Vinidex
Systems & Solutions

Environmental Product Declaration

StormPRO® and SewerPRO® Polypropylene Pipes

AUSTRALASIA EPD®
ENVIRONMENTAL PRODUCT DECLARATION

Environmental Product Declaration (EPD) in accordance with ISO 14025 and EN 15804
Version: 1.1 21 August 2017
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Geographical area of application of this EPD: Australia
Year taken as a reference for the data: 2014

EPD of Vinidex Polypropylene pipe products - in collaboration with the Plastics Industry Pipe Association of Australia (PIPA).

PIPA

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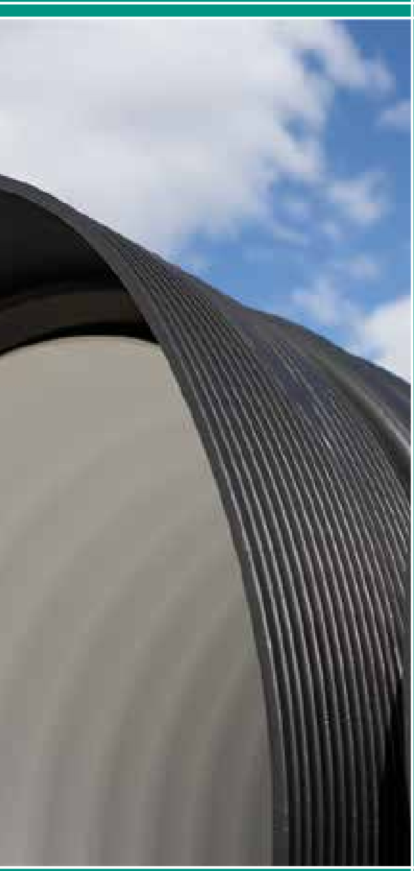

ENVIRONMENTAL PRODUCT DECLARATION DETAILS

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).

Environmental product declarations within the same product category from different programmes may not be comparable. EPD of construction products may not be comparable if they do not comply with EN 15804. This version of the EPD has been updated to clarify to which pipe dimensions the installation results refer to, corrected the installation impact calculations and added installation impact results for a broader range of pipes.

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Independent external verification of the declaration and data, according to ISO 14025:2010	☐ EPD process certification (Internal) ☑ EPD verification (External)
Accredited or approved by	The Australasian EPD® Programme

GREEN STAR EPD COMPLIANCE

✓ The EPD conforms with ISO 14025 and EN 15804.
✓ The EPD has been verified by an independent third party.
✓ The EPD has at least a cradle-to-gate scope.
✓ The EPD has product specific results.

This EPD may be used to obtain Sustainable Product credit points under the GBCA's Green Star rating tools.

The polypropylene (PP) pipe EPD results can also be used to represent PP pipe products in Whole of Building Life Cycle Assessments under Green Star rating tools. See the product specification tables to convert the product results from kilogram of installed pipe to length of pipe for individual pipe products.

VINIDEX SYSTEMS AND SOLUTIONS

Vinidex Pty Limited (Vinidex) is Australia's leading manufacturer and supplier of quality PVC, PE and PP pipe systems and solutions for the transportation of fluid, data and energy with pipe systems ranging from 15 mm to 1000 mm.

Vinidex pipe and fittings systems are used in a broad range of applications including plumbing, water supply, sewerage and wastewater, stormwater and drainage, mining, industrial, rural, irrigation, electrical, telecommunications and gas.

We have nine manufacturing sites across Australia and a comprehensive nationwide network of warehousing and distribution facilities to enable efficient distribution of our own products and those of our national and international partners. Vinidex has extensive logistics experience with major projects and a proven track record for project delivery.

As part of the world wide Aliaxis Group of companies, Vinidex can provide products, access to international technologies and innovative solutions that are world class. The Aliaxis Group is a leading global manufacturer and distributor of plastics pipe systems, present in over 40 countries, with more than 100 commercial entities and employs over 15,000 people.

Vinidex is renowned for a commitment to technical advancement and product innovation. Our continuous evaluation programmes, examining new materials, processing technology and manufacturing equipment, ensure our continued position as a major participant in the pipe industry. Vinidex participates in Australian and International pipe associations as well as Australian and ISO standards committees.

At every level of Vinidex, you'll find a genuine commitment from our staff to exceed expectations and ensure that you are satisfied with the overall experience. We offer total solutions from design assistance, technical support, product supply, delivery logistics management and field support.

