Assets Planning and Delivery Group
Engineering

Strategic Product Specification

SPS 117
Oriented Polyvinylchloride (PVC-O) Pipe for Pressure Applications

VERSION 1
REVISION 4

JUNE 2026

FOREWORD

Each Strategic Product Specification has been prepared to inform Water Corporation staff, consultants, contractors and land developers of the requirements for selecting and acquiring a manufactured product to be used in strategic Corporation infrastructure. The definition of 'Product' includes items that comprise assembled components, equipment or plant for mechanical, electrical and civil infrastructure applications.

The objective of a Strategic Product Specification is to specify fit-for-purpose Product which will contribute to the provision of effective water services at least whole-of-life cost and with least risk to service standards and safety. A Strategic Product Specification also provides uniform standards for compatibility of new water infrastructure with existing water assets.

Many Strategic Product Specifications have drawn on the design, asset management and operational experience of Product performance in live service gained by the Corporation over time. Some Strategic Product Specifications have drawn on the experience of the water industry nationally by referencing Australian or WSAA standards.

Strategic Product Specifications are intended for reference and use in the following typical procurement scenarios:

- Capital funded infrastructure design and construction work;
- Private developer funded subdivision infrastructure for takeover by the Corporation;
- Operationally funded infrastructure design and construction work;
- Corporation period contracts for Product purchases;
- Product purchases for stock or for miscellaneous minor work.

A published Strategic Product Specification will, in some cases, comprise technical content that is typical of a range of products of the same type (type specification) but may exclude specific requirements that should apply to a particular project or application. In such cases, the project designer is required to document the supplementary project specific requirements in the 'Project Specific Requirements' Appendix of the Specification.

The text of a published Specification should not be directly modified. In the event that a text variation is considered necessary to accommodate the needs of a particular project or application, the text modification should be documented in the appropriate Clause of a 'Project Specific Requirements' Appendix.

Enquiries relating to the technical content of this Specification should be directed to the Senior Principal Engineer, Wastewater Conveyance, Engineering.

Head of Engineering

This document is prepared without the assumption of a duty of care by the Water Corporation. The document is not intended to be nor should it be relied on as a substitute for professional engineering design expertise or any other professional advice.

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REVISION STATUS

The revision status of this specification is shown section by section below:

REVISION STATUS						
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1	1/0	5.03.13	All	New Section	KR	MH
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Strategic Product Specification
SPS 117
Oriented Polyvinylchloride (PVC-O) Pipe for Pressure Applications

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1 Scope and General

1.1 Scope

This Specification shall apply to the manufacture, supply, transportation, handling and delivery of oriented polyvinyl chloride (PVC-O) pressure pipe, for pressure water, wastewater and drainage applications. The Specification also details the acceptance criteria for PVC-O pressure pipes intended for infrastructure projects use and the means of demonstrating conformity with the Specification.

1.2 Referenced Documents

The following documents are referenced in this Specification or are provided for the purposes of design and installation context relevant to the Product:

Water Corporation

DS 50	Design and construction requirements for gravity sewers DN 150 to DN 600
DS 51	The Design and Construction of Wastewater Pumping Stations and Pressure Mains 4.5 to 180 Litres Per Second Capacity
DS 60	Water Supply Distribution Standard - Pipelines Other than Reticulation
DS 63	Water Reticulation Standard -Design and Construction Requirements for Water Reticulation Systems up to DN250
DS 66	Urban Main Drainage Standard
	Strategic Products Register

AS

1646	Elastomeric seals for waterworks purposes *(Performance requirements in AS 681)*
681.1	Elastomeric seals - Material requirements for pipe joint seals used in water and drainage applications - Vulcanized rubber
681.2	Elastomeric seals - Material requirements for pipe joint seals used in water and drainage applications - Thermoplastic elastomers
681.3	Elastomeric seals - Material requirements for pipe joint seals used in water and drainage applications - Cellular materials of vulcanized rubber
681.4	Elastomeric seals - Material requirements for pipe joint seals used in water and drainage applications - Cast polyurethane sealing elements
1462.24	Methods of test for plastics pipes and fittings Method 24:Determination of resistance to crack propagation—Test methods for slow crack growth in notched pipes(notch test) (This MOT was reproduced from and is equivalent to ISO 13479)
2345	Dezincification resistance of copper alloys
3688	Water supply and gas systems - Metallic fittings and end connectors
2550.1	Cranes, hoists and winches – Safe use – General requirements
2550.5	Cranes, hoists and winches – Safe use – Mobile

