GE322NUR6 (Enrich -30)

IVE Group Dandenong South

VICTORIA - MELBOURNE

Environmental Product Declaration

In Accordance with Environdec c-PCR-003 Concrete, concrete elements (EN 16757:2022), ISO 14025, and EN 15804:2012+A2:2019/AC:2021

Program: The International EPD System, www.environdec.com

Program Operator: EPD International AB

Regional Program: EPD Australasia

EPD Owner: Heidelberg Materials

This is a single company, single product EPD based on multiple manufacturing sites. An EPD may be updated or de-published if conditions change. To find the latest version of the EPD and to confirm its validity, see www.environdec.com.

EPD Registration Number: EPD-IES-0018979:001

Date of Publication: 2025-11-25

Valid Until: 2030-11-25

Date of Version: V.1 2025-11-25

EPD AUSTRALASIA INTERNATIONAL EPD SYSTEM

ECO PLATFORM EPD VERIFIED

EPD INTERNATIONAL EPD SYSTEM

Heidelberg Materials

Contents

1. General Information
2. Information about EPD owner
3. Product Information
4. Content Declaration
5. LCA Information
6. Environmental Performance
7. Abbreviations
8. Version History
9. References

1. General Information

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.

Heidelberg Materials Australia Pty Ltd has sole ownership, liability, and responsibility for the EPD.

Programme Operator	EPD International AB, Box 210 60, SE-100 31 Stockholm, Sweden Online: www.environdec.com Email: support@environdec.com		
Regional Programme Operator	EPD Australasia Limited, 6 Cube Court, Richmond, Tasman 7020 New Zealand Online: epd-australasia.com Email: info@epd-Australasia.com		
EPD Registration Number	EPD-IES-0018979:001		
Published	2025-11-25	**Valid until:**	2030-11-25
Reference year for data:	2023-2024		

Product Category Rules:	CEN standard EN 15804 serves as the core Product Category Rules (PCR).
PCR:	PCR 2019:14 Construction Products, Version 2.0.1, 2025-06-05 (valid until 2030-04-07)
PCR review was conducted by:	The Technical Committee of the International EPD® System. See www.environdec.com for a list of members. Review chair: Rob Rouwette | start2see (chair), Noa Meron | thinkstep-anz (co-chair). The review panel may be contacted via the Secretariat www.environdec.com/contact.
C-PCR:	Environdec c-PCR-003 Concrete, concrete elements, version 2025-04-08 (EN 16757:2023) served as sub-PCR.

Verification:	External and independent ('third-party') verification of the declaration and data, according to ISO 14025:2006, via EPD verification through: ☒ EPD process certification* with a pre-verified LCA/EPD tool
Process certifier:	Epsten Group, Inc. 101 Marietta St. NW, Suite 2600, Atlanta, Georgia 30303, USA www.epstengroup.com A2LA, Certificate #3142.03
Accredited by:	Megan Blizzard
Pre-verified LCA Tool:	Industry EPD tool for Clinker, Cement, Aggregates, Concrete and Precast products version 5.2 (GCCA Tool)
Third-party verifier, accountable for the tool verification:	Elia Rillo Studio Fieschi & soci Sri Società con Socio Unico Società soggetta a direzione e coordinamento di Tinexta S.p.A.
Tool verifier approved by:	The International EPD System
Procedure for follow-up of data during EPD validity involves third-party verifier:	☐ Yes ☒ No

2. Information about EPD owner

Heidelberg Materials is one of the world's largest building materials companies focused on producing materials to build our future.

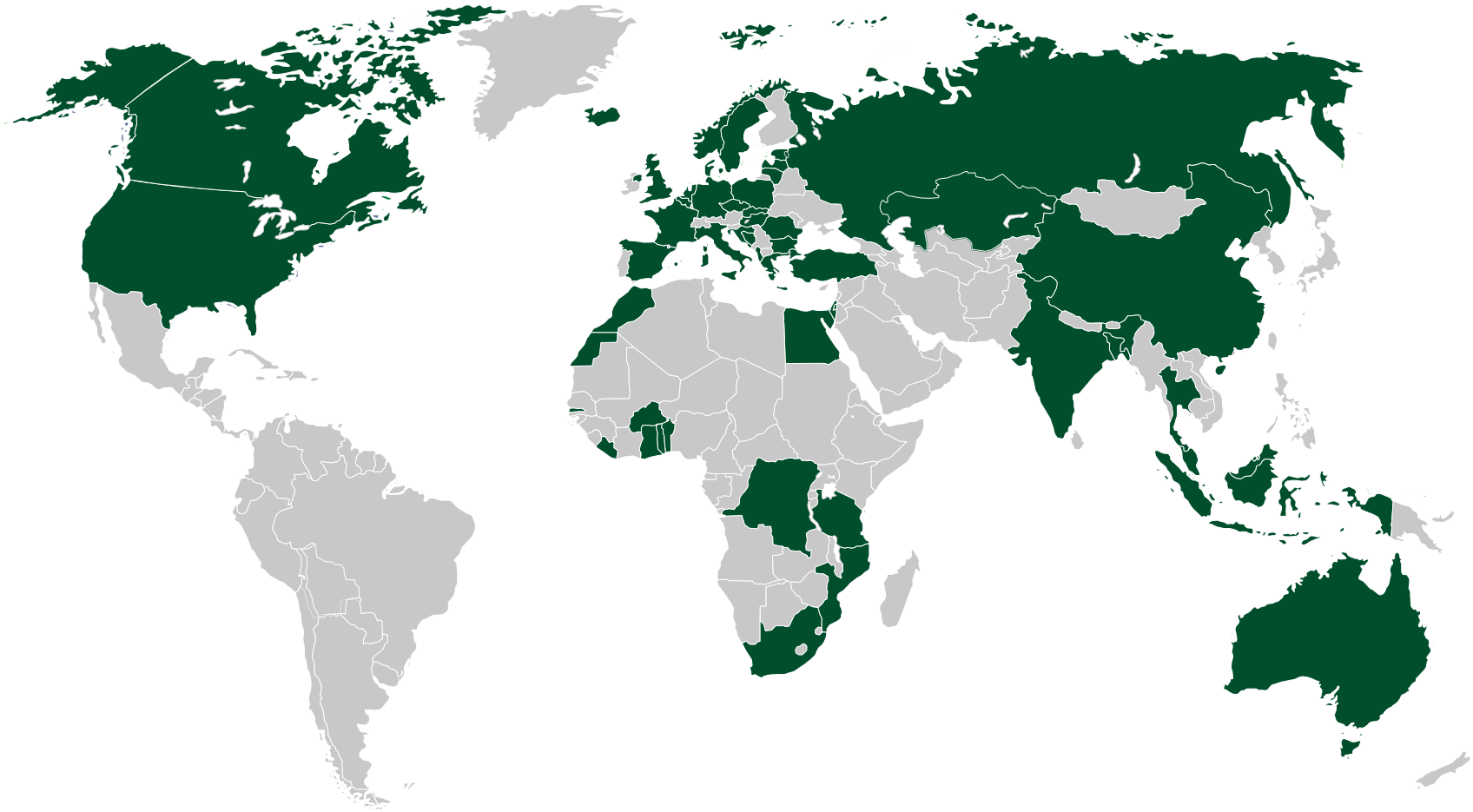
50 countries

51,000 employees

3,000 locations

Leading market positions in cement, aggregates and ready-mixed concrete.

