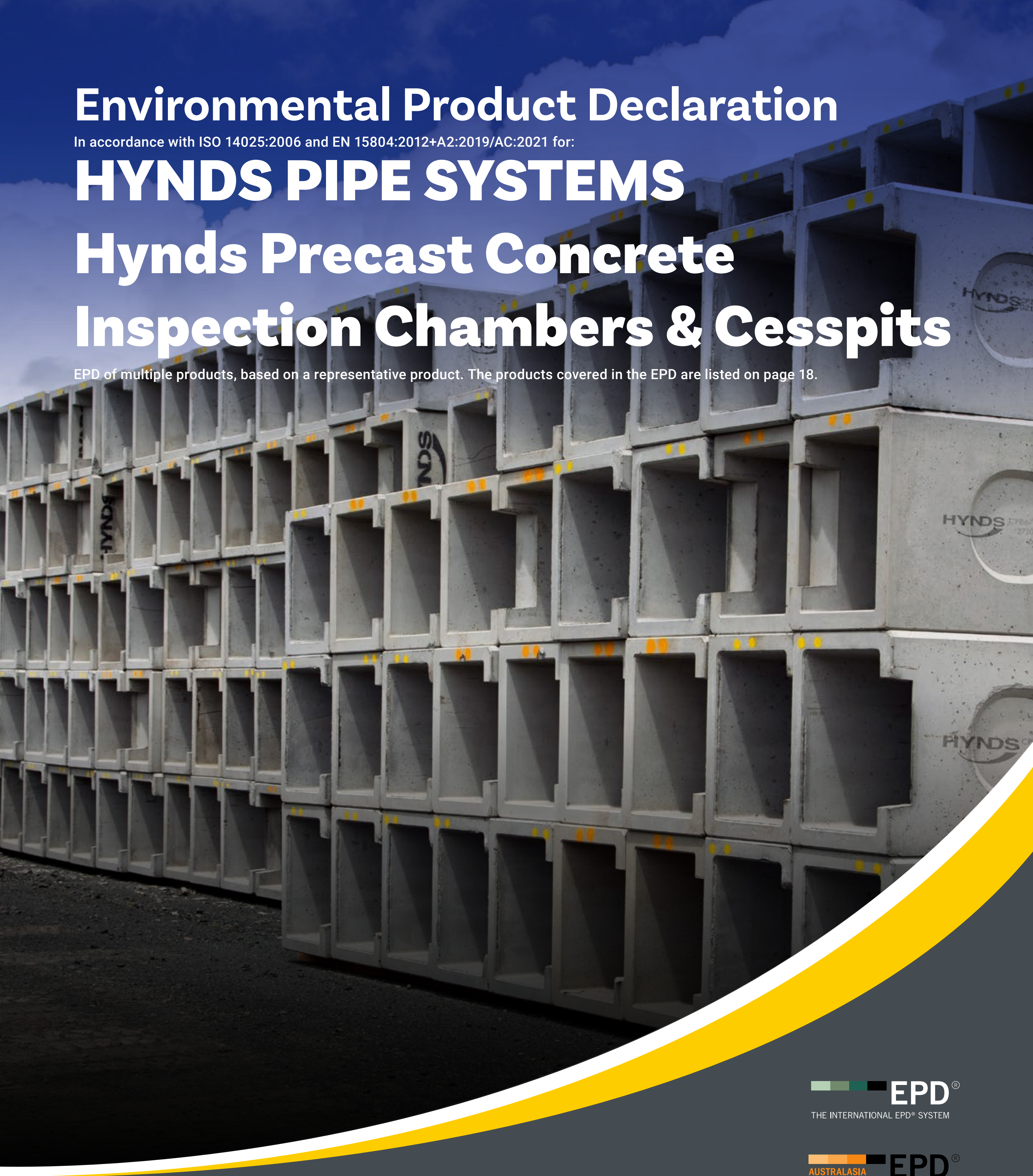


# Environmental Product Declaration

In accordance with ISO 14025:2006 and EN 15804:2012+A2:2019/AC:2021 for:

# HYNDS PIPE SYSTEMS

# Hynds Precast Concrete Inspection Chambers & Cesspits

EPD of multiple products, based on a representative product. The products covered in the EPD are listed on page 18.

EPD® THE INTERNATIONAL EPD® SYSTEM

AUSTRALASIA EPD® INTERNATIONAL EPD SYSTEM

ECO PLATFORM EPD VERIFIED

**Programme:** The International EPD® System, www.environdec.com

**Programme operator:** EPD International AB

**Regional Programme:** EPD Australasia, www.epd-australasia.com

**EPD registration number:** EPD-IES-0023129:001

**Publication date:** 2030-06-16

**Date of validity:** 2025-06-17

HYNDS

# Table of Contents

# ABOUT US


Founded in 1973 by John and Léonie Hynds, the privately owned Hynds Group of Companies is New Zealand's premier product supplier for the management of water and water-based waste in the civil and rural infrastructure markets.

Hynds Pipe Systems Limited is the largest operating company within the Hynds Group, and is split into two operating divisions: Manufacturing and Sales & Distribution.

Hynds Concrete Manufacturing operates six factory sites across New Zealand, operating independently audited ISO9001 quality, ISO45001 health and safety, and ISO14001 environmental management systems (see hynds.co.nz/about-us/ for certificates).

Hynds operates a sales & distribution network of 36 branches and 3 distribution centres throughout New Zealand supplying over 40 000 product types for drainage, watermain, environmental, industrial process and rural applications. The Hynds' fleet of 70 delivery trucks ensure reliable stock availability and delivery to all corners of the country.