AS/NZS

2566.1	Buried flexible pipelines - Structural design
	2566.1 Supplement 1: Buried flexible pipelines - Part 1: Structural design - Commentary
2566.2	Buried flexible pipelines - Part 2: Installation
2032	Installation of PVC pipe systems
3500	National Plumbing and Drainage Code
4020	Products for use in contact with drinking water
4441	Oriented PVC (PVC-O) pipes for pressure applications

AS/NZS ISO

7.1	**AS/ISO 7.1**: Pipe threads where pressure-tight joints are made on the threads - Dimensions, tolerances and designation
9001	Quality management systems – requirements
17000	ISO/IEC 17000: Conformity assessment – Vocabulary and general principles
17025	ISO/IEC 17025: General requirements for the competence of testing and calibration laboratories
17026	ISO/IEC 17026 (TR): Conformity assessment – Example of a certification scheme for tangible products

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Guide 28	ISO/IEC Guide 28: Conformity assessment -- Guidance on a third-party certification system for products
17030	Conformity assessment -- General requirements for third-party marks of conformity
17065	Conformity assessment -- Requirements for bodies certifying products, processes and services
17067	AS/NZS ISO/IEC 17067: Conformity assessment – Fundamentals of product certification and guidelines for product certification schemes
ISO	
228.1	Pipe threads where pressure-tight joints are not made on the threads - Part 1: Dimensions, tolerances and designation
9080	Plastics piping and ducting systems - Determination of the long-term hydrostatic strength of thermoplastics materials in pipe form by extrapolation
POP	**PIPA** (Plastics Industry Pipe Association of Australia) **Guidelines**
101	PVC Pressure Pipes Design for Dynamic Stresses
103	Depth Of Engagement For PVC Pipes
104	PVC pipe equivalence
106	Verification Guidelines For Best Environmental Practice PVC Pipe And Fittings
201	Resistance Of Plastics Pipes And Fittings To Water And Wastewater Chemicals
202	PVC And PE Pressure Pipe Installation On Curved Alignments
204	Expected Service Life Of Elastomeric Pipe Seals
205	Water Jet Cleaning Of Plastics Pipes
207	Installation Of Potable Watermains In Contaminated Ground

1.3 Definitions and Notation

The following definitions are intended to clarify the terminology used in this Specification.

1.3.1 Australian Standards®

Standards that are developed, published and maintained by Standards Australia.

1.3.2 Certificate

A formal certificate issued by a Conformity Assessment Body as an outcome of a conformity audit in accordance with a Certification System.

1.3.3 Certification Mark

A proprietary mark of product conformity issued in accordance with ISO/IEC 17030.

1.3.4 Certification System

An impartial third party product certification scheme or combination of schemes, as exemplified in ISO/IEC TR 17026, that are in accordance with the fundamentals of AS/NZS ISO/IEC 17067 and with the guiding principles of ISO/IEC Guide 28.

NOTE: The effect of this is to require maintenance by the manufacturer of effective production control planning in addition to full type testing from independently sampled production and subsequent verification of conformity with specified standards.

1.3.5 Conforming Product

Product that demonstrably conforms with standards and specifications nominated by the Corporation, where assessed by means of Product Appraisal.

1.3.6 Conformity Assessment Body (CAB)

A third party organisation that has been duly accredited as meeting the requirements of AS/ANZ ISO/IEC 17065 by a signatory member of the International Accreditation Forum (IAF) Multilateral Arrangement (MLA), previously known as a **Certification Body**.

1.3.7 Corporation

The Water Corporation of Western Australia.

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1.3.8 Manufacturer

An entity or combination of entities that are responsible for selection, processing and control of Product constituent materials or compounds and for the processing equipment that collectively result in the manufactured product.

1.3.9 Notation

Statements governed by use of the word 'shall' are mandatory or 'normative' requirements of the Specification. Statements expressed by use of the words 'should' or 'may' are 'informative' but not mandatory and are provided for information and guidance. Notes in Specification text are informative. Notes that form part of Specification Tables are normative. An Appendix to the Specification that is designated 'normative' contains mandatory requirements. An Appendix that is designated 'informative' is provided for information and guidance only. The term 'specified' includes requirements of the Specification and requirements stated or referenced in other project documentation.

1.3.10 Officer

A duly authorized representative or appointed agent of the Corporation.

1.3.11 Product

A single unit or multiple units of manufactured end product or an assembly of manufactured component products, materials or equipment. This Specification and accompanying Purchasing Schedule define the nature and details of Product to be supplied.

NOTES
1: An end product is most commonly an output of manufacturing processes that result in finished end products having the same features and characteristics and can be the result of a single or multiple production batches.
2: Manufactured equipment and assemblies of Product components or materials are commonly procured for mechanical, electrical and civil infrastructure applications.

