ResourceCo

ENVIRONMENTAL PRODUCT DECLARATION

CLASS 3 RECYCLED CONCRETE

ISO 14025.2006 and EN15804+A2:2019/AC:2021

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AUSTRALASIA EPD® INTERNATIONAL EPD SYSTEM

EPD INTERNATIONAL EPD SYSTEM

ECO PLATFORM EPD VERIFIED

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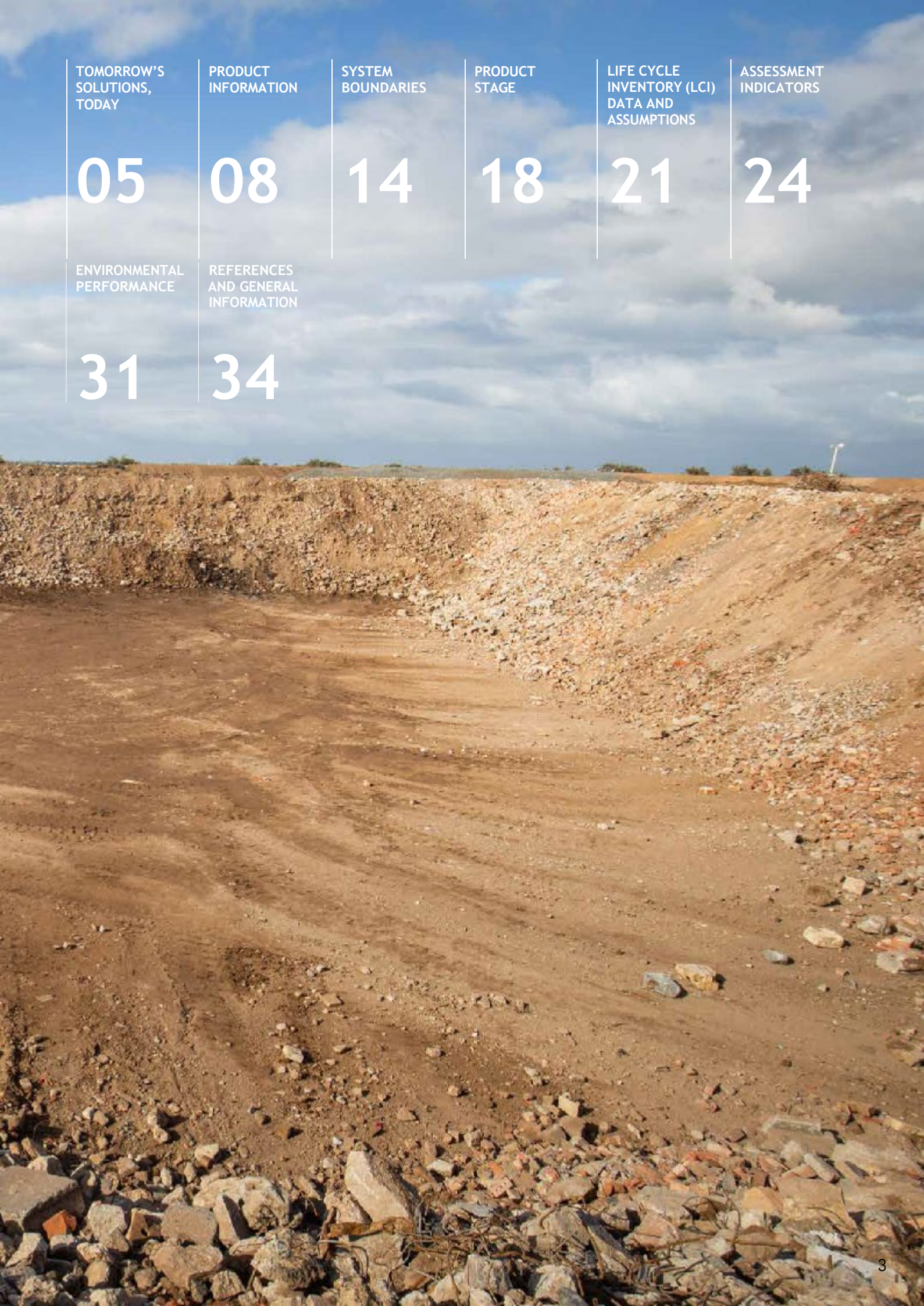

Tomorrow's solutions, today

ABOUT RESOURCECO

ResourceCo is a global leader in the recovery and re-manufacturing of primary resources, extracting maximum value from materials otherwise destined for landfill. We work with governments, communities and multinational companies to progress the circular economy and preserve natural resources for a sustainable future.

By adopting innovative advanced re-manufacturing principles, and a maintaining a continued focus on process and product quality, ResourceCo is one of Australia's most diversified recyclers capable of recovering resources from construction and demolition (C&D), commercial and industrial waste, soils and tyres.

ResourceCo's beginnings were humble, yet our ambition was bold; to be leaders in resource recovery living true to our brand promise to leave the world in a better place than we found it.

CONSTRUCTION & DEMOLITION MATERIAL RECYCLING

We provide a wide range of recycled products, including pavement and asphalt type materials, aggregates, concrete and sand, and services to major civil engineering projects and both residential and commercial construction.

The cornerstone of the business is the processing of C&D waste materials, consisting of asphalt, concrete, bricks and rubble to manufacture a range of recycled aggregates and recycled asphalt products. Recycling C&D material provides a diversion of waste from landfills including:

- The reuse of steel from concrete
- Conservation of resources through extending the life of quarries
- Full lifecycle of materials from demolition through to re-supply to site for construction
- Making the best use of the embodied carbon of materials
- Reducing landfill usage (and associated greenhouse gas emissions)

This EPD covers a single product from one ResourceCo site.

ResourceCo maintains ISO certification for Quality, Safety and environmental management systems.

