SEQ Water Supply and Sewerage Design & Construction Code (SEQ WS&S D&C Code)

Amendment to Sewage Pumping Station Code of Australia

(WSA04 – 2005 V2.1)

January 2017

Document History

Version	Description	Date
1.0	Initial Publication	01 July 2013
1.1	Redland Water and Gold Coast City Council Logos were replaced with the Redland City Council and City of Gold Coast Logos respectively. Amendments to Clauses Scope of Code, 1.6.1, 2.2, 2.5, 2.7, 2.8.1, 3.1, 3.7, 3.9, 4.2.2, 5.2.3, 5.2.5, 5.3.2, 5.3.3, 5.4.1, 5.4.3, 5.4.4, 5.4.6, 5.5.1, 5.6.1, 5.6.2.1, 5.6.4, 5.7, 5.8, 5.10, 5.11, 6.0, 6.4, 7.0, 7.3.1, 8.0, 8.1, 8.2, 8.8.5, 9.1.1, 9.2.1, 9.2.4, 9.3.1, 9.3.2, 9.3.5, 9.3.6, 9.4, 10.1.1, 10.2.3, 10.3.1, 10.3.5, 10.3.6, 10.6.1, 10.7, 10.9.1, 10.11.2, 11.1, 11.1.2, 11.3.4.2, 11.3.4.4, 11.3.5.6, 11.3.6, 11.3.7, 11.3.9.2, 11.3.10, 12.1.2, 12.1.5, 15.2.1, 15.2.9, APPENDIX B, APPENDIX E , 20, 21, 22, 24, 31, 31.1, 31.2, 31.3, 31.4, 31.5, 31.8, 31.9, 31.10, 36.1, 36.3, 36.4.3.1, 36.5.1, 36.5.2, 36.5.3, 36.5.4, 36.5.5	August 2014
1.2	Amendments to Clauses Scope of Code, Conditions of Supply of the SEQ Code, 3.7, 4.2.7, 5.2.3, 5.8, 6.0, 6.4, 6.5, 7.0, 8.0, 9.3.6, 10.1, 10.3.6, 10.7, 10.8, 11.2.2.2, 11.3.4.2, 15.2.1, 18.2, 20.0, 21.0, 22.0, 24.0.	January 2017

SEQ Amendment to Sewage Pumping Station Code WSA 04-2005 Version 2.1

Reference	Amendments to Sewage Pumping Station WSA04-2005 V2.1
INTRODUCTION	
SCOPE OF CODE	**Insert the following paragraphs at the end of the first paragraph:** The South East Queensland Service Providers (SEQ-SPs) have adopted the term 'rising main' rather than 'pressure main' to describe the pipeline into which each sewage pumping station discharges. Hereafter, reference to "Water Agency" or the like shall be taken to read as a reference to the individual south east Queensland service provider within whose sewerage network the sewage pumping station and rising main will be designed and constructed. **Add the following paragraph to the end of this clause:** The terms "Trunk" and "Reticulation" as used in this Code may have different definitions compared to those same terms as used in the various planning, charging, connection and policy documents of the SEQ-SPs.
CODE PURPOSE	**Insert the following paragraphs at the end of this section:** The SEQ Water Supply and Sewerage Design & Construction Code (the SEQ WS&S D&C Code or the SEQ Code) sets out the SEQ Amendments required by the SEQ-SPs to "The Sewage Pumping Station Code of Australia – WSA 04-2005 Version 2.1 (the WSA Code)". The SEQ amendments include: • The SEQ-SPs' requirements for specific detail which the WSA Code anticipates each individual SEQ-SP will address, and • Additions, deletions and variations to the WSA Code where the WSA Code's requirements are not compatible with each SEQ-SP's current requirements (due to local practice, climate, geographic and topographic conditions and statutory requirements, etc) or where the WSA Code is otherwise silent. Any reference to the WSA Code shall be deemed to refer to the SEQ Code which contains the SEQ amendments. The SEQ Code specifies mandatory requirements for the design and construction of Sewage Pump Stations that are to become the responsibility of the SEQ-SPs. Each SEQ-SP reserves the right to specify or approve other design and/or construction requirements for particular projects and/or developments. Before commencement of any construction, approval from the SEQ-SPs shall be obtained to any design and/or installation that do not comply with the SEQ-SP's Code.
New Clause	**Insert after "MANDATORY AND INFORMATIVE" clause.** **Drawings and Figures** Drawing references are added throughout the SEQ Code. In the event of a clash between the individual drawings and the figures in the SEQ Code – the details shown on the individual standard drawings take precedence.