VINIDEX STORMPRO® AND SEWERPRO® POLYPROPYLENE PIPES

Vinidex StormPRO® and SewerPRO® pipes are twin-wall, corrugated polypropylene pipes for non-pressure drainage and sewerage applications.

Utilising modern co-extrusion techniques, StormPRO® and SewerPRO® are manufactured with a smooth bore for optimum hydraulic performance and a corrugated outside wall for high stiffness to weight ratio. By combining the strength and toughness of advanced polypropylene materials with the structured wall design, StormPRO® and SewerPRO® pipes provide an environmentally sensitive, cost-effective piping system for a multitude of sewerage and drainage applications.

StormPRO® pipes are classified as SN8 with a minimum stiffness of 8000 N/m/m and are available in 6 m lengths in sizes from DN 150 to DN 900. StormPRO® pipes have a black external surface and a light grey internal surface.

SewerPRO® pipes are classified as SN10 with a minimum stiffness of 10,000 N/m/m and are available in 3 m lengths in sizes from DN 150 to DN 900. SewerPRO® pipes are dark grey outside and light grey inside.

StormPRO® and SewerPRO® polypropylene (PP) pipes are manufactured in accordance with AS/NZS 5065: “Polyethylene and Polypropylene pipes and fittings for drainage and sewerage applications”, complying with the dimensional requirements of type B pipes – ID series.

A complete range of fittings for StormPRO® and SewerPRO® pipelines is also available. Table 1 shows key characteristics of Vinidex PP pipe and Table 2 shows the content declaration.

Table 1 - Product characteristics of PP pipe

Product Characteristics	
Product names/application	Polypropylene (PP) pipes covered in this EPD are: • StormPRO® PP drainage pipe • SewerPRO® PP sewerage pipe See Table 9 and Table 10 for individual product codes.
UN CPC Code	36320 - Tubes, pipes and hoses, and fittings therefor, of plastics
Resin density	900 kg/m^3
Circumferential flexural modulus (2mm/min)	1300 MPa
Shore D hardness	60
Coefficient of linear thermal expansion	15 x 10^{-5}/°C
Tensile yield stress (50mm/min)	31 MPa
Poisson's ratio	0.45
Ring bending stiffness	StormPRO® - 8000 N/m/m SewerPRO® - 10,000 N/m/m
Nominal diameter	150-900 mm

Table 2 - Content Declaration

Material	Percentage Content	CAS No.
Polypropylene block copolymer	96%	9003-07-0
Polypropylene polymer masterbatch	4%	Confidential (nothing hazardous)
Total	100%	

PRODUCT LIFE CYCLE OVERVIEW

The life cycle of a building product is divided into three process modules according to the General Program Instructions (GPI) of the Australasian EPD Programme (AEPDP, 2015) and four information modules according to ISO 21930 and EN 15804, and supplemented by an optional information module on potential loads and benefits beyond the building life cycle. Table 3 shows the scope and system boundary of assessment. The scope is “cradle to gate with options” as defined by EN 15804. The intent of the EPD is to cover all environmental impacts of significant concern over the product life cycle. Due to the fact that the pipes are left in the ground at end of life with negligible potential environmental impact, modules C1-C4 were deemed not relevant (of negligible impact). Other than module B2, all other use stage modules were also deemed not relevant. Only minor maintenance for clearing pipes (“jetting”) was required during the use stage in module B2.

Table 3 - System boundary and scope of assessment

Product Stage			Construction Stage		Use Stage							End of Life Stage			
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4
Raw material supply	Transport	Manufacturing	Transport	Installation	Material emissions	Maintenance	Repair	Replacement	Refurbishment	Operational energy	Operational water	Deconstruction/Demolition	Transport	Waste processing	Disposal
X	X	X	X	X	NR	X	NR	NR	NR	NR	NR	NR	NR	NR	NR

X = module included in EPD
NR = module not relevant (does not indicate zero impact result)

