# ENVIRONMENTAL PRODUCT DECLARATION

## IN ACCORDANCE WITH EN 15804+A2 & ISO 14025

Pipes DN300 to DN1200 utilising BIB 101, 102 and 103
Reinforced Concrete Pipes Australia (Holding's) Pty Ltd

**EPD HUB, HUB-6260**
Published on 10.05.2026, last updated on 10.05.2026, valid until 09.05.2031

Life Cycle Assessment study has been performed in accordance with the requirements of EN 15804, EPD Hub PCR version 1.2 (24 Mar 2025) and JRC characterization factors EF 3.1.

Created with One Click LCA

# GENERAL INFORMATION

## MANUFACTURER

| | |
|---|---|
| Manufacturer | Reinforced Concrete Pipes Australia (Holding's) Pty Ltd |
| Address | 29 Cocos Drive, Bibra Lake, Australia |
| Contact details | Adrian.C@rcpa.com.au |
| Website | https://www.rcpa.com.au/ |

This EPD is intended for business-to-business and/or business-to-consumer communication. The manufacturer has the sole ownership, liability, and responsibility for the EPD. EPDs within the same product category but from different programs may not be comparable. EPDs of construction products may not be comparable if they do not comply with EN 15804 and if they are not compared in a building context.

## EPD STANDARDS, SCOPE AND VERIFICATION

| | |
|---|---|
| Program operator | EPD Hub, hub@epdhub.com |
| Reference standard | EN 15804:2012+A2:2019/AC:2021 and ISO 14025 |
| PCR | EPD Hub Core PCR Version 1.2, 24 Mar 2025<br>EN 16757 Product Category Rules for concrete and concrete elements |
| Sector | Manufactured product |
| Category of EPD | Third party verified EPD |
| Parent EPD number | - |
| Scope of the EPD | Cradle to gate with modules C1-C4, D |
| EPD author | Niki Jackson, EPD on Demand |
| EPD verification | Independent verification of this EPD and data, according to ISO 14025:<br>☐ Internal verification ☑ External verification |
| EPD verifier | Vera Durão, as an authorised verifier acting for EPD Hub Limited |

## PRODUCT

| | |
|---|---|
| Product name | Pipes DN300 to DN1200 utilising BIB 101, 102 and 103 |
| Additional labels | - |
| Product reference | - |
| Place(s) of raw material origin | Australia |
| Place of production | Bibra Lake, Australia |
| Place(s) of installation and use | Australia |
| Period for data | 1st July 2023 to 30th June 2024 |
| Averaging in EPD | Multiple products |
| Variation in GWP-fossil for A1-A3 (%) | -9.05 to + 8.7 |
| GTIN (Global Trade Item Number) | - |
| NOBB (Norwegian Building Product Database) | - |
| A1-A3 Specific data (%) | 80.0 |

## ENVIRONMENTAL DATA SUMMARY

| | |
|---|---|
| **Declared unit** | 1 ton of Reinforced concrete Pipe |
| **Declared unit mass** | 1000 kg |
| **Mass of packaging** | 0 kg |
| **GWP-fossil, A1-A3 ($kgCO_2e$)** | 283 |
| **GWP-total, A1-A3 ($kgCO_2e$)** | 284 |
| **Secondary material, inputs (%)** | 1.56 |
| **Total energy use, A1-A3 (kWh)** | 670 |
| **Net freshwater use, A1-A3 ($m^3$)** | 17 |

# PRODUCT AND MANUFACTURER

## ABOUT THE MANUFACTURER

RCPA is the leading supplier of vertically cast steel-reinforced concrete pipes in Australia. Established in 2009 after the merger of our two founding companies in the industry; Reinforced Concrete Pipes (RCP) and Australasian Pipeline & Precast (APP), that merger made RCPA the only national supplier of vertically cast steel-reinforced concrete pipes and the only, solely Australian owned and operated, concrete pipe business. With plants and leading civil precaster partnerships all over Australia, RCPA is committed to meeting customer requirements, no matter how big or small.
RCPA's focus on excellence is achieved through manufacturing processes that prioritise quality and efficiency. Technology and innovation are central to our operations. We are known for pioneering the vertical cast pipe process in Australia, and today we remain the only supplier offering this product range nationally. Our precast product technology and range are continually developing, offering our clients a diverse range of options.
Compliance is a top priority for RCPA, and our product designs and manufacturing processes adhere to local, state, and national regulations.
RCPA is driven by our values and capabilities. We are committed to protecting our people, the community, and the environment, and continuously strive for safer and more sustainable processes and products.
Innovation is a crucial aspect of RCPA's success. We incorporate advanced manufacturing technologies, superior materials, innovative designs, and sustainable practices to meet the construction industry's demands and address its challenges. Our innovative approach helps us remain competitive and create critical infrastructure elements for the safety and reliability of communities. We are extremely proud to introduce our latest innovation: EKOPipe, which utilises our revolutionary new BX3 technology.
Innovation has helped us not only reduce carbon emissions but also improve our material’s strength and durability. Additionally, RCPA is taking measure to improve our environmental footprint. As game changers in the industry, RCPA will continue investing in innovative solutions to stay relevant and effective in the future.

