Assets Planning and Delivery Group
Engineering

Strategic Product Specification

SPS 271

Gate Valves for Waterworks Purposes – Metal Seated

VERSION 6
REVISION 4

MAY 2023

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 appropriate Clause of the 'Project Specific Requirements' Appendix..

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 of the specification.

Enquiries relating to the technical content of this specification should be directed to the Principal Mechanical Engineer, Infrastructure Design Branch. 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.

It is the responsibility of the user to ensure they are using the current version of this document.

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	6/0	30.04.07	All	Reformatted into std template	EJP	AAK
1	6/3	20.06.16	10	DS26-41 & WC Specifications A1 & D1 added	GP	SWE
All	**6/4**	**25.05.23**	**n/a**	**Periodic review, no changes required**	**SE**	**SE**
2	6/0	30.04.07	All	Reformatted into std template	EJP	AAK
3	6/0	30.04.07	All	Reformatted into std template, Clause 3.1 amended, Table 3.1 added	EJP	AAK
3	6/1	01.05.07	13	Table 3.1 amended	EJP	AAK
3	6/3	20.06.16	12	Clause 3.2 amended. Clause 3.3 added	GP	SWE
4	6/0	30.04.07	All	Reformatted into std template	EJP	AAK
4	6/3	20.06.16	16	Clause 4.2 added	GP/VC	SWE
5	6/0	30.04.07	All	Reformatted into std template	EJP	AAK
6	6/0	30.04.07	All	Reformatted into std template	EJP	AAK
7	6/0	30.04.07	All	Reformatted into std template	EJP	AAK
8	6/0	30.04.07	All	Reformatted into std template	EJP	AAK
9	6/0	30.04.07	All	Reformatted into std template	EJP	AAK
10	6/0	30.04.07	All	Reformatted into std template	EJP	AAK
11	6/0	30.04.07	All	Reformatted into std template, Table 11.1 amended	EJP	AAK
12	6/0	30.04.07	All	Reformatted into std template	EJP	AAK

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13	**6/0**	**30.04.07**	**All**	**Reformatted into std template**	**EJP**	**AAK**
13	**6/2**	**12.05.08**	**All**	**MMR's amended**	**SE**	**AAK**
13	**6/3**	**20.06.16**	**33**	**Appendix D added** **MMR 21009 added**	**GP**	**SE**

Strategic Product Specification

SPS 271

Gate Valves for Waterworks Purposes – Metal Seated

CONTENTS

1 Scope and General

1.1 Scope

This Specification sets out requirements for the manufacture, supply, handling and delivery of non-rising stem, ductile iron, metal seated gate valves for waterworks purposes and as further described in the following. Valves shall be in a new unused condition.

The Specification details the requirements in lieu of specific clauses, or as clarification for options that exist within, or as additional requirements to AS 2638.1. Accordingly, unless otherwise specified in this Specification, the valves shall be manufactured, tested and supplied in accordance with the requirements of AS 2638.1. The Specification also details the means by which compliance with the Specification shall be demonstrated and the criteria for acceptance of Product.

NOTE: Whilst this Specification details the requirements for metal seated gate valves it is the Corporation's preference to use PN 16 and PN 25 resilient seated gate valves complying with SPS 272 in lieu of equivalent metal seated gate valves unless otherwise specified in the purchasing schedule.

1.2 Referenced Documents

The following documents are referenced in this Specification:

AS

1442	Carbon steels and carbon-manganese steels – Hot – rolled bars and semi-finished products
1830	Iron castings – Grey cast iron
2550.1	Cranes, hoists and winches – Safe use – General
2550.3	Cranes, hoists and winches – Safe use – Bridge, gantry, portal (including container cranes) jib and monorail cranes
2550.5	Cranes, hoists and winches – Safe use – Mobile
2550.11	Cranes, hoists and winches – Safe use – Vehicle loading cranes
2638.1	Gate valves for waterworks purposes – Metal seated
3894.1	Site testing of protective coatings – Method 1: Non-conductive coatings – Continuity testing – High voltage ('brush')

AS/NZS ISO

9001	Quality management systems – requirements

ISO/IEC

17025	General requirements for the competence of testing and calibration laboratories

Standards Australia Guides

HB 18	Guidelines for third-party certification and accreditation
HB 18.2	Guide 2-General terms and their definitions concerning standardization and related activities
HB 18.22	Guide 22-Information on manufacturer's declaration of conformity with standards and other technical specifications
HB 18.23	Guide 23-Methods of indicating conformity with standards for third-party certification systems
HB 18.28	Guide 28-General rules for model third-party certification system for products
MP52	Manual of authorization procedures for plumbing and drainage products

ASTM

A 480M Standard specification for general requirements for flat-rolled stainless and heat-resisting steel plate, sheet and strip

SPS

272 Gate Valves – Resilient Seated

Water Corporations Technical Specifications

DS26-41 Type Specification for an Electric Actuator for a Waterworks Valve

A1 Surface Preparation for the Application of Protective Coatings on Steel and Cast Iron

D1 Zinc Rich Epoxy Primer, Epoxy Mastic Coat, Polyurethane Top Coat on steel or Cast Iron

1.3 Definitions and Notation

1.3.1 Certificate

A formal certificate defined in SAA HB 18.2 and operated in accordance with SAA HB 18.22 that, as an outcome of Product Certification, attests Product conformity with the nominated product and test standards and authorizes the use of a Certification Mark.

