BORAL

Building something great

Pre-mix concrete EPD

Environmental Product Declaration

Victoria (VIC) region

In accordance with ISO 14025 and EN 15804

An EPD should provide current information and may be updated if conditions change.
The stated validity is therefore subject to the continued registration and publication at *epd-australasia.com*

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Geographical Scope: Victoria (VIC) region

ECO PLATFORM EPD VERIFIED

AUSTRALASIA EPD® INTERNATIONAL EPD SYSTEM

EPD INTERNATIONAL EPD SYSTEM

Contents

Program information and verification

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

These rules are a key part of ISO 14025, ISO 14040 and ISO 14044 as they enable transparency and comparability between EPDs. This EPD provides environmental indicators for Boral ENVISIA®, ENVIROCRETE®, ENVIROCRETE® PLUS, products for special applications and our normal class of pre-mix concrete products manufactured in Australia. This EPD is a 'cradle-to-gate' declaration covering production of the concrete and its supply chain.

This EPD is verified to be compliant with EN 15804. EPD of construction products may not be comparable if they do not comply with EN 15804. EPDs within the same product category but from different programs or utilising different PCRs may not be comparable. Boral, as the EPD owner, has the sole ownership, liability and responsibility for the EPD.

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Program information and verification

EPD version	Description of the changes
Version 1	The EPD was updated in line with changes in Boral's branding.
Version 2	The following edits were made as part of the first annual review: • Updated GWP values due to publication of the cement manufacturers EPD. • Added a new plant at Bulleen to the South East Metropolitan region. • The Envirocrete product range has been removed (Envirocrete 30% and Envirocrete 40% product ranges are still included) • The mixes for the Lower Carbon Concrete products have been updated. • Products have been added to the Melbourne Metropolitan region and the South East Metropolitan region.

CEN standard EN 15804 served as the core PCR	
Reference year for data: 2018-01-01/2018-12-31	
PCR	PCR 2012:01 Construction Products and Construction Services, Version 2.33, 2020-09-18 PCR 2012:01-SUB-PCR-G Concrete and concrete elements, 2020-09-18
PCR review was conducted by	The Technical Committee of the International EPD® System. Chair: Claudia A. Peña. Contact via info@environdec.com
Independent verification of the declaration and data, according to ISO 14025	☐ EPD process certification (Internal) ☒ EPD verification (External)
Procedure for follow-up of data during EPD validity involved third-party verifier	☐ No ☒ Yes

The Stokehouse, **St Kilda**, VIC

About Boral

Boral is the largest integrated construction materials company in Australia, with a leading position underpinned by strategically located quarry reserves and an extensive network of operating sites.

Boral Concrete has over 200 pre-mix concrete plants around Australia producing a wide range of concrete mixes in metropolitan and country areas.

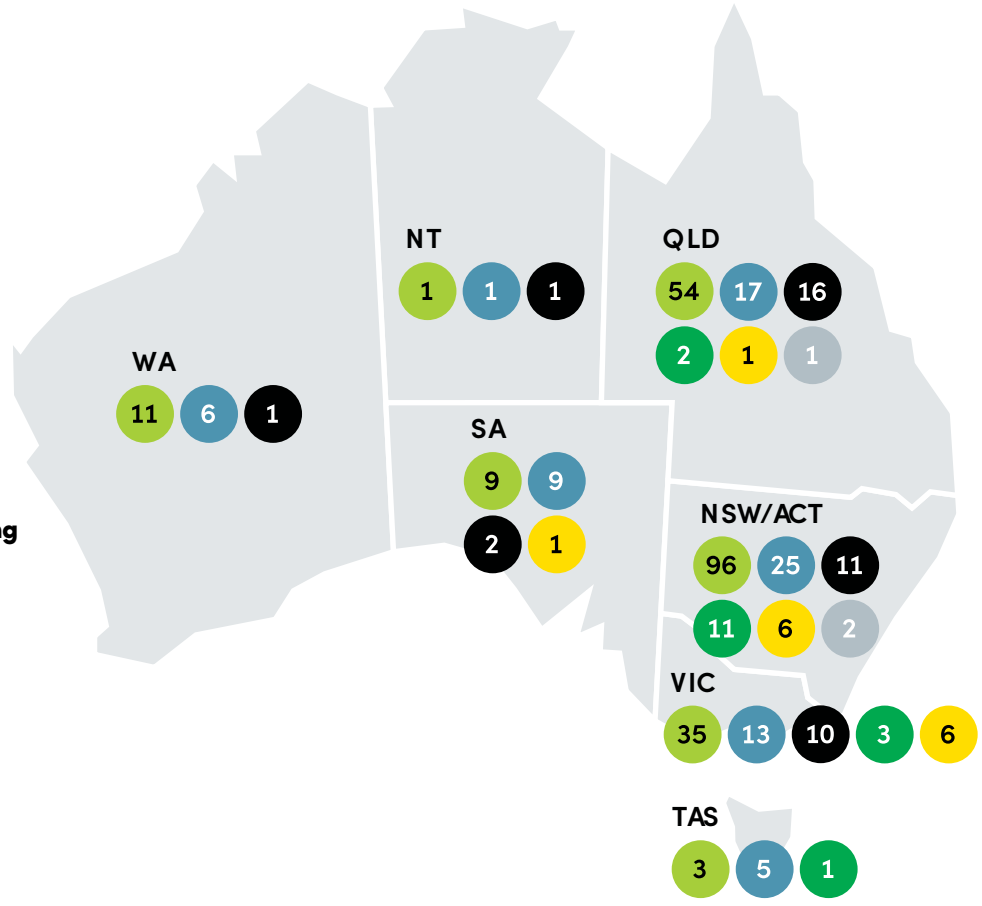
In Victoria, Boral Concrete supplies pre-mix concrete to all segments of the construction industry including infrastructure, social, commercial and residential construction.

This EPD covers the majority of the concrete products supplied from Boral plants in Victoria.

Construction materials
Leading integrated network

360
Operating sites*

- 209 **Concrete**
- 76 **Quarries**
- 41 **Asphalt**
- 17 **Cement**
- 14 **Recycling**
- 3 **Concrete Placing**



* Includes transport, fly ash and research and development sites.

About Boral

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

For over 75 years we've been building something great in Australia - rarely a day goes by that you wouldn't pass one of our sites or trucks, enter a building, use a road, bridge, tunnel, footpath or other critical infrastructure that our people and products have helped enable.

Boral is committed to a culture of Zero Harm Today. This ensures all our employees, contractors, partners and communities in which we operate are free from harm, injury and illnesses. Boral has a team of full-time Health, Safety, Environment and Quality specialists who operate across our integrated business, offering a single interface for safety communications and innovation across raw materials, logistics, operations and placement.

Sustainability at Boral

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

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

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

The Stokehouse, **St Kilda**, VIC

About Boral

Technical services

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

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

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

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

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

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

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

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

Geographical scope

Victoria region

The concrete plants considered for this Environmental Product Declaration comprise those in the state of Victoria, and the NSW Riverina region. There are eight sub-regions. Individual plants were assessed for life cycle assessment, and local surrounding similar raw material sources were included in the datasets. These regions, and modelled plants, including geographically nearby plants are listed on the map below.

Victoria Sub-regions

1 **Boral Concrete West Melbourne**–Melbourne Metropolitan region
2 **Boral Concrete Clayton**–Melbourne South-East Metropolitan region
3 **Boral Concrete Waurn Ponds**–Geelong/Bellarine region
4 **Boral Concrete Ballarat**–Ballarat/Goldfields region
5 **Boral Concrete Bendigo**–Loddon/Goldfields region
6 **Boral Concrete Shepparton**–Goulburn/Central Murray region
7 **Boral Concrete Mildura**–Mallee/Murray North region
8 **Boral Concrete Wodonga**–Murray East/Hume region

Melbourne Metropolitan region

- **West Melbourne**
- Tullamarine
- Deer Park
- Somerton
- Wollert
- Sunbury
- Melton
- Keilor

Geelong / Bellarine region

- **Waurn Ponds**
- Bacchus Marsh
- Werribee

Loddon / Goldfields region

- **Bendigo**

Goulburn / Central Murray region

- **Shepparton**
- Tatura
- Cobram
- Numurkah
- Nagambie
- Kyabram
- Moama
- Mulwala
- Finley
- Benalla

South-East Metropolitan region

- **Clayton**
- Dandenong
- Carrum Downs
- Cranbourne
- Healesville
- Montrose
- Pakenham
- Nunawading
- Bulleen/NEL

Mallee / Murray North region

- **Mildura**
- Swan Hill

Ballarat / Goldfields region

- **Ballarat**
- Daylesford

Murray East / Hume region

- **Wodonga**

Declared products

Products considered for the Victorian region EPD

The products considered for the EPD fall into three broad categories: normal class products, lower carbon concrete products and special concrete products. A brief description of each category is given below, followed by a full list of the products.

1) Lower carbon concrete products

The lower carbon concrete products have been designed to have lower portland cement contents and lower embodied carbon contents. They are ideal for projects with sustainability targets including targets based on the Green Building Council of Australia (GBCA) and the Infrastructure Sustainability Council (ISC) rating tools. They have been further categorised according to their portland cement reduction and their performance, as per the subcategories below.

Lower carbon concrete product	Portland cement reduction*	Typical properties
ENVIROCRETE®	≥30%	• Complies with AS 1379. • Applicable for Green Star project.
ENVIROCRETE® PLUS	≥45%	• Complies with AS 1379. • Applicable for Green Star projects. • Improved early age strength and drying shrinkage compared to the ENVIROCRETE® products.
ENVISIA®	≥50%	• Complies with AS 1379. • Applicable for Green Star projects. • Improved early age strength and drying shrinkage compared to the ENVIROCRETE® and ENVIROCRETE® PLUS products.

* The percentages indicate the typical portland cement reduction against default concrete mixes as defined in the Green Star and ISC Rating tools by the Green Building Council of Australia (GBCA) and the Infrastructure Sustainability Council (ISC) respectively.

2) Lower carbon concrete products for special applications

Boral's special concrete products have been designed to meet specific project requirements in addition to the requirements of AS 1379, while having lower portland cement contents and lower embodied carbon contents.

3) Normal class concrete products

Normal class concrete products are suitable for general applications and designed to meet the requirements of AS 1379 (Specification and supply of concrete). The normal class concrete products have been grouped according to the cement blend they contain as follows.

Normal class concrete category	Cementitious type
NORMAL CLASS GP BLEND	General Purpose (GP) cement
NORMAL CLASS GP/FA BLEND	General Purpose (GP) cement and Fly Ash (FA)
NORMAL CLASS GP/GGBFS BLEND	General Purpose (GP) cement and Ground Granulated Blast Furnace Slag (GGBFS)

4) VicRoads concrete products

VicRoads concrete products have been designed to meet VicRoads technical specifications.

5) Concrete products for special applications

Boral's special concrete products have been designed to meet specific project requirements in addition to the requirements of AS 1379. They include products that have been designed for infrastructure projects, multi-residential buildings, commercial buildings and civil works.

Declared products

ENVIROCRETE® concrete

Boral's ENVIROCRETE® concrete is a lower carbon concrete product which complies with AS 1379. It contains supplementary cementitious materials to reduce the portland cement content and the minimum reduction in portland cement compared to the GBCA and ISC reference case is 30%. ENVIROCRETE® is ideal for general applications where high performance concrete is not required.

For projects seeking a lower carbon footprint and have early age strength or lower shrinkage requirements ENVIROCRETE® PLUS or ENVISIA® concrete are recommended.

ENVIROCRETE® PLUS concrete

Boral's ENVIROCRETE® PLUS concrete is a lower carbon concrete product which complies with AS 1379. It contains supplementary cementitious materials to reduce the portland cement and the minimum reduction in portland cement compared to the GBCA and ISC reference case is 45%. ENVIROCRETE® PLUS also has enhanced engineering properties compared to the ENVIROCRETE® range. The early age strength and drying shrinkage are superior to ENVIROCRETE®.

ENVISIA® concrete

Boral's ENVISIA® concrete is a lower carbon concrete product which complies with AS 1379 and has excellent engineering properties. It contains supplementary cementitious materials to reduce the portland cement and the minimum portland cement reduction compared to the GBCA and ISC reference case is 50%. ENVISIA® combines a proprietary cement technology (ZEP®) which gives it good early age strength, low shrinkage characteristics and excellent durability characteristics in a marine environment. An overview of the sustainability, durability, engineering and architectural properties are given below.

Lower carbon

- ENVISIA® has a low portland cement content and is suitable for projects seeking to maximise the number of green star points from concrete.
- ENVISIA® has a lower carbon content and is suitable for projects seeking a rating with the Green Building Council of Australia (GBCA) or the Infrastructure Sustainability Council (ISC).

Workability

- ENVISIA® can be placed, pumped and finished like conventional concrete.

Superior engineering properties

- ENVISIA® will achieve early-age strength equivalent to conventional concrete mixes with higher portland cement content (e.g. post-tensioned and precast concrete).
- ENVISIA® has 20 per cent greater flexural strength compared to conventional concrete of the same grade.
- ENVISIA® achieves up to 50 per cent reduction in shrinkage when compared to conventional sustainable concrete mixes.

Superior durability

- ENVISIA® provides improved durability, through greater protection to steel reinforcement against chloride induced corrosion.
- ENVISIA® has improved sulphate and acid resistance properties.
- ENVISIA® mitigates the potential expansion due to alkali aggregate reactivity.

Architectural presence

- ENVISIA® can achieve a range of architectural benefits because of its good off-form finish and lighter colour.
- ENVISIA®'s lighter colour will enhance the use of coloured oxides.

Declared products

Products covered by this Environmental Product Declaration (EPD)

The products covered in the EPD are listed below. The environmental impacts of products not referenced in the EPD can be provided on request. Boral is developing an environmental impact calculator allowing us to provide environmental profiles for virtually any mix design from any of our concrete plants in Australia. We intend to have the calculator independently verified in line with the same standards this EPD is based on, so that the results are of similar standing.

1) Lower carbon concrete products

- ENVISIA® 20 MPa
- ENVISIA® 25 MPa
- ENVISIA® 32 MPa
- ENVISIA® 40 MPa
- ENVISIA® 50 MPa
- ENVISIA® 65 MPa
- ENVIROCRETE® PLUS 20 MPa
- ENVIROCRETE® PLUS 25 MPa
- ENVIROCRETE® PLUS 32 MPa
- ENVIROCRETE® PLUS 40 MPa
- ENVIROCRETE® PLUS 50 MPa
- ENVIROCRETE® 40% 20MPa
- ENVIROCRETE® 40% 25MPa
- ENVIROCRETE® 40% 32MPa
- ENVIROCRETE® 40% 40MPa
- ENVIROCRETE® 40% 50MPa
- ENVIROCRETE® 30% 20MPa
- ENVIROCRETE® 30% 25MPa
- ENVIROCRETE® 30% 32MPa
- ENVIROCRETE® 30% 40MPa
- ENVIROCRETE® 30% 50MPa

2) Lower carbon concrete products for special applications

- ENVIROCRETE® 20MPa - 40% SCM
- ENVIROCRETE® 25MPa - 40% SCM
- ENVIROCRETE® 32MPa - 65% SCM
- ENVIROCRETE® TUNNEL BACKFILL
- ENVIROCRETE® TUNNEL BACKFILL EXT PUMP
- ENVIROCRETE® KERB MACHINE 320KG/M^3
- ENVIROCRETE® KERB MACHINE 280KG/M^3
- ENVIROCRETE® VR450 14MM DWALL
- ENVIROCRETE® VR400 14MM IN SITU TUNNEL LINING
- ENVIROCRETE® VR450 14MM IN SITU TUNNEL LINING

3) Normal class concrete products

- NORMAL CLASS GP BLEND 20MPa
- NORMAL CLASS GP BLEND 25MPa
- NORMAL CLASS GP BLEND 32MPa
- NORMAL CLASS GP BLEND 40MPa
- NORMAL CLASS GP BLEND 50MPa
- NORMAL CLASS GP/FA BLEND 20MPa
- NORMAL CLASS GP/FA BLEND 25MPa
- NORMAL CLASS GP/FA BLEND 32MPa
- NORMAL CLASS GP/FA BLEND 40MPa
- NORMAL CLASS GP/FA BLEND 50MPa

4) VicRoads concrete products

- VR330 32MPa 20MM GP/FA
- VR330 32MPa 20MM GP/SLAG
- VR400 40MPa 20MM GP/FA
- VR400 40MPa 20MM GP/SLAG
- VR400 40MPa 14MM TREMIE GP/SLAG
- VR400 40MPa 14MM TREMIE/CFA GP/SLAG
- VR400 40MPa 7MM SHOTCRETE
- VR450 50MPa 20MM GP/FA
- VR450 50MPa 20MM GP/SLAG
- VR450 50MPa 14MM TREMIE GP/SLAG
- VR450 50MPa 14MM TREMIE/CFA GP/SLAG

5) Concrete products for special applications

- HIGH SLUMP 20MPa
- HIGH SLUMP 25MPa
- HIGH SLUMP 32MPa
- HIGH SLUMP 40MPa
- HIGH SLUMP 50MPa
- HIGH SLUMP 65MPa
- HIGH SLUMP 80MPa
- TREMIE 40MPa
- TREMIE 50MPa
- POST TENSIONED 40MPa 22@3
- POST TENSIONED 40MPa 22@4
- SHOTCRETE 32MPa
- SHOTCRETE 40MPa
- STABILISED SAND 3%
- STABILISED SAND 5%
- KERB MACHINE 320KG/M3
- KERB MACHINE 280KG/M3
- NO FINES 4%
- FIBRE STEEL 32MPa
- FIBRE STEEL 40MPa
- FIBRE STEEL 50MPa
- HIGH PERFORMANCE 32MPa
- HIGH PERFORMANCE 40MPa
- HIGH PERFORMANCE 50MPa
- LOW HEAT 32MPa
- LOW HEAT 40MPa
- LOW HEAT 50MPa
- SUPER WORK 40MPa 14mm 650SPR
- SUPER WORK 50MPa 14mm 650SPR
- SUPER WORK 65MPa 14mm 650SPR
- SUPER WORK 80MPa 14mm 650SPR

Pre-mix concrete production

Concrete production is the process of combining water, aggregates, cementitious binders and additives. These different 'ingredients' are mixed at a specialised facility known as a 'batching' plant.

The batching plant stores the ingredients in cement silos, aggregate bins and admixture tanks and uses calibrated weigh scales and flow meters to accurately weigh the ingredients. The ingredients are then mixed in a transit mixer compliant with item C3 of AS 1379 to produce concrete which is delivered to the project.

Depending on the proposed application of the final product, the concrete may contain other ingredients such as colour oxides and fibres and the production process may include heaters or chillers. Concrete production is time-sensitive, once the ingredients are mixed, workers must put the concrete in place before it loses workability.

The Stokehouse, **St Kilda**, VIC

ENVISIA® Case study

BORAL Building something great

Case study

ENVISIA® Concrete

The Stokehouse Restaurant, St Kilda

Overview

Owner
Van Haandel Group

Builder
Lanskey Constructions

Engineer
Robert Simeoni

Architect
Bonnaci Group

Segment
Commercial

Location
St Kilda, Vic

" The most exciting thing about the Stokehouse is the fact that we've managed to make it as environmentally friendly as we possibly can. "

– Frank Van Haandel
Owner,
Van Haandel Group

Project

Boral helped lift the famed Stokehouse restaurant out of the ashes of a devastating fire in 2014 to become Australia's first of its kind **5 Star Green Star building**. The owner's criteria for the new building included that it looked great and construction was as environmentally friendly as possible. It is now home to a refreshed and larger Stokehouse restaurant, casual dining space pontoon and beachside fish and chip kiosk, Paper Fish.

Outcomes

- **The rebuild was at the forefront of low-carbon emission construction** as the first Victorian venue to showcase Boral's **ENVISIA®** lower carbon concrete.
- **ENVISIA®** was used for the cantilevered slabs and exposed columns of the split level restaurant to **reduce the volume of concrete and steel** reinforcement required.
- **ENVISIA®** was chosen for its various characteristics including:
  – **lower carbon**
  – **high early strength**
  – **durability**
  – **light colour**
  – excellent **off form finish** and
  – suitability for **marine environments**.
- **ENVISIA®** lower carbon credentials assisted our client to meet **Government environmental and sustainability requirements** for developing Crown land.

Concrete performance*

ENVISIA® 40 MPa	
Portland cement reduction**	60%
4-day strength	28 MPa
7-day strength	33 MPa
28-day strength	43 MPa
Drying shrinkage at 56 days	280 microstrain

ENVISIA® 50 MPa	
Portland cement reduction**	60%
3-day strength	33 MPa
4-day strength	42 MPa
7-day strength	48 MPa
28-day strength	56 MPa
Drying shrinkage at 56 days	300 microstrain

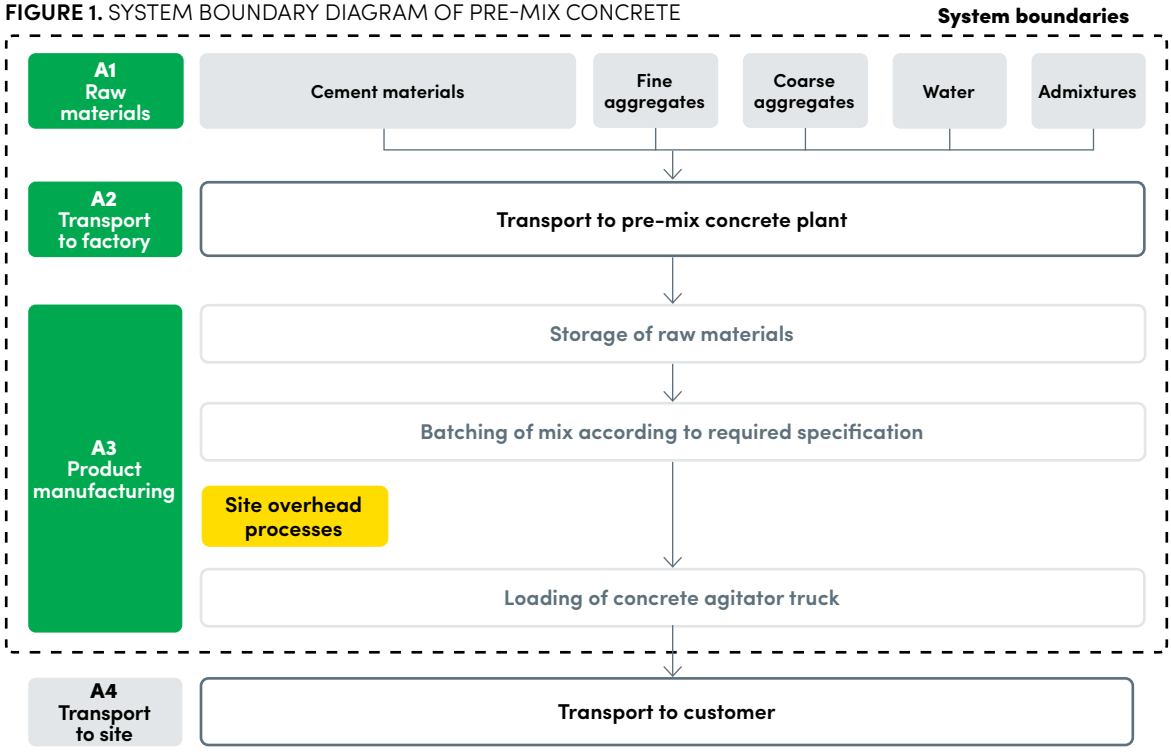
* Mean results.
** cf Green Building Council of Australia Mat 4 reference case.

For more information please visit boral.com.au/lcc

Life cycle stages covered by the Life Cycle Assessment (LCA)

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

FIGURE 1. SYSTEM BOUNDARY DIAGRAM OF PRE-MIX CONCRETE



Raw material stage (A1)

All raw materials used in the production of Boral's normal class concrete, lower carbon concrete and special concrete products comply with the following standards as required by AS 3600 Concrete Structures (SA 2018) and AS 1379 Specification and Supply of Concrete (SA 2007/R2017):

- **AS 3972:** General purpose and blended cements
- **AS 3582.1** Supplementary cementitious materials Part 1: Fly Ash
- **AS 3582.2** Supplementary cementitious materials Part 2: Slag—Ground granulated blast furnace
- **AS 2758.1** Aggregates and rock for engineering purposes Part 1: Concrete Aggregates
- **AS 1478.1** Chemical admixtures for concrete, mortar and grout

Life cycle stages covered by the Life Cycle Assessment (LCA)

Transportation stage (A2)

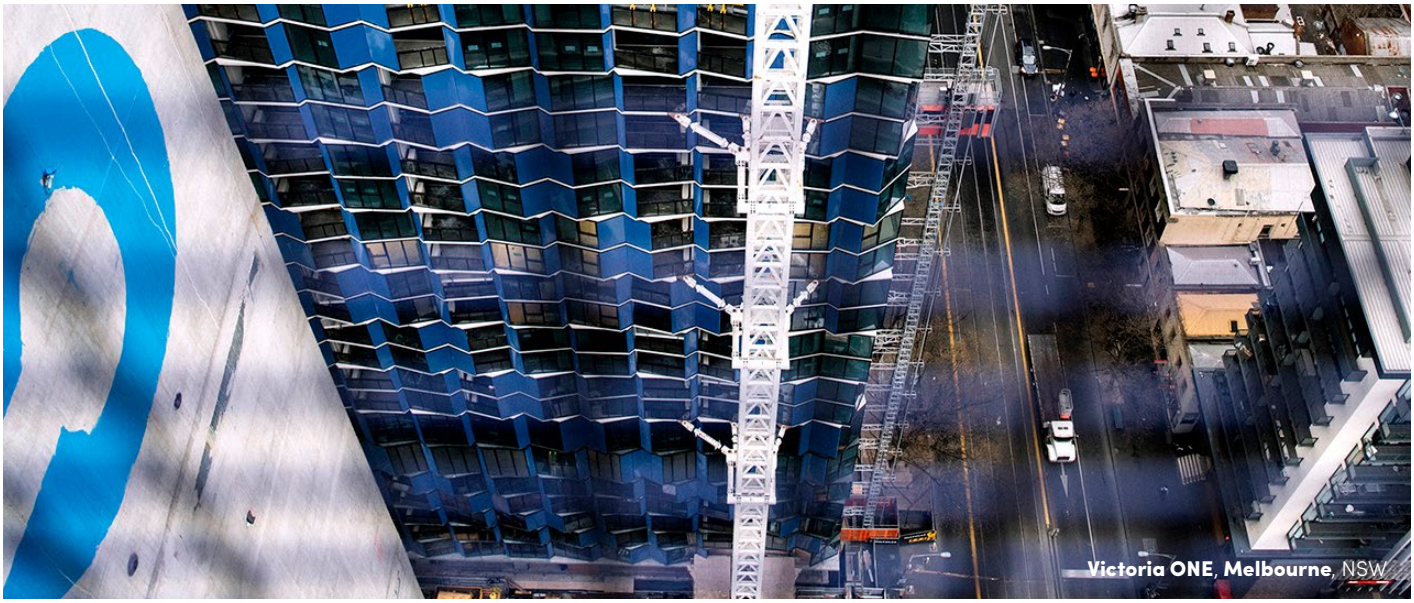
Raw materials are typically transported to our sites via rigid trucks. Coarse aggregates, manufactured sands and natural sands are sourced from our network of quarries, as well as third-party quarries. General purpose (GP) cement is supplied by Boral Cement from their facility in Waurn Ponds. Slag cement is supplied by a local supplier and fly ash is sourced from the Mount Piper Power Station. ZEP® additive and silica fume are mostly imported. Admixtures are sourced from locally based suppliers and transported using rigid trucks.

TABLE 1. SCOPE OF EPD

Product stage			Construction stage		Use stage							End-of-life stage				Benefits beyond system boundary
RAW MATERIAL SUPPLY	TRANSPORT	MANUFACTURING	TRANSPORT	CONSTRUCTION-INSTALLATION PROCESS	USE	MAINTENANCE	REPAIR	REPLACEMENT	REFURBISHMENT	OPERATIONAL ENERGY USE	OPERATIONAL WATER USE	DECONSTRUCTION DEMOLITION	TRANSPORT	WASTE PROCESSING	DISPOSAL	REUSE, RECOVERY, RECYCLING POTENTIAL
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
			Scenario		**Scenario**							**Scenario**				
✔	✔	✔	**MND**	**MND**	**MND**	**MND**	**MND**	**MND**	**MND**	**MND**	**MND**	**MND**	**MND**	**MND**	**MND**	**MND**

✔ = module is included in this study MND = module is not declared*

* When a module is not accounted for, the stage is marked with "ND" (Not Declared).
MND is used when we cannot define a typical scenario.


Victoria ONE, Melbourne, NSW

Life cycle stages covered by the Life Cycle Assessment (LCA)

Manufacturing stage (A3)

The manufacturing process of Boral's normal class concrete, lower carbon concrete and special concrete products is by mixing concrete constituents comprising of cement and supplementary cementitious materials (SCM) (AS 3972/AS 3582.1, 2, 3), and fine/coarse aggregates (AS 2758.1), plus admixtures/additives (AS 1478.1) and water (AS 1379) directly in the truck referred to as the dry batch method, or in selected locations pre-mixing in a wet mix fashion, before delivery by agitator truck.

The entire process is covered under AS 1379 Specification and Supply of concrete and verified by third party under ISO9001. This manufacturing stage (A3) includes activities associated with sourcing and delivery of individual concrete constituents, up to the point of mixing at the batch plant, but not including delivery and placement of concrete at the project location. This is typically described as the Cradle (A1) to Gate (A3) life cycle.

Life Cycle Assessment (LCA) methodology

Background data

Boral has supplied primary data from key quarries, cement production facilities and concrete production sites. Five concrete production sites (West Melbourne, Waurn Ponds, Ballarat, Shepparton and Bendigo) provided primary production data. All eight regions have provided mix design and supply chain data. The LCA shows that these sites are representative for key regions in Victoria. Data for admixtures have been sourced from EPDs published in December 2015 by EFCA (European Federation of Concrete Admixtures Associations) (EFCA 2015a-e).

Background data (e.g. for energy and transport processes, blast furnace slag and fly ash) have predominantly been sourced from AusLCI and the AusLCI shadow database v1.42 (AusLCI 2023). The Victorian quarry data and concrete production data have been collected for calendar year 2018. Cement data are taken from Boral Cement's Bulk Cement and Cementitious Products - Victoria (VIC) region - EPD (S-P-05506; 20 May 2023). The vast majority of the environmental profiles of our products are based on life cycle data that are less than five years old. Background data used is less than 10 years old.

Methodological choices have been applied in line with EN 15804 (CEN 2013); deviations have been recorded.

Representative plants in each region

Boral operates 36 concrete plants in Victoria. This EPD covers a sub-section of our concrete plants located in eight key regions:

1. West Melbourne for Melbourne Metro region
2. Clayton for Melbourne South-East Metro region
3. Waurn Ponds for Geelong/Bellarine Region
4. Ballarat for Ballarat/Goldfields region
5. Bendigo for Loddon/Goldfields region
6. Shepparton for Goulburn/Central Murray region
7. Mildura for Mallee/Murray North region
8. Wodonga for Murray East/Hume region

Our background LCA report shows that a single plant is representative for surrounding plants that have similar supply chains and mix designs.

Legend

Plants that are being modelled in the VIC region EPD.

Life Cycle Assessment (LCA) methodology

Allocation

The key material production processes that require allocation are:

Pre-mix concrete

Boral manufactures a range of pre-mix concrete products at its sites. Energy use for concrete production has been allocated to the products based on a volume basis (total m^3 of pre-mix concrete products).

Cementitious binders

Boral manufactures concrete using type GP cement inclusive of limestone mineral addition, Ground Granulated Blast Furnace Slag (GGBFS) and Fly Ash (FA). Cement clinker and slag granulate are sourced from third parties and are milled into cement and ground granulate blast furnace slag at the Boral Cement works at Geelong. Fly ash is sourced from a third party.

Blast Furnace Slag (BFS)

BFS Is a by-product from steel-making. We have used the AusLCI data for BFS ('Blast Furnace Slag allocation, at steel plant/AU U'), which contain impacts from pig iron production allocated to blast furnace slag using economic allocation.

Aggregates

Aggregates are produced through crushing of rock, which is graded in different sizes. The energy required for the crushing and screening does not differentiate between products. Therefore, aggregate production (including manufactured sand) has been allocated based on the mass of product.

Silica fume (Micro-silica)

Silica fume is a by-product of silicon metal or ferrosilicon alloys production. Economic allocation is used to attribute impacts between silica fume and ferrosilicon production.

Fly ash

Fly ash is a by-product from coal-fired power plants. We have used the AusLCI data for fly ash, in which all environmental impacts of the power plant are allocated to the main product: electricity. Fly ash has only received the burdens of transport to our sites.

The allocation assumptions were checked using sensitivity analysis, which showed that the allocation of fly ash can have an impact on the LCA results if impacts of electricity production are assigned to fly ash.

Cut-off criteria

The contribution of capital goods (production equipment and infrastructure) and personnel is excluded, as these processes are non-attributable and they contribute less than 10% to GWP-GHG.

The amount of packaging used for admixtures is well below the materiality cut-off and these materials have been excluded.

Key assumptions

Admixture data

Data for admixtures have been sourced from EPDs published in December 2015 by EFCA (European Federation of Concrete Admixtures Associations) (EFCA 2015a-e)

Fly ash

Is considered a by-product of electricity generation that comes without prior environmental impacts. This allocation decision can have a significant effect on the environmental profile of products that use fly ash.

Blast Furnace Slag (BFS)

Receives some environmental impacts from pig iron production. This allocation decision has an effect on the environmental profile of products that use Ground-Granulated Blast Furnace Slag (GGBFS).

Water consumption

Is not measured consistently across quarries. We have used AusLCI water consumption data per tonne of coarse and fine aggregates instead.

Product composition

Content declaration (% by weight)

TABLE 2. VIC REGION PRODUCT COMPOSITIONS

Constituent (% by weight)	NORMAL CLASS GP BLEND	NORMAL CLASS GP / FA BLEND	NORMAL CLASS GP / GGBFS BLEND	ENVIROCRETE®
General purpose cement	9–19%	8–18%	8–17%	6–18%
Ground granulated blast furnace slag	–	–	1–4%	0–13%
Fly ash	–	2–5%	–	0–13%
Silica fume	-	-	-	–
Coarse aggregate	40–50%	40–50%	40–50%	40–50%
Manufactured sand	0–20%	0–20%	0–7%	0–20%
Natural sand	22–41%	21–38%	21–41%	22–41%
Admixtures	<0.2%	<0.2%	<0.2%	<0.2%
Water	7–9%	6–9%	6–9%	6–9%

TABLE 3. VIC REGION PRODUCT COMPOSITION (CONTINUED)

Constituent (% m/m)	ENVIROCRETE® PLUS*	ENVISIA®	VicRoads	SPECIAL
General purpose cement	6–11%	4–11%	7–16%	2–19%
Ground granulated blast furnace slag	5–9%	6–12%	0–11%	0–12%
Fly ash	-	-	0–5%	-
Silica fume	-	-	0–2%	0–2%
Coarse aggregate	40–50%	35–50%	30–50%	0–95%
Manufactured sand	0–20%	0–20%	-	0–41%
Natural sand	22–40%	22–40%	25–44%	0–84%
Admixtures	<0.4%	<0.8%	<0.4%	<0.3%
Water	6–8%	6–8%	7–9%	2–13%

*May include Zep® technology.

The products as supplied are non-hazardous. The products included in this EPD do not contain any substances of very high concern as defined by European REACH regulation in concentrations >0.1% (m/m).

Pre-mix concrete is supplied in bulk; packaging materials are not relevant for the products contained in this EPD.

Boral's pre-mix concrete does not contain any biogenic carbon.

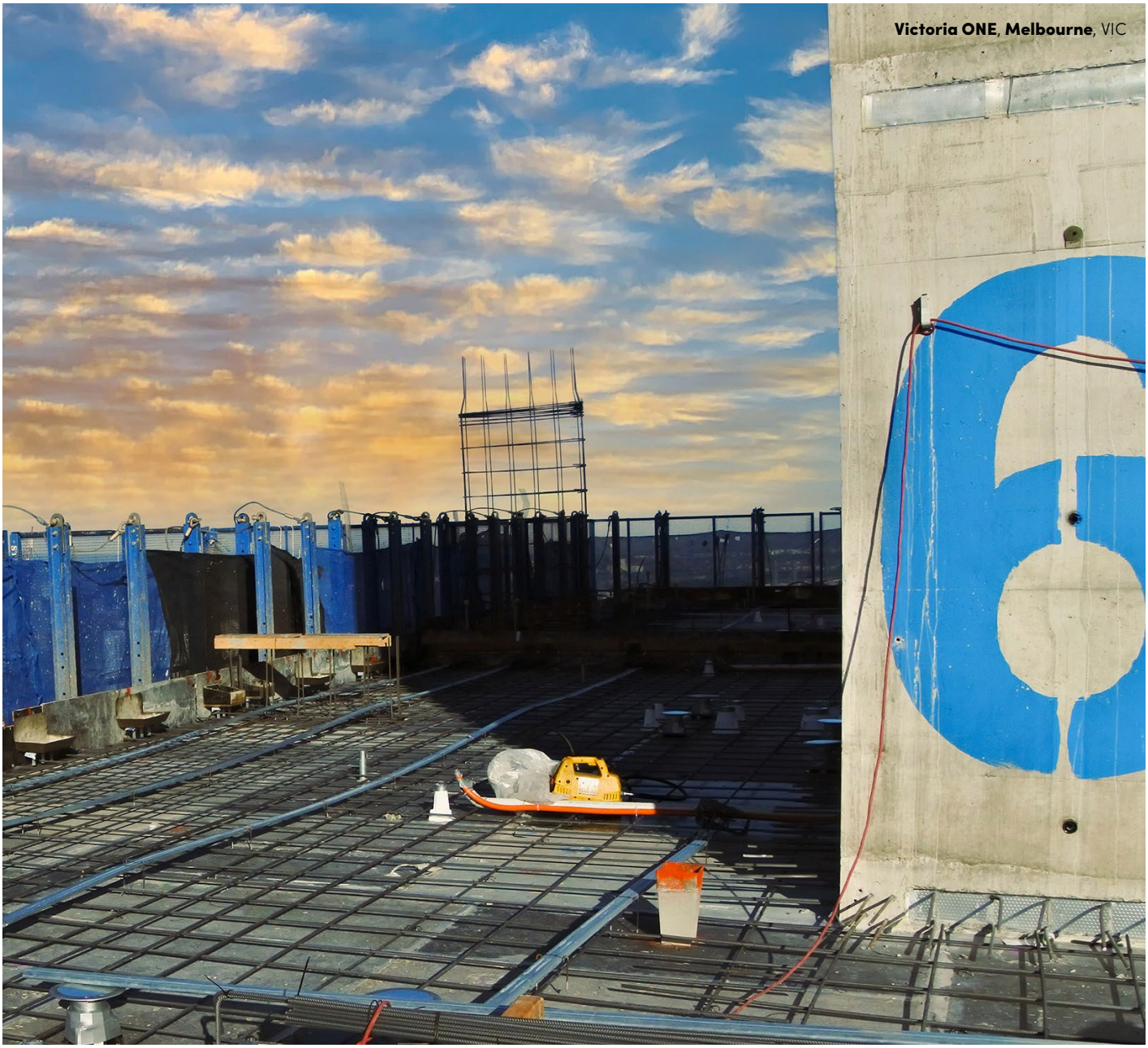
Declared unit

The background LCA serves as the foundation for this EPD. An LCA analyses the environmental processes in the value chain of a product. It provides a comprehensive evaluation of all upstream (and some downstream) material and energy inputs and outputs. The results are provided for a range of environmental impact categories, in line with EN 15804+A2.

Pre-mix concrete is available in various strength grades and with characteristics that are specifically designed for each application. The declared unit that covers all of the products is: **One cubic metre (m^3) of pre-mix concrete (as ordered by client) with a given strength grade and identifying characteristics.** This declared unit has been adapted from the C-PCR (Environdec 2020b).

All results are presented per declared unit and cover the A1-A3 life cycle stages (cradle-to-gate).

The product code for pre-mix concrete is UN CPC 375 (articles of concrete, cement and plaster) and ANZSIC 20330 (Concrete – ready mixed – except dry mix).



Victoria ONE, Melbourne, VIC

Environmental indicators

TABLE 4. CORE IMPACT CATEGORIES INCLUDED IN THIS ASSESSMENT

Impact category	Acronym	Unit
Global warming potential	**GWP**	kg CO_2 equivalents
Depletion potential of the stratospheric ozone layer	**ODP**	kg CFC-11 equivalents
Acidification potential of soil and water	**AP**	kg SO_2 equivalents
Eutrophication potential	**EP**	kg PO_4^{3-} equivalents
Photochemical ozone creation potential	**POCP**	kg C_2H_4 equivalents
Abiotic depletion potential for mineral elements*	**ADPE**	kg Sb equivalents
Abiotic depletion potential for fossil fuels*	**ADPF**	MJ

* 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 5. PARAMETERS DESCRIBING RESOURCE USE, WASTE AND OUTPUT FLOWS

Resource use	Acronym	Unit
Use of renewable primary energy excluding renewable primary energy resources used as raw materials	**PERE**	MJ_{NCV}
Use of renewable primary energy resources used as raw materials	**PERM**	MJ_{NCV}
Total use of renewable primary energy resources	**PERT**	MJ_{NCV}
Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials	**PENRE**	MJ_{NCV}
Use of non-renewable primary energy resources used as raw materials	**PENRM**	MJ_{NCV}
Total use of non-renewable primary energy resources	**PENRT**	MJ_{NCV}
Use of secondary material	**SM**	kg
Use of renewable secondary fuels	**RSF**	MJ_{NCV}
Use of non-renewable secondary fuels	**NRSF**	MJ_{NCV}
Use of net fresh water	**FW**	m^3
Waste categories		
Hazardous waste disposed	**HWD**	kg
Non-hazardous waste disposed	**NHWD**	kg
Radioactive waste disposed	**RWD**	kg
Output flows		
Components for re-use	**CRU**	kg
Materials for recycling	**MFR**	kg
Materials for energy recovery	**MER**	kg
Exported energy	**EE**	MJ

Environmental profiles

The cradle-to-gate (module A1-A3) environmental profiles and environmental parameters of each product group are expressed per m³ of pre-mix concrete (volume as ordered by the client).

Changes from the previous EPD

The results for the Victoria region in this EPD can vary from the results in our previously published Victoria Region Pre-mix Concrete EPD (S-P-02341). These changes are due to changes in our mix designs from the time of providing Victoria Region Pre-mix Concrete EPD mix designs until the current EPD, the content of many of the mixes has changes (in particular the portland cement in the ENVISIA® products has been reduced).

Limitations

The results of this study and the EPD are valid for Boral products only. Products from other manufacturers will likely have different impacts due to differences in mix designs, supply chains and manufacturing processes. The main limitations of the LCA results are found in the parameter results, which are highly dependent on background data.

The environmental parameters are based on the life cycle inventory.
There is some ambiguity around their presentation, and issues to note include:

- hazardous waste disposal (HWD) is derived from background LCI data.
- non-hazardous waste disposal (NHWD) is derived from background LCI data.
- radioactive waste disposal (RWD) is derived from background LCI data. Radioactive waste is only coming through the EPD data for admixtures, unless the life cycle contains clinker manufactured overseas.

