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Environmental Product Declaration

Hutchinson Builders – 31 Duncan St, Brisbane (18 of 20 mixes)

In Accordance with Environdec c-PCR-003 Concrete, concrete elements (EN 16757), ISO 14025 and EN15804:A2
Programme: The International EPD® System
Programme Operator: EPD Australasia Limited

EPD Registration Number: **S-P-10210**

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Hanson & Sustainability

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Global Expertise
Local Experience

Using world-class technologies and service platforms, we supply a comprehensive range of **high-quality concrete, aggregates and sand** products. We also produce **road base, asphalt, and sustainable and recycled materials.**

We are backed by **Heidelberg Materials** - one of the world's largest building materials companies focused on developing materials to build our future.

At the centre of our actions lies our responsibility for the environment.

Our Mission:
Leading change with our customers to build a sustainable future.

Our 5 Sustainability Pillars

CO_2 Emissions

To reduce our CO_2 emissions by improving our product performance and increasing operational efficiencies in our plants and fleets.

Sustainable Products

To improve our product sustainability by continuously increasing the use of alternative resources as substitutes for natural materials, and promoting our sustainable product range.

Biodiversity

To preserve and enhance the natural environment where we operate and create habitat through implementation of biodiversity management plans.

Water

To increase water efficiency by implementing water conservation plans aimed at improving water capture, storage and use.

Corporate Social Responsibility

To provide ongoing, meaningful community benefit by increasing diversity, social procurement, and community engagement.

Introducing the enrich - 30 / 40 / 50 Range

Our enrich-30/40/50 range has all the properties you expect of standard concrete, with a **guaranteed minimum of 30%, 40% or 50% carbon reduction.**

And we can provide **reporting based on the actual deliveries of the project**

- **Pre-Project**
- **During Project**
- **Post-Project**

enrich-30
enrich-40
enrich-50

Introducing ECOTERA®

The Challenge with Low Carbon Concrete

- Historically substituting materials in concrete mix design to lower the carbon content effects performance
  - Slow early strength development
  - Effect on Workability and Setting Time

The Solution

- A concrete that has:
  - **High Performance**
  - **Low Carbon** – 30% to 50% reduction

ECOTERA®

ECOTERA® - High Performance Low Carbon Concrete

ECOTERA®

A unique and innovative product:

- **Low Carbon Concrete** up to 50% reduction in CO_2
- **Early age strength** equivalent to standard post-tensioned concrete
- **Lower shrinkage** than standard concrete – average shrinkage range between 250microstrain to 450microstrain
- **High Modulus of Elasticity** (MOE)
- **Improved Flexural Strength** up to 50%
- **Aesthetically pleasing** due to a lighter colour

Requires **no additional safety requirements** compared to standard concrete - pump, place and finish within standard WHS requirements.

Low Carbon Concrete

Up to 50% C02 reduction compared to standard concrete.

Early Age Strength

Early age strength equivalent to standard post-tensioned concrete for faster construction.

Lower Shrinkage

Lower shrinkage than standard concrete. Tested in accordance with AS1012.13.


Life Cycle & Processes
CASE
MACK

Product EPD Process

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. 4.0 (short: GCCA tool) has been employed.

EPDs are created under either of 2 streams:

- Generic Stream - 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, 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.
- 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.
- The project-specific travel distances from all producing plants to the construction site were applied.
- Water usage in operations is averaged over the full geographic region of study.
- Grid purchased electricity mixes is based on the specific state's energy mix excluding imports.
- Travel for materials sources internationally included from shipping origin.

In Accordance with Environdec c-PCR-003 Concrete, concrete elements (EN 16757), ISO 14025 and EN15804:A2

Product EPD Process

Bill of Materials	Low Level [%]	High Level [%]
Cement	8	17
Supplementary Cementitious Materials	2	9
Aggregates	69	81
Water	5	9
Admixtures		<1%
Reinforcements		<1%

The contents of the materials contained in the subject mixes are contained in the table above, illustrated by percentage of weight.

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)

By-Products, Recycled Materials & Allocations

The following materials are the product of waste streams of other industrial processes:

Fly ash

- A by-product of coal-fired power stations, fly ash is considered to carry no environmental impact for the purposes of this EPD.