1.3.2 Certification Body

An independent (or third party) organisation duly accredited by the Joint Accreditation System of Australia and New Zealand (JAS-ANZ) to operate Certification Schemes.

In the case of a non-strategic plumbing Product, a Certification Body means an organisation approved by Standards Australia to administer the National Certification of Plumbing and Drainage Products (NCPDP) Scheme in accordance with SAA MP 52.

1.3.3 Certification Mark

A trademark or other mark of product conformity with a specified standard defined in SAA HB 18.2 and applied in accordance with SAA HB 18.23 that is issued under the rules of a Certification Scheme.

1.3.4 Certification Scheme

A product certification program or system which is operated in accordance with JAS-ANZ Procedure 15 – General requirements for bodies operating product certification systems and in accordance with the general rules of SAA HB 18.28 and System No. 5 as defined in ISO/ITC publication - Certification - Principles and practice. In the case of a non-strategic plumbing Product, a Certification Scheme means the NCPDP Scheme.

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 Compliant Product

Product that has been assessed, by means of Product Appraisal, as conforming to standards and specifications that are nominated by the Corporation.

1.3.6 Corporation

The Water Corporation of Western Australia.

1.3.7 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.

1.3.8 Notation

Statements expressed 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 only 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.

1.3.9 Officer

A duly authorised representative or appointed agent of the Corporation.

1.3.10 Pressure Classification (PN)

A classification of pressure by PN number, based on the allowable operating pressure (AOP) expressed in Megapascals (PN = 10 x AOP).

NOTE: The term Pressure Classification (PN) replaces the term Class used in AS 2638.1.

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. In this Specification the Product shall refer to metal seated gate valves for waterworks purposes including the operator.

NOTE 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.

NOTE 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, including product design, is subjected to systematic engineering assessment to determine Product fitness for prescribed end uses and to evaluate the extent of Product and production systems conformity with nominated standards and specifications. Product Appraisal includes verification of the extent of compliance in accordance with the requirements of a relevant 'Technical Compliance Schedule' Appendix.

1.3.13 Product Assessor

An organization, Officer or other person who, having demonstrated specialist product knowledge and competence acceptable to the Corporation, is nominated by the Corporation, subjects Product to Product Appraisal 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 Certification Body to evaluate compliance of these systems with prescribed product standards and tests, under Certification Scheme rules.

1.3.15 Product Verification Report

A formal report wherein a Product Assessor evaluates the extent of Product compliance with the nominated 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 or Manufacturer that Product is:

- In conformity with the nominated product specification and referenced standards;
- Fit for the nominated Product end use or application;
- Designed for sustained operation at the nominated service performance levels for the specified design life;
- Adequately packaged for intended transportation, handling and storage conditions;
- Supported by English language installation, operating and servicing instructions;
- Adequately supported by Supplier capacity to provide technical Product support.

NOTE: Where required, a Product Warranty should indemnify the Corporation against claims made or losses suffered as a result of breach of the Warranty by means of Public and Products Liability Insurances as specified in the undertaking.

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 Strategic Product

An essential product whose performance is critical in eliminating 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 1: Strategic product is most commonly an element of permanent Corporation infrastructure. Ancillary operational and safety equipment, not intended to form part of this infrastructure, may be considered strategic by virtue of enhanced operational performance or personnel safety.

NOTE 2: Plumbing products (end-of-line water service fittings DN 32 or smaller) used in strategic services may, by virtue of statutory and regulatory requirements, be considered strategic in Corporation applications.

1.3.20 Supplier

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

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

1.3.21 Testing

The determination of Product characteristics by inspection, and by the application of specified test procedures.

1.3.22 WSAA

The Water Services Association of Australia of which the Water Corporation is a corporate member.

1.4 Designation of Size

Valve sizes up to and including DN 900 shall be as specified in Clause 1.5 of AS 2638.1. Valves larger than DN 900 shall be designed, manufactured and tested in accordance with this Specification with gate valve dimensions and testing parameters subject to acceptance by the Corporation.

2 Materials and Components

2.1 General

Materials shall comply with the basic materials referred to in the Table 2.1 contained in AS 2638.1 with additions as shown in Table 2.1 of this Specification below:

Table 2.1 – Materials for Metal Seated Gate Valves

Component	Material	Standard	Minimum Grade
Gate facing rings	Gunmetal	AS 1565	C83600
Liners and shoes	Gunmetal	AS 1565	C83600
Indicator gears	Stainless steel	ASTM A480M	304
Gearbox body	Grey cast iron	AS 1830	250
Shaft bushes	Gunmetal	AS 1565	C83600
Gears and shaft	Material design in accordance with AS 2938		

2.2 Non-metallic Materials

Non-metallic materials or components used in the Product shall be fit for the intended purpose and exhibit dimensional stability, durability and longevity in the relevant operating environment e.g. buried, immersed or exposed to sunlight.