Variation (A1-A3) per impact category

The results of the LCA are based on data from one representative plant for each of the regions. The environmental profiles of concrete manufactured at other plants in the same region are largely similar, with variations mainly due to differences in transport distances for raw materials supplied to the concrete plant. The largest variation for the concrete mixes* is found in 20 MPa ENVISIA®, as this is the concrete product with the smallest footprint and the largest contribution from transport. The variation across included sites for other concrete products is considerably lower, and most mandatory indicators stay well within the ±10% range as required by the PCR (Environdec 2020a). We have analysed the maximum variation (caused by differences in transport) for each region:

Melbourne Metropolitan region

The impact categories for plants and mixes within the Melbourne Metropolitan region vary from the reported values by up to 7% for GWP, 33% for ODP, 11% for AP, 12% for EP, 12% for POCP, 1% for ADPE, and 13% for ADPF.

Melbourne South-East Metropolitan region

The variations for all concrete mixes and plants covered in the Melbourne South-East Metropolitan region stay within ±10% of the reported values for Clayton.

Geelong / Bellarine region

The impact categories for plants and mixes within the Geelong/Bellarine region vary from the reported values by up to 14% for GWP, 92% for ODP, 23% for AP, 28% for EP, 25% for POCP, 2% for ADPE, and 28% for ADPF.

Ballarat / Goldfields region

The variations for all concrete mixes and plants covered in the Ballarat / Goldfields region stay within ±10% of the reported values for Ballarat.

Loddon / Goldfields region

Bendigo is the only plant in this region, and therefore variation due to grouping is not relevant.

Goulburn / Central Murray region

The impact categories for plants and mixes within the Goulburn/Central Murray region vary from the reported values by up to 24% for GWP, 108% for ODP, 35% for AP, 41% for EP, 41% for POCP, 3% for ADPE, and 43% for ADPF.

Mallee / Murray North region

The impacts at the modelled plant (Mildura) are more conservative than for the regional plant (Swan Hill), due to further transport of raw materials. The impacts in Swan Hill can be significantly lower than the stated values, by up to 12% for GWP change, 30% for ODP, 12% for AP, 16% for EP, 16% for POCP, 1% for ADPE, and 17% for ADPF.

Murray East / Hume region

Wodonga is the only plant in this region, and therefore variation due to grouping is not relevant.

*The variation for stabilised sand and no fines products is much more dependent on transport of aggregates and exceeds 10% in most cases. Specific data should be sought from Boral if these mixes are important for your footprint and are sourced from plants other than the representative plant that has been modelled.

Melbourne Metropolitan region

Environmental profiles and parameters

Product table list

Melbourne Metropolitan region

In each region, we start with presenting a summary of the cradle-to-gate carbon footprint (GWP summary) of our concrete mixes.

Cradle-to-gate GWP-GHG summary (kg CO_2 eq/m^3)

Melbourne Metropolitan region

ENVISIA® 20MPa	ENVISIA® 25MPa	ENVISIA® 32MPa	ENVISIA® 40MPa	ENVISIA® 50MPa	ENVISIA® 65MPa	
212	230	264	318	378	382	
ENVIROCRETE® PLUS 20MPa	ENVIROCRETE® PLUS 25MPa	ENVIROCRETE® PLUS 32MPa	ENVIROCRETE® PLUS 40MPa	ENVIROCRETE® PLUS 50MPa		
224	244	276	324	402		
ENVIROCRETE® 40% 20MPa	ENVIROCRETE® 40% 25MPa	ENVIROCRETE® 40% 32MPa	ENVIROCRETE® 40% 40MPa	ENVIROCRETE® 40% 50MPa		
224	245	277	332	410		
ENVIROCRETE® 30% 20MPa	ENVIROCRETE® 30% 25MPa	ENVIROCRETE® 30% 32MPa	ENVIROCRETE® 30% 40MPa	ENVIROCRETE® 30% 50MPa		
249	273	311	373	459		
ENVIROCRETE® 20MPa - 40% SCM	ENVIROCRETE® 25MPa - 40% SCM	ENVIROCRETE® 32MPa - 65% SCM	ENVIROCRETE® TUNNEL BACKFILL	ENVIROCRETE® TUNNEL BACKFILL EXT PUMP		
198	225	190	95	140		
ENVIROCRETE® KERB MACHINE 320KG/M^3	ENVIROCRETE® KERB MACHINE 280KG/M^3	ENVIROCRETE® VR450 14MM DWALL	ENVIROCRETE® VR400 14MM IN SITU TUNNEL LINING	ENVIROCRETE® VR450 14MM IN SITU TUNNEL LINING		
204	228	315	319	356		
NORMAL CLASS GP BLEND 20MPa	NORMAL CLASS GP BLEND 25MPa	NORMAL CLASS GP BLEND 32MPa	NORMAL CLASS GP BLEND 40MPa	NORMAL CLASS GP BLEND 50MPa		
264	299	325	386	489		
NORMAL CLASS GP/FA BLEND 20MPa	NORMAL CLASS GP/FA BLEND 25MPa	NORMAL CLASS GP/FA BLEND 32MPa	NORMAL CLASS GP/FA BLEND 40MPa	NORMAL CLASS GP/FA BLEND 50MPa		
250	268	297	359	467		
VR330 32MPa 20MM GP/FA	VR330 32MPa 20MM GP/SLAG	VR400 40MPa 14MM TREMIE GP/SLAG	VR400 40MPa 14MM TREMIE/CFA GP/SLAG	VR400 40MPa 20MM GP/FA	VR400 40MPa 20MM GP/SLAG	
311	243	281	322	360	281	
VR400 40MPa 7MM SHOTCRETE	VR450 50MPa 20MM GP/FA	VR450 50MPa 20MM GP/SLAG	VR450 50MPa 14MM TREMIE GP/SLAG	VR450 50MPa 14MM TREMIE/CFA GP/SLAG		
426	412	311	311	335		
HIGH SLUMP 20MPa	HIGH SLUMP 25MPa	HIGH SLUMP 32MPa	HIGH SLUMP 40MPa	HIGH SLUMP 50MPa	HIGH SLUMP 65MPa	HIGH SLUMP 80MPa
249	280	302	345	453	476	504
TREMIE 40MPa	TREMIE 50MPa	POST TENSIONED 40MPa 22@3	POST TENSIONED 40MPa 22@4	SHOTCRETE 32MPa	SHOTCRETE 40MPa	
314	394	403	388	425	445	
STABILISED SAND 3%	STABILISED SAND 5%	KERB MACHINE 320KG/M^3	KERB MACHINE 280KG/M^3	NO FINES 4%		
81	111	256.0	287.0	81		
FIBRE STEEL 32MPa	FIBRE STEEL 40MPa	FIBRE STEEL 50MPa	HIGH PERFORMANCE 32MPa	HIGH PERFORMANCE 40MPa	HIGH PERFORMANCE 50MPa	
379	442	467	331	394	418	
LOW HEAT 32MPa	LOW HEAT 40MPa	LOW HEAT 50MPa	SUPER WORK 40MPa 14mm 650SPR	SUPER WORK 50MPa 14mm 650SPR	SUPER WORK 65MPa 14mm 650SPR	SUPER WORK 80MPa 14mm 650SPR
191	214	245	303	326	386	436

Melbourne Metropolitan region

TABLE 1. ENVIRONMENTAL PROFILES (A1-A3), LOWER CARBON CONCRETE, MELBOURNE METROPOLITAN (VIC), PER M^3

Indicator	Unit	ENVISIA® 20 MPa	ENVISIA® 25 MPa	ENVISIA® 32 MPa	ENVISIA® 40 MPa	ENVISIA® 50 MPa	ENVISIA® 65 MPa
GWP	**kg CO_2 eq**	**212**	**230**	**264**	**318**	**378**	**382**
ODP	kg CFC-11 eq	6.07E-06	6.35E-06	6.91E-06	7.75E-06	8.19E-06	8.38E-06
AP	kg SO_2 eq	0.958	1.03	1.19	1.42	1.60	1.63
EP	kg PO4--- eq	0.124	0.134	0.151	0.179	0.204	0.207
POCP	kg C_2H_4 eq	0.0440	0.0469	0.0531	0.0624	0.0697	0.0711
ADPE	kg Sb eq	2.52E-06	2.72E-06	3.09E-06	4.91E-06	6.27E-06	7.42E-06
ADPF	MJ	1770	1870	2150	2560	2920	2990

TABLE 2. ENVIRONMENTAL PARAMETERS (A1-A3), LOWER CARBON CONCRETE, MELBOURNE METROPOLITAN (VIC), PER M^3

Parameter	Unit	ENVISIA® 20 MPa	ENVISIA® 25 MPa	ENVISIA® 32 MPa	ENVISIA® 40 MPa	ENVISIA® 50 MPa	ENVISIA® 65 MPa
PERE	MJ_{NCV}	2.08E+01	2.08E+01	2.54E+01	3.15E+01	3.63E+01	3.81E+01
PERM	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ_{NCV}	2.08E+01	2.08E+01	2.54E+01	3.15E+01	3.63E+01	3.81E+01
PENRE	MJ_{NCV}	1.79E+03	1.90E+03	2.18E+03	2.60E+03	2.95E+03	3.02E+03
PENRM	MJ_{NCV}	4.81E+00	5.57E+00	6.12E+00	1.29E+01	1.78E+01	2.29E+01
PENRT	MJ_{NCV}	1.80E+03	1.91E+03	2.19E+03	2.61E+03	2.97E+03	3.04E+03
SM	kg	1.51E+02	1.75E+02	1.96E+02	2.39E+02	2.39E+02	2.50E+02
RSF	MJ_{NCV}	8.00E+00	8.88E+00	1.03E+01	1.26E+01	1.58E+01	1.58E+01
NRSF	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	3.97E+00	3.97E+00	4.17E+00	4.37E+00	4.51E+00	4.40E+00
HWD	kg	5.16E-06	5.98E-06	6.56E-06	1.38E-05	1.91E-05	2.46E-05
NHWD	kg	6.97E-02	7.67E-02	8.58E-02	1.31E-01	1.65E-01	1.92E-01
RWD	kg	8.98E-04	1.04E-03	1.14E-03	2.41E-03	3.33E-03	4.29E-03
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Melbourne Metropolitan region

TABLE 3. ENVIRONMENTAL PROFILES (A1-A3), LOWER CARBON CONCRETE, MELBOURNE METROPOLITAN (VIC), PER M^3

Indicator	Unit	ENVIROCRETE® PLUS 20 MPa	ENVIROCRETE® PLUS 25 MPa	ENVIROCRETE® PLUS 32 MPa	ENVIROCRETE® PLUS 40 MPa	ENVIROCRETE® PLUS 50 MPa
GWP	**kg CO_2 eq**	**224**	**244**	**276**	**324**	**402**
ODP	kg CFC-11 eq	5.97E-06	6.13E-06	6.50E-06	6.93E-06	8.59E-06
AP	kg SO_2 eq	0.956	1.02	1.12	1.28	1.62
EP	kg PO4--- eq	0.127	0.136	0.150	0.171	0.213
POCP	kg C_2H_4 eq	0.0441	0.0468	0.0513	0.0576	0.0719
ADPE	kg Sb eq	2.58E-06	3.23E-06	4.06E-06	4.76E-06	5.67E-06
ADPF	MJ	1800	1930	2140	2430	3020

TABLE 4. ENVIRONMENTAL PARAMETERS (A1-A3), LOWER CARBON CONCRETE, MELBOURNE METROPOLITAN (VIC), PER M^3

Parameter	Unit	ENVIROCRETE® PLUS 20 MPa	ENVIROCRETE® PLUS 25 MPa	ENVIROCRETE® PLUS 32 MPa	ENVIROCRETE® PLUS 40 MPa	ENVIROCRETE® PLUS 50 MPa
PERE	MJ_{NCV}	2.09E+01	2.28E+01	2.56E+01	2.91E+01	3.52E+01
PERM	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ_{NCV}	2.09E+01	2.28E+01	2.56E+01	2.91E+01	3.52E+01
PENRE	MJ_{NCV}	1.82E+03	1.95E+03	2.16E+03	2.45E+03	3.05E+03
PENRM	MJ_{NCV}	4.81E+00	7.38E+00	1.04E+01	1.26E+01	1.53E+01
PENRT	MJ_{NCV}	1.83E+03	1.96E+03	2.17E+03	2.47E+03	3.06E+03
SM	kg	1.35E+02	1.40E+02	1.46E+02	1.56E+02	2.08E+02
RSF	MJ_{NCV}	8.82E+00	9.81E+00	1.14E+01	1.39E+01	1.73E+01
NRSF	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	4.04E+00	4.05E+00	4.22E+00	4.33E+00	4.61E+00
HWD	kg	5.24E-06	7.95E-06	1.12E-05	1.35E-05	1.64E-05
NHWD	kg	7.13E-02	8.74E-02	1.08E-01	1.26E-01	1.51E-01
RWD	kg	9.09E-04	1.38E-03	1.94E-03	2.35E-03	2.86E-03
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Melbourne Metropolitan region

TABLE 5. ENVIRONMENTAL PROFILES (A1-A3), LOWER CARBON CONCRETE, MELBOURNE METROPOLITAN (VIC), PER M^3

Indicator	Unit	ENVIROCRETE® 40% 20MPa	ENVIROCRETE® 40% 25MPa	ENVIROCRETE® 40% 32MPa	ENVIROCRETE® 40% 40MPa	ENVIROCRETE® 40% 50MPa
GWP	**kg CO_2 eq**	**224**	**245**	**277**	**332**	**410**
ODP	kg CFC-11 eq	5.22E-06	5.43E-06	5.80E-06	6.35E-06	7.70E-06
AP	kg SO_2 eq	0.820	0.894	0.997	1.18	1.46
EP	kg PO4--- eq	0.118	0.128	0.142	0.167	0.204
POCP	kg C_2H_4 eq	0.0395	0.0425	0.0468	0.0544	0.0665
ADPE	kg Sb eq	2.48E-06	3.15E-06	2.86E-06	4.09E-06	4.33E-06
ADPF	MJ	1670	1810	2000	2350	2860

TABLE 6. ENVIRONMENTAL PARAMETERS (A1-A3), LOWER CARBON CONCRETE, MELBOURNE METROPOLITAN (VIC), PER M^3

Parameter	Unit	ENVIROCRETE® 40% 20MPa	ENVIROCRETE® 40% 25MPa	ENVIROCRETE® 40% 32MPa	ENVIROCRETE® 40% 40MPa	ENVIROCRETE® 40% 50MPa
PERE	MJ_{NCV}	1.85E+01	2.05E+01	2.19E+01	2.64E+01	3.06E+01
PERM	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ_{NCV}	1.85E+01	2.05E+01	2.19E+01	2.64E+01	3.06E+01
PENRE	MJ_{NCV}	1.67E+03	1.81E+03	2.01E+03	2.36E+03	2.88E+03
PENRM	MJ_{NCV}	4.81E+00	7.38E+00	5.46E+00	9.84E+00	9.84E+00
PENRT	MJ_{NCV}	1.68E+03	1.82E+03	2.01E+03	2.37E+03	2.89E+03
SM	kg	6.45E+01	7.28E+01	7.70E+01	9.36E+01	1.15E+02
RSF	MJ_{NCV}	9.65E+00	1.07E+01	1.24E+01	1.51E+01	1.89E+01
NRSF	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	3.98E+00	4.00E+00	4.16E+00	4.31E+00	4.54E+00
HWD	kg	5.24E-06	7.95E-06	5.89E-06	1.05E-05	1.05E-05
NHWD	kg	6.75E-02	8.36E-02	7.83E-02	1.09E-01	1.18E-01
RWD	kg	9.09E-04	1.38E-03	1.03E-03	1.84E-03	1.84E-03
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

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TABLE 7. ENVIRONMENTAL PROFILES (A1-A3), LOWER CARBON CONCRETE FOR SPECIAL APPLICATIONS, MELBOURNE METRO (VIC), PER M^3

Indicator	Unit	ENVIROCRETE® 30% 20MPa	ENVIROCRETE® 30% 25MPa	ENVIROCRETE® 30% 32MPa	ENVIROCRETE® 30% 40MPa	ENVIROCRETE® 30% 50MPa
GWP	**kg CO_2 eq**	**249**	**273**	**311**	**373**	**459**
ODP	kg CFC-11 eq	5.19E-06	5.39E-06	5.84E-06	6.37E-06	7.62E-06
AP	kg SO_2 eq	0.844	0.920	1.04	1.24	1.50
EP	kg PO4--- eq	0.126	0.136	0.153	0.180	0.218
POCP	kg C_2H_4 eq	0.0410	0.0441	0.0493	0.0573	0.0693
ADPE	kg Sb eq	2.57E-06	3.24E-06	2.98E-06	4.24E-06	4.50E-06
ADPF	MJ	1770	1920	2150	2530	3060

TABLE 8. ENVIRONMENTAL PARAMETERS (A1-A3), LOWER CARBON CONCRETE FOR SPECIAL APPLICATIONS, MELBOURNE METRO (VIC), PER M^3

Parameter	Unit	ENVIROCRETE® 30% 20MPa	ENVIROCRETE® 30% 25MPa	ENVIROCRETE® 30% 32MPa	ENVIROCRETE® 30% 40MPa	ENVIROCRETE® 30% 50MPa
PERE	MJ_{NCV}	1.96E+01	2.17E+01	2.34E+01	2.82E+01	3.26E+01
PERM	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ_{NCV}	1.96E+01	2.17E+01	2.34E+01	2.82E+01	3.26E+01
PENRE	MJ_{NCV}	1.77E+03	1.92E+03	2.15E+03	2.53E+03	3.06E+03
PENRM	MJ_{NCV}	4.81E+00	7.38E+00	5.46E+00	9.84E+00	9.84E+00
PENRT	MJ_{NCV}	1.78E+03	1.93E+03	2.16E+03	2.54E+03	3.07E+03
SM	kg	3.64E+01	4.16E+01	4.68E+01	5.41E+01	5.72E+01
RSF	MJ_{NCV}	1.12E+01	1.24E+01	1.45E+01	1.77E+01	2.21E+01
NRSF	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	4.07E+00	4.10E+00	4.29E+00	4.47E+00	4.73E+00
HWD	kg	5.24E-06	7.95E-06	5.89E-06	1.05E-05	1.05E-05
NHWD	kg	7.13E-02	8.77E-02	8.33E-02	1.15E-01	1.25E-01
RWD	kg	9.09E-04	1.38E-03	1.03E-03	1.84E-03	1.84E-03
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

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TABLE 9. ENVIRONMENTAL PROFILES (A1-A3), NORMAL CLASS CONCRETE, MELBOURNE METROPOLITAN (VIC), PER M^3

Indicator	Unit	ENVIROCRETE® 20MPa - 40% SCM	ENVIROCRETE® 25MPa - 40% SCM	ENVIROCRETE® 32MPa - 65% SCM	ENVIROCRETE® TUNNEL BACKFILL	ENVIROCRETE® TUNNEL BACKFILL EXT PUMP
GWP	**kg CO_2 eq**	**198**	**225**	**190**	**95.1**	**140**
ODP	kg CFC-11 eq	5.36E-06	5.70E-06	6.21E-06	4.23E-06	5.25E-06
AP	kg SO_2 eq	0.806	0.913	0.991	0.518	0.801
EP	kg PO4--- eq	0.112	0.125	0.121	0.0683	0.0968
POCP	kg C_2H_4 eq	0.0385	0.0427	0.0443	0.0258	0.0380
ADPE	kg Sb eq	2.50E-06	2.62E-06	3.99E-06	4.90E-06	2.81E-05
ADPF	MJ	1570	1750	1720	1020	1520

TABLE 10. ENVIRONMENTAL PARAMETERS (A1-A3), NORMAL CLASS CONCRETE, MELBOURNE METROPOLITAN (VIC), PER M^3

Parameter	Unit	ENVIROCRETE® 20MPa - 40% SCM	ENVIROCRETE® 25MPa - 40% SCM	ENVIROCRETE® 32MPa - 65% SCM	ENVIROCRETE® TUNNEL BACKFILL	ENVIROCRETE® TUNNEL BACKFILL EXT PUMP
PERE	MJ_{NCV}	1.74E+01	1.92E+01	2.05E+01	1.62E+01	3.60E+01
PERM	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.40E-01
PERT	MJ_{NCV}	1.74E+01	1.92E+01	2.05E+01	1.62E+01	3.62E+01
PENRE	MJ_{NCV}	1.59E+03	1.77E+03	1.76E+03	1.04E+03	1.54E+03
PENRM	MJ_{NCV}	5.46E+00	5.46E+00	1.18E+01	1.64E+01	3.42E+01
PENRT	MJ_{NCV}	1.59E+03	1.77E+03	1.77E+03	1.05E+03	1.58E+03
SM	kg	9.98E+01	1.16E+02	2.24E+02	1.14E+02	1.98E+02
RSF	MJ_{NCV}	7.89E+00	9.21E+00	6.30E+00	2.19E+00	3.29E+00
NRSF	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	3.84E+00	3.90E+00	3.70E+00	2.93E+00	3.06E+00
HW	kg	5.90E-06	5.90E-06	1.27E-05	2.07E-05	8.08E-05
NHW	kg	6.51E-02	6.89E-02	9.68E-02	1.35E-01	4.92E+00
RW	kg	1.03E-03	1.03E-03	2.20E-03	3.52E-03	1.06E-02
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

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TABLE 11. ENVIRONMENTAL PROFILES (A1-A3), NORMAL CLASS CONCRETE, MELBOURNE METROPOLITAN (VIC), PER M^3

Indicator	Unit	ENVIROCRETE® KERB MACHINE 320KG/M3	ENVIROCRETE® KERB MACHINE 280KG/M3	ENVIROCRETE® VR450 14MM DWALL	ENVIROCRETE® VR450 14MM IN SITU TUNNEL LINING	ENVIROCRETE® VR400 14MM IN SITU TUNNEL LINING
GWP	**kg CO_2 eq**	**204**	**228**	**315**	**356**	**319**
ODP	kg CFC-11 eq	6.06E-06	6.44E-06	5.43E-06	5.72E-06	6.64E-06
AP	kg SO_2 eq	0.908	1.01	0.978	1.10	1.20
EP	kg PO4--- eq	0.121	0.133	0.150	0.167	0.166
POCP	kg C_2H_4 eq	0.0422	0.0463	0.0477	0.0526	0.0552
ADPE	kg Sb eq	2.93E-06	3.05E-06	1.35E-05	1.49E-05	7.93E-06
ADPF	MJ	1690	1860	2160	2400	2390

TABLE 12. ENVIRONMENTAL PARAMETERS (A1-A3), NORMAL CLASS CONCRETE, MELBOURNE METROPOLITAN (VIC), PER M^3

Parameter	Unit	ENVIROCRETE® KERB MACHINE 320KG/M3	ENVIROCRETE® KERB MACHINE 280KG/M3	ENVIROCRETE® VR450 14MM DWALL	ENVIROCRETE® VR450 14MM IN SITU TUNNEL LINING	ENVIROCRETE® VR400 14MM IN SITU TUNNEL LINING
PERE	MJ_{NCV}	1.94E+01	2.10E+01	2.93E+01	3.20E+01	3.12E+01
PERM	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ_{NCV}	1.94E+01	2.10E+01	2.93E+01	3.20E+01	3.12E+01
PENRE	MJ_{NCV}	1.72E+03	1.89E+03	2.15E+03	2.38E+03	2.40E+03
PENRM	MJ_{NCV}	7.10E+00	7.10E+00	1.80E+01	1.80E+01	2.73E+01
PENRT	MJ_{NCV}	1.72E+03	1.89E+03	2.17E+03	2.40E+03	2.43E+03
SM	kg	1.46E+02	1.66E+02	0.00E+00	0.00E+00	1.30E+02
RSF	MJ_{NCV}	7.67E+00	8.77E+00	1.48E+01	1.70E+01	1.37E+01
NRSF	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	3.76E+00	3.83E+00	4.03E+00	4.13E+00	3.94E+00
HWD	kg	7.66E-06	7.66E-06	2.66E-05	2.78E-05	2.93E-05
NHWD	kg	8.09E-02	8.42E-02	2.33E+00	2.70E+00	2.01E-01
RWD	kg	1.33E-03	1.33E-03	5.06E-03	5.34E-03	5.10E-03
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

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TABLE 13. ENVIRONMENTAL PROFILES (A1-A3), NORMAL CLASS CONCRETE, MELBOURNE METROPOLITAN (VIC), PER M^3

Indicator	Unit	NORMAL CLASS GP BLEND 20MPa	NORMAL CLASS GP BLEND 25MPa	NORMAL CLASS GP BLEND 32MPa	NORMAL CLASS GP BLEND 40MPa	NORMAL CLASS GP BLEND 50MPa
GWP	**kg CO_2 eq**	**264**	**299**	**325**	**386**	**489**
ODP	kg CFC-11 eq	5.03E-06	5.32E-06	5.50E-06	5.99E-06	6.87E-06
AP	kg SO_2 eq	0.824	0.928	1.00	1.18	1.48
EP	kg PO4--- eq	0.128	0.143	0.153	0.179	0.222
POCP	kg C_2H_4 eq	0.0408	0.0452	0.0482	0.0557	0.0684
ADPE	kg Sb eq	2.75E-06	3.12E-06	3.36E-06	3.99E-06	4.92E-06
ADPF	MJ	1800	2010	2160	2520	3120

TABLE 14. ENVIRONMENTAL PARAMETERS (A1-A3), NORMAL CLASS CONCRETE, MELBOURNE METROPOLITAN (VIC), PER M^3

Parameter	Unit	NORMAL CLASS GP BLEND 20MPa	NORMAL CLASS GP BLEND 25MPa	NORMAL CLASS GP BLEND 32MPa	NORMAL CLASS GP BLEND 40MPa	NORMAL CLASS GP BLEND 50MPa
PERE	MJ_{NCV}	1.99E+01	2.22E+01	2.38E+01	2.77E+01	3.41E+01
PERM	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ_{NCV}	1.99E+01	2.22E+01	2.38E+01	2.77E+01	3.41E+01
PENRE	MJ_{NCV}	1.80E+03	2.01E+03	2.15E+03	2.51E+03	3.11E+03
PENRM	MJ_{NCV}	5.57E+00	6.56E+00	7.10E+00	8.74E+00	1.09E+01
PENRT	MJ_{NCV}	1.80E+03	2.01E+03	2.16E+03	2.52E+03	3.12E+03
SM	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	MJ_{NCV}	1.23E+01	1.43E+01	1.56E+01	1.89E+01	2.44E+01
NRSF	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	4.07E+00	4.20E+00	4.26E+00	4.47E+00	4.83E+00
HWD	kg	6.02E-06	7.07E-06	7.66E-06	9.38E-06	1.17E-05
NHWD	kg	7.61E-02	8.65E-02	9.31E-02	1.10E-01	1.36E-01
RWD	kg	1.05E-03	1.23E-03	1.33E-03	1.63E-03	2.04E-03
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

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TABLE 15. ENVIRONMENTAL PROFILES (A1-A3), CONCRETE FOR VICROADS APPLICATIONS, MELBOURNE METROPOLITAN (VIC), PER M^3

Indicator	Unit	NORMAL CLASS GP/FA BLEND 20MPa	NORMAL CLASS GP/FA BLEND 25MPa	NORMAL CLASS GP/FA BLEND 32MPa	NORMAL CLASS GP/FA BLEND 40MPa	NORMAL CLASS GP/FA BLEND 50MPa
GWP	**kg CO_2 eq**	**250**	**268**	**297**	**359**	**467**
ODP	kg CFC-11 eq	5.71E-06	6.16E-06	6.40E-06	7.03E-06	8.06E-06
AP	kg SO_2 eq	0.798	0.855	0.939	1.12	1.44
EP	kg PO4--- eq	0.126	0.135	0.147	0.173	0.219
POCP	kg C_2H_4 eq	0.0404	0.0431	0.0467	0.0544	0.0679
ADPE	kg Sb eq	2.66E-06	2.96E-06	3.45E-06	4.08E-06	5.16E-06
ADPF	MJ	1780	1910	2080	2450	3090

TABLE 16. ENVIRONMENTAL PARAMETERS (A1-A3), CONCRETE FOR VICROADS APPLICATIONS, MELBOURNE METROPOLITAN (VIC), PER M^3

Parameter	Unit	NORMAL CLASS GP/FA BLEND 20MPa	NORMAL CLASS GP/FA BLEND 25MPa	NORMAL CLASS GP/FA BLEND 32MPa	NORMAL CLASS GP/FA BLEND 40MPa	NORMAL CLASS GP/FA BLEND 50MPa
PERE	MJ_{NCV}	1.88E+01	2.00E+01	2.21E+01	2.60E+01	3.28E+01
PERM	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ_{NCV}	1.88E+01	2.00E+01	2.21E+01	2.60E+01	3.28E+01
PENRE	MJ_{NCV}	1.77E+03	1.90E+03	2.07E+03	2.44E+03	3.08E+03
PENRM	MJ_{NCV}	5.57E+00	6.56E+00	8.20E+00	9.84E+00	1.26E+01
PENRT	MJ_{NCV}	1.78E+03	1.91E+03	2.08E+03	2.45E+03	3.10E+03
SM	kg	5.72E+01	8.32E+01	8.32E+01	9.36E+01	1.04E+02
RSF	MJ_{NCV}	1.12E+01	1.21E+01	1.36E+01	1.68E+01	2.26E+01
NRSF	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	3.98E+00	4.00E+00	4.10E+00	4.28E+00	4.62E+00
HWD	kg	6.02E-06	7.07E-06	8.83E-06	1.05E-05	1.35E-05
NHWD	kg	7.34E-02	8.10E-02	9.38E-02	1.11E-01	1.41E-01
RWD	kg	1.05E-03	1.23E-03	1.54E-03	1.84E-03	2.35E-03
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

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TABLE 17. ENVIRONMENTAL PROFILES (A1-A3), CONCRETE FOR VICROADS APPLICATIONS, MELBOURNE METROPOLITAN (VIC), PER M^3

Indicator	Unit	VR330 32MPa 20MM GP/FA	VR330 32MPa 20MM GP/ SLAG	VR400 40MPa 20MM GP/FA	VR400 40MPa 20MM GP/SLAG	VR400 40MPa 14MM TREMIE GP/SLAG	VR400 40MPa 14MM TREMIE/ CFA GP/SLAG
GWP	**kg CO_2 eq**	**311**	**243**	**281**	**322**	**360**	**281**
ODP	kg CFC11 eq	7.11E-06	6.87E-06	7.55E-06	8.08E-06	8.00E-06	7.72E-06
AP	kg SO_2 eq	1.01	1.10	1.27	1.41	1.17	1.27
EP	kg PO_4^{3-} eq	0.155	0.142	0.161	0.183	0.178	0.162
POCP	kg C_2H_4 eq	0.0513	0.0512	0.058	0.0638	0.0584	0.0583
ADPE	kg Sb eq	1.94E-05	1.93E-05	2.15E-05	1.34E-05	1.96E-05	1.94E-05
ADPF	MJ_{NCV}	2230	2020	2310	2630	2550	2300

TABLE 18. ENVIRONMENTAL PARAMETERS (A1-A3), CONCRETE FOR VICROADS APPLICATIONS, MELBOURNE METROPOLITAN (VIC), PER M^3

Indicator	Unit	VR330 32MPa 20MM GP/FA	VR330 32MPa 20MM GP/ SLAG	VR400 40MPa 20MM GP/FA	VR400 40MPa 20MM GP/SLAG	VR400 40MPa 14MM TREMIE GP/SLAG	VR400 40MPa 14MM TREMIE/ CFA GP/SLAG
PERE	MJ_{NCV}	2.70E+01	2.60E+01	3.07E+01	3.63E+01	2.96E+01	2.85E+01
PERM	MJ_{NCV}	2.89E-02	2.89E-02	7.21E-02	9.62E-02	2.89E-02	2.89E-02
PERT	MJ_{NCV}	2.70E+01	2.61E+01	3.08E+01	3.64E+01	2.97E+01	2.85E+01
PENRE	MJ_{NCV}	2.22E+03	2.05E+03	2.34E+03	2.66E+03	2.54E+03	2.34E+03
PENRM	MJ_{NCV}	2.14E+00	2.14E+00	5.35E+00	2.90E+01	2.14E+00	2.14E+00
PENRT	MJ_{NCV}	2.23E+03	2.05E+03	2.35E+03	2.69E+03	2.54E+03	2.34E+03
SM	kg	8.84E+01	1.77E+02	2.08E+02	2.39E+02	1.04E+02	2.08E+02
RSF	MJ_{NCV}	1.40E+01	9.32E+00	1.10E+01	1.26E+01	1.64E+01	1.10E+01
NRSF	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	4.17E+00	4.00E+00	4.05E+00	4.04E+00	4.35E+00	4.15E+00
HWD	kg	2.14E-05	2.14E-05	3.03E-05	4.52E-05	2.14E-05	2.14E-05
NHWD	kg	4.90E+00	4.89E+00	5.18E+00	1.39E+00	4.90E+00	4.89E+00
RWD	kg	4.16E-03	4.16E-03	4.98E-03	6.36E-03	4.16E-03	4.16E-03
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

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TABLE 19. ENVIRONMENTAL PROFILES (A1-A3), CONCRETE FOR SPECIAL APPLICATIONS, MELBOURNE METROPOLITAN (VIC), PER M^3

Indicator	Unit	VR400 40MPa 7MM SHOTCRETE	VR450 50MPa 20MM GP/FA	VR450 50MPa 20MM GP/SLAG	VR450 50MPa 14MM TREMIE GP/SLAG	VR450 50MPa 14MM TREMIE/ CFA GP/SLAG
GWP	**kg CO_2 eq**	**426**	**412**	**311**	**311**	**335**
ODP	kg CFC-11 eq	9.49E-06	8.51E-06	8.27E-06	8.10E-06	8.31E-06
AP	kg SO_2 eq	1.41	1.32	1.41	1.40	1.47
EP	kg PO4--- eq	0.210	0.2	0.178	0.177	0.19
POCP	kg C_2H_4 eq	0.0762	0.0649	0.0637	0.0634	0.0662
ADPE	kg Sb eq	2.04E-05	1.98E-05	1.96E-05	2.17E-05	1.41E-05
ADPF	MJ	2990	2850	2520	2530	2740

TABLE 20. ENVIRONMENTAL PARAMETERS (A1-A3), CONCRETE FOR SPECIAL APPLICATIONS, MELBOURNE METROPOLITAN (VIC), PER M^3

Parameter	Unit	VR400 40MPa 7MM SHOTCRETE	VR450 50MPa 20MM GP/FA	VR450 50MPa 20MM GP/SLAG	VR450 50MPa 14MM TREMIE GP/SLAG	VR450 50MPa 14MM TREMIE/ CFA GP/SLAG
PERE	MJ_{NCV}	9.92E+01	3.26E+01	3.06E+01	3.28E+01	3.80E+01
PERM	MJ_{NCV}	2.89E-02	2.89E-02	2.89E-02	7.21E-02	9.62E-02
PERT	MJ_{NCV}	9.93E+01	3.26E+01	3.06E+01	3.29E+01	3.81E+01
PENRE	MJ_{NCV}	3.02E+03	2.84E+03	2.56E+03	2.56E+03	2.77E+03
PENRM	MJ_{NCV}	2.14E+00	2.14E+00	2.14E+00	5.35E+00	3.17E+01
PENRT	MJ_{NCV}	3.02E+03	2.85E+03	2.56E+03	2.57E+03	2.80E+03
SM	kg	7.28E+01	1.04E+02	2.34E+02	2.34E+02	2.50E+02
RSF	MJ_{NCV}	1.81E+01	1.92E+01	1.23E+01	1.23E+01	1.32E+01
NRSF	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	2.75E+01	4.57E+00	4.30E+00	4.20E+00	4.10E+00
HWD	kg	2.14E-05	2.14E-05	2.14E-05	3.03E-05	4.81E-05
NHWD	kg	4.91E+00	4.91E+00	4.90E+00	5.18E+00	1.41E+00
RWD	kg	4.16E-03	4.16E-03	4.16E-03	4.98E-03	6.87E-03
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

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TABLE 21. ENVIRONMENTAL PROFILES (A1-A3), CONCRETE FOR SPECIAL APPLICATIONS, MELBOURNE METROPOLITAN (VIC), PER M^3

Indicator	Unit	HIGH SLUMP 20MPa	HIGH SLUMP 25MPa	HIGH SLUMP 32MPa	HIGH SLUMP 40MPa	HIGH SLUMP 50MPa	HIGH SLUMP 65MPa	HIGH SLUMP 80MPa
GWP	**kg CO_2 eq**	**249**	**280**	**302**	**345**	**453**	**476**	**504**
ODP	kg CFC-11 eq	5.23E-06	5.53E-06	5.75E-06	6.18E-06	7.36E-06	8.30E-06	9.97E-06
AP	kg SO_2 eq	0.846	0.946	1.02	1.16	1.52	1.72	2.04
EP	kg PO4--- eq	0.126	0.140	0.149	0.168	0.216	0.235	0.264
POCP	kg C_2H_4 eq	0.0412	0.0454	0.0483	0.0541	0.0692	0.0771	0.0891
ADPE	kg Sb eq	2.81E-06	3.27E-06	3.36E-06	3.86E-06	7.18E-06	1.37E-05	1.55E-05
ADPF	MJ	1770	1970	2100	2370	3050	3340	3760

TABLE 22. ENVIRONMENTAL PARAMETERS (A1-A3), CONCRETE FOR SPECIAL APPLICATIONS, MELBOURNE METROPOLITAN (VIC), PER M^3

Parameter	Unit	HIGH SLUMP 20MPa	HIGH SLUMP 25MPa	HIGH SLUMP 32MPa	HIGH SLUMP 40MPa	HIGH SLUMP 50MPa	HIGH SLUMP 65MPa	HIGH SLUMP 80MPa
PERE	MJ_{NCV}	1.97E+01	2.21E+01	2.33E+01	2.62E+01	3.50E+01	4.31E+01	4.87E+01
PERM	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.81E-02	1.44E-01	1.35E-01
PERT	MJ_{NCV}	1.97E+01	2.21E+01	2.33E+01	2.62E+01	3.50E+01	4.33E+01	4.88E+01
PENRE	MJ_{NCV}	1.78E+03	1.97E+03	2.11E+03	2.37E+03	3.05E+03	3.36E+03	3.80E+03
PENRM	MJ_{NCV}	6.01E+00	6.78E+00	7.38E+00	8.74E+00	1.14E+01	2.00E+01	2.91E+01
PENRT	MJ_{NCV}	1.78E+03	1.98E+03	2.11E+03	2.38E+03	3.06E+03	3.38E+03	3.83E+03
SM	kg	3.74E+01	4.26E+01	4.68E+01	5.72E+01	8.32E+01	1.61E+02	2.96E+02
RSF	MJ_{NCV}	1.12E+01	1.28E+01	1.40E+01	1.62E+01	2.16E+01	2.19E+01	2.19E+01
NRSF	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	4.03E+00	4.12E+00	4.22E+00	4.35E+00	4.70E+00	4.73E+00	4.74E+00
HWD	kg	6.49E-06	8.31E-06	7.95E-06	9.38E-06	1.90E-05	4.17E-05	5.01E-05
NHWD	kg	7.61E-02	9.25E-02	9.11E-02	1.04E-01	6.36E-01	1.69E+00	1.64E+00
RWD	kg	1.13E-03	1.42E-03	1.38E-03	1.63E-03	2.54E-03	4.94E-03	6.56E-03
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

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TABLE 23. ENVIRONMENTAL PROFILES (A1-A3), CONCRETE FOR SPECIAL APPLICATIONS, MELBOURNE METROPOLITAN (VIC), PER M^3

Indicator	Unit	TREMIE 40MPa	TREMIE 50MPa	POST TENSIONED 40MPa 22@3	POST TENSIONED 40MPa 22@4	SHOTCRETE 32MPa	SHOTCRETE 40MPa
GWP	**kg CO_2 eq**	**314**	**394**	**403**	**388**	**425**	**445**
ODP	kg CFC-11 eq	6.39E-06	7.55E-06	6.28E-06	6.16E-06	8.05E-06	8.25E-06
AP	kg SO_2 eq	1.16	1.46	1.23	1.19	1.35	1.41
EP	kg PO4--- eq	0.16	0.199	0.187	0.18	0.203	0.212
POCP	kg C_2H_4 eq	0.0529	0.0653	0.0582	0.0564	0.0702	0.0728
ADPE	kg Sb eq	1.78E-06	2.15E-06	4.05E-06	3.98E-06	3.91E-06	4.00E-06
ADPF	MJ	2230	2760	2620	2540	2850	2970

TABLE 24. ENVIRONMENTAL PARAMETERS (A1-A3), CONCRETE FOR SPECIAL APPLICATIONS, MELBOURNE METROPOLITAN (VIC), PER M^3

Parameter	Unit	TREMIE 40MPa	TREMIE 50MPa	POST TENSIONED 40MPa 22@3	POST TENSIONED 40MPa 22@4	SHOTCRETE 32MPa	SHOTCRETE 40MPa
PERE	MJ_{NCV}	2.26E+01	2.76E+01	2.85E+01	2.77E+01	7.84E+01	7.95E+01
PERM	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ_{NCV}	2.26E+01	2.76E+01	2.85E+01	2.77E+01	7.84E+01	7.95E+01
PENRE	MJ_{NCV}	2.25E+03	2.78E+03	2.62E+03	2.53E+03	2.87E+03	2.99E+03
PENRM	MJ_{NCV}	0.00E+00	0.00E+00	8.74E+00	8.74E+00	6.01E+00	6.01E+00
PENRT	MJ_{NCV}	2.25E+03	2.78E+03	2.62E+03	2.54E+03	2.88E+03	3.00E+03
SM	kg	1.04E+02	1.46E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	MJ_{NCV}	1.43E+01	1.81E+01	1.97E+01	1.89E+01	1.92E+01	2.03E+01
NRSF	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	4.26E+00	4.61E+00	4.59E+00	4.54E+00	2.18E+01	2.19E+01
HWD	kg	0.00E+00	0.00E+00	9.38E-06	9.38E-06	6.97E-06	6.97E-06
NHWD	kg	5.36E-02	6.51E-02	1.12E-01	1.10E-01	1.01E-01	1.04E-01
RWD	kg	0.00E+00	0.00E+00	1.63E-03	1.63E-03	1.20E-03	1.20E-03
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

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TABLE 25. ENVIRONMENTAL PROFILES (A1-A3), CONCRETE FOR SPECIAL APPLICATIONS, WEST MELBOURNE REGION (VIC), PER M^3

Indicator	Unit	STABILISED SAND 3%	STABILISED SAND 5%	KERB MACHINE 320KG/M^3	KERB MACHINE 280KG/M^3	NO FINES 4%
GWP	**kg CO_2 eq**	**80.8**	**111**	**256.0**	**287**	**80.9**
ODP	kg CFC-11 eq	3.24E-06	3.54E-06	6.42E-06	5.86E-06	2.19E-06
AP	kg SO_2 eq	0.287	0.378	1.04	0.973	0.265
EP	kg PO4--- eq	0.0496	0.0624	0.141	0.144	0.0437
POCP	kg C_2H_4 eq	0.0172	0.021	0.0482	0.0467	0.0146
ADPE	kg Sb eq	9.45E-07	7.93E-07	3.43E-06	3.23E-06	6.89E-07
ADPF	MJ	706	880	1990	2030	625