From its early inception five decades ago, Hynds has been focused on delivering positive change with industry-leading, sustainable solutions. The manufacture of products to support stormwater and wastewater treatment, and ultimately to protect the environment, remains at the heart of our product innovation today.

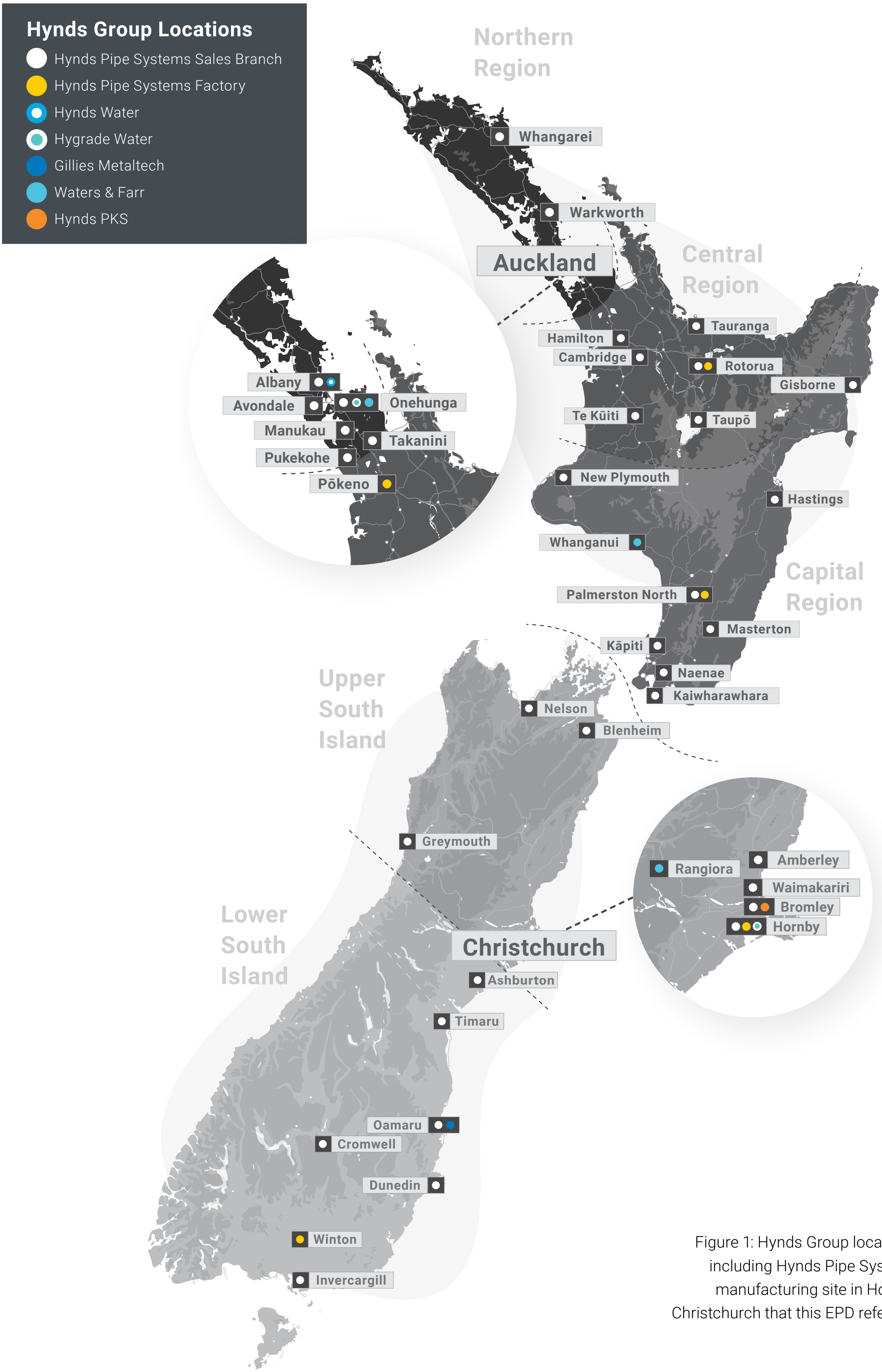


Figure 1: Hynds Group locations, including Hynds Pipe Systems manufacturing site in Hornby, Christchurch that this EPD refers to.

# HYNDS SUSTAINABILITY


Our business was built around finding sustainable solutions to support the three waters *(drinking water, wastewater and stormwater infrastructure services)* and ultimately keeping our country's waterways clean and our communities safe – both for today and for future generations.

Hynds has adopted a sustainability framework which focuses on three strategic pillars; the planet (our natural environment), people (our people but also our wider communities and stakeholders) and products (innovating and building resilience into what we do to meet the needs of future generations).

Addressing the effects of climate change is a huge challenge that we all face. Hynds believes that addressing climate change will make us better off and is committed to New Zealand's transition to a low-emissions economy. Hynds has committed to a 42% reduction in Scope 1 (direct) and Scope 2 (indirect) carbon emissions by 2032.

To support our customer's sustainability goals, Hynds now offers a lower carbon product range, HyndsLC®. The new HyndsLC® range assists our customers in meeting their sustainability requirements without compromising on quality and durability.

For more information on Hynds sustainability framework and HyndsLC® range, visit
**hynds.co.nz/sustainability/**
**or email sustainability@hynds.co.nz.**

HYNDS LC®

*Our low carbon future*

# PRODUCT INFORMATION

## Products Covered by EPD

This EPD covers the Hynds Precast Concrete Inspection Chambers and Cesspits manufactured at Hynds precast concrete manufacturing plant in Hornby, Christchurch. The full range of products covered by this EPD are given in the Product Mass Table (Table 16).