3 Design

3.1 Gate Valve

The valve design shall comply with the following:

(a) Valves shall be of the non-rising stem type.
(b) Relevant design requirements contained in AS 2638.1 shall extend to valve sizes greater than DN 900 although these valves do not appear in that Standard.
(c) All valves shall be suitable for installation with the valve stem in the vertical or horizontal positions.
(d) Valves shall be fitted with replaceable metal body seating rings.
(e) Valves DN 600 and larger shall incorporate replaceable gate liners in the body.
(f) The wedge for valves DN 600 and larger shall incorporate replaceable wedge shoes.
(g) The valve shall close when the valve key or operator handwheel is rotated anticlockwise when viewed from the operating position.

3.2 Gearbox

Where a gearbox is specified in the purchasing schedule, gearbox actuator design and construction shall comply with Section 6 of AS 2638.1 and the following:

(a) Gearbox design shall incorporate spur gears or worm and wheel reduction.
(b) The gearbox input shaft shall be extended at one end only and shall be fitted with a handwheel.
(c) Direction of rotation shall be anticlockwise-to-close the valve when viewed from the operating position. Direction of rotation arrows shall be cast onto the handwheel.
(d) Handwheels shall incorporate a freely rotating handle.
(e) All gear boxes for buried service applications shall be manufactured in accordance with AS60529 with an enclosure rating of IP68.
(f) Gearbox ratios shall comply with the table below.
(g) The gearbox shall incorporate a gear-driven clock type position indicator which shall provide accurate indication of the valve in the fully open and fully closed positions when viewed from above the input shaft. The indicator gears shall be machine-cut and mated.
(h) Where the valve has to close against flow it shall be fitted with a gearbox with a reduction ratio as shown in Table 3.1.

NOTE:
A gearbox should be fitted under the following circumstances:
1. The valve is to be operated against unbalanced head conditions.
2. For PN 16, DN 600 valves operating at > 60 m.
3. For PN 16, DN 700 valves and larger.
4. For PN 35, DN 400 valves and larger.

Table 3.1 – Gate Valve Gearbox Ratios

DN	Gearbox Ratios [Note 1]			DN
	PN 16	PN 25	PN 35	
80	Not required	Not Available	Not required	80
100				100
150				150
200				200
225				225
250			2:1	250
300	2:1		4:1	300
375	4:1		6:1	375
400	4:1		6:1	400
450	4:1		6:1	450
500	6:1		10:1	500
600	6:1		12:1	600

DN	Gearbox Ratios [Note 1]			DN
	PN 16	PN 25	PN 35	
700	12:1		24:1	700
750	12:1		24:1	750
800	12:1		24:1	800
900	16:1	16:1	Note 2	900

NOTES:

1. The sizing criteria for gearbox ratios are based on:
   (a) Torques to seal at allowable operating pressures of 1600 kPa, 2500 kPa and 3500 kPa as relevant.
   (b) Full unbalanced head conditions.
2. For the DN 900, PN 35 gearbox ratio refers to the manufacturer.

3.3 Lockout Devices

Valves shall be either fitted with lockout devices to enable their secure isolation, or be capable of accommodating them, as specified in the following:

a) Spindle cap operators shall accommodate the Corporation's valve locking device in accordance with Drawing No EG20-11-2 attached at Appendix D . The bottom plate of the locking device shall be capable of either being fitted under the spindle cap or alternatively locate into a groove in the body of the spindle cap. Other methods of accommodating the Corporation's valve locking device may be acceptable subject to approval by the Corporation.

b) Handwheels shall be fitted with provision for locking with a padlock.

c) Where the valve is electrically actuated, it shall incorporate padlockable lockout devices in accordance with DS 26-41.

4 Coatings

4.1 General

Valves shall be coated in accordance with the requirements specified in Section 4 of AS 2638.1.

4.2 Gearbox

The casings of gearboxes for buried service applications shall be externally coated in accordance with Water Corporations Technical Specifications A1 Surface Preparation for the Application of Protective Coatings on Steel and Cast Iron and D1-Zinc Rich Epoxy Primer, Epoxy Mastic Coat, Polyurethane Top Coat on steel or Cast Iron.

5 Testing

5.1 General

Product shall be tested in accordance with the test requirements of this Specification. Testing shall be deemed acceptable when test outcomes have been formally verified by a Certification Body or witnessed by a testing Officer. Product for which a test requirement has not been met shall be classified as non-compliant Product.

NOTE 1: Testing should be carried out by an organisation accredited by NATA or in accordance with ISO/IEC 17025.

NOTE 2: A testing Officer should normally be an Officer who has specialist knowledge of or training in product or materials testing appropriate to the Product characteristics to be tested.

5.2 Notification of Testing

The Corporation shall be notified in writing of each formal test proposal at least seven (7) days prior to the preparation of Product for testing except where a specified test has been the subject of a current valid Certificate issued by a Certification Body. This notification is required to enable the Corporation to make all necessary arrangements including appointment of a testing Officer in a timely manner.

