



How to use and read an EPD



Webinar content & speakers

- What EPDs are and what they aren't
- The environmental impacts included – what are they and why are they important?
- How to read EPDs – what to look out for
- Comparing products using EPDs
- How companies use EPDs internally and in their marketing
- How EPDs are being used by third-parties (e.g. within tools and rating systems, decision makers, etc.)



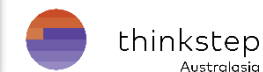
Stephen Mitchell,
Chair - Australasian EPD
Programme



Rob Rouwette,
start2see



Jeff Vickers,
Technical Director,
thinkstep Australasia





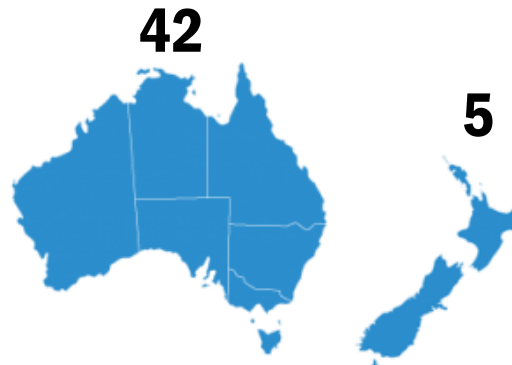
Stephen Mitchell

Chair - Australasian EPD Programme

About the Australasian EPD Programme



- A non-profit joint venture of Australian and New Zealand life cycle assessment professionals
- ISO 14025 compliant EPD Programme Operator
- Australia and New Zealand 47 EPDs



About the Australasian EPD Programme

- A regional partner of EPD International (mutual recognition) with >1,000 EPDs registered in 42 countries



AU & NZ Companies with EPDs

30 Members, 47 EPDs



Products and brands with EPDs



Tork®, Purex® and Sorbent® Toilet Tissue

ASALEO CARE LTD

[DOWNLOAD](#)

INCLUDED PRODUCTS IN THE EPD

- Tork Soft Conventional Toilet Roll T4 400 Sheet Advanced (48 Pack)
- Tork Soft Jumbo Toilet Roll T1 Advanced (6 Pack)
- Tork Soft Mini Jumbo Toilet Roll T2 Advanced (12 Pack)
- Sorbent SilkyWhite Long Toilet Roll (4 Pack)
- Sorbent Hypo-Allergenic Toilet Roll (4 Pack)
- Sorbent Hypo-Allergenic Toilet Roll (12 Pack)
- Purex Toilet Roll (12 Pack)
- Purex Mega Toilet Roll (4 Pack)
- Purex Mega Toilet Roll (6 Pack)



Steel – Hot Rolled Coil

BLUESCOPE

[DOWNLOAD](#)



COLORBOND® steel

BLUESCOPE

[DOWNLOAD](#)



Steel – Welded Beams and Columns

BLUESCOPE

[DOWNLOAD](#)

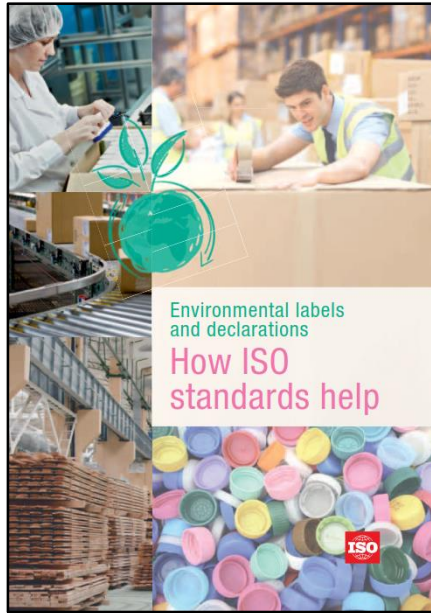


XLERPLATE® Steel

BLUESCOPE

[DOWNLOAD](#)

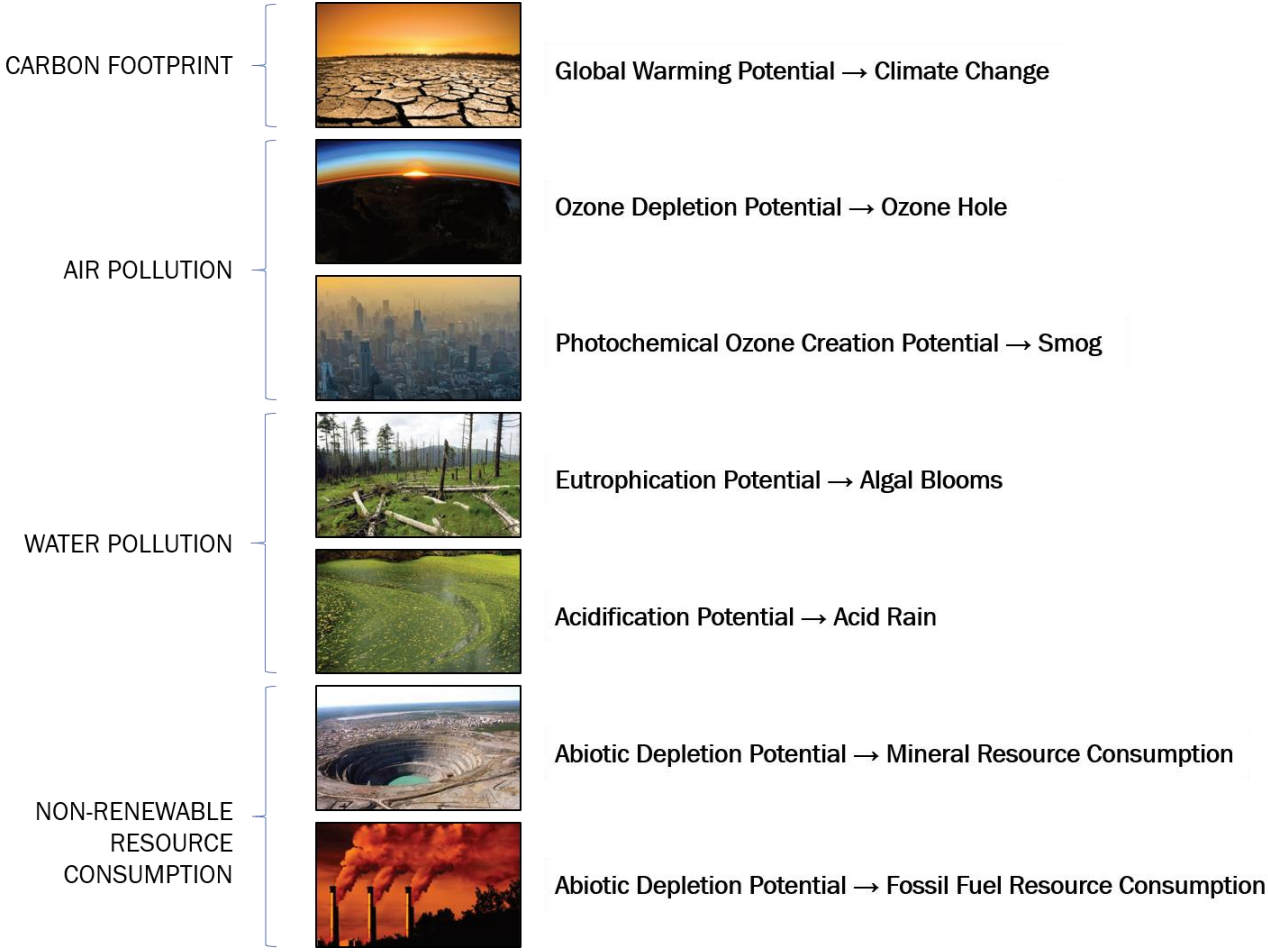
What is an EPD?