The Hynds Precast Concrete Inspection Chambers and Cesspits range is generally only supplied to South Island projects.

## Product Description

As the leading manufacturer of reinforced concrete inspection chambers and cesspits in New Zealand, Hynds' manhole lid rings are available in a wide range of diameters and heights.

Hynds Reinforced Concrete Inspection Chambers and Cesspits are manufactured using high strength concrete (50 MPa or greater), hard drawn steel wire. The concrete consists of coarse and fine aggregates, cement and chemical admixtures.

Hynds Precast Concrete Inspection Chambers and Cesspits are designed to be used as part of stormwater drainage systems.

## Declared Unit

The declared unit for the EPD is one kg of reinforced concrete inspection chambers and cesspits. A conversion table is provided with product weights for all products covered by this EPD, as required (see Table 16).

## Design Standard

Hynds Precast Concrete Inspection Chambers and Cesspits are designed and manufactured to the requirements of NZS 3101 and NZS 3109.

The Standard ranges of Hynds Reinforced Concrete inspection chambers and cesspits have a specified intended service life of 100 years when correctly installed in a non - aggressive environment.

## Packaging

The product is transported without packaging.

## Dangerous Substances

All products covered by this study as supplied are non-hazardous, and do not contain any substances of very high concern as defined by European REACH regulation in concentrations >0.1% (m/m). Precast concrete products and pipes are classified as non-dangerous goods according to the Land Transport Rule: Dangerous Goods 2005. Provide this reference here (ECHA, 2022)

When concrete products are cut, sawn, abraded or crushed, dust is created which contains crystalline silica, some of which may be respirable (particles small enough to go into the deep parts of the lung when breathed in), and which is hazardous. Exposure through inhalation should be avoided. Dust from these products is classified as Hazardous under the Hazardous Substances and New Organisms Act 1996 (HSNO Act) and is subject to Workplace Exposure Standards (WorkSafe NZ WES-BEI indices Edition 13, April 2022).

*Table 1: Industry classification*

| Product | Classification | Code | Category |
|---|---|---|---|
| **Product name/type** | UN CPC Ver.2 | 3755 | Prefabricated structural components for building or civil engineering, of cement, concrete or artificial stone |
| | ANZSIC 2006 | 2034 | Concrete Product Manufacturing |

# Content Declaration

*Table 2: Composition of Hynds Precast Concrete Inspection Chambers and Cesspits (per 1 kg)*

| Product components | Weight, kg | Post-consumer recycled material, weight-% of product | Biogenic material, weight-% of product | Biogenic material, kg C/product or declared unit |
|---|---|---|---|---|
| **Ready mixed concrete** | 0.990 (0 - 0.990) | 0 | 0 | 0 |
| **Bar** | 0.00928 (0 - 0.0261) | 0 | 0 | 0 |
| **Mesh** | 0.00104 (0 - 0.0298) | 0 | 0 | 0 |
| **Total** | 1 | 0 | 0 | 0 |

**Individual masses may not sum to total due to rounding. See Table 16 for mass conversion factors.*

No products declared within this EPD contain substances exceeding the limits for registration according to the European Chemicals Agency's "Candidate List of Substances of Very High Concern for authorisation" (European Union, 2024). Reinforced concrete inspection chambers and cesspits are not classified as dangerous goods according to the Land Transport Rule: Dangerous Goods 2005.

*Table 3: Composition of packaging (per 1 kg product)*

| Packaging materials | Weight, kg | Weight-% (versus the product) | Weight biogenic carbon, kg C/kg of product |
|---|---|---|---|
| **Product's packaging** | 0 | 0 | 0 |
| **Total** | 0 | 0 | 0 |

# Manufacturing Process

Hynds Hynds Precast Concrete Inspection Chambers and Cesspits are manufactured at Hynds precast concrete manufacturing site in Hornby, Christchurch, using spun pipe technology.

Hynds Inspection Chambers and Cesspits are also manufactured using a manual wet-casting process, utilizing the latest European and Japanese mould technology to ensure that the product meets strict quality requirements. This process uses high strength, wet-cast concrete batched on-site and controlled curing conditions to provide high quality durable products.

*Diagram of Hynds process*

## System boundaries

As shown in the table below, this EPD has a scope of cradle-to-gate with options, modules C1-C4, module D and with additional modules (type b). The additional module is A4.

*Table 4:* ***Modules included in the scope of the EPD***

| | Product stage | | | Construction process stage | | Use stage | | | | | | | End of life stage | | | | Recovery stage |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Raw material supply | Transport | Manufacturing | Transport | Construction / Installation | Use | Maintenance | Repair | Replacement | Refurbishment | Operational energy use | Operational water use | Deconstruction / demolition | Transport | Waste processing | Disposal | Future reuse, recycling or energy recovery potential |
| Module | A1 | A2 | A3 | A4 | A5 | B1 | B2 | B3 | B4 | B5 | B6 | B7 | C1 | C2 | C3 | C4 | D |
| Modules declared | X | X | X | X | ND | ND | ND | ND | ND | ND | ND | ND | X | X | X | X | X |
| Geography | GLO | GLO | NZ | NZ | - | - | - | - | - | - | - | - | NZ | NZ | NZ | NZ | NZ |
| Share of specific data | 88% | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Variation: product groups | 20% | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Variation: sites | 0% | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

X = included in the EPD; ND = Module not declared

*Share of specific data is calculated based on the GWP-GHG results and A1-A3 processes. Energy data (e.g. electricity, LPG) and material data pertaining to primary resource inputs (e.g. concrete, slag, GGBFS, steel) is specific, however data pertaining to the consumables used in manufacturing are not specific. This is consistent across both manufacturing sites.