LIFE CYCLE OF VINIDEX PP PIPES

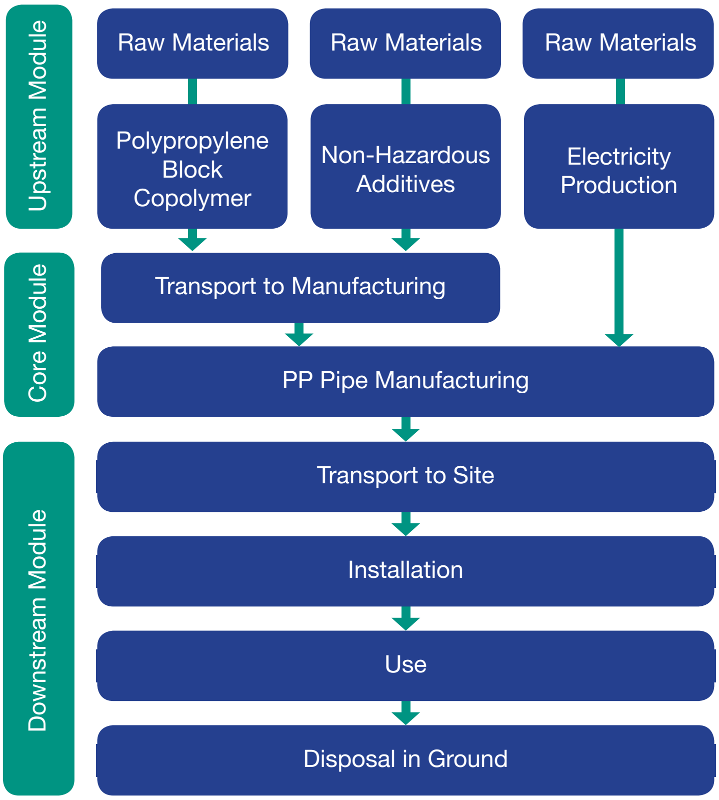


Figure 1 - Life cycle diagram of PP pipe production

VINIDEX POLYPROPYLENE PIPE MANUFACTURING

Vinidex StormPRO® and SewerPRO® are structured wall pipes manufactured from a high grade polypropylene copolymer. The pipes consist of an outer corrugated layer which is bonded to an inner smooth layer. The corrugated outer layer maximises stiffness to weight ratio whilst the inner layer provides a smooth surface for optimal hydraulic performance.

Polypropylene raw material is delivered to the manufacturing facility in bulk containers where it is transferred directly into storage silos using a blower and rotary valve system. Masterbatch materials are added to the raw PP copolymer to add colour and to prevent degradation under sunlight. Black and dark grey are used for the outer corrugations whilst light grey is used for the inner layer. Masterbatch materials are delivered in bulk bags of approx. 750 kg. Due to the hygroscopic nature of the carbon black used in the masterbatch, these materials are dried with hot air at approximately 90˚C for 1 to 2 hours before blending. The raw materials are transferred to a batch mixer where they are blended before being transferred directly to the manufacturing line. The whole material transfer system from delivery to final production is via enclosed piping systems using either air pressure or vacuum transfer systems.

The main part of the manufacturing line consists of two extruders (one for each layer), feeding into an extrusion die head and a corrugator. The extruders use a combination of applied heat and internal friction to melt and pump the molten material through the extrusion die using a process similar to an Archimedean screw. The extrusion die forms the two layers of molten PP into annular rings. The inner layer is then pulled over a smooth cooling mandrel whilst the outer layer is captured by a moving train of mould blocks having the corrugation profile.

Vacuum is used to pull the outer layer into the cavity of the mould blocks whilst the controlled wall thickness and gap between the mould blocks and inner mandrel press the two layers together to form a bond at the trough of each corrugation. Chilled water is circulated continuously through the mould blocks and the inner mandrel to freeze the material in the desired form.

At the designated places special blocks are automatically inserted into the mould train to form a socket or "cuff". Only the outer layer is utilised in the formation of the cuff.

Further processes downstream of the continuous production line consist of a caterpillar style, multi-belt haul off which matches the speed of the corrugator mould blocks and helps feed the pipe into the cutter and smart trim device. The cutter cuts the pipes at the correct position in relation to the cuff and the smart trim removes part of the inner layer from the cuff to form the correct socket profile for jointing. Rubber rings are either fitted to the pipe or attached with it, to complete the requirements for the socket jointing system, before they are stacked and packaged for storage and transport. Packaging materials are timber and PET strapping. In some cases black stretch wrap is used to protect the rubber seal from sunlight. Any internal scrap, including the off-cuts from the smart trim process, is granulated on site and recycled into the outer layer of the StormPRO® product. PP pipe is manufactured in Wagga Wagga (New South Wales) as shown below in Figure 2.