1.3.12 Product Appraisal

A formal process whereby Product is subjected to systematic engineering assessment to determine Product fitness for prescribed end uses and to evaluate its conformity with specified standards and requirements. Product Appraisal includes verification of the extent of conformity in accordance with the requirements of a relevant 'Technical Compliance Schedule'.

1.3.13 Product Assessor

An organization, Officer or other person who, having demonstrated specialist product knowledge and competence acceptable to the Corporation, is appointed to evaluate Product, appraises the Product and issues one or more Product Verification Reports.

1.3.14 Product Certification

A formal process whereby the production and management systems for the manufacture of Product, are assessed by a Conformity Assessment Body to evaluate conformity of these systems with specified product standards and tests in accordance with Certification System rules.

1.3.15 Product Verification Report

A formal report wherein a Product Assessor evaluates the extent of Product conformity with the specified product standards and specifications.

NOTE: Verification may be on a project-by-project basis or at agreed intervals, as appropriate to the scope of a Purchasing Schedule and Product end use, subject to determination by the Corporation.

1.3.16 Product Warranty

A formal express undertaking by a Supplier that indemnifies the Corporation against the consequences of supplied Product failure to conform with specified fitness for application and in-service life expectancy performance requirements.

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1.3.17 Purchasing Schedule

A Corporation purchase order, tender, schedule of prices, bill of quantities, or specification that details the nature, quantity and other characteristics of Product to be supplied, purchased or installed.

1.3.18 Quality System

A management system that establishes, documents, implements and maintains organizational structures, resources, responsibilities, processes and procedures for the manufacture of Product and provision of Product related services in accordance with the requirements of AS/NZS ISO 9001.

1.3.19 Standards Australia

The peak non-government standards development body in Australia which develops Australian Standards®.

1.3.20 Strategic Product

An essential infrastructure component whose performance is critical to the elimination of risk to the safe and effective provision of water services, which are functions of the Corporation under the Water Corporation Act as licensed under the Water Services Coordination Act.

NOTE: Strategic product is a component of permanent Corporation infrastructure. Ancillary operational and safety equipment that does not form part of permanent infrastructure but offers exceptional enhancements in operational performance or personnel safety may also be deemed strategic.

1.3.21 Strategic Product Appraisal Process

The process described in Section 3 of the Strategic Products Register whereby manufactured products and equipment are evaluated and authorized for use in Corporation infrastructure, subject to demonstrated conformity with the nominated product performance requirements.

1.3.22 Supplier

An entity or combination of entities that is responsible for the supply of Product.

NOTE: A Supplier may be a Manufacturer, owner, producer, distributor, vendor, agent, tenderer or contractor for supply of Product or Product related service.

1.3.23 Testing

The determination of Product characteristics by inspection and by the application of specified test procedures in order to determine Product conformity with nominated performance requirements.

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2 Materials, Design and Performance

2.1 General

Pipes shall be manufactured in accordance with the requirements of AS/NZS 4441 and shall be supplied in standard 6 metre lengths with integral joint sockets, except as may otherwise be specified. Pipe nominal sizes (DN) and outside diameters (OD) shall be Series 2 as defined in Table ZZ1A of Appendix ZZ of AS/NZS 4441. Elastomeric pipe joint seals shall be AS/NZS 4020 compliant EPDM or NBR in accordance with AS 1646 (incorporating AS 681.1, 681.2, 681.3 and 681.4) for the nominated elastomer IRHD hardness. Seals for integral pipe joint sockets shall be supplied by the original pipe manufacturer to assure installed pipe and jointing system compatibility and performance in service. Solvent weld jointing of AS/NZS 4441 PVC-O pressure pipe shall not be permissible.

PVC pressure pipe and fitting characteristics shall be selected in accordance with the requirements of the applicable Corporation Design Standard (DS 51, DS 60, DS 63 or DS 66) as appropriate to particular project applications. Where pipes and fittings may be exposed to elevated temperatures and pressure transients, the pressure rating of pipeline components shall be selected to sustain service pressure and cyclic fatigue resistance performance over the nominated pipeline design life with an acceptable margin of safety. Guidance on the selection of design factors for re-rating nominal pipe pressure ratings for exposure to elevated temperatures and cyclic pressure transients is available in the Corporation's Pipeline Selection Guidelines.

NOTES

1. Elastomeric seal jointed PVC-O pressure pipe should not form part of a vacuum reticulation system given that AS/NZS 4441 requires joint leak tightness testing to a negative internal operating pressure value no lower than -80 KPa.
2. Wherever a PVC pipeline may be at risk of exposure in whole or part to UV rays from natural and man-made radiation and heat sources, its exterior surface should be physically shielded or coated with an approved pastel shade paint in accordance with DS 95 to mitigate structural degradation risks.
3. NBR is a preferred elastomeric pipe joint sealing material for wastewater applications because of its superior long term resistance to hydrocarbons in wastewater.

