



Iplex Pipelines Australia Pty Limited

PRODUCT APPRAISAL REPORT 1612 Issue 2

PVC-O Series 2 Pressure Pipe

AS/NZS 4441:2017 – Oriented PVC (PVC-O) pipes for pressure applications

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Peer Reviewers

Name/Title	Organisation	Date
Product Appraisal Technical Advisory Group	WSAA	24 July 2017
Expert Panel	WSAA	24 July 2017
Alan Whittle, WSAA Consultant	WSAA	5 September 2017
Carl Radford, Product Appraisal Manager	WSAA	6 September 2017
Peter Pittard, WSAA Consultant	WSAA	19 October 2022
Carl Radford, Product Appraisal Manager	WSAA	20 October 2022

Overview of WSAA

The Water Services Association of Australia (WSAA) is the peak industry body representing the urban water industry. Our members provide water and sewerage services to over 20 million customers in Australia and New Zealand and many of Australia's largest industrial and commercial enterprises.

Based around our vision of 'customer driven, enriching life', WSAA facilitates collaboration, knowledge sharing, networking and cooperation within the urban water industry. We are proud of the collegiate attitude of our members which has led to industry-wide approaches to national water issues.

WSAA can demonstrate success in the standardisation of industry performance monitoring and benchmarking, as well as many research outcomes of national significance. The WSAA Executive retains strong links with policy makers and legislative bodies and their influencers, to monitor emerging issues of importance to the urban water industry.

WSAA was formed in 1995 as a non-profit organisation to foster the exchange of information between industry, government and the community, and to promote sustainable water resource management.

The urban water industry is committed to anchoring its services to customers' values, and to enrich communities where water services have broad economic, environmental and social values. In line with this our main activities focus on four areas:

1. influencing national and state policies on the provision of urban water services and sustainable water resource management
2. promoting debate on environmentally sustainable development and management of water resources and the community health requirements of public water supplies
3. improving industry performance and establishing benchmarks and industry leading practices for water service processes; and
4. fostering the exchange of information on education, training, research, water and wastewater management and treatment and other matters of common interest.

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1 EXECUTIVE SUMMARY

Iplex Pipelines Australia Pty Limited is a long-established Australian manufacturer and supplier of pipeline products to the water and gas industries. Fletcher Building Industries Ltd acquired the business in 2011.

This Appraisal is for a range of Apollo® PVC-O MRS450 PN16 Series 2 DIOD pipes in sizes DN 100 to DN 300 manufactured in conformance with AS/NZS 4441:2017 *Oriented PVC (PVC-O) pipes for pressure applications* for use in water supply and sewer applications.

This Issue 2 is a replacement for the previous version of the appraisal which had reached its 5-year expiry date.

The effective length of the pipe is six metres with socket and spigot ends for elastomeric seal jointing. The joints have 1° maximum angular deflection.

AS/NZS 4441 classifies PVC-O pipes based on the Minimum Required Strength (MRS) of the material. Apollo PN16 pipes are manufactured from PVC-O MRS450. PN12.5 PVC-O pipes are also manufactured by Iplex however have not been included in the Scope of this Appraisal.

Apollo PN16 PVC-O pipes are manufactured to ensure a minimum stiffness of SN10.

Apollo PVC-O pipe is available in solid blue for drinking water supply (ApolloBLUE), solid purple for non-drinking water supply (ApolloLILAC) and solid cream for pressure sewer applications (ApolloCREAM).

Iplex Pipelines Australia Pty Limited holds an ISO 9001:2015 Quality Management System Licence.

The PVC-O pipes have ISO Type 5 StandardsMark Product Certification to AS/NZS 4441:2017 *Oriented PVC (PVC-O) pipes for pressure applications* for its Chipping Norton manufacturing site.

This Appraisal has determined that Iplex Apollo PVC-O Series 2 pipes, as detailed in this report, meet the requirements of WSA PS 210 *Polyvinylchloride, Oriented (PVC-O) Pressure Pipes for Pressure Applications – Drinking Water, Non-Drinking Water Supply and Sewerage* and are considered as ‘fit-for-purpose’.

1.1 Report Recommendation

It is recommended that WSAA members, subject to any specific requirements of the member, accept or authorise the Iplex Apollo PN16 range of PVC-O pressure pipes, as detailed in this report, for use in water supply and sewerage applications provided the pipeline design, installation, acceptance testing and commissioning are in accordance with relevant WSAA Codes and the manufacturer’s requirements.

2 THE APPLICANT

The Applicant is Iplex Pipelines Australia Pty Limited.

2.1 The Manufacturer and Supplier

Iplex Pipelines Australia Pty Limited is a long-established Australian manufacturer and supplier of pipeline products to the water and gas industries. Iplex offers pipeline products for applications including water, sewerage, plumbing, irrigation, mining slurry, gas, and telecommunications and electrical conduits manufactured from a diverse range of polymers and metals including PVC, PE, PP, GRP and DI.

Iplex is a wholly owned business unit of Fletcher Building Industries Limited. The company has manufacturing operations in Innisfail, Townsville, Brisbane, Sydney, Albury, and Adelaide with sales and distribution centres located in every state of Australia.

The PVC-O pipe range is manufactured at Iplex’s Chipping Norton (Sydney NSW) site.

3 THE PRODUCT

This Appraisal is for a range of Apollo PVC-O MRS450 PN16 Series 2 DIOD pipes in sizes DN 100 to DN 300 manufactured in conformance with AS/NZS 4441:2017 *Oriented PVC (PVC-O) pipes for pressure applications* for use in water supply and sewer applications.

PVC-O is manufactured by controlled circumferential and axial orientation of the randomly arranged long chain polymer molecules in the PVC material to achieve improved mechanical properties over PVC-U and PVC-M. Orientation of the molecules creates a laminar structure in the material of the pipe wall. This structure provides the ability to withstand brittle failure emanating from scratches at the surface of the pipe wall and is highly resistant to notches with no risk of long-line rapid crack propagation. Orientation results in significantly better fatigue resistance, impact resistance and hoop strength.

