Assets Planning and Delivery Group
Engineering

Strategic Product Specification

SPS 130
Glass Reinforced Plastics Pipe and Pipe Fittings

VERSION 1
REVISION 3

JUNE 2024

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, Engineering to whom all enquiries relating to the technical content of the Specification should be directed. Future Specification changes, if any, will be issued to registered Specification users as and when published.

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.

Users should use and reference the current version of this document.

DISCLAIMER

Water Corporation accepts no liability for any loss or damage that arises from anything in the Standards/Specifications including any loss or damage that may arise due to the errors and omissions of any person. Any person or entity which relies upon the Standards/Specifications from the Water Corporation website does so at their own risk and without any right of recourse to the Water Corporation, including, but not limited to, using the Standards/Specification for works other than for or on behalf of the Water Corporation.

The Water Corporation shall not be responsible, nor liable, to any person or entity for any loss or damage suffered as a consequence of the unlawful use of, or reference to, the Standards/Specifications, including but not limited to the use of any part of the Standards/Specification without first obtaining prior express written permission from the CEO of the Water Corporation.

Any interpretation of anything in the Standards/Specifications that deviates from specific Water Corporation Project requirements must be referred to, and resolved by, reference to and for determination by the Water Corporation's project manager and/or designer for that particular Project.

REVISION STATUS

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

REVISION STATUS						
SECT	**VER/ REV**	**DATE**	**PAGES REVISED**	**REVISION DESCRIPTION (Section, Clause, Sub-Clause)**	**RVWD**	**APRV**
1	1/0		All	New Specification	KR	MH
1	1/2	30.6.23	All	Conformity & other definition clauses updated. Craneage standards added	KR	KP
1	**1/3**	**10.6.24**	**1.1/1.2**	**ISO 23856/18851 references/requirements added.**	**KR**	**KP**
2	1/0		All	New Specification	KR	MH
2	1/2	30.6.23	All	Pipe to be new and match connected pipe dimensions. Notes added and descriptions aligned throughout.	KR	KP
2	**1/3**	**10.6.24**	**All**	**Minimum pipe PN/SN ratings added in 2.1. Descriptions aligned throughout. ISO 23856 to AS 3571 relationship/dates clarified. GRP pipe fittings to be tested to ISO 18851 for acceptance**.	**KR**	**KP**
3	1/0		All	New Specification	KR	MH
4	1/0		All	New Specification	KR	MH
4	1/2	30.6.23	All	Conformity text aligned with Section 1.	KR	KP
4	**1/3**	**10.6.24**		**HB 18.28 replaced by WSAA TN 8**	**KR**	**KP**
5	1/0		All	New Specification	KR	MH
5	1/1	18.12.17	16	MMR updated	IP	KP

Strategic Product Specification
SPS 130
Glass Reinforced Pipe and Pipe Fittings

CONTENTS

1 Scope and General

1.1 Scope

This Specification sets out requirements for the manufacture, supply, handling and delivery of glass reinforced plastics (GRP) pipe and associated pipe fittings for pressure and non-pressure water and wastewater applications. The Specification also details the acceptance criteria for GRP pipe and pipe fittings intended for infrastructure project use and the means of demonstrating compliance with the Specification.

References to AS 3571 shall mean both parts of the Standard i.e. AS 3571.1 and 3571.2. ISO 23856 has replaced both ISO 10467 and ISO 10639 (on which 3571.1 and 3571.2 are respectively based). Notwithstanding this, the requirements of AS 3571 Appendices ZZ, ZA and ZC (both parts) shall continue to apply to ISO 23856 certified GRP piping products for the purposes of this specification.

NOTES:
1 GRP pipelines for buried applications should be designed and installed in accordance with AS/NZS 2566.1 and AS/NZS 2566.2 respectively;
2 Service condition, site condition and other project variables listed in AS 3571 Appendix ZZ - for application in Australia - should be considered prior to selecting and ordering GRP pipes and fittings to ensure an appropriate fit to project needs.