www.iso.org/iso/environmental-labelling.pdf

- Independently verified LCA-based environmental impact data and other environmental information
- Part or all of the life cycle: Minimum cradle-to-gate
- Must be registered with an EPD programme operator
- Relevant standard ISO 14025: Type III Environmental Declarations; third-party verified, based on LCA
- Australasian EPD requires all construction product EPDs to be compliant with EN 15804
- EPDs provide the data and information to help make projects and purchasing decisions that have quantifiably lower impacts

Multi indicator EPDs



Single indicator EPDs: Climate Declaration

EPD
CLIMATE DECLARATION
 FOR CERAMIC TILES
 Declared unit: 1 m² of ceramic floor tiles

The climate declaration shows the emissions of greenhouse gases, expressed as CO₂-equivalents. It is based on verified results from a lifecycle assessment (LCA) performed as basis for an EPD[®], in accordance with ISO 14025.

Information about the product
 Kalemeren Ceramic Floor Tiles are primarily made of kaolin, clay and feldspar, but they also include other raw materials such as marble, fat, alumina, bentonite and quartz.

Climate Declaration
 The table below shows the emissions of greenhouse gases, calculated as carbon dioxide equivalents (kg CO₂ eq.) for 1 m² of average ceramic floor tile. This LCA is cradle-to-gate, includes the product, construction/installation, use and end-of-life stages.

Product type	Greenhouse gases	TOTAL
WALL TILE	14.4 kg CO ₂ eq.	14.4 kg CO ₂ eq.
FLOOR TILE	4.88 kg CO ₂ eq.	4.88 kg CO ₂ eq.

Other environmental information
 This declaration is linked to the impact on climate change by emissions of greenhouse gases. Further information about other relevant environmental aspects is available in the EPD at www.kale.com.tr and www.epdregistry.org.

Contact information
 Kalemeren Ceramic Floor Tiles are primarily made of kaolin, clay and feldspar, but they also include other raw materials such as marble, fat, alumina, bentonite and quartz.

Information about the company
 Laying its foundation with Ceramika Ceramic Factories Corporation in 1957, Kale Group pioneered the formation of the ceramic industry in Turkey. Today, Kale Group is Europe's 3rd and the world's 12th largest ceramic manufacturer. Kale Group provides its products to consumers in over 100 countries to more than 400 million people. Kalemeren, a subsidiary of Kale Group manufactures ceramic tiles with a production capacity of 60 million m² ceramic tiles per year. Kalemeren's tile products take place in market under Ceramika Sanatları, Kalepor and Kale brand names. Kalemeren, being aware of its environmental responsibilities, takes necessary measures in all stages from planning, production and delivery to protect the environment.

Kale

EPD
CLIMATE DECLARATION
 FOR COLLECTION OF HAZARDOUS, POTENTIALLY INFECTIVE
 SANITARY WASTE AND DISPOSAL THROUGH INCINERATION
 Functional unit: disposal of 1 000 kg of waste

Information about the product
 This declaration shows the emissions of greenhouse gases, expressed as CO₂-equivalents. It is based on verified results from a lifecycle assessment (LCA) performed as basis for an EPD[®], in accordance with ISO 14025.

Climate Declaration
 The table below shows the emissions of greenhouse gases, calculated as carbon dioxide equivalents (kg CO₂ eq.) for 1 000 kg of average sanitary waste. This LCA is cradle-to-gate, includes the product, construction/installation, use and end-of-life stages.

Product type	Greenhouse gases	TOTAL
WALL TILE	14.4 kg CO ₂ eq.	14.4 kg CO ₂ eq.
FLOOR TILE	4.88 kg CO ₂ eq.	4.88 kg CO ₂ eq.

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EPD
CLIMATE DECLARATION FOR
 AQUAPLAST FILLERS / SPRICHTELMASSSE
 Functional unit: 1 kg of filler tile

The climate declaration shows the emissions of greenhouse gases, expressed as CO₂-equivalents. It is based on verified results from a lifecycle assessment (LCA) performed as basis for an EPD[®], in accordance with ISO 14025.

Information about the product
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Climate Declaration
 The table below shows the emissions of greenhouse gases, calculated as carbon dioxide equivalents (kg CO₂ eq.) for 1 kg of average filler tile. This LCA is cradle-to-gate, includes the product, construction/installation, use and end-of-life stages.