RCPA supports the industry community through membership and active participation in leading associations such as the Concrete Pipe Association of Australasia (CPAA), the National Precast Concrete Association of Australia (NPCAA), and the Infrastructure Sustainability Council.

## PRODUCT DESCRIPTION

Concrete Pipes manufactured by RCPA are produced in Rubber Ring Joint profiles, as per the standard AS/NZS 4058 for Precast concrete pipes (non-pressure). They range in diameter from 225mm up to 2100 mm and are available in classes of 2, 3 and 4, with the main differences between the classes is the thickness of the concrete wall and the amount of steel reinforcing used, which impacts the environmental impact for size and class of pipe.
Concrete pipes manufactured by RCPA with a diameter from 225mm to 2100mm have an effective laying length of 2.34 metres.
Within this EPD, pipes with a diameter from 300mm to 1200mm and classes of 2, 3 and 4 are covered. The EPD has been designed for 1 ton of product.

Further information can be found at:
https://www.rcpa.com.au/

## PRODUCT RAW MATERIAL MAIN COMPOSITION

| Raw material category | Amount, mass % | Material origin |
|---|---|---|
| Metals | 3.2 | Asia, Australia |
| Minerals | 96.75 | Australia, Asia |
| Fossil materials | 0.05 | Asia |
| Bio-based materials | 0 | - |

## BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

| | |
|---|---|
| Biogenic carbon content in product, kg C | 0 |
| Biogenic carbon content in packaging, kg C | 0 |

## FUNCTIONAL UNIT AND SERVICE LIFE

| | |
|---|---|
| Declared unit | 1 ton of Reinforced concrete Pipe |
| Mass per declared unit | 1000 kg |
| Functional unit | - |
| Reference service life | 100 years |

## SUBSTANCES, REACH - VERY HIGH CONCERN

The product does not contain any REACH SVHC substances in amounts greater than 0,1 % (1000 ppm).

# PRODUCT LIFE-CYCLE

## SYSTEM BOUNDARY

This EPD covers the life-cycle modules listed in the following table.

| Product stage | | | Assembly stage | | Use stage | | | | | | | End of life stage | | | | Beyond the system boundaries | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A1 | A2 | A3 | A4 | A5 | B1 | B2 | B3 | B4 | B5 | B6 | B7 | C1 | C2 | C3 | C4 | D | | |
| x | x | x | ND | ND | ND | ND | ND | ND | ND | ND | ND | x | x | x | x | x | | |
| 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 |

