



**Water Quality**

**Technical Standard**

# **TS 0800 – Materials in Contact with Drinking Water**

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**Government of  
South Australia**

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It is the responsibility of the users of this Standard to ensure that the application of information is appropriate and that any designs based on this Standard are fit for SA Water's purposes and comply with all relevant Australian Standards, Acts and regulations.

Users of this Standard accept sole responsibility for interpretation and use of the information contained in this Standard. Users should independently verify the accuracy, fitness for purpose and application of information contained in this Standard.

Only the current revision of this Standard should be used which is available for download from the SA Water website.

## Significant/Major Changes Incorporated in This Edition

Nil.

This is the first issue of this Technical Standard.





## Document Controls

### Revision History

Revision	Date	Author	Comments
1.0	04/07/2022	Keturah Stock Amber Lang Kingsley Brown Kevin Claridge	First issue

Template: Technical Standard Version 6.00, 10/05/2016

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# 1 Introduction

SA Water is responsible for the construction, commissioning, operation, and maintenance of an extensive amount of engineering infrastructure such that it is safe and fit for purpose.

This standard has been developed to assist in the design, maintenance, construction, and management of drinking water infrastructure.

## 1.1 Act, Regulations and Guidelines

SA Water is regulated by the Department for Health and Wellbeing. We are required to comply with the Safe Drinking Water Regulations 2012 (under the *Safe Drinking Water Act 2011*).

Section 4 of the *Safe Drinking Water Regulations 2012* states that SA Water has a general obligation to observe the ADWG in relation to the quality and supply of our drinking water.

Element 4 of the *Framework for Drinking Water Quality* in the Australian Drinking Water Guidelines (ADWG) (NHMRC 2011) focuses on operational procedures and process control. This includes the use of acceptable materials that come in contact with the drinking water.

The ADWG outlines that:

*“The products used in water systems should be subjected to an audited system of quality control. The effectiveness of preventive measures is highly dependent upon the design and implementation of associated process control programs. To consistently achieve a high-quality water supply it is essential to have effective control over the processes and activities that govern drinking water quality (NHMRC 2011)”.*

In addition, the ADWG outlines that:

*“Contaminants may also be introduced when water comes into contact with materials such as filter media, protective coatings, linings and liners, joining and sealing products, pipes and fittings, valves, meters and other components. Materials used should comply with Australian Standard AS/NZS 4020 Products for use in contact with drinking water”.*

In a similar manner, SA Water has a sound and robust approval process to select chemicals for use in drinking water system. This is an endorsed process which is part of the Drinking Water Quality Management System (DWQMS).

## 1.2 Purpose

The purpose of this standard is to detail minimum requirements to ensure that the drinking water assets covered by the scope of this standard are constructed and maintained to consistent standards and attain the required asset life and to ensure the safety of the drinking water supplied to the public.

## 1.3 Glossary

The following glossary items are used in this document:

Term	Description
ADWG	Australian Drinking Water Guidelines
AS/NZS	Joint Standard for Standards Australia and Standards New Zealand
DWQMS	Drinking Water Quality Management System
NDMA	N-Nitrosodimethylamine
NHMRC	National Health and Medical Research Council
PM	Project Manager
PTFE	Polytetrafluoroethylene
SA Water	South Australian Water Corporation
TDRF	Technical Dispensation Request Form
TG	SA Water Technical Guideline
TS	SA Water Technical Standard
WQ&TS	Water Quality & Treatment Solutions (previously Water Process Design & Standards)
WSAA	Water Services Association of Australia
WQI&C	Water Quality Improvement and Compliance

## 1.4 References

### 1.4.1 Australian and International

The following table identifies Australian and International standards and other similar documents referenced in this document:

Number	Title
AS/NZS 4020:2018	Testing of products for use in contact with drinking water
WSA 03	WSAA - Water Supply Code of Australia WSA 03—2011-3.1
BS 6920	British Standard - Suitability of non-metallic materials and products for use in contact with water intended for human consumption with regard to their effect on the quality of the water
NSF/ANSI 61	National Science Foundation / American National Standards Institute - Drinking Water System Components