Product type	Greenhouse gases	TOTAL
WALL TILE	14.4 kg CO ₂ eq.	14.4 kg CO ₂ eq.
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Beissier

All climate declarations must have a corresponding multi-indicator EPD registered

Applications: Business case



- Business-to-Business (B2B) Communication
- Business-to-Consumer (B2C) Communication
- Substantiate claims and prevent greenwash
- Green Building & Sustainable Infrastructure
- Sustainable Procurement & Design
- ISO 14001 Environmental Management Systems
- Eco and Sustainable Design.

Rob and Jeff will outline in detail how EPDs are used

What an EPD is not



- Not a Type I ecolabel (indicating overall environmental preferability based on life cycle principles)
- EPD never certifies that a declared product is environmentally superior to alternatives.
- Judgement or comparison is left to the EPD user in the context of their project or use of the product
- **Within their product category**, rules that an EPD must comply with ensure that impacts of products can be compared on a fair and equitable basis.

How to read / use an EPD



Rob Rouwette

Director - start2see



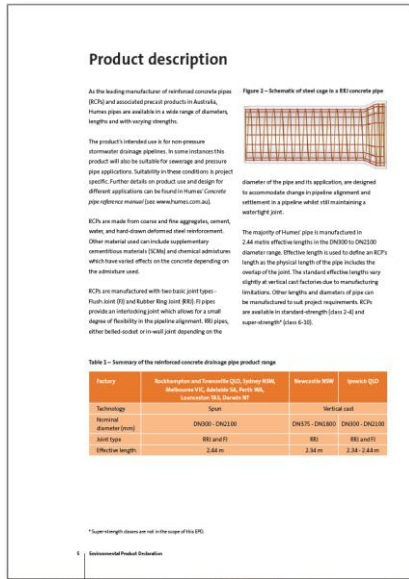
How to read an EPD – programme info



- **Programme operator**
 - E.g. Australasian EPD Programme

EPDs from different programmes may not be comparable!
- **Declaration owner**
 - Transparency about who is making the claim
 - Can be contacted with questions about the product
- **LCA consultant and verifier**
 - Transparency about who was involved in the LCA
- **Product Category Rules and Standards**
 - Easy to identify which standards the LCA and EPD comply with
 - **ISO 14025; EN 15804 (construction products); others**

How to read an EPD – scope



- **Product system description**

- Helps readers understand the product and how it is used

- **Product composition**

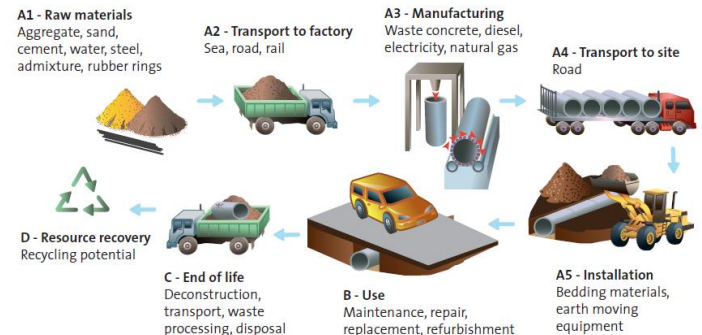
- Helps further identification

- **Life cycle stages**

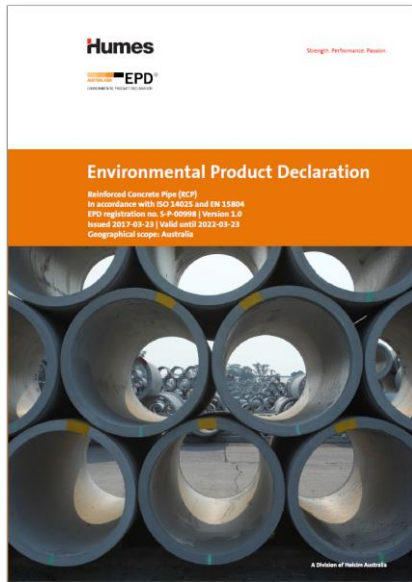
- Cradle-to-gate (A1-A3) [mandatory minimum]

- Cradle-to-gate with options (A1-A3, ...)

- Cradle-to-grave (A1-A3, A4, A5, B1-B5, B6, B7, C1-C4, D)