Revenue in 2023 – 21.2 Billion Euro



EPD Owner	Heidelberg Materials Australia Pty Ltd L14, 35 Clarence St, Sydney NSW 2000 Phone: 1300 136 464 Online: www.heidelbergmaterials.com.au

Global expertise, Local experience

With more than 4,000 employees across 300 sites, we have an extensive production and logistics network across Australia.

We think global and act local - we benefit from global research and development enhanced by national collaboration to offer a comprehensive range of high-quality concrete, aggregates, road base, sand and asphalt products. We also produce a wide range of sustainable and recycled construction materials for civil construction and infrastructure projects.

We are driven by excellence and high performance and together we will shape Australia’s construction materials industry building a legacy for generations to come.

Our sustainability charter

The Heidelberg Materials Australia group of companies are leaders in the heavy construction materials industry. However, we never take it for granted. We help to build the infrastructure of communities by working with them and being a part of them. While we are known for our “we’ll make it happen” attitude, we are conscious of our socio-economic and environmental impacts.

One of our strategic goals is to drive operational excellence and innovation, which means we are always looking for new ways of working to help preserve and protect our planet’s natural resources.

Heidelberg Materials sustainability commitments 2030 serve as a guiding principle for our sustainability strategy.

The strategy is comprised of four strategic pillars and supports initiatives that focus on CO_2 Emissions, Sustainable Products, Biodiversity, Water and Corporate Social Responsibility.

To realise these sustainability goals, individual plans will be developed for our operations, addressing their unique sustainability challenges. We will also build sustainability targets into everyone’s roles, recruit sustainability champions and invest in resources and projects that support our sustainability plans. Our plans and commitments align directly with each of our core values: Care, Collaboration and Ownership.

Committing to these goals as a team is an important part of being a truly sustainable business.

I look forward to working together to realise better outcomes for our people, our communities and our planet.

Phil Schacht
Chief Executive
Heidelberg Materials Australia

“Driven by excellence and high performance, together we will shape Australia’s construction materials industry, building a legacy for generations to come”

Product Information

Heidelberg Materials Concrete

Heidelberg Materials manufactures concrete, asphalt and aggregates, ranging in specification and application. Heidelberg Materials offers a full range of concrete products ranging from standard, to low carbon, or decorative concrete; see our website for details.

Product Information

Concrete products consist of a mixture of aggregates, cementitious binder, supplementary cementitious materials, natural and/or manufactured sand, and admixtures.

This EPD covers GE322NUR6 concrete, manufactured by Heidelberg Materials in Lysterfield, Dandenong South and Westall Dual Lane, in Melbourne, Australia.

Technical Compliance

Heidelberg Materials concrete products comply with relevant technical specifications as per the below:

- UN CPC 375 – Articles of concrete, cement and plaster

- ANZSIC Classification 2033 Ready Mix Concrete Manufacturing

Geographical Information

The activities described in modules A1 to A3 have been modeled to reflect concrete production taking place in VICTORIA - MELBOURNE, Australia. The raw materials used are sourced domestically, and the product's end-of-life stage (module C) is also based on typical Australian conditions, following the default scenario in the EPD Tool (GCCA Tool, v5.2).

Product Information

The product included in this EPD, it's strength grade, density, application and other relevant information is shown below:

Product identification	**GE322NUR6 (Enrich -30)**
EPD Registration Number	**EPD-IES-0018979:001**
Production site(s)	**Melbourne**
Compressive strength	**32**
Density	**2321 kg/m³**
Reference service life	**50 Years**
Recycling Rate At EoL	**81%**
Declared unit	**1 m^3**
Scope	**A1-A3 + A4-A5 + B1-B7 + C1-C4 + D, cradle-to-grave**
Methodology	**GCCA's Industry EPD Tool for Cement and Concrete (V5.2), International version**
Reference Year	**2024**

Product Information

The EPD values presented are indicative of local material performance at the time of publishing and are subject to change based on material availability and seasonal factors.

Product Identification	EPD Registration Number	Compressive strength [MPa]	A1-A3 GWP-tot[1] [kg CO_2 eq./m^3]	Application
FP324AW22 (Enrich -30)	EPD-IES-0018977:001	32	209	Footpaths
GE252VW12 (Enrich -50)	EPD-IES-0018978:001	25	165	Footings
GE322NUR6 (Enrich -30)	EPD-IES-0018979:001	32	230	Office
GE324LH26 (Enrich -30)	EPD-IES-0018980:001	32	233	Office

[1]More detailed information is provided in the mix-specific tables and assumptions covered in Life Cycles & Processes section.

Content Declaration

Bill of Materials	Low Level (%)	High Level (%)
Cement	6	10
Supplementary Cementitious Materials	3	6
Aggregates	80	82
Water	5	6
Admixtures	>0	1
Reinforcements	0	0

The materials (by mass%) contained in IVE Group Dandenong South mixes are summarized in the table above.

Hazard information related to concrete placement

GHS classifications

- Skin Corrosion Category 1
- Serious Eye Damage –Category 1
- Skin Sensitisation Category 1
- Specific Target Organ Toxicity (Repeated Exposure) Category 2

Hazard Statement(s)

- H302 –Harmful if swallowed
- P280 –Wear protective gloves/clothing/eye protection.
- H314 –Causes severe skin burns and eye damage
- H317 –May cause an allergic skin reaction
- H318 – Causes serious eye damage
- H373 –May cause damage to lungs by inhalation (dust from dried product)

Co-Products, Recycled Materials & Allocations

Co-products would be allocated via economic allocations and then normalized based on BOM. The following materials are the product of waste streams of other industrial processes:

Fly ash

- Fly ash is a co-product of coal-fired power stations. To duly allocate the environmental impacts, economic allocation has been applied.

Ground Granulated Blast Furnace Slag (GGBFS)

- Blast furnace slag is a co-product of steel production that is dried and ground for use in concrete production. To duly allocate the environmental impacts, economic allocation has been applied. All impacts associated with drying and grinding are assigned to the material.

Silica fume

- Silica fume is a co-product of silicon production. To duly allocate the environmental impacts, economic allocation has been applied.

Recycled concrete aggregate

- A component of the boarder category of construction and demolition waste, environmental impacts are allocated on the basis of reprocessing the material following delivery to the recycling facility.

Manufactured Sand

- A co-product of processing coarse aggregate. This manufactured sand is a direct replacement for natural sand and prevents the need to extract natural resources. In terms of emission factors, we treat manufactured sand as having the same environmental burden as aggregate.

Packaging

- This concrete is not produced with any packaging, instead delivered directly to site immediately following production.