Ground Granulated Blast Furnace Slag (GGBFS)

- Blast furnace slag is a by-product of steel production that is dried and ground for use in concrete production. To duly allocate the environmental impacts, economic allocation has been employed.

Silica fume

- As a by-product of silicon production, silica fume is considered to carry no environmental burden for the purposes of this EPD.

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 by-product of processing coarse aggregate. This manufactured sand is a direct replacement for natural sand and prevents the need to extract natural resources.

Packaging

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

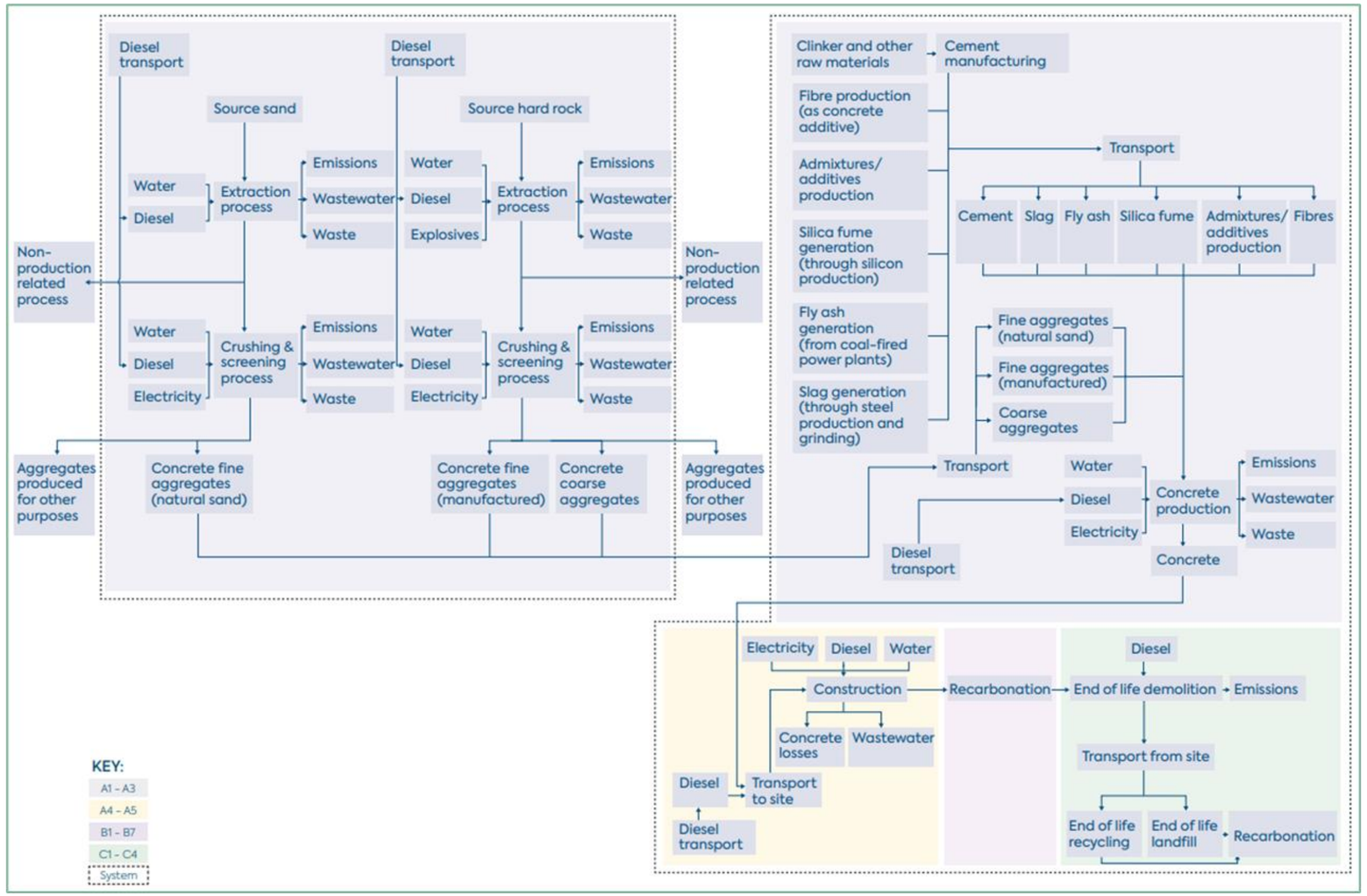
In Accordance with Environdec c-PCR-003 Concrete, concrete elements (EN 16757), ISO 14025 and EN15804:A2

Product Lifecycle Stages

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
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D1
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

- 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.