Reference	Amendments to Sewage Pumping Station WSA04-2005 V2.1
New Clause	**Insert the following new clause after "PROPOSED AMENDMENTS" clause.** CONDITIONS OF SUPPLY OF THE SEQ WATER SUPPLY AND SEWERAGE DESIGN AND CONSTRUCTION CODE The SEQ Code is supplied subject to the following understandings and conditions: • The SEQ Code is copyright and apart from any use as permitted under the Copyright Act 1968, no parts of the documents may be sold, reproduced, stored in a retrieval system or transmitted in any form or by any means without the prior permission in writing of one of the SEQ-SPs. • The SEQ Code is intended for use in connection with SEQ-SPs' related projects only. • The SEQ-SPs do not warrant the applicability of SEQ Code to climatic conditions, topography, soil types, water and sewage characteristics and other local conditions and factors that may be encountered outside of the SEQ-SPs' area of operations. • The holder of the SEQ Code acknowledges that it may contain errors and/or omissions. • The SEQ-SPs accept no responsibility for any works or parts thereof which may contain design and/or construction defects due to errors or omissions in any part of a SEQ Code which has not been prepared or formatted by the SEQ-SPs. • The SEQ-SPs accept no responsibility for the incorrect application of the SEQ Code by the holder or any other party.
Part 0 – Glossary of Terms, Abbreviations and References	
I GLOSSARY OF TERMS	**Add the following definition in alphabetical order:** "SEQ Code" means the SEQ Water Supply and Sewerage Design and Construction Code which is required by legislation and which is an instrument: • made jointly by the SEQ-SPs; and • that provides for technical standards relating to the design and construction of water infrastructure in the SEQ region "SEQ-SP Supplementary Specifications" means - Nominated National Codes or SEQ-SP specific specifications which may incorporate specific SEQ SP requirements for design and construction of infrastructure and the manufacture and supply of associated products and materials, and other documents including supplements to National Codes prepared and published or adopted by SEQ SP from time to time which further set out such requirements "Water Agency" means an authority, board, business, corporation, council or local government body with the responsibility for planning or defining planning requirements, for defining and authorising design requirements, for defining and authorising construction requirements and for operating and maintaining or defining operation and maintenance requirements for a water supply and/or sewerage system or systems".
II ABBREVIATIONS	**Add the following definition in alphabetical order:** "ADAC" means "Asset Design As Constructed" "FAT" means "factory acceptance test" "N" means "Newton" (in context) "SAT" means "site acceptance test" "SEQ-SP" means "The south east Queensland (water) service providers" **The following changes were made in the abbreviations schedule:** "pressure main" replaced with "rising main" "kohms" replaced with "kΩ" "Mohms" replaced with "MΩ"

Reference	Amendments to Sewage Pumping Station WSA04-2005 V2.1	
III REFERENCED DOCUMENTS	**The following standards shall be referenced by the Code:**	
	AS 4373	Prunin of Amenity Trees
		The following shall apply to preparation of drawing :
	AS 1 0	Technical Draw ngs
	AS 1 02	Graphi a Sy bols for Electrotechnology
	The following shall apply to materials and equipment which is specified or otherwise required for the work:	
	AS 1012	Methods of Testing Concrete
	AS 1012.1	Methods for Sampling Fresh Concrete
	AS 1012.3	Methods for the Determination of Properties Related to the Consistency of Concrete
	AS 1012.4	Methods for the Determination of Air Content of Freshly Mixed Concrete
	AS 1012.8	Method for Making and Curing Concrete Compression, Indirect Tensile and Flexure Test Specimens in the Laboratory or in the Field
	AS 1012.9	Method for the Determination of the Compressive Strength of Concrete Specimens
	AS 1012.13	Determination of the drying shrinkage of concrete for samples in the field or in the laboratory
	AS 1111.2	Product Grade C - Screws
	AS 1141	Methods for Sampling and Testing Aggregates (Set)
	AS 1444	Wrought Alloy Steels - Standard and Hardenability [H] Series and Hardened and Tampered to Designated mechanical Properties
	AS 1478	Chemical Admixtures for Use in Concrete, Mortar and Grout – Admixtures for Concrete
	AS 1554.3	Structural Steel Welding - Welding of reinforcing steel
	AS 1627	Metal Finishing - Preparation and Pre-treatment of Surfaces
	AS 1627.1	Cleaning Using Liquid Solvents and Alkaline Solutions
	AS1627.9	Pictorial Surface Preparation Standards for Painting Steel Surfaces
	AS 1646.1	Elastomeric Seals for Waterworks Purposes – General Requirements
	AS 1657	Fixed Platforms, Walkways, Stairways and Ladders - Design, Construction and Installation
	AS 1796	Certification of Welders and Welding Supervisors
	AS1830 31	Grey Cast Iron
	AS 2053.1	Conduits and fittings for electrical installations – General Requirements
	AS 2074	Steel Castings
	AS 2312	Guide to the Protection of Iron & Steel against Exterior Atmospheric Corrosion
	AS 2544	Grey Iron Pressure Fittings
	AS 2758	Aggregates and Rock for Engineering Purposes
	AS 2758.1	Concrete Aggregates
	AS 2837	Wrought Alloy Steels - Stainless Steel bars and Semi-Finished Products
	AS 3578	Cast Iron Non-return Valves for General Purposes
	AS 3582 (Set)	Supplementary cementitious materials for use with Portland and Blended Cement
	AS 3583	Methods of test for supplementary cementitious materials for use with Portland and Blended Cement
	AS 3972	Portland and Blended Cements
	AS/NZS 4158	Polymeric Coatings on Valves and Fittings for Water Industry Purposes - Thermal-bonded Coatings
	AS/NZS 4671	Steel Reinforcing Materials
	AS 6401	Knifegate Valves for Waterworks Purposes
	The following shall apply to testing and reporting:	
	AS 1055	Acoustics - Description and Measurement of Environment Noise
	AS 1081	Acoustics - Measurement of Airborne Noise Emitted by rotating Electrical Machinery
	AS 1217	Acoustics - Determination of Sound Power Levels of Noise Sources
	AS/IEC 61672	Electroacoustics - Sound Level Metres
	AS 1686	Metric Units for Use in Water Supply, Sewerage and Drainage (Including Plumbing)
	AS 2417	Rotodynamic Pumps – Hydraulic Performance acceptance Tests – Grades 1 and 2