## 1.4.2 SA Water documents

The following table identifies the SA Water standards and other similar documents referenced in this document:

Number	Title
Form 101	Product Authorisation Application, for use within SA Water Corporation networks.
TS 0500	Authorised Products for Maintenance of Water and Sewer Systems
TS 0501	Standard for Product Appraisal and Authorisation
TS 0503	Authorised Product Water Systems

## 1.5 Definitions

The following definitions are applicable to this document:

Term	Description
Accepted	Determined to be satisfactory by SA Water's Representative
Constructor	The organisation responsible for constructing and installing infrastructure for SA Water whether it be a third party under contract to SA Water or an in-house entity.
Contract Documents	A set of documents supplied to Constructor as the basis for construction; these documents contain contract forms, contract conditions, specifications, drawings, addenda, and contract changes
Designer	The organisation responsible for designing infrastructure for SA Water whether it be a third party under contract to SA Water or a Constructor, or an in-house entity
Manufacturer	A person, group, or company that owns and operates a manufacturing facility that provides materials for use in SA Water infrastructure
Responsible Discipline Lead	The discipline expert responsible for TS0800 defined on page 3
SA Water's Representative	The SA Water representative with delegated authority under a Contract or engagement, including (as applicable): <ul style="list-style-type: none"> <li>• Superintendent's Representative (e.g., AS 4300 &amp; AS 2124 etc.)</li> <li>• SA Water Project Manager</li> <li>• SA Water Construction Technical Officer</li> <li>• SA Water nominated contact person</li> </ul>
'Shall' and 'Should'	In this Standard the word 'shall' indicates a requirement that is to be adopted in order to comply with the Standard. The word 'should' indicates practices which are advised or recommended.
Supplier	A person, group or company that provides goods for use in SA Water infrastructure
TDRF	Technical Dispensation Request Form This form is part of SA Water's Technical Dispensation Request Procedure which details the process by which those required to comply, or ensure compliance, with SA Water's technical requirements may seek dispensation from those requirements.
Terminology	<ul style="list-style-type: none"> <li>• Where an obligation is given and it is not stated who is to undertake these obligations, they are to be undertaken by the Constructor.</li> <li>• Directions, instructions and the like, whether or not they include the expression 'the Constructor shall' or equivalent, shall be directions to the Constructor, unless otherwise specifically stated.</li> </ul>



	<ul style="list-style-type: none"> <li>• Where a submission, request, proposal is required and it is not stated who the recipient should be, it is to be provided to SA Water's Representative for review.</li> <li>• Each word imparting the plural shall be construed as if the said word were preceded by the word "all".</li> <li>• Each word implying persons shall, where appropriate, also be construed as including corporations.</li> <li>• "Authorised", "approval", "approved", "selected", "directed" and similar words shall be construed as referring to the authorisation, approval, selection or direction of SA Water's Representative in writing.</li> <li>• "Allow" shall mean that the cost of the item referred to is the responsibility of the Constructor.</li> <li>• "Provide" shall mean "supply and install".</li> <li>• "Submit" shall mean "submit to SA Water's Representative or their nominated delegate".</li> <li>• Submissions, requests, proposals are to be provided at least 7 working days prior to work commencing or material ordering (unless noted otherwise).</li> </ul> <p>"Informative" shall mean "provided for information and guidance"</p>
Works	Elements of a project which require design and/or construction

## 1.6 Disclaimer

- SA Water reserves the right to alter or amend this document at any time, without prior notice. Amended or updated versions take precedence over this version.
- SA Water does not give preference to any particular make or brand of products or Manufacturer/Supplier.
- It is the responsibility of the Designer/Constructor, to ensure selected products are appropriate for the intended application and fit for purpose.
- Compliance with AS/NZS 4020 is a requirement of Australian Standards, for products that are intended to be in contact with drinking water. AS/NZS 4020 testing is required at change of materials or every 5 years (whichever is sooner). SA Water is reliant upon Manufacturers providing notification of this testing in a timely manner and takes no responsibility for any issue that may arise should a manufacturer fail to do so.
- It is the responsibility of the Designer/Constructor, to ensure that a product complies with the infrastructure category for which it is intended to be used and that it has been manufactured to the relevant Australian Standards.