The improvement in hoop strength allows for reduced pipe wall thickness and a larger bore for the same nominal diameter and pressure class, thus providing more than 10% improvement in hydraulic performance compared to PVC-M pipe. Designers should be aware of the limitations of thin wall pipes and seek further advice from AS/NZS 2566 or Iplex where required.

The effective length of the pipe is six metres with socket and spigot ends for elastomeric seal jointing. The seals are factory fitted and are not to be removed from the pipe. The joints have 1° maximum angular deflection.

AS/NZS 4441 classifies PVC-O pipes based on the Minimum Required Strength (MRS) of the material. Apollo PN16 pipes are manufactured from PVC-O MRS450. PN12.5 MRS 355 PVC-O pipes are also manufactured by Iplex however have not been included in the Scope of this Appraisal.

Apollo PN16 PVC-O pipes are manufactured to ensure a minimum stiffness of SN10. See 6.2.5 for additional information.

TABLE 1 IPLEX APOLLO PVC-O PN16 PIPE RANGE

PN	MRS	DN:	100	150	200	225	250	300
		Pipe OD: mm	122	177	232	259	286	345
16	450	Mean wall thickness: mm	3.6	5.3	6.9	7.7	8.5	10.2

Apollo PVC-O pipe is available in solid blue for drinking water supply (ApolloBLUE), solid purple for non-drinking water supply (ApolloLILAC) and solid cream for pressure sewer applications (ApolloCREAM).

PVC-O Series 2 pipes are compatible with ductile iron fittings complying with AS/NZS 2280. See 12.4 for additional information.

Type F tapping bands and repair couplings, where a full circle design and positive stop is incorporated, are suitable for use with PVC-O pipes. Pre-tapped connectors are preferred for new property service installations.

4 SCOPE OF THE APPRAISAL

This product appraisal applies to Iplex Apollo PVC-O MRS450 PN16 Series 2 DIOD pipes in sizes DN 100 to DN 300, as detailed in Section 3 and included in the ISO Type 5 StandardsMark Product Certification schedules included in Appendix B.

5 APPRAISAL CRITERIA

5.1 Quality Assurance Requirements

The WSAA Product Appraisal Technical Advisory Group accepts PVC-O pipes for pressure applications manufactured in compliance with AS/NZS 4441:2017 *Oriented PVC (PVC-O) pipes for pressure applications* and duly certified by means of an ISO Type 5 product certification scheme undertaken by a JAS-ANZ accredited Conformity Assessment Body (CAB) or by an international accreditation system recognised by JAS-ANZ.

The manufacturer is generally expected to have a production management and control system that has been duly accredited in accordance with AS/NZS ISO 9001 as a prerequisite to undergoing a product certification audit.

The ISO Type 5 Product Certification Scheme shall meet the criteria described in WSA TN-08

5.2 Performance Requirements

Iplex Apollo PVC-O pipe has been appraised for compliance with the requirements of AS/NZS 4441:2017 *Oriented PVC (PVC-O) pipes for pressure applications*.

The following Product Specification is relevant to this application:

WSA PS 210 Polyvinylchloride, Oriented (PVC-O) Pressure Pipes for Pressure Applications – Drinking Water, Non-Drinking Water Supply and Sewerage

A copy of the Product Specification is available at the following link:

<https://www.wsaa.asn.au/shop/product/60961>

6 COMPLIANCE WITH APPRAISAL CRITERIA

6.1 Compliance with Quality Assurance Requirements

Iplex has submitted the following quality certificates:

- ISO 9001:2015 Certificate of Registration No. QEC0037 issued to Iplex Pipelines Australia Pty Limited by SAI Global.
- AS/NZS 4441:2017 StandardsMark ISO Type 5 Product Certification Licence No. SMK20188 issued to Iplex Pipelines Australia Pty Limited by SAI Global.
- AS/NZS 4441:2017 Best Environmental Practice PVC Certificate No. BEP-PVC 0037 issued to Iplex Pipelines Australia Pty Limited) by ApprovalMark International.

Copies of the Quality Assurance and Product Certification licences have been included in Appendix B and are also available from WSAA.

6.2 Compliance with Performance Requirements

6.2.1 Type testing

AS/NZS 4441:2017 Appendix ZA sets out a minimum sampling and testing frequency plan for a manufacturer to demonstrate compliance to the Standard. Required type tests are as follows:

Material Property

- Composition, K Value and Vicat softening point
- Vinyl chloride monomer
- MRS evaluation

Performance

- Opacity
- Resistance to hydrostatic pressure
- Resistance to hydrostatic pressure with integral socket
- Tensile strength

- Leak-tightness of assemblies – Short-term pressure test
- Leak-tightness of assemblies – Negative pressure test
- Leak-tightness of assemblies – Long-term pressure test

NATA test reports were submitted for pipe sizes up to DN 300 for the previous appraisal report and are not required to be repeated unless there is a material formulation or process change. Iplex has advised there have been no changes.

6.2.2 Elastomeric seals

Elastomeric seals are provided by Gulf Rubber (SBR 2612S) or Hultec Costa Rica (Turner EPDM HT5567-3) and comply with AS 1646 / EN 681.1.

The seals supplied by Gulf and Hultec are covered by ISO Type Product Certification. Copies of the licences are held on file by WSAA.

6.2.3 Suitability for contact with drinking water

Iplex has submitted a copy of test report No. AA143376 undertaken by Eurofins ams (NATA Accreditation No 15773) on a DN 100 PN16 ApolloBLUE pipe to demonstrate compliance with AS/NZS 4020:2018.

Copies of AS/NZS 4020:2018 test reports are held on file by WSAA for the Gulf SBR 2612S and Hultec EPDM HT5567-3 compounds utilised in the Iplex Apollo seals.