1.2 Referenced Documents

The following documents are referenced in this Specification:

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
2550.1	Cranes, hoists and winches – Safe use – General requirements
2550.5	Cranes, hoists and winches – Safe use – Mobile
3571.1	Plastics piping systems - Glass-reinforced thermoplastics (GRP) systems based on unsaturated polyester (UP) resin - Pressure and non-pressure drainage and sewerage (ISO 10467:2004, MOD)
3571.2	Plastics piping systems - Glass-reinforced thermoplastics (GRP) systems based on unsaturated polyester (UP) resin - Pressure and non-pressure water supply (ISO 10639:2004, MOD)
AS/NZS	
2566.1	Buried flexible pipelines - Part 1: Structural design
2566.1 Supp1	Buried flexible pipelines - Part 1: Structural design - Commentary
2566.2	Buried flexible pipelines - Part 2: Installation
4020	Products for use in contact with drinking water
4087	Metallic flanges for waterworks purposes
ISO	
18851	Plastics piping systems — Glass-reinforced thermosetting plastics (GRP) pipes and fittings — Test method to prove the structural design of fittings
23856	Plastics piping systems for pressure and non-pressure water supply, drainage or sewerage - Glass-reinforced thermosetting plastics (GRP) systems based on unsaturated polyester (UP) resin
25780	Plastics piping systems for pressure and non-pressure water supply, irrigation, drainage or sewerage -- Glass-reinforced thermosetting plastics (GRP) systems based on unsaturated polyester (UP) resin -- Pipes with flexible joints intended to be installed using jacking techniques
ISO Note	*Both ISO 10467 (on which 3571.1 is based) and ISO 10639 (on which 3571.2 is based) have been replaced by a single standard ISO 23856 which retains mutually exclusive GRP piping performance requirements for drinking water and sewerage/drainage applications.*

ISO/TS	
10465-1	Underground installation of flexible glass-reinforced pipes based on unsaturated polyester resin (GRP-UP) - Part 1: Installation procedures
AS/NZS/ISO	
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
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
Water Corporation	
	Pipeline Selection Guidelines
	Strategic Products Register
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
WSA	WSAA Technical Notes
TN 08	Additional Requirements for Conformity Assessment

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 to the standards and specifications nominated by the Corporation, where assessed by means of Product Appraisal.

1.3.6 Conformity Assessment Body (CAB)

A third-party organization 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.

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 authorised 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.

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 comply with specified fitness for application and in-service life expectancy performance requirements.

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 the Strategic Products Register whereby manufactured products and equipment are evaluated and authorised 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 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.

2 Materials and Components

2.1 Pipe and Fittings Selection

GRP pipe and fittings for wastewater/drainage and water applications shall be manufactured in accordance with the requirements of both AS 3571.1 and AS 3571.2 for all water, wastewater and drainage applications. GRP pipeline components for all (drinking water, non-drinking water, wastewater, drainage) applications shall conform with both the strain corrosion resistance (AS 3571.1 Clause 5.4) and the effect on water quality (AS 3571.2 Clause 4.8) requirements - as qualified by Clause 2.2 - of this specification. In addition to conformity with AS 3571, GRP pipe fittings shall also specifically conform with the test and acceptance requirements of ISO 18851.

Where conformity with ISO 23856 (as an alternative to AS 3571 parts 1 and 2) forms the basis of product acceptance, GRP pipeline components for all (drinking water, non-drinking water, wastewater, drainage) applications shall conform to both ISO 23856 Clauses 5.4 (Resistance to chemical attack) and 4.8 (Effect on water quality). Pipeline components shall also conform to the requirements of AS 3571 Appendices ZZ, ZA and ZC, for application in Australia.

Pipes and fittings shall be in new unused condition in accordance with the conveyance pipeline project and Design Standards nominated for the particular project application. Pipe and pipe fitting outside diameters (OD) shall be as defined in Table 5 of Appendix ZZ of AS 3571.1/AS 3571.2.

GRP pipes with flexible joints intended for installation using thrust boring or jacking techniques shall be in accordance with the requirements of ISO 25780.

GRP pipe and pipe fittings shall be pressure rated and accordingly marked - PN 16 or higher for pressure applications and PN 3 or higher for non-pressure open cut and jacked pipeline applications.

The stiffness of GRP pipeline components shall be rated SN 10 000 (N/m^2) or higher for open cut trench pipeline applications and SN 20 000 (N/m^2) or higher for jacked pipeline applications. The GRP pipeline designer shall nominate the rated stiffness values of each GRP pipe and pipe fitting, in conformity with pipeline project requirements. The GRP pipeline stiffness ratings nominated shall safely resist all imposed and other thrust forces that are expected to arise during and after installation. Rated stiffness – and corresponding pipe wall thickness - values shall also be selected to best match pipeline ID constraints, where intended to accommodate (or encase) a separate carrier pipeline or to interconnect with an existing/legacy network pipeline.

NOTES:

1 Requirements in AS 3571.1 and AS 3571.2 are identical except for the strain corrosion resistance requirement in AS 3571.1 Clause 5.4 for wastewater/drainage applications and the effect on water quality requirement in AS 3571.2 Clause 4.8, for drinking water applications. ISO 23856 specifies equivalent (resistance to chemical attack and effect on water quality) requirements.