LCA Information

Declared Unit is 1m³ of Concrete

- The process is used to produce an accurate estimation at all stages of the product life cycle from cradle to grave. Estimation at each stage is based on actual data which is a combination of both current and prior year average consumption per declared unit.

Life Cycle Assessment Tool

- For the purposes of creating this Environmental Product Declaration (EPD), the Global Cement & Concrete Association (GCCA) concrete EPD tool v. 5.2 (short: GCCA tool) has been employed.

EPDs are created under either of 2 streams:

- Regional product-specific- The class of product modelled is used for a particular geographical region using averaged data across operations.
- Project-specific stream – Models the manufacture of specific products required for a particular project being delivered from specific plant(s) using weighted average data where relevant and possible. Reports created after the completion of a project offer the highest accuracy, including all mix variations for each delivery.

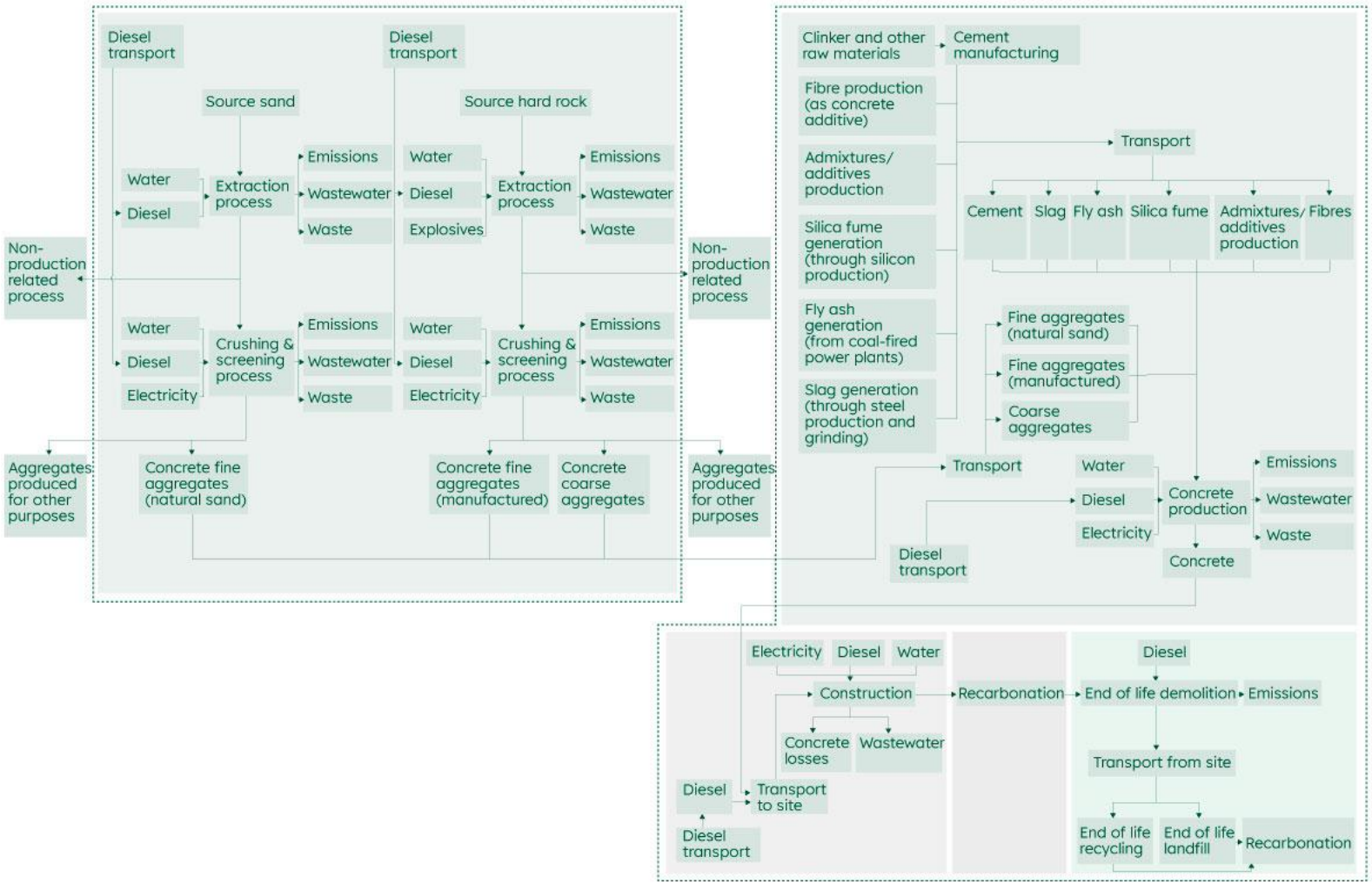
The main data categories include:

- The average bill of materials (BOM) for the concrete mix selected in the range of concrete plants specified including their average raw material travel distance, or the calculated BOM based on actual delivered materials incl. travel distances (average or specific) for the producing plants.
- The average fuel, water and energy consumption per declared unit between those plants;
- Plant production waste based on a nationally calculated figure;
- Recarbonation of concrete is determined through pre-defined values within GCCA tool for the type of construction project (-6.50kg CO_2 eq./ m³ at Stage B,-2.28 kg CO_2 eq./ m³ at Stage C3, and -4.77 kg CO_2 eq./ m³ at Stage C4), where known; and,
- End of life recycling is based upon industry data.
- This EPD Process is certified using GCCA international modelling of energy use and environmental impact to obtain a suitable estimation for products manufactured.
- Pre-defined cement and clinker data provided by the GCCA tool are used only where no better (supplier/source specific) information is available.

Assumptions & Limitations

- This is a project-specific EPD.
- All modelling assumptions adopted from the GCCA Tool. Any missing values are documented in this section.
- Raw material (inbound) transport distances is the previous year's travel distance average weighted according to deliveries across operations.
- Concrete mixes are assumed to use an equal amount of site fuel and energy and responsible for an equal amount of waste flows.
- Actual delivered materials are used to calculate the bill of materials across all producing plants. Concrete plants in the study include: Lysterfield, Dandenong South and Westall Dual Lane
- A4 Transport to the building site. The project-specific travel distances for diesel truck from the main plant to the construction site were applied. Truck type of >32 tonne was assumed to be fully utilized travelling to construction site with empty returns.
- Water usage in operations is averaged over the full geographic region of study.
- Grid purchased electricity mixes are based on the specific state's energy mix from Australian Energy Statistics. For this project, energy mix was sourced from coal and peat (94%), gas (1%), solar (<1%), wind (<1%), hydro (<1%), and biomass (<1%). The electricity emission (GWP-GHG) is 1.08 kg CO2e/kWh.
- Travel for materials sources internationally included from shipping origin.
- Reference Service Life (RSL) is set to 50 years as per default. It's based on the lowest exposure class A1 & A2 (AS 3600:2018 "Concrete Structures") in relatively benign environments.

LCA Information



- The lifecycle model and system boundary is the same for both Generic and Project-specific concrete EPDs, as detailed in the graphic.
- All stages of the lifecycle, from quarry to recycling are covered by the EPD.