Figure 2 - Vinidex PP pipe manufacturing site

DISTRIBUTION STAGE

Vinidex has one PP pipe manufacturing facility in Australia, requiring significant distribution distances to all major Australian markets apart from Sydney and Melbourne, requiring relatively shorter distribution distances. The impact of distribution was calculated by using the distance from manufacturing to each capital city in Australia weighted by PP pipe sales volumes in each state. While some PP pipe is transported to regional areas the vast majority is sold in capital cities.

INSTALLATION STAGE

Vinidex PP pipe systems are usually buried as part of drainage or sewer infrastructure as part of a large building site. The pipes are laid in an excavated trench. The trenching will be done using a mechanical excavator. The trench width and depth varies with pipe size and will be specified by the infrastructure agency. For the size ranges nominated for this EPD, PIPA suggest an average trench width of around 559 mm would be appropriate, and an average trench depth of 1509 mm is typical (based on DN 225 from AS/NZS 2566.1). PIPA discussions with contractors suggest an average installation rate for a trench of this size in a Greenfield site would be around 10-12m/hr using a 5-8t excavator and 18-19m/hr using a 12 - 20t machine. For this study it was assumed that 15 m of trench is excavated per hour operation. Assuming 3.91 kg of pipe per metre installed, this equates to 0.017 hr excavator operation per kg of pipe installed. This was modelled using Excavator/AU U from the Australasian Unit Process LCI, with 0.0022 L diesel consumed per kg pipe installed. Results are also presented for installation of DN300, DN600 and DN900. Module A5 results are only available for these specific pipe sizes, and the results do not apply to other pipe sizes included in the EPD.

Bedding and backfill materials vary in specification. In many cases no imported material is used but for many city-based agencies sand bedding and gravel are used in the areas immediately below and at the sides of the pipe. It is estimated that if imported backfill materials are used for the embedment, there would be 0.232 m^3 of material per m of pipeline – or 0.059 m^3 per kg of pipe (assuming average density of 3.91 kg/m). This material will need to be transported to site and given the predominance of this approach to city based installation it is estimated the typical transport distance would be 30-50 km.

The joints for PP pipes of this type are all rubber sealed spigot and socket joints – there is no heat used, no thermal or chemical welding and no solvent used. Handling, cutting, and positioning of individual pipes on site is done by hand – no mechanical lifting equipment required for the majority of pipes nominated in this EPD. The installation of the largest diameter pipes (e.g. 900 mm) is included in this EPD assuming negligible fuel used to position the pipes.

Wastage of pipe is minimal as short lengths are often required elsewhere and easily reused on subsequent sites or within the same site. A very rough estimate puts wastage from unusable offcuts at less than 2%.

USE STAGE

According to AS/NZS 5065:2005, the pipe systems are designed to outlast the building with a life expectancy in excess of 100 years (Standards Australia, 2005). The failure rate is also extremely low and is considered to be inconsequential (not relevant) in this EPD. Maintenance of these pipe systems is not planned as deterioration of the pipe in service is not an issue.

The only unplanned maintenance activities involve "jetting" to clear blockages. Jetting involves the insertion of a high pressure water hose and spray nozzle. This requires energy to pressurise the water and water is also consumed. It was estimated that over the life of a pipeline such as this, on average there would be the need to jet clean the pipeline only twice.

The major risk with plastics pipe systems is third party interference. However, these PP pipe systems are used primarily in drainage and sewer applications and do not share restricted footway allocations as with water and gas reticulation. Therefore, it is significantly less likely that third parties will encounter these pipe systems. Repairing a damaged PP pipe is simple using either a mechanical saddle fitting or cutting out the affected section and replacing with a new section of pipe.

END OF LIFE STAGE

The PP drainage and sewerage pipes which are installed underground are assumed to remain underground at end of life. The PP pipes are inert and there is no incentive to dig them up to send for waste treatment.

LIFE CYCLE ASSESSMENT METHODOLOGY

This section includes the main details of the LCA study as well as assumptions and methods of the assessment. A summary of the life cycle assessment parameters is given in Table 4.