## Production (Modules A1-A3)

The production stage includes the environmental impacts associated with raw materials extraction and processing of inputs, transport to, between and within the manufacturing site, and manufacturing of average product at the exit gate of the manufacturing site. CO2 absorption effects due to concrete carbonation during the products' life cycle are not taken into account in any of the declared modules.

## Transport to site (Module A4)

The average transport distance from Hynds Christchurch manufacturing site to customer sites is 100 km.

## End of Life (Modules C1-C4)

When infrastructure reaches the end of its functional life, it is typically demolished and disposed of making way for new infrastructure. Inspection chambers and cesspit are a special case since they are typically buried and are often simply abandoned. Other options are for the inspection chambers and cesspit to be exhumed and sent for recycling or exhumed and sent to landfill.

Scenarios shall be realistic and representative of one of the most probable alternatives and shall not include processes or procedures that are not in current use, or which have not been demonstrated to be practical.

This study assumes that the most likely scenario is that the inspection chambers and cesspit will be abandoned. It is not economically feasible to remove and recover inspection chambers and cesspit at the end of their service life. According to Hynds, decommissioned inspection chambers and cesspit are usually left in ground. No additional processes are included at end-of-life to model the decommissioning of a inspection chambers and cesspit.

## Recovery and Recycling potential (Module D)

Module D declares a potential credit or burden for the net scrap associated with a recycled product. As the inspection chambers and cesspit is modelled as abandoned in the ground there is no credit for concrete or steel recycled. Default factors from PEF R2 values are therefore not used and are replaced with 0 (European Commission, 2020).

*Table 5: End of life scenario and processes, per declared unit (1 kg)*

| Scenario / Module | Parameter | Left in ground |
|---|---|---|
| **Deconstruction (C1)** | Process and assumptions | n/a |
| | kg collected | 0 |
| **Transport (C2)** | Process and assumptions | n/a |
| | kg transported | 0 |
| **Waste processing (C3)** | Process and assumptions | n/a |
| | kg for re-use | 0 |
| | kg for recycling | 0 |
| **Disposal (C4)** | Process and assumptions | n/a |
| | kg disposed | 0 |

# Life Cycle Inventory (LCI) Data and Assumptions

Primary data was used for all manufacturing operations up to the factory gate, including upstream data for general purpose (GP) cement. Primary data were collected based on output data from Hynds systems during July 2023 – June 2024, excluding the sourcing of steel reinforcing wire and mesh which uses 2023 calendar year data.

Background datasets were obtained from Environmental Product Declarations (EPD) specific to suppliers in the case of steel and cement (EPD details omitted because of confidentiality), and EPDs covering similar products i.e. admixtures. All other materials were from the ecoinvent database 3.11 (Wernet, 2016). The reference year for most datasets range from 2019-2024.

Steam curing using natural gas as an energy input, takes place based on the need to turn around a product to fulfill an order. Records associated with steam curing use on a product by product basis is not avaialble. Therefore, natural gas use has been allocated according to the mass of the concrete.

## Electricity

Purchased electricity accounts for 100% of electricity use at Pokeno. It has been modelled using the residual electricity mix of the market.

The composition of the residual electricity grid mix of New Zealand is modelled in LCA FE based on published data for the year 1 April 2021 – 31 March 2022 (BraveTrace, 2023). The New Zealand residual electricity mix is made up of hydro (56.6%), geothermal (19.7%) natural gas (12.5%), wind (6.55%), coal (4.25%), biomass (0.266%) and biogas (0.160%).

Onsite consumption (3.00%), and the low voltage (<1kV) grid's transmission and distribution losses (6.73%) are calculated based on data from the Ministry of Business, Innovation & Employment (MBIE, 2023). The emission factor for the New Zealand residual grid mix for the GWP-GHG indicator is 0.151 kg $CO_2$-eq./kWh (based on EF3.1).

## Transport

Primary transport data was collected for most input materials to the product. The transport data included the transport modes and distances from suppliers. Transport distances were mapped against each line of Bill of Material (BOM) data and used to calculate upstream transport impacts.

All auxiliary materials and minor input materials were estimated to travel 24 km by truck and be shipped 10 622 km (from Shanghai).

Transport modes:

- Transport, freight, lorry 7.5-16 metric ton, EURO5.

- Transport, freight, sea, container ship.

## Cut off criteria

thinkstep consistently exclude impacts from infrastructure, construction, production equipment, and tools that are not directly consumed in the foreground production process, ('capital goods') regardless of potential significance.

Infrastructure/capital goods are excluded from all MLC datasets. An important exception is the inclusion of capital goods for electricity generation, where the capital goods are very important for modelling of changes towards more renewable generation. Capital goods related to electricity generation are included in all MLC electricity datasets.

Note: The system boundaries on manufacturing of equipment and for employees are not regarded as limiting the scope of the inventory or as an incomplete inventory (i.e. a cut-off).

Cut-off criteria were applied to the following:

Cut-off was applied to to the packaging of raw materials and the packaging materials which accompany the wooden dunnage (included) in minor quantities. Raw materials are delivered in bulk and represents a proportion below 1% of cumulative mass and environmental relevance of inputs to the product.

## Allocation

It was not possible to discern the specific quantities of energy (natural gas, electricity, diesel), water, consumables, dunnage and wastes per product. Data was available at the site-wide level and is allocated to products.