6.2.4 Colour

Apollo PVC-O pipe is available in solid blue for drinking water supply (ApolloBLUE), solid purple for non-drinking water supply (ApolloLILAC) and solid cream for pressure sewer applications (ApolloCREAM).

This meets the requirements of AS/NZS 4441:2017 and WSAA codes.

6.2.5 Pipe stiffness

Apollo PN16 PVC-O pipes are manufactured to ensure a minimum stiffness of SN10.

AS/NZS 4441 nominates the Young's Modulus of PVC-O MRS 450 as 4×10^6 kN/m² however the actual modulus is dependent on the technology of the manufacturing process and the stretch ratios applied. Based on ongoing pipe stiffness testing by Iplex, the Young's Modulus of Iplex PVC-O MRS450 material has been determined as minimum 4.255×10^6 kN/m², which provides for a calculated initial ring stiffness of SN10 based on the mean wall thickness of the pipes nominated in Table 1. AS/NZS 4441 nominates minimum wall thicknesses only.

Iplex advises that the nominated mean wall thicknesses are monitored for compliance as part of their quality control procedures.

Iplex has provided copies of test reports undertaken in accordance with ISO 9969 for each size pipe to demonstrate compliance with minimum initial stiffness of SN10 for pipes with mean wall thicknesses nominated in Table 1.

7 FITTING INSTRUCTIONS, TRAINING AND INSTALLATION

PVC-O pressure pipe has been a commonly used product in the urban water industry for many years. Iplex does not provide any specific training for pipe layers, however there are a number of Registered Training Organisations (RTO's) conducting suitable training courses based on AS/NZS 2032 and AS/NZS 2566.2.

PIPA has nominated the Flexitec course for PVC pipe handling and installation which is delivered nationally either directly by LeHunt and Associates or in conjunction with Partec (QLD, NT, NSW), Holmesglen TAFE (VIC), Chisholm TAFE (VIC) and Regency TAFE (SA). The Civil Contractors Federation have their own state-based RTO's and some of them conduct suitable PVC pipe training courses as well.

Iplex recommends that suitable anchorage is provided at all tees, valves, tapers, changes in direction and termination points except where restrained elastomeric seal joint fittings are utilised.

Further details are included in the Iplex Pipelines *Engineering Design and Installation Guide – ApolloBLUE™ Premium Bi-axially oriented PVC (PVC-O) Pressure Pipes* available at the following link: <https://www.iplex.com.au/products/pvc-pressure-system/pvc-o/>

8 PRODUCT MARKING

Iplex PVC-O pipes are marked as follows:

- Manufacturer's name: Iplex Pipelines
- Pipe material, classification and series: e.g., S2 PVC-O 450
- Nominal size x wall thickness: e.g., 100x3.4
- Pressure classification: e.g., PN16
- Date of manufacture: e.g., 220901 (1st September 2022)
- Time of manufacture: e.g., 15:43
- Place of manufacture code: e.g., 2C (Chipping Norton)
- Standard number: AS/NZS 4441
- Licence number: SMKP20188
- Best Environmental Practice: BEP-PVC
- Special application information e.g., RECYCLED WATER - DO NOT DRINK

Example:

IPLEX PIPELINES PDRA16100 S2 PVC-O 450 100x3.4 PN16 160901 15.43 2C AS/NZS4441
I>>>>I SMKP20188 BEP-PVC

Each pipe also has a witness mark on the spigot end to indicate insertion depth.

The marking meets the requirements of AS/NZS 4441.

9 PACKAGING AND TRANSPORTATION

The packaging and transport of Apollo PVC-O pipe is similar to that adopted for other Iplex pressure PVC (i.e., PVC-U and PVC-M) pipes and is in accordance with AS/NZS 2032. Full packs of pipes use timber bearers and are held in place by side supports and metal strapping. The strapping is fixed to the timbers to restrict movement during transport.

10 PRODUCT WARRANTY

The products are covered by the normal commercial and legal requirements of the *Competition and Consumer Act 2010 (Cth)*, which covers manufacture to the relevant standard and details of Iplex's warranty is included in their terms and conditions of sale.

11 WATER AGENCY EXPERIENCE WITH THE PRODUCT OR FIELD-TESTING REPORT

Apollo PVC-O pipe has been used by the water industry since the early 2000's with agency approvals dating back to 2005.

12 DISCUSSION

PVC-O pipes were first introduced in Australia in 1986 and have been in common use since around 2005.

The 2008 publication of AS/NZS 4441 stated "In order to take full advantage of the economics and performance of PVC-O pipes, it is essential that application designers are cognisant of the limitations of thin-walled pipes and information is presented in this Standard on lateral stiffness, negative pressure resistance and aspects of joint performance. Users should refer to AS/NZS 2566 for further advice."

12.1 Under Pressure Cut-in Connections

Only Type F flanged off-take clamps complying with AS 4181:2013 *Repair and off-take clamps for water industry purposes* incorporating a full circle design and positive stop, are recommended for use with PVC-O pipes.

12.2 Tapping

It is recommended that property services are installed at the time of main laying, utilising pre-tapped connectors wherever possible. Where tapping bands are utilised, only Type F bands complying with AS/NZS 4793:2020, incorporating a full circle design and positive stop, are recommended for use with PVC-O pipes.

Specific method(s) shall be in accordance with the requirements of the Water Agency.

Conventional drilling and tapping equipment used for PVC-U can also be used on PVC-O pipes. Fine toothed “shell cutters” or hole saws are recommended to avoid spalling of the internal pipe surface. Speed bore or spayed bits should not be used.

12.3 Pipeline Repairs

Pipeline repairs can be carried out using standard long barrel mechanical couplings.

12.4 Pipe Fittings

Conventional ductile iron socketed fittings complying with AS/NZS 2280 are suitable for use with PVC-O Series 2 pressure pipes.