TABLE 26. ENVIRONMENTAL PARAMETERS (A1-A3), CONCRETE FOR SPECIAL APPLICATIONS, WEST MELBOURNE REGION (VIC), PER M^3

Parameter	Unit	STABILISED SAND 3%	STABILISED SAND 5%	KERB MACHINE 320KG/M^3	KERB MACHINE 280KG/M^3	NO FINES 4%
PERE	MJ_{NCV}	8.78E+00	1.01E+01	2.20E+01	2.23E+01	7.39E+00
PERM	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ_{NCV}	8.78E+00	1.01E+01	2.20E+01	2.23E+01	7.39E+00
PENRE	MJ_{NCV}	7.05E+02	8.79E+02	2.01E+03	2.03E+03	6.24E+02
PENRM	MJ_{NCV}	1.26E+00	0.00E+00	8.20E+00	7.10E+00	0.00E+00
PENRT	MJ_{NCV}	7.06E+02	8.79E+02	2.02E+03	2.04E+03	6.24E+02
SM	kg	0.00E+00	0.00E+00	1.33E+02	4.37E+01	0.00E+00
RSF	MJ_{NCV}	2.74E+00	4.38E+00	1.05E+01	1.30E+01	3.29E+00
NRSF	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	2.98E+00	3.11E+00	4.10E+00	4.23E+00	2.49E+00
HWD	kg	1.61E-06	2.59E-07	9.05E-06	7.62E-06	0.00E+00
NHWD	kg	3.29E-02	3.07E-02	8.97E-02	8.78E-02	1.82E-02
RWD	kg	2.73E-04	3.87E-05	1.57E-03	1.33E-03	0.00E+00
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

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TABLE 27. ENVIRONMENTAL PROFILES (A1-A3), CONCRETE FOR SPECIAL APPLICATIONS, WEST MELBOURNE REGION (VIC), PER M^3

Indicator	Unit	FIBRE STEEL 32MPa	FIBRE STEEL 40MPa	FIBRE STEEL 50MPa	HIGH PERFORMANCE 32MPa	HIGH PERFORMANCE 40MPa	HIGH PERFORMANCE 50MPa
GWP	**kg CO_2 eq**	**379**	**442**	**467**	**331**	**394**	**418**
ODP	kg CFC-11 eq	9.74E-06	1.05E-05	1.11E-05	6.85E-06	7.59E-06	8.19E-06
AP	kg SO_2 eq	1.34	1.53	1.61	1.04	1.23	1.31
EP	kg PO4--- eq	0.233	0.26	0.272	0.162	0.189	0.201
POCP	kg C_2H_4 eq	0.0691	0.0772	0.0809	0.0516	0.0598	0.0634
ADPE	kg Sb eq	5.75E-02	5.75E-02	5.75E-02	3.47E-06	3.86E-06	4.45E-06
ADPF	MJ	2860	3240	3420	2280	2660	2840

TABLE 28. ENVIRONMENTAL PARAMETERS (A1-A3), CONCRETE FOR SPECIAL APPLICATIONS, WEST MELBOURNE REGION (VIC), PER M^3

Parameter	Unit	FIBRE STEEL 32MPa	FIBRE STEEL 40MPa	FIBRE STEEL 50MPa	HIGH PERFORMANCE 32MPa	HIGH PERFORMANCE 40MPa	HIGH PERFORMANCE 50MPa
PERE	MJ_{NCV}	6.44E+01	6.81E+01	7.00E+01	2.37E+01	2.74E+01	2.93E+01
PERM	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ_{NCV}	6.44E+01	6.81E+01	7.00E+01	2.37E+01	2.74E+01	2.93E+01
PENRE	MJ_{NCV}	2.93E+03	3.31E+03	3.48E+03	2.28E+03	2.66E+03	2.83E+03
PENRM	MJ_{NCV}	8.20E+00	8.74E+00	1.09E+01	8.20E+00	8.74E+00	1.09E+01
PENRT	MJ_{NCV}	2.94E+03	3.32E+03	3.50E+03	2.28E+03	2.66E+03	2.84E+03
SM	kg	7.87E+01	8.91E+01	1.20E+02	5.20E+01	6.24E+01	9.36E+01
RSF	MJ_{NCV}	2.54E+01	2.87E+01	2.98E+01	1.53E+01	1.86E+01	1.97E+01
NRSF	MJ_{NCV}	4.71E+00	4.71E+00	4.71E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	4.88E+00	5.14E+00	5.17E+00	4.17E+00	4.42E+00	4.44E+00
HWD	kg	2.45E-02	2.45E-02	2.45E-02	8.79E-06	9.38E-06	1.17E-05
NHWD	kg	1.82E+01	1.82E+01	1.82E+01	9.72E-02	1.09E-01	1.24E-01
RWD	kg	3.16E-03	3.26E-03	3.67E-03	1.53E-03	1.63E-03	2.04E-03
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

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TABLE 29. ENVIRONMENTAL PROFILES (A1-A3), CONCRETE FOR SPECIAL APPLICATIONS, WEST MELBOURNE REGION (VIC), PER M^3

Indicator	Unit	LOW HEAT 32MPa	LOW HEAT 40MPa	LOW HEAT 50MPa	SUPER WORK 40MPA 14mm 650SPR	SUPER WORK 50MPA 14mm 650SPR	SUPER WORK 65MPA 14mm 650SPR	SUPER WORK 80MPA 14mm 650SPR
GWP	**kg CO_2 eq**	**191**	**214**	**245**	**303**	**326**	**386**	**436**
ODP	kg CFC-11 eq	7.16E-06	7.64E-06	9.08E-06	8.19E-06	8.63E-06	1.01E-05	1.11E-05
AP	kg SO_2 eq	0.657	0.728	0.838	1.18	1.27	1.49	1.7
EP	kg PO4--- eq	0.11	0.12	0.139	0.166	0.178	0.208	0.234
POCP	kg C_2H_4 eq	0.0362	0.0394	0.0452	0.0568	0.0607	0.0747	0.0833
ADPE	kg Sb eq	2.92E-06	3.14E-06	3.73E-06	1.94E-05	2.20E-05	2.51E-05	2.81E-05
ADPF	MJ	1580	1730	2000	2420	2590	3030	3400

TABLE 30. ENVIRONMENTAL PARAMETERS (A1-A3), CONCRETE FOR SPECIAL APPLICATIONS, WEST MELBOURNE REGION (VIC), PER M^3

Parameter	Unit	LOW HEAT 32MPa	LOW HEAT 40MPa	LOW HEAT 50MPa	SUPER WORK 40MPA 14mm 650SPR	SUPER WORK 50MPA 14mm 650SPR	SUPER WORK 65MPA 14mm 650SPR	SUPER WORK 80MPA 14mm 650SPR
PERE	MJ_{NCV}	1.53E+01	1.67E+01	1.87E+01	3.35E+01	3.66E+01	7.47E+01	7.92E+01
PERM	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	1.06E-01	1.20E-01	1.35E-01	1.44E-01
PERT	MJ_{NCV}	1.53E+01	1.67E+01	1.87E+01	3.36E+01	3.67E+01	7.48E+01	7.94E+01
PENRE	MJ_{NCV}	1.58E+03	1.73E+03	2.00E+03	2.43E+03	2.60E+03	3.06E+03	3.44E+03
PENRM	MJ_{NCV}	8.20E+00	8.74E+00	1.09E+01	1.99E+01	2.26E+01	2.53E+01	2.71E+01
PENRT	MJ_{NCV}	1.58E+03	1.74E+03	2.01E+03	2.45E+03	2.63E+03	3.08E+03	3.46E+03
SM	kg	2.08E+02	2.29E+02	3.12E+02	2.27E+02	2.50E+02	2.55E+02	3.17E+02
RSF	MJ_{NCV}	7.13E+00	8.22E+00	9.32E+00	1.22E+01	1.32E+01	1.51E+01	1.73E+01
NRSF	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	3.55E+00	3.60E+00	3.65E+00	3.97E+00	4.03E+00	1.58E+01	1.58E+01
HWD	kg	8.79E-06	9.38E-06	1.17E-05	4.40E-05	5.01E-05	5.62E-05	6.13E-05
NHWD	kg	7.57E-02	8.16E-02	9.67E-02	3.62E+00	4.15E+00	4.68E+00	5.34E+00
RWD	kg	1.53E-03	1.63E-03	2.04E-03	6.43E-03	7.33E-03	8.24E-03	9.08E-03
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Melbourne South-East Metropolitan region

Environmental profiles and parameters

Product table list

Melbourne South-East Metropolitan region

In each region, we start with presenting a summary of the cradle-to-gate carbon footprint (GWP summary) of our concrete mixes.

Cradle-to-gate GWP-GHG summary (kg CO_2 eq/m^3)

Melbourne South-East Metropolitan region

ENVISIA® 20MPa	ENVISIA® 25MPa	ENVISIA® 32MPa	ENVISIA® 40MPa	ENVISIA® 50MPa	ENVISIA® 65MPa	
212	232	264	317	377	380	
ENVIROCRETE® PLUS 20MPa	ENVIROCRETE® PLUS 25MPa	ENVIROCRETE® PLUS 32MPa	ENVIROCRETE® PLUS 40MPa	ENVIROCRETE® PLUS 50MPa		
225	244	274	323	398		
ENVIROCRETE® 40% 20MPa	ENVIROCRETE® 40% 25MPa	ENVIROCRETE® 40% 32MPa	ENVIROCRETE® 40% 40MPa	ENVIROCRETE® 40% 50MPa		
226	247	280	333	408		
ENVIROCRETE® 30% 20MPa	ENVIROCRETE® 30% 25MPa	ENVIROCRETE® 30% 32MPa	ENVIROCRETE® 30% 40MPa	ENVIROCRETE® 30% 50MPa		
251	274	313	375	457		
ENVIROCRETE® 25MPa - 40% SCM	ENVIROCRETE® 20MPa - 40% SCM	ENVIROCRETE® TUNNEL BACKFILL	ENVIROCRETE® 32MPa - 65% SCM	ENVIROCRETE® TUNNEL BACKFILL EXT PUMP		
228	201	96	192	141		
ENVIROCRETE® KERB MACHINE 280KG/M^3	ENVIROCRETE® KERB MACHINE 320KG/M^3	ENVIROCRETE® VR400 14MM IN SITU TUNNEL LINING	ENVIROCRETE® VR450 14MM DWALL	ENVIROCRETE® VR450 14MM IN SITU TUNNEL LINING		
229	205	340	350	396		
NORMAL CLASS GP BLEND 20MPa	NORMAL CLASS GP BLEND 25MPa	NORMAL CLASS GP BLEND 32MPa	NORMAL CLASS GP BLEND 40MPa	NORMAL CLASS GP BLEND 50MPa		
260	296	326	383	484		
NORMAL CLASS GP/FA BLEND 20MPa	NORMAL CLASS GP/FA BLEND 25MPa	NORMAL CLASS GP/FA BLEND 32MPa	NORMAL CLASS GP/FA BLEND 40MPa	NORMAL CLASS GP/FA BLEND 50MPa		
239	271	304	354	413		
VR330 32MPa 20MM GP/FA	VR330 32MPa 20MM GP/SLAG	VR400 40MPa 14MM TREMIE GP/SLAG	VR400 40MPa 14MM TREMIE/CFA GP/SLAG	VR400 40MPa 20MM GP/FA	VR400 40MPa 20MM GP/SLAG	
309	241	279	322	356	277	
VR400 40MPa 7MM SHOTCRETE	VR450 50MPa 20MM GP/FA	VR450 50MPa 20MM GP/SLAG	VR450 50MPa 14MM TREMIE GP/SLAG	VR450 50MPa 14MM TREMIE/CFA GP/SLAG		
415	409	308	310	335		
HIGH SLUMP 20MPa	HIGH SLUMP 25MPa	HIGH SLUMP 32MPa	HIGH SLUMP 40MPa	HIGH SLUMP 50MPa	HIGH SLUMP 65MPa	HIGH SLUMP 80MPa
251	283	305	348	457	479	506
TREMIE 40MPa	TREMIE 50MPa	POST TENSIONED 40MPa 22@3	POST TENSIONED 40MPa 22@4	SHOTCRETE 32MPa	SHOTCRETE 40MPa	
317	397	406	391	418	438	
STABILISED SAND 3%	STABILISED SAND 5%	KERB MACHINE 320KG/M^3	KERB MACHINE 280KG/M^3	NO FINES 4%		
81	112	333.0	289.0	82		
FIBRE STEEL 32MPa	FIBRE STEEL 40MPa	FIBRE STEEL 50MPa	HIGH PERFORMANCE 32MPa	HIGH PERFORMANCE 40MPa	HIGH PERFORMANCE 50MPa	
377	441	465	329	392	417	
LOW HEAT 32MPa	LOW HEAT 40MPa	LOW HEAT 50MPa	SUPER WORK 40MPa 14mm 650SPR	SUPER WORK 50MPa 14mm 650SPR	SUPER WORK 65MPa 14mm 650SPR	SUPER WORK 80MPa 14mm 650SPR
204	228	269	308	331	384	434

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TABLE 1. ENVIRONMENTAL PROFILES (A1-A3), LOWER CARBON CONCRETE, CLAYTON (VIC), PER M^3

Indicator	Unit	ENVISIA® 20 MPa	ENVISIA® 25 MPa	ENVISIA® 32 MPa	ENVISIA® 40 MPa	ENVISIA® 50 MPa	ENVISIA® 65 MPa
GWP	**kg CO_2 eq**	**212**	**232**	**264**	**317**	**377**	**380**
ODP	kg CFC-11 eq	6.41E-06	6.70E-06	7.26E-06	8.07E-06	8.49E-06	8.62E-06
AP	kg SO_2 eq	0.955	1.04	1.19	1.42	1.59	1.61
EP	kg PO4--- eq	0.125	0.135	0.152	0.179	0.204	0.207
POCP	kg C_2H_4 eq	0.0434	0.0469	0.0525	0.0618	0.0691	0.0702
ADPE	kg Sb eq	2.49E-06	2.79E-06	3.10E-06	4.87E-06	6.25E-06	6.89E-06
ADPF	MJ	1760	1900	2130	2530	2890	2940

TABLE 2. ENVIRONMENTAL PARAMETERS (A1-A3), LOWER CARBON CONCRETE, CLAYTON (VIC), PER M^3

Parameter	Unit	ENVISIA® 20 MPa	ENVISIA® 25 MPa	ENVISIA® 32 MPa	ENVISIA® 40 MPa	ENVISIA® 50 MPa	ENVISIA® 65 MPa
PERE	MJ_{NCV}	1.93E+01	2.10E+01	2.35E+01	2.93E+01	3.42E+01	3.53E+01
PERM	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ_{NCV}	1.93E+01	2.10E+01	2.35E+01	2.93E+01	3.42E+01	3.53E+01
PENRE	MJ_{NCV}	1.79E+03	1.93E+03	2.17E+03	2.57E+03	2.92E+03	2.97E+03
PENRM	MJ_{NCV}	5.35E+00	6.23E+00	6.88E+00	1.34E+01	1.84E+01	2.11E+01
PENRT	MJ_{NCV}	1.79E+03	1.94E+03	2.17E+03	2.58E+03	2.94E+03	2.99E+03
SM	kg	1.57E+02	1.75E+02	2.03E+02	2.48E+02	2.48E+02	2.59E+02
RSF	MJ_{NCV}	8.00E+00	8.88E+00	1.03E+01	1.26E+01	1.58E+01	1.58E+01
NRSF	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	3.75E+00	3.80E+00	3.95E+00	4.15E+00	4.31E+00	4.32E+00
HWD	kg	5.81E-06	6.75E-06	7.45E-06	1.44E-05	1.97E-05	2.26E-05
NHWD	kg	7.85E-02	8.68E-02	9.60E-02	1.40E-01	1.75E-01	1.90E-01
RWD	kg	1.01E-03	1.17E-03	1.30E-03	2.51E-03	3.43E-03	3.94E-03
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

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TABLE 3. ENVIRONMENTAL PROFILES (A1-A3), LOWER CARBON CONCRETE, CLAYTON (VIC), PER M^3

Indicator	Unit	ENVIROCRETE® PLUS 20 MPa	ENVIROCRETE® PLUS 25 MPa	ENVIROCRETE® PLUS 32 MPa	ENVIROCRETE® PLUS 40 MPa	ENVIROCRETE® PLUS 50 MPa
GWP	**kg CO_2 eq**	**225**	**244**	**274**	**323**	**398**
ODP	kg CFC-11 eq	6.36E-06	6.51E-06	6.84E-06	7.26E-06	8.37E-06
AP	kg SO_2 eq	0.959	1.02	1.12	1.28	1.59
EP	kg PO4--- eq	0.128	0.136	0.150	0.171	0.209
POCP	kg C_2H_4 eq	0.0439	0.0465	0.0506	0.0572	0.0697
ADPE	kg Sb eq	2.53E-06	2.82E-06	3.11E-06	4.21E-06	5.70E-06
ADPF	MJ	1810	1920	2110	2420	2950

TABLE 4. ENVIRONMENTAL PARAMETERS (A1-A3), LOWER CARBON CONCRETE, CLAYTON (VIC), PER M^3

Parameter	Unit	ENVIROCRETE® PLUS 20 MPa	ENVIROCRETE® PLUS 25 MPa	ENVIROCRETE® PLUS 32 MPa	ENVIROCRETE® PLUS 40 MPa	ENVIROCRETE® PLUS 50 MPa
PERE	MJ_{NCV}	1.97E+01	2.11E+01	2.32E+01	2.73E+01	3.39E+01
PERM	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ_{NCV}	1.97E+01	2.11E+01	2.32E+01	2.73E+01	3.39E+01
PENRE	MJ_{NCV}	1.83E+03	1.95E+03	2.14E+03	2.44E+03	2.98E+03
PENRM	MJ_{NCV}	5.35E+00	6.23E+00	6.88E+00	1.07E+01	1.56E+01
PENRT	MJ_{NCV}	1.83E+03	1.95E+03	2.14E+03	2.45E+03	3.00E+03
SM	kg	1.39E+02	1.44E+02	1.50E+02	1.60E+02	2.14E+02
RSF	MJ_{NCV}	8.82E+00	9.81E+00	1.14E+01	1.39E+01	1.73E+01
NRSF	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	3.79E+00	3.83E+00	3.95E+00	4.11E+00	4.39E+00
HWD	kg	5.81E-06	6.75E-06	7.45E-06	1.15E-05	1.68E-05
NHWD	kg	7.84E-02	8.62E-02	9.44E-02	1.22E-01	1.60E-01
RWD	kg	1.01E-03	1.17E-03	1.30E-03	2.00E-03	2.92E-03
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

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TABLE 5. ENVIRONMENTAL PROFILES (A1-A3), LOWER CARBON CONCRETE, CLAYTON (VIC), PER M^3

Indicator	Unit	ENVIROCRETE® 40% 20MPa	ENVIROCRETE® 40% 25MPa	ENVIROCRETE® 40% 32MPa	ENVIROCRETE® 40% 40MPa	ENVIROCRETE® 40% 50MPa
GWP	**kg CO_2 eq**	**226**	**247**	**280**	**333**	**408**
ODP	kg CFC-11 eq	5.63E-06	5.83E-06	6.16E-06	6.71E-06	7.50E-06
AP	kg SO_2 eq	0.830	0.904	1.01	1.19	1.44
EP	kg PO4--- eq	0.120	0.129	0.144	0.168	0.201
POCP	kg C_2H_4 eq	0.0396	0.0426	0.0469	0.0544	0.0648
ADPE	kg Sb eq	2.48E-06	2.78E-06	3.08E-06	3.59E-06	4.43E-06
ADPF	MJ	1700	1830	2030	2360	2830

TABLE 6. ENVIRONMENTAL PARAMETERS (A1-A3), LOWER CARBON CONCRETE, CLAYTON (VIC), PER M^3

Parameter	Unit	ENVIROCRETE® 40% 20MPa	ENVIROCRETE® 40% 25MPa	ENVIROCRETE® 40% 32MPa	ENVIROCRETE® 40% 40MPa	ENVIROCRETE® 40% 50MPa
PERE	MJ_{NCV}	1.84E+01	2.00E+01	2.22E+01	2.59E+01	3.11E+01
PERM	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ_{NCV}	1.84E+01	2.00E+01	2.22E+01	2.59E+01	3.11E+01
PENRE	MJ_{NCV}	1.71E+03	1.84E+03	2.04E+03	2.37E+03	2.84E+03
PENRM	MJ_{NCV}	5.35E+00	6.23E+00	6.88E+00	7.98E+00	1.02E+01
PENRT	MJ_{NCV}	1.71E+03	1.84E+03	2.04E+03	2.38E+03	2.85E+03
SM	kg	6.45E+01	7.28E+01	7.70E+01	9.36E+01	1.15E+02
RSF	MJ_{NCV}	9.65E+00	1.07E+01	1.24E+01	1.51E+01	1.89E+01
NRSF	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	3.73E+00	3.78E+00	3.91E+00	4.11E+00	4.36E+00
HWD	kg	5.81E-06	6.75E-06	7.45E-06	8.56E-06	1.09E-05
NHWD	kg	7.49E-02	8.28E-02	9.11E-02	1.05E-01	1.27E-01
RWD	kg	1.01E-03	1.17E-03	1.30E-03	1.49E-03	1.90E-03
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

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TABLE 7. ENVIRONMENTAL PROFILES (A1-A3), LOWER CARBON CONCRETE, CLAYTON (VIC), PER M^3

Indicator	Unit	ENVIROCRETE® 30% 20MPa	ENVIROCRETE® 30% 25MPa	ENVIROCRETE® 30% 32MPa	ENVIROCRETE® 30% 40MPa	ENVIROCRETE® 30% 50MPa
GWP	**kg CO_2 eq**	**251**	**274**	**313**	**375**	**457**
ODP	kg CFC-11 eq	5.60E-06	5.80E-06	6.21E-06	6.74E-06	7.44E-06
AP	kg SO_2 eq	0.855	0.930	1.05	1.24	1.49
EP	kg PO4--- eq	0.127	0.137	0.154	0.181	0.216
POCP	kg C_2H_4 eq	0.0411	0.0442	0.0494	0.0573	0.0676
ADPE	kg Sb eq	2.57E-06	2.88E-06	3.20E-06	3.74E-06	4.60E-06
ADPF	MJ	1800	1940	2180	2540	3030

TABLE 8. ENVIRONMENTAL PARAMETERS (A1-A3), LOWER CARBON CONCRETE, CLAYTON (VIC), PER M^3

Parameter	Unit	ENVIROCRETE® 30% 20MPa	ENVIROCRETE® 30% 25MPa	ENVIROCRETE® 30% 32MPa	ENVIROCRETE® 30% 40MPa	ENVIROCRETE® 30% 50MPa
PERE	MJ_{NCV}	1.95E+01	2.11E+01	2.37E+01	2.77E+01	3.31E+01
PERM	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ_{NCV}	1.95E+01	2.11E+01	2.37E+01	2.77E+01	3.31E+01
PENRE	MJ_{NCV}	1.80E+03	1.94E+03	2.18E+03	2.55E+03	3.03E+03
PENRM	MJ_{NCV}	5.35E+00	6.23E+00	6.88E+00	7.98E+00	1.02E+01
PENRT	MJ_{NCV}	1.81E+03	1.95E+03	2.19E+03	2.56E+03	3.04E+03
SM	kg	3.64E+01	4.16E+01	4.68E+01	5.41E+01	5.72E+01
RSF	MJ_{NCV}	1.12E+01	1.24E+01	1.45E+01	1.77E+01	2.21E+01
NRSF	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	3.82E+00	3.89E+00	4.05E+00	4.27E+00	4.54E+00
HWD	kg	5.81E-06	6.75E-06	7.45E-06	8.56E-06	1.09E-05
NHWD	kg	7.87E-02	8.69E-02	9.62E-02	1.11E-01	1.35E-01
RWD	kg	1.01E-03	1.17E-03	1.30E-03	1.49E-03	1.90E-03
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

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TABLE 9. ENVIRONMENTAL PROFILES (A1-A3), LOWER CARBON CONCRETE, CLAYTON (VIC), PER M^3

Indicator	Unit	ENVIROCRETE® 20MPa - 40% SCM	ENVIROCRETE® 25MPa - 40% SCM	ENVIROCRETE® 32MPa - 65% SCM	ENVIROCRETE® TUNNEL BACKFILL	ENVIROCRETE® TUNNEL BACKFILL EXT PUMP
GWP	**kg CO_2 eq**	**201**	**228**	**192**	**95.8**	**141**
ODP	kg CFC-11 eq	5.79E-06	6.14E-06	6.59E-06	4.35E-06	5.42E-06
AP	kg SO_2 eq	0.819	0.926	1.00	0.517	0.802
EP	kg PO4--- eq	0.114	0.127	0.123	0.0679	0.0966
POCP	kg C_2H_4 eq	0.0387	0.0429	0.0445	0.0254	0.0377
ADPE	kg Sb eq	2.45E-06	2.57E-06	3.95E-06	4.84E-06	2.80E-05
ADPF	MJ	1610	1790	1760	1030	1540

TABLE 10. ENVIRONMENTAL PARAMETERS (A1-A3), LOWER CARBON CONCRETE, CLAYTON (VIC), PER M^3

Parameter	Unit	ENVIROCRETE® 20MPa - 40% SCM	ENVIROCRETE® 25MPa - 40% SCM	ENVIROCRETE® 32MPa - 65% SCM	ENVIROCRETE® TUNNEL BACKFILL	ENVIROCRETE® TUNNEL BACKFILL EXT PUMP
PERE	MJ_{NCV}	1.78E+01	1.95E+01	2.10E+01	1.58E+01	3.56E+01
PERM	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.40E-01
PERT	MJ_{NCV}	1.78E+01	1.95E+01	2.10E+01	1.58E+01	3.58E+01
PENRE	MJ_{NCV}	1.62E+03	1.81E+03	1.79E+03	1.05E+03	1.56E+03
PENRM	MJ_{NCV}	5.46E+00	5.46E+00	1.18E+01	1.64E+01	3.42E+01
PENRT	MJ_{NCV}	1.63E+03	1.81E+03	1.80E+03	1.06E+03	1.59E+03
SM	kg	9.98E+01	1.16E+02	2.24E+02	1.14E+02	1.98E+02
RSF	MJ_{NCV}	7.89E+00	9.21E+00	6.30E+00	2.19E+00	3.29E+00
NRSF	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	3.82E+00	3.88E+00	3.68E+00	2.93E+00	3.06E+00
HWD	kg	5.90E-06	5.90E-06	1.27E-05	2.07E-05	8.08E-05
NHWD	kg	7.26E-02	7.64E-02	1.04E-01	1.35E-01	4.92E+00
RWD	kg	1.03E-03	1.03E-03	2.20E-03	3.52E-03	1.06E-02
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

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TABLE 11. ENVIRONMENTAL PROFILES (A1-A3), LOWER CARBON CONCRETE, CLAYTON (VIC), PER M^3

Indicator	Unit	ENVIROCRETE® KERB MACHINE 320KG/M^3	ENVIROCRETE® KERB MACHINE 280KG/M^3	ENVIROCRETE® VR450 14MM DWALL	ENVIROCRETE® VR400 14MM IN SITU TUNNEL LINING	ENVIROCRETE® VR450 14MM IN SITU TUNNEL LINING
GWP	**kg CO_2 eq**	**205**	**229**	**350**	**340**	**396**
ODP	kg CFC-11 eq	6.26E-06	6.65E-06	8.18E-06	9.30E-06	8.81E-06
AP	kg SO_2 eq	0.911	1.02	1.18	1.30	1.33
EP	kg PO4--- eq	0.121	0.133	0.177	0.185	0.198
POCP	kg C_2H_4 eq	0.042	0.0461	0.0609	0.0612	0.0685
ADPE	kg Sb eq	2.86E-06	2.98E-06	1.38E-05	7.88E-06	1.53E-05
ADPF	MJ	1710	1880	2530	2680	2820

TABLE 12. ENVIRONMENTAL PARAMETERS (A1-A3), LOWER CARBON CONCRETE, CLAYTON (VIC), PER M^3

Parameter	Unit	ENVIROCRETE® KERB MACHINE 320KG/M^3	ENVIROCRETE® KERB MACHINE 280KG/M^3	ENVIROCRETE® VR450 14MM DWALL	ENVIROCRETE® VR400 14MM IN SITU TUNNEL LINING	ENVIROCRETE® VR450 14MM IN SITU TUNNEL LINING
PERE	MJ_{NCV}	1.90E+01	2.06E+01	6.34E+01	3.11E+01	7.46E+01
PERM	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ_{NCV}	1.90E+01	2.06E+01	6.34E+01	3.11E+01	7.46E+01
PENRE	MJ_{NCV}	1.73E+03	1.91E+03	2.54E+03	2.69E+03	2.83E+03
PENRM	MJ_{NCV}	7.10E+00	7.10E+00	1.80E+01	2.73E+01	1.80E+01
PENRT	MJ_{NCV}	1.74E+03	1.91E+03	2.55E+03	2.72E+03	2.85E+03
SM	kg	1.46E+02	1.66E+02	1.35E+02	2.60E+02	1.51E+02
RSF	MJ_{NCV}	7.67E+00	8.77E+00	1.48E+01	1.37E+01	1.70E+01
NRSF	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	3.76E+00	3.83E+00	1.57E+01	3.98E+00	1.87E+01
HWD	kg	7.66E-06	7.66E-06	2.66E-05	2.93E-05	2.78E-05
NHWD	kg	8.13E-02	8.46E-02	2.33E+00	2.03E-01	2.70E+00
RWD	kg	1.33E-03	1.33E-03	5.06E-03	5.10E-03	5.34E-03
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

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TABLE 13. ENVIRONMENTAL PROFILES (A1-A3), LOWER CARBON CONCRETE, CLAYTON (VIC), PER M^3

Indicator	Unit	NORMAL CLASS GP BLEND 20MPa	NORMAL CLASS GP BLEND 25MPa	NORMAL CLASS GP BLEND 32MPa	NORMAL CLASS GP BLEND 40MPa	NORMAL CLASS GP BLEND 50MPa
GWP	**kg CO_2 eq**	**260**	**296**	**326**	**383**	**484**
ODP	kg CFC-11 eq	5.28E-06	5.59E-06	5.78E-06	6.25E-06	6.98E-06
AP	kg SO_2 eq	0.816	0.921	1.01	1.17	1.46
EP	kg PO4--- eq	0.127	0.142	0.154	0.178	0.219
POCP	kg C_2H_4 eq	0.0400	0.0445	0.0481	0.0551	0.0672
ADPE	kg Sb eq	2.64E-06	2.98E-06	3.30E-06	3.85E-06	4.81E-06
ADPF	MJ	1790	2000	2180	2510	3090

TABLE 14. ENVIRONMENTAL PARAMETERS (A1-A3), LOWER CARBON CONCRETE, CLAYTON (VIC), PER M^3

Parameter	Unit	NORMAL CLASS GP BLEND 20MPa	NORMAL CLASS GP BLEND 25MPa	NORMAL CLASS GP BLEND 32MPa	NORMAL CLASS GP BLEND 40MPa	NORMAL CLASS GP BLEND 50MPa
PERE	MJ_{NCV}	1.99E+01	2.22E+01	2.42E+01	2.78E+01	3.39E+01
PERM	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ_{NCV}	1.99E+01	2.22E+01	2.42E+01	2.78E+01	3.39E+01
PENRE	MJ_{NCV}	1.79E+03	2.00E+03	2.17E+03	2.50E+03	3.08E+03
PENRM	MJ_{NCV}	5.41E+00	6.23E+00	7.01E+00	8.36E+00	1.08E+01
PENRT	MJ_{NCV}	1.79E+03	2.00E+03	2.18E+03	2.51E+03	3.09E+03
SM	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	MJ_{NCV}	1.21E+01	1.40E+01	1.56E+01	1.86E+01	2.41E+01
NRSF	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	3.97E+00	4.09E+00	4.18E+00	4.37E+00	4.50E+00
HWD	kg	5.84E-06	6.72E-06	7.56E-06	8.97E-06	1.16E-05
NHWD	kg	8.20E-02	9.16E-02	1.00E-01	1.16E-01	1.42E-01
RWD	kg	1.02E-03	1.17E-03	1.31E-03	1.56E-03	2.02E-03
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

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TABLE 15. ENVIRONMENTAL PROFILES (A1-A3), NORMAL CLASS CONCRETE, CLAYTON (VIC), PER M^3

Indicator	Unit	NORMAL CLASS GP/FA BLEND 20MPa	NORMAL CLASS GP/FA BLEND 25MPa	NORMAL CLASS GP/FA BLEND 32MPa	NORMAL CLASS GP/FA BLEND 40MPa	NORMAL CLASS GP/FA BLEND 50MPa
GWP	**kg CO_2 eq**	**239**	**271**	**304**	**354**	**413**
ODP	kg CFC-11 eq	5.75E-06	6.02E-06	6.56E-06	7.28E-06	8.04E-06
AP	kg SO_2 eq	0.764	0.859	0.960	1.11	1.28
EP	kg PO4--- eq	0.121	0.134	0.149	0.172	0.198
POCP	kg C_2H_4 eq	0.0384	0.0424	0.0470	0.0537	0.0614
ADPE	kg Sb eq	2.72E-06	3.06E-06	3.36E-06	3.90E-06	4.58E-06
ADPF	MJ	1720	1910	2120	2430	2800

TABLE 16. ENVIRONMENTAL PARAMETERS (A1-A3), NORMAL CLASS CONCRETE, CLAYTON (VIC), PER M^3

Parameter	Unit	NORMAL CLASS GP/FA BLEND 20MPa	NORMAL CLASS GP/FA BLEND 25MPa	NORMAL CLASS GP/FA BLEND 32MPa	NORMAL CLASS GP/FA BLEND 40MPa	NORMAL CLASS GP/FA BLEND 50MPa
PERE	MJ_{NCV}	1.90E+01	2.10E+01	2.28E+01	2.59E+01	2.98E+01
PERM	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ_{NCV}	1.90E+01	2.10E+01	2.28E+01	2.59E+01	2.98E+01
PENRE	MJ_{NCV}	1.71E+03	1.90E+03	2.11E+03	2.43E+03	2.79E+03
PENRM	MJ_{NCV}	6.10E+00	7.01E+00	7.85E+00	9.34E+00	1.12E+01
PENRT	MJ_{NCV}	1.72E+03	1.91E+03	2.12E+03	2.43E+03	2.80E+03
SM	kg	5.72E+01	6.24E+01	6.66E+01	8.22E+01	1.03E+02
RSF	MJ_{NCV}	1.06E+01	1.23E+01	1.40E+01	1.65E+01	1.95E+01
NRSF	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	3.86E+00	3.89E+00	4.06E+00	4.22E+00	4.42E+00
HWD	kg	6.58E-06	7.56E-06	8.45E-06	1.00E-05	1.20E-05
NHWD	kg	8.34E-02	9.25E-02	1.01E-01	1.15E-01	1.34E-01
RWD	kg	1.14E-03	1.31E-03	1.47E-03	1.74E-03	2.09E-03
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

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TABLE 17. ENVIRONMENTAL PROFILES (A1-A3), VICROADS CONCRETE PRODUCTS, CLAYTON (VIC), PER M^3

Indicator	Unit	VR330 32MPa 20MM GP/FA	VR330 32MPa 20MM GP/SLAG	VR400 40MPa 14MM TREMIE GP/SLAG	VR400 40MPa 14MM TREMIE/ CFA GP/SLAG	VR400 40MPa 20MM GP/FA	VR400 40MPa 20MM GP/SLAG
GWP	**kg CO_2 eq**	**309**	**241**	**279**	**322**	**356**	**277**
ODP	kg CFC-11 eq	7.10E-06	6.81E-06	7.31E-06	7.90E-06	7.68E-06	7.34E-06
AP	kg SO_2 eq	1.00	1.09	1.25	1.41	1.14	1.25
EP	kg PO4--- eq	0.153	0.139	0.158	0.180	0.174	0.157
POCP	kg C_2H_4 eq	0.0497	0.0495	0.056	0.0628	0.0558	0.0555
ADPE	kg Sb eq	1.76E-05	1.75E-05	2.16E-05	2.05E-05	1.78E-05	1.76E-05
ADPF	MJ	2200	1990	2270	2640	2480	2230

TABLE 18. ENVIRONMENTAL PARAMETERS (A1-A3), VICROADS CONCRETE PRODUCTS, CLAYTON (VIC), PER M^3

Parameter	Unit	VR330 32MPa 20MM GP/FA	VR330 32MPa 20MM GP/SLAG	VR400 40MPa 14MM TREMIE GP/SLAG	VR400 40MPa 14MM TREMIE/ CFA GP/SLAG	VR400 40MPa 20MM GP/FA	VR400 40MPa 20MM GP/SLAG
PERE	MJ_{NCV}	2.57E+01	2.47E+01	3.12E+01	3.89E+01	2.83E+01	2.72E+01
PERM	MJ_{NCV}	0.00E+00	0.00E+00	7.21E-02	9.62E-02	0.00E+00	0.00E+00
PERT	MJ_{NCV}	2.57E+01	2.47E+01	3.12E+01	3.90E+01	2.83E+01	2.72E+01
PENRE	MJ_{NCV}	2.20E+03	2.02E+03	2.31E+03	2.66E+03	2.48E+03	2.27E+03
PENRM	MJ_{NCV}	0.00E+00	0.00E+00	5.35E+00	2.90E+01	0.00E+00	0.00E+00
PENRT	MJ_{NCV}	2.20E+03	2.02E+03	2.31E+03	2.69E+03	2.48E+03	2.27E+03
SM	kg	8.84E+01	1.77E+02	2.08E+02	2.39E+02	1.04E+02	2.08E+02
RSF	MJ_{NCV}	1.40E+01	9.32E+00	1.10E+01	1.26E+01	1.64E+01	1.10E+01
NRSF	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	4.12E+00	3.95E+00	4.02E+00	4.02E+00	4.23E+00	4.03E+00
HWD	kg	1.50E-05	1.50E-05	3.03E-05	5.18E-05	1.50E-05	1.50E-05
NHWD	kg	4.59E+00	4.58E+00	5.19E+00	3.39E+00	4.60E+00	4.59E+00
RWD	kg	3.52E-03	3.52E-03	4.98E-03	7.91E-03	3.52E-03	3.52E-03
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

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TABLE 19. ENVIRONMENTAL PROFILES (A1-A3), VICROADS CONCRETE PRODUCTS, CLAYTON (VIC), PER M^3

Indicator	Unit	VR400 40MPa 7MM SHOTCRETE	VR450 50MPa 20MM GP/FA	VR450 50MPa 20MM GP/SLAG	VR450 50MPa 14MM TREMIE GP/SLAG	VR450 50MPa 14MM TREMIE/ CFA GP/SLAG
GWP	**kg CO_2 eq**	**415**	**409**	**308**	**310**	**335**
ODP	kg CFC-11 eq	8.25E-06	8.19E-06	7.89E-06	7.89E-06	8.12E-06
AP	kg SO_2 eq	1.44	1.30	1.39	1.39	1.47
EP	kg PO4--- eq	0.204	0.196	0.173	0.174	0.187
POCP	kg C_2H_4 eq	0.0742	0.0626	0.0612	0.0615	0.0652
ADPE	kg Sb eq	2.03E-05	1.98E-05	1.96E-05	2.17E-05	2.12E-05
ADPF	MJ	2850	2800	2470	2490	2740

TABLE 20. ENVIRONMENTAL PARAMETERS (A1-A3), VICROADS CONCRETE PRODUCTS, CLAYTON (VIC), PER M^3

Parameter	Unit	VR400 40MPa 7MM SHOTCRETE	VR450 50MPa 20MM GP/FA	VR450 50MPa 20MM GP/SLAG	VR450 50MPa 14MM TREMIE GP/SLAG	VR450 50MPa 14MM TREMIE/ CFA GP/SLAG
PERE	MJ_{NCV}	9.91E+01	3.29E+01	3.10E+01	3.33E+01	4.06E+01
PERM	MJ_{NCV}	2.89E-02	2.89E-02	2.89E-02	7.21E-02	9.62E-02
PERT	MJ_{NCV}	9.91E+01	3.30E+01	3.10E+01	3.34E+01	4.07E+01
PENRE	MJ_{NCV}	2.88E+03	2.80E+03	2.51E+03	2.53E+03	2.77E+03
PENRM	MJ_{NCV}	2.14E+00	2.14E+00	2.14E+00	5.35E+00	3.17E+01
PENRT	MJ_{NCV}	2.88E+03	2.80E+03	2.51E+03	2.54E+03	2.80E+03
SM	kg	7.28E+01	1.04E+02	2.34E+02	2.34E+02	2.50E+02
RSF	MJ_{NCV}	1.81E+01	1.92E+01	1.23E+01	1.23E+01	1.32E+01
NRSF	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	2.74E+01	4.46E+00	4.18E+00	4.18E+00	4.08E+00
HWD	kg	2.14E-05	2.14E-05	2.14E-05	3.03E-05	5.47E-05
NHWD	kg	4.91E+00	4.92E+00	4.90E+00	5.19E+00	3.41E+00
RWD	kg	4.16E-03	4.16E-03	4.16E-03	4.98E-03	8.42E-03
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

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TABLE 21. ENVIRONMENTAL PROFILES (A1-A3), CONCRETE FOR SPECIAL APPLICATIONS, CLAYTON (VIC), PER M^3

Indicator	Unit	HIGH SLUMP 20MPa	HIGH SLUMP 25MPa	HIGH SLUMP 32MPa	HIGH SLUMP 40MPa	HIGH SLUMP 50MPa	HIGH SLUMP 65MPa	HIGH SLUMP 80MPa
GWP	**kg CO_2 eq**	**251**	**283**	**305**	**348**	**457**	**479**	**506**
ODP	kg CFC-11 eq	5.66E-06	5.96E-06	6.19E-06	6.59E-06	7.89E-06	8.78E-06	1.03E-05
AP	kg SO_2 eq	0.858	0.959	1.03	1.17	1.54	1.74	2.05
EP	kg PO4--- eq	0.128	0.142	0.152	0.170	0.219	0.238	0.265
POCP	kg C_2H_4 eq	0.0414	0.0457	0.0486	0.0543	0.0698	0.0777	0.089
ADPE	kg Sb eq	2.75E-06	3.22E-06	3.31E-06	3.81E-06	7.14E-06	1.37E-05	1.56E-05
ADPF	MJ	1810	2010	2140	2400	3090	3390	3790

TABLE 22. ENVIRONMENTAL PARAMETERS (A1-A3), CONCRETE FOR SPECIAL APPLICATIONS, CLAYTON (VIC), PER M^3

Parameter	Unit	HIGH SLUMP 20MPa	HIGH SLUMP 25MPa	HIGH SLUMP 32MPa	HIGH SLUMP 40MPa	HIGH SLUMP 50MPa	HIGH SLUMP 65MPa	HIGH SLUMP 80MPa
PERE	MJ_{NCV}	2.00E+01	2.24E+01	2.37E+01	2.66E+01	3.54E+01	4.38E+01	4.95E+01
PERM	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.81E-02	1.44E-01	1.35E-01
PERT	MJ_{NCV}	2.00E+01	2.24E+01	2.37E+01	2.66E+01	3.55E+01	4.39E+01	4.96E+01
PENRE	MJ_{NCV}	1.81E+03	2.01E+03	2.14E+03	2.41E+03	3.10E+03	3.41E+03	3.82E+03
PENRM	MJ_{NCV}	6.01E+00	6.78E+00	7.38E+00	8.74E+00	1.14E+01	2.00E+01	2.91E+01
PENRT	MJ_{NCV}	1.82E+03	2.02E+03	2.15E+03	2.41E+03	3.11E+03	3.43E+03	3.85E+03
SM	kg	3.74E+01	4.26E+01	4.68E+01	5.72E+01	8.32E+01	1.61E+02	2.96E+02
RSF	MJ_{NCV}	1.12E+01	1.28E+01	1.40E+01	1.62E+01	2.16E+01	2.19E+01	2.19E+01
NRSF	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	4.01E+00	4.11E+00	4.20E+00	4.29E+00	4.68E+00	4.81E+00	4.93E+00
HWD	kg	6.49E-06	8.31E-06	7.95E-06	9.38E-06	1.90E-05	4.17E-05	5.01E-05
NHWD	kg	8.36E-02	1.00E-01	9.89E-02	1.12E-01	6.44E-01	1.70E+00	1.65E+00
RWD	kg	1.13E-03	1.42E-03	1.38E-03	1.63E-03	2.54E-03	4.94E-03	6.56E-03
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