Mass of concrete is used for allocation:

- Allocation of energy (natural gas, electricity and diesel) is based on mass of concrete per product as concrete production and movement is the main driver for on-site energy consumption.
- Water input is allocated based on mass of concrete as batching is the primary area of water use.
- Inputs and (outputs) such as consumables, dunnage and wastes (data collected at site-wide level) are allocated based on mass of concrete for consistency.

Waste generated by the site are not product specific and hence are allocated per product based on mass allocation (i.e. as a factor of specific product mass and total mass of products manufactured at the facility). Reinforcing steel wire and steel fibres including any steel scrap inputs is based on EPD data. The following allocation process occurred.

- Steel Supplier 1's reinforcing bar and wire co-product allocation is proportioned by physical mass according to EN15804 and ISO14044 guidance. Scrap steel input allocation is unclear and likely to have zero burden applied.
- Steel Supplier 2 did not require co-product allocation as data was provided for individual products. Scrap steel input was modelled with an environmental burden based on economic allocation.
- Steel fibre Supplier has a co-product allocation based on product mass basis (17% of total mass production in the manufacturer's facility). Scrap steel input allocation is unclear and likely to be zero burden.

Noting the above Steel Fibre Supplier and Steel Supplier 1 EPDs, PCR suggests that: "Some LCI databases include datasets that are described as being compliant with the allocation rules of EN 15804, but which have been modelled using cut-off allocation (i.e., waste allocation according to Section 4.5.2) for some production (A1-A3) scrap.... Such datasets can be used without adjustments, if the production scrap has no, negligible, or negative economic value (as co-product allocation then yields the same or nearly the same result as cut-off allocation, see Section 4.5.2) or if it can be justified that co-product allocation is not possible (if so, the use of cut-off allocation shall be declared in the EPD). Otherwise, such datasets shall be adjusted by manually adding an environmental burden in compliance with EN 15804 or as a conservative assumption" (section 4.5.5, (EPD International, 2024)).

In the case of Steel Supplier 1 and Steel Fibre Supplier EPDs (used as inputs for this study), any open scrap inputs into manufacturing remain unknown, and so have been treated as 'burden free.' This is not consistent with the PCR – however, adjusting Steel Supplier 1 and Steel Fibre Supplier EPDs is not possible. As per Section 4.5.2 of the PCR, if it can be justified that co-product allocation is not possible the use of cut-off allocation shall be declared in the EPD.

## Explanation of Representative Products & Variation

This is an EPD of multiple products, based on a representative product. The representative product is closest to or matches the sales-weighted average GWP-GHG impacts of the product group. The variation between individual products in the group is up to 20% for modules A1-A3, for the GWP-GHG indicator

# RESULTS

## Assessment Indicators

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

The first section of each table contains the environmental impact indicators, describing the potential environmental impacts of the product as shown in Table 11. The second section shows the resource indicators, describing the use of renewable and non-renewable material resources, renewable and non- renewable primary energy and water, as shown in Table 12. The final section of each table displays the waste and other outputs, as shown in Table 13.

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

The estimated impact results are only relative statements, which do not indicate the endpoints of the impact categories, exceeding threshold values, safety margins and/or risks. Energy indicators (MJ) are always given as net calorific value.

*Table 6: Indicators for life cycle impact assessment*

| Impact category | Indicator | Unit |
|---|---|---|
| **Climate change – total** | GWP-total | kg $CO_2$-eq. |
| **Climate change – fossil** | GWP-fossil | kg $CO_2$-eq. |
| **Climate change – biogenic** | GWP-biogenic | kg $CO_2$-eq. |
| **Climate change – land use and land use change** | GWP-luluc | kg $CO_2$-eq. |
| **Ozone depletion** | ODP | kg CFC-11 eq. |
| **Acidification** | AP | Mole of H+ eq. |
| **Eutrophication aquatic freshwater** | EP-freshwater | kgP eq. |
| **Eutrophication aquatic marine** | EP-marine | kgN eq. |
| **Eutrophication terrestrial** | EP-terrestrial | Mole of N eq. |
| **Photochemical ozone formation** | POCP | kgNMVOC eq. |
| **Depletion of abiotic resources – minerals and metals[1,2]** | ADP-m&m | kgSb eq. |
| **Depletion of abiotic resources – fossil fuels[1]** | ADP-fossil | MJ |
| **Water use[1]** | WDP | $m^3$ world equiv. |

*Table 7: Life cycle inventory indicators on use of resources*

| Indicator | Abbreviation | Unit |
|---|---|---|
| **Use of renewable primary energy excluding renewable primary energy resources used as raw materials** | PERE | MJ |
| **Use of renewable primary energy resources used as raw materials** | PERM | MJ |
| **Total use of renewable primary energy resources** | PERT | MJ |
| **Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials** | PENRE | MJ |
| **Use of non-renewable primary energy resources used as raw materials** | PENRM | MJ |
| **Total use of non-renewable primary energy resources** | PENRT | MJ |
| **Use of secondary material** | SM | kg |
| **Use of renewable secondary fuels** | RSF | MJ |
| **Use of non-renewable secondary fuels** | NRSF | MJ |
| **Total use of net fresh water** | FW | $m^3$ |

*Table 8: Life cycle inventory indicators on waste categories and output flows*

| Indicator | Abbreviation | Unit |
|---|---|---|
| **Hazardous waste disposed** | HWD | kg |
| **Non-hazardous waste disposed** | NHWD | kg |
| **Radioactive waste disposed** | RWD | kg |
| **Components for reuse** | CRU | kg |
| **Materials for energy recovery** | MER | kg |
| **Materials for recycling** | MFR | kg |
| **Exported electrical energy** | EEE | MJ |
| **Exported thermal energy** | EET | MJ |