5.3 Access to the Place of Manufacture

The Testing Officer shall be afforded access, at all reasonable times, to all places of manufacture of Product or product components and shall be authorised to arrange or undertake such testing there as the Corporation deems appropriate to the testing regime specified.

5.4 Place of Manufacture other than WA

Where any Product or product component is being manufactured other than in Western Australia the Corporation may appoint a local inspecting Officer to undertake inspections and witnessed testing as required. The testing Officer shall be provided with all due authority and permits required to carry out testing at the place of manufacture.

NOTE 1: The cost of witnessed testing arranged by the Corporation will normally be borne by the Corporation unless otherwise negotiated.

5.5 Performance Test Requirements

5.5.1 Production Tests

Each Product item shall be tested in accordance with the relevant production test requirements contained in Section 5 of AS 2638.1.

5.5.2 Coating Tests

The integrity of all coated surfaces, excepting external corners and embossed areas, shall be tested in accordance with the coating test requirements contained in Section 5 of AS 2638.1.

5.5.3 Test Certificates

For the purposes of acceptance, each test certificate shall, as a minimum, bear the relevant Product item serial number and shall certify that the Product item has complied with the specified test requirements.

6 Marking and Packaging

6.1 Marking

The body of the valve shall be marked in accordance with the requirements of Section 7 of AS 2638.1.

6.2 Packaging

6.2.1 General

Valves shall be packed in accordance with the requirements of Section 7 of AS 2638.1 and the following. Product shall be packaged with appropriate protection, which shall prevent damage or defects as a result of handling, storage or transportation. Flexible packaging material shall have a minimum expected life in outside storage conditions of 12 months from the date of delivery.

6.2.2 Identification Tag

Wherever requested in the Purchasing Schedule each Product item shall be identified using a weatherproof marking pen on a corrosion resistant metal identification tag securely wired to the Product in a conspicuous position using a galvanized tie wire with the following information:

a) Material Master Record number (MMR)

b) Contract number

c) Purchase order number.

6.2.3 Marking of Packaging

Where requested in the Purchasing Schedule, the Product shall be identified by marking on the outside of any protective packaging with the same information as shown on the identification tag.

7 Manuals

7.1 Format and Language

Where required, Product shall be supplied complete with appropriate installation, operation and maintenance, and safety instructions or manuals, in clear diagrammatic and text format, in English

7.2 Content

The manuals shall contain all the relevant information required to commission and maintain the Product in operational service, including the following:

a) Details of Product features

b) Operational adjustments

c) Installation and commissioning instructions

d) Preventative maintenance requirements and intervals

e) Testing procedures

f) Trouble shooting guidelines

g) Safety procedures

h) Complete list of parts and associated exploded views or sectional diagrams and reference part numbers

8 Spare Parts and Special Tools

8.1 Spare Parts

8.1.1 Interchangeability

All spare parts shall be interchangeable for a manufacturer's Product of the same size and model.

8.1.2 Availability

Spare parts and servicing facilities for the product shall be readily available in Western Australia.

8.2 Special Tools

Any special tools required for service and maintenance of the Product shall be supplied.

9 Transportation, Handling and Storage

9.1 General

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 e.g. 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.

9.2 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. Sensitive component materials shall be protected from extended exposure to direct sunlight and high temperatures e.g. elastomeric components shall be stored in accordance with the general principles of AS 1646.1 Clause 6. 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.

10 Quality Assurance

10.1 Certification

10.1.1 Certification of Product

Wherever this Specification requires compliance with nominated Product and test Standards, conformance shall be certified by means of a Certification Scheme, conducted by a Certification Body. 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. Product shall be marked in accordance with the requirements of the Certification Body.

NOTE: Compliance of Product including related accessories and services with nominated Standards and specified requirements may be verified by means of a Product Verification Report provided by a Product Assessor. The Product Verification Report should identify all relevant Certificates of Product compliance, duly issued in accordance with Certification Scheme rules.

10.1.2 Quality System

The processes for manufacture, testing, supply, transportation, handling, delivery and storage of Product to be supplied in accordance with this Specification shall form part of a documented Quality System. The System shall be certified by a Certification Body as complying with the requirements of AS/NZS ISO 9001 and shall provide for identification and traceability, control of production and delivery to the specified destination, customer verification and control of documents and records.

10.1.3 Product Re-verification

Product compliance 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.

Wherever the requirements of the Specification apply to a Product supply period in excess of three years, continuing acceptance of Product shall be subject to re-verification. The purpose of re-verification shall be to confirm the continuing compliance of Product quality and production control processes with the requirements of the Specification

10.2 Compliance and Acceptance

10.2.1 Means of Demonstrating Compliance

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

NOTE 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.

NOTE 2: A Product Verification Report should verify the extent of compliance with the Specification including all relevant 'Technical Compliance Schedule' Appendices and the currency of a Certificate where relevant to the Product.

10.2.2 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 comply with the specified requirements together with the extent of non-compliance.