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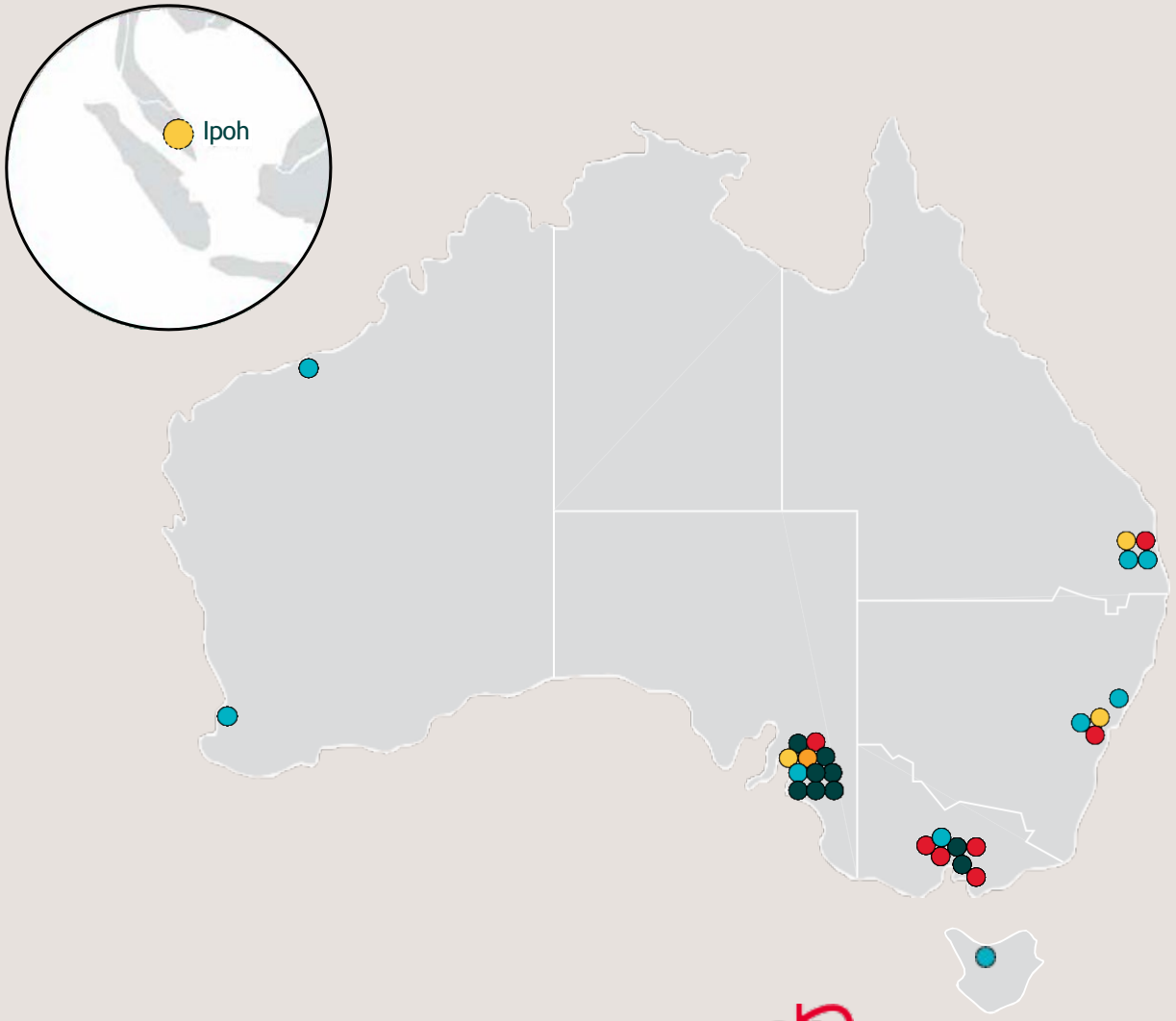
Operating locations

ResourceCo operates at locations in Australia and Asia across five business pillars: Tyre Recycling, Recycling & Waste, Soil Reuse & Recycling, Energy and Shared Services.



ResourceCo

TYRE RECYCLING | RECYCLING & WASTE | SOIL REUSE & RECYCLING | ENERGY | SHARED SERVICES

Production site

VICTORIA

Hampton Park
RECYCLING FACILITY
795 Gippsland Hwy, Hampton Park, VIC, 3976

Product information

This EPD covers one aggregate product Class 3 20 mm Recycled Concrete produced by ResourceCo at the Hampton Park facility in Victoria. Products produced at Hampton Park are consistent and produced from the same 'waste' feedstock.

PRODUCT	CODE
CLASS 3 20 MM RECYCLED CONCRETE	20CL3CC

ResourceCo's recycled products are produced to meet the requirements of various construction a transport uses. ResourceCo's recycled products can also be brought back to ResourceCo facilities at the end of their useful life and recycled further into more recycled products.

CLASS 3 20 MM RECYCLED CONCRETE

APPLICATIONS:
Road base construction, upper subbase material for pavement. Slab preparation, footpaths, unsealed roads, road repairs, driveways.

TABLE 1: INDUSTRY CLASSIFICATION

PRODUCT	CLASSIFICATION	CODE	CATEGORY
RECYCLED CONCRETE/ AGGREGATE	UN CPC VER.2.1 (UN 2015)	89420	NON-METAL WASTE AND SCRAP RECOVERY (RECYCLING) SERVICES, ON A FEE OR CONTRACT BASIS
	ANZSIC 2006	29220	WASTE REMEDIATION AND MATERIALS RECOVERY SERVICES (OR 29220 WASTE TREATMENT, DISPOSAL AND REMEDIATION SERVICES)

TABLE 2: TECHNICAL SPECIFICATIONS

PRODUCT	STATE	RELEVANT STANDARDS
AGGREGATES AND SAND PRODUCTS	VICTORIA	Technical Note 107 (Victorian Department of Transport)
	VICTORIA	Standard Specification Sections for Roadworks and Bridgeworks (Victorian Department of Transport)

TABLE 3: PRODUCT COVERED BY THIS EPD

LOCATION	PRODUCT
HAMPTON PARK, VIC	CLASS 3 20 MM RECYCLED CONCRETE

This EPD shows results that are product specific. Averaging (grouping) has not been performed in product or site level.

DECLARED UNIT

ISO 14040 defines a functional unit as “quantified performance of a product system for use as a reference unit”. EPDs that do not cover the full product life cycle from raw material extraction through to end-of-life use the term “declared unit” instead.