It is the responsibility of the Constructor to ensure materials and products to be used, have not exceeded any expiry date, and are stored and used in accordance with manufacturer's recommendations. This includes the requirement that during construction, the pipeline and fittings **must** be sealed whenever the work site is left unattended (sealing must be adequate to prevent water and other contaminants entering the pipe.)

## 2 Scope

This standard provides basic principles for the selection of materials that come in contact with drinking water supplies, thereby mitigating or reducing potential risks to water quality and public health.

This Standard is applicable to new or existing ADWG compliant water and non-drinking water systems, including repairs, upgrades, operations, and maintenance.

In the interests of public health protection, all SA Water employees and Contractors are responsible for the management and provision of drinking water supplies, shall ensure compliance with the requirements of this document.

During the design or upgrade of any infrastructure in the future, this standard shall be complied with, together with the relevant Australian Standards, legislative requirements, and SA Water specifications.

All products which are installed and are required to cure (such as epoxies), must be fully cured before immersion in drinking water. This is typically 7 days at 20C for adhesives and coatings.

### 2.1 Objectives of this Standard

- Consideration for water quality design requirements at very early stage of the project development to mitigate health risk to public.
- Elaborate on SA Water's water quality requirements
- Outline the process to achieve compliance
- Stipulate the responsibilities of various parties involved in the development of a project

### 2.2 Applications of this Standard

- New and remediated drinking water infrastructure including pipework and associated fittings
- New and remediated recycled water infrastructure including pipework and associated fittings
- All materials within the interior of a tank interiors including air space and roof
- All materials in direct contact with drinking/recycled water

### 2.3 Works Not in Scope

- Materials within drinking/recycled water but concealed by another compliant material that maintain its integrity throughout the life of the product.

## 2.4 Technical Dispensation

Departure from any requirement of this Technical Standard shall require the submission of Technical Dispensation Request Form (TDRF) for the review and approval (or otherwise) of SA Water Responsible Discipline Lead listed in Page 3, on a case-by-case basis.

The Designer shall not proceed to document/incorporate the non-conforming work before the Responsible Discipline Lead has approved of the proposed action in writing via the Technical Dispensation Request Form (TDRF).

SA Water requires sufficient information to assess dispensation requests and their potential impact. The onus is therefore on the proponent to justify dispensation request submissions and provide suitable evidence to support them.

Design works that are carried out without being appropriately sanctioned by SA Water shall be liable to rejection by SA Water and retrospective rectification by the designer/constructor.

## 3 Materials in Contact with Drinking Water

### 3.1 Compliance Requirements

The Australian Drinking Water Guideline (ADWG) states that:

*"Materials used should comply with Australian Standard AS/NZS 4020 Products for use in contact with drinking water (NHMRC 2011)"*

The Water Services Association of Australia (WSAA Codes), have been Gazetted by the Office of the Technical Regulator, as the minimum Standard requirements for Water and Wastewater infrastructure. Section 4.1 of the Water Supply Code (WSA 03 - 2011), highlights the compliance requirements to AS/NZS 4020.

*"All products and materials used in contact with drinking and non-drinking water shall comply with AS/NZS 4020" (WSAA 2011)."*

In addition,

*"Unless otherwise permitted by the Water Agency, only Water Agency "approved" products and materials shall be used".*

#### 3.1.1 SA Water Requirements

SA Water requires that products in contact with drinking water (including elements that may affect drinking water indirectly – see section 3.3.2.2) to comply with AS/NZS 4020 and have a current approval certificate to this Standard. From September 2019, all new products intended for water applications and approved by SA Water, are required to comply with AS/NZS 4020 (2018).