Product Lifecycle Stages



- 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**

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.

Product Data Sources

LCA Stage	Item	Source	Timing	Data Quality
Product Description	Product description and density	ERP report Bill of Materials and material specific data	Upon EPD creation	High, Primary
A1-3 Materials	Raw Materials	ERP report BOM and Mix design compilation used in conjunction with material template Note. Upstream process for raw materials utilise data from ecoinvent 3.5. Cement and Clinker details to be provided by cement producer or, where not available, GCCA Tool default data used in conjunction with ecoinvent 3.5.	Upon EPD creation	High, Secondary
A1-3 Materials	Inbound travel (raw materials)	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.	Full prior year data, average per delivery Actual travel distances between source and operation.	High, Primary
A1-3 Materials	Allocation Factor (for secondary co products):	Slag: AusLCI Fly Ash & Silica fume: no allocation as they are industrial by-products.	Upon EPD creation	Secondary, Medium
A1-3 Manufacturing	Plant Energy and Fuel Consumption	ERP Report 3. Concrete Energy Use, drawing on actual invoiced usage.	Full prior year data, average per metre	Primary, High
A1-3 Manufacturing	Electricity Energy Sources	Sourced from OpenNEM https://opennem.org.au; Australian Energy Market Operator.	Full year prior data, state-based, percentages	Secondary, High
A1-3 Waste Management	Waste and waste water	Waste water volume set to 9L per 1 m^3	Static	Secondary, Medium
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.	Generic EPD: Full prior year data, average per delivery. Project-specific EPD: Actual travel distances between plant and construction site.	Primary, High
B. Use	Re-carbonation	Default GCCA Tool settings	NA	Proxy, Medium
C. End of Life Demolition	Demolition	Default GCCA Tool settings	NA	Proxy, Medium
C. End of Life Transport	Transport	Default GCCA Tool settings	NA	Proxy, Medium
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) National Waste Reports	Prior year National Waste Report if available. If not, then latest available	Proxy, Medium
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	Proxy, Medium
D Benefits and Loads		Default GCCA Tool settings	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	Secondary, High

Product Environmental Performance

Product Environmental Performance

Comment	All information about goal and scope necessary for results interpretation are present in the latest version of the “LCA Model” report, available in GCCA’s Industry EPD Tool. 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 CO2 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 tool does not calculate the ‘Radioactive waste disposed’ indicator, it is considered not to be significant for the sector.
Core Environmental Impact Indicators	**GWP-GHG** (Global Warming Potential, GHG) • **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** (Abiotic depletion potential for non- fossil resources) • **ADPF** (Abiotic depletion for fossil resources potential) • **WDP** (Water (user) deprivation potential, deprivation-weighted water consumption)

Product Environmental Performance

Additional Environmental Impact Indicators	**PM** (Potential incidence of disease due to PM emissions) • **IRP** (Potential Human exposure efficiency relative to U235) • **ETP** (Potential Comparative Toxic Unit for ecosystems) • **HTPC** (Potential Comparative Toxic Unit for humans - cancer) • **HTPNC** (Potential Comparative Toxic Unit for humans - non-cancer) • **SQP** (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	**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** (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)