The declared unit is 1 000 kg of aggregate (one tonne).

TABLE 4: CONTENT DECLARATION

PRODUCT COMPONENTS	CLASS 3 20 MM RECYCLED CONCRETE	POST-CONSUMER RECYCLED MATERIAL	BIOGENIC MATERIAL
	WEIGHT KG	WEIGHT %	WEIGHT % & KG C/KG
RECYCLED CONCRETE	1 000	100%	0% RESP. 0
TOTAL	1 000		0% RESP. 0

Note: Products are delivered with no packaging

Dangerous substances from the candidate list of SVHC for Authorisation

No products declared within this EPD contain substances exceeding the limits for registration according to the European Chemicals Agency’s “Candidate List of Substances of Very High Concern for authorisation” (European Union, 2024).

Manufacturing process

The processing for all products covered by this EPD are consistent, with various products produced during the same processing circuit.

1

INCOMING RAW MATERIAL

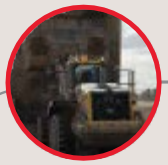
ResourceCo receives construction and demolition, commercial and industrial and mixed construction and demolition waste streams, which includes concrete, bricks, asphalt and masonry totalling around 1.2 million tonnes per annum.

Waste Material Delivered

Weighbridge

Quality Inspection

Pulverisor



Primary Jaw

2

PROCESSING

This material is sorted and the ferrous and non-ferrous metals, inert fractions (bricks, concrete, asphalt, masonry etc) and non-recyclables are separated.

Picking Station

Control Room

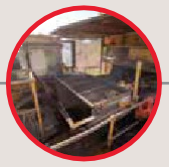
3

OUTGOING FINISHED PRODUCT

The inert fractions are recycled and resupplied to the civil construction market as an alternative to traditional quarried products: eg. recycled pavement materials, aggregates, sands, bulk fills & asphalt products at various facilities.

End users: builders, earthmovers, landscapers, civil companies.

Crushing Plant



Screen

--End of Waste--

Customer Dispatch Module A3

Pugmill or Stockpile Module A3

System boundaries

As shown in the table (right), this EPD is of the type a) Cradle to gate with modules C1–C4 and module D (A1–A3 + C + D). Other life cycle stages (Modules A4-A5, B1-B7) are dependent on particular scenarios and best modelled at the building level.

TABLE 5: MODULES INCLUDED IN THE SCOPE OF THE EPD

	PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE			RESOURCE RECOVERY STAGE	
	RAW MATERIAL SUPPLY	TRANSPORT OF RAW	MANUFACTURING	TRANSPORT TO CUSTOMER	CONSTRUCTION / INSTALLATION	USE	MAINTENANCE	REPAIR	REPLACEMENT	REFURBISHMENT	OPERATIONAL ENERGY USE	OPERATIONAL WATER USE	DECONSTRUCTION / DEMOLITION	TRANSPORT TO WASTE	WASTE PROCESSING	DISPOSAL	REUSE - RECOVERY-
	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
GEOGRAPHY	AU	AU	AU	-	-	-	-	-	-	-	-	-	AU	AU	AU	AU	AU
SPECIFIC DATA	>90%			-		-	-	-	-	-	-	-	-	-	-	-	-
VARIATION: PRODUCTS	NA			-		-	-	-	-	-	-	-	-	-	-	-	-
VARIATION: SITES	0%			-		-	-	-	-	-	-	-	-	-	-	-	-

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

NA = Not Applicable

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

ResourceCo carries out several operations at their Hampton Park site to recycle construction and demolition (C&D) waste into recycled aggregates. Their operations include receiving C&D waste, processing the C&D waste by sorting and crushing, and stocking and selling recycled aggregates. ResourceCo's recycling of C&D waste is a paid activity, customers are charged for each load of C&D waste they drop off at Hampton Park site.

Geographical scope of EPD: Australia

SYSTEM BOUNDARY

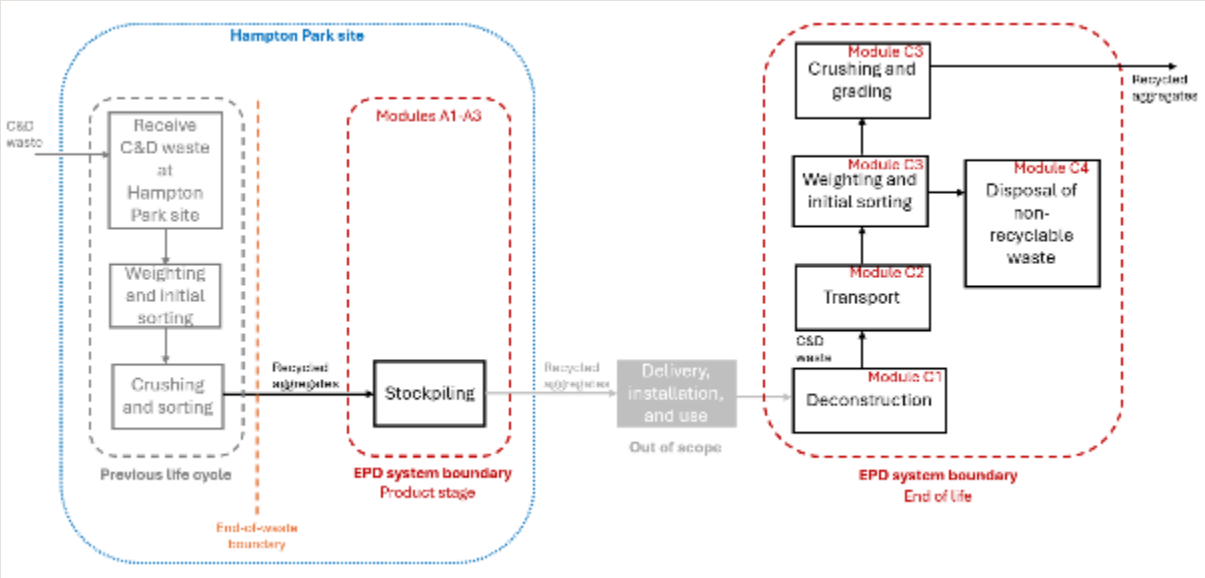


Figure 1: ResourceCo manufacturing site and LCA system boundary. Note that the LCA system boundary is different from the ResourceCo boundary.