Cut-off rules

We follow the cut-off rules as outlined in the PCR 2019:14 – Construction Products – Version 2.0.1, section 4.4. The cut-off threshold for the LCA study was flows contributing less than 1% for any individual input included in the LCA. No flows were deliberately excluded due to this threshold, however particularly minor impacts (e. g. packaging of chemical admixtures) were not considered. Cut off will occur only when data, or reliable estimates, are not practical to source. The contribution of capital goods (production equipment and infrastructure) and personnel are non-attributable and excluded for the system boundary.

Please note: The GCCA Tool datasets include infrastructure/capital equipment. This means some infrastructure and capital equipment is not entirely excluded from the system boundary.

Infrastructure relating to A2: Transport – Trucks, Trains and Boats are included in consideration. Direct (foreground) infrastructure is excluded, as it is commonly accepted to contribute negligibly to the environmental footprint of clinker, cement, aggregates, concrete and precast. The (background) infrastructure is however included by default in the ecoinvent database used in the model.

LCA Information

	Product Stage			Construction Stage		Use Stage							End of Life Stage				Benefits & loads for the next product system
	Raw Material Supply	Transport	Manufacturing	Transport	Construction/installation process	Use	Maintenance incl. transport	Repair incl. transport	Replacement incl. transport	Refurbishment incl. transport	Operational Energy Use	Operational Water Use	De-construction & demolition	Transport	Re-use recycling	Final Disposal	Reuse, Recovery Recycling
Module	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Modules declared	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Geography	GLO	GLO	AU	AU	AU	AU	AU	AU	AU	AU	AU	AU	AU	AU	AU	AU	AU
Share of primary data	33%																
Variation products	<10%																
Variation sites	<10%																

- All stages of the product lifecycle have been considered for this EPD – cradle to grave. By its nature, there are some stages of the lifecycle that are not applicable to the concrete product.
- The scenario applied for the use stage assumes that under normal use, no maintenance repair or replacement of the product during its service life is required. As a result, the values are displayed as zero.
- Those stages that, due to practicality, cannot be assessed accurately draw on default values of the underlying GCCA tool.
- For Project-specific EPDs, allocation is determined by the supplying plants with estimates as to the likely volume to be delivered from each. Where existing and sufficient data exists, historical data will be used to make this determination.

Disclaimers

Limitations & Non-conformities
Materials incorporated to the product and packaging materials available in the tool are pre-defined. For a given material, for instance, the share of primary versus secondary cannot be specified. Any give material is either 'primary' or 'secondary, product' or 'secondary, co-product' or 'secondary, waste'. The indicator 'Use of secondary materials' is computed as 'secondary materials, product' + 'secondary, co-product' + 'secondary, waste'. 'Secondary materials, waste' coming into the system are considered as a waste stream and are accepted as such. Therefore, no impact from the former life is considered. 'Secondary materials, product' and 'secondary materials, co-products' however inherit the impact of pre-processing (processing from 'end-of-waste' state to 'fit-for-use' state), consistently with the requirements of EN15804.
The PCR requires that the biogenic carbon content of the product and packaging should be reported in an EPD. It is mandatory when the biogenic carbon content exceeds 5% wt. (product or packaging). The latter is calculated and reported in the tool based on the default biogenic carbon content of input materials and is taken into account in the calculation of the GWP-bio indicator as per the requirements of the PCR. It is the responsibility of the EPD owner to report the biogenic content of the product and packaging in the EPD.

The removals and emissions associated with biogenic carbon content of the product and packaging are calculated based on the material input as per the inventory and are taken into consideration in the calculation of the GWP-bio indicator, as per the PCR. It is considered that all the material input eventually ends up in the product (resp. the packaging) with zero losses. The uptake of CO2 in A1-A3 (e.g. bio-based insulation materials in precast elements or bio-based packaging materials) and reemission in A5 (packaging end-of-life) or C3-C4 (product end-of-life).
The following hypotheses apply to waste streams at the end-of-life: 1) The only materials sent to recycling are the concrete itself and the reinforcement steel when applicable. Other materials (e.g. insulation, void formers) are considered to be landfilled. We assume the recycled materials are actually recycled and accounted for as recycled material. 2) The only credit in module D therefore applies to the recycling of concrete at the end of life and the recycling of reinforcing steel at the end of life. This methodological choice is consistent with the reality of the cement and concrete industry.
No allocation is applied in the GCCA tool. For instance, no allocation of impacts will be applied to excess electricity or excess heat which may result from the production of concrete or precast. Such situations are considered to be marginal and negligible when they take place.

Mandatory Disclaimer:
The results of the impact categories abiotic depletion of minerals and metals, land use, human toxicity (cancer), human toxicity, non-cancer and ecotoxicity (freshwater) may be highly uncertain in LCAs that include capital goods/infrastructure in generic datasets, in case infrastructure/capital goods contribute greatly to the total results. This is because the LCI data of infrastructure/capital goods used to quantify these indicators in currently available generic datasets sometimes lack temporal, technological and geographical representativeness. Caution should be exercised when using the results of these indicators for decision-making purposes.

Infrastructure relating to A2: Transport – Trucks, Trains and Boats are included in consideration. Direct (foreground) infrastructure is excluded, as it is commonly accepted to contribute negligibly to the environmental footprint of clinker, cement, aggregates, concrete and precast. The (background) infrastructure is however included by default in the ecoinvent database used in the model.

Data Quality Assessment

Process	Source type	Source	Reference year	Data Category	Share of primary data, of GWP-GHG results for A1-A3 (%)
Manufacturing of Concrete	Collected Data	EPD Owner	2024	Primary	0.0%
Generation of electricity used in manufacturing of product	Database	Govt table	2024	Primary	1.7 %
Transport of raw materials to concrete plant	Collected Data, Database	EPD Owner	2024	Primary, Secondary	7.1 %
Production of cement	EPD	Supplier EPD* - Goliath GP Cement EPD	2023	Primary	63.1 %
Production of GGBFS	Database	Quantis + GCCA Database	1999 - 2018	Secondary	0.0 %
Production of Fly Ash	Database	Quantis + GCCA Database	1980 – 2018	Secondary	0.0 %
Production of Silica Fume	Database	Quantis + GCCA Database	2008 - 2018	Secondary	0.0 %
Production of coarse aggregates and natural sand	Database	Ecoinvent v3.10	1997 – 2023	Secondary	5.1 %
Admixtures	Database	Ecoinvent v3.10 + EFCA	2011 - 2023	Secondary	0.0 %
Other processes	Database	Ecoinvent v3.10 + Quantis	2023	Secondary	0.0 %
				Total share of primary data*, of GWP-GHG results for A1-A3	77%