*Not declared = ND.*

## MANUFACTURING AND PACKAGING (A1-A3)

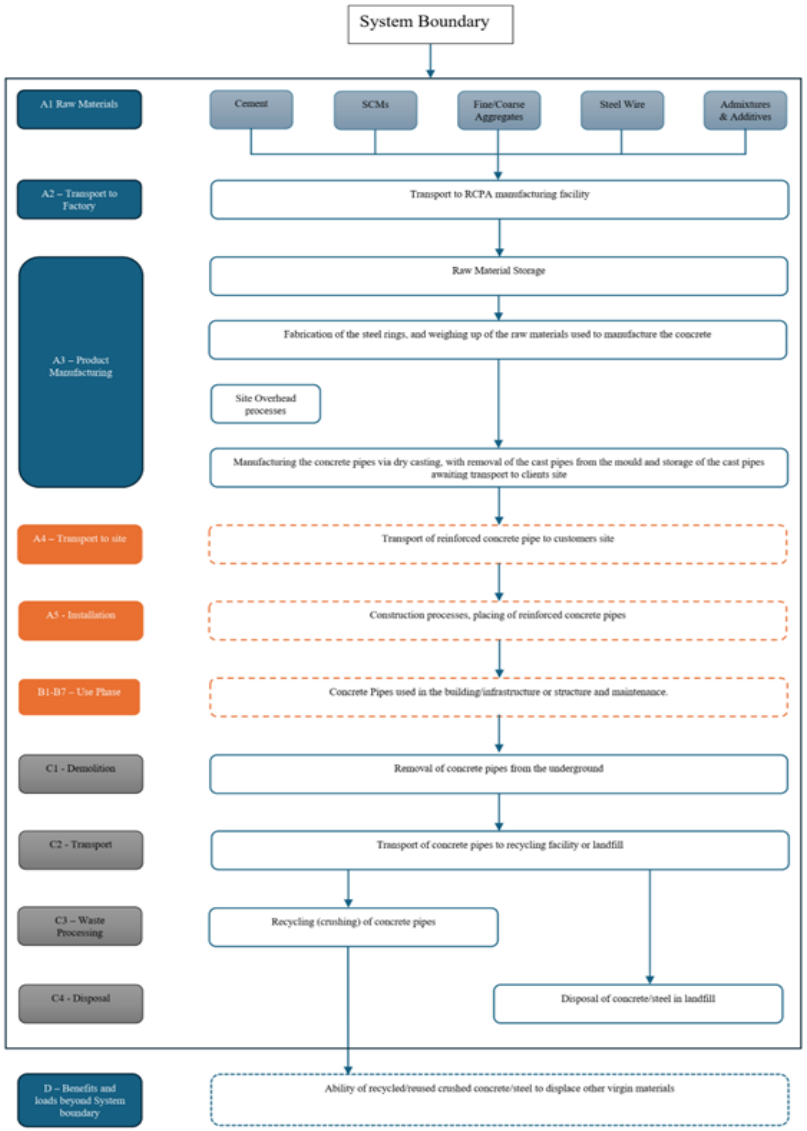
The environmental impacts considered for the product stage cover the manufacturing of raw materials used in the production as well as packaging materials and other ancillary materials. Also, fuels used by machines, and handling of waste formed in the production processes at the manufacturing facilities are included in this stage. The study also considers the material losses occurring during the manufacturing processes as well as losses during electricity transmission.

A market-based approach is used in modelling the electricity mix utilized in the factory.
Modules A1-A3
A1 – RCPA sources the raw materials from third parties located in Australia, and they comply with the relevant standards as required by AS/NZS 4058:2007, Precast concrete pipes (pressure and non-pressure), section 2.
Cement – AS 3972:2010
Supplementary Cementitious materials (SCMs) – AS 3582.1:2016 and AS 3582.2:2016
Coarse and fine aggregates – AS 2758.1:2014
Water – AS 1379:2007
Admixtures – AS 1478:2000
Reinforcement – AS/NZS 4671:2019
Joint Materials – AS 1646:2007
A2 - The materials are transported to our site in trucks, in either truck and dogs for aggerate, powdered tankers for the cementitious materials, bulk tanker trucks for the admixtures, flat bed trucks for the steel. Some of the materials are sourced from overseas suppliers and include transportation by sea.
A3 - The reinforced concrete pipes are manufactured to AS4058:2007, precast concrete pipes (pressure and non-pressure) section 3. The manufacturing process consists of fabrication of the steel cages for the pipes and the waste produced (0.01%), is sent for recycling with a transport factor of 80km. The pipes are constructed by placing the cages within the pipe mould with the rubber gasket, then batching and placing the concrete as per the required mix design, concrete is compacted by continuous compaction with waste produced (3.48%) sent for recycling with a transport factor of 80km. Once the pipes are cast they are removed from their mould where they are stored for labelling and curing before being sent to the customers site.

## PRODUCT END OF LIFE (C1-C4, D)

Modules C1-C4
EoL state is considered when concrete has undergone initial crushing, and for steel, it is after sorting and cleaning.
C1- covers the excavation and removal of the pipes from the ground, and the backfilling is associated with the new pipes' end-of-life scenario when the old pipe is replaced. An assigned value of 10 kWh/t has been used for this process.
C2 – This is the transport of the excavated pipe to the recycling and or disposal location and is based on the declared value of the product.
C3 – The waste processing includes the crushing of the reinforced concrete pipe, with separation of the steel, into recycled concrete aggregates and scrap steel. With a transport factor of 80km.
C4 – This is the steel and concrete that can't be recovered in module C3 and is sent to landfill. With a transport factor of 130km.
The scenarios for module C3 and C4 are based on the national waste and resource recovery report 2024 – final, Figure 31, page 84 of 83.3% recycling.
Module D
D – This accounts for the load and benefits of recycled concrete aggregate from module C3 replacing virgin raw materials and the reuse of the scrap steel. The benefits of the steel included pre- and post-consumer scrap content of 36.4% from module A1.