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TABLE 23. ENVIRONMENTAL PROFILES (A1-A3), CONCRETE FOR SPECIAL APPLICATIONS, CLAYTON (VIC), PER M^3

Indicator	Unit	TREMIE 40MPa	TREMIE 50MPa	POST TENSIONED 40MPa 22@3	POST TENSIONED 40MPa 22@4	SHOTCRETE 32MPa	SHOTCRETE 40MPa
GWP	**kg CO_2 eq**	**317**	**397**	**406**	**391**	**418**	**438**
ODP	kg CFC-11 eq	6.83E-06	8.04E-06	6.81E-06	6.68E-06	7.22E-06	7.43E-06
AP	kg SO_2 eq	1.17	1.48	1.25	1.20	1.38	1.44
EP	kg PO4--- eq	0.163	0.201	0.189	0.183	0.199	0.208
POCP	kg C_2H_4 eq	0.0533	0.0658	0.0587	0.0568	0.0687	0.0713
ADPE	kg Sb eq	1.74E-06	2.11E-06	4.00E-06	3.93E-06	3.83E-06	3.92E-06
ADPF	MJ	2270	2800	2670	2580	2750	2870

TABLE 24. ENVIRONMENTAL PARAMETERS (A1-A3), CONCRETE FOR SPECIAL APPLICATIONS, CLAYTON (VIC), PER M^3

Parameter	Unit	TREMIE 40MPa	TREMIE 50MPa	POST TENSIONED 40MPa 22@3	POST TENSIONED 40MPa 22@4	SHOTCRETE 32MPa	SHOTCRETE 40MPa
PERE	MJ_{NCV}	2.30E+01	2.81E+01	2.89E+01	2.81E+01	7.82E+01	7.94E+01
PERM	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ_{NCV}	2.30E+01	2.81E+01	2.89E+01	2.81E+01	7.82E+01	7.94E+01
PENRE	MJ_{NCV}	2.28E+03	2.83E+03	2.66E+03	2.57E+03	2.77E+03	2.89E+03
PENRM	MJ_{NCV}	0.00E+00	0.00E+00	8.74E+00	8.74E+00	6.01E+00	6.01E+00
PENRT	MJ_{NCV}	2.28E+03	2.83E+03	2.67E+03	2.58E+03	2.78E+03	2.90E+03
SM	kg	1.04E+02	1.46E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	MJ_{NCV}	1.43E+01	1.81E+01	1.97E+01	1.89E+01	1.92E+01	2.03E+01
NRSF	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	4.25E+00	4.59E+00	4.58E+00	4.53E+00	2.18E+01	2.19E+01
HWD	kg	0.00E+00	0.00E+00	9.38E-06	9.38E-06	6.97E-06	6.97E-06
NHWD	kg	6.15E-02	7.28E-02	1.20E-01	1.18E-01	1.06E-01	1.09E-01
RWD	kg	0.00E+00	0.00E+00	1.63E-03	1.63E-03	1.20E-03	1.20E-03
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Melbourne South-East Metropolitan region

TABLE 25. ENVIRONMENTAL PROFILES (A1-A3), CONCRETE FOR SPECIAL APPLICATIONS, CLAYTON (VIC), PER M^3

Indicator	Unit	STABILISED SAND 3%	STABILISED SAND 5%	KERB MACHINE 320KG/M^3	KERB MACHINE 280KG/M^3	NO FINES 4%
GWP	**kg CO_2 eq**	**80.6**	**112**	**333.0**	**289**	**82**
ODP	kg CFC-11 eq	3.31E-06	3.63E-06	6.65E-06	5.99E-06	2.38E-06
AP	kg SO_2 eq	0.285	0.376	1.11	0.973	0.274
EP	kg PO4--- eq	0.0486	0.0618	0.164	0.144	0.0452
POCP	kg C_2H_4 eq	0.0166	0.0205	0.0522	0.0461	0.0149
ADPE	kg Sb eq	5.90E-07	7.24E-07	3.50E-06	3.08E-06	7.08E-07
ADPF	MJ	704	887	2310	2030	635

TABLE 26. ENVIRONMENTAL PARAMETERS (A1-A3), CONCRETE FOR SPECIAL APPLICATIONS, CLAYTON (VIC), PER M^3

Parameter	Unit	STABILISED SAND 3%	STABILISED SAND 5%	KERB MACHINE 320KG/M^3	KERB MACHINE 280KG/M^3	NO FINES 4%
PERE	MJ_{NCV}	7.97E+00	9.73E+00	2.50E+01	2.21E+01	8.45E+00
PERM	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ_{NCV}	7.97E+00	9.73E+00	2.50E+01	2.21E+01	8.45E+00
PENRE	MJ_{NCV}	7.03E+02	8.86E+02	2.31E+03	2.03E+03	6.34E+02
PENRM	MJ_{NCV}	0.00E+00	0.00E+00	7.87E+00	6.88E+00	0.00E+00
PENRT	MJ_{NCV}	7.03E+02	8.86E+02	2.32E+03	2.04E+03	6.34E+02
SM	kg	0.00E+00	0.00E+00	4.16E+01	4.16E+01	0.00E+00
RSF	MJ_{NCV}	2.74E+00	4.38E+00	1.53E+01	1.32E+01	3.29E+00
NRSF	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	2.98E+00	3.11E+00	4.34E+00	3.98E+00	2.46E+00
HWD	kg	2.59E-07	2.59E-07	8.44E-06	7.38E-06	0.00E+00
NHWD	kg	2.65E-02	3.11E-02	1.04E-01	9.21E-02	2.86E-02
RWD	kg	3.87E-05	3.87E-05	1.47E-03	1.29E-03	0.00E+00
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

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TABLE 27. ENVIRONMENTAL PROFILES (A1-A3), CONCRETE FOR SPECIAL APPLICATIONS, CLAYTON (VIC), PER M^3

Indicator	Unit	FIBRE STEEL 32MPa	FIBRE STEEL 40MPa	FIBRE STEEL 50MPa	HIGH PERFORMANCE 32MPa	HIGH PERFORMANCE 40MPa	HIGH PERFORMANCE 50MPa
GWP	**kg CO_2 eq**	**377**	**441**	**465**	**329**	**392**	**417**
ODP	kg CFC-11 eq	9.54E-06	1.03E-05	1.09E-05	6.64E-06	7.41E-06	8.02E-06
AP	kg SO_2 eq	1.33	1.52	1.59	1.03	1.22	1.29
EP	kg PO4--- eq	0.230	0.257	0.270	0.159	0.187	0.199
POCP	kg C_2H_4 eq	0.0672	0.0755	0.0792	0.0498	0.058	0.0617
ADPE	kg Sb eq	5.75E-02	5.75E-02	5.75E-02	3.52E-06	3.92E-06	4.51E-06
ADPF	MJ	2830	3220	3400	2250	2640	2810

TABLE 28. ENVIRONMENTAL PARAMETERS (A1-A3), CONCRETE FOR SPECIAL APPLICATIONS, CLAYTON (VIC), PER M^3

Parameter	Unit	FIBRE STEEL 32MPa	FIBRE STEEL 40MPa	FIBRE STEEL 50MPa	HIGH PERFORMANCE 32MPa	HIGH PERFORMANCE 40MPa	HIGH PERFORMANCE 50MPa
PERE	MJ_{NCV}	6.49E+01	6.86E+01	7.05E+01	2.41E+01	2.79E+01	2.98E+01
PERM	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ_{NCV}	6.49E+01	6.86E+01	7.05E+01	2.41E+01	2.79E+01	2.98E+01
PENRE	MJ_{NCV}	2.90E+03	3.28E+03	3.46E+03	2.24E+03	2.63E+03	2.80E+03
PENRM	MJ_{NCV}	8.20E+00	8.74E+00	1.09E+01	8.20E+00	8.74E+00	1.09E+01
PENRT	MJ_{NCV}	2.91E+03	3.29E+03	3.47E+03	2.25E+03	2.64E+03	2.82E+03
SM	kg	7.87E+01	8.91E+01	1.20E+02	5.20E+01	6.24E+01	9.36E+01
RSF	MJ_{NCV}	2.54E+01	2.87E+01	2.98E+01	1.53E+01	1.86E+01	1.97E+01
NRSF	MJ_{NCV}	4.71E+00	4.71E+00	4.71E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	4.85E+00	5.11E+00	5.14E+00	4.13E+00	4.38E+00	4.41E+00
HWD	kg	2.45E-02	2.45E-02	2.45E-02	8.79E-06	9.38E-06	1.17E-05
NHWD	kg	1.82E+01	1.82E+01	1.82E+01	1.05E-01	1.17E-01	1.32E-01
RWD	kg	3.16E-03	3.26E-03	3.67E-03	1.53E-03	1.63E-03	2.04E-03
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

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TABLE 29. ENVIRONMENTAL PROFILES (A1-A3), CONCRETE FOR SPECIAL APPLICATIONS, CLAYTON (VIC), PER M^3

Indicator	Unit	LOW HEAT 32MPa	LOW HEAT 40MPa	LOW HEAT 50MPa	SUPER WORK 40MPA 14mm 650SPR	SUPER WORK 50MPA 14mm 650SPR	SUPER WORK 65MPA 14mm 650SPR	SUPER WORK 80MPA 14mm 650SPR
GWP	**kg CO_2 eq**	**204**	**228**	**269**	**308**	**331**	**384**	**434**
ODP	kg CFC-11 eq	6.63E-06	7.02E-06	8.17E-06	8.86E-06	9.31E-06	9.94E-06	1.10E-05
AP	kg SO_2 eq	1.01	1.12	1.38	1.20	1.29	1.52	1.73
EP	kg PO4--- eq	0.126	0.139	0.166	0.170	0.181	0.208	0.234
POCP	kg C_2H_4 eq	0.0451	0.0493	0.0593	0.0574	0.0614	0.0744	0.0831
ADPE	kg Sb eq	3.16E-06	3.40E-06	4.14E-06	1.93E-05	2.20E-05	2.51E-05	2.81E-05
ADPF	MJ	1790	1960	2340	2490	2660	3010	3380

TABLE 30. ENVIRONMENTAL PARAMETERS (A1-A3), CONCRETE FOR SPECIAL APPLICATIONS, CLAYTON (VIC), PER M^3

Parameter	Unit	LOW HEAT 32MPa	LOW HEAT 40MPa	LOW HEAT 50MPa	SUPER WORK 40MPA 14mm 650SPR	SUPER WORK 50MPA 14mm 650SPR	SUPER WORK 65MPA 14mm 650SPR	SUPER WORK 80MPA 14mm 650SPR
PERE	MJ_{NCV}	2.02E+01	2.20E+01	2.62E+01	3.36E+01	3.67E+01	7.48E+01	7.94E+01
PERM	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	1.06E-01	1.20E-01	1.35E-01	1.44E-01
PERT	MJ_{NCV}	2.02E+01	2.20E+01	2.62E+01	3.37E+01	3.68E+01	7.49E+01	7.95E+01
PENRE	MJ_{NCV}	1.83E+03	2.00E+03	2.39E+03	2.49E+03	2.67E+03	3.04E+03	3.41E+03
PENRM	MJ_{NCV}	8.20E+00	8.74E+00	1.09E+01	1.99E+01	2.26E+01	2.53E+01	2.71E+01
PENRT	MJ_{NCV}	1.83E+03	2.01E+03	2.40E+03	2.51E+03	2.69E+03	3.06E+03	3.44E+03
SM	kg	2.08E+02	2.29E+02	3.12E+02	2.27E+02	2.50E+02	2.55E+02	3.17E+02
RSF	MJ_{NCV}	7.13E+00	8.22E+00	9.59E+00	1.22E+01	1.32E+01	1.51E+01	1.73E+01
NRSF	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	3.71E+00	3.79E+00	3.96E+00	3.96E+00	4.02E+00	1.57E+01	1.58E+01
HWD	kg	8.79E-06	9.38E-06	1.17E-05	4.40E-05	5.01E-05	5.62E-05	6.13E-05
NHWD	kg	8.66E-02	9.30E-02	1.10E-01	3.62E+00	4.15E+00	4.69E+00	5.35E+00
RWD	kg	1.53E-03	1.63E-03	2.04E-03	6.43E-03	7.33E-03	8.24E-03	9.08E-03
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Geelong/Bellarine region

Environmental profiles and parameters

Product table list

Geelong/Bellarine region

In each region, we start with presenting a summary of the cradle-to-gate carbon footprint (GWP summary) of our concrete mixes.

Lower carbon concrete products

Normal class concrete products

VicRoads concrete products

Concrete products for special applications

Cradle-to-gate GWP-GHG summary (kg CO_2 eq/m^3)

Geelong/Bellarine region

ENVISIA® 20MPa	ENVISIA® 25MPa	ENVISIA® 32MPa	ENVISIA® 40MPa	ENVISIA® 50MPa	ENVISIA® 65MPa	
202	222	253	315	375	378	
ENVIROCRETE® PLUS 20MPa	ENVIROCRETE® PLUS 25MPa	ENVIROCRETE® PLUS 32MPa	ENVIROCRETE® PLUS 40MPa	ENVIROCRETE® PLUS 50MPa		
214	233	263	321	396		
ENVIROCRETE® 40% 20MPa	ENVIROCRETE® 40% 25MPa	ENVIROCRETE® 40% 32MPa	ENVIROCRETE® 40% 40MPa	ENVIROCRETE® 40% 50MPa		
215	236	268	330	404		
ENVIROCRETE® 30% 20MPa	ENVIROCRETE® 30% 25MPa	ENVIROCRETE® 30% 32MPa	ENVIROCRETE® 30% 40MPa	ENVIROCRETE® 30% 50MPa		
240	263	301	371	452		
NORMAL GP BLEND 20MPa	NORMAL GP BLEND 25MPa	NORMAL GP BLEND 32MPa	NORMAL GP BLEND 40MPa	NORMAL GP BLEND 50MPa		
253	289	314	375	476		
NORMAL GP/FA BLEND 20MPa	NORMAL GP/FA BLEND 25MPa	NORMAL GP/FA BLEND 32MPa	NORMAL GP/FA BLEND 40MPa	NORMAL GP/FA BLEND 50MPa		
240	259	288	349	457		
VR330 32MPa 20MM GP/FA	VR330 32MPa 20MM GP/SLAG	VR400 40MPa 20MM GP/FA	VR400 40MPa 20MM GP/SLAG	VR400 40MPa 14MM TREMIE GP/SLAG	VR400 40MPa 14MM TREMIE/ CFA GP/SLAG	
313	247	361	283	284	324	
VR400 40MPa 7MM SHOTCRETE	VR450 50MPa 20MM GP/FA	VR450 50MPa 20MM GP/SLAG	VR450 50MPa 14MM TREMIE GP/SLAG	VR450 50MPa 14MM TREMIE/ CFA GP/SLAG		
413	412	313	314	337		
HIGH SLUMP 20MPa	HIGH SLUMP 25MPa	HIGH SLUMP 32MPa	HIGH SLUMP 40MPa	HIGH SLUMP 50MPa	HIGH SLUMP 65MPa	HIGH SLUMP 80MPa
274	315	345	410	457	480	506
TREMIE 40MPa	TREMIE 50MPa	POST TENSIONED 40MPa 22@3	POST TENSIONED 40MPa 22@4	SHOTCRETE 32MPa	SHOTCRETE 40MPa	
306	384	392	377	414	435	
STABILISED SAND 3%	STABILISED SAND 5%	KERB MACHINE 320KG/M^3	KERB MACHINE 280KG/M^3	NO FINES 4%		
84	114	262	283	74		

Geelong/Bellarine region

TABLE 1. ENVIRONMENTAL PROFILES (A1-A3), LOWER CARBON CONCRETE, WAURN PONDS (VIC), PER M^3

Indicator	Unit	ENVISIA® 20 MPa	ENVISIA® 25 MPa	ENVISIA® 32 MPa	ENVISIA® 40 MPa	ENVISIA® 50 MPa	ENVISIA® 65 MPa
GWP	**kg CO_2 eq**	**202**	**222**	**253**	**315**	**375**	**378**
ODP	kg CFC-11 eq	4.70E-06	5.01E-06	5.55E-06	7.53E-06	7.98E-06	8.09E-06
AP	kg SO_2 eq	0.886	0.975	1.12	1.39	1.57	1.59
EP	kg PO4--- eq	0.112	0.122	0.139	0.175	0.200	0.203
POCP	kg C_2H_4 eq	0.0389	0.0424	0.048	0.0607	0.0682	0.0692
ADPE	kg Sb eq	2.41E-06	2.72E-06	3.03E-06	4.76E-06	6.14E-06	6.78E-06
ADPF	MJ	1620	1760	1990	2510	2870	2910

TABLE 2. ENVIRONMENTAL PARAMETERS (A1-A3), LOWER CARBON CONCRETE, WAURN PONDS (VIC), PER M^3

Parameter	Unit	ENVISIA® 20 MPa	ENVISIA® 25 MPa	ENVISIA® 32 MPa	ENVISIA® 40 MPa	ENVISIA® 50 MPa	ENVISIA® 65 MPa
PERE	MJ_{NCV}	2.14E+01	2.29E+01	2.53E+01	3.01E+01	3.47E+01	3.57E+01
PERM	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ_{NCV}	2.14E+01	2.29E+01	2.53E+01	3.01E+01	3.47E+01	3.57E+01
PENRE	MJ_{NCV}	1.65E+03	1.79E+03	2.02E+03	2.55E+03	2.90E+03	2.94E+03
PENRM	MJ_{NCV}	5.35E+00	6.23E+00	6.88E+00	1.34E+01	1.84E+01	2.11E+01
PENRT	MJ_{NCV}	1.65E+03	1.80E+03	2.03E+03	2.56E+03	2.92E+03	2.97E+03
SM	kg	1.57E+02	1.75E+02	2.03E+02	2.48E+02	2.48E+02	2.59E+02
RSF	MJ_{NCV}	8.00E+00	8.88E+00	1.03E+01	1.26E+01	1.58E+01	1.58E+01
NRSF	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	3.67E+00	3.73E+00	3.87E+00	4.13E+00	4.29E+00	4.26E+00
HWD	kg	5.81E-06	6.75E-06	7.45E-06	1.44E-05	1.97E-05	2.26E-05
NHWD	kg	8.15E-02	8.95E-02	9.85E-02	1.35E-01	1.69E-01	1.84E-01
RWD	kg	1.01E-03	1.17E-03	1.30E-03	2.51E-03	3.43E-03	3.94E-03
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Geelong/Bellarine region

TABLE 3. ENVIRONMENTAL PROFILES (A1-A3), LOWER CARBON CONCRETE, WAURN PONDS (VIC), PER M^3

Indicator	Unit	ENVIROCRETE® PLUS 20MPa	ENVIROCRETE® PLUS 25MPa	ENVIROCRETE® PLUS 32MPa	ENVIROCRETE® PLUS 40MPa	ENVIROCRETE® PLUS 50MPa
GWP	**kg CO_2 eq**	**214**	**233**	**263**	**321**	**396**
ODP	kg CFC-11 eq	4.60E-06	4.77E-06	5.05E-06	6.65E-06	7.80E-06
AP	kg SO_2 eq	0.889	0.953	1.05	1.26	1.57
EP	kg PO4--- eq	0.115	0.123	0.136	0.167	0.205
POCP	kg C_2H_4 eq	0.0393	0.0420	0.0460	0.0561	0.0687
ADPE	kg Sb eq	2.45E-06	2.75E-06	3.04E-06	4.08E-06	5.57E-06
ADPF	MJ	1660	1780	1960	2390	2920

TABLE 4. ENVIRONMENTAL PARAMETERS (A1-A3), LOWER CARBON CONCRETE, WAURN PONDS (VIC), PER M^3

Parameter	Unit	ENVIROCRETE® PLUS 20MPa	ENVIROCRETE® PLUS 25MPa	ENVIROCRETE® PLUS 32MPa	ENVIROCRETE® PLUS 40MPa	ENVIROCRETE® PLUS 50MPa
PERE	MJ_{NCV}	2.17E+01	2.30E+01	2.49E+01	2.84E+01	3.47E+01
PERM	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ_{NCV}	2.17E+01	2.30E+01	2.49E+01	2.84E+01	3.47E+01
PENRE	MJ_{NCV}	1.68E+03	1.80E+03	1.98E+03	2.41E+03	2.95E+03
PENRM	MJ_{NCV}	5.35E+00	6.23E+00	6.88E+00	1.07E+01	1.56E+01
PENRT	MJ_{NCV}	1.69E+03	1.81E+03	1.99E+03	2.42E+03	2.96E+03
SM	kg	1.39E+02	1.44E+02	1.50E+02	1.60E+02	2.14E+02
RSF	MJ_{NCV}	8.82E+00	9.81E+00	1.14E+01	1.39E+01	1.73E+01
NRSF	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	3.72E+00	3.75E+00	3.88E+00	4.08E+00	4.36E+00
HWD	kg	5.81E-06	6.75E-06	7.45E-06	1.15E-05	1.68E-05
NHWD	kg	8.14E-02	8.89E-02	9.69E-02	1.20E-01	1.58E-01
RWD	kg	1.01E-03	1.17E-03	1.30E-03	2.00E-03	2.92E-03
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Geelong/Bellarine region

TABLE 5. ENVIRONMENTAL PROFILES (A1-A3), LOWER CARBON CONCRETE, WAURN PONDS (VIC), PER M^3

Indicator	Unit	ENVIROCRETE® 40% 20MPa	ENVIROCRETE® 40% 25MPa	ENVIROCRETE® 40% 32MPa	ENVIROCRETE® 40% 40MPa	ENVIROCRETE® 40% 50MPa
GWP	**kg CO_2 eq**	**215**	**236**	**268**	**330**	**404**
ODP	kg CFC-11 eq	3.81E-06	4.02E-06	4.30E-06	6.01E-06	6.81E-06
AP	kg SO_2 eq	0.759	0.833	0.933	1.17	1.42
EP	kg PO4--- eq	0.106	0.116	0.130	0.163	0.196
POCP	kg C_2H_4 eq	0.0349	0.0379	0.0421	0.0531	0.0636
ADPE	kg Sb eq	2.40E-06	2.71E-06	3.01E-06	3.45E-06	4.30E-06
ADPF	MJ	1550	1670	1870	2320	2790

TABLE 6. ENVIRONMENTAL PARAMETERS (A1-A3), LOWER CARBON CONCRETE, WAURN PONDS (VIC), PER M^3

Parameter	Unit	ENVIROCRETE® 40% 20MPa	ENVIROCRETE® 40% 25MPa	ENVIROCRETE® 40% 32MPa	ENVIROCRETE® 40% 40MPa	ENVIROCRETE® 40% 50MPa
PERE	MJ_{NCV}	2.04E+01	2.18E+01	2.39E+01	2.69E+01	3.18E+01
PERM	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ_{NCV}	2.04E+01	2.18E+01	2.39E+01	2.69E+01	3.18E+01
PENRE	MJ_{NCV}	1.55E+03	1.68E+03	1.87E+03	2.33E+03	2.80E+03
PENRM	MJ_{NCV}	5.35E+00	6.23E+00	6.88E+00	7.98E+00	1.02E+01
PENRT	MJ_{NCV}	1.56E+03	1.69E+03	1.88E+03	2.34E+03	2.81E+03
SM	kg	6.45E+01	7.28E+01	7.70E+01	9.36E+01	1.15E+02
RSF	MJ_{NCV}	9.65E+00	1.07E+01	1.24E+01	1.51E+01	1.89E+01
NRSF	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	3.65E+00	3.70E+00	3.84E+00	4.07E+00	4.33E+00
HWD	kg	5.81E-06	6.75E-06	7.45E-06	8.56E-06	1.09E-05
NHWD	kg	7.79E-02	8.54E-02	9.35E-02	1.03E-01	1.24E-01
RWD	kg	1.01E-03	1.17E-03	1.30E-03	1.49E-03	1.90E-03
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Geelong/Bellarine region

TABLE 7. ENVIRONMENTAL PROFILES (A1-A3), LOWER CARBON CONCRETE, WAURN PONDS (VIC), PER M^3

Indicator	Unit	ENVIROCRETE® 30% 20MPa	ENVIROCRETE® 30% 25MPa	ENVIROCRETE® 30% 32MPa	ENVIROCRETE® 30% 40MPa	ENVIROCRETE® 30% 50MPa
GWP	**kg CO_2 eq**	**240**	**263**	**301**	**371**	**452**
ODP	kg CFC-11 eq	3.71E-06	3.91E-06	4.26E-06	5.92E-06	6.60E-06
AP	kg SO_2 eq	0.78	0.856	0.977	1.21	1.46
EP	kg PO4--- eq	0.113	0.123	0.14	0.175	0.21
POCP	kg C_2H_4 eq	0.0362	0.0393	0.0444	0.0557	0.0661
ADPE	kg Sb eq	2.49E-06	2.80E-06	3.13E-06	3.60E-06	4.47E-06
ADPF	MJ	1640	1780	2010	2490	2970

TABLE 8. ENVIRONMENTAL PARAMETERS (A1-A3), LOWER CARBON CONCRETE, WAURN PONDS (VIC), PER M^3

Parameter	Unit	ENVIROCRETE® 30% 20MPa	ENVIROCRETE® 30% 25MPa	ENVIROCRETE® 30% 32MPa	ENVIROCRETE® 30% 40MPa	ENVIROCRETE® 30% 50MPa
PERE	MJ_{NCV}	2.14E+01	2.30E+01	2.54E+01	2.87E+01	3.38E+01
PERM	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ_{NCV}	2.14E+01	2.30E+01	2.54E+01	2.87E+01	3.38E+01
PENRE	MJ_{NCV}	1.64E+03	1.78E+03	2.01E+03	2.50E+03	2.97E+03
PENRM	MJ_{NCV}	5.35E+00	6.23E+00	6.88E+00	7.98E+00	1.02E+01
PENRT	MJ_{NCV}	1.65E+03	1.79E+03	2.02E+03	2.50E+03	2.98E+03
SM	kg	3.64E+01	4.16E+01	4.68E+01	5.41E+01	5.72E+01
RSF	MJ_{NCV}	1.12E+01	1.24E+01	1.45E+01	1.77E+01	2.21E+01
NRSF	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	3.74E+00	3.81E+00	3.97E+00	4.24E+00	4.51E+00
HWD	kg	5.81E-06	6.75E-06	7.45E-06	8.56E-06	1.09E-05
NHWD	kg	8.16E-02	8.95E-02	9.86E-02	1.09E-01	1.32E-01
RWD	kg	1.01E-03	1.17E-03	1.30E-03	1.49E-03	1.90E-03
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Geelong/Bellarine region

TABLE 9. ENVIRONMENTAL PROFILES (A1-A3), NORMAL CLASS CONCRETE, WAURN PONDS (VIC), PER M^3

Indicator	Unit	NORMAL GP BLEND 20MPa	NORMAL GP BLEND 25MPa	NORMAL GP BLEND 32MPa	NORMAL GP BLEND 40MPa	NORMAL GP BLEND 50MPa
GWP	**kg CO_2 eq**	**253**	**289**	**314**	**375**	**476**
ODP	kg CFC-11 eq	3.44E-06	3.69E-06	3.87E-06	4.31E-06	5.07E-06
AP	kg SO_2 eq	0.756	0.858	0.932	1.11	1.4
EP	kg PO4--- eq	0.114	0.129	0.14	0.165	0.207
POCP	kg C_2H_4 eq	0.0356	0.04	0.0431	0.0506	0.063
ADPE	kg Sb eq	2.56E-06	2.92E-06	3.18E-06	3.78E-06	4.80E-06
ADPF	MJ	1660	1860	2010	2350	2940

TABLE 10. ENVIRONMENTAL PARAMETERS (A1-A3), NORMAL CLASS CONCRETE, WAURN PONDS (VIC), PER M^3

Parameter	Unit	NORMAL GP BLEND 20MPa	NORMAL GP BLEND 25MPa	NORMAL GP BLEND 32MPa	NORMAL GP BLEND 40MPa	NORMAL GP BLEND 50MPa
PERE	MJ_{NCV}	2.18E+01	2.40E+01	2.55E+01	2.93E+01	3.56E+01
PERM	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ_{NCV}	2.18E+01	2.40E+01	2.55E+01	2.93E+01	3.56E+01
PENRE	MJ_{NCV}	1.66E+03	1.86E+03	2.00E+03	2.35E+03	2.93E+03
PENRM	MJ_{NCV}	5.55E+00	6.39E+00	7.02E+00	8.49E+00	1.09E+01
PENRT	MJ_{NCV}	1.66E+03	1.86E+03	2.01E+03	2.35E+03	2.94E+03
SM	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	MJ_{NCV}	1.23E+01	1.43E+01	1.56E+01	1.89E+01	2.44E+01
NRSF	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	3.82E+00	3.94E+00	4.04E+00	4.25E+00	4.61E+00
HWD	kg	6.01E-06	6.92E-06	7.60E-06	9.10E-06	1.17E-05
NHWD	kg	8.47E-02	9.44E-02	1.01E-01	1.17E-01	1.45E-01
RWD	kg	1.05E-03	1.20E-03	1.32E-03	1.58E-03	2.04E-03
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Geelong/Bellarine region

TABLE 11. ENVIRONMENTAL PROFILES (A1-A3), NORMAL CLASS CONCRETE, WAURN PONDS (VIC), PER M^3

Indicator	Unit	NORMAL GP/FA BLEND 20MPa	NORMAL GP/FA BLEND 25MPa	NORMAL GP/FA BLEND 32MPa	NORMAL GP/FA BLEND 40MPa	NORMAL GP/FA BLEND 50MPa
GWP	**kg CO_2 eq**	**240**	**259**	**288**	**349**	**457**
ODP	kg CFC-11 eq	4.22E-06	4.75E-06	4.97E-06	5.57E-06	6.56E-06
AP	kg SO_2 eq	0.734	0.795	0.877	1.06	1.37
EP	kg PO4--- eq	0.113	0.123	0.135	0.161	0.207
POCP	kg C_2H_4 eq	0.0355	0.0385	0.0421	0.0498	0.0634
ADPE	kg Sb eq	2.49E-06	2.99E-06	3.27E-06	3.94E-06	5.04E-06
ADPF	MJ	1650	1780	1950	2310	2940

TABLE 12. ENVIRONMENTAL PARAMETERS (A1-A3), NORMAL CLASS CONCRETE, WAURN PONDS (VIC), PER M^3

Parameter	Unit	NORMAL GP/FA BLEND 20MPa	NORMAL GP/FA BLEND 25MPa	NORMAL GP/FA BLEND 32MPa	NORMAL GP/FA BLEND 40MPa	NORMAL GP/FA BLEND 50MPa
PERE	MJ_{NCV}	2.07E+01	2.20E+01	2.38E+01	2.75E+01	3.43E+01
PERM	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ_{NCV}	2.07E+01	2.20E+01	2.38E+01	2.75E+01	3.43E+01
PENRE	MJ_{NCV}	1.64E+03	1.78E+03	1.94E+03	2.30E+03	2.93E+03
PENRM	MJ_{NCV}	5.55E+00	7.38E+00	8.06E+00	9.84E+00	1.26E+01
PENRT	MJ_{NCV}	1.65E+03	1.79E+03	1.95E+03	2.31E+03	2.95E+03
SM	kg	5.72E+01	8.32E+01	8.32E+01	9.36E+01	1.04E+02
RSF	MJ_{NCV}	1.12E+01	1.21E+01	1.36E+01	1.68E+01	2.26E+01
NRSF	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	3.71E+00	3.75E+00	3.86E+00	4.04E+00	4.44E+00
HWD	kg	6.01E-06	7.98E-06	8.72E-06	1.05E-05	1.35E-05
NHWD	kg	8.20E-02	9.40E-02	1.02E-01	1.19E-01	1.49E-01
RWD	kg	1.05E-03	1.39E-03	1.52E-03	1.84E-03	2.35E-03
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Geelong/Bellarine region

TABLE 13. ENVIRONMENTAL PROFILES (A1-A3), VICROADS CONCRETE PRODUCTS, WAURN PONDS (VIC), PER M^3

Indicator	Unit	VR330 32MPa 20MM GP/FA	VR330 32MPa 20MM GP/ SLAG	VR400 40MPa 20MM GP/FA	VR400 40MPa 20MM GP/ SLAG	VR400 40MPa 14MM TREMIE GP/SLAG	VR400 40MPa 14MM TREMIE/ CFA GP/SLAG
GWP	**kg CO_2 eq**	**313**	**247**	**361**	**283**	**284**	**324**
ODP	kg CFC-11 eq	7.12E-06	7.01E-06	7.74E-06	7.61E-06	7.61E-06	7.73E-06
AP	kg SO_2 eq	1.01	1.1	1.15	1.26	1.27	1.41
EP	kg PO4--- eq	0.154	0.141	0.175	0.16	0.161	0.179
POCP	kg C_2H_4 eq	0.0505	0.0507	0.0571	0.0572	0.0576	0.0629
ADPE	kg Sb eq	1.93E-05	1.92E-05	1.94E-05	1.93E-05	2.14E-05	2.04E-05
ADPF	MJ	2270	2070	2550	2320	2350	2660

TABLE 14. ENVIRONMENTAL PARAMETERS (A1-A3), VICROADS CONCRETE PRODUCTS, WAURN PONDS (VIC), PER M^3

Parameter	Unit	VR330 32MPa 20MM GP/FA	VR330 32MPa 20MM GP/ SLAG	VR400 40MPa 20MM GP/FA	VR400 40MPa 20MM GP/ SLAG	VR400 40MPa 14MM TREMIE GP/SLAG	VR400 40MPa 14MM TREMIE/ CFA GP/SLAG
PERE	MJ_{NCV}	2.89E+01	2.80E+01	3.09E+01	2.98E+01	3.22E+01	4.02E+01
PERM	MJ_{NCV}	2.89E-02	2.89E-02	2.89E-02	2.89E-02	7.21E-02	9.62E-02
PERT	MJ_{NCV}	2.89E+01	2.80E+01	3.09E+01	2.98E+01	3.22E+01	4.03E+01
PENRE	MJ_{NCV}	2.26E+03	2.10E+03	2.55E+03	2.36E+03	2.38E+03	2.69E+03
PENRM	MJ_{NCV}	2.14E+00	2.14E+00	2.14E+00	2.14E+00	5.35E+00	2.90E+01
PENRT	MJ_{NCV}	2.26E+03	2.11E+03	2.55E+03	2.36E+03	2.39E+03	2.72E+03
SM	kg	8.84E+01	1.77E+02	1.04E+02	2.08E+02	2.08E+02	2.39E+02
RSF	MJ_{NCV}	1.40E+01	9.32E+00	1.64E+01	1.10E+01	1.10E+01	1.26E+01
NRSF	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	4.11E+00	3.95E+00	4.23E+00	4.03E+00	4.04E+00	3.99E+00
HWD	kg	2.14E-05	2.14E-05	2.14E-05	2.14E-05	3.03E-05	5.18E-05
NHWD	kg	4.90E+00	4.89E+00	4.90E+00	4.89E+00	5.18E+00	3.39E+00
RWD	kg	4.16E-03	4.16E-03	4.16E-03	4.16E-03	4.98E-03	7.91E-03
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Geelong/Bellarine region

TABLE 15. ENVIRONMENTAL PROFILES (A1-A3), VICROADS CONCRETE PRODUCTS, WAURN PONDS (VIC), PER M^3

Indicator	Unit	VR400 40MPa 7MM SHOTCRETE	VR450 50MPa 20MM GP/FA	VR450 50MPa 20MM GP/SLAG	VR450 50MPa 14MM TREMIE GP/SLAG	VR450 50MPa 14MM TREMIE/ CFA GP/SLAG
GWP	**kg CO_2 eq**	**413**	**412**	**313**	**314**	**337**
ODP	kg CFC-11 eq	7.48E-06	8.20E-06	8.18E-06	8.11E-06	7.94E-06
AP	kg SO_2 eq	1.41	1.3	1.4	1.4	1.46
EP	kg PO4--- eq	0.198	0.197	0.176	0.176	0.186
POCP	kg C_2H_4 eq	0.072	0.0635	0.0627	0.0628	0.0652
ADPE	kg Sb eq	2.03E-05	1.97E-05	1.94E-05	2.15E-05	2.10E-05
ADPF	MJ	2820	2850	2550	2560	2770

TABLE 16. ENVIRONMENTAL PARAMETERS (A1-A3), VICROADS CONCRETE PRODUCTS, WAURN PONDS (VIC), PER M^3

Parameter	Unit	VR400 40MPa 7MM SHOTCRETE	VR450 50MPa 20MM GP/FA	VR450 50MPa 20MM GP/SLAG	VR450 50MPa 14MM TREMIE GP/SLAG	VR450 50MPa 14MM TREMIE/ CFA GP/SLAG
PERE	MJ_{NCV}	1.01E+02	3.38E+01	3.19E+01	3.42E+01	4.19E+01
PERM	MJ_{NCV}	2.89E-02	2.89E-02	2.89E-02	7.21E-02	9.62E-02
PERT	MJ_{NCV}	1.01E+02	3.39E+01	3.20E+01	3.43E+01	4.20E+01
PENRE	MJ_{NCV}	2.85E+03	2.84E+03	2.59E+03	2.60E+03	2.80E+03
PENRM	MJ_{NCV}	2.14E+00	2.14E+00	2.14E+00	5.35E+00	3.17E+01
PENRT	MJ_{NCV}	2.85E+03	2.85E+03	2.59E+03	2.61E+03	2.83E+03
SM	kg	7.28E+01	1.04E+02	2.34E+02	2.34E+02	2.50E+02
RSF	MJ_{NCV}	1.81E+01	1.92E+01	1.23E+01	1.23E+01	1.32E+01
NRSF	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	2.74E+01	4.48E+00	4.21E+00	4.17E+00	4.05E+00
HWD	kg	2.14E-05	2.14E-05	2.14E-05	3.03E-05	5.47E-05
NHWD	kg	4.91E+00	4.91E+00	4.90E+00	5.19E+00	3.40E+00
RWD	kg	4.16E-03	4.16E-03	4.16E-03	4.98E-03	8.42E-03
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Geelong/Bellarine region

TABLE 17. ENVIRONMENTAL PROFILES (A1-A3), CONCRETE FOR SPECIAL APPLICATIONS, WAURN PONDS (VIC), PER M^3

Indicator	Unit	HIGH SLUMP 20 MPa	HIGH SLUMP 25 MPa	HIGH SLUMP 32 MPa	HIGH SLUMP 40 MPa	HIGH SLUMP 50 MPa	HIGH SLUMP 65 MPa	HIGH SLUMP 80 MPa
GWP	**kg CO_2 eq**	**274**	**315**	**345**	**410**	**457**	**480**	**506**
ODP	kg CFC-11 eq	3.65E-06	3.92E-06	4.16E-06	4.59E-06	7.49E-06	8.41E-06	9.88E-06
AP	kg SO_2 eq	0.818	0.934	1.02	1.21	1.52	1.72	2.03
EP	kg PO4--- eq	0.124	0.14	0.153	0.18	0.216	0.235	0.262
POCP	kg C_2H_4 eq	0.0384	0.0433	0.0471	0.055	0.0686	0.0766	0.0882
ADPE	kg Sb eq	2.78E-06	3.18E-06	3.48E-06	4.15E-06	7.14E-06	1.37E-05	1.54E-05
ADPF	MJ	1790	2020	2190	2560	3100	3400	3790

TABLE 18. ENVIRONMENTAL PARAMETERS (A1-A3), CONCRETE FOR SPECIAL APPLICATIONS, WAURN PONDS (VIC), PER M^3

Parameter	Unit	HIGH SLUMP 20 MPa	HIGH SLUMP 25 MPa	HIGH SLUMP 32 MPa	HIGH SLUMP 40 MPa	HIGH SLUMP 50 MPa	HIGH SLUMP 65 MPa	HIGH SLUMP 80 MPa
PERE	MJ_{NCV}	2.33E+01	2.57E+01	2.76E+01	3.15E+01	3.65E+01	4.49E+01	5.03E+01
PERM	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.81E-02	1.44E-01	1.35E-01
PERT	MJ_{NCV}	2.33E+01	2.57E+01	2.76E+01	3.15E+01	3.65E+01	4.50E+01	5.04E+01
PENRE	MJ_{NCV}	1.78E+03	2.01E+03	2.19E+03	2.55E+03	3.10E+03	3.42E+03	3.83E+03
PENRM	MJ_{NCV}	6.03E+00	7.01E+00	7.75E+00	9.34E+00	1.14E+01	2.00E+01	2.91E+01
PENRT	MJ_{NCV}	1.79E+03	2.02E+03	2.19E+03	2.56E+03	3.12E+03	3.44E+03	3.86E+03
SM	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.32E+01	1.61E+02	2.96E+02
RSF	MJ_{NCV}	1.34E+01	1.56E+01	1.73E+01	2.08E+01	2.16E+01	2.19E+01	2.19E+01
NRSF	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	4.02E+00	4.12E+00	4.24E+00	4.42E+00	4.65E+00	4.80E+00	4.83E+00
HWD	kg	6.53E-06	7.58E-06	8.31E-06	1.00E-05	1.90E-05	4.17E-05	5.01E-05
NHWD	kg	9.12E-02	1.02E-01	1.10E-01	1.27E-01	6.39E-01	1.69E+00	1.64E+00
RWD	kg	1.13E-03	1.32E-03	1.45E-03	1.74E-03	2.54E-03	4.94E-03	6.56E-03
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Geelong/Bellarine region

TABLE 19. ENVIRONMENTAL PROFILES (A1-A3), CONCRETE FOR SPECIAL APPLICATIONS, WAURN PONDS (VIC), PER M^3

Indicator	Unit	TREMIE 40MPa	TREMIE 50MPa	POST TENSIONED 40MPa 22@3	POST TENSIONED 40MPa 22@4	SHOTCRETE 32MPa	SHOTCRETE 40MPa
GWP	**kg CO_2 eq**	**306**	**384**	**392**	**377**	**414**	**435**
ODP	kg CFC-11 eq	5.06E-06	6.14E-06	4.55E-06	4.44E-06	6.28E-06	6.45E-06
AP	kg SO_2 eq	1.1	1.4	1.16	1.11	1.34	1.4
EP	kg PO4--- eq	0.149	0.187	0.173	0.166	0.192	0.2
POCP	kg C_2H_4 eq	0.0487	0.0609	0.0529	0.0511	0.0661	0.0686
ADPE	kg Sb eq	1.68E-06	2.05E-06	3.92E-06	3.85E-06	3.78E-06	3.87E-06
ADPF	MJ	2110	2630	2470	2380	2710	2830

TABLE 20. ENVIRONMENTAL PARAMETERS (A1-A3), CONCRETE FOR SPECIAL APPLICATIONS, WAURN PONDS (VIC), PER M^3

Parameter	Unit	TREMIE 40MPa	TREMIE 50MPa	POST TENSIONED 40MPa 22@3	POST TENSIONED 40MPa 22@4	SHOTCRETE 32MPa	SHOTCRETE 40MPa
PERE	MJ_{NCV}	2.44E+01	2.94E+01	3.07E+01	2.99E+01	8.01E+01	8.12E+01
PERM	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ_{NCV}	2.44E+01	2.94E+01	3.07E+01	2.99E+01	8.01E+01	8.12E+01
PENRE	MJ_{NCV}	2.13E+03	2.65E+03	2.46E+03	2.37E+03	2.73E+03	2.85E+03
PENRM	MJ_{NCV}	0.00E+00	0.00E+00	8.74E+00	8.74E+00	6.01E+00	6.01E+00
PENRT	MJ_{NCV}	2.13E+03	2.65E+03	2.47E+03	2.38E+03	2.73E+03	2.85E+03
SM	kg	1.04E+02	1.46E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	MJ_{NCV}	1.43E+01	1.81E+01	1.97E+01	1.89E+01	1.92E+01	2.03E+01
NRSF	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	4.17E+00	4.51E+00	4.49E+00	4.44E+00	2.17E+01	2.18E+01
HWD	kg	0.00E+00	0.00E+00	9.38E-06	9.38E-06	6.97E-06	6.97E-06
NHWD	kg	6.27E-02	7.40E-02	1.22E-01	1.20E-01	1.04E-01	1.07E-01
RWD	kg	0.00E+00	0.00E+00	1.63E-03	1.63E-03	1.20E-03	1.20E-03
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Geelong/Bellarine region

TABLE 21. ENVIRONMENTAL PROFILES (A1-A3), CONCRETE FOR SPECIAL APPLICATIONS, WAURN PONDS (VIC), PER M^3

Indicator	Unit	STABILISED SAND 3%	STABILISED SAND 5%	KERB MACHINE 320KG/M^3	KERB MACHINE 280KG/M^3	NO FINES 4%
GWP	**kg CO_2 eq**	**83.8**	**114**	**262**	**283**	**73.6**
ODP	kg CFC-11 eq	3.21E-06	3.46E-06	6.61E-06	5.77E-06	1.40E-06
AP	kg SO_2 eq	0.28	0.368	1.04	0.955	0.237
EP	kg PO4--- eq	0.0478	0.0602	0.141	0.139	0.0383
POCP	kg C_2H_4 eq	0.0162	0.0199	0.0475	0.0449	0.0128
ADPE	kg Sb eq	8.45E-07	6.92E-07	3.22E-06	3.01E-06	6.98E-07
ADPF	MJ	749	917	2070	2040	520

TABLE 22. ENVIRONMENTAL PARAMETERS (A1-A3), CONCRETE FOR SPECIAL APPLICATIONS, WAURN PONDS (VIC), PER M^3

Parameter	Unit	STABILISED SAND 3%	STABILISED SAND 5%	KERB MACHINE 320KG/M^3	KERB MACHINE 280KG/M^3	NO FINES 4%
PERE	MJ_{NCV}	9.65E+00	1.10E+01	2.42E+01	2.40E+01	8.00E+00
PERM	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ_{NCV}	9.65E+00	1.10E+01	2.42E+01	2.40E+01	8.00E+00
PENRE	MJ_{NCV}	7.48E+02	9.17E+02	2.09E+03	2.05E+03	5.20E+02
PENRM	MJ_{NCV}	1.26E+00	0.00E+00	7.87E+00	6.88E+00	0.00E+00
PENRT	MJ_{NCV}	7.50E+02	9.17E+02	2.09E+03	2.06E+03	5.20E+02
SM	kg	0.00E+00	0.00E+00	1.33E+02	5.20E+01	0.00E+00
RSF	MJ_{NCV}	2.74E+00	4.38E+00	1.05E+01	1.26E+01	3.29E+00
NRSF	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	2.89E+00	3.02E+00	4.14E+00	4.09E+00	2.40E+00
HWD	kg	1.61E-06	2.59E-07	8.44E-06	7.38E-06	0.00E+00
NHWD	kg	3.08E-02	2.86E-02	9.08E-02	8.91E-02	2.75E-02
RWD	kg	2.73E-04	3.87E-05	1.47E-03	1.29E-03	0.00E+00
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Ballarat/Goldfields region

Environmental profiles and parameters

Product table list

Ballarat/Goldfields region

In each region, we start with presenting a summary of the cradle-to-gate carbon footprint (GWP summary) of our concrete mixes.