Compliance testing of products against the AS/NZS 4020 Standard, shall be undertaken by the Manufacturer, at any change in materials, formulation, design or manufacture of the product or every 5 years (whichever occurs first). In addition, if there is a change to the AS/NZS 4020 Standard, the product must be re-verified within a two-year period of this change. SA Water will accept an abridged program of testing for the re-verification of a product. This will be in the form of gap-testing, which will capture the differences in testing requirements.

Clause 6.8 of AS/NZS 4020 (2018), states that organic compounds must be within the values listed in the ADWG, which sets the limits for NDMA leaching at 100 ng/L. However, SA Water has the additional requirement for the testing of rubber rings in PVC pipe, where each compound, shall be tested in chloraminated water and that the 9-day result, shall be < 30 ng/L. Results of this testing must be provided to SA Water along with the AS/NZS 4020 (2018) certification.

Section 5 of this Technical Standard is included to provide guidance on the material types (metals, polymeric and inorganic/cementitious) and the tests required to demonstrate compliance to AS/NZS 4020 when assessing the test report details to ensure the full suite has been conducted.

Satisfaction of the requirements of this clause (including citing the AS/NZS 4020 certificate) constitute a **HOLD POINT** under this Technical Standard.

#### 3.1.2 Approved products for reticulation networks

Approved products for reticulation networks are documented in:

- TS 0500 – Authorised Products for Maintenance of Water and Sewer Systems and
- TS 0503 – Authorised Products Water System.

Products in these documents have already been approved for use and have AS/NZS 4020 approval. However, these standards do not list all AS/NZS 4020 products available and do not cover all transmission, pumping and storage of drinking water.

## 3.2 Material Risk Categorisation

SA Water group materials into three categories:

- Group 1 – Materials which have current AS/NZS 4020 certification (as per section 3.3.1.1) or
  - Stainless steel 304L, 316L or higher grades
  - Copper
  - Brass Dezincification Resistant (DR)
  - Aluminium 5000 / 6000 series
  - Galvanised mild steel
  - Mild steel
  - Cast iron
  - Ductile iron
  - Concrete that does not contain chemicals/additives which may leech out.
- Group 2 - Materials which do not have AS/NZS 4020 but have certification to BS 6920 or NSF/ANSI 61 approval or products not directly in contact with drinking water.
- Group 3 – Materials which do not have AS/NZS 4020 certification or another international standard certification (BS 6920 or NSF/ANSI 61).

## 3.3 Material Risk Groups

Refer to the Materials in Contact with Drinking Water Flowchart (5Appendix B) for details on the use/approval process for each product.

### 3.3.1 Group 1 - AS/NZS 4020 Certification or approved metals

Group 1 are products which are approved for use in SA Water systems, provided they also meet other specifications required by SA Water. Group 1 products are SA Water's strong preference for drinking/recycled water supplies.

Certification and product data sheets shall be provided upon request.

#### 3.3.1.1 Group 1A - AS/NZ 4020 Certification

Products which have a current compliance certificate to AS/NZ 4020 can be used in SA Water drinking water supplies provided they also meet other specifications required by SA Water.

A current compliance certificate is:

- A test certificate that was issued after 1<sup>st</sup> October 2016 to AS/NZS 4020:2005, and a supplementary (gap test) report for the additional tests have been conducted to the 2018 edition (mutagenic, organics (including NDMA) and metallic value limitations).
- The test report was issued after 1<sup>st</sup> October 2020 to AS/NZS 4020:2018.
- Test report to AS/NZS 4020:2005 and is less than 5 years old.
- If a polymeric compound is used in higher temperatures environments (i.e., greater than 25°C) additional testing may be required to confirm suitability of the product in accordance with Appendix J of AS/NZS 4020. This additional testing shall be explicitly asked for at the time of testing or supplementary gap testing conducted.
- An example of a compliance report can be found in 5Appendix C

Gap testing to meet the requirements of AS/NZS 4020 (2018) may also be necessary.

#### 3.3.1.2 Group 1B – Approved metals

Some materials made from certain metals are considered low risk materials and can be used in SA Waters supplies.