2.2 Temperature and Fatigue Considerations

Prior to selecting PVC-O pressure pipe pressure (PN) ratings for particular pipeline projects and environments, consideration shall be given to itsreduced maximum allowable pressure (MAOP) capacity for a given nominal pressure (PN) rating, where its wall temperature is likely to exceed 20°C and where pumping pressure cycling frequency may reduce its long term structural strength, arising from the inherent fatigue response characteristics of the PVC pipeline over itsnominated service life.

The selected re-rating factors shall be in accordance with the requirements of the appropriate application Design Standard – DS 51 for wastewater, DS 60 for water distribution, DS 63 for water reticulation and DS 66 for urban drainage.

NOTES:

1. High level guidance is provided in the Pipeline Selection Guidelines on the definitions and inter-relationships of PVC pipe stiffness rating (SN), nominal pressure rating (PN), maximum allowable operating pressure (MAOP), allowable site test pressure (ASTP) and appropriate pressure de-rating factors for exposure to elevated (> 20°C) PVC pipe temperatures and for cyclic pressure transients.
2. The PVC-O pipeline system design pressure and the corresponding field test pressure should be as calculated by the pipeline designer and nominated on project design drawings for the pipeline wall temperatures at the project site.
3. Field test operatives should ensure that the designer nominated design pressure and field test pressure are duly adjusted/re-rated (or not) for pipe wall temperatures at the location and time of testing and are applied to the lowest elevation of pipeline sections to be tested, in accordance with the appropriate Design Standard.

2.3 Colour

PVC-O pipe for buried pressure applications shall be coloured in accordance with the colour requirements of AS/NZS 4441 (Clause 9 as amended by Clause ZZ2).

NOTE: Wastewater pressure pipe applications include use in vacuum reticulation and main drainage systems.

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2.4 Effect on Water

Pipe, elastomeric seals, lubricants, priming fluids and solvent cements for all applications shall conform with AS/NZS 4020 for a scaling factor of 1.

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3 Transportation, Handling and Storage

3.1 General

Product shall be transported, handled and stored in accordance with AS/NZS 2032 so as to prevent damage by impact, rough handling, crushing, piercing by sharp objects, contact with aggressive chemicals or by extended exposure to high temperature sources. Product items shall not be lifted by hooking at ends or by dropping off elevated vehicle platforms or sites. Pipes shall be loaded and unloaded by means of reinforced wide-band elastomeric or fabric webbing straps or slings of an acceptable design. Where wire ropes or chains are used, these shall not come into direct contact with product.

NOTES

1: PVC pipe, being made from a thermoplastic material, is sensitive to deformation under increasing load, elevated temperature, point loadings and cuts and scratches which can lead to sudden pipe failure in service. Prolonged exposure of PVC pipe to sunlight and high temperatures can lead to embrittlement of the pipe material.

2: Appropriate consideration should be given to personnel safety when working with loose or stacked PVC pipes because their smooth surface finish renders them slippery, particularly in wet conditions.

3.2 Packaging

Pipes shall be packaged in supporting crates or in strapped bundles that have been designed to prevent point loading, chafing, scoring, impact or other pipe damage during transportation, handling and storage operations. Pipes shall be seated on scallop-profiled timber bearers and separating packers. Pipes shall be bundled so that socketed pipe ends alternately adjoin but extend beyond spigoted pipe ends (See Figure 2.1). Each pipe bundle or crate shall be constructed so that pipe loads are directly supported by the bundle or crate structure and not by other pipes.

Packaged pipe bundles shall be restrained by timber framework or by padded strapping all round. Support framework, bearers, packers and strapping shall be at support centres no farther apart than 2.5 metres. A packaged pipe bundle shall not exceed one metre in height when on level ground. Pipes shall not be nested unless both inner and outer pipes have been adequately secured from movement and deformation relative to each other and relative to the supporting system. Where pipe bundles are packaged in timber crates, the distance between timber framework support centres shall be constant throughout if vertical stacking of the crates is required.

3.3 Lifting

Pipes shall be supported at nominal quarter points from pipe ends during lifting operations. Mechanical equipment and slings used for handling of pipes and fittings shall be in accordance with AS 2550.1 and AS 2550.5 and shall be appropriate to the loads to be lifted. Manual handling shall be in accordance with the National Standard for Manual Handling and the National Code of Practice for Manual Handling, published by National Occupational Health and Safety Commission, Australia.