Lower carbon concrete products

Normal class concrete products

VicRoads concrete products

Concrete products for special applications

Cradle-to-gate GWP-GHG summary (kg CO_2 eq/m^3)

Ballarat/Goldfields region

ENVISIA® 20MPa	ENVISIA® 25MPa	ENVISIA® 32MPa	ENVISIA® 40MPa	ENVISIA® 50MPa	ENVISIA® 65MPa	
218	238	272	325	385	388	
ENVIROCRETE® PLUS 20MPa	ENVIROCRETE® PLUS 25MPa	ENVIROCRETE® PLUS 32MPa	ENVIROCRETE® PLUS 40MPa	ENVIROCRETE® PLUS 50MPa		
229	249	281	329	406		
ENVIROCRETE® 40% 20MPa	ENVIROCRETE® 40% 25MPa	ENVIROCRETE® 40% 32MPa	ENVIROCRETE® 40% 40MPa	ENVIROCRETE® 40% 50MPa		
229	250	284	337	412		
ENVIROCRETE® 30% 20MPa	ENVIROCRETE® 30% 25MPa	ENVIROCRETE® 30% 32MPa	ENVIROCRETE® 30% 40MPa	ENVIROCRETE® 30% 50MPa		
253	277	318	378	461		
NORMAL GP BLEND 20MPa	NORMAL GP BLEND 25MPa	NORMAL GP BLEND 32MPa	NORMAL GP BLEND 40MPa	NORMAL GP BLEND 50MPa		
261	291	328	387	495		
NORMAL GP/FA BLEND 20MPa	NORMAL GP/FA BLEND 25MPa	NORMAL GP/FA BLEND 32MPa	NORMAL GP/FA BLEND 40MPa	NORMAL GP/FA BLEND 50MPa		
239	267	302	339	450		
VR330 32MPa 20MM GP/FA	VR330 32MPa 20MM GP/SLAG	VR400 40MPa 20MM GP/FA	VR400 40MPa 20MM GP/SLAG	VR400 40MPa 14MM TREMIE GP/SLAG	VR400 40MPa 14MM TREMIE/ CFA GP/SLAG	
320	252	369	290	291	334	
VR400 40MPa 7MM SHOTCRETE	VR450 50MPa 20MM GP/FA	VR450 50MPa 20MM GP/SLAG	VR450 50MPa 14MM TREMIE GP/SLAG	VR450 50MPa 14MM TREMIE/ CFA GP/SLAG		
427	423	323	324	348		
HIGH SLUMP 20MPa	HIGH SLUMP 25MPa	HIGH SLUMP 32MPa	HIGH SLUMP 40MPa	HIGH SLUMP 50MPa	HIGH SLUMP 65MPa	HIGH SLUMP 80MPa
279	305	346	409	475	493	519
TREMIE 40MPa	TREMIE 50MPa	POST TENSIONED 40MPa 22@3	POST TENSIONED 40MPa 22@4	SHOTCRETE 32MPa	SHOTCRETE 40MPa	
330	410	408	393	421	441	
STABILISED SAND 3%	STABILISED SAND 5%	KERB MACHINE 320KG/M^3	KERB MACHINE 280KG/M^3	VR450 50MPa 14MM TREMIE/ CFA GP/SLAG		
84	114	323	288	98		

Ballarat/Goldfields region

TABLE 1. ENVIRONMENTAL PROFILES (A1-A3), LOWER CARBON CONCRETE, BALLARAT (VIC), PER M^3

Indicator	Unit	ENVISIA® 20 MPa	ENVISIA® 25 MPa	ENVISIA® 32 MPa	ENVISIA® 40 MPa	ENVISIA® 50 MPa	ENVISIA® 65 MPa
GWP	**kg CO_2 eq**	**218**	**238**	**272**	**325**	**385**	**388**
ODP	kg CFC-11 eq	6.64E-06	7.00E-06	7.76E-06	8.81E-06	9.25E-06	9.28E-06
AP	kg SO_2 eq	0.992	1.08	1.24	1.48	1.65	1.67
EP	kg PO4--- eq	0.132	0.142	0.161	0.189	0.214	0.216
POCP	kg C_2H_4 eq	0.0472	0.0509	0.0572	0.0669	0.0741	0.0749
ADPE	kg Sb eq	3.62E-06	4.07E-06	4.47E-06	5.06E-06	6.36E-06	7.00E-06
ADPF	MJ	1840	2000	2260	2660	3020	3060

TABLE 2. ENVIRONMENTAL PARAMETERS (A1-A3), LOWER CARBON CONCRETE, BALLARAT (VIC), PER M^3

Parameter	Unit	ENVISIA® 20 MPa	ENVISIA® 25 MPa	ENVISIA® 32 MPa	ENVISIA® 40 MPa	ENVISIA® 50 MPa	ENVISIA® 65 MPa
PERE	MJ_{NCV}	2.16E+01	2.37E+01	2.66E+01	3.12E+01	3.58E+01	3.70E+01
PERM	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ_{NCV}	2.16E+01	2.37E+01	2.66E+01	3.12E+01	3.58E+01	3.70E+01
PENRE	MJ_{NCV}	1.87E+03	2.02E+03	2.29E+03	2.70E+03	3.06E+03	3.09E+03
PENRM	MJ_{NCV}	9.02E+00	1.05E+01	1.17E+01	1.31E+01	1.79E+01	2.07E+01
PENRT	MJ_{NCV}	1.88E+03	2.04E+03	2.30E+03	2.71E+03	3.07E+03	3.11E+03
SM	kg	1.51E+02	1.68E+02	1.96E+02	2.39E+02	2.39E+02	2.50E+02
RSF	MJ_{NCV}	8.00E+00	8.88E+00	1.03E+01	1.26E+01	1.58E+01	1.58E+01
NRSF	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	4.08E+00	4.15E+00	4.32E+00	4.58E+00	4.61E+00	4.55E+00
HWD	kg	9.80E-06	1.14E-05	1.25E-05	1.41E-05	1.92E-05	2.22E-05
NHWD	kg	9.15E-02	1.03E-01	1.14E-01	1.31E-01	1.64E-01	1.79E-01
RWD	kg	1.70E-03	1.98E-03	2.18E-03	2.45E-03	3.35E-03	3.86E-03
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Ballarat/Goldfields region

TABLE 3. ENVIRONMENTAL PROFILES (A1-A3), LOWER CARBON CONCRETE, BALLARAT (VIC), PER M^3

Indicator	Unit	ENVIROCRETE® PLUS 20 MPa	ENVIROCRETE® PLUS 25 MPa	ENVIROCRETE® PLUS 32 MPa	ENVIROCRETE® PLUS 40 MPa	ENVIROCRETE® PLUS 50 MPa
GWP	**kg CO_2 eq**	**229**	**249**	**281**	**329**	**406**
ODP	kg CFC-11 eq	6.56E-06	6.77E-06	7.27E-06	7.89E-06	9.15E-06
AP	kg SO_2 eq	0.991	1.06	1.16	1.33	1.65
EP	kg PO4--- eq	0.134	0.143	0.158	0.18	0.219
POCP	kg C_2H_4 eq	0.0475	0.0502	0.0550	0.0618	0.0746
ADPE	kg Sb eq	3.64E-06	4.07E-06	4.43E-06	4.35E-06	5.78E-06
ADPF	MJ	1870	2000	2210	2510	3070

TABLE 4. ENVIRONMENTAL PARAMETERS (A1-A3), LOWER CARBON CONCRETE, BALLARAT (VIC), PER M^3

Parameter	Unit	ENVIROCRETE® PLUS 20 MPa	ENVIROCRETE® PLUS 25 MPa	ENVIROCRETE® PLUS 32 MPa	ENVIROCRETE® PLUS 40 MPa	ENVIROCRETE® PLUS 50 MPa
PERE	MJ_{NCV}	2.14E+01	2.31E+01	2.53E+01	2.78E+01	3.46E+01
PERM	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ_{NCV}	2.14E+01	2.31E+01	2.53E+01	2.78E+01	3.46E+01
PENRE	MJ_{NCV}	1.89E+03	2.02E+03	2.23E+03	2.53E+03	3.10E+03
PENRM	MJ_{NCV}	9.02E+00	1.05E+01	1.17E+01	1.04E+01	1.52E+01
PENRT	MJ_{NCV}	1.90E+03	2.03E+03	2.25E+03	2.54E+03	3.11E+03
SM	kg	1.35E+02	1.40E+02	1.46E+02	1.56E+02	2.08E+02
RSF	MJ_{NCV}	8.82E+00	9.81E+00	1.14E+01	1.39E+01	1.73E+01
NRSF	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	4.11E+00	4.15E+00	4.29E+00	4.49E+00	4.70E+00
HWD	kg	9.80E-06	1.14E-05	1.25E-05	1.11E-05	1.63E-05
NHWD	kg	9.12E-02	1.02E-01	1.12E-01	1.12E-01	1.50E-01
RWD	kg	1.70E-03	1.98E-03	2.18E-03	1.94E-03	2.84E-03
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Ballarat/Goldfields region

TABLE 5. ENVIRONMENTAL PROFILES (A1-A3), LOWER CARBON CONCRETE, BALLARAT (VIC), PER M^3

Indicator	Unit	ENVIROCRETE® 40% 20MPa	ENVIROCRETE® 40% 25MPa	ENVIROCRETE® 40% 32MPa	ENVIROCRETE® 40% 40MPa	ENVIROCRETE® 40% 50MPa
GWP	**kg CO_2 eq**	**229**	**250**	**284**	**337**	**412**
ODP	kg CFC-11 eq	5.74E-06	6.00E-06	6.51E-06	7.25E-06	8.16E-06
AP	kg SO_2 eq	0.853	0.929	1.04	1.23	1.48
EP	kg PO4--- eq	0.126	0.135	0.151	0.176	0.210
POCP	kg C_2H_4 eq	0.0427	0.0459	0.0508	0.0585	0.0691
ADPE	kg Sb eq	3.55E-06	3.98E-06	4.35E-06	3.67E-06	4.44E-06
ADPF	MJ	1730	1870	2090	2420	2900

TABLE 6. ENVIRONMENTAL PARAMETERS (A1-A3), LOWER CARBON CONCRETE, BALLARAT (VIC), PER M^3

Parameter	Unit	ENVIROCRETE® 40% 20MPa	ENVIROCRETE® 40% 25MPa	ENVIROCRETE® 40% 32MPa	ENVIROCRETE® 40% 40MPa	ENVIROCRETE® 40% 50MPa
PERE	MJ_{NCV}	1.91E+01	2.08E+01	2.30E+01	2.51E+01	3.01E+01
PERM	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ_{NCV}	1.91E+01	2.08E+01	2.30E+01	2.51E+01	3.01E+01
PENRE	MJ_{NCV}	1.74E+03	1.88E+03	2.10E+03	2.43E+03	2.91E+03
PENRM	MJ_{NCV}	9.02E+00	1.05E+01	1.17E+01	7.65E+00	9.73E+00
PENRT	MJ_{NCV}	1.75E+03	1.89E+03	2.11E+03	2.44E+03	2.92E+03
SM	kg	6.45E+01	7.28E+01	7.70E+01	9.36E+01	1.15E+02
RSF	MJ_{NCV}	9.65E+00	1.07E+01	1.24E+01	1.51E+01	1.89E+01
NRSF	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	4.04E+00	4.10E+00	4.24E+00	4.47E+00	4.62E+00
HWD	kg	9.80E-06	1.14E-05	1.25E-05	8.20E-06	1.04E-05
NHWD	kg	8.74E-02	9.84E-02	1.08E-01	9.48E-02	1.16E-01
RWD	kg	1.70E-03	1.98E-03	2.18E-03	1.43E-03	1.82E-03
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Ballarat/Goldfields region

TABLE 7. ENVIRONMENTAL PROFILES (A1-A3), LOWER CARBON CONCRETE, BALLARAT (VIC), PER M^3

Indicator	Unit	ENVIROCRETE® 30% 20MPa	ENVIROCRETE® 30% 25MPa	ENVIROCRETE® 30% 32MPa	ENVIROCRETE® 30% 40MPa	ENVIROCRETE® 30% 50MPa
GWP	**kg CO_2 eq**	**253**	**277**	**318**	**378**	**461**
ODP	kg CFC-11 eq	5.70E-06	5.94E-06	6.53E-06	7.25E-06	8.03E-06
AP	kg SO_2 eq	0.877	0.954	1.09	1.28	1.53
EP	kg PO4--- eq	0.133	0.143	0.162	0.189	0.224
POCP	kg C_2H_4 eq	0.0442	0.0474	0.0532	0.0613	0.0718
ADPE	kg Sb eq	3.64E-06	4.08E-06	4.48E-06	3.82E-06	4.61E-06
ADPF	MJ	1830	1980	2240	2600	3090

TABLE 8. ENVIRONMENTAL PARAMETERS (A1-A3), LOWER CARBON CONCRETE, BALLARAT (VIC), PER M^3

Parameter	Unit	ENVIROCRETE® 30% 20MPa	ENVIROCRETE® 30% 25MPa	ENVIROCRETE® 30% 32MPa	ENVIROCRETE® 30% 40MPa	ENVIROCRETE® 30% 50MPa
PERE	MJ_{NCV}	2.01E+01	2.19E+01	2.45E+01	2.69E+01	3.21E+01
PERM	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ_{NCV}	2.01E+01	2.19E+01	2.45E+01	2.69E+01	3.21E+01
PENRE	MJ_{NCV}	1.83E+03	1.98E+03	2.24E+03	2.60E+03	3.09E+03
PENRM	MJ_{NCV}	9.02E+00	1.05E+01	1.17E+01	7.65E+00	9.73E+00
PENRT	MJ_{NCV}	1.84E+03	1.99E+03	2.26E+03	2.61E+03	3.10E+03
SM	kg	3.64E+01	4.16E+01	4.68E+01	5.41E+01	5.72E+01
RSF	MJ_{NCV}	1.12E+01	1.24E+01	1.45E+01	1.77E+01	2.21E+01
NRSF	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	4.13E+00	4.20E+00	4.37E+00	4.62E+00	4.80E+00
HWD	kg	9.80E-06	1.14E-05	1.25E-05	8.20E-06	1.04E-05
NHWD	kg	9.12E-02	1.02E-01	1.13E-01	1.01E-01	1.24E-01
RWD	kg	1.70E-03	1.98E-03	2.18E-03	1.43E-03	1.82E-03
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Ballarat/Goldfields region

TABLE 9. ENVIRONMENTAL PROFILES (A1-A3), NORMAL CLASS CONCRETE, BALLARAT (VIC), PER M^3

Indicator	Unit	NORMAL GP BLEND 20MPa	NORMAL GP BLEND 25MPa	NORMAL GP BLEND 32MPa	NORMAL GP BLEND 40MPa	NORMAL GP BLEND 50MPa
GWP	**kg CO_2 eq**	**261**	**291**	**328**	**387**	**495**
ODP	kg CFC-11 eq	5.43E-06	5.67E-06	6.17E-06	6.97E-06	7.84E-06
AP	kg SO_2 eq	0.837	0.925	1.04	1.22	1.53
EP	kg PO4--- eq	0.132	0.144	0.161	0.187	0.232
POCP	kg C_2H_4 eq	0.0429	0.0466	0.0516	0.0597	0.0728
ADPE	kg Sb eq	2.56E-06	2.81E-06	3.08E-06	3.78E-06	4.72E-06
ADPF	MJ	1800	1980	2210	2580	3200

TABLE 10. ENVIRONMENTAL PARAMETERS (A1-A3), NORMAL CLASS CONCRETE, BALLARAT (VIC), PER M^3

Parameter	Unit	NORMAL GP BLEND 20MPa	NORMAL GP BLEND 25MPa	NORMAL GP BLEND 32MPa	NORMAL GP BLEND 40MPa	NORMAL GP BLEND 50MPa
PERE	MJ_{NCV}	1.87E+01	2.05E+01	2.27E+01	2.65E+01	3.32E+01
PERM	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ_{NCV}	1.87E+01	2.05E+01	2.27E+01	2.65E+01	3.32E+01
PENRE	MJ_{NCV}	1.80E+03	1.97E+03	2.20E+03	2.57E+03	3.19E+03
PENRM	MJ_{NCV}	4.21E+00	4.78E+00	5.45E+00	7.65E+00	9.73E+00
PENRT	MJ_{NCV}	1.80E+03	1.98E+03	2.21E+03	2.58E+03	3.20E+03
SM	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	MJ_{NCV}	1.21E+01	1.37E+01	1.56E+01	1.86E+01	2.44E+01
NRSF	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	4.21E+00	4.25E+00	4.42E+00	4.61E+00	5.00E+00
HWD	kg	4.64E-06	5.26E-06	5.85E-06	8.20E-06	1.04E-05
NHWD	kg	6.72E-02	7.46E-02	8.24E-02	1.02E-01	1.29E-01
RWD	kg	8.05E-04	9.12E-04	1.02E-03	1.43E-03	1.82E-03
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Ballarat/Goldfields region

TABLE 11. ENVIRONMENTAL PROFILES (A1-A3), NORMAL CLASS CONCRETE, BALLARAT (VIC), PER M^3

Indicator	Unit	NORMAL GP/FA BLEND 20MPa	NORMAL GP/FA BLEND 25MPa	NORMAL GP/FA BLEND 32MPa	NORMAL GP/FA BLEND 40MPa	NORMAL GP/FA BLEND 50MPa
GWP	**kg CO_2 eq**	**239**	**267**	**302**	**339**	**450**
ODP	kg CFC-11 eq	6.26E-06	6.68E-06	7.48E-06	8.51E-06	9.51E-06
AP	kg SO_2 eq	0.790	0.876	0.988	1.13	1.43
EP	kg PO4--- eq	0.127	0.140	0.157	0.175	0.222
POCP	kg C_2H_4 eq	0.0418	0.0457	0.0511	0.0580	0.0705
ADPE	kg Sb eq	2.43E-06	2.90E-06	3.26E-06	1.71E-05	4.46E-06
ADPF	MJ	1740	1930	2170	2450	3080

TABLE 12. ENVIRONMENTAL PARAMETERS (A1-A3), NORMAL CLASS CONCRETE, BALLARAT (VIC), PER M^3

Parameter	Unit	NORMAL GP/FA BLEND 20MPa	NORMAL GP/FA BLEND 25MPa	NORMAL GP/FA BLEND 32MPa	NORMAL GP/FA BLEND 40MPa	NORMAL GP/FA BLEND 50MPa
PERE	MJ_{NCV}	1.70E+01	1.91E+01	2.11E+01	2.58E+01	3.00E+01
PERM	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ_{NCV}	1.70E+01	1.91E+01	2.11E+01	2.58E+01	3.00E+01
PENRE	MJ_{NCV}	1.74E+03	1.92E+03	2.16E+03	2.44E+03	3.07E+03
PENRM	MJ_{NCV}	4.21E+00	5.74E+00	7.10E+00	0.00E+00	9.73E+00
PENRT	MJ_{NCV}	1.74E+03	1.93E+03	2.17E+03	2.44E+03	3.08E+03
SM	kg	6.55E+01	7.49E+01	8.53E+01	1.25E+02	1.33E+02
RSF	MJ_{NCV}	1.04E+01	1.18E+01	1.35E+01	1.51E+01	2.10E+01
NRSF	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	4.03E+00	4.16E+00	4.22E+00	4.34E+00	4.70E+00
HWD	kg	4.64E-06	6.28E-06	7.62E-06	1.44E-05	1.04E-05
NHWD	kg	6.31E-02	7.52E-02	8.58E-02	4.40E+00	1.21E-01
RWD	kg	8.05E-04	1.09E-03	1.33E-03	3.38E-03	1.82E-03
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Ballarat/Goldfields region

TABLE 13. ENVIRONMENTAL PROFILES (A1-A3), VICROADS CONCRETE PRODUCTS, BALLARAT (VIC), PER M^3

Indicator	Unit	VR330 32MPa 20MM GP/FA	VR330 32MPa 20MM GP/SLAG	VR400 40MPa 20MM GP/FA	VR400 40MPa 20MM GP/SLAG	VR400 40MPa 14MM TREMIE GP/SLAG	VR400 40MPa 14MM TREMIE/ CFA GP/SLAG
GWP	**kg CO_2 eq**	**320**	**252**	**369**	**290**	**291**	**334**
ODP	kg CFC-11 eq	8.44E-06	8.18E-06	9.34E-06	9.03E-06	8.98E-06	9.61E-06
AP	kg SO_2 eq	1.08	1.17	1.23	1.34	1.34	1.5
EP	kg PO4--- eq	0.168	0.154	0.191	0.174	0.175	0.197
POCP	kg C_2H_4 eq	0.0567	0.0564	0.0637	0.0633	0.0635	0.0704
ADPE	kg Sb eq	1.94E-05	1.93E-05	1.96E-05	1.94E-05	2.15E-05	2.05E-05
ADPF	MJ	2360	2150	2670	2430	2450	2810

TABLE 14. ENVIRONMENTAL PARAMETERS (A1-A3), VICROADS CONCRETE PRODUCTS, BALLARAT (VIC), PER M^3

Parameter	Unit	VR330 32MPa 20MM GP/FA	VR330 32MPa 20MM GP/SLAG	VR400 40MPa 20MM GP/FA	VR400 40MPa 20MM GP/SLAG	VR400 40MPa 14MM TREMIE GP/SLAG	VR400 40MPa 14MM TREMIE/ CFA GP/SLAG
PERE	MJ_{NCV}	2.65E+01	2.56E+01	2.90E+01	2.79E+01	3.03E+01	3.82E+01
PERM	MJ_{NCV}	2.89E-02	2.89E-02	2.89E-02	2.89E-02	7.21E-02	9.62E-02
PERT	MJ_{NCV}	2.65E+01	2.56E+01	2.90E+01	2.79E+01	3.03E+01	3.83E+01
PENRE	MJ_{NCV}	2.35E+03	2.18E+03	2.67E+03	2.46E+03	2.48E+03	2.84E+03
PENRM	MJ_{NCV}	2.14E+00	2.14E+00	2.14E+00	2.14E+00	5.35E+00	2.90E+01
PENRT	MJ_{NCV}	2.36E+03	2.18E+03	2.67E+03	2.46E+03	2.49E+03	2.87E+03
SM	kg	8.84E+01	1.77E+02	1.04E+02	2.08E+02	2.08E+02	2.39E+02
RSF	MJ_{NCV}	1.40E+01	9.32E+00	1.64E+01	1.10E+01	1.10E+01	1.26E+01
NRSF	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	4.27E+00	4.10E+00	4.33E+00	4.14E+00	4.16E+00	4.15E+00
HWD	kg	2.14E-05	2.14E-05	2.14E-05	2.14E-05	3.03E-05	5.18E-05
NHWD	kg	4.89E+00	4.88E+00	4.90E+00	4.89E+00	5.18E+00	3.38E+00
RWD	kg	4.16E-03	4.16E-03	4.16E-03	4.16E-03	4.98E-03	7.91E-03
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Ballarat/Goldfields region

TABLE 15. ENVIRONMENTAL PROFILES (A1-A3), VICROADS CONCRETE PRODUCTS, BALLARAT (VIC), PER M^3

Indicator	Unit	VR400 40MPa 7MM SHOTCRETE	VR450 50MPa 20MM GP/FA	VR450 50MPa 20MM GP/SLAG	VR450 50MPa 14MM TREMIE GP/SLAG	VR450 50MPa 14MM TREMIE/ CFA GP/SLAG
GWP	**kg CO_2 eq**	**427**	**423**	**323**	**324**	**348**
ODP	kg CFC-11 eq	9.85E-06	1.02E-05	9.92E-06	9.85E-06	9.84E-06
AP	kg SO_2 eq	1.53	1.4	1.48	1.48	1.55
EP	kg PO4--- eq	0.221	0.216	0.193	0.193	0.204
POCP	kg C_2H_4 eq	0.0817	0.0712	0.0698	0.0699	0.0728
ADPE	kg Sb eq	2.03E-05	1.98E-05	1.96E-05	2.17E-05	2.12E-05
ADPF	MJ	3010	3010	2680	2700	2920

TABLE 16. ENVIRONMENTAL PARAMETERS (A1-A3), VICROADS CONCRETE PRODUCTS, BALLARAT (VIC), PER M^3

Parameter	Unit	VR400 40MPa 7MM SHOTCRETE	VR450 50MPa 20MM GP/FA	VR450 50MPa 20MM GP/SLAG	VR450 50MPa 14MM TREMIE GP/SLAG	VR450 50MPa 14MM TREMIE/ CFA GP/SLAG
PERE	MJ_{NCV}	9.85E+01	3.20E+01	3.01E+01	3.24E+01	3.99E+01
PERM	MJ_{NCV}	2.89E-02	2.89E-02	2.89E-02	7.21E-02	9.62E-02
PERT	MJ_{NCV}	9.85E+01	3.21E+01	3.01E+01	3.25E+01	4.00E+01
PENRE	MJ_{NCV}	3.04E+03	3.01E+03	2.72E+03	2.74E+03	2.95E+03
PENRM	MJ_{NCV}	2.14E+00	2.14E+00	2.14E+00	5.35E+00	3.17E+01
PENRT	MJ_{NCV}	3.04E+03	3.01E+03	2.73E+03	2.74E+03	2.98E+03
SM	kg	7.28E+01	1.04E+02	2.34E+02	2.34E+02	2.50E+02
RSF	MJ_{NCV}	1.81E+01	1.92E+01	1.23E+01	1.23E+01	1.32E+01
NRSF	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	2.76E+01	4.64E+00	4.36E+00	4.33E+00	4.21E+00
HWD	kg	2.14E-05	2.14E-05	2.14E-05	3.03E-05	5.47E-05
NHWD	kg	4.91E+00	4.91E+00	4.89E+00	5.18E+00	3.40E+00
RWD	kg	4.16E-03	4.16E-03	4.16E-03	4.98E-03	8.42E-03
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Ballarat/Goldfields region

TABLE 17. ENVIRONMENTAL PROFILES (A1-A3), CONCRETE FOR SPECIAL APPLICATIONS, BALLARAT (VIC), PER M^3

Indicator	Unit	HIGH SLUMP 20MPa	HIGH SLUMP 25MPa	HIGH SLUMP 32MPa	HIGH SLUMP 40MPa	HIGH SLUMP 50MPa	HIGH SLUMP 65MPa	HIGH SLUMP 80MPa
GWP	**kg CO_2 eq**	**279**	**305**	**346**	**409**	**475**	**493**	**519**
ODP	kg CFC-11 eq	5.93E-06	6.19E-06	6.64E-06	7.21E-06	9.72E-06	1.07E-05	1.21E-05
AP	kg SO_2 eq	0.898	0.974	1.1	1.28	1.64	1.83	2.14
EP	kg PO4--- eq	0.141	0.152	0.17	0.196	0.24	0.257	0.283
POCP	kg C_2H_4 eq	0.046	0.0493	0.0547	0.0625	0.0784	0.0859	0.0969
ADPE	kg Sb eq	2.73E-06	2.99E-06	3.30E-06	3.90E-06	7.10E-06	1.37E-05	1.55E-05
ADPF	MJ	1930	2090	2340	2700	3310	3590	3980

TABLE 18. ENVIRONMENTAL PARAMETERS (A1-A3), CONCRETE FOR SPECIAL APPLICATIONS, BALLARAT (VIC), PER M^3

Parameter	Unit	HIGH SLUMP 20MPa	HIGH SLUMP 25MPa	HIGH SLUMP 32MPa	HIGH SLUMP 40MPa	HIGH SLUMP 50MPa	HIGH SLUMP 65MPa	HIGH SLUMP 80MPa
PERE	MJ_{NCV}	1.97E+01	2.13E+01	2.38E+01	2.78E+01	3.48E+01	4.28E+01	4.84E+01
PERM	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.81E-02	1.44E-01	1.35E-01
PERT	MJ_{NCV}	1.97E+01	2.13E+01	2.38E+01	2.78E+01	3.49E+01	4.30E+01	4.86E+01
PENRE	MJ_{NCV}	1.93E+03	2.08E+03	2.33E+03	2.70E+03	3.32E+03	3.61E+03	4.01E+03
PENRM	MJ_{NCV}	5.03E+00	5.68E+00	6.34E+00	7.76E+00	1.14E+01	2.00E+01	2.91E+01
PENRT	MJ_{NCV}	1.93E+03	2.09E+03	2.34E+03	2.70E+03	3.33E+03	3.63E+03	4.04E+03
SM	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.32E+01	1.61E+02	2.96E+02
RSF	MJ_{NCV}	1.29E+01	1.43E+01	1.64E+01	1.97E+01	2.19E+01	2.19E+01	2.19E+01
NRSF	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	4.21E+00	4.33E+00	4.48E+00	4.75E+00	4.86E+00	4.99E+00	5.01E+00
HWD	kg	5.39E-06	6.10E-06	6.80E-06	8.32E-06	1.90E-05	4.17E-05	5.01E-05
NHWD	kg	7.27E-02	7.99E-02	8.94E-02	1.06E-01	6.36E-01	1.69E+00	1.64E+00
RWD	kg	9.39E-04	1.06E-03	1.18E-03	1.45E-03	2.54E-03	4.94E-03	6.56E-03
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Ballarat/Goldfields region

TABLE 19. ENVIRONMENTAL PROFILES (A1-A3), CONCRETE FOR SPECIAL APPLICATIONS, BALLARAT (VIC), PER M^3

Indicator	Unit	TREMIE 40MPa	TREMIE 50MPa	POST TENSIONED 40MPa 22@3	POST TENSIONED 40MPa 22@4	SHOTCRETE 32MPa	SHOTCRETE 40MPa
GWP	**kg CO_2 eq**	**330**	**410**	**408**	**393**	**421**	**441**
ODP	kg CFC-11 eq	8.65E-06	9.84E-06	7.16E-06	7.04E-06	7.72E-06	7.92E-06
AP	kg SO_2 eq	1.26	1.57	1.28	1.23	1.42	1.48
EP	kg PO4--- eq	0.181	0.219	0.196	0.19	0.207	0.216
POCP	kg C_2H_4 eq	0.0614	0.0738	0.0623	0.0605	0.0728	0.0754
ADPE	kg Sb eq	1.68E-06	2.05E-06	4.12E-06	4.05E-06	3.94E-06	4.03E-06
ADPF	MJ	2460	2990	2700	2620	2800	2920

TABLE 20. ENVIRONMENTAL PARAMETERS (A1-A3), CONCRETE FOR SPECIAL APPLICATIONS, BALLARAT (VIC), PER M^3

Parameter	Unit	TREMIE 40MPa	TREMIE 50MPa	POST TENSIONED 40MPa 22@3	POST TENSIONED 40MPa 22@4	SHOTCRETE 32MPa	SHOTCRETE 40MPa
PERE	MJ_{NCV}	2.20E+01	2.71E+01	2.80E+01	2.72E+01	7.75E+01	7.87E+01
PERM	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ_{NCV}	2.20E+01	2.71E+01	2.80E+01	2.72E+01	7.75E+01	7.87E+01
PENRE	MJ_{NCV}	2.47E+03	3.01E+03	2.70E+03	2.61E+03	2.82E+03	2.94E+03
PENRM	MJ_{NCV}	0.00E+00	0.00E+00	8.74E+00	8.74E+00	6.01E+00	6.01E+00
PENRT	MJ_{NCV}	2.47E+03	3.01E+03	2.70E+03	2.62E+03	2.82E+03	2.94E+03
SM	kg	1.04E+02	1.46E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	MJ_{NCV}	1.43E+01	1.81E+01	1.97E+01	1.89E+01	1.92E+01	2.03E+01
NRSF	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	4.40E+00	4.75E+00	4.69E+00	4.64E+00	2.19E+01	2.20E+01
HWD	kg	0.00E+00	0.00E+00	9.38E-06	9.38E-06	6.97E-06	6.97E-06
NHWD	kg	5.20E-02	6.35E-02	1.11E-01	1.09E-01	9.88E-02	1.02E-01
RWD	kg	0.00E+00	0.00E+00	1.63E-03	1.63E-03	1.20E-03	1.20E-03
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Ballarat/Goldfields region

TABLE 21. ENVIRONMENTAL PROFILES (A1-A3), CONCRETE FOR SPECIAL APPLICATIONS, BALLARAT (VIC), PER M^3

Indicator	Unit	STABILISED SAND 3%	STABILISED SAND 5%	KERB MACHINE 320KG/M^3	KERB MACHINE 280KG/M^3	NO FINES 4%
GWP	**kg CO_2 eq**	**83.8**	**114**	**323**	**288**	**98**
ODP	kg CFC-11 eq	3.81E-06	4.12E-06	8.25E-06	7.81E-06	4.60E-06
AP	kg SO_2 eq	0.321	0.412	1.17	1.05	0.379
EP	kg PO4--- eq	0.0567	0.0696	0.174	0.158	0.066
POCP	kg C_2H_4 eq	0.0206	0.0245	0.0585	0.0535	0.0239
ADPE	kg Sb eq	9.80E-07	8.28E-07	3.18E-06	2.82E-06	5.37E-07
ADPF	MJ	752	926	2380	2160	868

TABLE 22. ENVIRONMENTAL PARAMETERS (A1-A3), CONCRETE FOR SPECIAL APPLICATIONS, BALLARAT (VIC), PER M^3

Parameter	Unit	STABILISED SAND 3%	STABILISED SAND 5%	KERB MACHINE 320KG/M^3	KERB MACHINE 280KG/M^3	NO FINES 4%
PERE	MJ_{NCV}	7.26E+00	8.63E+00	2.30E+01	2.06E+01	6.92E+00
PERM	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ_{NCV}	7.26E+00	8.63E+00	2.30E+01	2.06E+01	6.92E+00
PENRE	MJ_{NCV}	7.51E+02	9.26E+02	2.39E+03	2.17E+03	8.68E+02
PENRM	MJ_{NCV}	1.26E+00	0.00E+00	6.99E+00	6.12E+00	0.00E+00
PENRT	MJ_{NCV}	7.52E+02	9.26E+02	2.40E+03	2.17E+03	8.68E+02
SM	kg	0.00E+00	0.00E+00	6.66E+01	5.82E+01	0.00E+00
RSF	MJ_{NCV}	2.74E+00	4.38E+00	1.40E+01	1.23E+01	3.29E+00
NRSF	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	3.03E+00	3.17E+00	4.26E+00	4.10E+00	2.65E+00
HWD	kg	1.61E-06	2.59E-07	7.50E-06	6.56E-06	0.00E+00
NHWD	kg	2.55E-02	2.34E-02	8.75E-02	7.78E-02	1.73E-02
RWD	kg	2.73E-04	3.87E-05	1.31E-03	1.14E-03	0.00E+00
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Loddon/Goldfields region

Environmental profiles and parameters

Product table list

Loddon/Goldfields region

In each region, we start with presenting a summary of the cradle-to-gate carbon footprint (GWP summary) of our concrete mixes.