2 AS 3571.1-2009 and AS 3571.2-2009 were based respectively on ISO 10467:2004 and ISO 10639:2004. ISO 10467 and ISO 10639 were both re-published in 2016 and required specific GRP pipe fitting structural conformity with ISO 18851:2015. The new GRP piping standard ISO 23856:2021, which amalgamated ISO 10467:2016 and ISO 10639:2016, also required conformity with ISO 18851:2015. Accordingly, wherever this specification (SPS 130) requires conformity with AS 3571, conformity of GRP pipe fittings with ISO 18851:2015 is also a fundamental requirement.

3 With some exceptions, GRP pipes and fitting diameters (DN/OD) $\leq$ DN 750, as nominated in AS 3571.1 Appendix ZZ Table 5, are compatible with cast iron outside diameters (CIOD) [e.g. grey/cast Iron (CI), ductile iron (DI), asbestos cement (AC) and PVC Series 2 pressure pipes].

4 Metallic couplings for GRP pipeline components in wastewater applications may be considered only as and where specifically agreed in writing by the Corporation on a project-by-project basis for particular applications.

5 GRP pipe sizes as listed in AS 3571.1 Appendix ZZ Table 5 may be considered for use, provided that such use is specifically supported by size-compatible Corporation pipe/fitting stocks for insurance repair/replacement purposes.

6 GRP pipeline components for installation by trenchless means should be justified on the basis of supporting calculations in terms of permissible jacking forces, in accordance with ISO 25780 for the structural conditions and temperatures to which the pipeline is wall exposed to during installation and service life.

2.2 Effect on Water

GRP pipe and pipe fittings together with integral components including joint seals and joint lubricants shall conform with AS/NZS 4020, using a scaling factor of 0.05 for all water, wastewater and drainage applications.

NOTE: GRP pressure pipeline components for all applications are required to conform with this effect on water requirement in order to preclude any risk of any unintentional or intentional use of product acquired for any particular (e.g. wastewater) application in another (e.g. drinking water) application.

2.3 Joint Configuration and Performance

2.3.1 Flexible Joints

GRP pipes shall be supplied complete with integral socketed jointcomponents. Joint angular deflection capability shall not be less than that specified in AS 3571. Flexible joints mean end-load-bearing (axial thrust resistant) and non-end-load-bearing joints as defined in AS 3571. Flexible joint seals shall be EPDM or, subject to conformity with AS/NZS 4020, NBR in accordance with AS 1646 (incorporating AS 681.1, 681.2, 681.3 and 681.4) for the nominated elastomer IRHD hardness and shall be supplied by the original GRP pipeline component manufacturer.

NOTE Where the use of flexibly jointed GRP pipe proves impracticable at changes of pipeline direction by virtue of thrust restraint block sizes and pipe alignment space constraints, rigidly jointed pipeline sections of sufficient length should be designed to resist unbalanced joint loads at bend positions and to preclude pipeline movement during field pressure testing and subsequent service operations, with due provision for appropriate design and service safety factors.

2.3.2 Rigid Joints

GRP pipes and pipe fitting rigid (non-flexible) joints shall conform to the requirements for wrapped, cemented and bolted flange joints in AS 3571, as appropriate to project configuration and application requirements.

2.3.3 Joint Performance

GRP pipe and pipe fitting joints shall be designed to assure long term structural integrity and leak-free service performance in buried and above ground applications. Joint design, in terms of structural and hydraulic performance, shall be proven by testing for conformity with the requirements of AS 3571.
The performance of trenchlessly installed GRP pipe joints shall conform to the requirements of ISO 25780.

NOTES
1 The interconnection of GRP pipe with pipe whose outside diameter is compatible with imperial cast iron (CIOD) or metric (ISO) outside diameter series pipe should be by means of appropriately selected, configured and designed adaptor pipe fittings and couplings that are compatible with the joint component outside diameters and with end load bearing (including longitudinal thrust restraint) requirements;
2 Adaptor fittings and couplings intended for connection to GRP pipe should have material, joint longitudinal restraint, joint sealing and service performance properties appropriate to the particular application, including:
- Standard (off the shelf) gibault style couplings with straight or stepped configurations;
- Standard (off the shelf) pipe fittings with appropriate end configurations (e.g. spigoted, socketed or flanged);
- Special purpose fabricated pipe adaptor fittings (e.g. straight, tapered or stepped) with appropriate end configurations (e.g. spigoted, socketed or flanged) of acceptable materials (e.g. 316 SS, GRP, rigid PVC,) complying with an appropriate performance or product standard (or combination of standards) acceptable to the Corporation;