Product Environmental Performance

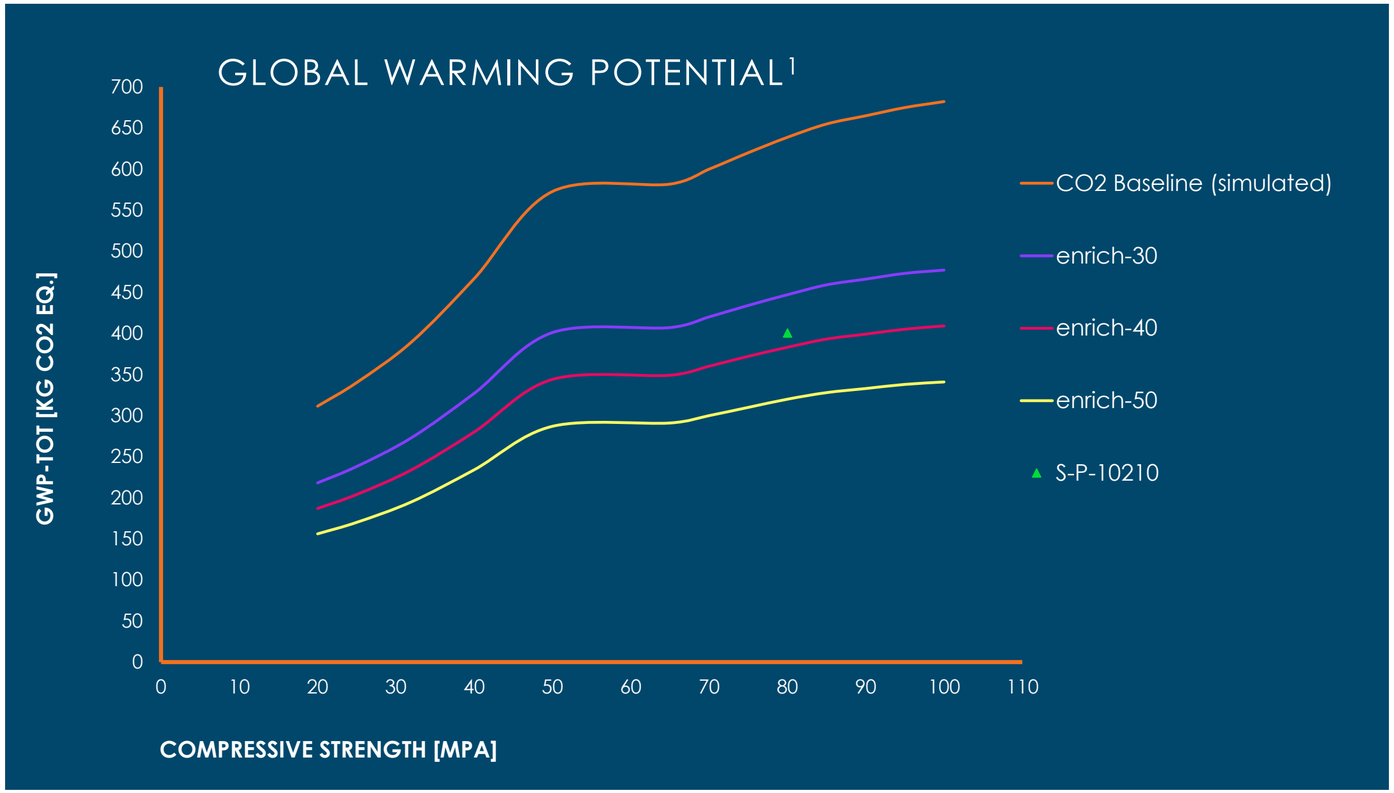
- The EPD numbers presented are indicative of local material performance at the time of publishing and are subject to change based on material availability and seasonal factors.

Product Identification	EPD Registration Number	GP[1] Content [kg/m^3]	CO_2 Reference[2] [kg/m^3]	CO_2 Reduction[3] [%]	GWP-tot[4] [kg CO_2 eq.]	Page
Pump - 80 MPa	S-P-10210	407	639	37%	400	21

[1]GP = General Portland Cement, does not include SCMs.
[2]See Appendix for detailed explanation.
[3]Calculation: {1 - (GWP-tot - CO2 Reference)} / (CO2 reference).
[4]GWP-tot: Covers A1-A3 only. More detailed information is provided in the following mix-specific tables.

Product Environmental Performance

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



[1]GWP-tot: Covers A1-A3 only. More detailed information is provided in the following mix-specific tables.
[2]CO_2 Baseline (simulated) is based on the Green Star Mat–4 Concrete Credit User Guide (2012). Detailed explanation is provided in the appendix.
[3]Plotting style: Scatter plot of values with smooth lines & markers.