Lower carbon concrete products

Normal class concrete products

VicRoads concrete products

Concrete products for special applications

Cradle-to-gate GWP-GHG summary (kg CO_2 eq/m^3)

Loddon/Goldfields region

ENVISIA® 20MPa	ENVISIA® 25MPa	ENVISIA® 32MPa	ENVISIA® 40MPa	ENVISIA® 50MPa	ENVISIA® 65MPa
284	232	265	321	381	384
ENVIROCRETE® PLUS 20MPa	ENVIROCRETE® PLUS 25MPa	ENVIROCRETE® PLUS 32MPa	ENVIROCRETE® PLUS 40MPa	ENVIROCRETE® PLUS 50MPa	
223	243	274	325	401	
ENVIROCRETE® 40% 20MPa	ENVIROCRETE® 40% 25MPa	ENVIROCRETE® 40% 32MPa	ENVIROCRETE® 40% 40MPa	ENVIROCRETE® 40% 50MPa	
223	244	277	333	407	
ENVIROCRETE® 30% 20MPa	ENVIROCRETE® 30% 25MPa	ENVIROCRETE® 30% 32MPa	ENVIROCRETE® 30% 40MPa	ENVIROCRETE® 30% 50MPa	
248	272	311	375	457	
NORMAL GP BLEND 20MPa	NORMAL GP BLEND 25MPa	NORMAL GP BLEND 32MPa	NORMAL GP BLEND 40MPa	NORMAL GP BLEND 50MPa	
273	309	336	404	480	
NORMAL GP/FA BLEND 20MPa	NORMAL GP/FA BLEND 25MPa	NORMAL GP/FA BLEND 32MPa	NORMAL GP/FA BLEND 40MPa	NORMAL GP/FA BLEND 50MPa	
234	280	300	361	398	
VR330 32MPA 20MM GP/FA	VR330 32MPA 20MM GP/SLAG	VR400 40MPA 20MM GP	VR400 40MPA 20MM GP/SLAG	VR400 40MPA 14MM TREMIE GP/SLAG	VR400 40MPA 14MM TREMIE/ CFA GP/SLAG
319	253	467	330	274	319
VR450 50MPA 20MM GP/FA	VR450 50MPA 20MM GP/SLAG	VR450 50MPA 14MM TREMIE GP/SLAG	VR450 50MPA 14MM TREMIE/ CFA GP/SLAG		
405	306	307	333		
HIGH SLUMP 20MPA	HIGH SLUMP 25MPA	HIGH SLUMP 32MPA	HIGH SLUMP 40MPA	HIGH SLUMP 50MPA	HIGH SLUMP 65MPA	HIGH SLUMP 80MPA
288	320	351	419	466	480	505
TREMIE 40MPA	TREMIE 50MPA	POST TENSIONED 40MPA 22@3	POST TENSIONED 40MPA 22@4	SHOTCRETE 32MPA	SHOTCRETE 40MPA	
315	396	404	382	425	445	
STABILISED SAND 3%	STABILISED SAND 5%	KERB MACHINE 320KG/M^3	KERB MACHINE 280KG/M^3	NO FINES 4%		
71	102	311	277	81		

Loddon/Goldfields region

TABLE 1. ENVIRONMENTAL PROFILES (A1-A3), LOWER CARBON CONCRETE, BENDIGO (VIC), PER M^3

Indicator	Unit	ENVISIA® 20 MPa	ENVISIA® 25 MPa	ENVISIA® 32 MPa	ENVISIA® 40 MPa	ENVISIA® 50 MPa	ENVISIA® 65 MPa
GWP	**kg CO_2 eq**	**284**	**232**	**265**	**321**	**381**	**384**
ODP	kg CFC-11 eq	7.05E-06	6.46E-06	7.12E-06	8.16E-06	8.60E-06	8.73E-06
AP	kg SO_2 eq	1.06	1.05	1.19	1.44	1.61	1.64
EP	kg PO4--- eq	0.150	0.134	0.151	0.181	0.206	0.208
POCP	kg C_2H_4 eq	0.05	0.0471	0.0531	0.0631	0.0704	0.0715
ADPE	kg Sb eq	3.65E-06	2.78E-06	3.08E-06	4.94E-06	6.20E-06	6.84E-06
ADPF	MJ	2680	1910	2160	2600	2960	3000

TABLE 2. ENVIRONMENTAL PARAMETERS (A1-A3), LOWER CARBON CONCRETE, BENDIGO (VIC), PER M^3

Parameter	Unit	ENVISIA® 20 MPa	ENVISIA® 25 MPa	ENVISIA® 32 MPa	ENVISIA® 40 MPa	ENVISIA® 50 MPa	ENVISIA® 65 MPa
PERE	MJ_{NCV}	1.56E+02	2.28E+01	2.56E+01	3.20E+01	3.67E+01	3.79E+01
PERM	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ_{NCV}	1.56E+02	2.28E+01	2.56E+01	3.20E+01	3.67E+01	3.79E+01
PENRE	MJ_{NCV}	2.71E+03	1.94E+03	2.20E+03	2.63E+03	2.99E+03	3.04E+03
PENRM	MJ_{NCV}	5.14E+00	5.90E+00	6.45E+00	1.33E+01	1.77E+01	2.04E+01
PENRT	MJ_{NCV}	2.71E+03	1.95E+03	2.20E+03	2.65E+03	3.01E+03	3.06E+03
SM	kg	1.51E+02	1.68E+02	1.96E+02	2.39E+02	2.39E+02	2.50E+02
RSF	MJ_{NCV}	8.00E+00	8.88E+00	1.03E+01	1.26E+01	1.58E+01	1.58E+01
NRSF	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	1.75E+02	3.98E+00	4.19E+00	4.44E+00	4.62E+00	4.60E+00
HWD	kg	5.51E-06	6.33E-06	6.92E-06	1.43E-05	1.90E-05	2.19E-05
NHWD	kg	3.88E-01	8.53E-02	9.41E-02	1.40E-01	1.72E-01	1.87E-01
RWD	kg	9.59E-04	1.10E-03	1.20E-03	2.49E-03	3.31E-03	3.82E-03
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Loddon/Goldfields region

TABLE 3. ENVIRONMENTAL PROFILES (A1-A3), LOWER CARBON CONCRETE, BENDIGO (VIC), PER M^3

Indicator	Unit	ENVIROCRETE® PLUS 20 MPa	ENVIROCRETE® PLUS 25 MPa	ENVIROCRETE® PLUS 32 MPa	ENVIROCRETE® PLUS 40 MPa	ENVIROCRETE® PLUS 50 MPa
GWP	**kg CO_2 eq**	**223**	**243**	**274**	**325**	**401**
ODP	kg CFC-11 eq	5.99E-06	6.25E-06	6.65E-06	7.26E-06	8.46E-06
AP	kg SO_2 eq	0.953	1.02	1.12	1.29	1.61
EP	kg PO4--- eq	0.126	0.135	0.149	0.172	0.21
POCP	kg C_2H_4 eq	0.0437	0.0466	0.0510	0.0580	0.0708
ADPE	kg Sb eq	2.52E-06	2.78E-06	3.05E-06	4.23E-06	5.61E-06
ADPF	MJ	1790	1920	2120	2450	3000

TABLE 4. ENVIRONMENTAL PARAMETERS (A1-A3), LOWER CARBON CONCRETE, BENDIGO (VIC), PER M^3

Parameter	Unit	ENVIROCRETE® PLUS 20 MPa	ENVIROCRETE® PLUS 25 MPa	ENVIROCRETE® PLUS 32 MPa	ENVIROCRETE® PLUS 40 MPa	ENVIROCRETE® PLUS 50 MPa
PERE	MJ_{NCV}	2.08E+01	2.22E+01	2.43E+01	2.86E+01	3.55E+01
PERM	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ_{NCV}	2.08E+01	2.22E+01	2.43E+01	2.86E+01	3.55E+01
PENRE	MJ_{NCV}	1.81E+03	1.94E+03	2.14E+03	2.47E+03	3.03E+03
PENRM	MJ_{NCV}	5.14E+00	5.90E+00	6.45E+00	1.06E+01	1.50E+01
PENRT	MJ_{NCV}	1.82E+03	1.95E+03	2.15E+03	2.48E+03	3.04E+03
SM	kg	1.35E+02	1.40E+02	1.46E+02	1.56E+02	2.08E+02
RSF	MJ_{NCV}	8.82E+00	9.81E+00	1.14E+01	1.39E+01	1.73E+01
NRSF	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	3.95E+00	3.99E+00	4.16E+00	4.36E+00	4.66E+00
HWD	kg	5.51E-06	6.33E-06	6.92E-06	1.14E-05	1.61E-05
NHWD	kg	7.74E-02	8.45E-02	9.22E-02	1.22E-01	1.57E-01
RWD	kg	9.59E-04	1.10E-03	1.20E-03	1.98E-03	2.80E-03
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Loddon/Goldfields region

TABLE 5. ENVIRONMENTAL PROFILES (A1-A3), LOWER CARBON CONCRETE, BENDIGO (VIC), PER M^3

Indicator	Unit	ENVIROCRETE® 40% 20MPa	ENVIROCRETE® 40% 25MPa	ENVIROCRETE® 40% 32MPa	ENVIROCRETE® 40% 40MPa	ENVIROCRETE® 40% 50MPa
GWP	**kg CO_2 eq**	**223**	**244**	**277**	**333**	**407**
ODP	kg CFC-11 eq	5.17E-06	5.48E-06	5.89E-06	6.63E-06	7.49E-06
AP	kg SO_2 eq	0.816	0.893	0.999	1.19	1.45
EP	kg PO4--- eq	0.117	0.127	0.142	0.168	0.202
POCP	kg C_2H_4 eq	0.039	0.0422	0.0467	0.0548	0.0653
ADPE	kg Sb eq	2.43E-06	2.70E-06	2.97E-06	3.55E-06	4.27E-06
ADPF	MJ	1650	1790	2000	2360	2830

TABLE 6. ENVIRONMENTAL PARAMETERS (A1-A3), LOWER CARBON CONCRETE, BENDIGO (VIC), PER M^3

Parameter	Unit	ENVIROCRETE® 40% 20MPa	ENVIROCRETE® 40% 25MPa	ENVIROCRETE® 40% 32MPa	ENVIROCRETE® 40% 40MPa	ENVIROCRETE® 40% 50MPa
PERE	MJ_{NCV}	1.84E+01	2.00E+01	2.21E+01	2.59E+01	3.10E+01
PERM	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ_{NCV}	1.84E+01	2.00E+01	2.21E+01	2.59E+01	3.10E+01
PENRE	MJ_{NCV}	1.66E+03	1.80E+03	2.01E+03	2.37E+03	2.84E+03
PENRM	MJ_{NCV}	5.14E+00	5.90E+00	6.45E+00	7.87E+00	9.51E+00
PENRT	MJ_{NCV}	1.66E+03	1.81E+03	2.01E+03	2.38E+03	2.85E+03
SM	kg	6.45E+01	7.28E+01	7.70E+01	9.36E+01	1.15E+02
RSF	MJ_{NCV}	9.65E+00	1.07E+01	1.24E+01	1.51E+01	1.89E+01
NRSF	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	3.85E+00	3.91E+00	4.08E+00	4.31E+00	4.58E+00
HWD	kg	5.51E-06	6.33E-06	6.92E-06	8.44E-06	1.02E-05
NHWD	kg	7.36E-02	8.06E-02	8.85E-02	1.04E-01	1.24E-01
RWD	kg	9.59E-04	1.10E-03	1.20E-03	1.47E-03	1.78E-03
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Loddon/Goldfields region

TABLE 7. ENVIRONMENTAL PROFILES (A1-A3), LOWER CARBON CONCRETE, BENDIGO (VIC), PER M^3

Indicator	Unit	ENVIROCRETE® 30% 20MPa	ENVIROCRETE® 30% 25MPa	ENVIROCRETE® 30% 32MPa	ENVIROCRETE® 30% 40MPa	ENVIROCRETE® 30% 50MPa
GWP	**kg CO_2 eq**	**248**	**272**	**311**	**375**	**457**
ODP	kg CFC-11 eq	5.17E-06	5.48E-06	5.97E-06	6.70E-06	7.45E-06
AP	kg SO_2 eq	0.841	0.921	1.05	1.25	1.49
EP	kg PO4--- eq	0.125	0.136	0.154	0.181	0.216
POCP	kg C_2H_4 eq	0.0405	0.0439	0.0493	0.0578	0.0682
ADPE	kg Sb eq	2.51E-06	2.79E-06	3.10E-06	3.70E-06	4.44E-06
ADPF	MJ	1750	1910	2150	2540	3030

TABLE 8. ENVIRONMENTAL PARAMETERS (A1-A3), LOWER CARBON CONCRETE, BENDIGO (VIC), PER M^3

Parameter	Unit	ENVIROCRETE® 30% 20MPa	ENVIROCRETE® 30% 25MPa	ENVIROCRETE® 30% 32MPa	ENVIROCRETE® 30% 40MPa	ENVIROCRETE® 30% 50MPa
PERE	MJ_{NCV}	1.94E+01	2.11E+01	2.36E+01	2.77E+01	3.30E+01
PERM	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ_{NCV}	1.94E+01	2.11E+01	2.36E+01	2.77E+01	3.30E+01
PENRE	MJ_{NCV}	1.75E+03	1.91E+03	2.16E+03	2.55E+03	3.03E+03
PENRM	MJ_{NCV}	5.14E+00	5.90E+00	6.45E+00	7.87E+00	9.51E+00
PENRT	MJ_{NCV}	1.76E+03	1.91E+03	2.16E+03	2.55E+03	3.04E+03
SM	kg	3.64E+01	4.16E+01	4.68E+01	5.41E+01	5.72E+01
RSF	MJ_{NCV}	1.12E+01	1.24E+01	1.45E+01	1.77E+01	2.21E+01
NRSF	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	3.95E+00	4.01E+00	4.22E+00	4.48E+00	4.76E+00
HWD	kg	5.51E-06	6.33E-06	6.92E-06	8.44E-06	1.02E-05
NHWD	kg	7.74E-02	8.48E-02	9.36E-02	1.10E-01	1.31E-01
RWD	kg	9.59E-04	1.10E-03	1.20E-03	1.47E-03	1.78E-03
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Loddon/Goldfields region

TABLE 9. ENVIRONMENTAL PROFILES (A1-A3), NORMAL CLASS CONCRETE, BENDIGO (VIC), PER M^3

Indicator	Unit	NORMAL GP BLEND 20MPa	NORMAL GP BLEND 25MPa	NORMAL GP BLEND 32MPa	NORMAL GP BLEND 40MPa	NORMAL GP BLEND 50MPa
GWP	**kg CO_2 eq**	**273**	**309**	**336**	**404**	**480**
ODP	kg CFC-11 eq	5.07E-06	5.47E-06	5.76E-06	6.49E-06	7.11E-06
AP	kg SO_2 eq	0.851	0.959	1.04	1.24	1.46
EP	kg PO4--- eq	0.131	0.147	0.159	0.188	0.22
POCP	kg C_2H_4 eq	0.0416	0.0463	0.0497	0.0585	0.0678
ADPE	kg Sb eq	2.75E-06	3.10E-06	3.36E-06	4.01E-06	4.77E-06
ADPF	MJ	1840	2070	2220	2640	3080

TABLE 10. ENVIRONMENTAL PARAMETERS (A1-A3), NORMAL CLASS CONCRETE, BENDIGO (VIC), PER M^3

Parameter	Unit	NORMAL GP BLEND 20MPa	NORMAL GP BLEND 25MPa	NORMAL GP BLEND 32MPa	NORMAL GP BLEND 40MPa	NORMAL GP BLEND 50MPa
PERE	MJ_{NCV}	2.06E+01	2.29E+01	2.46E+01	2.89E+01	3.38E+01
PERM	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ_{NCV}	2.06E+01	2.29E+01	2.46E+01	2.89E+01	3.38E+01
PENRE	MJ_{NCV}	1.84E+03	2.06E+03	2.22E+03	2.63E+03	3.07E+03
PENRM	MJ_{NCV}	5.78E+00	6.64E+00	7.26E+00	8.85E+00	1.07E+01
PENRT	MJ_{NCV}	1.85E+03	2.07E+03	2.23E+03	2.64E+03	3.08E+03
SM	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	MJ_{NCV}	1.29E+01	1.48E+01	1.62E+01	1.97E+01	2.38E+01
NRSF	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	4.07E+00	4.19E+00	4.32E+00	4.64E+00	4.85E+00
HWD	kg	6.25E-06	7.17E-06	7.83E-06	9.49E-06	1.15E-05
NHWD	kg	8.50E-02	9.48E-02	1.02E-01	1.20E-01	1.41E-01
RWD	kg	1.09E-03	1.25E-03	1.36E-03	1.65E-03	2.00E-03
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Loddon/Goldfields region

TABLE 11. ENVIRONMENTAL PROFILES (A1-A3), NORMAL CLASS CONCRETE, BENDIGO (VIC), PER M^3

Indicator	Unit	NORMAL GP/FA BLEND 20MPa	NORMAL GP/FA BLEND 25MPa	NORMAL GP/FA BLEND 32MPa	NORMAL GP/FA BLEND 40MPa	NORMAL GP/FA BLEND 50MPa
GWP	**kg CO_2 eq**	**234**	**280**	**300**	**361**	**398**
ODP	kg CFC-11 eq	5.51E-06	6.19E-06	6.47E-06	7.46E-06	7.52E-06
AP	kg SO_2 eq	0.751	0.89	0.948	1.14	1.24
EP	kg PO4--- eq	0.119	0.139	0.148	0.176	0.19
POCP	kg C_2H_4 eq	0.038	0.0443	0.0468	0.0554	0.0591
ADPE	kg Sb eq	2.66E-06	3.17E-06	3.39E-06	3.79E-06	4.41E-06
ADPF	MJ	1680	1970	2090	2480	2680

TABLE 12. ENVIRONMENTAL PARAMETERS (A1-A3), NORMAL CLASS CONCRETE, BENDIGO (VIC), PER M^3

Parameter	Unit	NORMAL GP/FA BLEND 20MPa	NORMAL GP/FA BLEND 25MPa	NORMAL GP/FA BLEND 32MPa	NORMAL GP/FA BLEND 40MPa	NORMAL GP/FA BLEND 50MPa
PERE	MJ_{NCV}	1.82E+01	2.12E+01	2.25E+01	2.61E+01	2.86E+01
PERM	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ_{NCV}	1.82E+01	2.12E+01	2.25E+01	2.61E+01	2.86E+01
PENRE	MJ_{NCV}	1.67E+03	1.96E+03	2.08E+03	2.47E+03	2.67E+03
PENRM	MJ_{NCV}	6.27E+00	7.62E+00	8.24E+00	8.85E+00	1.09E+01
PENRT	MJ_{NCV}	1.68E+03	1.97E+03	2.09E+03	2.48E+03	2.68E+03
SM	kg	6.66E+01	8.01E+01	8.74E+01	1.07E+02	1.04E+02
RSF	MJ_{NCV}	1.05E+01	1.28E+01	1.38E+01	1.68E+01	1.89E+01
NRSF	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	3.83E+00	4.05E+00	4.09E+00	4.43E+00	4.15E+00
HWD	kg	6.73E-06	8.23E-06	8.84E-06	9.49E-06	1.17E-05
NHWD	kg	8.07E-02	9.50E-02	1.01E-01	1.13E-01	1.28E-01
RWD	kg	1.17E-03	1.43E-03	1.54E-03	1.65E-03	2.04E-03
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Loddon/Goldfields region

TABLE 13. ENVIRONMENTAL PROFILES (A1-A3), VICROADS CONCRETE PRODUCTS, BENDIGO (VIC), PER M^3

Indicator	Unit	VR330 32MPa 20MM GP/FA	VR330 32MPa 20MM GP/ SLAG	VR400 40MPa 20MM GP	VR400 40MPa 20MM GP/ SLAG	VR400 40MPa 14MM TREMIE GP/SLAG	VR400 40MPa 14MM TREMIE/CFA GP/SLAG
GWP	**kg CO_2 eq**	**319**	**253**	**467**	**330**	**274**	**319**
ODP	kg CFC-11 eq	7.97E-06	7.86E-06	9.51E-06	9.68E-06	6.74E-06	7.55E-06
AP	kg SO_2 eq	1.05	1.14	1.49	1.37	1.23	1.4
EP	kg PO4--- eq	0.163	0.149	0.225	0.185	0.153	0.178
POCP	kg C_2H_4 eq	0.0537	0.0537	0.0721	0.0639	0.0546	0.0623
ADPE	kg Sb eq	2.07E-05	2.05E-05	2.27E-05	1.71E-05	2.15E-05	2.05E-05
ADPF	MJ	2350	2160	3200	2630	2200	2600

TABLE 14. ENVIRONMENTAL PARAMETERS (A1-A3), VICROADS CONCRETE PRODUCTS, BENDIGO (VIC), PER M^3

Parameter	Unit	VR330 32MPa 20MM GP/FA	VR330 32MPa 20MM GP/ SLAG	VR400 40MPa 20MM GP	VR400 40MPa 20MM GP/ SLAG	VR400 40MPa 14MM TREMIE GP/SLAG	VR400 40MPa 14MM TREMIE/CFA GP/SLAG
PERE	MJ_{NCV}	2.89E+01	2.80E+01	3.60E+01	2.89E+01	3.07E+01	3.89E+01
PERM	MJ_{NCV}	2.89E-02	2.89E-02	0.00E+00	0.00E+00	7.21E-02	9.62E-02
PERT	MJ_{NCV}	2.89E+01	2.80E+01	3.60E+01	2.89E+01	3.08E+01	3.90E+01
PENRE	MJ_{NCV}	2.35E+03	2.19E+03	3.20E+03	2.66E+03	2.24E+03	2.63E+03
PENRM	MJ_{NCV}	7.92E+00	7.92E+00	0.00E+00	0.00E+00	5.35E+00	2.90E+01
PENRT	MJ_{NCV}	2.35E+03	2.19E+03	3.20E+03	2.66E+03	2.24E+03	2.66E+03
SM	kg	8.84E+01	1.77E+02	0.00E+00	1.66E+02	2.08E+02	2.39E+02
RSF	MJ_{NCV}	1.40E+01	9.32E+00	2.19E+01	1.32E+01	1.10E+01	1.26E+01
NRSF	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	4.27E+00	4.10E+00	4.89E+00	4.39E+00	3.80E+00	4.08E+00
HWD	kg	2.76E-05	2.76E-05	1.93E-05	1.44E-05	3.03E-05	5.18E-05
NHWD	kg	4.93E+00	4.92E+00	5.88E+00	4.41E+00	5.18E+00	3.39E+00
RWD	kg	5.24E-03	5.24E-03	4.51E-03	3.38E-03	4.98E-03	7.91E-03
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

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TABLE 15. ENVIRONMENTAL PROFILES (A1-A3), VICROADS CONCRETE PRODUCTS, BENDIGO (VIC), PER M^3

Indicator	Unit	VR450 50MPa 20MM GP/FA	VR450 50MPa 20MM GP/SLAG	VR450 50MPa 14MM TREMIE GP/SLAG	VR450 50MPa 14MM TREMIE/CFA GP/SLAG
GWP	**kg CO_2 eq**	**405**	**306**	**307**	**333**
ODP	kg CFC-11 eq	7.69E-06	7.59E-06	7.56E-06	7.81E-06
AP	kg SO_2 eq	1.28	1.37	1.38	1.46
EP	kg PO4--- eq	0.193	0.171	0.172	0.185
POCP	kg C_2H_4 eq	0.0619	0.0608	0.061	0.0647
ADPE	kg Sb eq	1.98E-05	1.96E-05	2.17E-05	2.12E-05
ADPF	MJ	2750	2440	2460	2710

TABLE 16. ENVIRONMENTAL PARAMETERS (A1-A3), VICROADS CONCRETE PRODUCTS, BENDIGO (VIC), PER M^3

Parameter	Unit	VR450 50MPa 20MM GP/FA	VR450 50MPa 20MM GP/SLAG	VR450 50MPa 14MM TREMIE GP/SLAG	VR450 50MPa 14MM TREMIE/CFA GP/SLAG
PERE	MJ_{NCV}	3.29E+01	3.10E+01	3.33E+01	4.06E+01
PERM	MJ_{NCV}	2.89E-02	2.89E-02	7.21E-02	9.62E-02
PERT	MJ_{NCV}	3.30E+01	3.10E+01	3.34E+01	4.07E+01
PENRE	MJ_{NCV}	2.75E+03	2.48E+03	2.50E+03	2.73E+03
PENRM	MJ_{NCV}	2.14E+00	2.14E+00	5.35E+00	3.17E+01
PENRT	MJ_{NCV}	2.75E+03	2.48E+03	2.50E+03	2.77E+03
SM	kg	1.04E+02	2.34E+02	2.34E+02	2.50E+02
RSF	MJ_{NCV}	1.92E+01	1.23E+01	1.23E+01	1.32E+01
NRSF	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	4.55E+00	4.28E+00	4.24E+00	4.15E+00
HWD	kg	2.14E-05	2.14E-05	3.03E-05	5.47E-05
NHWD	kg	4.92E+00	4.90E+00	5.19E+00	3.41E+00
RWD	kg	4.16E-03	4.16E-03	4.98E-03	8.42E-03
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	9.60E+01	9.60E+01	9.60E+01	9.60E+01
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Loddon/Goldfields region

TABLE 17. ENVIRONMENTAL PROFILES (A1-A3), CONCRETE FOR SPECIAL APPLICATIONS, BENDIGO (VIC), PER M^3

Indicator	Unit	HIGH SLUMP 20 MPa	HIGH SLUMP 25 MPa	HIGH SLUMP 32 MPa	HIGH SLUMP 40 MPa	HIGH SLUMP 50 MPa	HIGH SLUMP 65 MPa	HIGH SLUMP 80 MPa
GWP	**kg CO_2 eq**	**288**	**320**	**351**	**419**	**466**	**480**	**505**
ODP	kg CFC-11 eq	5.24E-06	5.56E-06	5.87E-06	6.66E-06	7.86E-06	8.85E-06	1.05E-05
AP	kg SO_2 eq	0.897	0.989	1.08	1.28	1.56	1.74	2.05
EP	kg PO4--- eq	0.138	0.152	0.165	0.195	0.224	0.239	0.265
POCP	kg C_2H_4 eq	0.0436	0.0476	0.0515	0.0604	0.0717	0.0783	0.0892
ADPE	kg Sb eq	2.90E-06	3.24E-06	3.51E-06	4.17E-06	1.30E-05	1.31E-05	1.33E-05
ADPF	MJ	1940	2130	2310	2730	3190	3410	3760

TABLE 18. ENVIRONMENTAL PARAMETERS (A1-A3), CONCRETE FOR SPECIAL APPLICATIONS, BENDIGO (VIC), PER M^3

Parameter	Unit	HIGH SLUMP 20 MPa	HIGH SLUMP 25 MPa	HIGH SLUMP 32 MPa	HIGH SLUMP 40 MPa	HIGH SLUMP 50 MPa	HIGH SLUMP 65 MPa	HIGH SLUMP 80 MPa
PERE	MJ_{NCV}	2.16E+01	2.37E+01	2.56E+01	2.99E+01	4.17E+01	4.37E+01	4.68E+01
PERM	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.20E-01	1.20E-01	1.20E-01
PERT	MJ_{NCV}	2.16E+01	2.37E+01	2.56E+01	2.99E+01	4.19E+01	4.38E+01	4.69E+01
PENRE	MJ_{NCV}	1.93E+03	2.12E+03	2.31E+03	2.72E+03	3.19E+03	3.42E+03	3.81E+03
PENRM	MJ_{NCV}	6.15E+00	6.88E+00	7.62E+00	9.22E+00	2.22E+01	2.22E+01	2.22E+01
PENRT	MJ_{NCV}	1.94E+03	2.13E+03	2.31E+03	2.73E+03	3.22E+03	3.45E+03	3.83E+03
SM	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.32E+01	1.61E+02	2.96E+02
RSF	MJ_{NCV}	1.37E+01	1.53E+01	1.70E+01	2.06E+01	2.19E+01	2.19E+01	2.19E+01
NRSF	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	4.13E+00	4.25E+00	4.38E+00	4.64E+00	4.76E+00	4.89E+00	4.92E+00
HWD	kg	6.59E-06	7.64E-06	8.18E-06	9.89E-06	4.07E-05	4.07E-05	4.07E-05
NHWD	kg	8.90E-02	9.95E-02	1.06E-01	1.24E-01	1.46E+00	1.46E+00	1.46E+00
RWD	kg	1.15E-03	1.32E-03	1.42E-03	1.72E-03	5.15E-03	5.15E-03	5.15E-03
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

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TABLE 19. ENVIRONMENTAL PROFILES (A1-A3), CONCRETE FOR SPECIAL APPLICATIONS, BENDIGO (VIC), PER M^3

Indicator	Unit	TREMIE 40MPa	TREMIE 50MPa	POST TENSIONED 40MPa 22@3	POST TENSIONED 40MPa 22@4	SHOTCRETE 32MPa	SHOTCRETE 40MPa
GWP	**kg CO_2 eq**	**315**	**396**	**404**	**382**	**425**	**445**
ODP	kg CFC-11 eq	6.59E-06	7.96E-06	6.52E-06	6.18E-06	8.17E-06	8.34E-06
AP	kg SO_2 eq	1.16	1.47	1.24	1.17	1.42	1.48
EP	kg PO4--- eq	0.161	0.201	0.188	0.178	0.207	0.216
POCP	kg C_2H_4 eq	0.0531	0.066	0.0585	0.0556	0.0717	0.0742
ADPE	kg Sb eq	1.71E-06	2.09E-06	3.80E-06	3.88E-06	3.81E-06	3.90E-06
ADPF	MJ	2240	2790	2640	2500	2860	2970

TABLE 20. TABLE 20. ENVIRONMENTAL PARAMETERS (A1-A3), CONCRETE FOR SPECIAL APPLICATIONS, BENDIGO (VIC), PER M^3

Parameter	Unit	TREMIE 40MPa	TREMIE 50MPa	POST TENSIONED 40MPa 22@3	POST TENSIONED 40MPa 22@4	SHOTCRETE 32MPa	SHOTCRETE 40MPa
PERE	MJ_{NCV}	2.29E+01	2.80E+01	2.87E+01	2.78E+01	7.82E+01	7.94E+01
PERM	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ_{NCV}	2.29E+01	2.80E+01	2.87E+01	2.78E+01	7.82E+01	7.94E+01
PENRE	MJ_{NCV}	2.26E+03	2.82E+03	2.63E+03	2.49E+03	2.88E+03	2.99E+03
PENRM	MJ_{NCV}	0.00E+00	0.00E+00	7.87E+00	8.61E+00	6.01E+00	6.01E+00
PENRT	MJ_{NCV}	2.26E+03	2.82E+03	2.64E+03	2.50E+03	2.88E+03	3.00E+03
SM	kg	1.04E+02	1.46E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	MJ_{NCV}	1.43E+01	1.81E+01	1.97E+01	1.86E+01	1.92E+01	2.03E+01
NRSF	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	4.33E+00	4.67E+00	4.69E+00	4.56E+00	2.19E+01	2.19E+01
HWD	kg	0.00E+00	0.00E+00	8.44E-06	9.23E-06	6.97E-06	6.97E-06
NHWD	kg	6.08E-02	7.22E-02	1.15E-01	1.16E-01	1.05E-01	1.08E-01
RWD	kg	0.00E+00	0.00E+00	1.47E-03	1.61E-03	1.20E-03	1.20E-03
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

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TABLE 21. ENVIRONMENTAL PROFILES (A1-A3), CONCRETE FOR SPECIAL APPLICATIONS, BENDIGO (VIC), PER M^3

Indicator	Unit	STABILISED SAND 3%	STABILISED SAND 5%	KERB MACHINE 320KG/M3	KERB MACHINE 280KG/M3	NO FINES 4%
GWP	**kg CO_2 eq**	**70.9**	**102**	**311**	**277**	**81.4**
ODP	kg CFC-11 eq	2.17E-06	2.53E-06	8.25E-06	7.69E-06	2.30E-06
AP	kg SO_2 eq	0.24	0.333	1.14	1.02	0.274
EP	kg PO4--- eq	0.0402	0.0535	0.166	0.15	0.0456
POCP	kg C_2H_4 eq	0.0140	0.0180	0.0546	0.0495	0.0153
ADPE	kg Sb eq	6.77E-07	5.26E-07	3.41E-06	3.02E-06	7.08E-07
ADPF	MJ	577	757	2340	2120	627

TABLE 22. ENVIRONMENTAL PARAMETERS (A1-A3), CONCRETE FOR SPECIAL APPLICATIONS, BENDIGO (VIC), PER M^3

Parameter	Unit	STABILISED SAND 3%	STABILISED SAND 5%	KERB MACHINE 320KG/M3	KERB MACHINE 280KG/M3	NO FINES 4%
PERE	MJ_{NCV}	6.69E+00	8.06E+00	2.40E+01	2.15E+01	8.51E+00
PERM	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ_{NCV}	6.69E+00	8.06E+00	2.40E+01	2.15E+01	8.51E+00
PENRE	MJ_{NCV}	5.76E+02	7.56E+02	2.35E+03	2.12E+03	6.27E+02
PENRM	MJ_{NCV}	1.26E+00	0.00E+00	7.87E+00	6.88E+00	0.00E+00
PENRT	MJ_{NCV}	5.77E+02	7.56E+02	2.36E+03	2.13E+03	6.27E+02
SM	kg	0.00E+00	0.00E+00	8.32E+01	7.28E+01	0.00E+00
RSF	MJ_{NCV}	2.74E+00	4.38E+00	1.32E+01	1.15E+01	3.29E+00
NRSF	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	2.81E+00	2.94E+00	4.20E+00	4.05E+00	2.55E+00
HWD	kg	1.61E-06	2.59E-07	8.44E-06	7.38E-06	0.00E+00
NHWD	kg	2.62E-02	2.41E-02	1.00E-01	8.95E-02	2.87E-02
RWD	kg	2.73E-04	3.87E-05	1.47E-03	1.29E-03	0.00E+00
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Goulburn/Central Murray region

Environmental profiles and parameters

Product table list

Goulburn/Central Murray region

In each region, we start with presenting a summary of the cradle-to-gate carbon footprint (GWP summary) of our concrete mixes.

Lower carbon concrete products

Normal class concrete products

VicRoads concrete products

Concrete products for special applications

Cradle-to-gate GWP-GHG summary (kg CO_2 eq/m^3)

Goulburn/Central Murray region

ENVISIA® 20MPa	ENVISIA® 25MPa	ENVISIA® 32MPa	ENVISIA® 40MPa	ENVISIA® 50MPa	ENVISIA® 65MPa
215	236	269	325	388	391
ENVIROCRETE® PLUS 20MPa	ENVIROCRETE® PLUS 25MPa	ENVIROCRETE® PLUS 32MPa	ENVIROCRETE® PLUS 40MPa	ENVIROCRETE® PLUS 50MPa	
227	247	279	330	408	
ENVIROCRETE® 40% 20MPa	ENVIROCRETE® 40% 25MPa	ENVIROCRETE® 40% 32MPa	ENVIROCRETE® 40% 40MPa	ENVIROCRETE® 40% 50MPa	
226	248	282	338	415	
ENVIROCRETE® 30% 20MPa	ENVIROCRETE® 30% 25MPa	ENVIROCRETE® 30% 32MPa	ENVIROCRETE® 30% 40MPa	ENVIROCRETE® 30% 50MPa	
252	276	316	380	465	
NORMAL GP BLEND 20MPa	NORMAL GP BLEND 25MPa	NORMAL GP BLEND 32MPa	NORMAL GP BLEND 40MPa	NORMAL GP BLEND 50MPa	
272	303	357	394	499	
NORMAL GP/FA BLEND 20MPa	NORMAL GP/FA BLEND 25MPa	NORMAL GP/FA BLEND 32MPa	NORMAL GP/FA BLEND 40MPa	NORMAL GP/FA BLEND 50MPa	
243	278	308	340	462	
VR330 32MPa 20MM GP	VR330 32MPa 20MM GP/SLAG	VR400 40MPa 20MM GP	VR400 40MPa 20MM GP/SLAG	VR400 40MPa 14MM TREMIE GP/SLAG	VR400 40MPa 14MM TREMIE/ CFA GP/SLAG
398	242	459	313	282	326
VR450 50MPa 20MM GP	VR450 50MPa 20MM GP/SLAG	VR450 50MPa 14MM TREMIE GP/SLAG	VR450 50MPa 14MM TREMIE/ CFA GP/SLAG		
512	310	312	339		
HIGH SLUMP 20MPa	HIGH SLUMP 25MPa	HIGH SLUMP 32MPa	HIGH SLUMP 40MPa	HIGH SLUMP 50MPa	HIGH SLUMP 65MPa	HIGH SLUMP 80MPa
256	275	373	426	514	485	510
TREMIE 40MPa	TREMIE 50MPa	POST TENSIONED 40MPa 22@3	POST TENSIONED 40MPa 22@4	SHOTCRETE 32MPa	SHOTCRETE 40MPa	
319	401	409	388	422	461	
STABILISED SAND 3%	STABILISED SAND 5%	KERB MACHINE 320KG/M^3	KERB MACHINE 280KG/M^3	NO FINES 4%		
77	109	312	277	81		

Goulburn/Central Murray region

TABLE 1. ENVIRONMENTAL PROFILES (A1-A3), LOWER CARBON CONCRETE, SHEPPARTON (VIC), PER M^3

Indicator	Unit	ENVISIA® 20 MPa	ENVISIA® 25 MPa	ENVISIA® 32 MPa	ENVISIA® 40 MPa	ENVISIA® 50 MPa	ENVISIA® 65 MPa
GWP	**kg CO_2 eq**	**215**	**236**	**269**	**325**	**388**	**391**
ODP	kg CFC-11 eq	6.46E-06	6.89E-06	7.59E-06	8.74E-06	9.41E-06	9.56E-06
AP	kg SO_2 eq	0.969	1.06	1.21	1.46	1.64	1.67
EP	kg PO4--- eq	0.126	0.137	0.155	0.185	0.211	0.214
POCP	kg C_2H_4 eq	0.0443	0.0481	0.0542	0.0643	0.0723	0.0735
ADPE	kg Sb eq	2.55E-06	2.81E-06	3.22E-06	4.91E-06	6.28E-06	6.93E-06
ADPF	MJ	1810	1960	2220	2660	3050	3100

TABLE 2. ENVIRONMENTAL PARAMETERS (A1-A3), LOWER CARBON CONCRETE, SHEPPARTON (VIC), PER M^3

Parameter	Unit	ENVISIA® 20 MPa	ENVISIA® 25 MPa	ENVISIA® 32 MPa	ENVISIA® 40 MPa	ENVISIA® 50 MPa	ENVISIA® 65 MPa
PERE	MJ_{NCV}	2.16E+01	2.34E+01	2.63E+01	3.24E+01	3.72E+01	3.84E+01
PERM	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ_{NCV}	2.16E+01	2.34E+01	2.63E+01	3.24E+01	3.72E+01	3.84E+01
PENRE	MJ_{NCV}	1.83E+03	1.99E+03	2.25E+03	2.70E+03	3.08E+03	3.13E+03
PENRM	MJ_{NCV}	5.03E+00	5.68E+00	6.78E+00	1.30E+01	1.79E+01	2.07E+01
PENRT	MJ_{NCV}	1.84E+03	2.00E+03	2.26E+03	2.71E+03	3.10E+03	3.15E+03
SM	kg	1.51E+02	1.68E+02	1.96E+02	2.39E+02	2.39E+02	2.50E+02
RSF	MJ_{NCV}	8.00E+00	8.88E+00	1.03E+01	1.26E+01	1.58E+01	1.58E+01
NRSF	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	4.16E+00	4.23E+00	4.41E+00	4.64E+00	4.85E+00	4.88E+00
HWD	kg	5.44E-06	6.15E-06	7.32E-06	1.39E-05	1.92E-05	2.22E-05
NHWD	kg	8.01E-02	8.71E-02	9.85E-02	1.40E-01	1.75E-01	1.90E-01
RWD	kg	9.46E-04	1.07E-03	1.27E-03	2.43E-03	3.35E-03	3.86E-03
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Goulburn/Central Murray region

TABLE 3. ENVIRONMENTAL PROFILES (A1-A3), LOWER CARBON CONCRETE, SHEPPARTON (VIC), PER M^3

Indicator	Unit	ENVIROCRETE® PLUS 20 MPa	ENVIROCRETE® PLUS 25 MPa	ENVIROCRETE® PLUS 32 MPa	ENVIROCRETE® PLUS 40 MPa	ENVIROCRETE® PLUS 50 MPa
GWP	**kg CO_2 eq**	**227**	**247**	**279**	**330**	**408**
ODP	kg CFC-11 eq	6.42E-06	6.70E-06	7.13E-06	7.85E-06	9.30E-06
AP	kg SO_2 eq	0.97	1.04	1.14	1.31	1.64
EP	kg PO4--- eq	0.129	0.138	0.153	0.176	0.216
POCP	kg C_2H_4 eq	0.0447	0.0476	0.0520	0.0593	0.0727
ADPE	kg Sb eq	2.57E-06	2.81E-06	3.19E-06	4.20E-06	5.69E-06
ADPF	MJ	1840	1970	2180	2510	3090

TABLE 4. ENVIRONMENTAL PARAMETERS (A1-A3), LOWER CARBON CONCRETE, SHEPPARTON (VIC), PER M^3

Parameter	Unit	ENVIROCRETE® PLUS 20 MPa	ENVIROCRETE® PLUS 25 MPa	ENVIROCRETE® PLUS 32 MPa	ENVIROCRETE® PLUS 40 MPa	ENVIROCRETE® PLUS 50 MPa
PERE	MJ_{NCV}	2.14E+01	2.28E+01	2.50E+01	2.90E+01	3.60E+01
PERM	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ_{NCV}	2.14E+01	2.28E+01	2.50E+01	2.90E+01	3.60E+01
PENRE	MJ_{NCV}	1.86E+03	1.99E+03	2.20E+03	2.53E+03	3.12E+03
PENRM	MJ_{NCV}	5.03E+00	5.68E+00	6.78E+00	1.03E+01	1.52E+01
PENRT	MJ_{NCV}	1.87E+03	2.00E+03	2.20E+03	2.54E+03	3.14E+03
SM	kg	1.35E+02	1.40E+02	1.46E+02	1.56E+02	2.08E+02
RSF	MJ_{NCV}	8.82E+00	9.81E+00	1.14E+01	1.39E+01	1.73E+01
NRSF	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	4.19E+00	4.24E+00	4.38E+00	4.56E+00	4.90E+00
HWD	kg	5.44E-06	6.15E-06	7.32E-06	1.10E-05	1.63E-05
NHWD	kg	7.98E-02	8.63E-02	9.66E-02	1.22E-01	1.60E-01
RWD	kg	9.46E-04	1.07E-03	1.27E-03	1.92E-03	2.84E-03
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

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TABLE 5. ENVIRONMENTAL PROFILES (A1-A3), LOWER CARBON CONCRETE, SHEPPARTON (VIC), PER M^3

Indicator	Unit	ENVIROCRETE® 40% 20MPa	ENVIROCRETE® 40% 25MPa	ENVIROCRETE® 40% 32MPa	ENVIROCRETE® 40% 40MPa	ENVIROCRETE® 40% 50MPa
GWP	**kg CO_2 eq**	**226**	**248**	**282**	**338**	**415**
ODP	kg CFC-11 eq	5.60E-06	5.93E-06	6.38E-06	7.23E-06	8.34E-06
AP	kg SO_2 eq	0.832	0.91	1.02	1.21	1.48
EP	kg PO4--- eq	0.120	0.131	0.146	0.172	0.208
POCP	kg C_2H_4 eq	0.04	0.0432	0.0479	0.0561	0.0673
ADPE	kg Sb eq	2.48E-06	2.72E-06	3.11E-06	3.53E-06	4.36E-06
ADPF	MJ	1700	1840	2060	2420	2930

TABLE 6. ENVIRONMENTAL PARAMETERS (A1-A3), LOWER CARBON CONCRETE, SHEPPARTON (VIC), PER M^3

Parameter	Unit	ENVIROCRETE® 40% 20MPa	ENVIROCRETE® 40% 25MPa	ENVIROCRETE® 40% 32MPa	ENVIROCRETE® 40% 40MPa	ENVIROCRETE® 40% 50MPa
PERE	MJ_{NCV}	1.90E+01	2.05E+01	2.27E+01	2.63E+01	3.14E+01
PERM	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ_{NCV}	1.90E+01	2.05E+01	2.27E+01	2.63E+01	3.14E+01
PENRE	MJ_{NCV}	1.71E+03	1.85E+03	2.07E+03	2.43E+03	2.94E+03
PENRM	MJ_{NCV}	5.03E+00	5.68E+00	6.78E+00	7.54E+00	9.73E+00
PENRT	MJ_{NCV}	1.71E+03	1.86E+03	2.07E+03	2.44E+03	2.95E+03
SM	kg	6.45E+01	7.28E+01	7.70E+01	9.36E+01	1.15E+02
RSF	MJ_{NCV}	9.65E+00	1.07E+01	1.24E+01	1.51E+01	1.89E+01
NRSF	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	4.09E+00	4.15E+00	4.30E+00	4.51E+00	4.82E+00
HWD	kg	5.44E-06	6.15E-06	7.32E-06	8.09E-06	1.04E-05
NHWD	kg	7.60E-02	8.25E-02	9.29E-02	1.04E-01	1.27E-01
RWD	kg	9.46E-04	1.07E-03	1.27E-03	1.41E-03	1.82E-03
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

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TABLE 7. ENVIRONMENTAL PROFILES (A1-A3), LOWER CARBON CONCRETE, SHEPPARTON (VIC), PER M^3

Indicator	Unit	ENVIROCRETE® 30% 20MPa	ENVIROCRETE® 30% 25MPa	ENVIROCRETE® 30% 32MPa	ENVIROCRETE® 30% 40MPa	ENVIROCRETE® 30% 50MPa
GWP	**kg CO_2 eq**	**252**	**276**	**316**	**380**	**465**
ODP	kg CFC-11 eq	5.63E-06	5.96E-06	6.51E-06	7.36E-06	8.37E-06
AP	kg SO_2 eq	0.859	0.94	1.07	1.27	1.53
EP	kg PO4--- eq	0.128	0.139	0.158	0.186	0.223
POCP	kg C_2H_4 eq	0.0416	0.045	0.0506	0.0593	0.0705
ADPE	kg Sb eq	2.56E-06	2.82E-06	3.24E-06	3.68E-06	4.53E-06
ADPF	MJ	1810	1960	2220	2620	3140

TABLE 8. ENVIRONMENTAL PARAMETERS (A1-A3), LOWER CARBON CONCRETE, SHEPPARTON (VIC), PER M^3

Parameter	Unit	ENVIROCRETE® 30% 20MPa	ENVIROCRETE® 30% 25MPa	ENVIROCRETE® 30% 32MPa	ENVIROCRETE® 30% 40MPa	ENVIROCRETE® 30% 50MPa
PERE	MJ_{NCV}	2.01E+01	2.17E+01	2.43E+01	2.81E+01	3.34E+01
PERM	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ_{NCV}	2.01E+01	2.17E+01	2.43E+01	2.81E+01	3.34E+01
PENRE	MJ_{NCV}	1.81E+03	1.96E+03	2.22E+03	2.62E+03	3.14E+03
PENRM	MJ_{NCV}	5.03E+00	5.68E+00	6.78E+00	7.54E+00	9.73E+00
PENRT	MJ_{NCV}	1.81E+03	1.97E+03	2.23E+03	2.63E+03	3.15E+03
SM	kg	3.64E+01	4.16E+01	4.68E+01	5.41E+01	5.72E+01
RSF	MJ_{NCV}	1.12E+01	1.24E+01	1.45E+01	1.77E+01	2.21E+01
NRSF	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	4.19E+00	4.26E+00	4.44E+00	4.68E+00	5.00E+00
HWD	kg	5.44E-06	6.15E-06	7.32E-06	8.09E-06	1.04E-05
NHWD	kg	7.98E-02	8.66E-02	9.80E-02	1.11E-01	1.34E-01
RWD	kg	9.46E-04	1.07E-03	1.27E-03	1.41E-03	1.82E-03
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

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TABLE 9. ENVIRONMENTAL PROFILES (A1-A3), NORMAL CLASS CONCRETE, SHEPPARTON (VIC), PER M^3

Indicator	Unit	NORMAL GP BLEND 20MPa	NORMAL GP BLEND 25MPa	NORMAL GP BLEND 32MPa	NORMAL GP BLEND 40MPa	NORMAL GP BLEND 50MPa
GWP	**kg CO_2 eq**	**272**	**303**	**357**	**394**	**499**
ODP	kg CFC-11 eq	5.51E-06	5.88E-06	6.55E-06	7.01E-06	8.20E-06
AP	kg SO_2 eq	0.854	0.948	1.11	1.22	1.53
EP	kg PO4--- eq	0.133	0.147	0.17	0.186	0.232
POCP	kg C_2H_4 eq	0.0421	0.0461	0.0532	0.0581	0.0715
ADPE	kg Sb eq	2.77E-06	3.07E-06	3.58E-06	3.91E-06	4.91E-06
ADPF	MJ	1870	2060	2390	2620	3260