*Table 9: Biogenic carbon content indicators*

| Indicator | Abbreviation | Unit |
|---|---|---|
| **Biogenic carbon content - product** | BCC-prod | kg |
| **Biogenic carbon content - packaging** | BCC-pack | kg |

*Table 10: Additional Environmental Impact Indicators*

| Indicator | Abbreviation | Unit |
|---|---|---|
| **Climate Change[3]** | GWP-GHG | kg $CO_2$-eq. |
| **Particulate Matter emissions** | PM | Disease incidences |
| **Ionising Radiation – human health[4]** | IRP | kBq U235 eq. |
| **Eco-toxicity (freshwater)[5]** | ETP-fw | CTUe |
| **Human Toxicity, cancer[5]** | HTP-c | CTUh |
| **Human Toxicity, non-cancer[5]** | HTP-nc | CTUh |
| **Land use related impacts / soil quality[5]** | SQP | Dimensionless |

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

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

[3] This indicator should be identical to GWP-total except that the CF for biogenic $CO_2$ is set to zero. It has been included in the EPD following the PCR (EPD International, 2024). In this study, it is calculated by subtracting the value of Climate change – biogenic (GWP-biogenic) from the value of Climate change – total (GWP-total) since the ecoinvent Excel LCIA results do not include the indicator.

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

[5] 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

# Environmental performance per 1 kg of Hynds Precast Concrete Inspection Chambers and Cesspits

*Table 11: Core environmental indicators*

| Indicator | Unit | A1-A3 | A4 | C1 | C2 | C3 | C4 | D | A-C |
|---|---|---|---|---|---|---|---|---|---|
| **GWP-total** | kg $CO_2$-eq. | **2.26E-01** | 2.55E-02 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 19.4% |
| **GWP-fossil** | kg $CO_2$-eq. | **2.25E-01** | 2.55E-02 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 19.0% |
| **GWP-biogenic** | kg $CO_2$-eq. | **1.39E-03** | 1.20E-05 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 80.3% |
| **GWP-luluc** | kg $CO_2$-eq. | **1.40E-04** | 1.11E-05 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 73.1% |
| **ODP** | kg CFC11-eq. | **1.13E-09** | 3.14E-10 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 231% |
| **AP** | Mole of H+ eq. | **9.16E-04** | 8.49E-05 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 44.0% |
| **EP-freshwater** | kg P eq. | **3.13E-05** | 2.78E-06 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 302% |
| **EP-marine** | kg N eq. | **2.37E-04** | 2.64E-05 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 41.7% |
| **EP-terrestrial** | Mole of N eq. | **2.63E-03** | 2.87E-04 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 27.9% |
| **POCP** | kg NMCOC eq. | **7.70E-04** | 1.13E-04 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 549% |
| **ADP-m&m** | kg Sb-eq. | **1.15E-06** | 8.59E-08 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 80.8% |
| **ADP-fossil** | MJ | **1.52E+00** | 3.47E-01 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 34.2% |
| **WDP** | $m^3$ world eq. | **1.14E+00** | 1.76E-03 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 3.56% |

*Table 12: Resource use indicators*

| Environmental Impact | Unit | A1-A3 | A4 | C1 | C2 | C3 | C4 | D |
|---|---|---|---|---|---|---|---|---|
| **PERE** | MJ | 3.15E-01 | 5.08E-03 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| **PERM** | MJ | 1.22E-05 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| **PERT** | MJ | 3.15E-01 | 5.08E-03 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| **PENRE** | MJ | 1.43E+00 | 3.47E-01 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| **PENRM** | MJ | 1.09E-02 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| **PENRT** | MJ | 1.44E+00 | 3.47E-01 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| **SM** | kg | 9.14E-03 | 1.45E-04 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| **RSF** | MJ | 4.56E-05 | 1.77E-06 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| **NRSF** | MJ | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| **FW** | $m^3$ | 2.85E-03 | 4.48E-05 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |

*The results for A1-A3 should not be analysed without considering the impacts represented by module C*

*Table 13: Waste output flow indicators*

| Waste and output flows | Unit | A1-A3 | A4 | C1 | C2 | C3 | C4 | D |
|---|---|---|---|---|---|---|---|---|
| **HWD** | kg | 6.23E-03 | 7.89E-04 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| **NHWD** | kg | 1.37E-01 | 1.55E-02 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| **RWD** | kg | 6.20E-07 | 2.07E-08 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| **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 | 9.36E-05 | 3.95E-06 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| **MER** | kg | 2.96E-06 | 2.90E-08 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| **EEE** | MJ | 2.73E-04 | 2.84E-05 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| **EET** | MJ | 2.41E-04 | 3.16E-05 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |

*Table 14: Additional indicators*

| Waste and output flows | Unit | A1-A3 | A4 | C1 | C2 | C3 | C4 | D |
|---|---|---|---|---|---|---|---|---|
| **GWP-GHG** | kg $CO_2$-eq. | 2.25E-01 | 2.55E-02 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| **PM** | Disease incidences | 9.30E-09 | 1.73E-09 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| **IRP** | kBq U235 eq. | 2.72E-03 | 2.84E-04 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| **ETP-fw** | CTUe | 5.37E-01 | 6.93E-02 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| **HTPc** | CTUh | 7.87E-11 | 4.05E-12 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| **HTPnc** | CTUh | 1.63E-09 | 2.03E-10 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| **SQP** | Pt | 5.72E-01 | 1.77E-01 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |

*Table 15: Biogenic carbon indicators*

| Indicators | Units | A1 - A3 |
|---|---|---|
| **Biogenic carbon content in product** | kg C | 0 |
| **Biogenic carbon content in packaging** | kg C | 0 |

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

The results for A1-A3 should not be analysed without considering the impacts represented by module C.