Stockpiling configurates the production stage (modules A1-A3). The material supply is recycled aggregates made from crushed and graded C&D waste. Other inputs are diesel for stockpiling, water for dust control, and electricity for water pumping. Auxiliary inputs, such as lubricants, are also required and included. Transportation of all required inputs and energy carriers is included in module A2. The manufacturing stage, after the end-of-waste boundary, includes stocking recycled aggregates before customer dispatch.

End-of-Waste State

The end-of-waste state is determined in line with the polluter-pays principle. EN 15804 requires the following criteria to be met before the end-of-waste state can be declared:

- The material is used for specific purposes;
- A market demand exists;
- The material meets lawful and specific requirements; and
- The material fulfils limit values for Substance of Very High Concern (SVHC).

Considering the above, the C&D waste transported and delivered to Hampton Park site has not yet reached the end-of-waste state, since the materials do not have a value at drop-off, and ResourceCo either is paid to receive them or receives them for free. The collection, transport, and processing C&D waste into recycled aggregates is therefore part of the waste processing in the previous product system. In line with the polluter-pays principle. C&D waste becomes useful after it is crushed and graded and enters the production stage (modules A1-A3) as recycled aggregates.

At the Hampton Park recycling facility, C&D waste is weighed, sorted, and crushed, those processes are included in modules C1-C4, as they are part of the end-of-life stage of recycled aggregates, following the end-of-waste state criteria.

Product stage (Modules A1-A3)

The production stage includes the environmental impacts associated with raw materials extraction and processing of inputs, transport to, between and within the manufacturing site, and manufacturing of product at the exit gate of the manufacturing site. The impacts include the production and use of fuels and electricity, production of auxiliary materials and waste treatment of production wastes.

Since Module C is included in the EPD, the use of Module A1-A3 results without considering the results of Module C is discouraged.

End of Life (Modules C1-C4)

When a building reaches its end-of-life, the recycled aggregates are disposed of.

In Australia, the waste materials are typically recycled or disposed of in a landfill. Module C includes waste processing followed by recycling or landfill of the product. The scenarios included are currently in use and are representative for one of the most probable alternatives.

Table 6: End of life scenarios for products

Process	Unit (expressed per declared unit of components products or materials and by type of material)
Collection process specified by type	1 000 kg collected with mixed construction and demolition (C&D) waste
Recovery system specified by type	810 kg for recycling*
Disposal specified by type	190 kg product or material for final deposition
Assumptions for scenario development, e.g. transportation	C1 – Demolishing with an Excavator (100 kW)- Fuel consumption is calculated at 0.172 kg diesel input per 1 000 kg of material. C2 – 15 km of transport by truck C3 – 0.548 kg of diesel to process 1 000 kg of recycled aggregate.

* The Department of Climate Change, Energy, the Environment and Water (DCCEEW) of Australia reports 81% of Australia's C&D waste is recycled (DCCEEW, 2022). The R2 value, i.e., recycling rate, for aggregate recycling is not available in the European Union Guidance on product environmental footprint (European Commission, 2020).

C1 is based on the background dataset 'Excavator, 100 kW, construction'.

C2 is the an estimation of C&D sites and an aggregate waste processing facility in Melbourne.

C3 is based on the consumption of diesel to process C&D waste at ResourceCo facility up to end of waste state

Recovery and Recycling potential (Module D)

Module D declares a potential credit or burden for the net scrap associated recycled aggregate product. Net scrap is the amount of scrap left after scrap from post-consumer needs are removed from scrap produced from product. That is, secondary product used in product manufacture is subtracted from the overall amount of recycled product after the first life cycle. If the net balance is negative, a burden given. The burden is calculated by comparing the impacts associated with primary product produced.

Recycling and recycled inputs

Construction and demolition (C&D) waste inputs, consisting of asphalt, concrete, bricks, and rubble, are based on the cut-off approach. This waste is then used to manufacture a range of recycled aggregates products. As per the polluter-pays principle, "processes of waste processing shall be assigned to the product system that generates the waste until the end-of-waste state is reached" (CEN, 2019) and in the case of secondary use of material, "the system boundary between the system under study and the previous system (...) is set where outputs of the previous system (...) reach the end-of-waste state" (CEN, 2019). Hence, ResourceCo becomes responsible for environmental impacts of the material that reaches the end-of-life state at its boundaries. That is to say that waste sent to energy generation is not part of ResourceCo boundaries.

Life cycle inventory

(LCI) data and assumptions

Primary data were used for all manufacturing operations up to the factory gate. Primary data were collected for recycled aggregate products manufactured by ResourceCo for the 12-month period between 2024-01-01 to 2024-12-31. No changes to production technology have occurred since the data collection period and hence the data continues to be representative of current practice.

UPSTREAM DATA

With the exception of electricity, diesel, lubricant and water (which correctly reflect Australian conditions), minor upstream (supply chain) data used were European or Global due to a lack of consistent LCI data for Australia at the time this study was conducted.

LCA SOFTWARE AND DATABASE

Sphera Solutions LCA for Experts (LCAFE, formerly known as GaBi) software version 10.9.0.31 was used together with Sphera Managed LCA Content database version 2024.2 (Sphera, 2024) for all data in the background system. Most datasets have a reference year between 2020 and 2023 and all fall within the 10-year limit allowable for generic data under EN 15804.

ELECTRICITY

The composition of the electricity grid mix is modelled in LCAFE based on published data for the year 2022-07-01 to 2023-06-30 (Australian Government, 2024). The Victorian residual electricity mix is made up of lignite (91.6%), and natural gas (3.07%). Of the remaining electricity, 2.38% is imported from Southern Australia, 1.56% is imported from Tasmania, and 1.43% is imported from New South Wales.

Onsite consumption is calculated based on the same source as the grid mix (Australian Government, 2024). The medium voltage (1kV-60kV) grid's transmission and distribution losses (2.31%) are calculated based on data from the Australian Energy Market Operator (AEMO, 2022).