TABLE 10. ENVIRONMENTAL PARAMETERS (A1-A3), NORMAL CLASS CONCRETE, SHEPPARTON (VIC), PER M^3

Parameter	Unit	NORMAL GP BLEND 20MPa	NORMAL GP BLEND 25MPa	NORMAL GP BLEND 32MPa	NORMAL GP BLEND 40MPa	NORMAL GP BLEND 50MPa
PERE	MJ_{NCV}	2.09E+01	2.29E+01	2.62E+01	2.84E+01	3.49E+01
PERM	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ_{NCV}	2.09E+01	2.29E+01	2.62E+01	2.84E+01	3.49E+01
PENRE	MJ_{NCV}	1.87E+03	2.06E+03	2.39E+03	2.61E+03	3.25E+03
PENRM	MJ_{NCV}	5.66E+00	6.39E+00	7.65E+00	8.49E+00	1.09E+01
PENRT	MJ_{NCV}	1.87E+03	2.06E+03	2.39E+03	2.62E+03	3.26E+03
SM	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	MJ_{NCV}	1.26E+01	1.43E+01	1.70E+01	1.89E+01	2.44E+01
NRSF	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	4.29E+00	4.39E+00	4.64E+00	4.83E+00	5.13E+00
HWD	kg	6.12E-06	6.91E-06	8.26E-06	9.10E-06	1.17E-05
NHWD	kg	8.62E-02	9.46E-02	1.09E-01	1.18E-01	1.46E-01
RWD	kg	1.06E-03	1.20E-03	1.44E-03	1.58E-03	2.04E-03
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

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TABLE 11. ENVIRONMENTAL PROFILES (A1-A3), NORMAL CLASS CONCRETE, SHEPPARTON (VIC), PER M^3

Indicator	Unit	NORMAL GP/FA BLEND 20MPa	NORMAL GP/FA BLEND 25MPa	NORMAL GP/FA BLEND 32MPa	NORMAL GP/FA BLEND 40MPa	NORMAL GP/FA BLEND 50MPa
GWP	**kg CO_2 eq**	**243**	**278**	**308**	**340**	**462**
ODP	kg CFC-11 eq	5.71E-06	6.28E-06	6.96E-06	7.42E-06	8.94E-06
AP	kg SO_2 eq	0.778	0.884	0.978	1.08	1.44
EP	kg PO4--- eq	0.123	0.139	0.153	0.168	0.221
POCP	kg C_2H_4 eq	0.0392	0.044	0.0485	0.0527	0.0687
ADPE	kg Sb eq	2.79E-06	2.78E-06	3.34E-06	3.65E-06	4.72E-06
ADPF	MJ	1740	1960	2170	2370	3120

TABLE 12. ENVIRONMENTAL PARAMETERS (A1-A3), NORMAL CLASS CONCRETE, SHEPPARTON (VIC), PER M^3

Parameter	Unit	NORMAL GP/FA BLEND 20MPa	NORMAL GP/FA BLEND 25MPa	NORMAL GP/FA BLEND 32MPa	NORMAL GP/FA BLEND 40MPa	NORMAL GP/FA BLEND 50MPa
PERE	MJ_{NCV}	1.93E+01	2.10E+01	2.31E+01	2.51E+01	3.25E+01
PERM	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ_{NCV}	1.93E+01	2.10E+01	2.31E+01	2.51E+01	3.25E+01
PENRE	MJ_{NCV}	1.73E+03	1.95E+03	2.16E+03	2.36E+03	3.11E+03
PENRM	MJ_{NCV}	6.39E+00	5.68E+00	7.65E+00	8.49E+00	1.09E+01
PENRT	MJ_{NCV}	1.74E+03	1.96E+03	2.17E+03	2.37E+03	3.12E+03
SM	kg	5.20E+01	6.24E+01	8.94E+01	9.88E+01	1.04E+02
RSF	MJ_{NCV}	1.09E+01	1.26E+01	1.40E+01	1.56E+01	2.19E+01
NRSF	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	4.12E+00	4.24E+00	4.41E+00	4.48E+00	4.94E+00
HWD	kg	6.91E-06	6.15E-06	8.26E-06	9.10E-06	1.17E-05
NHWD	kg	8.54E-02	8.65E-02	1.01E-01	1.09E-01	1.39E-01
RWD	kg	1.20E-03	1.07E-03	1.44E-03	1.58E-03	2.04E-03
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Goulburn/Central Murray region

TABLE 13. ENVIRONMENTAL PROFILES (A1-A3), VICROADS CONCRETE PRODUCTS, SHEPPARTON (VIC), PER M^3

Indicator	Unit	VR330 32MPa 20MM GP	VR330 32MPa 20MM GP/ SLAG	VR400 40MPa 20MM GP	VR400 40MPa 20MM GP/ SLAG	VR400 40MPa 14MM TREMIE GP/SLAG	VR400 40MPa 14MM TREMIE/CFA GP/SLAG
GWP	**kg CO_2 eq**	**398**	**242**	**459**	**313**	**282**	**326**
ODP	kg CFC-11 eq	8.07E-06	6.90E-06	8.65E-06	7.61E-06	7.69E-06	8.34E-06
AP	kg SO_2 eq	1.27	1.09	1.45	1.29	1.27	1.43
EP	kg PO4--- eq	0.192	0.139	0.218	0.169	0.161	0.183
POCP	kg C_2H_4 eq	0.0614	0.0498	0.069	0.0583	0.0573	0.0641
ADPE	kg Sb eq	1.73E-05	1.68E-05	1.76E-05	1.71E-05	2.16E-05	2.05E-05
ADPF	MJ	2730	2000	3080	2400	2320	2690

TABLE 14. ENVIRONMENTAL PARAMETERS (A1-A3), VICROADS CONCRETE PRODUCTS, SHEPPARTON (VIC), PER M^3

Parameter	Unit	VR330 32MPa 20MM GP	VR330 32MPa 20MM GP/ SLAG	VR400 40MPa 20MM GP	VR400 40MPa 20MM GP/ SLAG	VR400 40MPa 14MM TREMIE GP/SLAG	VR400 40MPa 14MM TREMIE/CFA GP/SLAG
PERE	MJ_{NCV}	3.07E+01	2.48E+01	3.42E+01	2.86E+01	3.15E+01	3.92E+01
PERM	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.21E-02	9.62E-02
PERT	MJ_{NCV}	3.07E+01	2.48E+01	3.42E+01	2.86E+01	3.16E+01	3.93E+01
PENRE	MJ_{NCV}	2.72E+03	2.03E+03	3.08E+03	2.43E+03	2.35E+03	2.72E+03
PENRM	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.35E+00	2.90E+01
PENRT	MJ_{NCV}	2.72E+03	2.03E+03	3.08E+03	2.43E+03	2.36E+03	2.75E+03
SM	kg	0.00E+00	1.77E+02	0.00E+00	1.66E+02	2.08E+02	2.39E+02
RSF	MJ_{NCV}	1.86E+01	9.32E+00	2.19E+01	1.32E+01	1.10E+01	1.26E+01
NRSF	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	4.81E+00	4.26E+00	4.97E+00	4.45E+00	4.42E+00	4.33E+00
HWD	kg	1.44E-05	1.44E-05	1.44E-05	1.44E-05	3.03E-05	5.18E-05
NHWD	kg	4.42E+00	4.40E+00	4.43E+00	4.41E+00	5.19E+00	3.39E+00
RWD	kg	3.38E-03	3.38E-03	3.38E-03	3.38E-03	4.98E-03	7.91E-03
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Goulburn/Central Murray region

TABLE 15. ENVIRONMENTAL PROFILES (A1-A3), VICROADS CONCRETE PRODUCTS, SHEPPARTON (VIC), PER M^3

Indicator	Unit	VR450 50MPa 20MM GP	VR450 50MPa 20MM GP/SLAG	VR450 50MPa 14MM TREMIE GP/SLAG	VR450 50MPa 14MM TREMIE/CFA GP/SLAG
GWP	**kg CO_2 eq**	**512**	**310**	**312**	**339**
ODP	kg CFC-11 eq	9.28E-06	8.25E-06	8.18E-06	8.60E-06
AP	kg SO_2 eq	1.6	1.39	1.4	1.49
EP	kg PO4--- eq	0.240	0.175	0.175	0.190
POCP	kg C_2H_4 eq	0.0758	0.0618	0.0622	0.0665
ADPE	kg Sb eq	1.78E-05	1.72E-05	2.17E-05	2.12E-05
ADPF	MJ	3400	2490	2530	2800

TABLE 16. ENVIRONMENTAL PARAMETERS (A1-A3), VICROADS CONCRETE PRODUCTS, SHEPPARTON (VIC), PER M^3

Parameter	Unit	VR450 50MPa 20MM GP	VR450 50MPa 20MM GP/SLAG	VR450 50MPa 14MM TREMIE GP/SLAG	VR450 50MPa 14MM TREMIE/CFA GP/SLAG
PERE	MJ_{NCV}	3.70E+01	2.93E+01	3.34E+01	4.09E+01
PERM	MJ_{NCV}	0.00E+00	0.00E+00	7.21E-02	9.62E-02
PERT	MJ_{NCV}	3.70E+01	2.93E+01	3.35E+01	4.10E+01
PENRE	MJ_{NCV}	3.39E+03	2.53E+03	2.57E+03	2.82E+03
PENRM	MJ_{NCV}	0.00E+00	0.00E+00	5.35E+00	3.17E+01
PENRT	MJ_{NCV}	3.39E+03	2.53E+03	2.57E+03	2.86E+03
SM	kg	0.00E+00	2.34E+02	2.34E+02	2.50E+02
RSF	MJ_{NCV}	2.47E+01	1.23E+01	1.23E+01	1.32E+01
NRSF	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	5.15E+00	4.43E+00	4.35E+00	4.38E+00
HWD	kg	1.44E-05	1.44E-05	3.03E-05	5.47E-05
NHWD	kg	4.44E+00	4.41E+00	5.19E+00	3.41E+00
RWD	kg	3.38E-03	3.38E-03	4.98E-03	8.42E-03
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	9.60E+01	9.60E+01	9.60E+01	9.60E+01
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Goulburn/Central Murray region

TABLE 17. ENVIRONMENTAL PROFILES (A1-A3), CONCRETE FOR SPECIAL APPLICATIONS, SHEPPARTON (VIC), PER M^3

Indicator	Unit	HIGH SLUMP 20 MPa	HIGH SLUMP 25 MPa	HIGH SLUMP 32 MPa	HIGH SLUMP 40 MPa	HIGH SLUMP 50 MPa	HIGH SLUMP 65 MPa	HIGH SLUMP 80 MPa
GWP	**kg CO_2 eq**	**256**	**275**	**373**	**426**	**514**	**485**	**510**
ODP	kg CFC-11 eq	5.73E-06	5.99E-06	6.74E-06	7.42E-06	8.34E-06	9.52E-06	1.12E-05
AP	kg SO_2 eq	0.875	0.936	1.15	1.33	1.57	1.8	2.11
EP	kg PO4--- eq	0.131	0.139	0.177	0.2	0.238	0.242	0.268
POCP	kg C_2H_4 eq	0.0423	0.045	0.0553	0.0634	0.0734	0.0812	0.0924
ADPE	kg Sb eq	2.82E-06	3.03E-06	3.72E-06	1.67E-05	5.06E-06	3.17E-05	3.26E-05
ADPF	MJ	1840	1960	2490	2830	3350	3480	3850

TABLE 18. ENVIRONMENTAL PARAMETERS (A1-A3), CONCRETE FOR SPECIAL APPLICATIONS, SHEPPARTON (VIC), PER M^3

Parameter	Unit	HIGH SLUMP 20 MPa	HIGH SLUMP 25 MPa	HIGH SLUMP 32 MPa	HIGH SLUMP 40 MPa	HIGH SLUMP 50 MPa	HIGH SLUMP 65 MPa	HIGH SLUMP 80 MPa
PERE	MJ_{NCV}	2.07E+01	2.19E+01	2.71E+01	3.24E+01	3.59E+01	4.61E+01	4.95E+01
PERM	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.62E-02	9.62E-02
PERT	MJ_{NCV}	2.07E+01	2.19E+01	2.71E+01	3.24E+01	3.59E+01	4.61E+01	4.96E+01
PENRE	MJ_{NCV}	1.84E+03	1.96E+03	2.48E+03	2.82E+03	3.34E+03	3.51E+03	3.90E+03
PENRM	MJ_{NCV}	6.01E+00	6.56E+00	7.98E+00	0.00E+00	1.13E+01	7.13E+00	7.13E+00
PENRT	MJ_{NCV}	1.85E+03	1.97E+03	2.49E+03	2.82E+03	3.35E+03	3.51E+03	3.91E+03
SM	kg	3.85E+01	4.16E+01	0.00E+00	0.00E+00	0.00E+00	1.61E+02	2.96E+02
RSF	MJ_{NCV}	1.14E+01	1.23E+01	1.78E+01	2.06E+01	2.52E+01	2.19E+01	2.19E+01
NRSF	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	4.25E+00	4.32E+00	4.72E+00	4.95E+00	5.15E+00	4.97E+00	5.05E+00
HWD	kg	6.58E-06	7.16E-06	8.69E-06	1.37E-05	1.21E-05	4.28E-05	4.35E-05
NHWD	kg	8.63E-02	9.19E-02	1.13E-01	4.21E+00	1.50E-01	7.65E+00	7.87E+00
RWD	kg	1.14E-03	1.24E-03	1.51E-03	3.21E-03	2.11E-03	7.21E-03	7.38E-03
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Goulburn/Central Murray region

TABLE 19. ENVIRONMENTAL PROFILES (A1-A3), CONCRETE FOR SPECIAL APPLICATIONS, SHEPPARTON (VIC), PER M^3

Indicator	Unit	TREMIE 40MPa	TREMIE 50MPa	POST TENSIONED 40MPa 22@3	POST TENSIONED 40MPa 22@4	SHOTCRETE 32MPa	SHOTCRETE 40MPa
GWP	**kg CO_2 eq**	**319**	**401**	**409**	**388**	**422**	**461**
ODP	kg CFC-11 eq	7.11E-06	8.60E-06	7.11E-06	6.86E-06	7.68E-06	8.30E-06
AP	kg SO_2 eq	1.18	1.5	1.26	1.2	1.4	1.55
EP	kg PO4--- eq	0.165	0.205	0.192	0.183	0.203	0.223
POCP	kg C_2H_4 eq	0.0541	0.0673	0.0598	0.0571	0.0702	0.0783
ADPE	kg Sb eq	1.74E-06	2.12E-06	4.05E-06	3.85E-06	3.91E-06	4.21E-06
ADPF	MJ	2300	2860	2710	2580	2800	3050

TABLE 20. ENVIRONMENTAL PARAMETERS (A1-A3), CONCRETE FOR SPECIAL APPLICATIONS, SHEPPARTON (VIC), PER M^3

Parameter	Unit	TREMIE 40MPa	TREMIE 50MPa	POST TENSIONED 40MPa 22@3	POST TENSIONED 40MPa 22@4	SHOTCRETE 32MPa	SHOTCRETE 40MPa
PERE	MJ_{NCV}	2.32E+01	2.83E+01	2.93E+01	2.80E+01	7.89E+01	9.77E+01
PERM	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ_{NCV}	2.32E+01	2.83E+01	2.93E+01	2.80E+01	7.89E+01	9.77E+01
PENRE	MJ_{NCV}	2.32E+03	2.89E+03	2.70E+03	2.57E+03	2.82E+03	3.08E+03
PENRM	MJ_{NCV}	0.00E+00	0.00E+00	8.85E+00	8.36E+00	6.01E+00	6.01E+00
PENRT	MJ_{NCV}	2.32E+03	2.89E+03	2.71E+03	2.58E+03	2.83E+03	3.09E+03
SM	kg	1.04E+02	1.46E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	MJ_{NCV}	1.43E+01	1.81E+01	1.97E+01	1.86E+01	1.92E+01	2.08E+01
NRSF	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	4.43E+00	4.78E+00	4.80E+00	4.74E+00	2.19E+01	2.79E+01
HWD	kg	0.00E+00	0.00E+00	9.49E-06	8.97E-06	6.97E-06	6.97E-06
NHWD	kg	6.19E-02	7.34E-02	1.22E-01	1.16E-01	1.09E-01	1.13E-01
RWD	kg	0.00E+00	0.00E+00	1.65E-03	1.56E-03	1.20E-03	1.20E-03
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Goulburn/Central Murray region

TABLE 21. ENVIRONMENTAL PROFILES (A1-A3), CONCRETE FOR SPECIAL APPLICATIONS, SHEPPARTON (VIC), PER M^3

Indicator	Unit	STABILISED SAND 3%	STABILISED SAND 5%	KERB MACHINE 320KG/M^3	KERB MACHINE 280KG/M^3	NO FINES 4%
GWP	**kg CO_2 eq**	**76.8**	**109**	**312**	**277**	**81**
ODP	kg CFC-11 eq	2.95E-06	3.36E-06	6.66E-06	6.21E-06	2.26E-06
AP	kg SO_2 eq	0.269	0.364	1.09	0.972	0.271
EP	kg PO4--- eq	0.0454	0.0593	0.158	0.142	0.0448
POCP	kg C_2H_4 eq	0.0157	0.0199	0.0512	0.0463	0.0149
ADPE	kg Sb eq	3.65E-07	5.01E-07	3.47E-06	3.09E-06	7.08E-07
ADPF	MJ	656	849	2230	2000	622

TABLE 22. ENVIRONMENTAL PARAMETERS (A1-A3), CONCRETE FOR SPECIAL APPLICATIONS, SHEPPARTON (VIC), PER M^3

Parameter	Unit	STABILISED SAND 3%	STABILISED SAND 5%	KERB MACHINE 320KG/M^3	KERB MACHINE 280KG/M^3	NO FINES 4%
PERE	MJ_{NCV}	6.45E+00	8.23E+00	2.45E+01	2.22E+01	8.55E+00
PERM	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ_{NCV}	6.45E+00	8.23E+00	2.45E+01	2.22E+01	8.55E+00
PENRE	MJ_{NCV}	6.56E+02	8.49E+02	2.23E+03	2.01E+03	6.22E+02
PENRM	MJ_{NCV}	0.00E+00	0.00E+00	7.87E+00	6.88E+00	0.00E+00
PENRT	MJ_{NCV}	6.56E+02	8.49E+02	2.24E+03	2.02E+03	6.22E+02
SM	kg	0.00E+00	0.00E+00	6.66E+01	5.82E+01	0.00E+00
RSF	MJ_{NCV}	2.74E+00	4.38E+00	1.40E+01	1.23E+01	3.29E+00
NRSF	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	3.01E+00	3.15E+00	4.34E+00	4.28E+00	2.64E+00
HWD	kg	0.00E+00	0.00E+00	8.44E-06	7.38E-06	0.00E+00
NHWD	kg	1.82E-02	2.28E-02	1.02E-01	9.21E-02	2.88E-02
RWD	kg	0.00E+00	0.00E+00	1.47E-03	1.29E-03	0.00E+00
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Mallee/Murray North region

Environmental profiles and parameters

Product table list

Mallee/Murray North region

In each region, we start with presenting a summary of the cradle-to-gate carbon footprint (GWP summary) of our concrete mixes.

Lower carbon concrete products

Normal class concrete products

VicRoads concrete products

Concrete products for special applications

Cradle-to-gate GWP-GHG summary (kg CO_2 eq/m^3)

Mallee/Murray North region

ENVISIA® 20MPa	ENVISIA® 25MPa	ENVISIA® 32MPa	ENVISIA® 40MPa	ENVISIA® 50MPa	ENVISIA® 65MPa	
267	289	326	387	453	458	
ENVIROCRETE® PLUS 20MPa	ENVIROCRETE® PLUS 25MPa	ENVIROCRETE® PLUS 32MPa	ENVIROCRETE® PLUS 40MPa	ENVIROCRETE® PLUS 50MPa		
280	301	336	390	474		
ENVIROCRETE® 40% 20MPa	ENVIROCRETE® 40% 25MPa	ENVIROCRETE® 40% 32MPa	ENVIROCRETE® 40% 40MPa	ENVIROCRETE® 40% 50MPa		
279	302	339	398	481		
ENVIROCRETE® 30% 20MPa	ENVIROCRETE® 30% 25MPa	ENVIROCRETE® 30% 32MPa	ENVIROCRETE® 30% 40MPa	ENVIROCRETE® 30% 50MPa		
305	330	375	442	533		
NORMAL GP BLEND 20MPa	NORMAL GP BLEND 25MPa	NORMAL GP BLEND 32MPa	NORMAL GP BLEND 40MPa	NORMAL GP BLEND 50MPa		
330	363	421	460	572		
NORMAL GP/FA BLEND 20MPa	NORMAL GP/FA BLEND 25MPa	NORMAL GP/FA BLEND 32MPa	NORMAL GP/FA BLEND 40MPa	NORMAL GP/FA BLEND 50MPa		
307	337	390	424	527		
VR330 32MPA 20MM GP/FA	VR330 32MPA 20MM GP/SLAG	VR400 40MPA 20MM GP/FA	VR400 40MPA 20MM GP/SLAG	VR400 40MPA 14MM TREMIE GP/SLAG	VR400 40MPA 14MM TREMIE/ CFA GP/SLAG	
365	297	418	338	339	377	
VR400 40MPA 7MM SHOTCRETE	VR450 50MPA 20MM GP/FA	VR450 50MPA 20MM GP/SLAG	VR450 50MPA 14MM TREMIE GP/SLAG	VR450 50MPA 14MM TREMIE/ CFA GP/SLAG		
463	475	374	374	390		
HIGH SLUMP 20MPA	HIGH SLUMP 25MPA	HIGH SLUMP 32MPA	HIGH SLUMP 40MPA	HIGH SLUMP 50MPA	HIGH SLUMP 65MPA	HIGH SLUMP 80MPA
314	344	392	435	532	547	585
TREMIE 40MPA	TREMIE 50MPA	POST TENSIONED 40MPA 22@3	POST TENSIONED 40MPA 22@4	SHOTCRETE 32MPA	SHOTCRETE 40MPA	
395	481	471	454	485	507	
STABILISED SAND 3%	STABILISED SAND 5%	KERB MACHINE 320KG/M^3	KERB MACHINE 280KG/M^3	NO FINES 4%		
73	106	377	339	149		

Mallee/Murray North region

TABLE 1. ENVIRONMENTAL PROFILES (A1-A3), LOWER CARBON CONCRETE, MILDURA (VIC), PER M^3

Indicator	Unit	ENVISIA® 20 MPa	ENVISIA® 25 MPa	ENVISIA® 32 MPa	ENVISIA® 40 MPa	ENVISIA® 50 MPa	ENVISIA® 65 MPa
GWP	**kg CO_2 eq**	**267**	**289**	**326**	**387**	**453**	**458**
ODP	kg CFC-11 eq	1.29E-05	1.35E-05	1.47E-05	1.64E-05	1.77E-05	1.78E-05
AP	kg SO_2 eq	1.22	1.32	1.48	1.75	1.95	1.98
EP	kg PO4--- eq	0.173	0.185	0.206	0.240	0.271	0.274
POCP	kg C_2H_4 eq	0.0604	0.0646	0.0717	0.0833	0.0927	0.0939
ADPE	kg Sb eq	2.51E-06	2.79E-06	3.10E-06	4.93E-06	6.32E-06	7.51E-06
ADPF	MJ	2520	2700	3000	3510	3960	4020

TABLE 2. ENVIRONMENTAL PARAMETERS (A1-A3), LOWER CARBON CONCRETE, MILDURA (VIC), PER M^3

Parameter	Unit	ENVISIA® 20 MPa	ENVISIA® 25 MPa	ENVISIA® 32 MPa	ENVISIA® 40 MPa	ENVISIA® 50 MPa	ENVISIA® 65 MPa
PERE	MJ_{NCV}	2.21E+01	2.40E+01	2.68E+01	3.33E+01	3.83E+01	4.02E+01
PERM	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ_{NCV}	2.21E+01	2.40E+01	2.68E+01	3.33E+01	3.83E+01	4.02E+01
PENRE	MJ_{NCV}	2.54E+03	2.72E+03	3.03E+03	3.54E+03	3.99E+03	4.05E+03
PENRM	MJ_{NCV}	4.81E+00	5.57E+00	6.12E+00	1.29E+01	1.78E+01	2.29E+01
PENRT	MJ_{NCV}	2.55E+03	2.73E+03	3.03E+03	3.56E+03	4.01E+03	4.08E+03
SM	kg	1.51E+02	1.68E+02	1.96E+02	2.39E+02	2.39E+02	2.50E+02
RSF	MJ_{NCV}	8.00E+00	8.88E+00	1.03E+01	1.26E+01	1.58E+01	1.58E+01
NRSF	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	4.15E+00	4.20E+00	4.35E+00	4.57E+00	4.75E+00	4.69E+00
HWD	kg	5.16E-06	6.02E-06	6.60E-06	1.38E-05	1.91E-05	2.46E-05
NHWD	kg	7.97E-02	8.77E-02	9.68E-02	1.42E-01	1.77E-01	2.05E-01
RWD	kg	8.98E-04	1.05E-03	1.15E-03	2.41E-03	3.33E-03	4.29E-03
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Mallee/Murray North region

TABLE 3. ENVIRONMENTAL PROFILES (A1-A3), LOWER CARBON CONCRETE, MILDURA (VIC), PER M^3

Indicator	Unit	ENVIROCRETE® PLUS 20 MPa	ENVIROCRETE® PLUS 25 MPa	ENVIROCRETE® PLUS 32 MPa	ENVIROCRETE® PLUS 40 MPa	ENVIROCRETE® PLUS 50 MPa
GWP	**kg CO_2 eq**	**280**	**301**	**336**	**390**	**474**
ODP	kg CFC-11 eq	1.31E-05	1.34E-05	1.41E-05	1.53E-05	1.76E-05
AP	kg SO_2 eq	1.23	1.3	1.41	1.6	1.95
EP	kg PO4--- eq	0.178	0.187	0.205	0.231	0.277
POCP	kg C_2H_4 eq	0.0614	0.0644	0.0698	0.0779	0.0933
ADPE	kg Sb eq	2.55E-06	3.21E-06	4.04E-06	4.76E-06	5.78E-06
ADPF	MJ	2570	2720	2970	3340	4010

TABLE 4. ENVIRONMENTAL PARAMETERS (A1-A3), LOWER CARBON CONCRETE, MILDURA (VIC), PER M^3

Parameter	Unit	ENVIROCRETE® PLUS 20 MPa	ENVIROCRETE® PLUS 25 MPa	ENVIROCRETE® PLUS 32 MPa	ENVIROCRETE® PLUS 40 MPa	ENVIROCRETE® PLUS 50 MPa
PERE	MJ_{NCV}	2.20E+01	2.40E+01	2.69E+01	3.06E+01	3.72E+01
PERM	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ_{NCV}	2.20E+01	2.40E+01	2.69E+01	3.06E+01	3.72E+01
PENRE	MJ_{NCV}	2.60E+03	2.74E+03	2.99E+03	3.36E+03	4.03E+03
PENRM	MJ_{NCV}	4.81E+00	7.38E+00	1.04E+01	1.26E+01	1.53E+01
PENRT	MJ_{NCV}	2.60E+03	2.74E+03	3.00E+03	3.37E+03	4.05E+03
SM	kg	1.35E+02	1.40E+02	1.46E+02	1.56E+02	2.08E+02
RSF	MJ_{NCV}	8.82E+00	9.81E+00	1.14E+01	1.39E+01	1.73E+01
NRSF	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	4.21E+00	4.25E+00	4.40E+00	4.52E+00	4.79E+00
HWD	kg	5.24E-06	7.95E-06	1.12E-05	1.35E-05	1.64E-05
NHWD	kg	8.06E-02	9.66E-02	1.18E-01	1.36E-01	1.64E-01
RWD	kg	9.09E-04	1.38E-03	1.94E-03	2.35E-03	2.86E-03
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Mallee/Murray North region

TABLE 5. ENVIRONMENTAL PROFILES (A1-A3), LOWER CARBON CONCRETE, MILDURA (VIC), PER M^3

Indicator	Unit	ENVIROCRETE® 40% 20MPa	ENVIROCRETE® 40% 25MPa	ENVIROCRETE® 40% 32MPa	ENVIROCRETE® 40% 40MPa	ENVIROCRETE® 40% 50MPa
GWP	**kg CO_2 eq**	**279**	**302**	**339**	**398**	**481**
ODP	kg CFC-11 eq	1.21E-05	1.26E-05	1.35E-05	1.47E-05	1.66E-05
AP	kg SO_2 eq	1.09	1.17	1.3	1.5	1.8
EP	kg PO4--- eq	0.169	0.180	0.199	0.228	0.269
POCP	kg C_2H_4 eq	0.0565	0.0602	0.066	0.0751	0.0881
ADPE	kg Sb eq	2.67E-06	2.95E-06	3.36E-06	3.82E-06	4.95E-06
ADPF	MJ	2420	2580	2850	3260	3850

TABLE 6. ENVIRONMENTAL PARAMETERS (A1-A3), LOWER CARBON CONCRETE, MILDURA (VIC), PER M^3

Parameter	Unit	ENVIROCRETE® 40% 20MPa	ENVIROCRETE® 40% 25MPa	ENVIROCRETE® 40% 32MPa	ENVIROCRETE® 40% 40MPa	ENVIROCRETE® 40% 50MPa
PERE	MJ_{NCV}	2.00E+01	2.15E+01	2.39E+01	2.76E+01	3.33E+01
PERM	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ_{NCV}	2.00E+01	2.15E+01	2.39E+01	2.76E+01	3.33E+01
PENRE	MJ_{NCV}	2.43E+03	2.59E+03	2.86E+03	3.27E+03	3.86E+03
PENRM	MJ_{NCV}	5.79E+00	6.56E+00	7.70E+00	8.63E+00	1.20E+01
PENRT	MJ_{NCV}	2.43E+03	2.60E+03	2.86E+03	3.28E+03	3.87E+03
SM	kg	6.45E+01	7.28E+01	7.70E+01	9.36E+01	1.15E+02
RSF	MJ_{NCV}	9.65E+00	1.07E+01	1.24E+01	1.51E+01	1.89E+01
NRSF	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	4.14E+00	4.20E+00	4.32E+00	4.56E+00	4.76E+00
HWD	kg	6.26E-06	7.08E-06	8.30E-06	9.26E-06	1.29E-05
NHWD	kg	8.17E-02	8.88E-02	1.00E-01	1.13E-01	1.42E-01
RWD	kg	1.09E-03	1.23E-03	1.44E-03	1.61E-03	2.24E-03
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

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TABLE 7. ENVIRONMENTAL PROFILES (A1-A3), LOWER CARBON CONCRETE, MILDURA (VIC), PER M^3

Indicator	Unit	ENVIROCRETE® 30% 20MPa	ENVIROCRETE® 30% 25MPa	ENVIROCRETE® 30% 32MPa	ENVIROCRETE® 30% 40MPa	ENVIROCRETE® 30% 50MPa
GWP	**kg CO_2 eq**	**305**	**330**	**375**	**442**	**533**
ODP	kg CFC-11 eq	1.22E-05	1.27E-05	1.38E-05	1.50E-05	1.68E-05
AP	kg SO_2 eq	1.12	1.2	1.35	1.57	1.86
EP	kg PO4--- eq	0.178	0.19	0.212	0.243	0.286
POCP	kg C_2H_4 eq	0.0585	0.0623	0.0691	0.0788	0.0918
ADPE	kg Sb eq	2.76E-06	3.04E-06	3.49E-06	3.98E-06	5.12E-06
ADPF	MJ	2540	2710	3020	3470	4070

TABLE 8. ENVIRONMENTAL PARAMETERS (A1-A3), LOWER CARBON CONCRETE, MILDURA (VIC), PER M^3

Parameter	Unit	ENVIROCRETE® 30% 20MPa	ENVIROCRETE® 30% 25MPa	ENVIROCRETE® 30% 32MPa	ENVIROCRETE® 30% 40MPa	ENVIROCRETE® 30% 50MPa
PERE	MJ_{NCV}	2.10E+01	2.27E+01	2.54E+01	2.94E+01	3.53E+01
PERM	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ_{NCV}	2.10E+01	2.27E+01	2.54E+01	2.94E+01	3.53E+01
PENRE	MJ_{NCV}	2.54E+03	2.71E+03	3.02E+03	3.47E+03	4.07E+03
PENRM	MJ_{NCV}	5.79E+00	6.56E+00	7.70E+00	8.63E+00	1.20E+01
PENRT	MJ_{NCV}	2.55E+03	2.72E+03	3.03E+03	3.48E+03	4.09E+03
SM	kg	3.64E+01	4.16E+01	4.68E+01	5.41E+01	5.72E+01
RSF	MJ_{NCV}	1.12E+01	1.24E+01	1.45E+01	1.77E+01	2.21E+01
NRSF	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	4.23E+00	4.31E+00	4.46E+00	4.72E+00	4.95E+00
HWD	kg	6.26E-06	7.08E-06	8.30E-06	9.26E-06	1.29E-05
NHWD	kg	8.55E-02	9.30E-02	1.05E-01	1.19E-01	1.50E-01
RWD	kg	1.09E-03	1.23E-03	1.44E-03	1.61E-03	2.24E-03
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

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TABLE 9. ENVIRONMENTAL PROFILES (A1-A3), NORMAL CLASS CONCRETE, MILDURA (VIC), PER M^3

Indicator	Unit	NORMAL GP BLEND 20MPa	NORMAL GP BLEND 25MPa	NORMAL GP BLEND 32MPa	NORMAL GP BLEND 40MPa	NORMAL GP BLEND 50MPa
GWP	**kg CO_2 eq**	**330**	**363**	**421**	**460**	**572**
ODP	kg CFC-11 eq	1.22E-05	1.28E-05	1.40E-05	1.47E-05	1.68E-05
AP	kg SO_2 eq	1.13	1.23	1.41	1.53	1.88
EP	kg PO4--- eq	0.185	0.200	0.228	0.246	0.298
POCP	kg C_2H_4 eq	0.0598	0.0644	0.0727	0.0781	0.0939
ADPE	kg Sb eq	2.84E-06	3.15E-06	3.65E-06	4.01E-06	5.03E-06
ADPF	MJ	2640	2850	3240	3490	4230

TABLE 10. ENVIRONMENTAL PARAMETERS (A1-A3), NORMAL CLASS CONCRETE, MILDURA (VIC), PER M^3

Parameter	Unit	NORMAL GP BLEND 20MPa	NORMAL GP BLEND 25MPa	NORMAL GP BLEND 32MPa	NORMAL GP BLEND 40MPa	NORMAL GP BLEND 50MPa
PERE	MJ_{NCV}	2.19E+01	2.39E+01	2.73E+01	2.97E+01	3.65E+01
PERM	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ_{NCV}	2.19E+01	2.39E+01	2.73E+01	2.97E+01	3.65E+01
PENRE	MJ_{NCV}	2.63E+03	2.84E+03	3.23E+03	3.48E+03	4.21E+03
PENRM	MJ_{NCV}	5.79E+00	6.56E+00	7.70E+00	8.63E+00	1.10E+01
PENRT	MJ_{NCV}	2.64E+03	2.85E+03	3.24E+03	3.49E+03	4.23E+03
SM	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	MJ_{NCV}	1.29E+01	1.45E+01	1.73E+01	1.92E+01	2.47E+01
NRSF	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	4.32E+00	4.43E+00	4.63E+00	4.77E+00	5.13E+00
HWD	kg	6.26E-06	7.08E-06	8.30E-06	9.26E-06	1.18E-05
NHWD	kg	8.93E-02	9.79E-02	1.12E-01	1.22E-01	1.50E-01
RWD	kg	1.09E-03	1.23E-03	1.44E-03	1.61E-03	2.06E-03
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

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TABLE 11. ENVIRONMENTAL PROFILES (A1-A3), NORMAL CLASS CONCRETE, MILDURA (VIC), PER M^3

Indicator	Unit	NORMAL GP/FA BLEND 20MPa	NORMAL GP/FA BLEND 25MPa	NORMAL GP/FA BLEND 32MPa	NORMAL GP/FA BLEND 40MPa	NORMAL GP/FA BLEND 50MPa
GWP	**kg CO_2 eq**	**307**	**337**	**390**	**424**	**527**
ODP	kg CFC-11 eq	1.26E-05	1.34E-05	1.45E-05	1.52E-05	1.74E-05
AP	kg SO_2 eq	1.07	1.17	1.33	1.44	1.76
EP	kg PO4--- eq	0.178	0.193	0.218	0.235	0.283
POCP	kg C_2H_4 eq	0.0579	0.0625	0.0700	0.0751	0.0899
ADPE	kg Sb eq	2.86E-06	3.15E-06	3.68E-06	4.02E-06	5.02E-06
ADPF	MJ	2550	2760	3110	3340	4040

TABLE 12. ENVIRONMENTAL PARAMETERS (A1-A3), NORMAL CLASS CONCRETE, MILDURA (VIC), PER M^3

Parameter	Unit	NORMAL GP/FA BLEND 20MPa	NORMAL GP/FA BLEND 25MPa	NORMAL GP/FA BLEND 32MPa	NORMAL GP/FA BLEND 40MPa	NORMAL GP/FA BLEND 50MPa
PERE	MJ_{NCV}	2.06E+01	2.24E+01	2.55E+01	2.76E+01	3.38E+01
PERM	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ_{NCV}	2.06E+01	2.24E+01	2.55E+01	2.76E+01	3.38E+01
PENRE	MJ_{NCV}	2.54E+03	2.75E+03	3.10E+03	3.34E+03	4.03E+03
PENRM	MJ_{NCV}	6.39E+00	7.10E+00	8.52E+00	9.45E+00	1.20E+01
PENRT	MJ_{NCV}	2.55E+03	2.76E+03	3.11E+03	3.35E+03	4.04E+03
SM	kg	5.41E+01	6.03E+01	7.18E+01	8.01E+01	1.03E+02
RSF	MJ_{NCV}	1.14E+01	1.27E+01	1.52E+01	1.68E+01	2.17E+01
NRSF	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	4.18E+00	4.29E+00	4.44E+00	4.57E+00	4.87E+00
HWD	kg	6.90E-06	7.67E-06	9.18E-06	1.01E-05	1.29E-05
NHWD	kg	8.85E-02	9.65E-02	1.11E-01	1.20E-01	1.48E-01
RWD	kg	1.20E-03	1.33E-03	1.60E-03	1.77E-03	2.24E-03
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

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TABLE 13. ENVIRONMENTAL PROFILES (A1-A3), VICROADS CONCRETE PRODUCTS, MILDURA (VIC), PER M^3

Indicator	Unit	VR330 32MPa 20MM GP/FA	VR330 32MPa 20MM GP/ SLAG	VR400 40MPa 20MM GP/FA	VR400 40MPa 20MM GP/ SLAG	VR400 40MPa 14MM TREMIE GP/ SLAG	VR400 40MPa 14MM TREMIE/CFA GP/SLAG
GWP	**kg CO_2 eq**	**365**	**297**	**418**	**338**	**339**	**377**
ODP	kg CFC-11 eq	1.42E-05	1.39E-05	1.53E-05	1.50E-05	1.48E-05	1.47E-05
AP	kg SO_2 eq	1.28	1.36	1.45	1.54	1.54	1.67
EP	kg PO4--- eq	0.207	0.19	0.232	0.212	0.212	0.229
POCP	kg C_2H_4 eq	0.0677	0.0669	0.0757	0.0747	0.0749	0.0797
ADPE	kg Sb eq	1.38E-05	1.37E-05	1.72E-05	1.71E-05	2.16E-05	2.06E-05
ADPF	MJ	2970	2750	3330	3080	3100	3390

TABLE 14. ENVIRONMENTAL PARAMETERS (A1-A3), VICROADS CONCRETE PRODUCTS, MILDURA (VIC), PER M^3

Parameter	Unit	VR330 32MPa 20MM GP/FA	VR330 32MPa 20MM GP/ SLAG	VR400 40MPa 20MM GP/FA	VR400 40MPa 20MM GP/ SLAG	VR400 40MPa 14MM TREMIE GP/ SLAG	VR400 40MPa 14MM TREMIE/CFA GP/SLAG
PERE	MJ_{NCV}	2.56E+01	2.46E+01	2.94E+01	2.83E+01	3.24E+01	4.01E+01
PERM	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.21E-02	9.62E-02
PERT	MJ_{NCV}	2.56E+01	2.46E+01	2.94E+01	2.83E+01	3.25E+01	4.02E+01
PENRE	MJ_{NCV}	2.96E+03	2.79E+03	3.32E+03	3.12E+03	3.14E+03	3.42E+03
PENRM	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.35E+00	2.90E+01
PENRT	MJ_{NCV}	2.96E+03	2.79E+03	3.32E+03	3.12E+03	3.14E+03	3.45E+03
SM	kg	8.84E+01	1.77E+02	1.04E+02	2.08E+02	2.08E+02	2.39E+02
RSF	MJ_{NCV}	1.40E+01	9.32E+00	1.64E+01	1.10E+01	1.10E+01	1.26E+01
NRSF	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	4.33E+00	4.16E+00	4.48E+00	4.28E+00	4.30E+00	4.22E+00
HWD	kg	1.14E-05	1.14E-05	1.44E-05	1.44E-05	3.03E-05	5.18E-05
NHWD	kg	3.51E+00	3.50E+00	4.42E+00	4.41E+00	5.19E+00	3.39E+00
RWD	kg	2.68E-03	2.68E-03	3.38E-03	3.38E-03	4.98E-03	7.91E-03
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Mallee/Murray North region

TABLE 15. ENVIRONMENTAL PROFILES (A1-A3), VICROADS CONCRETE PRODUCTS, MILDURA (VIC), PER M^3

Indicator	Unit	VR400 40MPa 7MM SHOTCRETE	VR450 50MPa 20MM GP/FA	VR450 50MPa 20MM GP/SLAG	VR450 50MPa 14MM TREMIE GP/SLAG	VR450 50MPa 14MM TREMIE/ CFA GP/SLAG
GWP	**kg CO_2 eq**	**463**	**475**	**374**	**374**	**390**
ODP	kg CFC-11 eq	1.43E-05	1.66E-05	1.62E-05	1.59E-05	1.50E-05
AP	kg SO_2 eq	1.68	1.63	1.7	1.7	1.72
EP	kg PO4--- eq	0.250	0.259	0.233	0.232	0.235
POCP	kg C_2H_4 eq	0.0901	0.0842	0.0817	0.0816	0.082
ADPE	kg Sb eq	2.20E-05	1.94E-05	1.92E-05	2.37E-05	2.13E-05
ADPF	MJ	3510	3720	3370	3390	3490

TABLE 16. ENVIRONMENTAL PARAMETERS (A1-A3), VICROADS CONCRETE PRODUCTS, MILDURA (VIC), PER M^3

Parameter	Unit	VR400 40MPa 7MM SHOTCRETE	VR450 50MPa 20MM GP/FA	VR450 50MPa 20MM GP/SLAG	VR450 50MPa 14MM TREMIE GP/SLAG	VR450 50MPa 14MM TREMIE/ CFA GP/SLAG
PERE	MJ_{NCV}	9.96E+01	3.31E+01	3.11E+01	3.53E+01	4.17E+01
PERM	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	7.21E-02	9.62E-02
PERT	MJ_{NCV}	9.96E+01	3.31E+01	3.11E+01	3.53E+01	4.18E+01
PENRE	MJ_{NCV}	3.54E+03	3.71E+03	3.42E+03	3.43E+03	3.52E+03
PENRM	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	5.35E+00	3.17E+01
PENRT	MJ_{NCV}	3.54E+03	3.71E+03	3.42E+03	3.43E+03	3.55E+03
SM	kg	7.28E+01	1.04E+02	2.34E+02	2.34E+02	2.50E+02
RSF	MJ_{NCV}	1.81E+01	1.92E+01	1.23E+01	1.23E+01	1.32E+01
NRSF	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	2.76E+01	4.70E+00	4.43E+00	4.36E+00	4.26E+00
HWD	kg	1.83E-05	1.62E-05	1.62E-05	3.21E-05	5.47E-05
NHWD	kg	5.58E+00	4.97E+00	4.96E+00	5.74E+00	3.41E+00
RWD	kg	4.28E-03	3.80E-03	3.80E-03	5.41E-03	8.42E-03
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Mallee/Murray North region