3 Typically, pipeline component materials that are compatible with cast iron pipe outside diameters (CIOD) include GRP (Tables 3/5 respectively of AS 3571.1/AS 3571.2 Appendix ZZ), PVC Series 2, AS/NZS 2280 ductile iron and most older vintage cast (grey) iron and asbestos cement. ISO/metric OD pipes typically include PVC Series 1, AS/NZS 4130 PE, steel pipe to SPS 100 and AS/NZS 1260 PVC DWV non-pressure pipe.
4 The hydraulic integrity (or leakproofness) of GRP pipelines should be field tested after installation in accordance with AS/NZS 2566.2 Section 6 including Appendix M. Sub-clauses (paragraphs) 6.3.4.1 and M4 in particular apply to the field hydrostatic pressure testing of substantial GRP pipelines.
5 The pipe, fitting and joint product markings required by AS 3571.1/2 (in line with the underlying ISO 10467/10635 product standards) differ from those required by the new ISO 23856, being as follows:

ISO 23856 Marking Code			**AS 3571.1/2 Marking Codes**		
Pipe (Cl **5.5**)	Fittings (Cl **6.7**)	Joints (Cl **7.4**)	Pipe (Cl **5.5/5.4**)	Fittings (Cl **6.7**)	Joints (N/A)
W - water for human consumption			**P** – drinking water -		No marking
P - pressure sewers/drains			**C** – surface water and sewage		No marking
U - non-pressure sewers/drains					

This specification requires GRP pipeline components to be manufactured for all or any (e.g. drinking water, non-drinking water, wastewater, drainage) infrastructure applications. This accordingly requires components supplied in accordance with

the specification to be marked for multi-application usage with "WPU" for conforming ISO 23856 product and "PC" for conforming AS 3571 product, to eliminate downstream owner supply, stocking, spares handling & storage risks.

3 Transportation, Handling and Storage

3.1 General

GRP pipes and fittings shall be transported, handled and stored in accordance with the relevant procedures in ISO/TS 10465.1.

Transportation, handling and storage facilities shall be designed to prevent Product damage or defects and to maintain Product free of deleterious matter. Product shall not be dropped off elevated vehicle platforms or sites. Mechanical handling equipment shall be in accordance with AS 2550.1, AS 2550.3, AS 2550.5 and AS 2550.11 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. Product restraint during transportation shall be 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.

NOTE: Where wire ropes or chains are used for loading and unloading, they should not come into direct contact with Product. Lifting elements in direct contact with Product should be of a non-abrasive design eg elastomeric or fabric webbing straps. During transportation, Product restraints should be checked for tension at regular intervals of travel and should not be released until the transporting vehicle is resting in a secure stable disposition on level ground.

3.2 Preservation of Product in Storage

Product shall be stored in original Product packaging in accordance with the published requirements of the manufacturer, prior to installation. GRP pipe, fittings and elastomeric components shall be protected from extended exposure to direct sunlight and high temperatures. Elastomeric components shall be stored in accordance with the guidance on storage of seals in AS 1646/AS 681.

Designated Product storage areas shall be of sufficient size to accommodate Product deliveries and shall be flat, reasonably level and free of combustible vegetation, sharp stones or projections that could cause Product damage or defects. Product packaging material shall have a minimum expected life in outside storage conditions of 12 months from the date of delivery.

4 Quality Assurance

4.1 Certification

4.1.1 Certification of Product

Conformity with this Specification shall be certified by means of an ISO Type 5 Certification System in accordance with WSAA Technical Note WSA TN 08 as defined herein. Each Certificate shall expressly attest compliance of all Product items with the nominated Standards. Wherever specified, Certificates shall be submitted to the Officer nominated for this purpose as evidence of conformity. Product shall be marked in accordance with the requirements of the Conformity Assessment Body.

NOTE: Product conformity with nominated Standards and specified requirements may be verified by means of a Product Verification Report as defined herein. The Product Verification Report should identify all relevant Certificates of Product conformity, duly issued in accordance with Certification System rules.

4.1.2 Quality System

The processes for manufacture, testing, supply, transportation, handling, delivery and storage of Product shall form part of a documented Quality System as defined herein. The System shall be certified by a Conformity Assessment Body and shall provide for identification and traceability, control of production, delivery to the specified destination, customer verification and control of system documents and records.