The emission factor for Victoria residual grid mix for the GWP-GHG indicator is 1.01 kg CO_2eq./kWh (based on EF3.1).

RECYCLING AND RECYCLED INPUTS

The product uses 100% post-consumer scrap. The post-consumer scrap is assumed to be burden free. Statistical data of the region is used to inform end-of-life (EOL) recycling values where available to secure high geographical representativeness.

TRANSPORT

Average transportation distances and modes of transport are included for the transport of the raw materials, operating materials, and auxiliary materials to production and assembly facilities.

The MLC database was used to model transportation, in which transport mode was modelled using the MLC global transportation datasets, and fuels were modelled using the geographically appropriate datasets

CUT OFF CRITERIA

Personnel-related processes are excluded as per section 4.3.2 in the PCR (EPD International, 2023).

thinkstep-anz consistently excludes environmental impacts from infrastructure, construction, production equipment, and tools that are not directly consumed in the foreground production process, ('capital goods') regardless of potential significance. High-quality infrastructure-related data isn't always available and there is no clear cut-off for what to include. For this reason, capital goods data are applied to LCA studies inconsistently. This is expected to lead to reduced consistency and comparability of EPDs. Capital goods were previously excluded from EPDs, thus including capital goods in current EPDs would further reduce their comparability.

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

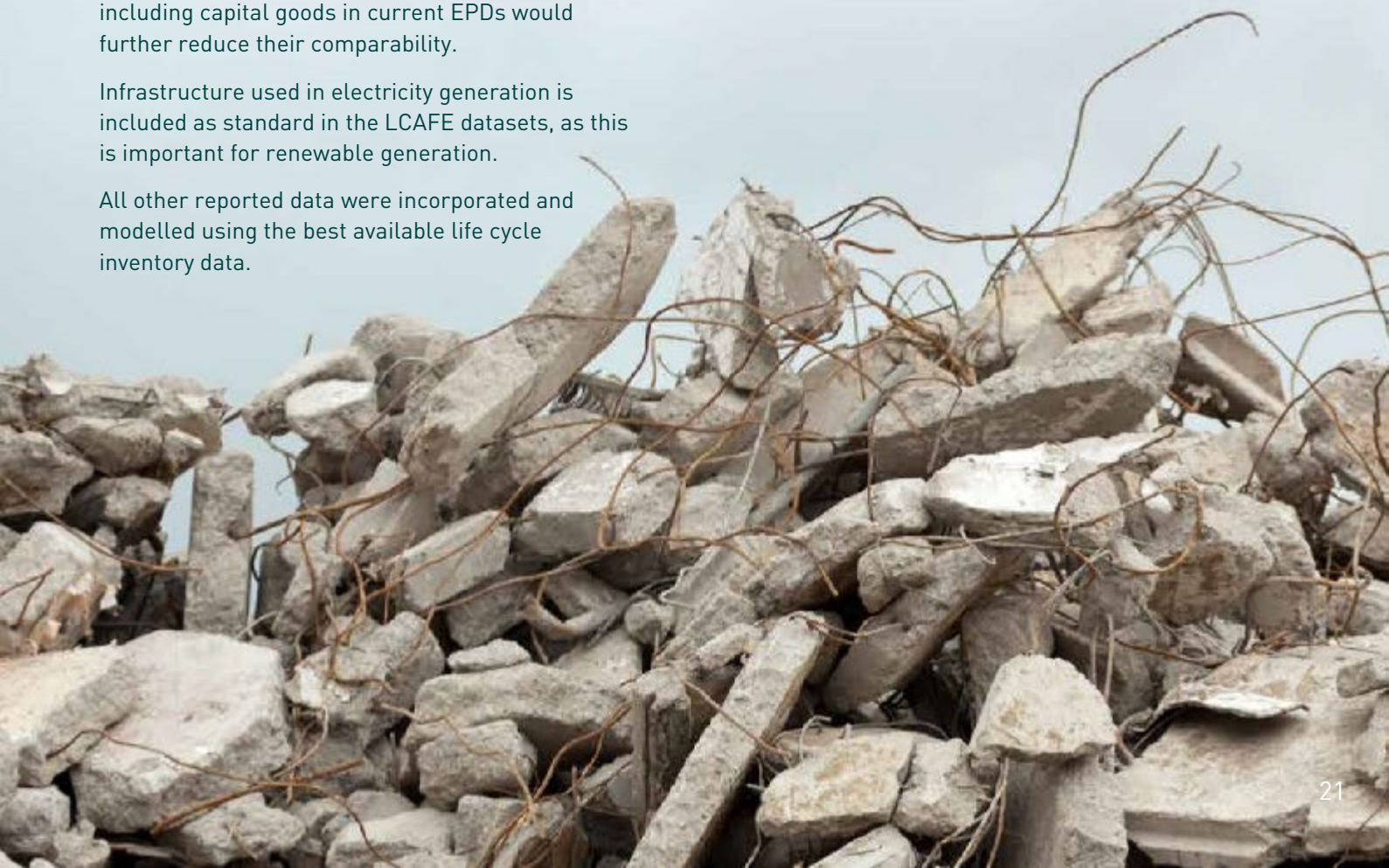
All other reported data were incorporated and modelled using the best available life cycle inventory data.

ALLOCATION

Where subdivision of processes was not possible, allocation rules listed in PCR chapter 4.5 have been applied. Where economic allocation was required, prices were based on a 2024-year average.

The ResourceCo's site has a joint co-production for recycled aggregates, where the processes cannot be sub-divided, requiring allocation. Although there is physical relationship between the co-produced recycled aggregates, their difference in revenue is high. Therefore, allocation for the facility utilities is applied based on economic values.

End-of-life allocation follows the requirements of EN 15804:2017+A2:2019 § 6.4.3.3 and follows the polluter pays principle. Open scrap inputs from the production stage are subtracted from scrap to be recycled at end-of-life to give the net scrap output from the product life cycle. This remaining net scrap is sent to material recycling. Credits are assigned at module D based on the potential benefit of recovering the secondary material in substitution for primary material production. If net scrap is negative, that is, the raw material need in module A1 is higher than the recyclable product output in C3, module D has a burden impact. This is the case for recycled aggregate products in this EPD. In this study, the burdens represent sourcing aggregates made of primary materials.