**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.*

Product Data Sources

LCA Stage	Process / Item	Source type	Source	Data Quality		
				Geographical	Technical	Time
Product Description	Product description and density	Collected data	EPD Owner: ERP report Bill of Materials and material specific data	Very good	Very good	Very good
A1-3 Materials	Cement production	EPD	Supplier: Goliath GP Cement EPD	Very good	Very good	Good
A1-3 Materials	Other Concrete Raw Materials	Collected data & Database	EPD Owner: ERP report BOM and Mix design compilation used in conjunction with material template Note. Upstream process for raw materials utilise data from ecoinvent 3.10. Specific cement EPD data by the cement manufacturer was used if available. Published cement EPDs were used to create concrete EPDs. In the rare case that specific cement data was not possible, region-specific default cement and clinker values (default values from ecoinvent v3.10) would have been used. This would be reflected in "Specific data."	Very good	Good	Very good
A1-3 Materials	Inbound travel (raw materials)	Database	EPD Owner: ERP report 2. Inbound Travel drawing from actual deliveries from sources to operations. Where delivery data not available, travel calculated based on Google Maps. Train travel (only for operations around Melbourne) calculated by actual Google Maps distance. Fuel type and consumption for Truck for Quarry operations and transport to concrete plant + distance in km.	Very good	Good	Very good
A1-3 Materials	Allocation Factor (for secondary co products):	Database	Slag: economic allocation as calculated by AusLCI. All impacts associated with drying and grinding are assigned to the material. Fly Ash & Silica fume: Due to the lack of reliable data for the Australian market, we use the GCCA Concrete EPD tools proposed economical allocation factors for these SCMs.	Very good	Good	Very good
A1-3 Manufacturing	Fuel Consumption	Collected data	EPD Owner: ERP Report 3. Concrete Energy Use, drawing on actual invoiced usage. AEMO: Grid composition data is sourced from the Australian Energy Market Operator (AEMO) for all States. We use a conservative modelling approach and minus renewables from the grid composition. Renewable Energy Contracts (w. Guarantee of Origin): Some plants have contracts with suppliers for renewable energy. In this instance, we use these numbers + the remaining grid composition numbers for the relevant state.	Very good	Very good	Very good
A1-3 Manufacturing	Plant Energy & Electricity Energy Sources	Collected data & database	EPD Owner: ERP Report 3. Concrete Energy Use, drawing on actual invoiced usage.	Very good	Very good	Very good
A1-3 Waste Management	Waste and wastewater	Collected data	Wastewater volume set to 9L per 1 m^3	Very good	Good	Very good

Product Data Sources

LCA Stage	Item	Source	Timing	Data Quality		
				Geographical	Technical	Time
A4-5 Construction	Outbound Travel	For generic EPDs: ERP report 5. Outbound travel drawing from actual deliveries from operations to customer sites. Where data not available, travel calculated based on Google Maps. For project-specific EPDs: The project-specific travel distances from the main plant to the construction site was applied. For both scenarios, diesel truck is used to transport deliveries to customer site/s. A5 uses default GCCA Tool settings for: 2.8 kWh electricity, 1.7 L diesel in building machine, 669 kg water, and 0.669 m^3 wastewater. Note that internal concrete losses are at ~1% (based on internal reports)	Generic EPD: Full prior year data, average per delivery. Project-specific EPD: Actual travel distances between plant and construction site.	Very good	Good	Very good
B. Use	Recarbonation	Default GCCA Tool settings:The modelling for recarbonation during the life cycle of the concrete products follows the guidance provided in norm EN 16757 – Annex BB – CO2 uptake by carbonation – Guidance on calculation, and in the British application of the norm, BRE EN 15804 – Annex C. The GCCA Tool default settings align with the defaults set out in the PCR (v2.0.1).	NA	Good	Good	Very good
C. End of Life Demolition	Demolition	Default GCCA Tool settings: 2.674 L diesel in building machine, 0.0365 mg PM2.5, 0.184 mg PM10, 0.139 mg PM>10. PM refers to particulate matter.	NA	Good	Good	Very good
C. End of Life Transport	Transport	Default GCCA Tool settings: For recycling, the tool assumes 50km default distance by truck, via Quantis estimate. If waste is going to landfill, the tool assumes a distance of 15km by truck, as per the ecoinvent v2.2, inert material landfill. The GCCA Tool default settings align with the defaults set out in the PCR (v2.0.1).	NA	Good	Good	Very good
C. End of Life Waste Processing	Recycling Rate at EOL	Masonry materials recycling rate obtained from annual National Waste Report published (e. g. for National Waste Report 2022, page 41, figure 29). Referenced recycling rate is used in industry as closest to concrete-specific value. National Waste Reports	Prior year National Waste Report if available. If not, then latest available	Good	Good	Very good
C. End of Life Disposal	Disposal Rate at EOL	Disposal rate inverse of masonry materials recycling rate obtained from annual National Waste Report published National Waste Reports	Prior year National Waste Report if available. If not, then latest available	Good	Good	Very good
D Benefits and Loads		Default GCCA Tool settings: The impacts beyond the system boundaries are calculated, for each flow of recycled material, as the difference between the impacts of recycling 1 kg of material and the impacts of 1 kg of the primary materials avoided, multiplied by the mass flow sent to recycling minus its initial recycled material content. The GCCA Tool default settings align with the defaults set out in the PCR (v2.0.1).	NA	NA	NA	NA
General	General	Ecoinvent database used by the GCCA tool Note: This covers environmental information for all raw materials and energy sources. Cement, where data is available, employs specific raw material and energy data for the product manufacture and for each component draws on Eco Invent Data.	NA	Very good	Good	Very good

LCA Indicators

Comment	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. Since Module C is included in the EPD, the use of Module A1-A3 results without considering the results of Module C is discouraged. EF3.1 based EN15804+A2 impact assessment methodology has been is used for all indicators. The removals and emissions associated with biogenic carbon content of i) the product and ii) the packaging are not significant or even not relevant in the sector. The only limitation is the uptake of CO_2 in A1-A3 (e.g. biobased insulation materials in precast elements or biobased packaging materials) and reemission in A5 (packaging end-of-life) or C3-C4 (product end-of-life). This does not affect the GWP-tot indicator. The indicator RWD (Radioactive Waste Disposed) is calculated over the whole supply chain of the product using the background database Ecoinvent 3.10 with EN15804 add-on.
Core Environmental Impact Indicators	**GWP-tot** (Global Warming Potential total) • **GWP-fos** (Global Warming Potential fossil fuels) • **GWP-bio** (Global Warming Potential biogenic) • **GWP-luc** (Global Warming Potential land use and land use change) • **ODP** (Depletion potential of the stratospheric ozone layer) • **AP** (Acidification potential, Accumulated Exceedance) • **EP-fw** (Eutrophication potential, freshwater) • **EP-mar** (Eutrophication potential, fraction of nutrients reaching marine end compartment) • **EP-ter** (Eutrophication potential, Accumulated Exceedance) • **POCP** (Formation potential of tropospheric ozone) • **ADPE**[1] (Abiotic depletion potential for non- fossil resources) • **ADPF**[1] (Abiotic depletion for fossil resources potential) • **WDP**[1] (Water (user) deprivation potential, deprivation-weighted water consumption)

[1] The 'Water deprivation potential' (WDP) indicator is characterised according to global characterization factors and not local ones. The results of this environmental impact indicator shall be used with care as the uncertainties of the results are high and as there is limited experience with the indicator.