NOTE : Where the Specification includes Technical Compliance Schedules, the nature and extent of all non-compliances should be provided in accordance with the appropriate Schedules.

10.3 Non-compliant Product

10.3.1 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-compliant 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-compliant except where a Supplier has demonstrated compliance in accordance with the requirements of the 'Technical Compliance Schedule' Appendices of the Specification.

10.3.2 Manufacturing Repairs (In-process)

Welding, the use of fillers and other repairs shall generally not be permissible on Product which is in the course of production. Repairs to custom-built Products such as axially-split pumps and large valves may be considered only if determined by the Corporation to be minor casting repair work in non-strategic locations. 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 the appropriate inspection and testing plans (ITPs) for sufficient hold points whenever casting defects are encountered. Production work on non-compliant components shall cease and repair work shall not commence until the following details have been confirmed by the Corporation in writing:

(a) that repair of the non-compliant components in lieu of their replacement is acceptable; and

(b) that proposed repair procedures are acceptable; and

(c) that any proposal to vary the terms of the original Product Warranty as a consequence of the in-process repair is acceptable.

10.3.3 Product Warranty

The Supplier shall replace non-compliant Product with Product that conforms to 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-compliant Product for a period no less than 24 months after Product delivery or 12 months after Product installation, whichever period elapses first.

10.3.4 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.

11 Appendix A: Project Specific Requirements (Normative)

11.1 General

Project specific information and requirements, not included elsewhere in this Strategic Product Specification shall apply as specified in the following.

11.2 Technical Requirements

Table 11.1 details project specific requirements for the valves to be procured.

TABLE 11.1: SCHEDULE OF PROJECT TECHNICAL REQUIREMENTS

MMR No	No Off	DN	PN	Special Requirements Refer Notes 1, 2, 3

NOTES:

1. The materials of construction should comply with the Basic Materials contained in Table 2.1 of AS 3638.1unless otherwise stated.
2. Specify the operator type e.g. key or handwheel.
3. Specify if a gearbox is required.

12 Appendix B: Technical Compliance Schedules (Normative)

12.1 Compliance Schedules

Suppliers shall demonstrate Product compliance with the Specification by completing Technical Compliance Schedule 1 as shown in **TABLE 12.1A** and **TABLE 12.1B** on an item by item basis. Table 12.1A refers to clauses contained in AS 2638.1 whereas Table 12.1B refers to additional clauses contained in this Specification.

For acceptance, the extent of scheduled technical item compliance shall be supported by verifiable documentary evidence. Each scheduled item nominates a Specification clause number with which the extent of Product compliance shall be demonstrated.

The Supplier shall denote compliance of an item by ticking the unshaded 'Yes' column appropriate to that item. Where Product does not comply with specified requirements, the Supplier shall tick the 'No' column and shall detail the reasons for non-conformance and any proposed alternatives in the 'Comments' column. The Supplier shall denote acceptance and understanding of a Specification clause by ticking the corresponding 'Noted' column wherever unshaded.

Failure to notify the Corporation of all non-compliant Product components, including the extent of non-compliance, may void an accepted offer to supply or may result in rectification of all non compliant Product elements, at the Supplier's cost.

TABLE 12.1A: AS 2638.1 TECHNICAL COMPLIANCE SCHEDULE 1A

Metal Seated Gate Valves					
Section/Clause		**Noted**	**Compliance**		**Comments**
			Yes	**No**	
1. SCOPE AND GENERAL					
1.1	Scope				
1.2	Referenced Documents				
1.3	Definitions				
1.4	Designation of Size				
1.5	Allowable Pressures				
2. MATERIALS AND COMPONENTS					
2.1	Materials				
2.2	Dezincification-resistant Materials				
2.3	Contamination of Water				
2.4	O-rings (elastomeric toroidal sealing rings)				
3. DESIGN					
3.1	General				
3.2	Dimensions				
3.3	End Connections				
3.4	Gate				
3.5	Component Jointing				
3.6	Waterway				
3.6.1	Waterway				
3.6.2	Metal rings				
3.7	Spindle				
3.7.1	Spindle diameter				
3.7.2	Spindle thread				
3.7.3	Spindle sealing				
3.7.4	Thrust collar				
3.7.5	Spindle seat retainer				
3.8	Operation				
3.8.1	General				
3.8.2	Spindle cap and key				
3.8.3	Extension spindle				
3.8.4	Handwheels				
3.8.5	Direction of closure				
3.9	Lifting Devices				
3.10	Support Feet				