TABLE 17. ENVIRONMENTAL PROFILES (A1-A3), CONCRETE FOR SPECIAL APPLICATIONS, MILDURA (VIC), PER M^3

Indicator	Unit	HIGH SLUMP 20MPa	HIGH SLUMP 25MPa	HIGH SLUMP 32MPa	HIGH SLUMP 40MPa	HIGH SLUMP 50MPa	HIGH SLUMP 65MPa	HIGH SLUMP 80MPa
GWP	**kg CO_2 eq**	**314**	**344**	**392**	**435**	**532**	**547**	**585**
ODP	kg CFC-11 eq	1.25E-05	1.31E-05	1.40E-05	1.47E-05	1.67E-05	1.78E-05	2.01E-05
AP	kg SO_2 eq	1.15	1.25	1.41	1.55	1.89	2.07	2.42
EP	kg PO4--- eq	0.183	0.197	0.22	0.24	0.287	0.302	0.335
POCP	kg C_2H_4 eq	0.0601	0.0644	0.0715	0.0776	0.0927	0.0999	0.113
ADPE	kg Sb eq	2.88E-06	3.17E-06	3.65E-06	4.07E-06	7.24E-06	1.38E-05	1.57E-05
ADPF	MJ	2610	2810	3130	3420	4090	4360	4870

TABLE 18. ENVIRONMENTAL PARAMETERS (A1-A3), CONCRETE FOR SPECIAL APPLICATIONS, MILDURA (VIC), PER M^3

Parameter	Unit	HIGH SLUMP 20MPa	HIGH SLUMP 25MPa	HIGH SLUMP 32MPa	HIGH SLUMP 40MPa	HIGH SLUMP 50MPa	HIGH SLUMP 65MPa	HIGH SLUMP 80MPa
PERE	MJ_{NCV}	2.16E+01	2.35E+01	2.66E+01	2.93E+01	3.72E+01	4.49E+01	5.11E+01
PERM	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.81E-02	1.44E-01	1.35E-01
PERT	MJ_{NCV}	2.16E+01	2.35E+01	2.66E+01	2.93E+01	3.72E+01	4.51E+01	5.12E+01
PENRE	MJ_{NCV}	2.61E+03	2.81E+03	3.14E+03	3.42E+03	4.10E+03	4.38E+03	4.91E+03
PENRM	MJ_{NCV}	6.12E+00	6.88E+00	8.11E+00	9.18E+00	1.14E+01	2.00E+01	2.91E+01
PENRT	MJ_{NCV}	2.62E+03	2.82E+03	3.14E+03	3.43E+03	4.11E+03	4.40E+03	4.94E+03
SM	kg	3.95E+01	4.37E+01	5.20E+01	5.82E+01	8.32E+01	1.61E+02	2.96E+02
RSF	MJ_{NCV}	1.16E+01	1.30E+01	1.53E+01	1.75E+01	2.19E+01	2.16E+01	2.19E+01
NRSF	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	4.26E+00	4.35E+00	4.49E+00	4.60E+00	4.93E+00	5.02E+00	5.20E+00
HWD	kg	6.60E-06	7.42E-06	8.74E-06	9.85E-06	1.90E-05	4.17E-05	5.01E-05
NHWD	kg	8.85E-02	9.66E-02	1.10E-01	1.21E-01	6.49E-01	1.70E+00	1.65E+00
RWD	kg	1.15E-03	1.29E-03	1.52E-03	1.71E-03	2.54E-03	4.94E-03	6.56E-03
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Mallee/Murray North region

TABLE 19. ENVIRONMENTAL PROFILES (A1-A3), CONCRETE FOR SPECIAL APPLICATIONS, MILDURA (VIC), PER M^3

Indicator	Unit	TREMIE 40MPa	TREMIE 50MPa	POST TENSIONED 40MPa 22@3	POST TENSIONED 40MPa 22@4	SHOTCRETE 32MPa	SHOTCRETE 40MPa
GWP	**kg CO_2 eq**	**395**	**481**	**471**	**454**	**485**	**507**
ODP	kg CFC-11 eq	1.48E-05	1.68E-05	1.48E-05	1.46E-05	1.37E-05	1.41E-05
AP	kg SO_2 eq	1.53	1.86	1.56	1.51	1.71	1.78
EP	kg PO4--- eq	0.227	0.271	0.251	0.243	0.256	0.266
POCP	kg C_2H_4 eq	0.0763	0.0907	0.0795	0.0773	0.09	0.093
ADPE	kg Sb eq	1.41E-05	1.45E-05	4.08E-06	4.02E-06	4.25E-06	4.34E-06
ADPF	MJ	3270	3900	3560	3450	3550	3690

TABLE 20. ENVIRONMENTAL PARAMETERS (A1-A3), CONCRETE FOR SPECIAL APPLICATIONS, MILDURA (VIC), PER M^3

Parameter	Unit	TREMIE 40MPa	TREMIE 50MPa	POST TENSIONED 40MPa 22@3	POST TENSIONED 40MPa 22@4	SHOTCRETE 32MPa	SHOTCRETE 40MPa
PERE	MJ_{NCV}	3.17E+01	3.69E+01	3.03E+01	2.94E+01	9.69E+01	9.81E+01
PERM	MJ_{NCV}	7.21E-02	7.21E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ_{NCV}	3.17E+01	3.70E+01	3.03E+01	2.94E+01	9.69E+01	9.81E+01
PENRE	MJ_{NCV}	3.29E+03	3.92E+03	3.55E+03	3.44E+03	3.58E+03	3.72E+03
PENRM	MJ_{NCV}	5.35E+00	5.35E+00	8.74E+00	8.74E+00	6.56E+00	6.56E+00
PENRT	MJ_{NCV}	3.29E+03	3.92E+03	3.56E+03	3.45E+03	3.58E+03	3.72E+03
SM	kg	1.04E+02	1.46E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	MJ_{NCV}	1.48E+01	1.86E+01	1.97E+01	1.89E+01	1.97E+01	2.08E+01
NRSF	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	4.61E+00	5.00E+00	4.79E+00	4.74E+00	2.77E+01	2.78E+01
HWD	kg	2.31E-05	2.31E-05	9.38E-06	9.38E-06	7.81E-06	7.81E-06
NHWD	kg	3.02E+00	3.04E+00	1.24E-01	1.22E-01	1.15E-01	1.18E-01
RWD	kg	3.29E-03	3.29E-03	1.63E-03	1.63E-03	1.34E-03	1.34E-03
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Mallee/Murray North region

TABLE 21. ENVIRONMENTAL PROFILES (A1-A3), CONCRETE FOR SPECIAL APPLICATIONS, MILDURA (VIC), PER M^3

Indicator	Unit	STABILISED SAND 3%	STABILISED SAND 5%	KERB MACHINE 320KG/M^3	KERB MACHINE 280KG/M^3	NO FINES 4%
GWP	**kg CO_2 eq**	**72.7**	**106**	**377**	**339**	**149**
ODP	kg CFC-11 eq	2.34E-06	2.92E-06	1.31E-05	1.25E-05	1.07E-05
AP	kg SO_2 eq	0.25	0.352	1.35	1.23	0.603
EP	kg PO4--- eq	0.0423	0.0575	0.21	0.192	0.109
POCP	kg C_2H_4 eq	0.0146	0.0192	0.0682	0.0630	0.0365
ADPE	kg Sb eq	5.42E-07	6.80E-07	3.52E-06	3.19E-06	7.79E-07
ADPF	MJ	596	807	2990	2740	1550

TABLE 22. ENVIRONMENTAL PARAMETERS (A1-A3), CONCRETE FOR SPECIAL APPLICATIONS, MILDURA (VIC), PER M^3

Parameter	Unit	STABILISED SAND 3%	STABILISED SAND 5%	KERB MACHINE 320KG/M^3	KERB MACHINE 280KG/M^3	NO FINES 4%
PERE	MJ_{NCV}	7.81E+00	9.61E+00	2.56E+01	2.33E+01	9.79E+00
PERM	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ_{NCV}	7.81E+00	9.61E+00	2.56E+01	2.33E+01	9.79E+00
PENRE	MJ_{NCV}	5.95E+02	8.07E+02	2.99E+03	2.75E+03	1.55E+03
PENRM	MJ_{NCV}	0.00E+00	0.00E+00	7.87E+00	7.10E+00	0.00E+00
PENRT	MJ_{NCV}	5.95E+02	8.07E+02	3.00E+03	2.75E+03	1.55E+03
SM	kg	0.00E+00	0.00E+00	4.99E+01	4.37E+01	0.00E+00
RSF	MJ_{NCV}	2.74E+00	4.38E+00	1.49E+01	1.30E+01	3.29E+00
NRSF	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	3.05E+00	3.19E+00	4.35E+00	4.34E+00	2.67E+00
HWD	kg	0.00E+00	0.00E+00	8.44E-06	7.62E-06	0.00E+00
NHWD	kg	2.42E-02	2.88E-02	1.05E-01	9.64E-02	3.24E-02
RWD	kg	0.00E+00	0.00E+00	1.47E-03	1.33E-03	0.00E+00
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Murray East/Hume region

Environmental profiles and parameters

Product table list

Murray East/Hume region

In each region, we start with presenting a summary of the cradle-to-gate carbon footprint (GWP summary) of our concrete mixes.

Lower carbon concrete products

Normal class concrete products

VicRoads concrete products

Concrete products for special applications

Cradle-to-gate GWP-GHG summary (kg CO_2 eq/m^3)

Murray East/Hume region

ENVISIA® 20MPa	ENVISIA® 25MPa	ENVISIA® 32MPa	ENVISIA® 40MPa	ENVISIA® 50MPa	ENVISIA® 65MPa	
218	240	274	333	397	400	
ENVIROCRETE® PLUS 20MPa	ENVIROCRETE® PLUS 25MPa	ENVIROCRETE® PLUS 32MPa	ENVIROCRETE® PLUS 40MPa	ENVIROCRETE® PLUS 50MPa		
230	251	283	336	416		
ENVIROCRETE® 40% 20MPa	ENVIROCRETE® 40% 25MPa	ENVIROCRETE® 40% 32MPa	ENVIROCRETE® 40% 40MPa	ENVIROCRETE® 40% 50MPa		
229	252	286	344	424		
ENVIROCRETE® 30% 20MPa	ENVIROCRETE® 30% 25MPa	ENVIROCRETE® 30% 32MPa	ENVIROCRETE® 30% 40MPa	ENVIROCRETE® 30% 50MPa		
255	280	321	387	475		
NORMAL GP BLEND 20MPa	NORMAL GP BLEND 25MPa	NORMAL GP BLEND 32MPa	NORMAL GP BLEND 40MPa	NORMAL GP BLEND 50MPa		
276	309	374	429	494		
NORMAL GP/FA BLEND 20MPa	NORMAL GP/FA BLEND 25MPa	NORMAL GP/FA BLEND 32MPa	NORMAL GP/FA BLEND 40MPa	NORMAL GP/FA BLEND 50MPa		
242	272	332	381	449		
VR330 32MPA 20MM GP/FA	VR330 32MPA 20MM GP/SLAG	VR400 40MPA 20MM GP/FA	VR400 40MPA 20MM GP/SLAG	VR400 40MPA 14MM TREMIE GP/SLAG	VR400 40MPA 14MM TREMIE/ CFA GP/SLAG	
337	248	361	286	289	332	
VR400 40MPA 7MM SHOTCRETE	VR450 50MPA 20MM GP/FA	VR450 50MPA 20MM GP/SLAG	VR450 50MPA 14MM TREMIE GP/SLAG	VR450 50MPA 14MM TREMIE/ CFA GP/SLAG		
423	417	320	320	346		
HIGH SLUMP 20MPA	HIGH SLUMP 25MPA	HIGH SLUMP 32MPA	HIGH SLUMP 40MPA	HIGH SLUMP 50MPA	HIGH SLUMP 65MPA	HIGH SLUMP 80MPA
287	321	364	451	472	498	528
TREMIE 40MPA	TREMIE 50MPA	POST TENSIONED 40MPA 22@3	POST TENSIONED 40MPA 22@4	SHOTCRETE 32MPA	SHOTCRETE 40MPA	
327	411	439	422	427	459	
STABILISED SAND 3%	STABILISED SAND 5%	KERB MACHINE 320KG/M^3	KERB MACHINE 280KG/M^3	NO FINES 4%		
69	102	373	330	90		

Murray East/Hume region

TABLE 1. ENVIRONMENTAL PROFILES (A1-A3), LOWER CARBON CONCRETE, WODONGA (VIC), PER M^3

Indicator	Unit	ENVISIA® 20 MPa	ENVISIA® 25 MPa	ENVISIA® 32 MPa	ENVISIA® 40 MPa	ENVISIA® 50 MPa	ENVISIA® 65 MPa
GWP	**kg CO_2 eq**	**218**	**240**	**274**	**333**	**397**	**400**
ODP	kg CFC-11 eq	6.84E-06	7.39E-06	8.24E-06	9.67E-06	1.06E-05	1.08E-05
AP	kg SO_2 eq	0.979	1.08	1.23	1.49	1.68	1.71
EP	kg PO4--- eq	0.128	0.140	0.158	0.190	0.219	0.222
POCP	kg C_2H_4 eq	0.0449	0.049	0.0554	0.0662	0.0748	0.076
ADPE	kg Sb eq	2.56E-06	2.87E-06	3.20E-06	4.99E-06	6.37E-06	7.02E-06
ADPF	MJ	1840	2020	2290	2760	3180	3230

TABLE 2. ENVIRONMENTAL PARAMETERS (A1-A3), LOWER CARBON CONCRETE, WODONGA (VIC), PER M^3

Parameter	Unit	ENVISIA® 20 MPa	ENVISIA® 25 MPa	ENVISIA® 32 MPa	ENVISIA® 40 MPa	ENVISIA® 50 MPa	ENVISIA® 65 MPa
PERE	MJ_{NCV}	2.12E+01	2.31E+01	2.60E+01	3.23E+01	3.73E+01	3.85E+01
PERM	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ_{NCV}	2.12E+01	2.31E+01	2.60E+01	3.23E+01	3.73E+01	3.85E+01
PENRE	MJ_{NCV}	1.87E+03	2.05E+03	2.32E+03	2.80E+03	3.21E+03	3.26E+03
PENRM	MJ_{NCV}	5.35E+00	6.23E+00	6.88E+00	1.34E+01	1.84E+01	2.11E+01
PENRT	MJ_{NCV}	1.87E+03	2.05E+03	2.33E+03	2.81E+03	3.23E+03	3.28E+03
SM	kg	1.51E+02	1.68E+02	1.96E+02	2.39E+02	2.39E+02	2.50E+02
RSF	MJ_{NCV}	8.00E+00	8.88E+00	1.03E+01	1.26E+01	1.58E+01	1.58E+01
NRSF	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	3.98E+00	4.05E+00	4.21E+00	4.43E+00	4.60E+00	4.62E+00
HWD	kg	5.81E-06	6.75E-06	7.45E-06	1.44E-05	1.97E-05	2.26E-05
NHWD	kg	7.95E-02	8.80E-02	9.74E-02	1.42E-01	1.77E-01	1.92E-01
RWD	kg	1.01E-03	1.17E-03	1.30E-03	2.51E-03	3.43E-03	3.94E-03
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Murray East/Hume region

TABLE 3. ENVIRONMENTAL PROFILES (A1-A3), LOWER CARBON CONCRETE, WODONGA (VIC), PER M^3

Indicator	Unit	ENVIROCRETE® PLUS 20MPa	ENVIROCRETE® PLUS 25MPa	ENVIROCRETE® PLUS 32MPa	ENVIROCRETE® PLUS 40MPa	ENVIROCRETE® PLUS 50MPa
GWP	**kg CO_2 eq**	**230**	**251**	**283**	**336**	**416**
ODP	kg CFC-11 eq	6.82E-06	7.21E-06	7.77E-06	8.73E-06	1.05E-05
AP	kg SO_2 eq	0.981	1.05	1.16	1.34	1.67
EP	kg PO4--- eq	0.131	0.141	0.156	0.182	0.224
POCP	kg C_2H_4 eq	0.0453	0.0485	0.0533	0.0611	0.0750
ADPE	kg Sb eq	2.58E-06	2.88E-06	3.17E-06	4.28E-06	5.77E-06
ADPF	MJ	1880	2030	2240	2610	3210

TABLE 4. ENVIRONMENTAL PARAMETERS (A1-A3), LOWER CARBON CONCRETE, WODONGA (VIC), PER M^3

Parameter	Unit	ENVIROCRETE® PLUS 20MPa	ENVIROCRETE® PLUS 25MPa	ENVIROCRETE® PLUS 32MPa	ENVIROCRETE® PLUS 40MPa	ENVIROCRETE® PLUS 50MPa
PERE	MJ_{NCV}	2.10E+01	2.25E+01	2.46E+01	2.90E+01	3.55E+01
PERM	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ_{NCV}	2.10E+01	2.25E+01	2.46E+01	2.90E+01	3.55E+01
PENRE	MJ_{NCV}	1.90E+03	2.05E+03	2.26E+03	2.63E+03	3.24E+03
PENRM	MJ_{NCV}	5.35E+00	6.23E+00	6.88E+00	1.07E+01	1.56E+01
PENRT	MJ_{NCV}	1.91E+03	2.05E+03	2.27E+03	2.64E+03	3.25E+03
SM	kg	1.35E+02	1.40E+02	1.46E+02	1.56E+02	2.08E+02
RSF	MJ_{NCV}	8.82E+00	9.81E+00	1.14E+01	1.39E+01	1.73E+01
NRSF	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	4.01E+00	4.05E+00	4.18E+00	4.35E+00	4.61E+00
HWD	kg	5.81E-06	6.75E-06	7.45E-06	1.15E-05	1.68E-05
NHWD	kg	7.92E-02	8.72E-02	9.55E-02	1.23E-01	1.60E-01
RWD	kg	1.01E-03	1.17E-03	1.30E-03	2.00E-03	2.92E-03
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Murray East/Hume region

TABLE 5. ENVIRONMENTAL PROFILES (A1-A3), LOWER CARBON CONCRETE, WODONGA (VIC), PER M^3

Indicator	Unit	ENVIROCRETE® 40% 20MPa	ENVIROCRETE® 40% 25MPa	ENVIROCRETE® 40% 32MPa	ENVIROCRETE® 40% 40MPa	ENVIROCRETE® 40% 50MPa
GWP	**kg CO_2 eq**	**229**	**252**	**286**	**344**	**424**
ODP	kg CFC-11 eq	5.95E-06	6.40E-06	6.97E-06	8.09E-06	9.51E-06
AP	kg SO_2 eq	0.843	0.926	1.04	1.24	1.52
EP	kg PO4--- eq	0.122	0.133	0.149	0.178	0.216
POCP	kg C_2H_4 eq	0.0406	0.0441	0.049	0.058	0.0699
ADPE	kg Sb eq	2.48E-06	2.79E-06	3.09E-06	3.60E-06	4.45E-06
ADPF	MJ	1730	1890	2120	2510	3050

TABLE 6. ENVIRONMENTAL PARAMETERS (A1-A3), LOWER CARBON CONCRETE, WODONGA (VIC), PER M^3

Parameter	Unit	ENVIROCRETE® 40% 20MPa	ENVIROCRETE® 40% 25MPa	ENVIROCRETE® 40% 32MPa	ENVIROCRETE® 40% 40MPa	ENVIROCRETE® 40% 50MPa
PERE	MJ_{NCV}	1.86E+01	2.02E+01	2.24E+01	2.62E+01	3.15E+01
PERM	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ_{NCV}	1.86E+01	2.02E+01	2.24E+01	2.62E+01	3.15E+01
PENRE	MJ_{NCV}	1.74E+03	1.90E+03	2.13E+03	2.53E+03	3.07E+03
PENRM	MJ_{NCV}	5.35E+00	6.23E+00	6.88E+00	7.98E+00	1.02E+01
PENRT	MJ_{NCV}	1.75E+03	1.91E+03	2.13E+03	2.53E+03	3.08E+03
SM	kg	6.45E+01	7.28E+01	7.70E+01	9.36E+01	1.15E+02
RSF	MJ_{NCV}	9.65E+00	1.07E+01	1.24E+01	1.51E+01	1.89E+01
NRSF	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	3.91E+00	3.97E+00	4.10E+00	4.30E+00	4.57E+00
HWD	kg	5.81E-06	6.75E-06	7.45E-06	8.56E-06	1.09E-05
NHWD	kg	7.54E-02	8.33E-02	9.18E-02	1.06E-01	1.29E-01
RWD	kg	1.01E-03	1.17E-03	1.30E-03	1.49E-03	1.90E-03
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Murray East/Hume region

TABLE 7. ENVIRONMENTAL PROFILES (A1-A3), LOWER CARBON CONCRETE, WODONGA (VIC), PER M^3

Indicator	Unit	ENVIROCRETE® 30% 20MPa	ENVIROCRETE® 30% 25MPa	ENVIROCRETE® 30% 32MPa	ENVIROCRETE® 30% 40MPa	ENVIROCRETE® 30% 50MPa
GWP	**kg CO_2 eq**	**255**	**280**	**321**	**387**	**475**
ODP	kg CFC-11 eq	6.03E-06	6.48E-06	7.17E-06	8.30E-06	9.64E-06
AP	kg SO_2 eq	0.872	0.957	1.09	1.3	1.57
EP	kg PO4--- eq	0.131	0.143	0.162	0.192	0.232
POCP	kg C_2H_4 eq	0.0424	0.0461	0.052	0.0614	0.0733
ADPE	kg Sb eq	2.57E-06	2.89E-06	3.21E-06	3.75E-06	4.62E-06
ADPF	MJ	1850	2020	2290	2720	3270

TABLE 8. ENVIRONMENTAL PARAMETERS (A1-A3), LOWER CARBON CONCRETE, WODONGA (VIC), PER M^3

Parameter	Unit	ENVIROCRETE® 30% 20MPa	ENVIROCRETE® 30% 25MPa	ENVIROCRETE® 30% 32MPa	ENVIROCRETE® 30% 40MPa	ENVIROCRETE® 30% 50MPa
PERE	MJ_{NCV}	1.96E+01	2.14E+01	2.39E+01	2.80E+01	3.35E+01
PERM	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ_{NCV}	1.96E+01	2.14E+01	2.39E+01	2.80E+01	3.35E+01
PENRE	MJ_{NCV}	1.85E+03	2.02E+03	2.29E+03	2.72E+03	3.28E+03
PENRM	MJ_{NCV}	5.35E+00	6.23E+00	6.88E+00	7.98E+00	1.02E+01
PENRT	MJ_{NCV}	1.86E+03	2.03E+03	2.30E+03	2.73E+03	3.29E+03
SM	kg	3.64E+01	4.16E+01	4.68E+01	5.41E+01	5.72E+01
RSF	MJ_{NCV}	1.12E+01	1.24E+01	1.45E+01	1.77E+01	2.21E+01
NRSF	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	4.00E+00	4.07E+00	4.24E+00	4.47E+00	4.73E+00
HWD	kg	5.81E-06	6.75E-06	7.45E-06	8.56E-06	1.09E-05
NHWD	kg	7.92E-02	8.75E-02	9.69E-02	1.12E-01	1.36E-01
RWD	kg	1.01E-03	1.17E-03	1.30E-03	1.49E-03	1.90E-03
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

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TABLE 9. ENVIRONMENTAL PROFILES (A1-A3), NORMAL CLASS CONCRETE, WODONGA (VIC), PER M^3

Indicator	Unit	NORMAL CLASS GP BLEND 20MPa	NORMAL CLASS GP BLEND 25MPa	NORMAL CLASS GP BLEND 32MPa	NORMAL CLASS GP BLEND 40MPa	NORMAL CLASS GP BLEND 50MPa
GWP	**kg CO_2 eq**	**276**	**309**	**374**	**429**	**494**
ODP	kg CFC-11 eq	6.13E-06	6.60E-06	7.60E-06	8.43E-06	9.39E-06
AP	kg SO_2 eq	0.877	0.975	1.17	1.34	1.53
EP	kg PO4--- eq	0.137	0.151	0.181	0.206	0.235
POCP	kg C_2H_4 eq	0.0435	0.0478	0.0567	0.0641	0.0728
ADPE	kg Sb eq	2.57E-06	2.86E-06	3.44E-06	3.91E-06	4.48E-06
ADPF	MJ	1930	2140	2550	2900	3300

TABLE 10. ENVIRONMENTAL PARAMETERS (A1-A3), NORMAL CLASS CONCRETE, WODONGA (VIC), PER M^3

Parameter	Unit	NORMAL CLASS GP BLEND 20MPa	NORMAL CLASS GP BLEND 25MPa	NORMAL CLASS GP BLEND 32MPa	NORMAL CLASS GP BLEND 40MPa	NORMAL CLASS GP BLEND 50MPa
PERE	MJ_{NCV}	2.03E+01	2.23E+01	2.64E+01	2.97E+01	3.36E+01
PERM	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ_{NCV}	2.03E+01	2.23E+01	2.64E+01	2.97E+01	3.36E+01
PENRE	MJ_{NCV}	1.93E+03	2.13E+03	2.54E+03	2.89E+03	3.29E+03
PENRM	MJ_{NCV}	5.03E+00	5.68E+00	7.02E+00	8.09E+00	9.40E+00
PENRT	MJ_{NCV}	1.93E+03	2.14E+03	2.55E+03	2.90E+03	3.30E+03
SM	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	MJ_{NCV}	1.26E+01	1.43E+01	1.75E+01	2.03E+01	2.36E+01
NRSF	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	4.21E+00	4.31E+00	4.59E+00	4.84E+00	5.04E+00
HWD	kg	5.42E-06	6.16E-06	7.60E-06	8.67E-06	1.01E-05
NHWD	kg	8.09E-02	8.92E-02	1.06E-01	1.19E-01	1.35E-01
RWD	kg	9.42E-04	1.07E-03	1.32E-03	1.51E-03	1.75E-03
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

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TABLE 11. ENVIRONMENTAL PROFILES (A1-A3), NORMAL CLASS CONCRETE, WODONGA (VIC), PER M^3

Indicator	Unit	NORMAL GP/FA BLEND 20MPa	NORMAL GP/FA BLEND 25MPa	NORMAL GP/FA BLEND 32MPa	NORMAL GP/FA BLEND 40MPa	NORMAL GP/FA BLEND 50MPa
GWP	**kg CO_2 eq**	**242**	**272**	**332**	**381**	**449**
ODP	kg CFC-11 eq	6.05E-06	6.75E-06	7.79E-06	8.67E-06	9.72E-06
AP	kg SO_2 eq	0.781	0.876	1.06	1.21	1.41
EP	kg PO4--- eq	0.124	0.138	0.166	0.189	0.219
POCP	kg C_2H_4 eq	0.0396	0.0441	0.0524	0.0593	0.0682
ADPE	kg Sb eq	2.48E-06	2.87E-06	3.46E-06	3.95E-06	4.64E-06
ADPF	MJ	1750	1960	2350	2670	3100

TABLE 12. ENVIRONMENTAL PARAMETERS (A1-A3), NORMAL CLASS CONCRETE, WODONGA (VIC), PER M^3

Parameter	Unit	NORMAL GP/FA BLEND 20MPa	NORMAL GP/FA BLEND 25MPa	NORMAL GP/FA BLEND 32MPa	NORMAL GP/FA BLEND 40MPa	NORMAL GP/FA BLEND 50MPa
PERE	MJ_{NCV}	1.84E+01	2.04E+01	2.41E+01	2.71E+01	3.12E+01
PERM	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ_{NCV}	1.84E+01	2.04E+01	2.41E+01	2.71E+01	3.12E+01
PENRE	MJ_{NCV}	1.75E+03	1.96E+03	2.34E+03	2.66E+03	3.09E+03
PENRM	MJ_{NCV}	5.35E+00	6.45E+00	7.98E+00	9.29E+00	1.10E+01
PENRT	MJ_{NCV}	1.75E+03	1.96E+03	2.35E+03	2.67E+03	3.10E+03
SM	kg	5.20E+01	7.80E+01	9.46E+01	1.12E+02	1.30E+02
RSF	MJ_{NCV}	1.07E+01	1.21E+01	1.50E+01	1.74E+01	2.08E+01
NRSF	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	4.01E+00	4.17E+00	4.42E+00	4.54E+00	4.58E+00
HWD	kg	5.74E-06	6.98E-06	8.62E-06	9.96E-06	1.18E-05
NHWD	kg	7.72E-02	8.78E-02	1.04E-01	1.18E-01	1.36E-01
RWD	kg	1.00E-03	1.21E-03	1.50E-03	1.73E-03	2.06E-03
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

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TABLE 13. ENVIRONMENTAL PROFILES (A1-A3), VICROADS CONCRETE PRODUCTS, WODONGA (VIC), PER M^3

Indicator	Unit	VR330 32MPa 20MM GP/FA	VR330 32MPA 20MM GP/ SLAG	VR400 40MPa 20MM GP/FA	VR400 40MPA 20MM GP/ SLAG	VR400 40MPA 14MM TREMIE GP/ SLAG	VR400 40MPA 14MM TREMIE/CFA GP/SLAG
GWP	**kg CO_2 eq**	**337**	**248**	**361**	**286**	**289**	**332**
ODP	kg CFC-11 eq	7.69E-06	7.68E-06	8.30E-06	8.58E-06	8.61E-06	9.56E-06
AP	kg SO_2 eq	1.07	1.1	1.17	1.29	1.3	1.46
EP	kg PO4--- eq	0.167	0.145	0.179	0.165	0.166	0.19
POCP	kg C_2H_4 eq	0.0529	0.0504	0.0576	0.0584	0.0593	0.0662
ADPE	kg Sb eq	4.05E-06	3.82E-06	1.71E-05	1.70E-05	2.16E-05	1.45E-05
ADPF	MJ	2370	2060	2550	2370	2420	2770

TABLE 14. ENVIRONMENTAL PARAMETERS (A1-A3), VICROADS CONCRETE PRODUCTS, WODONGA (VIC), PER M^3

Parameter	Unit	VR330 32MPa 20MM GP/FA	VR330 32MPA 20MM GP/ SLAG	VR400 40MPa 20MM GP/FA	VR400 40MPA 20MM GP/ SLAG	VR400 40MPA 14MM TREMIE GP/ SLAG	VR400 40MPA 14MM TREMIE/CFA GP/SLAG
PERE	MJ_{NCV}	2.45E+01	2.22E+01	2.83E+01	2.73E+01	3.15E+01	3.40E+01
PERM	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.21E-02	0.00E+00
PERT	MJ_{NCV}	2.45E+01	2.22E+01	2.83E+01	2.73E+01	3.16E+01	3.40E+01
PENRE	MJ_{NCV}	2.36E+03	2.09E+03	2.55E+03	2.40E+03	2.45E+03	2.80E+03
PENRM	MJ_{NCV}	7.65E+00	7.65E+00	0.00E+00	0.00E+00	5.35E+00	2.19E+01
PENRT	MJ_{NCV}	2.37E+03	2.10E+03	2.55E+03	2.40E+03	2.46E+03	2.82E+03
SM	kg	7.28E+01	1.77E+02	1.04E+02	2.08E+02	2.08E+02	2.39E+02
RSF	MJ_{NCV}	1.53E+01	9.32E+00	1.64E+01	1.10E+01	1.10E+01	1.26E+01
NRSF	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	4.45E+00	4.17E+00	4.42E+00	4.23E+00	4.30E+00	4.50E+00
HWD	kg	8.81E-06	8.81E-06	1.44E-05	1.44E-05	3.03E-05	3.07E-05
NHWD	kg	2.84E-01	2.71E-01	4.42E+00	4.41E+00	5.19E+00	2.35E+00
RWD	kg	1.57E-03	1.57E-03	3.38E-03	3.38E-03	4.98E-03	5.77E-03
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Murray East/Hume region

TABLE 15. ENVIRONMENTAL PROFILES (A1-A3), VICROADS CONCRETE PRODUCTS, WODONGA (VIC), PER M^3

Indicator	Unit	VR400 40MPa 7MM SHOTCRETE	VR450 50MPa 14MM TREMIE GP/SLAG	VR450 50MPa 14MM TREMIE/ CFA GP/SLAG	VR450 50MPa 20MM GP/FA	VR450 50MPa 20MM GP/SLAG
GWP	**kg CO_2 eq**	**423**	**417**	**320**	**320**	**346**
ODP	kg CFC-11 eq	9.06E-06	9.10E-06	9.34E-06	9.17E-06	9.48E-06
AP	kg SO_2 eq	1.45	1.34	1.44	1.44	1.51
EP	kg PO4--- eq	0.212	0.204	0.183	0.182	0.196
POCP	kg C_2H_4 eq	0.0756	0.0656	0.065	0.0645	0.0683
ADPE	kg Sb eq	7.05E-06	2.41E-05	2.39E-05	2.37E-05	2.12E-05
ADPF	MJ	2940	2920	2650	2640	2890

TABLE 16. ENVIRONMENTAL PARAMETERS (A1-A3), VICROADS CONCRETE PRODUCTS, WODONGA (VIC), PER M^3

Parameter	Unit	VR400 40MPa 7MM SHOTCRETE	VR450 50MPa 14MM TREMIE GP/SLAG	VR450 50MPa 14MM TREMIE/ CFA GP/SLAG	VR450 50MPa 20MM GP/FA	VR450 50MPa 20MM GP/SLAG
PERE	MJ_{NCV}	9.78E+01	3.44E+01	3.25E+01	3.41E+01	4.09E+01
PERM	MJ_{NCV}	2.89E-02	2.40E-02	2.40E-02	7.21E-02	9.62E-02
PERT	MJ_{NCV}	9.78E+01	3.44E+01	3.25E+01	3.41E+01	4.10E+01
PENRE	MJ_{NCV}	2.97E+03	2.91E+03	2.69E+03	2.68E+03	2.92E+03
PENRM	MJ_{NCV}	1.42E+01	1.78E+00	1.78E+00	5.35E+00	3.17E+01
PENRT	MJ_{NCV}	2.98E+03	2.92E+03	2.69E+03	2.68E+03	2.95E+03
SM	kg	7.28E+01	1.04E+02	2.34E+02	2.34E+02	2.50E+02
RSF	MJ_{NCV}	1.81E+01	1.92E+01	1.23E+01	1.23E+01	1.32E+01
NRSF	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	2.77E+01	4.59E+00	4.32E+00	4.15E+00	4.28E+00
HWD	kg	1.92E-05	2.46E-05	2.46E-05	3.21E-05	5.47E-05
NHWD	kg	4.44E-01	6.15E+00	6.14E+00	5.74E+00	3.41E+00
RWD	kg	2.89E-03	5.06E-03	5.06E-03	5.41E-03	8.42E-03
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Murray East/Hume region

TABLE 17. ENVIRONMENTAL PROFILES (A1-A3), CONCRETE FOR SPECIAL APPLICATIONS, WODONGA (VIC), PER M^3

Indicator	Unit	HIGH SLUMP 20MPa	HIGH SLUMP 25MPa	HIGH SLUMP 32MPa	HIGH SLUMP 40MPa	HIGH SLUMP 50MPa	HIGH SLUMP 65MPa	HIGH SLUMP 80MPa
GWP	**kg CO_2 eq**	**287**	**321**	**364**	**451**	**472**	**498**	**528**
ODP	kg CFC-11 eq	6.34E-06	6.87E-06	7.48E-06	8.78E-06	9.88E-06	1.11E-05	1.30E-05
AP	kg SO_2 eq	0.912	1.01	1.14	1.4	1.61	1.83	2.15
EP	kg PO4--- eq	0.142	0.158	0.177	0.215	0.234	0.255	0.284
POCP	kg C_2H_4 eq	0.0451	0.0497	0.0554	0.0671	0.0749	0.0835	0.0957
ADPE	kg Sb eq	2.67E-06	3.12E-06	3.52E-06	4.10E-06	7.16E-06	1.38E-05	1.56E-05
ADPF	MJ	2010	2220	2490	3030	3310	3650	4090

TABLE 18. ENVIRONMENTAL PARAMETERS (A1-A3), CONCRETE FOR SPECIAL APPLICATIONS, WODONGA (VIC), PER M^3

Parameter	Unit	HIGH SLUMP 20MPa	HIGH SLUMP 25MPa	HIGH SLUMP 32MPa	HIGH SLUMP 40MPa	HIGH SLUMP 50MPa	HIGH SLUMP 65MPa	HIGH SLUMP 80MPa
PERE	MJ_{NCV}	2.11E+01	2.33E+01	2.59E+01	3.10E+01	3.59E+01	4.43E+01	5.00E+01
PERM	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.81E-02	1.44E-01	1.35E-01
PERT	MJ_{NCV}	2.11E+01	2.33E+01	2.59E+01	3.10E+01	3.59E+01	4.44E+01	5.02E+01
PENRE	MJ_{NCV}	2.00E+03	2.22E+03	2.49E+03	3.03E+03	3.32E+03	3.67E+03	4.13E+03
PENRM	MJ_{NCV}	5.25E+00	6.61E+00	7.59E+00	8.52E+00	1.14E+01	2.00E+01	2.91E+01
PENRT	MJ_{NCV}	2.01E+03	2.22E+03	2.49E+03	3.03E+03	3.33E+03	3.69E+03	4.16E+03
SM	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.32E+01	1.61E+02	2.96E+02
RSF	MJ_{NCV}	1.32E+01	1.48E+01	1.70E+01	2.14E+01	2.16E+01	2.19E+01	2.19E+01
NRSF	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	4.29E+00	4.46E+00	4.60E+00	4.90E+00	4.89E+00	5.07E+00	5.18E+00
HWD	kg	5.65E-06	7.16E-06	8.15E-06	9.14E-06	1.90E-05	4.17E-05	5.01E-05
NHWD	kg	8.40E-02	9.61E-02	1.07E-01	1.24E-01	6.45E-01	1.70E+00	1.65E+00
RWD	kg	9.83E-04	1.24E-03	1.42E-03	1.59E-03	2.54E-03	4.94E-03	6.56E-03
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Murray East/Hume region

TABLE 19. ENVIRONMENTAL PROFILES (A1-A3), CONCRETE FOR SPECIAL APPLICATIONS, WODONGA (VIC), PER M^3

Indicator	Unit	TREMIE 40MPa	TREMIE 50MPa	POST TENSIONED 40MPa 22@3	POST TENSIONED 40MPa 22@4	SHOTCRETE 32MPa	SHOTCRETE 40MPa
GWP	**kg CO_2 eq**	**327**	**411**	**439**	**422**	**427**	**459**
ODP	kg CFC-11 eq	8.08E-06	9.78E-06	8.53E-06	8.16E-06	8.34E-06	8.83E-06
AP	kg SO_2 eq	1.22	1.54	1.37	1.31	1.42	1.52
EP	kg PO4--- eq	0.172	0.214	0.21	0.201	0.208	0.223
POCP	kg C_2H_4 eq	0.0565	0.0702	0.0654	0.0627	0.0718	0.0762
ADPE	kg Sb eq	1.75E-06	2.13E-06	4.22E-06	4.02E-06	3.84E-06	3.98E-06
ADPF	MJ	2410	2990	2960	2840	2880	3080

TABLE 20. ENVIRONMENTAL PARAMETERS (A1-A3), CONCRETE FOR SPECIAL APPLICATIONS, WODONGA (VIC), PER M^3

Parameter	Unit	TREMIE 40MPa	TREMIE 50MPa	POST TENSIONED 40MPa 22@3	POST TENSIONED 40MPa 22@4	SHOTCRETE 32MPa	SHOTCRETE 40MPa
PERE	MJ_{NCV}	2.33E+01	2.85E+01	3.06E+01	2.94E+01	7.85E+01	8.03E+01
PERM	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ_{NCV}	2.33E+01	2.85E+01	3.06E+01	2.94E+01	7.85E+01	8.03E+01
PENRE	MJ_{NCV}	2.42E+03	3.02E+03	2.95E+03	2.83E+03	2.90E+03	3.10E+03
PENRM	MJ_{NCV}	0.00E+00	0.00E+00	9.29E+00	8.74E+00	6.01E+00	6.01E+00
PENRT	MJ_{NCV}	2.42E+03	3.02E+03	2.96E+03	2.84E+03	2.90E+03	3.10E+03
SM	kg	1.04E+02	1.46E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	MJ_{NCV}	1.43E+01	1.81E+01	2.08E+01	2.00E+01	1.92E+01	2.08E+01
NRSF	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	4.44E+00	4.79E+00	4.78E+00	4.56E+00	2.20E+01	2.21E+01
HWD	kg	0.00E+00	0.00E+00	9.96E-06	9.38E-06	6.97E-06	6.97E-06
NHWD	kg	6.23E-02	7.39E-02	1.26E-01	1.21E-01	1.07E-01	1.11E-01
RWD	kg	0.00E+00	0.00E+00	1.73E-03	1.63E-03	1.20E-03	1.20E-03
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Murray East/Hume region

TABLE 21. ENVIRONMENTAL PROFILES (A1-A3), CONCRETE FOR SPECIAL APPLICATIONS, WODONGA (VIC), PER M^3

Indicator	Unit	STABILISED SAND 3%	STABILISED SAND 5%	KERB MACHINE 320KG/M^3	KERB MACHINE 280KG/M^3	NO FINES 4%
GWP	**kg CO_2 eq**	**69.2**	**102**	**373**	**330**	**90.1**
ODP	kg CFC-11 eq	2.00E-06	2.50E-06	7.53E-06	6.88E-06	3.39E-06
AP	kg SO_2 eq	0.232	0.331	1.17	1.04	0.315
EP	kg PO4--- eq	0.0384	0.0529	0.18	0.161	0.0533
POCP	kg C_2H_4 eq	0.0134	0.0178	0.0564	0.0506	0.0178
ADPE	kg Sb eq	3.58E-07	4.94E-07	3.41E-06	3.03E-06	7.18E-07
ADPF	MJ	553	755	2540	2270	747

TABLE 22. ENVIRONMENTAL PARAMETERS (A1-A3), CONCRETE FOR SPECIAL APPLICATIONS, WODONGA (VIC), PER M^3

Parameter	Unit	STABILISED SAND 3%	STABILISED SAND 5%	KERB MACHINE 320KG/M^3	KERB MACHINE 280KG/M^3	NO FINES 4%
PERE	MJ_{NCV}	6.33E+00	8.12E+00	2.61E+01	2.35E+01	8.73E+00
PERM	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ_{NCV}	6.33E+00	8.12E+00	2.61E+01	2.35E+01	8.73E+00
PENRE	MJ_{NCV}	5.52E+02	7.54E+02	2.53E+03	2.26E+03	7.47E+02
PENRM	MJ_{NCV}	0.00E+00	0.00E+00	6.99E+00	6.12E+00	0.00E+00
PENRT	MJ_{NCV}	5.52E+02	7.54E+02	2.54E+03	2.27E+03	7.47E+02
SM	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	MJ_{NCV}	2.74E+00	4.38E+00	1.75E+01	1.53E+01	3.29E+00
NRSF	MJ_{NCV}	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	3.04E+00	3.18E+00	4.46E+00	4.29E+00	2.66E+00
HWD	kg	0.00E+00	0.00E+00	7.50E-06	6.56E-06	0.00E+00
NHWD	kg	1.79E-02	2.25E-02	1.05E-01	9.38E-02	2.94E-02
RWD	kg	0.00E+00	0.00E+00	1.31E-03	1.14E-03	0.00E+00
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	9.60E+01	9.60E+01	9.60E+01	9.60E+01	9.60E+01
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

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