LCA Indicators

Additional Environmental Impact Indicators	**GWP-GHG** (Global Warming Potential, GHG) • **PM** (Potential incidence of disease due to PM emissions) • **IRP**[2] (Potential Human exposure efficiency relative to U235) • **ETP**[1] (Potential Comparative Toxic Unit for ecosystems) • **HTPC**[1] (Potential Comparative Toxic Unit for humans - cancer) • **HTPNC**[1] (Potential Comparative Toxic Unit for humans - non-cancer) • **SQP**[1] (Potential soil quality index)
Parameters Describing Resource Use	**PERE** (Use of renewable primary energy excluding renewable primary energy resources used as raw materials) • **PERM** (Use of renewable primary energy resources used as raw materials) • **PERT** (Total use of renewable primary energy resources) • **PENRE** (Use of non renewable primary energy excluding non-renewable primary energy resources used as raw materials) • **PENRM** (Use of non-renewable primary energy resources used as raw materials) • **PENRT** (Total use of non-renewable primary energy resources) • **SM** (Use of secondary materials) • **RSF** (Use of renewable secondary fuels) • **NRSF** (Use of non-renewable secondary fuels) • **NFW** (Net use of fresh water)
Waste Categories[3]	**HWD** (Hazardous waste disposed) • **NHWD** (Non-hazardous waste disposed) • **RWD** (Radioactive waste disposed)
Output Flows	**CRU** (Components for re-use) • **MFR** (Materials for recycling) • **MER** (Materials for energy recovery) • **EE** (Exported energy)
Extra Indicators	**CC**[1] (Emissions from calcination and removals from carbonation) • **CWRS** (Emissions from combustion of waste from renewable sources used in production processes) • **CWNRS** (Emissions from combustion of waste from non-renewable sources used in production processes) • **GWP-prod** (Removals and emissions associated with biogenic carbon content of the bio-based product) • **GWP-pack** (Removals and emissions associated with biogenic carbon content of the bio-based packaging)

[1] The results of this environmental impact indicator shall be used with care as the uncertainties of the results are high and as there is limited experience with the indicator.
[2] 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.
[3] The 'Non-hazardous waste disposed' (NHWD) and 'Hazardous waste disposed' (HWD) indicators in the tool relate only to the foreground of the clinker, cement and concrete, where cement inherits the impacts from clinker and concrete inherits the impacts from cement.

Environmental Performance

EPD Registration Number EPD-IED-0018979:001

Core environmental impact indicators

		A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-tot	kg CO_2 eq.	2.30E+02	2.06E+00	1.17E+01	-6.50E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.68E+00	3.64E+01	1.10E+01	-4.52E+00	-1.36E+01
GWP-fos	kg CO_2 eq.	2.30E+02	2.06E+00	1.17E+01	-6.50E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.68E+00	3.64E+01	1.10E+01	-4.52E+00	-1.36E+01
GWP-bio	kg CO_2 eq.	1.52E-01	8.45E-05	1.14E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.49E-04	8.11E-04	1.92E-02	2.76E-05	-3.38E-02
GWP-luc	kg CO_2 eq.	8.17E-02	8.35E-04	3.26E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.54E-04	1.44E-02	7.94E-03	2.19E-05	-1.07E-02
ODP	kg CFC 11 eq.	1.34E-06	3.21E-08	2.13E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.33E-07	5.08E-07	1.26E-07	3.86E-09	-1.11E-07
AP	mol H+ eq.	9.02E-01	8.58E-03	8.98E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.83E-02	1.21E-01	8.17E-02	2.28E-03	-8.60E-02
EP-fw	kg P eq.	2.88E-02	5.29E-05	7.38E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.27E-05	9.31E-04	7.82E-04	0.00E+00	-1.23E-03
EP-mar	kg N eq.	1.09E-01	3.12E-03	3.09E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.63E-02	3.93E-02	2.54E-02	1.06E-03	-2.04E-02
EP-ter	mol N eq.	2.39E+00	3.40E-02	3.43E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.98E-01	4.27E-01	2.60E-01	1.16E-02	-2.58E-01
POCP	kg NMVOC eq.	6.39E-01	1.25E-02	1.02E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.19E-01	1.69E-01	7.66E-02	3.45E-03	-6.99E-02
ADPE	kg Sb eq.	1.74E-04	5.79E-06	2.04E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.19E-06	1.19E-04	5.41E-05	9.25E-08	-7.21E-05
ADPF	MJ, net calorific value	1.28E+03	3.01E+01	1.33E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.14E+02	5.10E+02	1.63E+02	3.30E+00	-1.63E+02
WDP	m^3 world eq. deprived	2.86E+01	1.44E-01	1.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.78E-01	2.30E+00	1.72E+00	8.08E-03	-2.74E+01

Parameters describing resource use

		A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PERE	MJ, net calorific value	1.38E+02	3.95E-01	6.49E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.97E-01	6.70E+00	1.62E+01	2.02E-02	-1.35E+01
PERM	MJ, net calorific value	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ, net calorific value	1.38E+02	3.95E-01	6.49E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.97E-01	6.70E+00	1.62E+01	2.02E-02	-1.35E+01
PENRE	MJ, net calorific value	1.28E+03	3.01E+01	1.33E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.14E+02	5.10E+02	1.63E+02	3.30E+00	-1.63E+02
PENRM	MJ, net calorific value	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT	MJ, net calorific value	1.28E+03	3.01E+01	1.33E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.14E+02	5.10E+02	1.63E+02	3.30E+00	-1.63E+02
SM	kg	8.18E+01	0.00E+00	8.18E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	MJ, net calorific value	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	MJ, net calorific value	9.26E+01	0.00E+00	9.26E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NFW	m^3	1.92E+00	4.43E-03	3.33E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.38E-03	6.59E-02	4.69E-02	2.14E-04	-6.46E-01

Environmental Performance

EPD Registration Number EPD-IED-0018979:001

Additional environmental impact indicators

		A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-GHG	kg CO_2 eq.	2.30E+02	2.06E+00	1.17E+01	-6.50E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.68E+00	3.64E+01	1.10E+01	-4.52E+00	-1.36E+01
PM	Disease incidence	8.14E-06	2.11E-07	1.74E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.23E-06	2.88E-06	1.22E-06	6.46E-08	-1.40E-06
IRP	kBq U235 eq.	4.41E+02	2.65E-02	4.59E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.09E-02	4.19E-01	7.43E-01	1.48E-03	-1.17E+00
ETP	CTUe	7.81E+02	7.24E+00	1.74E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.61E+01	1.36E+02	3.75E+01	4.68E-01	-8.72E+01
HTPC	CTUh	2.88E-06	1.03E-08	6.93E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.39E-08	1.88E-07	3.01E-08	9.86E-10	-1.61E-07
HTPNC	CTUh	1.01E-05	1.99E-08	1.59E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.55E-08	3.27E-07	1.07E-07	4.49E-10	-1.10E-07
SQP	dimensionless	1.19E+03	3.03E+01	3.40E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.98E+00	3.04E+02	4.72E+01	2.32E-01	-1.74E+02