AS/NZS 2280 nominates the minimum depth of entry beyond the elastomeric seal for socketed fittings intended for use with plastic pipes. The minimum entry depths are proposed to accommodate axial movement of the pipe due to the combined effects of thermal contraction, Poisson contraction together with an allowance for joint angular deflection, spigot chamfer length, spigot end squareness and soil friction effects.

See WSAA TN2 at <https://www.wsaa.asn.au/shop/category/5> for further information and Table 7 below for the minimum depth of entry beyond the elastomeric seal for fittings sockets.

TABLE 2: MINIMUM DEPTH OF ENTRY FOR DI FITTINGS SOCKETS

DN	Minimum depth of entry beyond elastomeric seal (mm)
100	42
150	50
200	58
225	62
250	66
300	71

13 OUTCOMES OF EXPERT PANEL PRODUCT REVIEW

There are no outstanding issues.

14 FUTURE WORKS

No future works have been identified.

15 DISCLAIMER

This Product Appraisal Report (Report) is issued by the Water Services Association of Australia Limited on the understanding that:

This Report applies to the product(s) as submitted. Any changes to the product(s) either minor or major shall void this Report.

To maintain the recommendations of this Report any such changes shall be detailed and notified to the Product Appraisal Manager for consideration and review of the Report and appropriate action. Appraisals and their recommendations will be the subject of continuous review dependent upon the satisfactory performance of products.

WSAA reserves the right to undertake random audits of product manufacture and installation. Where products fail to maintain appraised performance requirements the appraisal and its recommendations may be modified and reissued. Appraisal reports will be reviewed and reissued at regular intervals not exceeding five (5) years.

The following information explains a number of very important limits on your ability to rely on the information in this Report. Please read it carefully and take it into account when considering the contents of this Report.

Any enquiries regarding this report should be directed to the Program Manager, Carl Radford, Phone: 03 8605 7601 email carl.radford@wsaa.asn.au.

15.1 Issue of Report

This Report has been published and/or prepared by the Water Services Association of Australia Limited and nominated Project Manager and peer group of technical specialists (the Publishers).

The Report has been prepared for use within Australia only by technical specialists that have expertise in the function of products such as those appraised in the Report (the Recipients).

By accepting this Report, the Recipient acknowledges and represents to the Publisher(s) and to each person involved in the preparation of the Report that the Recipient has understood and accepted the terms of this Disclaimer.

15.2 Limits on Reliance on Information and Recommendations

15.2.1 Disclaimer of liability

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This Report does not contain all information that a person might require for the purposes of assessing any product discussed or appraised within it. The product appraisal criteria used in preparing this Report may not address all relevant aspects of the Product.

Recipients should seek independent evidence of any matter which is material to their decisions in connection with an assessment of the Product and consult their own advisers for any technical information required. Any decision to use the Product should take into account the reliability of that independent evidence obtained by the Recipient regarding the Product.

Recipients should also independently verify and assess the appropriateness of any recommendation in the Report, especially given that any recommendation will not take into account a Recipient's particular needs or circumstances.

WSAA has not evaluated the extent of the product liability and professional indemnity insurance that the provider of the product maintains. Recipients should ensure that they evaluate the allocation of liability for product defects and any professional advice obtained in relation to the product or its specification including the requirements for product liability and professional indemnity insurance.

15.3 No Updating

Neither the Publisher(s) nor any person involved in the preparation of this Report [has] [have] any obligation to notify you of any change in the information contained in this Report or of any new information concerning the Publisher(s) or the Product or any other matter.

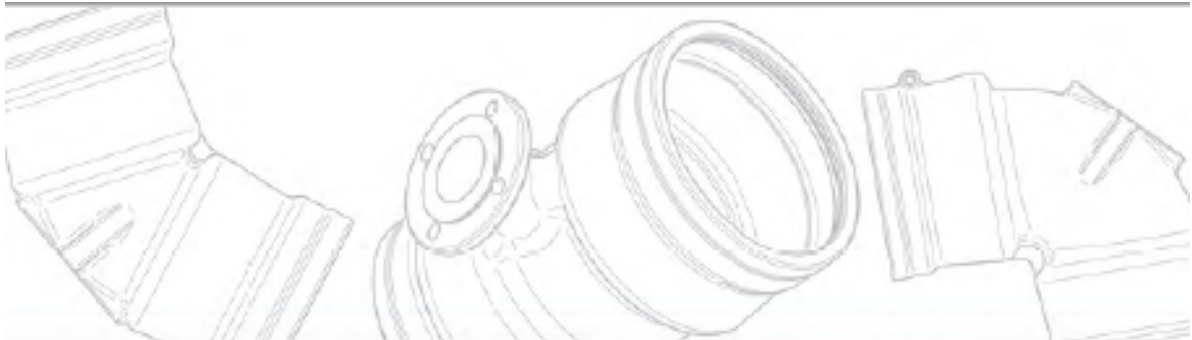
15.4 No Warranty

The Publisher(s) do[es] not, in any way, warrant that steps have been taken to verify or audit the accuracy or completeness of the information in this Report, or the accuracy, completeness or reasonableness of any recommendation in this Report.