3.4 Transportation and Unloading

All loading, unloading and transport operations shall be in accordance with the requirements of AS/NZS 2032. Unsupported pipe overhangs shall be limited to one metre. Individual or loose pipes shall be lowered, lifted and carried in a controlled fashion and shall not be thrown or dropped from loading platforms or transporting vehicles or dragged along the ground at storage or installation sites (See Figure 3.2). Climbing or standing on pipes shall not be permissible.

Pipes and supporting system load restraints shall be secured to the transporter to prevent displacement relative to the transporter during transportation. This may be by means of straps, bolsters or other appropriate restraints in accordance with Load Restraint Guide—Guidelines for Safe Carriage of Loads on Road Vehicles, published jointly by the Federal Office of Road Safety and the National Road Transport Commission, Australia. Load restraint mechanisms shall be checked for tension at regular intervals not exceeding 300 kilometres of travel and shall not be released until the transporting vehicle is resting in a secure stable disposition on level ground.

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Each bundle or crate shall be separately secured. The timber bearers or spacers of one bundle or crate shall not be nailed to those of another. The timber bearers of stacked pipe bundles or crates shall be positioned vertically above each other and shall not be used for lifting. Lifting slings shall be placed around the pipe bundles beyond the positions of supporting timbers bearers or spacers.

Transport by rail, sea or air, shall be in accordance with the relevant regulations for the particular mode of transport. Cushioned pipe end protection of an acceptable design shall be provided to prevent damage from shunting shocks during transportation.

NOTE: Pipe deliveries in packaged or bundled form should be retained in this form until required for installation activities. Pipe deliveries in small quantities should be secured by means of side chocking, end support and temporary strapping or packing to prevent any sideways or longitudinal movement during transportation. Pipes should be off-loaded from high-sided vehicles by rolling them down two timber runners under rope control. Off-loading below head height should be achieved by gently sliding each pipe from the opened tail of the transporting vehicle to a practicable manual carrying position on site (See Figure 3.2).

3.5 Pipe Storage

Designated storage areas at pipe depots and at pipe installation sites shall be of sufficient size to accommodate pipe deliveries. Storage areas and procedures shall conform with the requirements of AS/NZS 2032. Illustrations of right and wrong handling and stacking practices for pipes in storage depots and on installation sites are given in Figures 3.1 and 3.2. Storage of elastomeric pipe joint seals shall conform with the requirements of AS 1646 (incorporating AS 681.1, 681.2, 681.3 and 681.4).

NOTES
1: Pipe fittings and jointing materials should be stored separately and under cover. Discrete or loose pipe components should be stored in original product packaging, prior to pipe installation.
2: Pipes or pipe bundles should be supported on a grid structure of timber or sandbags that avoids direct pipe contact with the ground or soil materials with adequate space provided around pipe storage stacks for the movement of machinery and lifting equipment, without risk of pipe damage.

3.6 Pipe Stacking

Pipe stacking heights shall be kept to a minimum to enable safe lifting manoeuvres. Stacked pipe bundles or crates shall be no more than three units high subject to a maximum overall stack height of two metres. Timber framed pipe bundles or crates shall be stacked timber to timber. Provision shall be made for side support to prevent stack collapse when the banding or framing is removed.

Where loose or individual pipe stacks have vertical side supports stack height shall be restricted to a maximum of 1.5 metres to minimise pipe ovalization or deformation while stored. Loose pipe stacks on installation sites shall be no higher than one metre (See Figures 3.1 and 3.2). The number of supports between stacked layers of nested pipes (i.e. pipes stored inside pipes of a larger diameter) shall be increased so that point loads on individual pipes are no greater than for un-nested pipes.

Stacked pipe barrels shall be continuously and uniformly supported with socketed pipe ends alternately adjoining but extending beyond spigoted pipe ends. Where pipes of different stiffness or pressure classes are stored in the same stack, the highest rated class shall be at the bottom of the stack. Where pipe deformation does occur, particularly in the lower layers of pipe storage stacks, the deformed pipes shall be removed at a sufficient time before installation to allow re-rounding to occur.

NOTE: The width of bottom stack layers should not exceed 3 metres. Timber stack supports should be sufficiently thick to prevent pipe sockets bearing directly on the ground. Vertical supports and chock blocks should be provided to prevent accidental slippage, rolling or collapse of pipe stacks.

3.7 Pipe Stringing

Pipe ‘stringing’ at installation sites shall be restricted to a sufficiently short length to reduce the risk of damage or contamination. Pipes shall be strung at a safe distance from spoil heaps, heavy operating machinery and vehicle tracking areas.