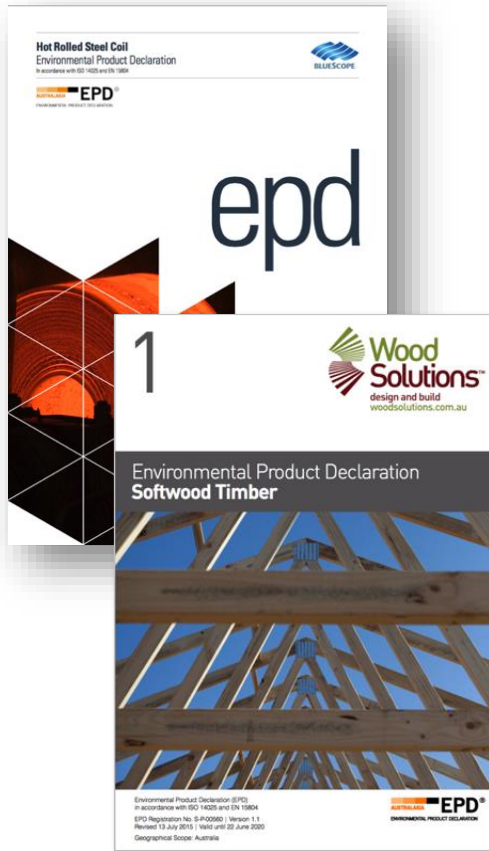


How to read an EPD – units



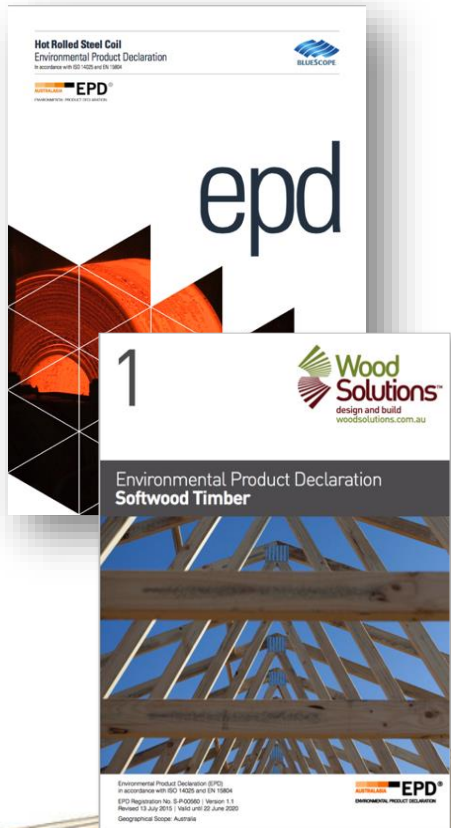
- Each EPD clearly states a **declared** or **functional unit**
- **Declared unit: 1 tonne** of reinforced concrete pipework with a given capacity (class, dimensions and length of pipes shall be specified).
 - Declared units relate to the material
 - Can be easily extrapolated to the required quantity
- **Functional unit: 1 equivalent metre** of reinforced pipework with a given capacity (dimensions and class shall be specified), **applied in a 'normal environment' in Australia, with a service life of 100 years**
 - Functional units relate to a product in its application
 - Not necessarily representative for other applications

Comparison between EPDs – declared vs. functional units



- When comparing results, always consider the functional unit and application of the product (including durability and operational aspects)
 - E.g. Comparing 1 tonne of steel with 1 tonne of timber is nonsensical, as the mass is not an indicator of functional performance
- **Remember:** Judgement or comparison is left to the EPD user in the context of their project or use of the product
 - Example: structural beam
- A declared unit can only be used for direct comparisons under very specific circumstances (when the rest of the life cycle is identical)
- **Unsure? Ask an LCA specialist to assist!**

Comparison between EPDs – [fictional] example of a structural beam



- **Functional unit:** A horizontal beam, 4.0m span, with minimum load carrying capacity of xx tonnes, for a period of 50 years
 - A steel H-beam that can fulfil these functions might require 440kg of structural steel, transported from local steel mill
 - A timber beam that fulfils these functions might require 100kg of softwood timber glulam transported from Europe, but have larger dimensions and require steel fixings
- Consider differences in assembly, maintenance, disposal



- **Other functions** that might be relevant: fire safety standards, dimensions, aesthetics, etc.

How to read an EPD – results of the assessment

Table 8 – Environmental indicators modules A1-A3 Dry-cast pipe, NSW per tonne of pipe

Environmental Indicator	Class 2 pipes	Class 3 pipes	Class 4 pipes
GWP [kg CO ₂ eq]	2.97E+02	3.34E+02	3.41E+02
ODP [kg CFC-11 eq]	2.65E-06	2.60E-06	2.68E-06
AP [kg SO ₂ eq]	7.28E-01	8.35E-01	8.53E-01
EP [kg PO ₄ ³⁻ eq]	1.29E-01	1.40E-01	1.44E-01
POCP [kg C ₂ H ₄ eq]	8.29E-02	1.07E-01	1.08E-01
ADPE [kg Sb eq]	3.48E-04	4.97E-04	4.97E-04
ADPF [MJ _{NCV}]	2.56E+03	2.99E+03	3.04E+03
Resource Use	Class 2 pipes	Class 3 pipes	Class 4 pipes
PERE [MJ _{NCV}]	8.45E+01	1.08E+02	1.09E+02
PERM [MJ _{NCV}]	4.16E-01	4.10E-01	4.05E-01
PERT [MJ _{NCV}]	8.49E+01	1.09E+02	1.09E+02
PENRE [MJ _{NCV}]	2.58E+03	3.02E+03	3.07E+03
PENRM [MJ _{NCV}]	6.73E+00	6.64E+00	6.56E+00
PENRT [MJ _{NCV}]	2.59E+03	3.03E+03	3.07E+03
SM [kg]	2.18E+01	3.16E+01	3.16E+01
RSF [MJ _{NCV}]	0	0	0
NRSF [MJ _{NCV}]	1.36E+00	1.97E+00	1.97E+00
FW [m ³]	1.85E+00	1.99E+00	2.00E+00
Waste Categories	Class 2 pipes	Class 3 pipes	Class 4 pipes
HW [kg]	4.96E-05	5.49E-05	5.44E-05
NHW [kg]	2.22E+01	3.09E+01	3.09E+01
RW [kg]	4.76E-03	5.65E-03	5.62E-03
Output flows	Class 2 pipes	Class 3 pipes	Class 4 pipes
CRU [kg]	0	0	0
MFR [kg]	2.53E+01	2.54E+01	2.54E+01
MER [kg]	1.87E-02	2.71E-02	2.71E-02
EE [MJ]	0	0	0

- Life cycle stages (A1-A3)
- Product
- Declared Unit
- Environmental indicators
- Indicator results
- Parameters
- Parameter results

How are EPDs used? Tools (ISCA calculator)

Table 8 – Environmental indicators modules A1-A3 Dry-cast pipe, NSW per tonne of pipe

Environmental Indicator	Class 2 pipes	Class 3 pipes	Class 4 pipes
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POCP [kg C ₂ H ₄ eq]	8.29E-02	1.07E-01	1.08E-01
ADPE [kg Sb eq]	3.48E-04	4.97E-04	4.97E-04
ADPF [MJ _{NCV}]	2.56E+03	2.99E+03	3.04E+03

Enter the impact assessment results, as published in the EPD for stages A1-A3 only, per tonne of pipe product in the table below

Environmental indicators

Global Warming Potential (GWP)

Ozone Depletion Potential (ODP)

Acidification Potential (AP)

Eutrophication Potential (EP)

Photochemical Ozone Creation Potential (POCP)

Abiotic Depletion Potential (Elements) (ADPE)

Abiotic Depletion Potential (Fossil Fuels) (ADPF)

Reinforced Concrete Pipe (RCP); S-P-00998

[product]; [EPD registration number]

[product]; [EPD registration number]

Units

3.41E+02		
2.68E-06		
8.53E-01		
1.44E-01		
1.08E-01		
4.97E-04		
3.04E+03		

kg CO₂ equivalent
 kg CFC-11 equivalent
 kg SO₂ equivalent
 kg PO₄³⁻ equivalent
 kg C₂H₄ equivalent
 kg Sb equivalent
 MJ net calorific value

EPD 1

Enter the combined value for stages A1-A3. Convert the EPD results to one tonne of pipes if necessary!