Product Environmental Performance

Product Identification	**Pump - 80 MPa**
EPD Registration Number	**S-P-10210**
Production Site(S)	Brisbane
Compressive Strength	80
Density	2341.5 kg/m³
Reference Service Life	50 Years
Recycling Rate At EoI	78%
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 (V4.0), International version

Product Environmental Performance

EPD Registration Number S-P-10210

Core 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.	4.00E+02	1.12E+00	1.26E+01	-7.57E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.99E+00	8.96E+00	3.59E+00	-3.50E+00	-1.40E+01
GWP-tot	kg CO_2 eq.	4.00E+02	1.12E+00	1.26E+01	-7.57E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.99E+00	8.96E+00	3.59E+00	-3.50E+00	-1.40E+01
GWP-fos	kg CO_2 eq.	4.00E+02	1.12E+00	1.26E+01	-7.57E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.99E+00	8.95E+00	3.56E+00	-3.50E+00	-1.39E+01
GWP-bio	kg CO_2 eq.	8.41E-02	4.39E-04	4.72E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.60E-03	6.40E-03	1.91E-02	1.87E-03	-5.61E-02
GWP-luc	kg CO_2 eq.	6.18E-02	3.79E-04	3.63E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.13E-03	5.20E-03	1.46E-02	1.52E-03	-2.43E-02
ODP	kg CFC 11 eq.	9.33E-06	2.14E-07	1.32E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.62E-06	1.51E-06	3.69E-07	9.21E-07	-9.51E-07
AP	mol H+ eq.	1.76E+00	5.81E-03	1.01E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.42E-02	5.41E-02	3.90E-02	2.71E-02	-9.87E-02
EP-fw	kg P eq.	8.09E-02	8.36E-05	2.55E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.02E-04	1.20E-03	3.04E-03	3.31E-04	-5.84E-03
EP-mar	kg N eq.	5.19E-03	7.27E-06	7.17E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.34E-05	8.85E-05	2.11E-04	3.13E-05	-3.78E-04
EP-ter	mol N eq.	3.67E+00	2.08E-02	3.52E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.44E-01	1.91E-01	7.29E-02	9.71E-02	-2.46E-01
POCP	kg NMVOC eq.	9.28E-01	6.26E-03	9.64E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.22E-01	5.57E-02	2.05E-02	2.85E-02	-6.23E-02
ADPE	kg Sb eq.	1.97E-04	2.09E-06	7.44E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.66E-06	1.58E-05	4.54E-06	3.08E-06	-1.59E-04
ADPF	MJ, net calorific value	2.37E+03	1.77E+01	1.42E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.30E+02	1.33E+02	7.58E+01	7.87E+01	-1.60E+02
WDP	m^3 world eq. deprived	9.89E+01	1.30E-01	-1.15E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.67E-01	1.16E+00	1.06E+00	3.80E+00	-2.71E+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	8.90E+01	5.11E-01	5.92E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.59E-01	4.89E+00	8.28E+00	2.04E+00	-1.31E+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	8.90E+01	5.11E-01	5.92E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.59E-01	4.89E+00	8.28E+00	2.04E+00	-1.31E+01
PENRE	MJ, net calorific value	2.41E+03	1.77E+01	1.42E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.30E+02	1.33E+02	7.58E+01	7.87E+01	-1.60E+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	2.41E+03	1.77E+01	1.42E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.30E+02	1.33E+02	7.58E+01	7.87E+01	-1.60E+02
SM	kg	2.03E+02	0.00E+00	2.03E+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
RSF	MJ, net calorific value	7.98E+00	0.00E+00	7.98E-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
NRSF	MJ, net calorific value	1.33E+02	0.00E+00	1.33E+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
NFW	m^3	2.42E+00	3.90E-03	1.20E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.99E-02	3.57E-02	4.31E-02	8.86E-02	-6.48E-01