APPENDIX A – PRODUCT LITERATURE

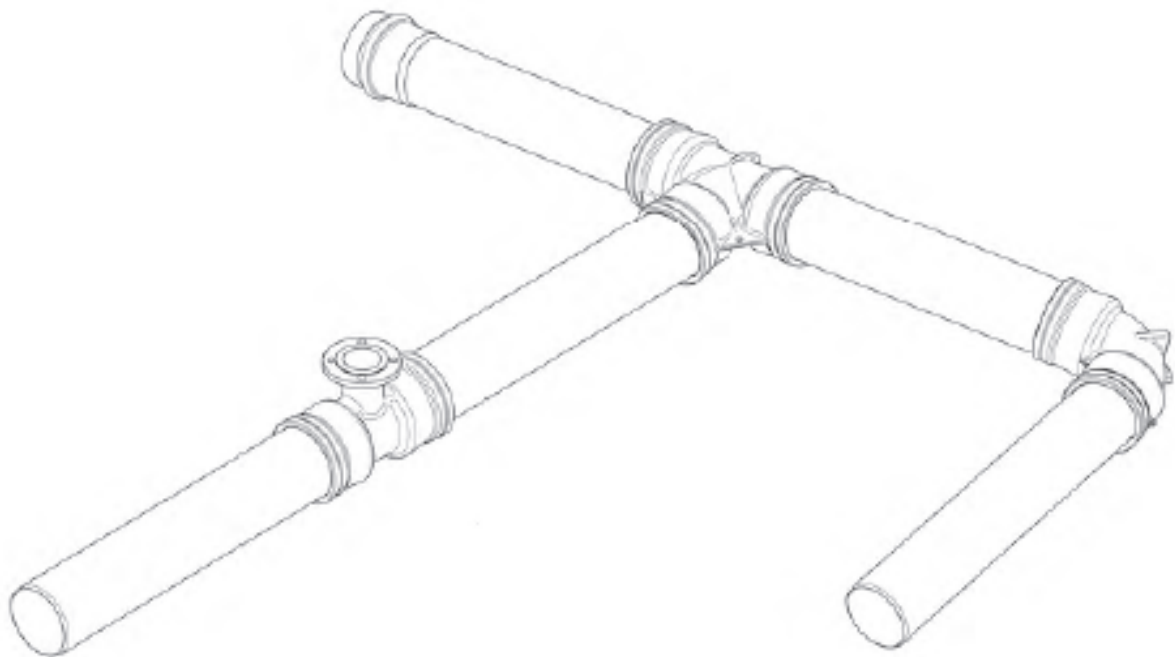
This Guide below and other product information is available at the following link:

<https://www.iplex.com.au/products/pvc-pressure-system/pvc-o/>



ENGINEERING DESIGN AND INSTALLATION GUIDE

ApolloBLUE™ PREMIUM
Bi-axially Oriented PVC (PVC-O) Pressure Pipes



iplex
Pipelines

APPENDIX B - QUALITY CERTIFICATIONS

**TABLE B1
IPLEX AUSTRALIA PTY LIMITED – MANAGEMENT SYSTEMS**

35 Alfred Road Chipping Norton NSW	
Quality Systems Standard	AS/NZS ISO 9001:2015
Certification Licence No.	SMKP20188
Certifying Agency	SAI Global
First Date of Certification	13 August 2003
Current Date of Certification	10 January 2020
Expiry Date of Certification	14 December 2024

**TABLE B2
IPLEX AUSTRALIA PTY LIMITED – PRODUCT CERTIFICATION**

35 Alfred Road Chipping Norton NSW	
Product Standard/Spec.	AS/NZS 4441:2017
Certificate No.	SMKP20188
Issuing Certification Body	SAI Global
First Date of Certification	13 August 2003
Current Date of Certification	10 January 2020
Expiry Date of Certification	14 December 2024

**TABLE B3
IPLEX AUSTRALIA PTY LIMITED – BEST ENVIRONMENTAL PRACTICE**

35 Alfred Road Chipping Norton NSW	
Product Standard/Spec.	AS/NZS 4441:2017
Certificate No.	BEP-PVC
Issuing Certification Body	ApprovalMark International
First Date of Certification	20 February 2012
Current Date of Certification	9 February 2022
Expiry Date of Certification	20 February 2024



CERTIFICATE OF REGISTRATION

This is to certify that:

Iplex Pipelines Australia Pty Limited

ABN 56 079 613 308

Cnr Southpine & Johnstone Roads Strathpine QLD 4500 AUSTRALIA
35 Alfred Road Chipping Norton NSW 2170 AUSTRALIA
31 Terry Court Thurgoona NSW 2640 AUSTRALIA
884 Ingham Road Bohle QLD 4818 AUSTRALIA
Philip Highway Elizabeth SA 5112 AUSTRALIA
9-15 Radford Road Reservoir VIC 3073 AUSTRALIA

operates a

QUALITY MANAGEMENT SYSTEM

which complies with the requirements of

ISO 9001:2015

for the following scope

The design, manufacture and distribution of rigid PVC pipe, conduit and fittings, polyethylene, PB-1 pipe, polypropylene pipe and fittings and associated fittings for the water supply, sewerage, drainage, electrical, mining, gas, rural and telecommunications industries. Scope also includes sourcing and distribution of complementary products.

Certificate No: QEC0037

Issued: 17 December 2020

Originally Certified: 3 April 1990

Expires: 9 January 2024

Current Certification: 17 December 2020

Frank Camasta
Global Head of Technical Services
SAI Global Assurance



Registered by:
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STANDARDSMARK LICENCE

SAI Global hereby grants:

Iplex Pipelines Australia Pty Ltd

ABN 56 079 613 308

35 Alfred Road, Chipping Norton, NSW 2170, Australia

StandardsMark Licence

Manufactured to:

AS/NZS 4441:2017 - Oriented PVC (PVC-O) pipes for pressure applications (ISO 16422:2014, MOD)

"the StandardsMark Licensee" the right to use the STANDARDSMARK as shown below only in respect of the goods described and detailed in the Schedule which are produced by the Licensee or on behalf of the Licensee* and which comply with the appropriate Standard referred to above as from time to time amended. The Licence is granted subject to the rules governing the use of the STANDARDSMARK and the Terms and Conditions for certification and licence. The Licensee covenants to comply with all the Rules and Terms and Conditions.