ASSUMPTIONS

Assumptions made during the LCI collection and modelling process are as follows:

- Accuracy of data measurement falls within normal industrial weighing systems accuracy limits of ±10%. Hence, we assumed that total input of material (C&D waste) was equal to the total ResourceCo output (products, waste, and scrap).
- Where specific life cycle inventory data were unavailable, proxy data were used, giving preference to regional data, as documented in section 3.3.
- Use of any required secondary data from outside Australia is sufficiently representative of the impacts of the material. Where the geography is expected to have an impact on the results, this is indicated as a geographical proxy.
- Land use is modelled with occupation assumed to end in 2050 and using historical production to approximate annual production.

DATA QUALITY ASSESSMENT

The data quality assessment according to the EN15804 Annex E is provided in Table 6 with more details provided below.

- **Temporal:** All primary data were collected for the year 2024. All secondary data come from the MLC databases and are representative of the years 2020-2023. As the study intended to compare the product systems for the reference year 2024, temporal representativeness is considered to be high.
- **Geographical:** All primary and secondary data were collected specific to the countries or regions under study. Where country-specific or region-specific data were unavailable, proxy data were used. Geographical representativeness is considered to be high.
- **Technological:** All primary and secondary data were modelled to be specific to the technologies or technology mixes under study. Where technology-specific data were unavailable, proxy data were used. Technological representativeness is considered to be high.

	Geographical representativeness	Technical representativeness	Time representativeness
Diesel	Very Good	Very Good	Very Good
Lubricant	Very Good	Very Good	Very Good
Electricity	Very Good	Very Good	Very Good
Ground water	Very Good	Very Good	Very Good
Module C1	Good	Very Good	Very Good
Module C2	Good	Very Good	Very Good
Module C3	Very Good	Very Good	Very Good
Module C4	Fair	Very Good	Very Good
Module D	Fair	Good	Very Good

Table 7: Data quality assessment

Assessment indicators

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

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.

Long-term emissions (> 100 years) are not taken into consideration in the impact estimate.

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

The use of primary energy is separated into energy used as raw material and energy used as energy carrier as per option C in Annex 3 in the PCR (EPD International, 2024).

TABLE 8: EN15804+A2 CORE ENVIRONMENTAL IMPACT INDICATORS

IMPACT CATEGORY	ABBREVIATION	UNIT
CLIMATE CHANGE – TOTAL	GWP-total	kg CO_2-eq.
CLIMATE CHANGE – FOSSIL	GWP-fossil	kg CO_2-eq.
CLIMATE CHANGE – BIOGENIC	GWP-biogenic	kg CO_2-eq.
CLIMATE CHANGE – LAND USE AND LAND USE CHANGE	GWP-luluc	kg CO_2-eq.
OZONE DEPLETION	ODP	kg CFC11-eq.
ACIDIFICATION	AP	Mole of H^+ eq.
EUTROPHICATION AQUATIC FRESHWATER	EP-freshwater	kg P eq.
EUTROPHICATION AQUATIC MARINE	EP-marine	kg N eq.
EUTROPHICATION TERRESTRIAL	EP-terrestrial	Mole of N eq.
PHOTOCHEMICAL OZONE FORMATION	POCP	kg NMVOC eq.
DEPLETION OF ABIOTIC RESOURCES – MINERALS AND METALS[1]	ADP-m&m	kg Sb-eq.
DEPLETION OF ABIOTIC RESOURCES – FOSSIL FUELS[1]	ADP-fossil	MJ
WATER USE[1]	WDP	m^3 world equiv.

[1]The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator.

TABLE 9: LIFE CYCLE INVENTORY INDICATORS ON USE OF RESOURCES

INDICATOR	ABBREVIATION	UNIT
USE OF RENEWABLE PRIMARY ENERGY EXCLUDING RENEWABLE PRIMARY ENERGY RESOURCES USED AS RAW MATERIALS	PERE	MJ
USE OF RENEWABLE PRIMARY ENERGY RESOURCES USED AS RAW MATERIALS	PERM	MJ
TOTAL USE OF RENEWABLE PRIMARY ENERGY RESOURCES	PERT	MJ
USE OF NON-RENEWABLE PRIMARY ENERGY EXCLUDINGNON-RENEWABLE PRIMARY ENERGY RESOURCES USED AS RAW MATERIALS	PENRE	MJ
USE OF NON-RENEWABLE PRIMARY ENERGY RESOURCES USED AS RAW MATERIALS	PENRM	MJ
TOTAL USE OF NON-RENEWABLE PRIMARY ENERGY RESOURCES	PENRT	MJ
USE OF SECONDARY MATERIAL;	SM	kg
USE OF RENEWABLE SECONDARY FUELS	RSF	MJ
USE OF NON-RENEWABLE SECONDARY FUELS	NRSF	MJ
TOTAL USE OF NET FRESH WATER	FW	m^3

TABLE 10: LIFE CYCLE INVENTORY INDICATORS ON WASTE CATEGORIES AND OUTPUT FLOWS

INDICATOR	ABBREVIATION	UNIT
HAZARDOUS WASTE DISPOSED	HWD	kg
NON-HAZARDOUS WASTE DISPOSED	NHWD	kg
RADIOACTIVE WASTE DISPOSED	RWD	kg
COMPONENTS FOR REUSE	CRU	kg
MATERIALS FOR ENERGY RECOVERY	MER	kg
MATERIALS FOR RECYCLING	MFR	kg
EXPORTED ELECTRICAL ENERGY	EEE	MJ
EXPORTED THERMAL ENERGY	EET	MJ

TABLE 11: EN15804+A2 ADDITIONAL ENVIRONMENTAL IMPACT INDICATORS

INDICATOR	ABBREVIATION	UNIT
CLIMATE CHANGE[2]	GWP-GHG	kg CO_2-eq.
PARTICULATE MATTER EMISSIONS	PM	DISEASE INCIDENCES
IONISING RADIATION – HUMAN HEALTH[3]	IRP	kBq U235 eq.
ECO-TOXICITY (FRESHWATER)[1]	ETP-fw	CTUe
HUMAN TOXICITY, CANCER[1]	HTP-c	CTUh
HUMAN TOXICITY, NON-CANCER[1]	HTP-nc	CTUh
LAND USE RELATED IMPACTS / SOIL QUALITY[1]	SQP	Pt

1The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator.