- Stainless steel 304L, 316L or higher grades
- Copper
- Brass Dezincification Resistant (DR)
- Aluminium 5000 series
- Galvanised mild steel
- Mild steel
- Cast iron
- Ductile iron

### **3.3.2 Group 2 - International Standards Certification/Products not in direct contact with water**

Group 2 products are not SA Water's preferred product for use and in all circumstances an alternate Group 1 product should be sought before considering a group 2 product. A risk assessment is required for all products which fall into this group prior to their use in drinking water supplies (following receipt of a TDRF). SA Water's Water Quality Improvement and Compliance team (Water Expertise) will store and assist with completing the risk assessments.

#### **3.3.2.1 Group 2A - International standards certification (BS 6920 and NSF/ANSI 61)**

Products with BS 6920 and NSF/ANSI 61 are required to be risk assessed, should they wish to be used in SA Water's drinking water systems. Due to possible deficiencies in these international testing protocols, a risk assessment with SA Water stakeholders is required (conducted by WQ Improvement and Compliance, Water Expertise, SA Water). Each product that does not have AS/NZS 4020 compliance will be assessed on an individual product and site-specific basis before approval for use is granted for the specific application. Additional product or commissioning testing to meet current AS/NZS 4020 requirements may be required (on a product which has international certification). The manufacturer may choose to have their product tested to AS/NZS4020 at their cost.

#### **3.3.2.2 Group 2B - Products not directly in contact with water**

Tanks roof structures are not in direct contact with water; however condensation can form and lead to indirect contact with water. Products which SA Water deem low risk when not in contact with water (e.g. PTFE or Teflon products), may be allowed to be used in these structures. These require specific approval by SA Water and are considered on a site specified, case by case basis.

Decisions made shall not be seen as a precedence for any similar requests. A risk assessment will be conducted by SA Water which will not only consider material/product and location, but also inputs, such as the size, quantity and condition of the exposed surfaces.

### **3.3.3 Group 3 – Materials without AS/NZ 4020 Certification**

For products or materials that do not fall into groups 1 or 2, SA Water will direct to use an alternate product or material, that does comply with this standard.

If no alternate product or material is available, SA Water may require the manufacturer to have the product or material tested to validate its compliance with AS/NZS 4020. In some cases, SA Water may approve a dispensation (upon receiving a TDRF) for a non-compliant product in some one-off circumstances as supported by materials specialists and risk assessments, depending on the product material.

However, SA Water's preference is that alternate products should be sought.



## 4 Installed Products / Materials That Do Not Comply with this Standard<sup>1</sup>

For any products or materials that are currently installed in SA Water drinking water supplies, that do not comply with this Standard, SA Water's approach is as follows (not all steps in this process may be required, consult with Water Expertise if a product is identified):

- 1) Undertake relevant water quality monitoring, in the SA Water supply to ensure the safety of the drinking water (this may already be completed by way of the routine monitoring program or may require a specific monitoring program).
- 2) Undertake necessary AS/NZS 4020 testing of the non-compliant product / material. This may only be required if monitoring results detect unusual levels which may attributed to the non-compliant product being installed.
- 3) Report findings of items 1) and 2) to SA Health.
- 4) Undertake risk assessment of current product / material within water supply system with relevant stakeholders.
  - a. **For high-risk products / materials** (as defined by risk assessment) – immediately replace the non-compliant product / material with a compliant product / material.
  - b. **For low-risk products / materials** (as defined by risk assessment) - As part of the routine asset replacement program within drinking water networks, replace the non-compliant product / material with a compliant product / material within an agreed timeframe.
- 5) Document the non-compliant product / material, with supporting evidence.
- 6) Communicate that the non-compliant product / material can no longer be used with relevant stakeholders (PMs, Constructors, Customer Technical Services and Field Operations and anyone who purchases stock).
- 7) Remove non-compliant product / material from drinking water stocks held within SA Water's (and relevant partners) stores/workshops/depots etc.
- 8) Notify the product/material manufacturer of non-compliance issues and remove product from the relevant SA Water Technical Standard.
- 9) Order and stock replacement products / materials that are compliant with this Standard.