NOTE: Pipe ‘stringing’ should be restricted to one or two working days. In urban areas, individual pipes should be chocked to prevent accidental movement with appropriate warning signs and lighting provided.

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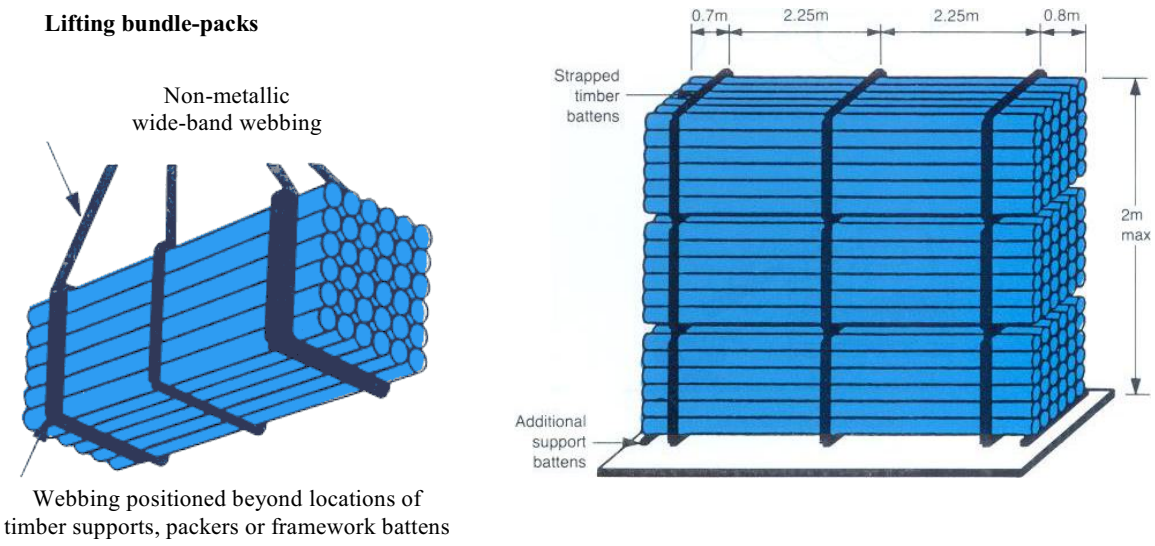
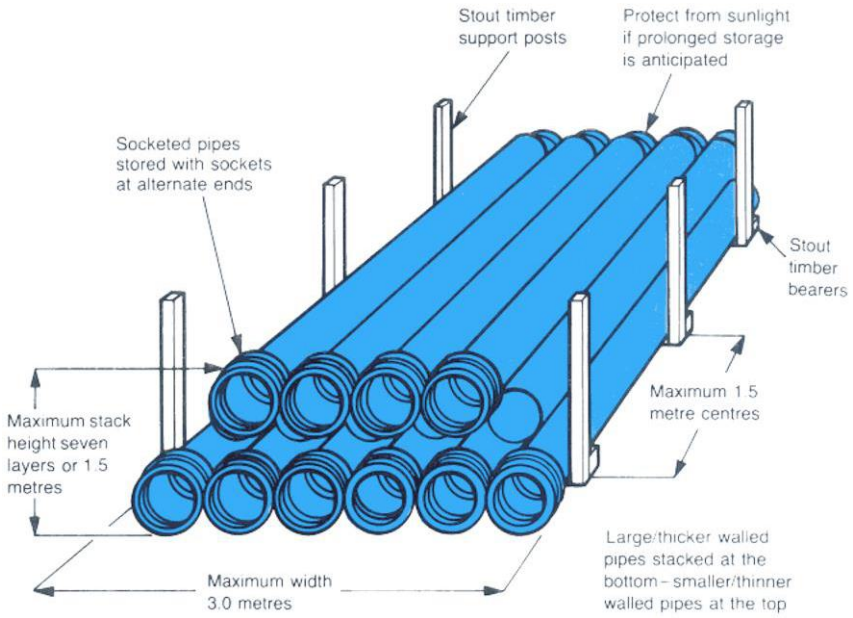
Lifting bundle-packs