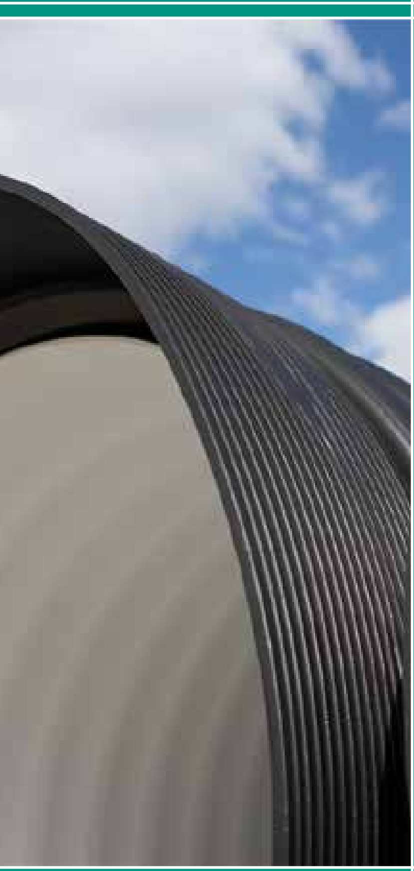
Table 4 - Details of LCA Study

Declared unit	1 kg of installed pipe
Geographical coverage	Australia
LCA scope	Cradle to gate with options
Reference service life	100 years - While the design life of the PP pipe is in excess of 100 years, the lifetime of pipes used in buildings may be less for buildings with a shorter lifetime.

Life cycle assessment (LCA) requires a compilation of the inputs, outputs and environmental impacts of a product system throughout its life cycle. LCA can enable businesses to identify resource flows, waste generation and environmental impacts (such as climate change) associated with the provision of products and services.

Life cycle thinking is a core concept in sustainable consumption and production for policy and business. Upstream and downstream consequences of decisions must be taken into account to help avoid the shifting of burdens from one type of environmental impact to another, from one political region to another, or from one stage to another in a product's life cycle from the cradle to the grave.

According to EN 15804, EPDs of construction products may not be comparable if they do not comply with this standard, and EPDs might not be comparable, particularly if different functional units are used.



CORE DATA COLLECTION

Life cycle data has been sourced from material quantity data and production process data from:

- Vinidex reporting systems and staff
- Vinidex suppliers

Core manufacturing data was collected directly from Vinidex manufacturing sites. Electricity consumption was allocated to pipe via mass of pipe produced.

BACKGROUND DATA

Generic background data was sourced for raw materials in the upstream module and transportation. Background data was adapted to represent Vinidex PP pipe product as accurately as possible. Australian inputs were primarily modelled with the AusLCI database (AusLCI, 2009) and the Australasian Unit Process LCI (Life Cycle Strategies, 2015) and the ecoinvent v3 database where suitable Australian data was not available. The polypropylene block copolymer and polymer inputs sourced from outside Australia were modelled based on global averages using the ecoinvent v3 database. Global averages were used since the sourcing of these materials often changes from year to year. All background data used was less than 10 years old.

CUT OFF CRITERIA

Environmental impacts relating to personnel, infrastructure, and production equipment not directly consumed in the process are excluded from the system boundary as per the PCR (IEPDS, 2015), section 6.6. All other reported data were incorporated and modelled using the best available life cycle inventory data.

ALLOCATION

Allocation was carried out in accordance with the PCR (IEPDS, 2015), section 6.7. No allocation between co-products in the core module as there were no
co-products created during manufacturing. Energy consumed in core module was allocated to pipe via mass of pipe produced.

STORMPRO® AND SEWERPRO® ENVIRONMENTAL PERFORMANCE

The potential environmental impacts used in this EPD are explained in Table 5 and the results for Vinidex PP pipe are shown in Table 6. The use of energy and fresh water resources is shown in Table 7. The use of secondary material and secondary material used as energy resources is listed as 'INA' (indicator not assessed). Although Vinidex do not directly use secondary material, it is unknown whether secondary material is used in the supply chain and therefore exists in the product life cycle. Table 8 shows the generation of waste throughout the product life cycle.