# MANUFACTURING PROCESS



# LIFE-CYCLE ASSESSMENT

## CUT-OFF CRITERIA

The study does not exclude any modules or processes which are stated mandatory in the reference standard and the applied PCR. The study does not exclude any hazardous materials or substances. The study includes all major raw material and energy consumption. All inputs and outputs of the unit processes, for which data is available for, are included in the calculation. There is no neglected unit process more than 1% of total mass or energy flows. The module specific total neglected input and output flows also do not exceed 5% of energy usage or mass.

The production of capital equipment, construction activities, and infrastructure, maintenance and operation of capital equipment, personnel-related activities, energy and water use related to company management and sales activities are excluded.

Repair materials have been excluded as they are not easily identifiable to which set of products they are used. As the overall repair materials make up less than 0.1% of the total declared weight, they do not have a significant impact on the results.

## VALIDATION OF DATA

Data collection for production, transport, and packaging was conducted using time and site-specific information, as defined in the general information section on page 1 and 2. Upstream process calculations rely on generic data as defined in the Bibliography section. Manufacturer-provided specific and generic data were used for the product's manufacturing stage. The analysis was performed in One Click LCA EPD Generator, with the 'Cut-Off, EN 15804+A2' allocation method, and characterization factors according to EN 15804:2012+A2:2019/AC:2021 and JRC EF 3.1.

## ALLOCATION, ESTIMATES AND ASSUMPTIONS

Allocation is required if some material, energy, and waste data cannot be measured separately for the product under investigation. All allocations are done as per the reference standards and the applied PCR. In this study, allocation has been done in the following ways:

| Data type | Allocation |
|---|---|
| Raw materials | Allocated by mass |
| Packaging material | Not applicable |
| Ancillary materials | Allocated by mass |
| Manufacturing energy and waste | Allocated by mass |

• A market-based approach is used in modelling the electricity mix utilised in the factory. Renewables have been removed to provide a conservative approach, with electricity being less than 0.3% of the total impact; this would have very little impact on the results
• Distribution Loss Factor (DLF) of 1.042 was applied to the electricity
• Electricity is composed of 21.17% Coal, 73.30% Gas and 5.54% Oil
• Transport factors for raw materials, Aggregates 11-38km truck, Admixtures 15-26km truck 3900km by rail, Cementitious 10-16km, Rubber gaskets 13200km by sea, 263km by truck and steel 4600km by sea and 46km
• Transport factor for the waste generated during manufacturing (A3) and sent for recycling is 80km.

## PRODUCT & MANUFACTURING SITES GROUPING

| | |
|---|---|
| Type of grouping | Multiple products |
| Grouping method | Based on average results of product group - by total mass |
| Variation in GWP-fossil for A1-A3, % | -9.05 to + 8.7 |

This Environmental Product Declaration represents the average of multiple products. The declared results are based on production-weighted data from the reference year, reflecting the actual output of each product. All included products use comparable raw materials, mix designs, energy sources, and production technologies relevant to the declared concrete product.
The included products are: DN300 to DN1200.
The averaged dataset is considered representative of typical production for these products within the organisation. Variations between products were assessed and determined not to materially affect the environmental profile of the declared product. Where differences existed (e.g., raw material quantity), these were incorporated into the production-weighted average in accordance with EN 15804+A2 and ISO 14025. The declared results reflect the average performance of these products and are representative of the company's overall production for these products.

## LCA SOFTWARE AND BIBLIOGRAPHY

This EPD has been created using One Click LCA EPD Generator for EPD Hub V3 and EPD Process Certification v3.2.5. The LCA and EPD have been prepared according to the reference standards and ISO 14040/14044. The EPD Generator uses Ecoinvent v3.10.1/3.11/3.12 and One Click LCA databases as sources of environmental data. Allocation used in Ecoinvent 3.10.1/3.11/3.12 environmental data sources follow the methodology 'allocation, Cut-off, EN 15804+A2'.
AS 1379 2007 - Specification and supply of concrete
AS/NZS 4058:2007, Precast concrete pipes (pressure and non-pressure)
Cement - AS 3972:2010
Supplementary Cementitious materials (SCMs) – AS 3582.1:2016 and AS 3582.2:2016
Coarse and fine aggregates – AS 2758.1:2014
Water – AS 1379:2007
Admixtures – AS 1478:2000
Reinforcement – AS/NZS 4671:2019
Joint Materials – AS 1646:2007
Australian energy statistics 2025 - Table O, Australian electricity generation, by state and territory, by fuel type, physical units.
https://www.energy.gov.au/publications/australian-energy-update-2025
Australian Energy Market Operator - Distribution Loss Factors For The 2024/25 Financial Year. https://www.aemo.com.au/-/media/files/electricity/nem/security_and_reliability/loss_factors_and_regional_boundaries/2024-25-financial-year/distribution-loss-factors-for-2024-25.pdf
https://www.dcceew.gov.au/sites/default/files/documents/national-waste-and-resource-recovery-report-2024.pdf
EPDs compliant with EN 15804 and third party verified were used for some of the raw materials