Product Environmental Performance

Additional Environmental Impact Indicators

		A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PM	Disease incidence	1.19E-05	1.03E-07	1.73E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.45E-06	8.35E-07	3.49E-07	5.05E-07	-1.16E-06
IRP	kBq U235 eq.	4.61E+03	9.30E+01	5.94E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.08E+02	7.66E+02	8.13E+02	3.64E+02	-1.31E+03
ETP	CTUe	1.34E+03	3.73E+00	1.71E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.76E+00	2.34E+01	1.59E+00	1.48E+00	-6.75E+00
HTPC	CTUh	1.34E+03	3.73E+00	1.71E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.36E-08	1.02E-07	6.31E-08	2.47E-08	-3.33E-07
HTPNC	CTUh	2.47E-05	2.01E-07	1.03E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.46E-07	1.40E-06	2.90E-07	1.58E-07	-1.98E-06
SQP	dimensionless	1.17E-06	7.18E-09	1.93E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.71E+00	2.18E+02	6.19E+01	1.47E+02	-2.09E+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	1.69E-01	0.00E+00	5.11E+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	5.11E+02	0.00E+00
RWD	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

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	0.00E+00	0.00E+00	1.83E+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	1.83E+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.	1.92E+02	0.00E+00	1.76E+00	-7.57E+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	-2.63E+00	-6.33E+00	0.00E+00
CWRS	kg CO_2 eq.	9.97E-03	0.00E+00	9.97E-05	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.	1.12E+01	0.00E+00	1.12E-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
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

References

Program Information

EPD Owner	Hanson Construction Materials Pty Ltd L14, 35 Clarence St, Sydney NSW 2000 Phone: 1300 136 464 Online: hanson.com.au	
Program Operator	EPD Australasia Limited, 315a Hardy St, Nelson 7010 New Zealand Online: epd-australasia.com Email: info@epd-Australasia.com	
Process EPD Certified By	Katherine McFeaters Epsten Group, Inc. 101 Marietta St. NW, Suite 2600, Atlanta, Georgia 30303, USA www.epstengroup.com Accredited by: A2LA, Certificate #3142.03	
Product Category Rules	CEN standard EN 15804:A2 (PCR 2019:14 Construction Products, Version 1.2.5) served as the core PCR. Environdec c-PCR-003 Concrete, concrete elements (EN 16757:2023) served as sub-PCR.	
EN 15804 PCR Review	The Technical Committee of the International EPD®System. Chair: Claudia A. Peña. The review panel may be contacted via info@environdec.com.	
EPD Registration Number	S-P-10210	
Independent Verification of the Declaration and Data, According to ISO 14025:	❑ EPD process certification ❑ EPD verification	
Valid From	2023-10-03	
Valid To	2028-10-03	
Version	1.0	
Description of Version Differences (if NOT VERSION 1.0)		
Geographical Scope	Brisbane, QLD	
Important Notes	EPDs within the same product category but from different programmes may not be comparable. EPDs of construction products may not be comparable if they do not comply with EN 15804. The EPD Owner maintains full ownership, liability and responsibility for the EPD.	
Product Group Classification	UN CPC 88 - Concrete, cement and plaster article manufacturing services	
ANZSIC Classification	2033 Ready Mix Concrete Manufacturing	