How are EPDs used? Tools (ISCA calculator)

Infrastructure Sustainability Materials Calculator
Materials Details - Base Case 1

Component 1: Asphalt RM concrete Precast concrete Binders Aggregates **Piping** Steel Aluminium Coatings Timber Glass Plastics Composites Cabling Chemicals EPD (other)

Pipe products (modelled using generic data)	Amount	Unit	Transport mode(s)	Distance(s)	Material related		Transport related	
					GHG (t CO2-e)	EnviroPoints v2.0 (Pt)	GHG (t CO2-e)	EnviroPoints v2.0 (Pt)
Select piping type		tonnes	Select transport mode		0.0	0.0	0.0	0.0
Select piping type		tonnes	Select transport mode		0.0	0.0	0.0	0.0
Select piping type		tonnes	Select transport mode		0.0	0.0	0.0	0.0
Select piping type		tonnes	Select transport mode		0.0	0.0	0.0	0.0
Reinforced Concrete Pipe, Class 4; S-P-00998	1200	tonnes	Articulated Truck	50 km	409.2	3967.5	4.3	46.1
[product]; [EPD registration number]		tonnes	Select transport mode		0.0	0.0	0.0	0.0
[product]; [EPD registration number]		tonnes	Select transport mode		0.0	0.0	0.0	0.0

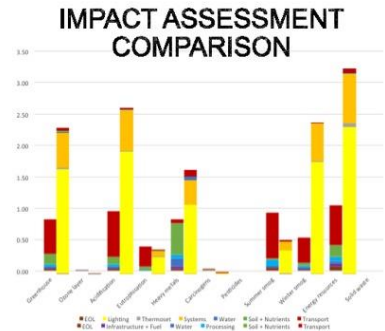
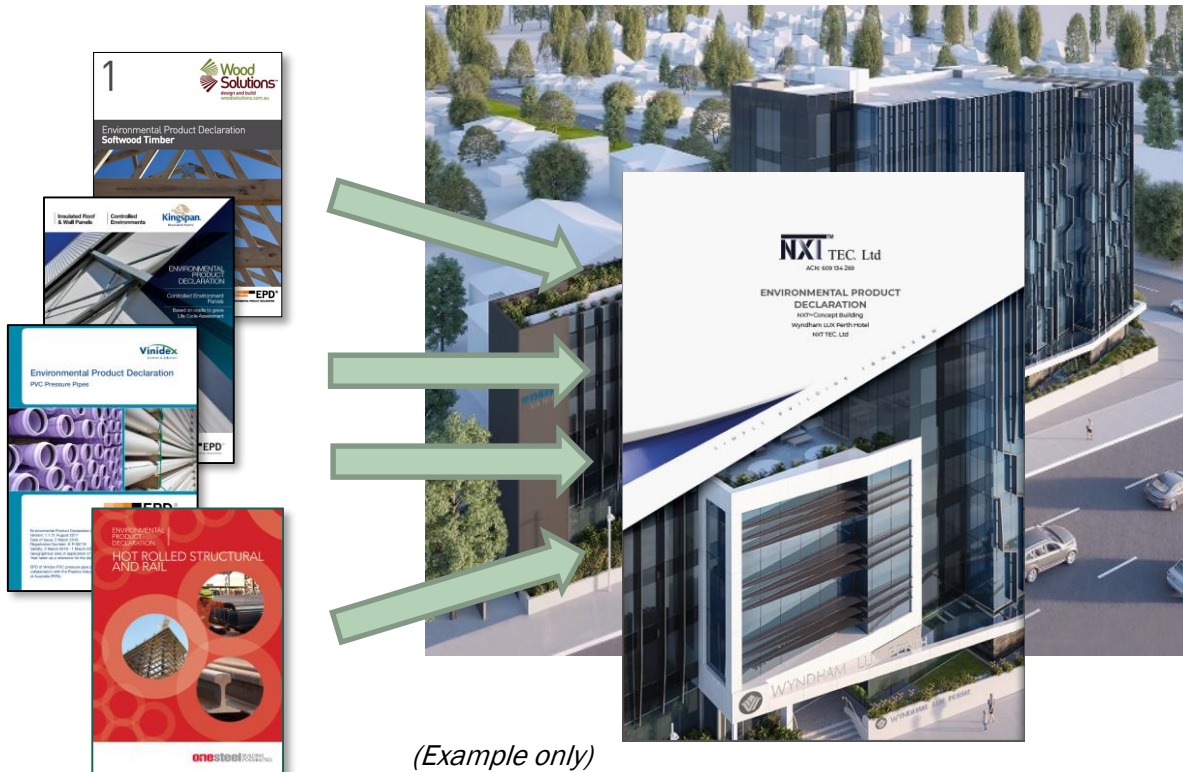
select product & quantity

add transport

= get results

How are EPDs used? Material -> building

- EPDs are perfect for passing information on through the supply chain
 - Allows others to make more sustainable design and purchasing decisions.



EN 15978
Assessment of
environmental
performance of
buildings

How to read an EPD – other information

- EPDs can be broader than just the LCA data
 - Opportunity to highlight other company & product related environmental information

e.g.

- Product quality and durability
- Instructions for proper use and maintenance of the product
- Environmental management systems, supply chain management, social responsibility initiatives, etc.

3. Additional environmental information

As part of the Mt. Gillibrand wind farm development application, numerous environmental studies have been undertaken in order to inform the environmental impact assessment of the project.

3.1 Biodiversity protection

The implementation of wind energy as an alternative to other traditional power generation options has evident benefits for the environment. However, the commissioning of this kind of facility must always be undertaken with great care to protect the biodiversity in the area. Several iterations were made to the proposed layout after detailed surveys for the project were undertaken to avoid, or minimise impacts on high quality native vegetation and significant fauna habitat, along with an overall reduction in project size to reduce the impact on native vegetation.