4. COATINGS					
4.1	General				
4.2	Design				
5. TESTING					
5.1	Type Tests				
5.1.1	General				
5.1.2	Strength test (spindle, nut and cap) (Test A)				
5.1.3	Body pressure test (Test B)				
5.1.4	Gate strength test (Test C)				
5.1.5	Torque test (Test D)				
5.1.6	Valve seat test (Test E)				
5.1.7	Sensitivity test (Test F)				
5.1.8	Functional test (Test G)				
5.1.9	Spindle seal replacement or repair test (Test H)				
5.1.10	Final inspection				
5.1.11	Strength test (valve key) (Test I)				
5.1.12	Strength test (spindle extension) (Test J)				
5.2	Production Tests				
5.2.1	General				
5.2.2	Body test (Test 1)				
5.2.3	Valve seat test (Test 2)				
5.2.4	Coating tests				
6. GEARBOXES					
6.1	Design				
6.1.1	Gearbox				
6.1.2	Gearbox selection				
6.1.3	Geared valves				
6.2	Coatings				
6. 3	Markings				
7. MARKING AND PACKAGING					
7.1	Body Markings				
7.2	Valve Key and Spindle Extension Markings				
7.3	Direction of Closure for Handwheels and Caps				
7.4	Packaging				

TABLE 12.1B: SPS 271 TECHNICAL COMPLIANCE SCHEDULE 1B

Metal Seated Gate Valves					
Section/Clause		**Noted**	**Compliance**		**Comments**
			Yes	**No**	
1. SCOPE AND GENERAL					
1.1	Scope				
1.2	Referenced Documents				
1.3	Definitions and Notation				
1.4	Designation of Size				
2. MATERIALS AND COMPONENTS					
2.1	General				
2.2	Non-metallic Materials				
3. DESIGN					
3.1	Gate Valve				
3.2	Gearbox				
3.3	Lockout Devices				
4. COATINGS					
4.1	General				
5. TESTING					
5.1	General				
5.2	Notification of Testing				
5.3	Access to the Place of Manufacture				
5.4	Place of Manufacture other than WA				
5.5	Performance Test Requirements				
5.5.1	Production Tests				
5.5.2	Coating Tests				
5.5.3	Test Certificates				

6. MARKING AND PACKAGING					
6.1	Marking				
6.2	Packaging				
6.2.1	General				
6.2.2	Identification Tag				
6.2.3	Marking of Packaging				
7. MANUALS					
7.1	Format and Language				
7.2	Content				
8. SPARE PARTS AND SPECIAL TOOLS					
8.1	Spare Parts				
8.1.1	Interchangeability				
8.1.2	Availability				
8.2	Special Tools				
9. TRANSPORTATION, HANDLING AND STORAGE					
9.1	General				
9.2	Preservation of Product in Storage				
10. QUALITY ASSURANCE					
10.1	Certification				
10.1.1	Certification of Product				
10.1.2	Quality System				
10.1.3	Product Re-verification				
10.2	Compliance and Acceptance				
10.2.1	Means of Demonstrating Compliance				
10.2.2	Acceptance Criteria				
10.3	Defective and Non-compliant Product				
10.3.1	General				
10.3.2	Manufacturing Repairs (In-process)				
10.3.3	Product Warranty				
10.3.4	Product Repair				

Name of Supplier:

Signature: Date:

When requested by the Corporation, the Supplier shall provide the information required by Technical Compliance Schedule 2 as shown in **TABLE 12.2**.

TABLE 12.2: TECHNICAL COMPLIANCE SCHEDULE 2

Metal Seated Gate Valves				
1.	**SUPPLIER'S REPRESENTATIVE**			
1.1	Full name			
1.2	Postal address			
1.3	Facsimile number			
1.4	Email address			
1.5	Phone number			
1.6	Mobile number			
2.	**QUALITY ASSURANCE**			
2.1	Extent of Third Party Accreditation of Supplier			
2.2	Extent of Third Party Accreditation of Manufacturer			
2.3	Details of Certificates and Verification Reports attached	(Yes/No)		
2.4	Certification Mark obtained	(Yes/No)		
2.5	Corporation authorisation received	(Yes/No)		
3.	**TECHNICAL INFORMATION**			
3.1	Valve and gearbox detail drawing supplied	(Yes/No)		
3.2	Details of the manufacturer's ITPs supplied.	(Yes/No)		
3.3	Details of servicing facilities in Perth supplied.	(Yes/No)		
3.4	Additional pamphlets and drawings in conjunction with the technical literature supplied.	(Yes/No)		
4	**MATERIALS**	**MATERIAL**	**STANDARD**	**GRADE**
4.1	Body			
4.2	Bonnet and seal retaining housing (where applicable)			
4.3	Seal retainer			
4.4	Gate			
4.5	Gate facing rings			
4.6	Gate nut			
4.7	Seating rings			
4.8	Spindle			
4.9	Spindle cap and handwheel			
4.10	Fasteners			
4.11	Flat gaskets			
4.12	O-rings			
4.13	Gate liners and wedge shoes			
4.14	Gearbox body			
4.15	Gear shafts			
4.16	Gears			
4.17	Shaft bushes			
4.18	Indicator gears			
4.19	Protective coating			
5.	**VALVE DESIGN AND MANUFACTURE**			
5.1	Manufacturer's name			
5.2	Place of manufacture			
5.3	Model			
5.4	Type			
5.5	Size mm			
5.6	Pressure classification (PN) kPa			
5.7	Maximum operating temperature ºC			
5.8	End connection – flange standard			