# WEIGHT CONVERSION TABLE

*Table 16: Hynds Precast Concrete Inspection Chambers and Cesspits products covered by this EPD and their weights for conversion.*

| Product code | Product full name | Product mass (kg per 1 unit of pipe) | Representative product |
|---|---|---|---|
| **IB06000450** | Internal Base Conc Ø600 450Hmm | 198 | |
| **IB06000600** | Internal Base Conc Ø600 600Hmm | 198 | |
| **IB06000900** | Internal Base Conc Ø600 900Hmm | 272 | |
| **IB06001200** | Internal Base Conc Ø600 1200Hmm | 346 | |
| **IB06001500** | Internal Base & Riser Conc Ø600 1500Hmm | 420 | |
| **IB06001800** | Internal Base Conc Ø600 1800Hmm | 494 | |
| **IB09000600** | Internal Base Conc Ø900 600Hmm | 456 | |
| **IB09000900** | Internal Base Conc Ø900 900Hmm | 598 | |
| **IB09001200** | Internal Base Conc Ø900 1200Hmm | 740 | |
| **IB10500450** | Internal Base & Riser Conc Ø1050 450Hmm | 619 | |
| **IB10500600** | Internal Base Conc Ø1050 600Hmm | 710 | |
| **IB10500900** | Internal Base Conc Ø1050 900Hmm | 893 | |
| **IB10501200** | Internal Base Conc Ø1050 1200Hmm | 1 077 | |
| **IB10501500** | Internal Base Conc Ø1050 1500Hmm | 1 260 | |
| **IB10501800** | Internal Base Conc Ø1050 1800Hmm | 1 443 | |
| **IB10502100** | Internal Base Conc Ø1050 2100Hmm | 1 626 | |
| **IB10502400** | Internal Base Conc Ø1050 2400Hmm | 1 809 | |
| **IB12000600** | Internal Base Conc Ø1200 600Hmm | 897 | |
| **IB12000900** | Internal Base Conc Ø1200 900Hmm | 1 124 | |
| **IB12001200** | Internal Base Conc Ø1200 1200Hmm | 1 352 | |
| **IB12001200SQ** | Internal Base Conc 1200Lx1200Wx1000Hx150Bmm Chch | 3 354 | Yes |
| **IB12001800** | Internal Base Conc Ø1200 1800Hmm | 1 807 | |
| **IB15000600** | Internal Base & Riser 1500x600mm | 1 311 | |
| **IB15000900** | Internal Base & Riser 1500x900mm | 1 623 | |
| **IB15002400** | Internal Base & Riser Conc Ø1500 2400Hmm | 3 184 | |
| **IC6000300** | Inspection Chamber No Base Conc Ø600 300Hmm | 74 | |
| **IC6000450** | Inspection Chamber No Base Conc Ø600 450Hmm | 111 | |

| | | | |
|---|---|---|---|
| **IC6000600** | Inspection Chamber No Base Conc Ø600 600Hmm | 148 | |
| **IC6000900** | Inspection Chamber No Base Conc Ø600 900Hmm | 222 | |
| **IC6001200** | Inspection Chamber No Base Conc Ø600 1200Hmm | 296 | |
| **IC6001500** | Inspection Chamber No Base Conc Ø600 1500Hmm | 370 | |
| **IC6001800** | Inspection Chamber No Base Conc Ø600 1800Hmm | 444 | |
| **IC6002100** | Inspection Chamber No Base Conc Ø600 2100Hmm | 518 | |
| **IC6002400** | Inspection Chamber No Base Conc Ø600 2400Hmm | 592 | |
| **IC6002400TW** | Inspection Chamber No Base Conc Ø600 2400Hmm Thick Wall | 844 | |
| **IC6750450** | Inspection Chamber No Base Conc Ø675 450Hmm | 138 | |
| **IC9000300** | Inspection Chamber No Base Conc Ø900 300Hmm | 142 | |
| **IC9000600** | Inspection Chamber No Base Conc Ø900 600Hmm | 284 | |
| **IC9000600TW** | Inspection Chamber No Base Ø900×600Hmm TW | 376 | |
| **IC9000900** | Inspection Chamber No Base Conc Ø900 900Hmm | 426 | |
| **IC9001200** | Inspection Chamber No Base Conc Ø900 1200Hmm | 568 | |
| **IC9001500** | Inspection Chamber No Base Conc Ø900 1500Hmm | 711 | |
| **IC9001800** | Inspection Chamber No Base Conc Ø900 1800Hmm | 852 | |
| **IC9001800TW** | Inspection Chamber No Base Ø900×1800Hmm TW | 1 137 | |
| **IC9002400TW** | Inspection Chamber No Base Ø900×2400Hmm TW | 1 516 | |
| **CP300300** | Cesspit Conc 300Lx300Wx610Hmm Mini | 161 | |
| **CP425250FP** | Flushing Pit Conc 425Lx250Wx650Hmm | 326 | |
| **CP450450FT** | Cesspit Conc 450Lx450Wx950Hmm Flat Top | 578 | |
| **CP675450BE** | Cesspit Conc 675Lx450Wx1200Hmm Back Entry | 651 | |
| **CP675450FT** | Cesspit Conc 675Lx450Wx1200Hmm Flat Top | 749 | |
| **CP675450SBE** | Cesspit Syphon Conc 675Lx450Wx1800Hmm Back Entry | 897 | |
| **CP675450SFT** | Cesspit Syphon Conc 675Lx450Wx1800Hmm | 931 | |
| **CP845160** | Kerb Block Conc 845Lx160H mm Back inlet | 124 | |
| **CR6754501.5** | Cesspit Riser Conc 675Lx450Wx150Hmm | 82 | |
| **CR6754503** | Cesspit Riser Conc 675Lx450Wx300Hmm | 154 | |