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<sup>1</sup> This section is an internal process for SA Water's reference

## 5 Material Testing Guidance

The following shall be considered when assessing a material as compliant (and the testing required) by AS/NZS 4020:2018 Table 1:

- 1) The environment that the material is exposed to (e.g., water, chlorinated water, chloraminated water, raw water, permeate, tank head space).
- 2) The exposure of the material within the system (e.g., coating vs gasket).
- 3) The temperature of the environment, testing to Appendix J of AS/NZS 4020 (standard test temperature 25°C vs elevated temperature (tanks head space up to 50°C)). Where products are to be used in areas exceeding 25°C then additional testing is required to Appendix J.
- 4) The potential leachates of the generic materials.
- 5) The generic material class of material (metals, epoxies, cementitious).

Changes to products (metals, inorganics, polymers) shall be retested if the parameters stated in Appendix O of AS/NZS 4020 change.

**Table 1 - Testing requirements for product groups**

Test	AS/NZS 4020 Appendix	Metals	Polymeric	Inorganic
Sample Preparation	A	A.9	Coatings A7.4 Sealant A7.5 Jointing A7.6	A.8
Scaling of test	B	Yes	Yes	Yes
Taste	C	Yes	Yes	Yes
Appearance	D	No	Yes	No
Microbial	E	Yes	Yes	No
Cytotoxicity	F	Yes	Yes	Yes
Mutagenicity	G	No	Yes	No
Metals	H to J	Yes Table 2 limits	No	Yes
High temp	J	Yes Where products exposed to greater than 25°C	Yes Where products exposed to greater than 25°C	Yes Where products exposed to greater than 25°C
End of line	I	Yes	Yes	No
Water heaters	K	No	No	No
Organic	Clause 6.8 (2018) including nitrosamines	No	Yes	Yes
Hot water		Yes	Yes	No

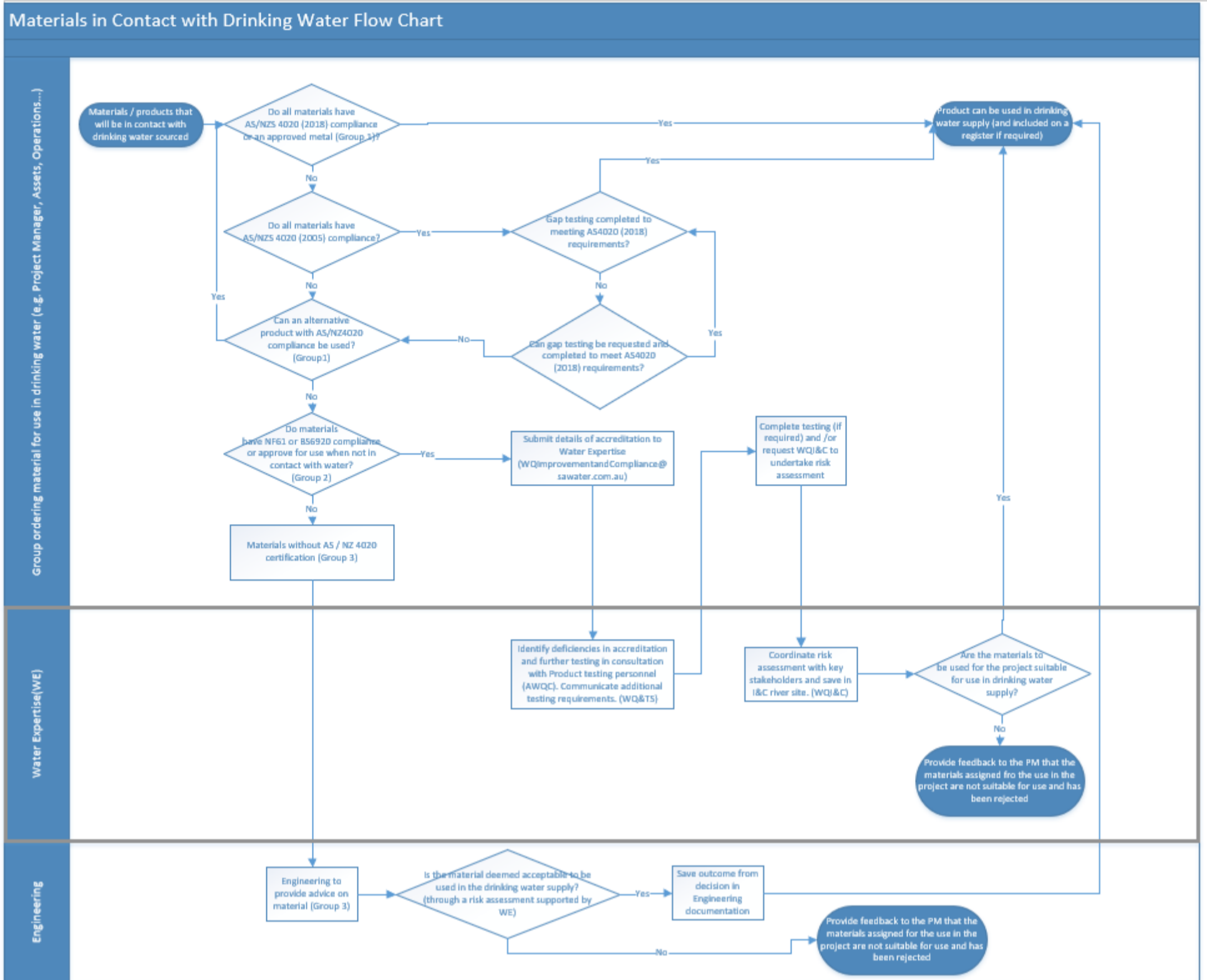
## Appendix A : Schedules of Hold Points, Witness Points & Identified Records