Licence No: SMKP20188

**Issued : 10 January 2020
Expires : 14 December 2024**

**Originally Certified : 13 August 2003
Current Certification : 10 January 2020**

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* For details of manufacture, refer to the licensee

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SCHEDULE TO STANDARDSMARK LICENCE

SAI Global hereby grants:

Iplex Pipelines Australia Pty Ltd

35 Alfred Road, Chipping Norton, NSW 2170, Australia

StandardsMark Licence

Manufactured to:

AS/NZS 4441:2017 - Oriented PVC (PVC-O) pipes for pressure applications (ISO 16422:2014, MOD)

Model identification of the goods on which the STANDARDSMARK may be used:

Model Identification	Model Name	Brand Name	Product Description	Product Type	Application	Nominal Size (DN)	Pipe Series	Classification	Joint Type	Colour	Date Endorsed
ApolloBLUE	ApolloBLUE	ApolloBLUE PREMIUM (IPLEXPIPELINES\MAINLINE)	DN225 PVC-O Pressure Pipe	PVC-O Pressure Pipe	Water	225	2	PN12.5	Elastomeric Sealing Ring (Rubber Ring)/Plain Ended	Light Blue	7 Aug 2019
ApolloBLUE	ApolloBLUE	ApolloBLUE PREMIUM (IPLEXPIPELINES\MAINLINE)	DN300 PVC-O Pressure Pipe	PVC-O Pressure Pipe	Water	300	2	PN12.5	Elastomeric Sealing Ring (Rubber Ring)/Plain Ended	Light Blue	7 Aug 2019
ApolloBLUE	ApolloBLUE	ApolloBLUE PREMIUM (IPLEXPIPELINES\MAINLINE)	DN250 PVC-O Pressure Pipe	PVC-O Pressure Pipe	Water	250	2	PN12.5	Elastomeric Sealing Ring (Rubber Ring)/Plain Ended	Light Blue	7 Aug 2019
ApolloBLUE	ApolloBLUE	ApolloBLUE PREMIUM (IPLEXPIPELINES\MAINLINE)	DN150 PVC-O Pressure Pipe	PVC-O Pressure Pipe	Water	150	2	PN12.5	Elastomeric Sealing Ring (Rubber Ring)/Plain Ended	Light Blue	7 Aug 2019

Licence No: SMKP20188

Issued Date: 10 January 2020

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SCHEDULE TO STANDARDSMARK LICENCE

Model Identification	Model Name	Brand Name	Product Description	Product Type	Application	Nominal Size (DN)	Pipe Series	Classification	Joint Type	Colour	Date Endorsed
ApolloBLUE	ApolloBLUE	ApolloBLUE PREMIUM (IPLEXPIPELINES/MAINLINE)	DN100 PVC-O Pressure Pipe	PVC-O Pressure Pipe	Water	100	2	PN12.5	Elastomeric Sealing Ring (Rubber Ring)/Plain Ended	Light Blue	7 Aug 2019
ApolloBLUE	ApolloBLUE	ApolloBLUE PREMIUM (IPLEXPIPELINES/MAINLINE)	DN200 PVC-O Pressure Pipe	PVC-O Pressure Pipe	Water	200	2	PN12.5	Elastomeric Sealing Ring (Rubber Ring)/Plain Ended	Light Blue	7 Aug 2019
ApolloBLUE	ApolloBLUE	ApolloBLUE PREMIUM (IPLEXPIPELINES/MAINLINE)	DN200 PVC-O Pressure Pipe	PVC-O Pressure Pipe	Water	200	2	PN16	Elastomeric Sealing Ring (Rubber Ring)/Plain Ended	Light Blue	7 Aug 2019
ApolloBLUE	ApolloBLUE	ApolloBLUE PREMIUM (IPLEXPIPELINES/MAINLINE)	DN250 PVC-O Pressure Pipe	PVC-O Pressure Pipe	Water	250	2	PN16	Elastomeric Sealing Ring (Rubber Ring)/Plain Ended	Light Blue	7 Aug 2019
ApolloBLUE	ApolloBLUE	ApolloBLUE PREMIUM (IPLEXPIPELINES/MAINLINE)	DN300 PVC-O Pressure Pipe	PVC-O Pressure Pipe	Water	300	2	PN16	Elastomeric Sealing Ring (Rubber Ring)/Plain Ended	Light Blue	7 Aug 2019
ApolloBLUE	ApolloBLUE	ApolloBLUE PREMIUM (IPLEXPIPELINES/MAINLINE)	DN225 PVC-O Pressure Pipe	PVC-O Pressure Pipe	Water	225	2	PN16	Elastomeric Sealing Ring (Rubber Ring)/Plain Ended	Light Blue	7 Aug 2019

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Model Identification	Model Name	Brand Name	Product Description	Product Type	Application	Nominal Size (DN)	Pipe Series	Classification	Joint Type	Colour	Date Endorsed
ApolloBLUE	ApolloBLUE	ApolloBLUE PREMIUM (IPLEXPIPELINES\MAINLINE)	DN100 PVC-O Pressure Pipe	PVC-O Pressure Pipe	Water	100	2	PN16	Elastomeric Sealing Ring (Rubber Ring)/Plain Ended	Light Blue	7 Aug 2019
ApolloBLUE	ApolloBLUE	ApolloBLUE PREMIUM (IPLEXPIPELINES\MAINLINE)	DN150 PVC-O Pressure Pipe	PVC-O Pressure Pipe	Water	150	2	PN16	Elastomeric Sealing Ring (Rubber Ring)/Plain Ended	Light Blue	7 Aug 2019
ApolloBLUE	ApolloCREAM	ApolloCREAM PREMIUM (IPLEXPIPELINES)	DN200 PVC-O Pressure Pipe	PVC-O Pressure Pipe	Sewage	200	2	PN16	Elastomeric Sealing Ring (Rubber Ring)/Plain Ended	Cream	7 Aug 2019
ApolloBLUE	ApolloCREAM	ApolloCREAM PREMIUM (IPLEXPIPELINES)	DN250 PVC-O Pressure Pipe	PVC-O Pressure Pipe	Sewage	250	2	PN16	Elastomeric Sealing Ring (Rubber Ring)/Plain Ended	Cream	7 Aug 2019
ApolloBLUE	ApolloCREAM	ApolloCREAM PREMIUM (IPLEXPIPELINES)	DN300 PVC-O Pressure Pipe	PVC-O Pressure Pipe	Sewage	300	2	PN12.5	Elastomeric Sealing Ring (Rubber Ring)/Plain Ended	Cream	7 Aug 2019
ApolloBLUE	ApolloCREAM	ApolloCREAM PREMIUM (IPLEXPIPELINES)	DN300 PVC-O Pressure Pipe	PVC-O Pressure Pipe	Sewage	300	2	PN16	Elastomeric Sealing Ring (Rubber Ring)/Plain Ended	Cream	7 Aug 2019