5.9	Maximum allowable flow velocity	m/sec	
5.10	Allowable operating pressure	kPa	
5.11	Maximum allowable operating pressure	kPa	
5.12	Number of turns to fully open the valve		
5.13	Maximum torque to unseat the valve	Nm	
5.14	Valve maximum running torque	Nm	
5.15	Flow coefficient (maximum opening)	kV	
5.16	Minimum waterway diameter		(Yes/No)
5.17	Gate guide fitted		
5.18	Gate intrusion into the waterway		(Yes/No)
5.19	Full engagement of spindle thread in the nut with gate closed		(Yes/No)
5.20	Gate seating rings		Integral:……Separate:……
5.21	Spindle thread type		
5.22	Direction of closure when facing the operator		
5.23	Type of spindle seals		
5.24	Spindle seal retainer fail-safe locking feature		
5.25	Thrust bearing type and location		
5.26	Support feet provided		(Yes/No)
5.27	Mass of valve and gearbox	kg	
6.	**GEARBOX DESIGN AND MANUFACTURE**		
6.1	Manufacturer's name		
6.2	Place of manufacture		
6.3	Model		
6.4	Type of reduction		
6.5	Ratio		
6.6	Rated maximum output torque	Nm	
6.7	Input torque required for maximum output torque	Nm	
6.8	Efficiency		
7.	**PERFORMANCE TESTS**		
7.1	Body test pressure	kPa	
7.2	Valve seat test pressure	kPa	
7.3	Coating test to be performed		(Yes/No)

Name of Supplier:

Signature: Date:

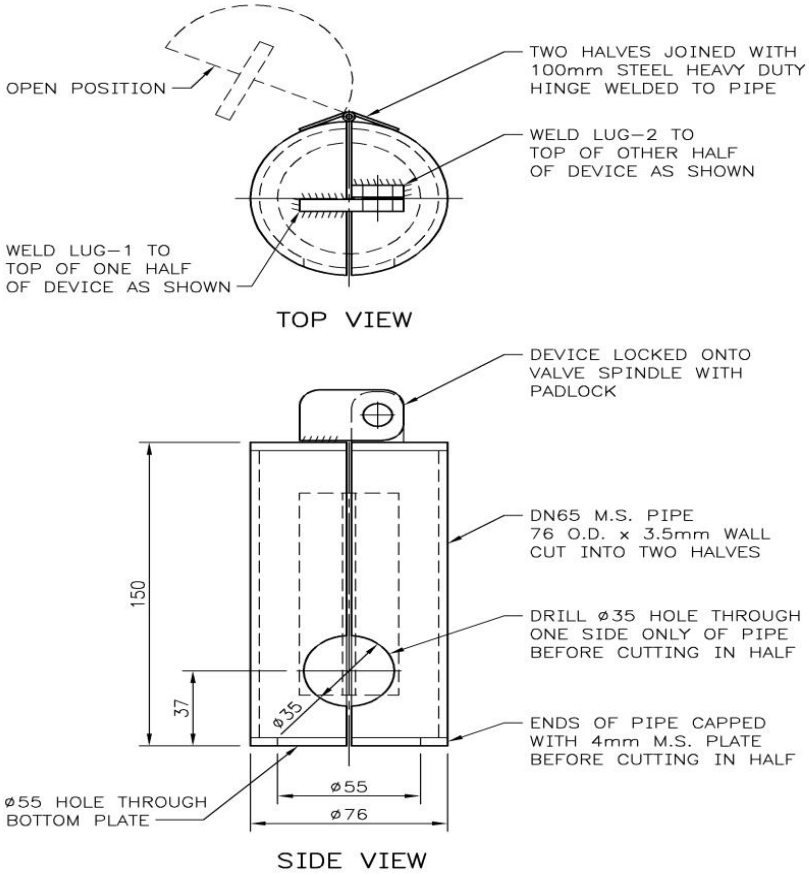
13 Appendix C: Material Master Records (Informative)

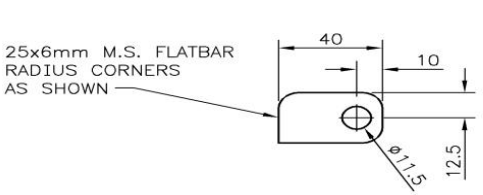
The following Material Master Records (MMR) comprise Corporation catalogue numbers that are unique to the particular products described for the purposes of Corporation activities or work.