Table 5 - Environmental indicators used in the EPD

Environmental Indicator	Unit	Description
Global Warming Potential [a]	kg carbon dioxide equivalents	Increase in the Earth's average temperature, mostly through the release of greenhouse gases. A common outcome of this is an increase in natural disasters and sea level rise.
Ozone Depletion Potential [b]	kg CFC-11 equivalents	The decline in ozone in the Earth's stratosphere. The depletion of the ozone layer increases the amount of UVB that reaches the Earth's surface. UVB is generally accepted to be a contributing factor to skin cancer, cataracts and decreased crop yields.
Acidification Potential [c]	kg sulphur dioxide equivalents	A process whereby pollutants are converted into acidic substances which degrade the natural environment. Common outcomes of this are acidified lakes and rivers, toxic metal leaching, forest damage and destruction of buildings.
Eutrophication Potential [c]	kg phosphate equivalents	An increase in the levels of nutrients released to the environment. A common outcome of this is high biological productivity that can lead to oxygen depletion, as well as significant impacts on water quality, affecting all forms of aquatic and plant life.
Photochemical Ozone Creation Potential [c]	kg ethylene equivalents	Ozone in the troposphere is a constituent of smog that is caused by a reaction between sunlight, nitrogen oxide and volatile organic compounds (VOCs). This is a known cause for respiratory health problems and damage to vegetation.
Abiotic Depletion Potential – Elements / minerals [c]	kg antimony equivalents	The extraction of non-living and non-renewable elements and minerals. These resources are essential in our everyday lives and many are currently being extracted at an unsustainable rate.
Abiotic Depletion Potential – Fossil Fuels [c]	MJ net calorific value	The extraction of non-living and non-renewable fossil fuels. These resources are essential in our everyday lives and many are currently being extracted at an unsustainable rate.

Life cycle impact assessment methods used: a - CML (v4.1) – based on IPCC AR4 (GWP 100); b - CML (v4.1) – based on WMO 1999; c - CML (v4.1)

Table 6 - Potential environmental impacts per 1 kg of installed pipe

	A1 & 2	A3	A4	A5 DN 225	A5 DN 300	A5 DN 600	A5 DN 900	B2
GWP (kgCO_2 eq)	2.47	1.02	0.343	0.707	0.597	0.470	0.427	0.000510
ODP (kgCFC11 eq)	1.73E-08	1.54E-09	3.51E-09	5.33E-08	4.49E-08	3.53E-08	3.20E-08	1.09E-12
AP (kgSO_2 eq)	8.09E-03	1.47E-03	7.97E-04	2.96E-03	2.50E-03	1.96E-03	1.78E-03	6.92E-07
EP (kgPO_4^{3-} eq)	1.04E-03	3.98E-04	1.69E-04	6.18E-04	5.21E-04	4.10E-04	3.72E-04	1.91E-07
POCP (kgC_2H_2 eq)	4.81E-04	3.41E-05	5.07E-05	1.34E-04	1.13E-04	8.89E-05	8.06E-05	1.83E-08
ADPE (kgSb eq)	3.65E-07	8.48E-07	2.47E-07	1.26E-06	1.06E-06	8.37E-07	7.59E-07	5.18E-10
ADPF (MJ)	73.8	11.1	5.16	10.8	9.09	7.15	6.49	5.77E-03

GWP = Global Warming Potential, **ODP** = Ozone Depletion Potential, **AP** = Acidification Potential, **EP** = Eutrophication Potential, **POCP** = Photochemical Oxidant Formation Potential, **ADPE** = Abiotic Resource Depletion Potential – Elements, **ADPF** = Abiotic Resource Depletion Potential – Fossil Fuel

Table 7 - Use of resources per 1 kg of installed pipe

	A1 & 2	A3	A4	A5 DN225	A5 DN300	A5 DN600	A5 DN900	B2
PERE (MJ)	0.548	0.535	0.0112	0.0537	0.0455	0.0362	0.0330	2.45E-04
PERM (MJ)	0	0	0	0	0	0	0	0
PERT (MJ)	0.548	0.535	0.0112	0.0537	0.0455	0.0362	0.0330	2.45E-04
PENRE (MJ)	83.4	9.82	5.17	11.2	9.42	7.41	6.73	5.80E-03
PENRM (MJ)	0	0	0	0	0	0	0	0
PENRT (MJ)	83.4	9.82	5.17	11.2	9.42	7.41	6.73	5.80E-03
SM (kg)	INA	INA	INA	INA	INA	INA	INA	INA
RSF (MJ)	INA	INA	INA	INA	INA	INA	INA	INA
NRSF (MJ)	INA	INA	INA	INA	INA	INA	INA	INA
FW (m^3)	1.65E-02	3.37E-03	4.05E-04	1.92E-01	1.62E-01	1.27E-01	1.16E-01	1.14E-06