(a) Typical lifting and stacking arrangements for pipe bundles and crates



(b) Typical stacking arrangements for loose pipes

Figure 3.1 - Handling and stacking at pipe storage sites

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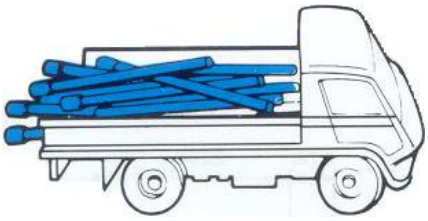
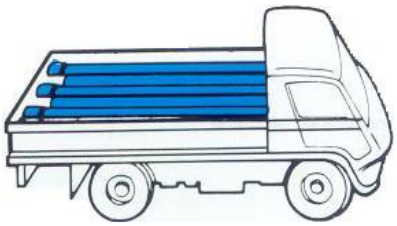
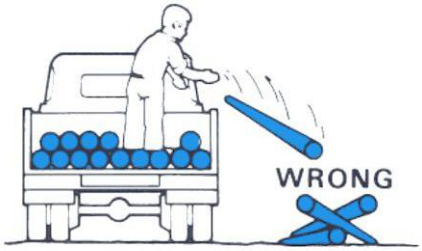


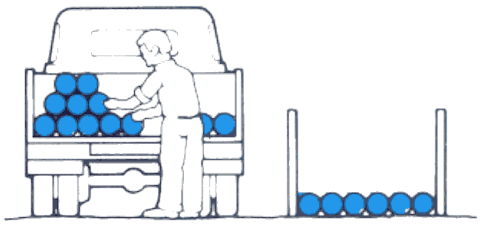
WRONG way to load pipes



RIGHT way to load pipes

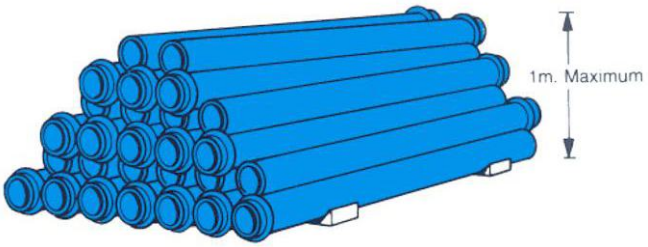


WRONG way to off-load pipes

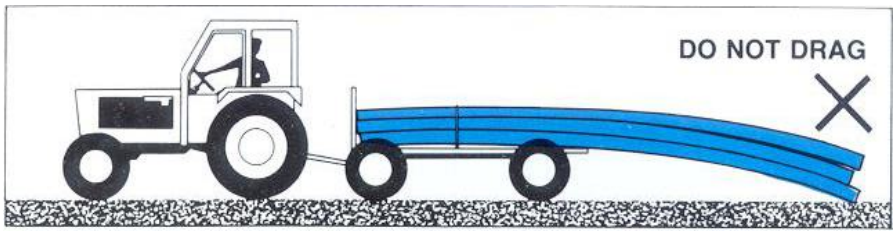


RIGHT way to off-load pipes

(a) Common (wrong and right) loading and off-loading arrangements for small pipe quantities



(b) Typical stacking arrangement for individual or loose pipes



(c) Common (wrong) on-site transportation arrangement for loose pipes

Figure 3.2 - Handling and stacking on pipe installation sites

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4 Conformity with Requirements

4.1 General

Product conformity with the specified requirements shall be verified by means of an acceptable inspection and test plan (ITP). The ITP shall provide for product component structural and durability design, materials control and performance conformity testing throughout production. The inspection and test plan shall be embodied in a duly accredited ISO 9001 production quality management system.

Product shall be deemed to conform with requirements where test outcomes have been formally verified by a Product Assessor or certified by a Conformity Assessment Body (CAB) in accordance with the requirements of a product standard acceptable to the Corporation. Otherwise, it shall be classified as non-conforming Product.

NOTE: For acceptance, performance testing and calibration laboratories should be accredited as meeting the requirements of AS/NZS ISO/IEC 17025 by a signatory member of the International Laboratory Accreditation Cooperation (ILAC) Mutual Recognition Arrangement (MRA). The scope of laboratory/facility accreditation should include the competencies and capabilities required to execute the particular product testing and calibration work to be undertaken.

4.2 Certification of Product

Products, in respect of which conformity with a particular nominated product Standard(s) is claimed, shall, for acceptance, be assessed in accordance with an acceptable product certification system and shall be subject to the issue of a certificate of conformity with the nominated Standard(s) by a duly accredited CAB.

The certification system or scheme with which product conformity is claimed shall:

- be based on ISO/IEC TR 17026, Conformity assessment -- Example of a certification scheme for tangible products and shall be in accordance with the fundamentals of AS/NZS ISO/IEC 17067 and with the guiding principles of ISO/IEC Guide 28;
- include product type testing from independently sampled production;
- require the manufacturer's production processes and associated controls to be part of a quality management system that has been certified as meeting the requirements of AS/NZS ISO 9001, Quality management systems - Requirements; and shall
- include subsequent verification that the manufacturer continues to maintain effective production control and product conformity with the nominated product Standard(s), at intervals not exceeding 12 months

NOTE: Evidence of Product conformity with the specified requirements may be by means of a Product Verification Report provided by a Product Assessor including reference to a current relevant water industry appraisal report or certificate issued by WSAA.