MMR	PURCHASE ORDER LONG TEXT
5956	Valve, Gate; Sluice; Ductile Cast Iron Body; Dn400; Metal Seated; Pn16; Flanged to AS 4087 Figure B5; Thermal Bonded Polymeric Coating (Internal & External) to AS/NZS 4158; Ungeared; Anti-Clockwise Closing.
5957	Valve, Gate; Sluice; Ductile Cast Iron Body; Dn500; Metal Seated; Pn16; Flanged to AS 4087 Figure B5; Thermal Bonded Polymeric Coating (Internal & External) to AS/NZS 4158; Ungeared; Anti-Clockwise Closing.
5958	Valve, Gate; Sluice; Ductile Cast Iron Body; Dn600; Metal Seated; Pn16; Flanged to AS 4087 Figure B5; Thermal Bonded Polymeric Coating (Internal & External) to AS/NZS 4158; Geared; Anti-Clockwise Closing.
16689	Valve, Gate; Sluice; Ductile Cast Iron Body; Dn700; Metal Seated; Pn16; Flanged to AS 4087 Figure B5; Thermal Bonded Polymeric Coating (Internal & External) to AS/NZS 4158; Geared; Anti-Clockwise Closing.
7592	Valve, Gate; Sluice; Ductile Cast Iron Body; Dn800; Metal Seated; Pn16; Flanged to AS 4087 Figure B5; Thermal Bonded Polymeric Coating (Internal & External) to AS/NZS 4158; Geared; Anti-Clockwise Closing.
5960	Valve, Gate; Sluice; Ductile Cast Iron Body; Dn900; Metal Seated; Pn16; Flanged to AS 4087 Figure B5; Thermal Bonded Polymeric Coating (Internal & External) to AS/NZS 4158; Geared; Anti-Clockwise Closing.
3712	Valve, Gate; Sluice; Ductile Cast Iron Body; Dn100; Metal Seated; Pn35; Flanged to AS 4087 Figure B6; Thermal Bonded Polymeric Coating (Internal & External) to AS/NZS 4158; Ungeared; Anti-Clockwise Closing.
3713	Valve, Gate; Sluice; Ductile Cast Iron Body; Dn150; Metal Seated; Pn35; Flanged to AS 4087 Figure B6; Thermal Bonded Polymeric Coating (Internal & External) to AS/NZS 4158; Ungeared; Anti-Clockwise Closing.
3714	Valve, Gate; Sluice; Ductile Cast Iron Body; Dn200; Metal Seated; Pn35; Flanged to AS 4087 Figure B6; Thermal Bonded Polymeric Coating (Internal & External) to AS/NZS 4158; Ungeared; Anti-Clockwise Closing.
21009	Valve, Gate; Sluice; DN250; PN35; Ductile Cast Iron Body; Metal Seated; Flanged to AS 4087 Figure B6; Thermal Bonded Polymeric Coating (Internal & External) to AS/NZS 4158; Ungeared; Anti-Clockwise Closing.
3716	Valve, Gate; Sluice; Ductile Cast Iron Body; Dn300; Metal Seated; Pn35; Flanged to AS 4087 Figure B6; Thermal Bonded Polymeric Coating (Internal & External) to AS/NZS 4158; Ungeared; Anti-Clockwise Closing.
19981	Valve, Gate; Sluice; Ductile Cast Iron Body; Dn375; Metal Seated; Pn35; Flanged to AS 4087 Figure B6; Thermal Bonded Polymeric Coating (Internal & External) to AS/NZS 4158; Geared; Anti-Clockwise Closing.
7091	Valve, Gate; Sluice; Ductile Cast Iron Body; Dn400; Metal Seated; Pn35; Flanged to AS 4087 Figure B6; Thermal Bonded Polymeric Coating (Internal & External) to AS/NZS 4158; Ungeared; Anti-Clockwise Closing.

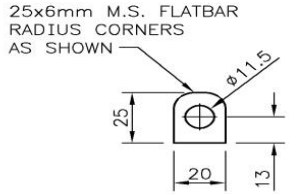
MMR	PURCHASE ORDER LONG TEXT
19986	Valve, Gate; Sluice; Ductile Cast Iron Body; Dn400; Metal Seated; Pn35; Flanged to AS 4087 Figure B6; Thermal Bonded Polymeric Coating (Internal & External) to AS/NZS 4158; Geared; Anti-Clockwise Closing.
19982	Valve, Gate; Sluice; Ductile Cast Iron Body; Dn500; Metal Seated; Pn35; Flanged to AS 4087 Figure B6; Thermal Bonded Polymeric Coating (Internal & External) to AS/NZS 4158; Geared; Anti-Clockwise Closing.
19983	Valve, Gate; Sluice; Ductile Cast Iron Body; Dn600; Metal Seated; Pn35; Flanged to AS 4087 Figure B6; Thermal Bonded Polymeric Coating (Internal & External) to AS/NZS 4158; Geared; Anti-Clockwise Closing.
19985	Valve, Gate; Sluice; Ductile Cast Iron Body; Dn900; Metal Seated; Pn35; Flanged to AS 4087 Figure B6; Thermal Bonded Polymeric Coating (Internal & External) to AS/NZS 4158; Geared; Anti-Clockwise Closing.

14 Appendix D





LUG–1 DETAIL



LUG–2 DETAIL

VALVE LOCKING DEVICE SHALL BE USED IN CONJUNCTION WITH WATER CORPORATION LOCK AND TAG PROCEDURE "WC–OSH (109)"

GENERAL NOTES
1. UNLESS OTHERWISE NOTED ALL DIMENSIONS ARE IN MILLIMETRES.
2. PAINT WITH INORGANIC ZINC SILICATE AFTER MANUFACTURE.

THIS DRAWING IS DERIVED FROM DRAWING EG20–11–2

END OF DOCUMENT