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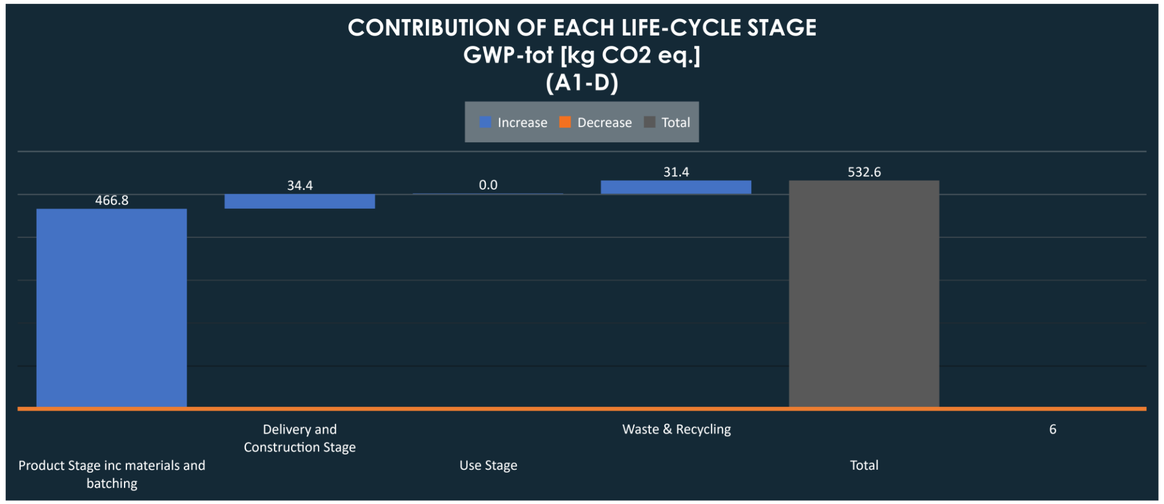
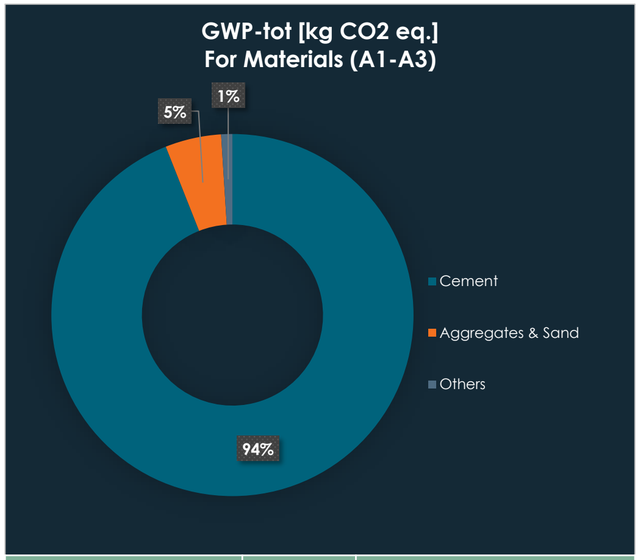
CO_2 Baseline

CO2 Baseline(simulated): 40 MPa

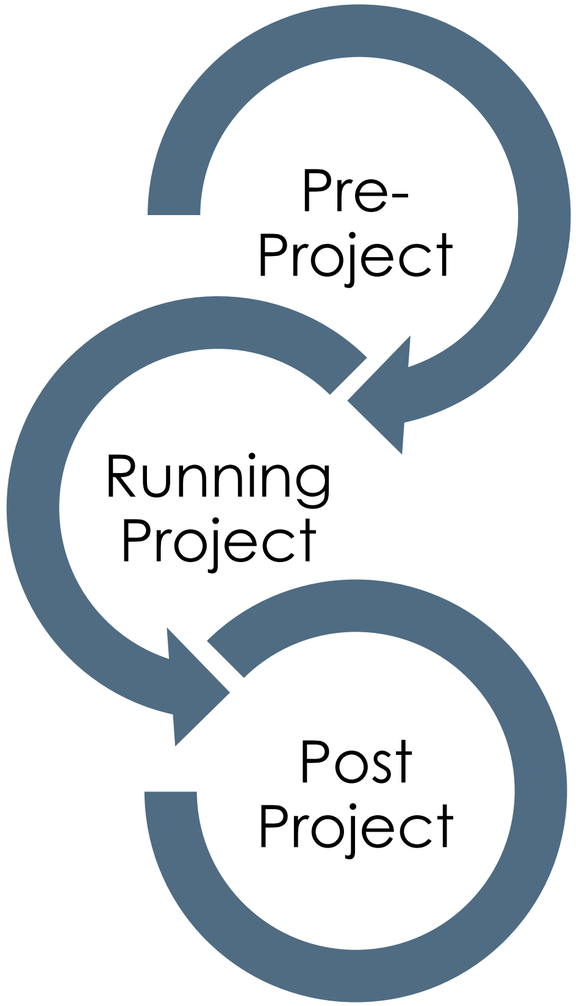
- Due to the lack of an industry wide CO2 baseline, we simulated our own baseline mixes:
  - Based on the Green Star Mat–4 Concrete Credit User Guide (2012)
  - Cement reference values were added to the GCCA concrete EPD tool
  - Default values (Australia specific)
  - The background information (incl. assumptions, generic mix designs) can be downloaded here: https://hanson.com.au/background-gs-benchmarks.zip





Material	Quantity	Travel Distance
Cement	440 kg	Truck: 100 km, Rail: 100 km
Aggregates & Sand	1821 kg	Truck: 90 km
Water	197 L	
Admixtures	3 L	Truck: 100 km, Rail: 600 km

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 Hanson, 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).