Other environmental information describing waste categories

		A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
HWD	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NHWD	kg	1.40E-01	0.00E+00	4.37E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.37E+02	0.00E+00
RWD	kg	3.41E-04	6.50E-06	4.83E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.25E-05	1.03E-04	1.81E-04	3.63E-07	-2.85E-04

Environmental information describing output flows

		A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	1.68E-02	0.00E+00	1.89E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.89E+03	0.00E+00	0.00E+00
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Extra indicators

		A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
CC	kg CO_2 eq.	1.10E+02	0.00E+00	9.64E-01	-6.50E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-2.28E+00	-4.77E+00	0.00E+00
CWRS	kg CO_2 eq.	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CWNRS	kg CO_2 eq.	7.34E+00	0.00E+00	7.34E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
GWP-prod	kg CO_2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
GWP-pack	kg CO_2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Environmental Performance

The EPD values here are representative of 100% recycling scenario.

Core environmental impact indicators

		C1	C2	C3	C4	D
GWP-tot	kg CO_2 eq.	8.68E+00	3.64E+01	1.46E+01	0.00E+00	-1.68E+01
GWP-fos	kg CO_2 eq.	8.68E+00	3.64E+01	1.46E+01	0.00E+00	-1.67E+01
GWP-bio	kg CO_2 eq.	9.49E-04	8.11E-04	2.08E-02	0.00E+00	-4.17E-02
GWP-luc	kg CO_2 eq.	7.54E-04	1.44E-02	9.58E-03	0.00E+00	-1.32E-02
ODP	kg CFC 11 eq.	1.33E-07	5.08E-07	1.36E-07	0.00E+00	-1.37E-07
AP	mol H+ eq.	7.83E-02	1.21E-01	8.91E-02	0.00E+00	-1.06E-01
EP-fw	kg P eq.	8.27E-05	9.31E-04	9.63E-04	0.00E+00	-1.51E-03
EP-mar	kg N eq.	3.63E-02	3.93E-02	2.71E-02	0.00E+00	-2.51E-02
EP-ter	mol N eq.	3.98E-01	4.27E-01	2.78E-01	0.00E+00	-3.18E-01
POCP	kg NMVOC eq.	1.19E-01	1.69E-01	8.19E-02	0.00E+00	-8.61E-02
ADPE	kg Sb eq.	3.19E-06	1.19E-04	6.12E-05	0.00E+00	-8.89E-05
ADPF	MJ, net calorific value	1.14E+02	5.10E+02	1.80E+02	0.00E+00	-2.01E+02
WDP	m^3 world eq. deprived	2.78E-01	2.30E+00	2.00E+00	0.00E+00	-3.37E+01

Parameters describing resource use

		C1	C2	C3	C4	D
PERE	MJ, net calorific value	6.97E-01	6.70E+00	1.84E+01	0.00E+00	-1.66E+01
PERM	MJ, net calorific value	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ, net calorific value	6.97E-01	6.70E+00	1.84E+01	0.00E+00	-1.66E+01
PENRE	MJ, net calorific value	1.14E+02	5.10E+02	1.80E+02	0.00E+00	-2.01E+02
PENRM	MJ, net calorific value	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT	MJ, net calorific value	1.14E+02	5.10E+02	1.80E+02	0.00E+00	-2.01E+02
SM	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	MJ, net calorific value	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	MJ, net calorific value	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NFW	m^3	7.38E-03	6.59E-02	5.48E-02	0.00E+00	-7.96E-01

Additional environmental impact indicators

		C1	C2	C3	C4	D
GWP-GHG	kg CO_2 eq.	8.68E+00	3.64E+01	1.46E+01	0.00E+00	-1.68E+01
PM	Disease incidence	2.23E-06	2.88E-06	1.31E-06	0.00E+00	-1.72E-06
IRP	kBq U235 eq.	5.09E-02	4.19E-01	9.07E-01	0.00E+00	-1.45E+00
ETP	CTUe	1.61E+01	1.36E+02	4.18E+01	0.00E+00	-1.07E+02
HTPC	CTUh	3.39E-08	1.88E-07	3.34E-08	0.00E+00	-1.98E-07
HTPNC	CTUh	1.55E-08	3.27E-07	1.19E-07	0.00E+00	-1.36E-07
SQP	dimensionless	7.98E+00	3.04E+02	5.66E+01	0.00E+00	-2.14E+02

Other environmental information describing waste categories

		C1	C2	C3	C4	D
HWD	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NHWD	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RWD	kg	1.25E-05	1.03E-04	2.22E-04	0.00E+00	-3.51E-04

Environmental information describing output flows

		C1	C2	C3	C4	D
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	0.00E+00	0.00E+00	2.32E+03	0.00E+00	0.00E+00
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Extra indicators

		C1	C2	C3	C4	D
CC	kg CO_2 eq.	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CWRS	kg CO_2 eq.	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CWNRS	kg CO_2 eq.	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
GWP-prod	kg CO_2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
GWP-pack	kg CO_2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Environmental Performance

The EPD values here are representative of 100% landfill scenario.

Core environmental impact indicators

		C1	C2	C3	C4	D
GWP-tot	kg CO_2 eq.	8.68E+00	3.64E+01	7.52E+00	1.34E+00	0.00E+00
GWP-fos	kg CO_2 eq.	8.68E+00	3.64E+01	7.50E+00	1.34E+00	0.00E+00
GWP-bio	kg CO_2 eq.	9.49E-04	8.11E-04	1.23E-02	1.47E-04	0.00E+00
GWP-luc	kg CO_2 eq.	7.54E-04	1.44E-02	8.54E-04	1.16E-04	0.00E+00
ODP	kg CFC 11 eq.	1.33E-07	5.08E-07	8.14E-08	2.05E-08	0.00E+00
AP	mol H+ eq.	7.83E-02	1.21E-01	4.99E-02	1.21E-02	0.00E+00
EP-fw	kg P eq.	8.27E-05	9.31E-04	0.00E+00	0.00E+00	0.00E+00
EP-mar	kg N eq.	3.63E-02	3.93E-02	1.81E-02	5.61E-03	0.00E+00
EP-ter	mol N eq.	3.98E-01	4.27E-01	1.83E-01	6.15E-02	0.00E+00
POCP	kg NMVOC eq.	1.19E-01	1.69E-01	5.36E-02	1.83E-02	0.00E+00
ADPE	kg Sb eq.	3.19E-06	1.19E-04	2.38E-05	4.92E-07	0.00E+00
ADPF	MJ, net calorific value	1.14E+02	5.10E+02	8.83E+01	1.75E+01	0.00E+00
WDP	m^3 world eq. deprived	2.78E-01	2.30E+00	5.36E-01	4.30E-02	0.00E+00