2 This indicator is identical to GWP-total except that the CF for biogenic CO2 is set to zero. It has been included in the EPD following the PCR 2019:14 v1.3.4 (EPD International, 2024).

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

4This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and some construction materials, is also not measured by this indicator.

TABLE 12: BIOGENIC CARBON CONTENT INDICATORS

INDICATOR	ABBREVIATION	UNIT
BIOGENIC CARBON CONTENT - PRODUCT	BCC-prod	kg C
BIOGENIC CARBON CONTENT - PACKAGING	BCC-pack	kg C

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

TABLE 13: EN15804+A1 ENVIRONMENTAL IMPACT INDICATORS

INDICATOR	ABBREVIATION	UNIT
GLOBAL WARMING POTENTIAL	GWP (EN15804+A1)	kg CO_2-eq.
OZONE DEPLETION POTENTIAL	ODP (EN15804+A1)	kg CFC11-eq.
ACIDIFICATION POTENTIAL	AP (EN15804+A1)	kg SO_2-eq.
EUTROPHICATION POTENTIAL	EP (EN15804+A1)	kg PO_4^{3-}- eq.
PHOTOCHEMICAL OZONE CREATION POTENTIAL	POCP (EN15804+A1)	kg C_2H_4-eq.
ABIOTIC DEPLETION POTENTIAL FOR NON-FOSSIL RESOURCES	ADPE (EN15804+A1)	kg Sb-eq.
ABIOTIC DEPLETION POTENTIAL FOR FOSSIL RESOURCES	ADPF (EN15804+A1)	MJ


RESOURCECO
KOMATSU
RESOURCECO

Environmental performance

Hampton Park (VIC)

Results for 1 000 kg **of Recycled Aggregate at** Hampton Park (VIC)

TABLE 14: EN15804+A2 CORE ENVIRONMENTAL IMPACT INDICATORS AT HAMPTON PARK (VIC)

			Class 3 20 mm recycled concrete					
			Production		End-of-Life			Mod D
Impact Category	Indicator	Unit	A1-A3	C1	C2	C3	C4	D
Climate change - total	GWP-total	kg CO_2 eq.	9.47E-01	6.77E-01	1.13E+00	2.17E+00	2.87E+00	5.28E-01
Climate change - fossil	GWP-fossil	kg CO_2 eq.	9.29E-01	6.77E-01	1.08E+00	2.16E+00	2.84E+00	5.26E-01
Climate change - biogenic	GWP-biogenic	kg CO_2 eq.	1.78E-02	1.33E-04	4.80E-02	2.34E-03	9.04E-03	-1.42E-03
Climate change - land use and land use change	GWP-luluc	kg CO_2 eq.	6.66E-05	1.75E-05	3.15E-05	5.59E-05	1.71E-02	3.03E-03
Ozone Depletion	ODP	kg CFC-11 eq.	1.23E-12	6.69E-14	3.85E-14	2.13E-13	7.67E-12	2.76E-12
Acidification	AP	Mole of H^+ eq.	6.57E-03	3.50E-03	6.27E-03	1.69E-02	2.02E-02	2.81E-03
Eutrophication aquatic freshwater	EP-freshwater	kg P eq.	1.50E-05	1.03E-07	1.88E-07	3.28E-07	6.46E-06	1.52E-06
Eutrophication aquatic marine	EP-marine	kg N eq.	3.09E-03	1.70E-03	3.15E-03	8.10E-03	5.20E-03	1.13E-03
Eutrophication terrestrial	EP-terrestrial	Mole of N eq.	3.35E-02	1.86E-02	3.46E-02	8.95E-02	5.72E-02	1.25E-02
Photochemical ozone formation	POCP	kg NMVOC eq.	9.14E-03	4.80E-03	6.00E-03	2.45E-02	1.59E-02	2.72E-03
Depletion abiotic resources - minerals & metals	ADP-minerals&metals	kg Sb eq.	1.62E-08	8.79E-09	2.38E-08	2.81E-08	1.84E-07	4.43E-08
Depletion abiotic resources - fossil fuels	ADP-fossil	MJ	1.16E+01	8.82E+00	1.48E+01	2.82E+01	3.75E+01	7.77E+00
Water use	WDP	m^3 world equiv.	6.55E-02	2.51E-03	1.85E-03	8.02E-03	3.26E-01	4.56E-02

TABLE 15: EN15804+A2 ADDITIONAL ENVIRONMENTAL IMPACT INDICATORS AT HAMPTON PARK (VIC)

			Class 3 20 mm recycled concrete					
			Production		End-of-Life			Mod D
Impact Category	Indicator	Unit	A1-A3	C1	C2	C3	C4	D
GWP-GHG	GWP-GHG	kg CO_2 eq.	9.32E-01	6.77E-01	1.08E+00	2.16E+00	2.87E+00	5.31E-01
GWP-GHG (IPCC AR5)	GWP-GHG (IPCC AR5)	kg CO_2 eq.	9.32E-01	6.77E-01	1.08E+00	2.16E+00	2.85E+00	5.28E-01
Respiratory inorganics	PM	Disease incidences	3.43E-08	4.43E-08	3.99E-08	7.42E-08	2.53E-07	1.20E-07
Ionising radiation - human health	IRP	kBq U235 eq.	7.85E-04	1.85E-04	1.93E-04	5.89E-04	4.56E-02	6.12E-02
Ecotoxicity - freshwater	ETP-fw	CTUe	5.73E+00	3.94E+00	3.60E+00	1.26E+01	2.16E+01	3.43E+00
Human toxicity, cancer	HTP-c	CTUh	1.19E-09	6.47E-11	6.25E-11	3.17E-09	5.10E-10	1.04E-10
Human toxicity, non-cancer	HTP-nc	CTUh	2.85E-09	1.43E-09	1.47E-09	4.74E-09	1.97E-08	4.06E-09
Land use related impacts / soil quality	SQP	Pt	3.33E+03	1.80E-02	1.96E-02	5.73E-02	1.03E+01	2.34E+00