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Model Identification	Model Name	Brand Name	Product Description	Product Type	Application	Nominal Size (DN)	Pipe Series	Classification	Joint Type	Colour	Date Endorsed
ApolloBLUE	ApolloCREAM	ApolloCREAM PREMIUM (IPLEXPIPELINES)	DN225 PVC-O Pressure Pipe	PVC-O Pressure Pipe	Sewage	225	2	PN16	Elastomeric Sealing Ring (Rubber Ring)/Plain Ended	Cream	7 Aug 2019
ApolloBLUE	ApolloCREAM	ApolloCREAM PREMIUM (IPLEXPIPELINES)	DN225 PVC-O Pressure Pipe	PVC-O Pressure Pipe	Sewage	225	2	PN12.5	Elastomeric Sealing Ring (Rubber Ring)/Plain Ended	Cream	7 Aug 2019
ApolloBLUE	ApolloCREAM	ApolloCREAM PREMIUM (IPLEXPIPELINES)	DN150 PVC-O Pressure Pipe	PVC-O Pressure Pipe	Sewage	150	2	PN12.5	Elastomeric Sealing Ring (Rubber Ring)/Plain Ended	Cream	7 Aug 2019
ApolloBLUE	ApolloCREAM	ApolloCREAM PREMIUM (IPLEXPIPELINES)	DN150 PVC-O Pressure Pipe	PVC-O Pressure Pipe	Sewage	150	2	PN16	Elastomeric Sealing Ring (Rubber Ring)/Plain Ended	Cream	7 Aug 2019
ApolloBLUE	ApolloCREAM	ApolloCREAM PREMIUM (IPLEXPIPELINES)	DN100 PVC-O Pressure Pipe	PVC-O Pressure Pipe	Sewage	100	2	PN16	Elastomeric Sealing Ring (Rubber Ring)/Plain Ended	Cream	7 Aug 2019
ApolloBLUE	ApolloCREAM	ApolloCREAM PREMIUM (IPLEXPIPELINES)	DN100 PVC-O Pressure Pipe	PVC-O Pressure Pipe	Sewage	100	2	PN12.5	Elastomeric Sealing Ring (Rubber Ring)/Plain Ended	Cream	7 Aug 2019

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Model Identification	Model Name	Brand Name	Product Description	Product Type	Application	Nominal Size (DN)	Pipe Series	Classification	Joint Type	Colour	Date Endorsed
ApolloBLUE	ApolloCREAM	ApolloCREAM PREMIUM (IPLEXPIPELINES)	DN200 PVC-O Pressure Pipe	PVC-O Pressure Pipe	Sewage	200	2	PN12.5	Elastomeric Sealing Ring (Rubber Ring)/Pain Ended	Cream	7 Aug 2019
ApolloBLUE	ApolloCREAM	ApolloCREAM PREMIUM (IPLEXPIPELINES)	DN250 PVC-O Pressure Pipe	PVC-O Pressure Pipe	Sewage	250	2	PN12.5	Elastomeric Sealing Ring (Rubber Ring)/Pain Ended	Cream	7 Aug 2019
ApolloBLUE	ApolloLILAC	ApolloLILAC PREMIUM (IPLEXPIPELINES)	DN150 PVC-O Pressure Pipe	PVC-O Pressure Pipe	RecycledWater	150	2	PN16	Elastomeric Sealing Ring (Rubber Ring)/Pain Ended	Lilac	7 Aug 2019
ApolloBLUE	ApolloLILAC	ApolloLILAC PREMIUM (IPLEXPIPELINES)	DN250 PVC-O Pressure Pipe	PVC-O Pressure Pipe	RecycledWater	250	2	PN12.5	Elastomeric Sealing Ring (Rubber Ring)/Pain Ended	Lilac	7 Aug 2019
ApolloBLUE	ApolloLILAC	ApolloLILAC PREMIUM (IPLEXPIPELINES)	DN300 PVC-O Pressure Pipe	PVC-O Pressure Pipe	RecycledWater	300	2	PN12.5	Elastomeric Sealing Ring (Rubber Ring)/Pain Ended	Lilac	7 Aug 2019
ApolloBLUE	ApolloLILAC	ApolloLILAC PREMIUM (IPLEXPIPELINES)	DN225 PVC-O Pressure Pipe	PVC-O Pressure Pipe	RecycledWater	225	2	PN16	Elastomeric Sealing Ring (Rubber Ring)/Pain Ended	Lilac	7 Aug 2019