Parameters describing resource use

		C1	C2	C3	C4	D
PERE	MJ, net calorific value	6.97E-01	6.70E+00	6.68E+00	1.08E-01	0.00E+00
PERM	MJ, net calorific value	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ, net calorific value	6.97E-01	6.70E+00	6.68E+00	1.08E-01	0.00E+00
PENRE	MJ, net calorific value	1.14E+02	5.10E+02	8.83E+01	1.75E+01	0.00E+00
PENRM	MJ, net calorific value	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT	MJ, net calorific value	1.14E+02	5.10E+02	8.83E+01	1.75E+01	0.00E+00
SM	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	MJ, net calorific value	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	MJ, net calorific value	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NFW	m^3	7.38E-03	6.59E-02	1.31E-02	1.14E-03	0.00E+00

Additional environmental impact indicators

		C1	C2	C3	C4	D
GWP-GHG	kg CO_2 eq.	8.68E+00	3.64E+01	7.52E+00	1.34E+00	0.00E+00
PM	Disease incidence	2.23E-06	2.88E-06	8.55E-07	3.44E-07	0.00E+00
IRP	kBq U235 eq.	5.09E-02	4.19E-01	3.15E-02	7.86E-03	0.00E+00
ETP	CTUe	1.61E+01	1.36E+02	1.91E+01	2.49E+00	0.00E+00
HTPC	CTUh	3.39E-08	1.88E-07	1.57E-08	5.24E-09	0.00E+00
HTPNC	CTUh	1.55E-08	3.27E-07	5.54E-08	2.39E-09	0.00E+00
SQP	dimensionless	7.98E+00	3.04E+02	6.57E+00	1.23E+00	0.00E+00

Other environmental information describing waste categories

		C1	C2	C3	C4	D
HWD	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NHWD	kg	0.00E+00	0.00E+00	0.00E+00	2.32E+03	0.00E+00
RWD	kg	1.25E-05	1.03E-04	7.56E-06	1.93E-06	0.00E+00

Environmental information describing output flows

		C1	C2	C3	C4	D
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Extra indicators

		C1	C2	C3	C4	D
CC	kg CO_2 eq.	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CWRS	kg CO_2 eq.	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CWNRS	kg CO_2 eq.	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
GWP-prod	kg CO_2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
GWP-pack	kg CO_2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Abbreviations & Version History

Abbreviations

ANZIC	Australian and New Zealand Standard Industrial Classification
BOM	Bill of Materials
CEN	European Committee for Standardization
CPC	Central Product Classification
EN	European Norm (Standard)
EPD	Environmental Product Declaration
GCCA	Global Cement and Concrete Assosciation
GGBFS	ground granulated blast furnace slag
GPI	General Programme Instructions
ISO	International Organization for Standardization
LCA	Life Cycle Assessment
ND	Not Declared
PCR/c-PCR	Product Category Rules / complimentary Product Category Rules
UN	United Nations

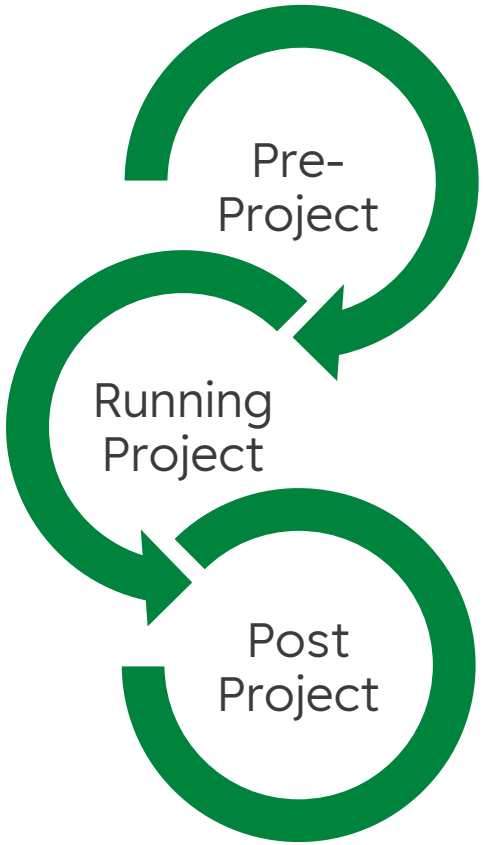
Version History

Version	Notes
V.1 2025-11-25	1st version

References

1) Australian Life Cycle Assessment Society. (2015). Australian Life Cycle Inventory Database Initiative. Retrieved from http://www.auslci.com.au
2) National Waste Report. (2024). https://www.dcceew.gov.au/environment/protection/waste/publications/national-waste-resource-recovery-reporting. Canberra: Department of Climate Change, Energy, the Environment and Water.
3) Ecoinvent. (2023, Nov 23). ecoinvent 3.10 (database). Retrieved from https://ecoinvent.org/ecoinvent-v3-10/
4) EPD International. (2024). General Programme Instructions for the International EPD® System v5.0.1. Retrieved from envirodec.com
5) EPD Australasia Regional Annex (2024) – Version 4.2 Retrieved from epd-australasia.com
6) European Committee for Standardisation (CEN). (2022). EN 16757:2022: Sustainability of construction works - Environmental product declarations - Product Category Rules for concrete and concrete elements.
7) European Committee for Standardisation (CEN). (2021). EN 15804:2012+A2:2019/AC:2021 Cement and building lime - Environmental Product Declarations - Product Category Rules complementary to EN 15804. Brussels.
8) European Committee for Standardisation (CEN). (2019). EN 15804:2012+A2:2019: Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products. Brussels.
9) Google. (n.d.). Google Maps. Retrieved from https://www.google.com.au/maps/
10) International Organization for Standardization. (2015). ISO14020 Environmental Labels and Declarations - General Principles.
11) International Organization for Standardization. (2017). ISO14025 Environmental Labels and Declarations - Type III Environmental Declarations - Principles and Procedures.
12) International Organization for Standardization. (2020). ISO 14044 Environmental Management - Life Cycle Assessment - Requirements and Guidelines.
13) McConnell, D., Holmes a Court, S., Tan, S., & Cubrilovic, N. (2022). OpenNEM. https://opennem.org.au/
14) Quantis. (2025). GCCA's Industry EPD Tool for Cement and Concrete v5.2. Retrieved from https://concrete-epd-tool.org/

CO_2 Service Offer



CO_2 is set to become a crucial budgeting currency in the construction sector. As such, it must be managed accordingly. Most provided embodied carbon emission data out there is based on estimates and typically handed over to the customer before a project starts.

At Heidelberg Materials Australia, we believe there's a better way to communicate carbon values, which also eliminates the current gap of carbon monitoring options during the construction phase in the market:

1) **Pre-project:** Predicting - We can provide you indicative CO_2 values for your specific project with our 3rd party verified CO_2 calculator (targeted & fast & reliable).

2) **Running project:** Monitoring - You get regular updates of your deliveries and how you track towards your carbon targets (no more surprises).

3) **Post-project:** Verification - You'll receive a final report and a project-specific EPD based on actual deliveries (highest accuracy).