TABLE 16: RESOURCE USE INDICATORS AT HAMPTON PARK (VIC)

			Class 3 20 mm recycled concrete					
			Production		End-of-Life			Mod D
Impact Category	Indicator	Unit	A1-A3	C1	C2	C3	C4	D
Renewable primary energy as energy carrier	PERE	MJ	5.89E-01	3.82E-02	3.43E-02	1.22E-01	6.54E+00	2.11E+00
Renewable primary energy resources as material utilisation	PERM	MJ	0	0	0	0	0	0
Total use of renewable primary energy resources	PERT	MJ	5.89E-01	3.82E-02	3.43E-02	1.22E-01	6.54E+00	2.11E+00
Non-renewable primary energy as energy carrier	PENRE	MJ	1.16E+01	8.82E+00	1.48E+01	2.82E+01	3.75E+01	7.77E+00
Non-renewable primary energy as material utilisation	PENRM	MJ	0	0	0	0	0	0
Total use of non-renewable primary energy resources	PENRT	MJ	1.16E+01	8.82E+00	1.48E+01	2.82E+01	3.75E+01	7.77E+00
Use of secondary material	SM	kg	1.00E+03	0	0	0	0	0
Use of renewable secondary fuels	RSF	MJ	0	0	0	0	0	0
Use of non-renewable secondary fuels	NRSF	MJ	0	0	0	0	0	0
Use of net fresh water	FW	m^3	9.84E-04	5.11E-05	3.75E-05	1.63E-04	9.94E-03	1.86E-03

TABLE 17: WASTE MATERIAL AND OUTPUT FLOW INDICATORS AT HAMPTON PARK (VIC)

			Class 3 20 mm recycled concrete					
			Production		End-of-Life			Mod D
Parameter	Indicator	Unit	A1-A3	C1	C2	C3	C4	D
Hazardous waste disposed	HWD	kg	1.20E-09	1.42E-10	3.23E-10	4.53E-10	9.34E-09	3.74E-09
Non-hazardous waste disposed	NHWD	kg	4.41E-01	2.17E-04	2.47E-04	6.91E-04	1.90E+02	7.93E+00
Radioactive waste disposed	RWD	kg	6.12E-06	1.72E-06	2.20E-06	5.49E-06	3.94E-04	3.77E-04
Components for re-use	CRU	kg	0	0	0	0	0	0
Materials for recycling	MFR	kg	0	0	0	8.10E+02	0	0
Materials for energy recovery	MER	kg	0	0	0	0	0	0
Exported electrical energy	EEE	MJ	0	0	0	0	0	0
Exported thermal energy	EET	MJ	0	0	0	0	0	0

TABLE 18: BIOGENIC CARBON CONTENT INDICATORS AT HAMPTON PARK (VIC)

			Class 3 20 mm recycled concrete					
			Production		End-of-Life			Mod D
Parameter	Indicator	Unit	A1-A3	C1	C2	C3	C4	D
Biogenic carbon content - product	BCC-prod	kg	0	0	0	0	0	0
Biogenic carbon content - packaging	BCC-pack	kg	0	0	0	0	0	0

TABLE 19: EN15804+A1 ENVIRONMENTAL INDICATORS

			Class 3 20 mm recycled concrete					
			Production		End-of-Life			Mod D
Impact Category	Indicator	Unit	A1-A3	C1	C2	C3	C4	D
Climate change	GWP (A1)	kg CO_2 eq.	9.38E-01	6.70E-01	1.11E+00	2.15E+00	2.82E+00	5.19E-01
Ozone depletion potential	ODP (A1)	kg CFC-11 eq.	1.45E-12	7.87E-14	4.53E-14	2.51E-13	9.03E-12	3.25E-12
Acidification potential of land and water	AP (A1)	kg SO2 eq.	4.61E-03	2.43E-03	4.26E-03	1.17E-02	1.61E-02	2.02E-03
Eutrophication potential	EP (A1)	kg PO_4^{3-} eq.	1.13E-03	5.71E-04	1.06E-03	2.73E-03	1.82E-03	4.07E-04
Photochemical ozone creation	POCP (A1)	kg Ethene eq.	5.68E-04	2.52E-04	-1.86E-03	1.50E-03	1.33E-03	-1.20E-04
Abiotic depletion potential – elements	ADPE (A1)	kg Sb eq.	1.63E-08	8.80E-09	2.38E-08	2.81E-08	1.87E-07	4.68E-08
Abiotic depletion potential – fossil fuels	ADPF (A1)	MJ	1.16E+01	8.76E+00	1.47E+01	2.80E+01	3.59E+01	6.60E+00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General information

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

ResourceCo has the sole ownership, liability, and responsibility for the EPD. EPDs within the same product category but from different programmes may not be comparable.

EPDs within the same product category but registered 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 version number up to the first two digits) 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 equivalent system boundaries and descriptions of data; apply equivalent data quality requirements, methods of data collection, and allocation methods; apply identical cut-off rules and impact assessment methods (including the same version of characterisation factors); have equivalent content declarations; and be valid at the time of comparison.

1 The results for EN15804+A1 compliant EPDs are not comparable with EN15804+A2 compliant studies as the methodologies are different. EN15804+A1 results in this EPD do not claim compliance with EN15804+A1.


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PRODUCT CATEGORY RULES (PCR)

CEN standard EN 15804:2012+A2:2019/AC:2021 served as the core Product Category Rules (PCR)

Product Category Rules (PCR):	PCR 2019.14 Construction Products, version 1.3.4
PCR review was conducted by:	The Technical Committee of the International EPD® System. See www.environdec.com for a list of members.
The most recent review chair:	Claudia A. Peña The review panel may be contacted via the Secretariat: www.environdec.com/contact

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THIRD-PARTY VERIFICATION

Independent verification of the declaration and data, according to ISO 14025:2006, via:

☒ EPD verification by individual verifier

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Procedure for follow-up of data during EPD validity involved third-party verifier:

☐ Yes ☒ No

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