4.3 Product Re-verification

Product conformity with the Specification shall be subject to re-verification by a Product Assessor when, during the agreed Product supply period, there occurs any:

- substantive change in Product design, material formulation or performance
- Product failure to perform in operational service to the nominated performance specification.

Re-verification shall require the issue of a new or supplementary Product Verification Report. Product components and test outcomes that are not significantly affected by the Product change or failure may be excluded from the scope of re-verification, provided that these outcomes have already been reported in a current valid Product Verification Report that is acceptable to the Corporation.

4.4 Acceptance Criteria

For acceptance, Product shall be supplied as specified in the Purchasing Schedule and shall be clearly and indelibly provided with product markings in accordance with AS/NZS 4441.

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Prior to the implementation of any arrangement to supply Product, the Supplier shall, in accordance with specified - including acceptance - requirements:

- nominate applicable Product Warranty terms; and
- provide documentary verification of conformity with performance requirements in the form of a current valid Certificate, certified evidence of conformity with an inspection and test plan (ITP) or a Product Verification Report that is appropriate to the Product, subject to the acceptability of certification credentials; and
- detail each element of Product that does not conform with the specified requirements together with the extent of non-conformity.

NOTE : Where the Specification includes Technical Compliance Schedules, the nature and extent of all non-conformities should be recorded in the appropriate Schedules to be submitted for acceptance.

4.5 Non-conforming Product

4.5.1 General

Product whose design, workmanship or performance fails to conform to the specified requirements shall be clearly tagged and quarantined by the Supplier as non-conforming and shall be subject to rejection for return to and replacement by the Supplier.

4.5.2 Manufacturing Repairs (In-process)

The Manufacturer shall make provision in its production Quality System and in its ITP for sufficient hold points whenever Product non-conformities are encountered. Production work on non-conforming components shall cease and repair work shall not re-commence until the following have been confirmed by the Corporation in writing:

- acceptability of non-conforming component repair in lieu of component replacement; and
- acceptability of the particular proposed repair procedures; and
- acceptability of any proposal to vary the terms of the original Product Warranty as a consequence of an in-process repair.

4.5.3 Product Warranty

The Supplier shall replace non-conforming Product with Product that conforms with the acceptance criteria or shall repair or rectify all faults, damage or losses caused by non-conforming Product. Except as may otherwise be specified, the Product Warranty shall indemnify and keep indemnified the Corporation against all losses suffered by the Corporation as a result of non-conforming Product for a period no less than 24 months after Product delivery or 12 months after Product installation, whichever period elapses first.

4.5.4 Product Repair

All reasonable proposals for repair or remedy of defects will be considered, provided that each such proposal is accompanied by a methodology statement that accords with the performance objectives of this Specification, as determined by the Corporation. For acceptance, a proposal for repair or remedy of Product non-conformities shall not void or otherwise diminish the provisions of the Product Warranty.

4.5.5 Access to the Place of Manufacture

The Corporation shall be afforded access, at all reasonable times, to all places of manufacture of Product and shall be authorized to arrange or undertake such testing there as the Corporation deems appropriate to the agreed design proving or testing regime.

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5 Appendix A: Material Master Records (Informative)

The following Material Master Records (MMR) comprise Corporation catalogue numbers that are unique to the particular products described for the purposes of Corporation activities or work.

MMR	DESCRIPTION (Cream Sewer Series 2 PN16)	BUOM
22094	Pipe, Plastic; OPVC; Cream; Series 2; Sewer; DN100; Pressure Class PN16; Elastomeric Seal Joint; 6m Length.	LG
22195	Pipe, Plastic; OPVC; Cream; Series 2; Sewer; DN150; Pressure Class PN16; Elastomeric Seal Joint; 6m Length.	LG
21804	Pipe, Plastic; OPVC; Cream; Series 2; Sewer; DN200; Pressure Class PN16; Elastomeric Seal Joint; 6m Length.	LG
21993	Pipe, Plastic; OPVC; Cream; Series 2; Sewer; DN250; Pressure Class PN16; Elastomeric Seal Joint; 6m Length.	LG
21163	Pipe, Plastic; OPVC; Cream; Series 2; Sewer; DN300; Pressure Class PN16; Elastomeric Seal Joint; 3m Length.	LG
21166	Pipe, Plastic; OPVC; Cream; Series 2; Sewer; DN300; Pressure Class PN16; Elastomeric Seal Joint; 6m Length.	LG

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END OF DOCUMENT

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