# ENVIRONMENTAL IMPACT DATA

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

## CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, EF 3.1

| Impact category | Unit | A1 | A2 | A3 | A1-A3 | A4 | A5 | B1 | B2 | B3 | B4 | B5 | B6 | B7 | C1 | C2 | C3 | C4 | D |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GWP – total[1)] | kg $CO_2$e | 2.65E+02 | 3.82E+00 | 1.55E+01 | 2.84E+02 | ND | ND | ND | ND | ND | ND | ND | ND | ND | 3.62E+00 | 9.81E+00 | 4.14E+00 | 4.71E+00 | -3.60E+01 |
| GWP – fossil | kg $CO_2$e | 2.64E+02 | 3.82E+00 | 1.55E+01 | 2.83E+02 | ND | ND | ND | ND | ND | ND | ND | ND | ND | 3.62E+00 | 9.80E+00 | 4.14E+00 | 3.74E+00 | -3.60E+01 |
| GWP – biogenic | kg $CO_2$e | 1.53E+00 | 8.04E-04 | 1.51E-03 | 1.54E+00 | ND | ND | ND | ND | ND | ND | ND | ND | ND | 6.90E-04 | 2.25E-03 | -8.06E-03 | 9.70E-01 | 0.00E+00 |
| GWP – LULUC | kg $CO_2$e | 6.72E-02 | 1.96E-03 | 6.72E-04 | 6.98E-02 | ND | ND | ND | ND | ND | ND | ND | ND | ND | 3.71E-04 | 4.37E-03 | 1.10E-03 | 7.68E-03 | -1.17E-02 |
| Ozone depletion pot. | kg $CFC\text{-}_{11}$e | 2.24E-06 | 5.58E-08 | 1.13E-06 | 3.42E-06 | ND | ND | ND | ND | ND | ND | ND | ND | ND | 5.38E-08 | 1.43E-07 | 6.25E-08 | 7.32E-08 | -1.56E-07 |
| Acidification potential | mol $H^+$e | 8.83E-01 | 3.97E-02 | 6.67E-02 | 9.90E-01 | ND | ND | ND | ND | ND | ND | ND | ND | ND | 3.24E-02 | 3.41E-02 | 3.88E-02 | 2.25E-02 | -1.62E-01 |
| EP-freshwater[2)] | kg Pe | 1.16E-02 | 2.51E-04 | 1.07E-03 | 1.29E-02 | ND | ND | ND | ND | ND | ND | ND | ND | ND | 1.17E-04 | 1.05E-03 | 5.13E-04 | 3.29E-04 | -2.27E-02 |
| EP-marine | kg Ne | 2.24E-01 | 1.00E-02 | 2.02E-02 | 2.54E-01 | ND | ND | ND | ND | ND | ND | ND | ND | ND | 1.51E-02 | 1.13E-02 | 1.64E-02 | 1.03E-02 | -3.68E-02 |
| EP-terrestrial | mol Ne | 2.55E+00 | 1.11E-01 | 2.18E-01 | 2.88E+00 | ND | ND | ND | ND | ND | ND | ND | ND | ND | 1.65E-01 | 1.22E-01 | 1.80E-01 | 9.99E-02 | -4.16E-01 |
| POCP ("smog")[3)] | kg NMVOCe | 7.45E-01 | 3.51E-02 | 6.33E-02 | 8.43E-01 | ND | ND | ND | ND | ND | ND | ND | ND | ND | 4.94E-02 | 5.00E-02 | 5.40E-02 | 3.36E-02 | -1.32E-01 |
| ADP-minerals & metals[4)] | kg Sbe | 4.23E-05 | 8.80E-06 | 5.89E-06 | 5.70E-05 | ND | ND | ND | ND | ND | ND | ND | ND | ND | 1.30E-06 | 2.80E-05 | 4.37E-05 | 8.32E-06 | -3.49E-04 |
| ADP-fossil resources | MJ | 1.88E+03 | 5.30E+01 | 2.18E+02 | 2.15E+03 | ND | ND | ND | ND | ND | ND | ND | ND | ND | 4.72E+01 | 1.40E+02 | 5.41E+01 | 6.20E+01 | -3.54E+02 |
| Water use[5)] | $m^3$e depr. | 4.97E+01 | 2.41E-01 | 1.17E+02 | 1.67E+02 | ND | ND | ND | ND | ND | ND | ND | ND | ND | 1.21E-01 | 8.13E-01 | 2.73E-01 | 1.30E+00 | -1.84E+01 |