### A1 Schedule of Hold Points, Witness Points and Approvals

To be used as required in the format below.

Clause	Type	Description
2.4	Hold	Technical Dispensation Request Form <i>(if deviations from this Technical Standard are proposed)</i>
3.1.1	Hold	Compliance with SA Water requirements with respect to AS4020

## Appendix B : Materials in contact with drinking water flow chart



## Appendix C – Example of AS/NZS 4020 Report

PO Box 1751      250 Victoria Square  
 Adelaide SA 5001      Adelaide SA 5000

Tel: 1300 653 366  
 Fax: 1300 883 171

Internet: [www.awqc.com.au](http://www.awqc.com.au)

Email: [producttesting@awqc.com.au](mailto:producttesting@awqc.com.au)



27/12/2019

Dear [REDACTED]

Please find the attached report to AS/NZS 4020:2018 for Cement Mortar Lining for Ductile Iron Pipes submitted for testing.

Should you have any enquiries about the report or any other matters pertaining to the Standard please contact the laboratory on 61 8 7424 1512

Yours sincerely,

Michael Glasson  
 Supervisor Product Testing



Corporate Accreditation No. 1118  
 Chemical and Biological Testing  
 Accredited for compliance with ISO/IEC 17025



ABN 89336525019

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Internet: [www.awqc.com.au](http://www.awqc.com.au)

Email: [producttesting@awqc.com.au](mailto:producttesting@awqc.com.au)

**FINAL REPORT**

Report ID : 40000000

**Summary of Results**

APPENDIX/CLAUSE	RESULTS
C – Taste	Passed at the in-product exposure (51,280 mm <sup>3</sup> /L).
D – Appearance	Passed at the in-product exposure (51,280 mm <sup>3</sup> /L).
F – Cytotoxic Activity	Passed at the in-product exposure (51,280 mm <sup>3</sup> /L).
H – Metals	Passed at the in-product exposure (51,280 mm <sup>3</sup> /L).

**Test Methods**

Test(s) in Appendix	AWQC Test Method	Reference Method
C	T0320-01	AS/NZS 4020:2018
D	T0029-01 & T0018-01	APHA 2120c & APHA 2130b
F	TM-001	AS/NZS 4020:2018
H	TIC-006	EPA 200.8

**Summary Comment :** Twelve sequential soakings were performed to obtain a pH < 9.0. In accordance with section A8 (Cementitious Products).