4.1.3 Product Re-verification

Product conformity with the Specification shall be subject to re-certification or 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 Certificate 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.

Wherever the requirements of the Specification apply to a Product supply period in excess of five years, continuing acceptance of Product shall be subject to re-verification to confirm continuing Product conformity.

4.2 Conformity and Acceptance

4.2.1 Means of Demonstrating Conformity

Conformity with this Specification shall be demonstrated by means of Product Appraisal and issue by a Product Assessor of a Product Verification Report that confirms conformity. Otherwise, Product shall be deemed non-conforming and ineligible for registration as Product authorised for use in Corporation infrastructure.

NOTES
1: Where a project includes design work including Product design, Product Appraisal may form part of the project design review process and the Product Assessor may be a member of the project design review team.
2: A Product Verification Report should verify the extent of conformity with the Specification including all relevant 'Technical Compliance Schedule' Appendices and the currency of a Certificate where relevant to the Product.

4.2.2 Acceptance Criteria

For acceptance, Product shall be supplied as specified in the Purchasing Schedule.

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

- nominate applicable Product Warranty terms ;and

- provide documentary verification in the form of a current valid Certificate or Product Verification Report as appropriate to the Product; 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 provided in accordance with the appropriate Schedules.

4.3 Non-conforming Product

4.3.1 General

For acceptance, the surfaces of GRP pipe and fittings shall conform to the surfaces defects acceptability criteria in (either part of) AS 3571 Appendix ZC or authorised published equivalent thereof. Product whose design, workmanship or performance fails to conform with 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.

Where the Specification includes a 'Technical Compliance Schedule', Product shall be deemed non-conforming except where a Supplier has demonstrated conformity in accordance with the requirements of the 'Technical Compliance Schedule' Appendices of the Specification.

4.3.2 Manufacturing Repairs (In-process)

Welding, the use of fillers and other repairs shall not be permissible on Product which is in the course of production. Accordingly, details of any defect which the Manufacturer considers can be repaired; together with details of proposed repair procedures shall be submitted in writing for determination by the Corporation.

The Manufacturer shall make provision in its production Quality System and in its ITP for sufficient hold points whenever significant Product non-conformities occur. 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:

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

4.3.3 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 defective 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.

4.3.4 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 defects shall not void or otherwise diminish the provisions of the Product Warranty.

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	PURCHASE ORDER LONG TEXT **Non-Pressure (Sewer)**	BUOM
20586	Pipe, Plastic; GRP; DN450; Non-Pressure (Sewer); PN3 (Minimum); SN10000; Adjustment Pipe; Elastomeric Seal Joint (RRJ); C/W Joint Collars; Suit CIOD Series 2 Pipe; 3m Length.	LG
20588	Pipe, Plastic; GRP; DN450; Non-Pressure (Sewer); PN3 (Minimum); SN10000; Elastomeric Seal Joint (RRJ); C/W Joint Collars; Suit CIOD Series 2 Pipe; 6m Length.	LG
20587	Pipe, Plastic; GRP; DN600; Non-Pressure (Sewer); PN3 (Minimum); SN10000; Adjustment Pipe; Elastomeric Seal Joint (RRJ); C/W Joint Collars; Suit CIOD Series 2 Pipe; 3m Length.	LG
20585	Pipe, Plastic; GRP; DN600; Non-Pressure (Sewer); PN3 (Minimum); SN10000; Elastomeric Seal Joint (RRJ); C/W Joint Collars; Suit CIOD Series 2 Pipe; 6m Length.	LG

MMR	PURCHASE ORDER LONG TEXT **Pressure**	BUOM
20589	Pipe, Plastic; GRP; DN450; Pressure; PN16; SN10000; Adjustment Pipe; Elastomeric Seal Joint (RRJ); C/W Joint Collars; Suit CIOD Series 2 Pipe; 3m Length.	LG
20591	Pipe, Plastic; GRP; DN450; Pressure; PN16; SN10000; Elastomeric Seal Joint (RRJ); C/W Joint Collars; Suit CIOD Series 2 Pipe; 6m Length.	LG
20590	Pipe, Plastic; GRP; DN600; Pressure; PN16; SN10000; Adjustment Pipe; Elastomeric Seal Joint (RRJ); C/W Joint Collars; Suit CIOD Series 2 Pipe; 3m Length.	LG
20592	Pipe, Plastic; GRP; DN600; Pressure; PN16; SN10000; Elastomeric Seal Joint (RRJ); C/W Joint Collars; Suit CIOD Series 2 Pipe; 6m Length.	LG

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