*1) GWP = Global Warming Potential; 2) EP = Eutrophication potential. Required characterisation method and data are in kg P-eq. Multiply by 3,07 to get PO4e; 3) POCP = Photochemical ozone formation; 4) ADP = Abiotic depletion potential; 5) EN 15804+A2 disclaimer for Abiotic depletion and Water use and optional indicators except Particulate matter and Ionizing radiation, human health. 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.*

## ADDITIONAL (OPTIONAL) ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, EF 3.1

| Impact category | Unit | A1 | A2 | A3 | A1-A3 | A4 | A5 | B1 | B2 | B3 | B4 | B5 | B6 | B7 | C1 | C2 | C3 | C4 | D |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Particulate matter | Incidence | 1.48E-05 | 3.00E-07 | 9.71E-07 | 1.61E-05 | ND | ND | ND | ND | ND | ND | ND | ND | ND | 9.25E-07 | 9.61E-07 | 7.00E-06 | 1.74E-06 | -2.81E-06 |
| Ionizing radiation[6)] | kBq U235e | 6.03E-01 | 5.62E-02 | 1.69E-01 | 8.28E-01 | ND | ND | ND | ND | ND | ND | ND | ND | ND | 2.01E-02 | 1.18E-01 | 8.88E-02 | 4.15E-02 | 3.68E-01 |
| Ecotoxicity (freshwater) | CTUe | 1.34E+03 | 6.60E+00 | 2.79E+01 | 1.38E+03 | ND | ND | ND | ND | ND | ND | ND | ND | ND | 2.69E+01 | 2.87E+01 | 4.43E+01 | 1.29E+01 | -1.31E+03 |
| Human toxicity, cancer | CTUh | 3.24E-07 | 7.02E-10 | 6.23E-10 | 3.25E-07 | ND | ND | ND | ND | ND | ND | ND | ND | ND | 3.69E-10 | 1.54E-09 | 8.71E-10 | 7.13E-10 | -6.30E-09 |
| Human tox. non-cancer | CTUh | 3.91E-06 | 2.87E-08 | 3.79E-08 | 3.97E-06 | ND | ND | ND | ND | ND | ND | ND | ND | ND | 5.80E-09 | 8.71E-08 | 4.24E-08 | 2.52E-08 | -2.55E-07 |
| SQP[7)] | - | 6.23E+02 | 4.00E+01 | 1.45E+01 | 6.78E+02 | ND | ND | ND | ND | ND | ND | ND | ND | ND | 3.12E+00 | 1.40E+02 | 1.87E+01 | 7.30E+01 | -1.79E+02 |

*6) EN 15804+A2 disclaimer for Ionizing radiation, human health. 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; 7) SQP = Land use related impacts/soil quality.*