Corporate Accreditation No. 1118  
 Chemical and Biological Testing  
 Accredited for compliance with ISO/IEC 17025



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Email: [producttesting@awqc.com.au](mailto:producttesting@awqc.com.au)

**FINAL REPORT**

Report ID : **AWQSW**

**CLAUSE 6.3 Appearance**

**Sample Description** The sample consisted of a 300 mm length of cement lined pipe (78mm internal diameter) providing an in-product exposure of approximately 51,280 mm<sup>2</sup> per Litre. Extracts were prepared using 500 mL volumes of pre-conditioning water (AI 12.6).

**Extraction Temperature** 20°C ± 2°C.

**Test Method** Appearance (Appendix D)

**Scaling Factor** Not applied.

**Results**

	<u>Test (- Blank)</u>	<u>Maximum Allowed</u>	<u>Units</u>
Colour	<1	5	HU
Turbidity	<0.1	0.5	NTU

**Evaluation** The product passed the requirements of clause 6.3 when tested at the in-product exposure.

**Number of Samples** 1.

**Test Comment** Not applicable.

*Andrew Paul Ford*

Andrew Ford  
 APPROVED SIGNATORY



Corporate Accreditation No. 1118  
 Chemical and Biological Testing  
 Accredited for compliance with ISO/IEC 17025



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**FINAL REPORT**

Report ID : 45720000

**CLAUSE 6.7**

**Metals**

**Sample Description**

The sample consisted of a 300 mm length of cement lined pipe (78mm internal diameter) providing an in-product exposure of approximately 51,280 mm<sup>3</sup> per Litre. Extracts were prepared using 500 mL volumes of pre-conditioning water (AI 12.6).

**Extraction Temperature**

20°C ± 2°C.

**Test Method**

Metals (Appendix H)

**Scaling Factor**

Not applied.

**Method of Analysis**

All methods used to determine concentrations of metals are based on those described in the US EPA method 200.8 Determination of Trace elements in Waters and Wastes by Inductively Coupled Plasma - Mass Spectrometry. The methods have been adapted for the instrumentation in use at the Australian Water Quality Centre.

Concentration of the metals described in Table 2 of the AS/NZS 4020:2018 are determined as follows:

Aluminium, Antimony, Arsenic, Barium, Boron, Cadmium, Chromium, Copper, Iron, Lead, Manganese, Mercury, Molybdenum, Nickel, Selenium and Silver by Inductively Coupled Plasma Mass Spectrometry.

**Results**

**Final Extract**

	Limit of Reporting mg/L	Blank mg/L	Test 1 mg/L	Test 2 mg/L	Max Allowed mg/L
Aluminium	0.001	0.027	0.027	0.028	0.2
Antimony	0.0005	<0.0005	<0.0005	<0.0005	0.003
Arsenic	0.0003	<0.0003	<0.0003	0.0003	0.01
Barium	0.0005	0.0268	0.0279	0.0278	0.7
Boron	0.020	<0.020	<0.020	<0.020	1.4
Cadmium	0.0001	<0.0001	<0.0001	<0.0001	0.002
Chromium	0.0001	0.0001	0.0001	0.0002	0.05
Copper	0.0001	0.0936	0.0998	0.0907	2.0
Iron	0.0005	0.0131	0.0159	0.0172	0.3
Lead	0.0001	0.0003	0.0004	0.0004	0.01
Manganese	0.0001	0.0003	0.0003	0.0005	0.1
Mercury	0.00003	<0.00003	<0.00003	<0.00003	0.001
Molybdenum	0.0001	0.0002	0.0002	0.0002	0.05
Nickel	0.0001	0.0005	0.0005	0.0007	0.02
Selenium	0.0001	<0.0001	<0.0001	<0.0001	0.01
Silver	0.00003	<0.00003	<0.00003	<0.00003	0.1

**Evaluation**

The product passed the requirements of clause 6.7 when tested at the in-product exposure.

**Number of Samples**

1.

**Test Comment**

Not applicable.

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