FAUNA MANAGEMENT PLAN

The Mt. Gillibrand wind farm site contains patches of native grassland which support native fauna. The Striped Legless Lizard (*Delma impar*) and the Golden Suni Moth are the only threatened fauna species listed under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) which have been located on the wind farm site.

The area in which the Striped Legless Lizard has been sighted has been excluded from development. A salvage protocol was developed, to be applied in the event of identifying any specimen within the development area during the construction phase. However, no Striped Legless Lizards were sighted during construction so the exclusion area was successful. During construction, native fauna is at risk of falling into and becoming trapped in open cable trenches or turbine footings, so procedures to minimise this risk were followed. These

procedures were effective, and no native fauna or livestock became trapped in excavations.

Impacts on native fauna during the operational phase are primarily associated with potential impacts on birds and bats arising from blade strike. A Bat and Avifauna Management Plan has been developed that outlines the inspection and management measures that will be implemented on the site during the first two years of operation to ensure the wind farm does not have a significant impact on birds or bats.

In addition to the native fauna protective measures, a pest animal management plan has also been implemented, seeking to ensure that the construction and operation of the Mt. Gillibrand wind farm does not lead to an increase in European Rabbit and Red Fox populations on the site. This plan sets out a series of control and monitoring measures focused on ensuring that there is no increase in habitat or food supplies during construction and operation of the wind farm, preventing the number of pest animal species increasing.

VEGETATION MANAGEMENT PLAN

The wind farm site is located in the Victorian Volcanic Plain bioregion. The field assessment recorded fifty-nine flora species (37 indigenous and 22 non-indigenous) within the study area.

Adverse impacts on native vegetation were avoided where possible, particularly removal of vegetation. Where impacts cannot be avoided, impacts have been minimised through responsive planning and design with input from relevant experts. Finally, appropriate offsets need to be identified to compensate for native vegetation removal. The proposed future layout for the project has been designed to meet the avoid and minimise principles of Victoria's Biodiversity Assessment Guidelines.

Environmental product declaration: Electricity generated at Mt Gillibrand 102 MW windfarm

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Why and how companies use EPDs



Jeff Vickers

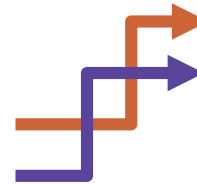
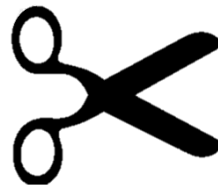
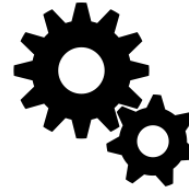
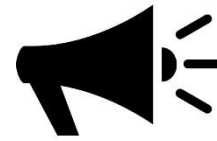
*Technical Director
thinkstep Australasia*



thinkstep
Australasia



9 reasons





Competitive edge in tenders

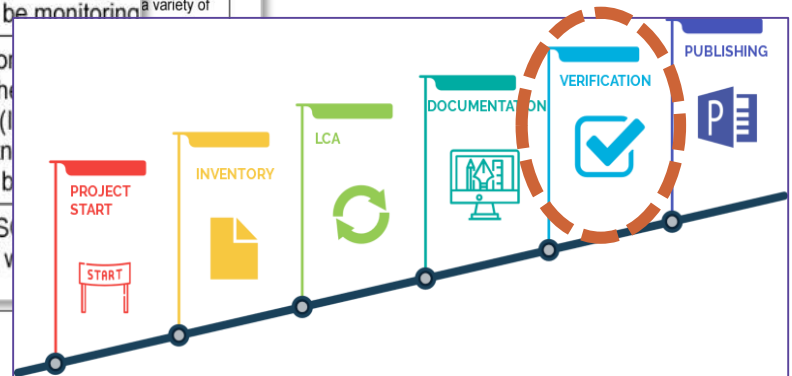


Suppliers Questionnaire – Lighting

The following questionnaire has been developed to identify performance in key sustainability areas related to the manufacture and supply of Electronic and Electrical lighting products. The questionnaire will be used initially to capture sustainability performance and then re-submitted at regular intervals to track how sustainability performance has changed, ensuring that best practice outcomes are constantly being pursued and maintained.

Sustainability Practices		
1.	Does your company set targets for energy use / consumption reduction / efficiency? (Yes/No - if yes please provide details)	The company's current electrical consumption is only 0.568TJ per annum, the reporting level required by the National Greenhouse and Energy Reporting Act 2007 is 100TJ. The company is nonetheless implementing an energy usage reduction program involving the installation of energy saving light bulbs, LED lighting and dimming techniques. We will be monitoring a variety of
2.	Has your company carried out any Life Cycle Analysis (LCA) on your product(s) and made this information available through Environmental Product Declarations (EPDs) or other methods - What percentage of your products have an EPD?	Yes. We have had an LCA completed to allow us to quickly include other results are now with the IBU (International PE International who we partner with). They are included for review by
3.	Has your company developed and implemented any waste minimisation initiatives? (Eg. Reduced product packaging)	The company is certified to ISO 14001 and has reduced by 50%. In addition we use reusable or bio degradable.
5.	Does your company supply any electronic or electrical product(s) containing potentially hazardous chemicals as outlined in the EU Restriction of Hazardous Substances Directive (RoHS) 1 (Yes/No - if yes please provide details)	No, we are RoHS compliant
6.	Does your company set targets for water use / consumption reduction / efficiency? (Yes/No - if yes please provide details)	The only water used is that in washrooms and the kitchen. Current usage is only 1,418 ML per annum against a reporting level of 100ML as required by the National Greenhouse and Energy Reporting Act 2007. We will however be replacing the hot water service with a more efficient system later this year.