## USE OF NATURAL RESOURCES

| Impact category | Unit | A1 | A2 | A3 | A1-A3 | A4 | A5 | B1 | B2 | B3 | B4 | B5 | B6 | B7 | C1 | C2 | C3 | C4 | D |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Renew. PER as energy[8)] | MJ | 9.77E+01 | 6.91E-01 | 1.59E+01 | 1.14E+02 | ND | ND | ND | ND | ND | ND | ND | ND | ND | 2.96E-01 | 1.95E+00 | 1.77E+00 | 7.10E-01 | -3.13E+01 |
| Renew. PER as material | MJ | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Total use of renew. PER | MJ | 9.77E+01 | 6.91E-01 | 1.59E+01 | 1.14E+02 | ND | ND | ND | ND | ND | ND | ND | ND | ND | 2.96E-01 | 1.95E+00 | 1.77E+00 | 7.10E-01 | -3.13E+01 |
| Non-re. PER as energy | MJ | 1.97E+03 | 5.30E+01 | 2.19E+02 | 2.24E+03 | ND | ND | ND | ND | ND | ND | ND | ND | ND | 4.72E+01 | 1.40E+02 | 5.41E+01 | 4.35E+01 | -3.55E+02 |
| Non-re. PER as material | MJ | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Total use of non-re. PER | MJ | 1.97E+03 | 5.30E+01 | 2.19E+02 | 2.24E+03 | ND | ND | ND | ND | ND | ND | ND | ND | ND | 4.72E+01 | 1.40E+02 | 5.41E+01 | 4.35E+01 | -3.55E+02 |
| Secondary materials | kg | 1.56E+01 | 2.47E-02 | 1.39E-02 | 1.57E+01 | ND | ND | ND | ND | ND | ND | ND | ND | ND | 1.95E-02 | 5.86E-02 | 2.89E-02 | 2.22E-02 | 1.57E+01 |
| Renew. secondary fuels | MJ | 1.74E+01 | 2.26E-04 | 5.52E-05 | 1.74E+01 | ND | ND | ND | ND | ND | ND | ND | ND | ND | 5.12E-05 | 7.64E-04 | 5.10E-04 | 2.99E-04 | -3.27E-03 |
| Non-ren. secondary fuels | MJ | 4.11E+01 | 0.00E+00 | 0.00E+00 | 4.11E+01 | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Use of net fresh water | $m^3$ | 1.69E+01 | 6.91E-03 | 6.61E-02 | 1.70E+01 | ND | ND | ND | ND | ND | ND | ND | ND | ND | 3.02E-03 | 2.01E-02 | 6.39E-03 | 2.90E-02 | -3.88E-01 |

*8) PER = Primary energy resources.*

## END OF LIFE – WASTE

| Impact category | Unit | A1 | A2 | A3 | A1-A3 | A4 | A5 | B1 | B2 | B3 | B4 | B5 | B6 | B7 | C1 | C2 | C3 | C4 | D |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Hazardous waste | kg | 3.98E+00 | 8.82E-02 | 4.02E-02 | 4.10E+00 | ND | ND | ND | ND | ND | ND | ND | ND | ND | 5.29E-02 | 8.74E-01 | 2.03E-01 | 2.98E-01 | -1.01E+01 |
| Non-hazardous waste | kg | 5.88E+01 | 1.52E+00 | 9.44E-01 | 6.13E+01 | ND | ND | ND | ND | ND | ND | ND | ND | ND | 7.71E-01 | 1.73E+01 | 2.84E+00 | 1.68E+02 | -1.25E+02 |
| Radioactive waste | kg | 2.14E-03 | 1.44E-05 | 2.60E-05 | 2.18E-03 | ND | ND | ND | ND | ND | ND | ND | ND | ND | 4.93E-06 | 2.81E-05 | 2.23E-05 | 9.87E-06 | 1.06E-04 |

## END OF LIFE – OUTPUT FLOWS

| Impact category | Unit | A1 | A2 | A3 | A1-A3 | A4 | A5 | B1 | B2 | B3 | B4 | B5 | B6 | B7 | C1 | C2 | C3 | C4 | D |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Components for re-use | kg | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Materials for recycling | kg | 6.81E-01 | 0.00E+00 | 3.49E+01 | 3.56E+01 | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.00E+00 | 0.00E+00 | 8.33E+02 | 0.00E+00 | 0.00E+00 |
| Materials for energy rec | kg | 1.61E-06 | 0.00E+00 | 0.00E+00 | 1.61E-06 | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Exported energy | MJ | 2.29E-03 | 0.00E+00 | 0.00E+00 | 2.29E-03 | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Exported energy – Electricity | MJ | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Exported energy – Heat | MJ | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |

## ENVIRONMENTAL IMPACTS – EN 15804+A1, CML

| Impact category | Unit | A1 | A2 | A3 | A1-A3 | A4 | A5 | B1 | B2 | B3 | B4 | B5 | B6 | B7 | C1 | C2 | C3 | C4 | D |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Global Warming Pot. | kg $CO_2$e | 2.59E+02 | 3.80E+00 | 1.54E+01 | 2.78E+02 | ND | ND | ND | ND | ND | ND | ND | ND | ND | 3.60E+00 | 9.75E+00 | 4.12E+00 | 3.72E+00 | -3.58E+01 |
| Ozone depletion Pot. | kg $CFC_{-11}$e | 1.80E-06 | 4.45E-08 | 9.88E-07 | 2.84E-06 | ND | ND | ND | ND | ND | ND | ND | ND | ND | 4.28E-08 | 1.14E-07 | 5.02E-08 | 5.82E-08 | -1.57E-07 |
| Acidification | kg $SO_2$e | 6.34E-01 | 3.17E-02 | 5.19E-02 | 7.17E-01 | ND | ND | ND | ND | ND | ND | ND | ND | ND | 2.28E-02 | 2.60E-02 | 2.80E-02 | 1.64E-02 | -1.29E-01 |
| Eutrophication | kg $PO_4^3$e | 2.19E-01 | 4.21E-03 | 1.01E-02 | 2.33E-01 | ND | ND | ND | ND | ND | ND | ND | ND | ND | 5.36E-03 | 7.02E-03 | 6.16E-03 | 5.77E-03 | -2.69E-02 |
| POCP (“smog”) | kg $C_2H_4$e | 1.42E-01 | 1.84E-03 | 2.74E-03 | 1.47E-01 | ND | ND | ND | ND | ND | ND | ND | ND | ND | 1.71E-03 | 2.26E-03 | 2.01E-03 | 1.40E-03 | -1.76E-02 |
| ADP-elements | kg Sbe | 3.84E-05 | 8.60E-06 | 5.84E-06 | 5.28E-05 | ND | ND | ND | ND | ND | ND | ND | ND | ND | 1.26E-06 | 2.73E-05 | 4.36E-05 | 8.11E-06 | -3.48E-04 |
| ADP-fossil | MJ | 2.11E+03 | 5.21E+01 | 2.17E+02 | 2.38E+03 | ND | ND | ND | ND | ND | ND | ND | ND | ND | 4.69E+01 | 1.38E+02 | 5.26E+01 | 6.14E+01 | -3.64E+02 |

## ADDITIONAL INDICATOR – GWP-GHG

| Impact category | Unit | A1 | A2 | A3 | A1-A3 | A4 | A5 | B1 | B2 | B3 | B4 | B5 | B6 | B7 | C1 | C2 | C3 | C4 | D |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GWP-GHG[9)] | kg $CO_2e$ | 2.64E+02 | 3.82E+00 | 1.55E+01 | 2.83E+02 | ND | ND | ND | ND | ND | ND | ND | ND | ND | 3.62E+00 | 9.81E+00 | 4.14E+00 | 3.74E+00 | -3.60E+01 |

*9) This indicator includes all greenhouse gases excluding biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. In addition, the characterisation factors for the flows – CH4 fossil, CH4 biogenic and Dinitrogen monoxide – were updated. This indicator is identical to the GWP-total of EN 15804:2012+A2:2019 except that the characterisation factor for biogenic CO2 is set to zero*

## SCENARIO DOCUMENTATION

## DATA SOURCES

### Manufacturing energy scenario documentation

1. Electricity, Western Australia, 2024, Australia, One Click LCA, 0.82 kgCO2e/kWh

### End of life (C1-C4) - Scenario documentation

| Scenario information | Value |
|---|---|
| Collection process: collected separately (kg) | - |
| Collection process: Mixed waste (kg) | 1000 |
| Recovery: re-use (kg) | 0 |
| Recovery: recycling (kg) | 833 |
| Recovery: energy recovery (kg) | 0 |
| Disposal (kg) | 167 |
| Scenario assumptions e.g. transportation (mode, km) & other | 80km for transport to sorting and recycling facility and 130km for landfill |

# THIRD-PARTY VERIFICATION STATEMENT

EPD Hub declares that this EPD is verified in accordance with ISO 14025 by an independent, third-party verifier. The project report on the Life Cycle Assessment and the report(s) on features of environmental relevance are filed at EPD Hub. EPD Hub PCR and ECO Platform verification checklist are used.

EPD Hub is not able to identify any unjustified deviations from the PCR and EN 15804+A2 in the Environmental Product Declaration and its project report.

EPD Hub maintains its independence as a third-party body; it was not involved in the execution of the LCA or in the development of the declaration and has no conflicts of interest regarding this verification.

The company-specific data and upstream and downstream data have been examined as regards plausibility and consistency. The publisher is responsible for ensuring the factual integrity and legal compliance of this declaration.

The software used in creation of this LCA and EPD is verified by EPD Hub to conform to the procedural and methodological requirements outlined in ISO 14025:2010, ISO 14040/14044, EN 15804+A2, and EPD Hub Core Product Category Rules and General Program Instructions.

Verified tools

Tool verifier: Magaly Gonzalez Vazquez
Tool verification validity: 27 March 2025 - 26 March 2028

Vera Durão, as an authorised verifier acting for EPD Hub Limited

10.05.2026