CP450.450

# References


- *BraveTrace. (2023). NZECS Residual Supply Mix for electricity certification. New Zealand.*
- *CEN. (2021). EN 15804:2012+A2:2019/AC:2021 Sustainability of construction works. Environmental product declarations. Core rules for the product category of construction products. Brussels: European Committee for Standardization.*
- *CEN. (2022). EN 16757:2022 Sustainability of construction works. Environmental product declarations - Product Category Rules for concrete and concrete elements. Brussels: European Committee for Standardization.*
- *ECHA. (2024). Candidate List of substances of very high concern for Authorisation. Retrieved from European Chemical Agency: www.echa.europa.eu/candidate-list-table*
- *EPD Australasia. (2024). Instructions of the Australasian EPD Programme v4.2 (published on 2024-04-12). Nelson: EPD Australasia.*
- *EPD International. (2021). General Programme Instructions for the International EPD(r) System. Version 4.0, dated 2021-03-29. Stockholm: EPD International AB.*
- *EPD International. (2025). Complementary Product Category Rules (C-PCR) to PCR 2019:14 for Concrete and Concrete Elements (version 1.0.0 of 2025-04-08 (valid until 2030-04- 07). Stockholm: EPD International AB.*
- *EPD International. (2024). PCR 2019:14 Construction Products version 1.3.4 of 2024-04-30 (valid until 2025-06- 20). Stockholm: EPD International AB.*
- *European Commission. (2020) Annex C V2.1 May 2020. https:// eplca.jrc.ec.europa.eu/LCDN/ developerEF.xhtml*
- *IPCC. (2021). Climate Change 2021: The Physical Science Basis. Geneva: IPCC.*
- *ISO. (2006a). ISO 14040: Environmental management – Life cycle assessment – Principles and framework. Geneva: International Organization for Standardization.*
- *ISO. (2006b). ISO 14044: Environmental management – Life cycle assessment – Requirements and guidelines. Geneva: International Organization for Standardization.*
- *ISO. (2006c). ISO 14025: Environmental labels and declarations - Type III environmental declarations - Principles and procedures. Geneva: International Organization for Standardization.*
- *MBIE. (2023). Annual Electricity Data Updates. New Zealand.*
- *Wernet, G. B.-R. (2016). The ecoinvent database version 3 (part I): overview and methodology. The International Journal of Life Cycle Assessment, 21(9)([online]), 1218–1230.*

# General information

| | |
|---|---|
| Declaration owner: | **Hynds Pipe Systems Ltd**<br>Jackson MacFarlane, jackson.macfarlane@hynds.co.nz<br>www.hynds.co.nz<br>Sustainability@hynds.co.nz<br>PO Box 58142, Botany, Auckland 2163 |
| Geographical scope | New Zealand |
| Reference year for data | July 2023 - June 2024 |
| LCA produced by: | **thinkstep Ltd.**<br>Barbara Nebel, thinkstep Ltd.<br>Rosie Dodd, thinkstep Ltd.<br>Joel Edwards, thinkstep Ltd.<br>www.thinkstep-anz.com \| anz@thinkstep-anz.com<br>11 Rawhiti Road, Pukerua Bay, Wellington 5026, New Zealand |
| EPD programme operator: | **EPD International AB**<br>www.environdec.com<br>Box 210 60, SE-100 31, Stockholm, Sweden<br>info@environdec.com |
| Regional programme: | **EPD Australasia Limited**<br>www.epd-australasia.com<br>info@epd-australasia.com<br>315a Hardy Street, Nelson 7010, New Zealand |
| CEN standard EN 15804+A2 served as the core PCR | |
| PCR: | PCR 2019.14 Construction Products, version 1.3.4 (published on 2024-04-30, valid until 2025-06-20)<br>c-PCR-003 (to 2019:14) Concrete and concrete elements, version 1.0.0 (published on 2025-04-08) |
| PCR review was conducted by: | The Technical Committee of the International EPD System.<br>See www.environdec.com for a list of members. |
| Chair: | The most recent review chair: Claudia Peña, PINDA LCT SpA.<br>The review panel may be contacted via the Secretariat: www.environdec.com/contact |
| Independent third-party verification of the declaration and data, according to ISO 14025: | ☑ EPD verification (by individual verifier) |
| Third-party verifier:<br>(Approved by: EPD Australasia) | Claudia A. Peña, PINDA LCT SpA<br>Email: pinda.lct@gmail.com |
| Procedure for follow-up of data during EPD validity involved third-party verifier | ☐ Yes<br>☑ No |

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

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*EPDs within the same product category but registered in different EPD programmes, or not compliant with EN 15804, may not be comparable. For two EPDs to be comparable, they must be based on the same PCR (including the same version number) or be based on fully-aligned PCRs or versions of PCRs; cover products with identical functions, technical performances and use (e.g. identical declared/functional units); have equivalent system boundaries and descriptions of data; apply equivalent data quality requirements, methods of data collection, and allocation methods; apply identical cut-off rules and impact assessment methods (including the same version of characterisation factors); have equivalent content declarations; and be valid at the time of comparison. For further information about comparability, see EN 15804 and ISO 14025.*

HYNDS