Comprehensive
Credible





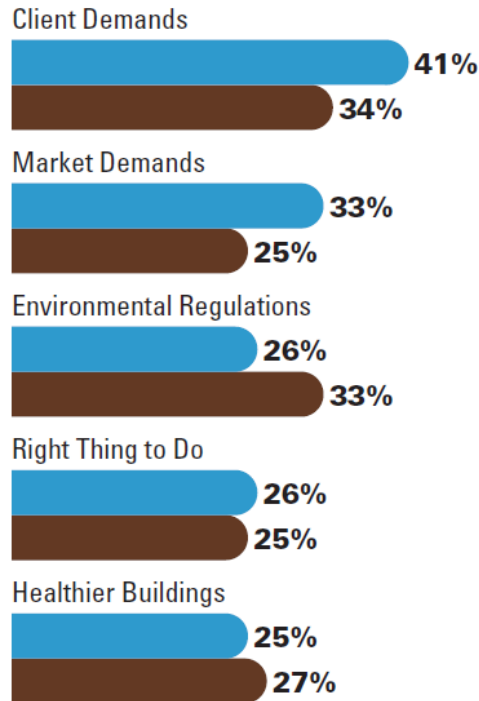
Become a preferred supplier



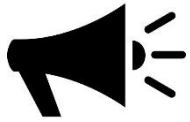
Top Triggers Driving Future Green Building Activity in Australia

Dodge Data & Analytics, 2018

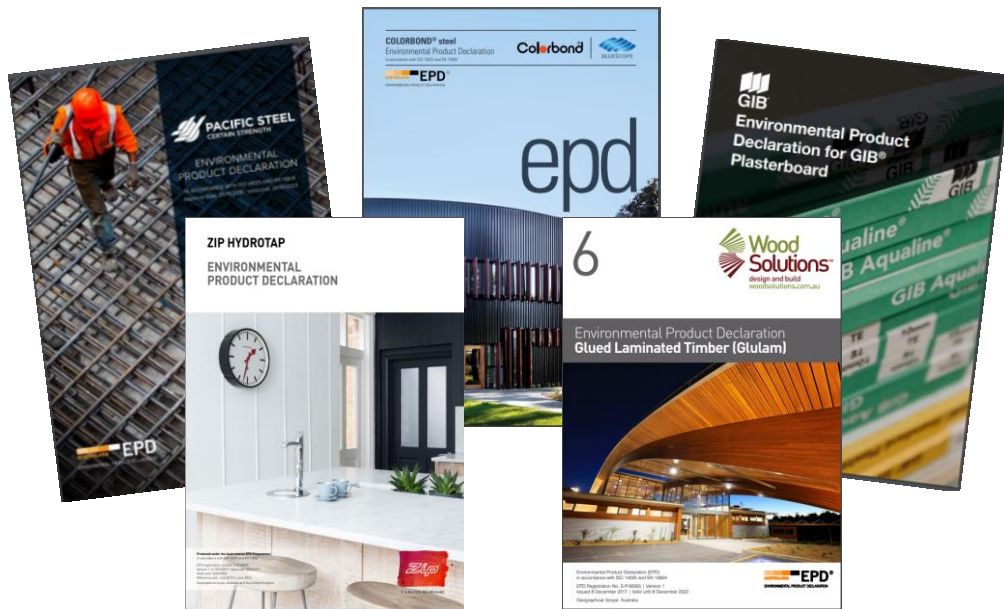
- Australia
- Global Average



Your customers can **earn points** within green building rating schemes



Marketing



AUSTRALASIA EPD[®]
ENVIRONMENTAL PRODUCT DECLARATION

<https://westcoastclimateforum.com/cfpt/concrete/strategy1>

EPD "Nutrition" Label

Your Building Product

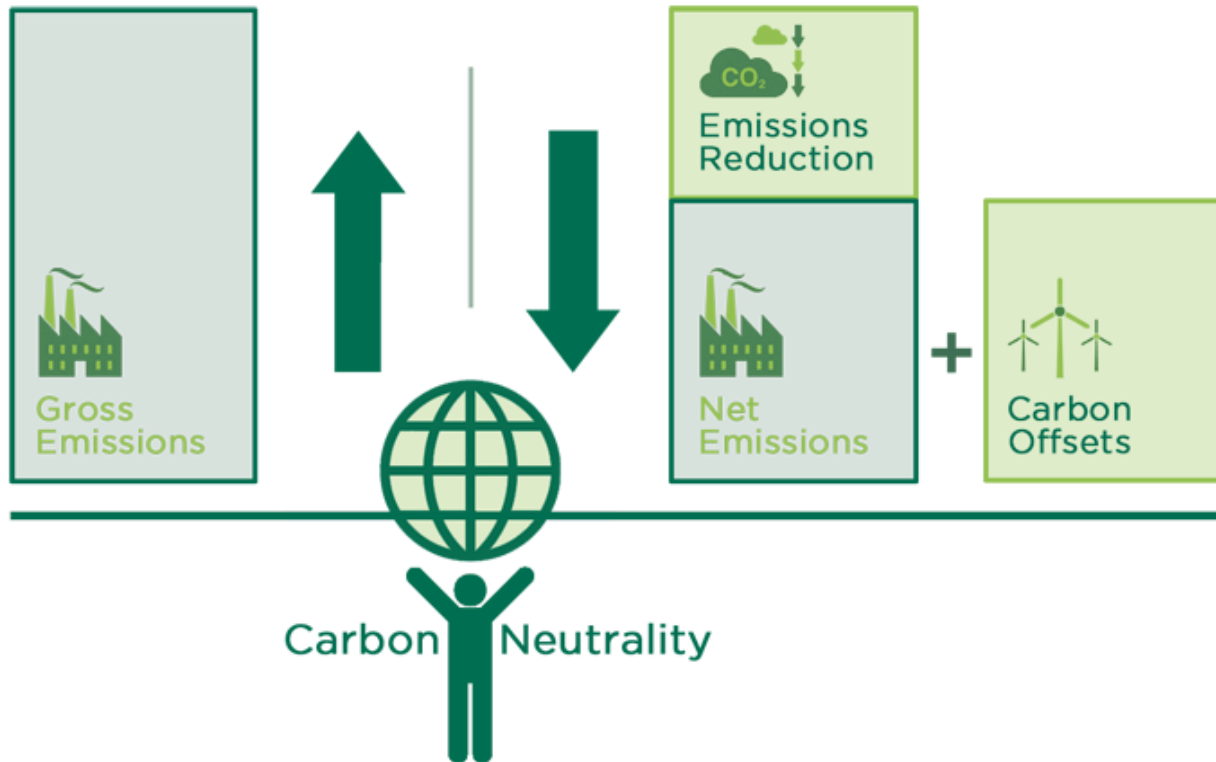
Amount per Unit	
LCA IMACT MEASURES	TOTAL
Primary Energy (MJ)	12.4
Global Warming Potential (kg CO ₂ eq)	0.96
Ozone Depletion (kg CFC-11 eq)	1.80E-08
Acidification Potential (mol H ⁺ eq)	0.93
Eutrophication Potential (kg N eq)	6.43E-04
Photo-Oxidant Creation Potential (kg O ₃ eq)	0.121