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Model Identification	Model Name	Brand Name	Product Description	Product Type	Application	Nominal Size (DN)	Pipe Series	Classification	Joint Type	Colour	Date Endorsed
ApolloBL UE	ApolloLILAC	ApolloLILAC PREMIUM (IPLEXPIPELINES)	DN200 PVC-O Pressure Pipe	PVC-O Pressure Pipe	Recycled Water	200	2	PN16	Elastomeric Sealing Ring (Rubber Ring)/Plain Ended	Lilac	7 Aug 2019
ApolloBL UE	ApolloLILAC	ApolloLILAC PREMIUM (IPLEXPIPELINES)	DN300 PVC-O Pressure Pipe	PVC-O Pressure Pipe	Recycled Water	300	2	PN16	Elastomeric Sealing Ring (Rubber Ring)/Plain Ended	Lilac	7 Aug 2019
ApolloBL UE	ApolloLILAC	ApolloLILAC PREMIUM (IPLEXPIPELINES)	DN150 PVC-O Pressure Pipe	PVC-O Pressure Pipe	Recycled Water	150	2	PN12.5	Elastomeric Sealing Ring (Rubber Ring)/Plain Ended	Lilac	7 Aug 2019
ApolloBL UE	ApolloLILAC	ApolloLILAC PREMIUM (IPLEXPIPELINES)	DN250 PVC-O Pressure Pipe	PVC-O Pressure Pipe	Recycled Water	250	2	PN16	Elastomeric Sealing Ring (Rubber Ring)/Plain Ended	Lilac	7 Aug 2019
ApolloBL UE	ApolloLILAC	ApolloLILAC PREMIUM (IPLEXPIPELINES)	DN100 PVC-O Pressure Pipe	PVC-O Pressure Pipe	Recycled Water	100	2	PN16	Elastomeric Sealing Ring (Rubber Ring)/Plain Ended	Lilac	7 Aug 2019
ApolloBL UE	ApolloLILAC	ApolloLILAC PREMIUM (IPLEXPIPELINES)	DN225 PVC-O Pressure Pipe	PVC-O Pressure Pipe	Recycled Water	225	2	PN12.5	Elastomeric Sealing Ring (Rubber Ring)/Plain Ended	Lilac	7 Aug 2019

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Model Identification	Model Name	Brand Name	Product Description	Product Type	Application	Nominal Size (DN)	Pipe Series	Classification	Joint Type	Colour	Date Endorsed
ApolloBLUE	ApolloLILAC	ApolloLILAC PREMIUM (IPLEXPIPELINES)	DN200 PVC-O Pressure Pipe	PVC-O Pressure Pipe	Recycled Water	200	2	PN12.5	Elastomeric Sealing Ring (Rubber Ring)/Plain Ended	Lilac	7 Aug 2019
ApolloBLUE	ApolloLILAC	ApolloLILAC PREMIUM (IPLEXPIPELINES)	DN100 PVC-O Pressure Pipe	PVC-O Pressure Pipe	Recycled Water	100	2	PN12.5	Elastomeric Sealing Ring (Rubber Ring)/Plain Ended	Lilac	7 Aug 2019
PDRAW	ApolloWHITE	ApolloWHITE PREMIUM (Iplex Pipelines)	DN150 MRS400 PVC-O Pressure pipe	PVC-O Pressure Pipe	Water	150	2	PN12.5	Elastomeric seal ring (rubber ring)	White	7 Aug 2019
PDRAW	ApolloWHITE	ApolloWHITE PREMIUM (Iplex Pipelines)	DN200 MRS400 PVC-O Pressure pipe	PVC-O Pressure Pipe	Water	200	2	PN12.5	Elastomeric seal ring (rubber ring)	White	7 Aug 2019
PDRAW	ApolloWHITE	ApolloWHITE PREMIUM (Iplex Pipelines)	DN225 MRS400 PVC-O Pressure pipe	PVC-O Pressure Pipe	Water	225	2	PN12.5	Elastomeric seal ring (rubber ring)	White	7 Aug 2019
PDRAW	ApolloWHITE	ApolloWHITE PREMIUM (Iplex Pipelines)	DN250 MRS400 PVC-O Pressure pipe	PVC-O Pressure Pipe	Water	250	2	PN12.5	Elastomeric seal ring (rubber ring)	White	7 Aug 2019
PDRAW	ApolloWHITE	ApolloWHITE PREMIUM (Iplex Pipelines)	DN300 MRS400 PVC-O Pressure pipe	PVC-O Pressure Pipe	Water	300	2	PN12.5	Elastomeric seal ring (rubber ring)	White	7 Aug 2019

End of Record

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BEST ENVIRONMENTAL PRACTICE



ApprovalMark International hereby grants:

IPLEX PIPELINES PTY LTD

Level 4, 68 Waterloo Road,
Macquarie Park
NSW 2113
AUSTRALIA

Best Environmental Practice

Evaluated to

AS/NZS 1254:2010 - PVC-U - Pipes and fittings for stormwater and surface water applications

AS/NZS 1260:2017 - PVC-U - Pipes and fittings for drain, waste and vent applications

AS/NZS 1477:2017 - PVC-U - Pipes and fittings for pressure applications

AS/NZS 4441:2017 - Orientated PVC (PVC-O) pipes for pressure applications

AS/NZS 4765:2017 - Modified PVC (PVC-M) pipes for pressure applications

AS/NZS 2053.2:2001 - Conduits and fittings for electrical installations - Part 2: Rigid plain conduits and fittings of insulating material

The licensee complies with the requirements of Best Environmental Practice – PVC as per Section 7, specified in the Green Building Council of Australia ("the Requirements") Literature Review and Best Practice Guidelines for the Life Cycle of PVC Building Product's using the compliance pathway Number 2 - Manufacturer's Declaration as measured by the Green Star PVC Credit Auditor Verification Guidance - November 2013 ("the Criteria").

The documentation was reviewed by ApprovalMark International on 9th February 2022 and found to comply with the following requirements:

- **Manufacture of PVC Resin**
- **Manufacture and end of life management of PVC products**
- **Use of PVC Recyclate in PVC products**

Note - Any changes introduced to above requirements shall immediately be reported to ApprovalMark International in order to examine the validity of the certificate.

Certificate No. BEP-PVC 0037

Issued: 9th February 2022

Expires: 20th February 2024

Originally Certified: 20th February 2012

Current Certification: 9th February 2022

John PRASAD
Director

BEP
CERTIFIED

ApprovalMark

APPENDIX C - SUPPLIER CONTACTS

Iplex Pipelines Australia Pty Limited

Head Office

Cnr South Pine & Johnstone Roads,
Brendale Queensland

Sales and Product Enquiries

Phone: 131086

Emails: QLD/NT: civil.qld@iplexpipelines.com.au

NQ: civil.nq@iplexpipelines.com.au

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VIC/TAS: civil.vic@iplexpipelines.com.au

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