PERE = Use of renewable primary energy excluding raw materials, **PERM** = Use of renewable primary energy resources used as raw materials, **PERT** = Total use of renewable primary energy resources, **PENRE** = Use of non-renewable primary energy excluding raw materials, **PENRM** = Use of non-renewable primary energy resources used as raw materials, **PENRT** = Total use of non-renewable primary energy resources, **SM** = Use of secondary material, **RSF** = Use of renewable secondary fuels, **NRSF** = Use of non-renewable secondary fuels, **FW** = Use of net fresh water, **INA** = Indicator not accessed due to a limitation of the LCA tools and databases used to calculate the required resource flows. INA does not imply zero impact

Table 8 - Generation of waste per 1 kg of installed pipe

	A1 & 2	A3	A4	A5 DN225	A5 DN300	A5 DN600	A5 DN900	B2
HWD (kg)	1.68E-06	1.44E-06	1.16E-06	7.22E-06	6.09E-06	4.79E-06	4.34E-06	8.78E-10
NHWD (kg)	8.39E-02	8.47E-02	1.12E-02	6.25E-02	5.36E-02	4.33E-02	3.98E-02	2.93E-05
RWD (kg)	8.19E-06	1.99E-08	2.81E-08	1.45E-07	1.23E-07	9.65E-08	8.75E-08	2.12E-11

HWD = Hazardous waste disposed, **NHWD** = Non-hazardous waste disposed, **RWD** = Radioactive waste disposed

INTERPRETATION OF LCA RESULTS

The majority of environmental impact lies within the PP raw material supplied to Vinidex followed by the energy used for excavation during the pipe installation phase – comparatively little impact is caused by the PP pipe manufacturing at Vinidex sites. From the feed mix ingredients, PP block copolymer resin is responsible for the majority of all environmental impacts and use of resources, although the PP polymer additive was still found to have a significant impact.

ADDITIONAL ENVIRONMENTAL INFORMATION

Vinidex recognise the importance of incorporating environmental sustainability into our business strategies. Environmental issues are now the subject of greater community awareness. Vinidex have long been mindful of these issues, demonstrated by our achievements in minimising waste, post-industrial and post-consumer recycling, minimising energy use on production as well as minimising embodied energy on our products.

Vinidex StormPRO® and SewerPRO® pipes are material efficient due to their structured wall, have excellent mechanical properties and can be recycled at end of life.

GUIDANCE FOR PP PIPE RECYCLING

All PP pipe offcuts from installation can be completely recycled back into new pipe products. Specific PP pipe recycling or take back centres are limited to Sydney, Brisbane and Melbourne. In addition to these sites there are general plastics recyclers in all Australian capital cities. Although the PP pipes covered in this EPD are most likely to be left in the ground at end of life, PP has a high recyclability and can be mechanically or chemically recycled to replace virgin polypropylene in new products.

PRODUCT SPECIFICATIONS

The following tables (Table 9 and Table 10) can be used to calculate the environmental results for specific Vinidex PP pipe products. The mass for a standard length of pipe is given for each product code.

Table 9 - Product specifications for StormPRO® PP pipe

Application	Prod-uct Code	Stiff-ness Class	Length (m)	Minimum Mean Outside Dia. (mm)	Mass per pipe length (kg/length)
150mm StormPRO®	29479	SN8	6.02	169	8.8
225mm StormPRO®	29456	SN8	5.99	259	18.9
225mm StormPRO®	29458	SN8	5.94	343	31.2
375mm StormPRO®	29460	SN8	5.93	428	48
450mm StormPRO®	29471	SN8	5.95	514	72.1
525mm StormPRO®	29473	SN8	5.89	600	93.5
600mm StormPRO®	29475	SN8	5.85	682	120.5
750mm StormPRO®	29418	SN8	5.92	835	187.5
900mm StormPRO®	29419	SN8	5.91	999	256.7

Table 10 - Product specifications for SewerPRO® PP pipe

Application	Product Code	Stiff-ness Class	Length (m)	Minimum Mean Outside Dia. (mm)	Mass per pipe length (kg/length)
150mm SewerPRO®	29480	SN10	2.95	169	4.9
225mm SewerPRO®	29457	SN10	2.92	259	9.9
300mm SewerPRO®	29459	SN10	2.87	343	16.3
375mm SewerPRO®	29461	SN10	2.86	428	25.1
450mm SewerPRO®	29472	SN10	2.86	514	37.6
525mm SewerPRO®	29474	SN10	2.80	600	48.8
600mm SewerPRO®	29476	SN10	2.75	682	62.8
750mm SewerPRO®	29427	SN10	2.82	835	97.7
900mm SewerPRO®	29428	SN10	2.81	999	133.6

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