Your Product's Ingredients: Listed Here

EPD "nutrition label" for concrete mixes



Fast track carbon neutrality



Source: <http://marketplace.carbonmarketinstitute.org/participate/>



Environmental management



Life cycle thinking





Supply chain management

Rana Plaza garment factory collapse - Bangladesh 2013



1134 deaths



SDG Target 8.7: *Take immediate and effective measures to eradicate forced labour, end modern slavery and human trafficking...*

Modern Slavery Bill 2018 Australia, NSW



Conflict minerals - Electronics supply chain



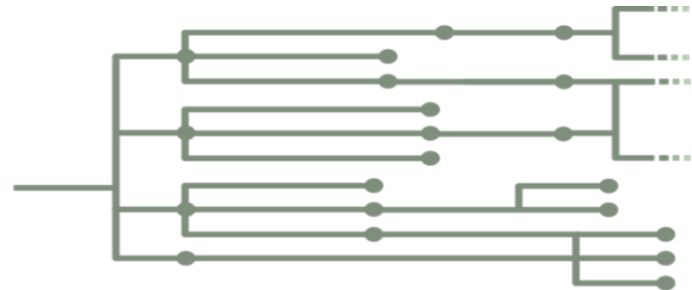
Consumer



Company



Suppliers



Subcontractor

Input Suppliers

Raw materials

Source: Modern Slavery image <https://www.personneltoday.com/wp-content/uploads/sites/8/2015/08/modern-slavery-act.jpg>

Electronics image https://www.sourcetoday.com/sites/sourcetoday.com/files/styles/article_featured_retina/public/uploads/2012/09/conflictminerals_1.jpg?itok=KRr1xZn-

Bangladesh factory <https://cleanclothes.org/news/2013/04/24/labels-primark-and-mango-found-after-factory-collapse-bangladesh>



Product and process **innovation**



*“We see LCA as a tool for continuous **improvement** and innovation and a way of improving environmental performance while avoiding burden shifting and unintended consequences.”*
– David Trubridge



Reduce cost

LCA

“Resource use and its associated wastes — such as inefficient consumption of energy, water, or raw materials — represent real costs to suppliers that trickle down the value chain”

— **Deloitte:** Enhancing the value of life cycle assessment

EPD

Streamlined Standardised



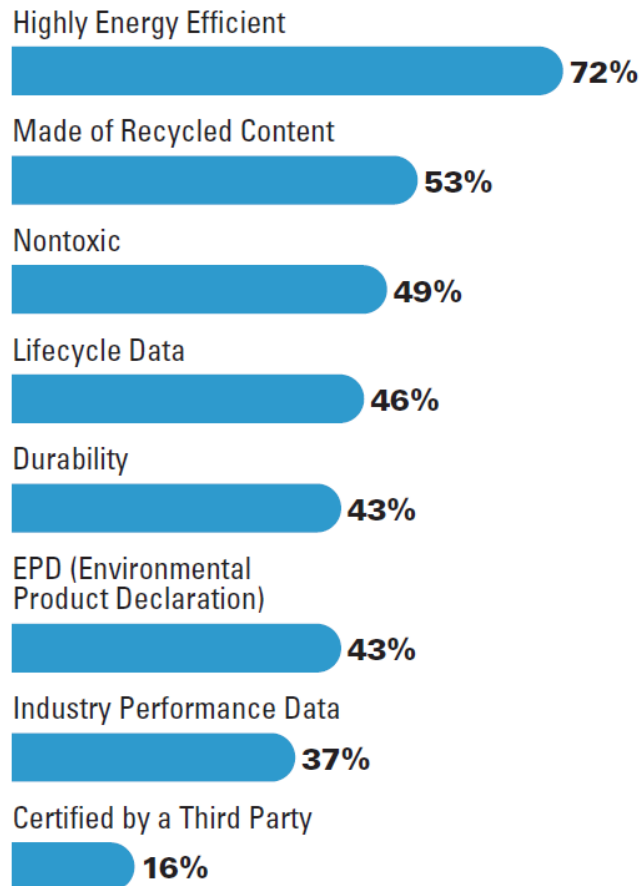
- Developers
- Architects
- Procurements



Benchmarking

Criteria Used to Evaluate If a Product Is Green (According to Global Respondents)

Dodge Data & Analytics, 2018



Provide a platform for **comparison**

Verified environmental credentials



QUESTIONS?



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EPD Owners: Internal uses



“Our EPDs are a key differentiator and enable us to set the benchmark for sustainable tissue manufacturing in Australia and New Zealand in a way that is credible, transparent and comparable.”

Jane Mansfield, Sustainability Manager, Asaleo Care



“EPDs provide transparent and clear information to help us identify products that will reduce the environmental impact of our developments across their entire life cycle.”

Paolo Bevilacqua, General Manager, Sustainability – Frasers Property Australia

EPD Owners: External uses



“EPDs give stakeholders the confidence that we are telling the truth about the impact of our manufacturing processes.”

Mark Heathcote, General Manager, Plastics Industry Pipe Association of Australia (PIPA)



“In a crowded market, we need to be able to differentiate our products and brands from our competitors and clearly articulate why we are the best choice for our customers and consumers.”

Jane Mansfield, Quality, Environment and Sustainability Manager, Asaleo Care