<table>
<tr><th>Reference</th><th>Amendments to Sewage Pumping Station WSA04-2005 V2.1</th></tr>
<tr><td colspan="2">Part 1 – Planning and Design</td></tr>
<tr><td>PREFACE</td><td>Add the following paragraphs:

Reference to “Water Agency” or the like shall be taken to read as a reference to the individual south east Queensland service provider within whose sewerage network the sewage pumping station and rising main will be designed and constructed.

Any reference to the WSA Code shall be deemed to refer to the SEQ Code which contains the SEQ Amendments. The SEQ Code specifies mandatory requirements for the design and construction of Sewage Pump Stations that are to become the responsibility of the SEQ-SPs.

Each SEQ-SP reserves the right to specify or approve other design and/or construction requirements for particular projects and/or developments. Before commencement of any construction, approval from the SEQ-SPs shall be obtained to any design and/or installation that do not comply with the SEQ-SP’s Code.</td></tr>
<tr><td>1.2.2 Pumping Alternatives</td><td>Insert the following as non italic in second last paragraph:

A Planning Report that has analysed all of the options in detail is required to be submitted to the relevant SEQ-SP. The Planning Report shall include the life cycle cost of all options that have been analysed. The process for acceptance of the planning report will be in accordance with Clause 2.5.</td></tr>
<tr><td>1.5.2 Planning responsibilities</td><td>Delete all informative text after the word

Unless otherwise agreed…….</td></tr>
<tr><td>1.5.3 Design Responsibilities</td><td>Replace the drawing references with the following information and start as a new paragraph:

“The following table sets out the typical layouts for each SPS for each Service Provider in SEQ covered by this code:
<table>
<tr><th>Service Provider</th><th>Typical Layout Plan</th><th>Typical Pump Station Plan</th><th>Typical Pump Station Section</th></tr>
<tr><td>UW</td><td>SEQ-SPS -1102-2</td><td>SEQ-SPS -1300-1</td><td>SEQ-SPS -1300-2</td></tr>
<tr><td>QUU</td><td>SEQ-SPS -1102-4</td><td>SEQ-SPS -1301-1</td><td>SEQ-SPS -1102-5 & SEQ-SPS -1301-3</td></tr>
<tr><td>Redland City Council</td><td>SEQ-SPS -1102-1</td><td>SEQ-SPS -1300-1</td><td>SEQ-SPS -1300-2</td></tr>
<tr><td>Logan City Council</td><td>SEQ-SPS -1102-1</td><td>SEQ-SPS -1300-1</td><td>SEQ-SPS -1300-2</td></tr>
<tr><td>City of Gold Coast</td><td>SEQ-SPS -1102-1</td><td>SEQ-SPS -1300-1</td><td>SEQ-SPS -1300-2</td></tr>
</table>
Any SEQ-SP may require, at the cost of the Developer, the input of an independent Consultant to represent the Service Provider in the design review, supervision and construction processes associated with sewage pump stations.

Add the following to the end of (iii), new Item (H) and (I) as follows:

(H) rising main design to match construction technique (e.g. HDD); and
(I) standby generator supply for the SPS versus overflow storage options.

Add new item (vii) as follows:

the designer must establish the structural design of wet wells and MH’s that suit the ground conditions and constructability, e.g. caisson construction, contiguous piled excavation or open cut excavation and cast insitu construction.</td></tr>
<tr><td>1.6.1 Overall objective</td><td>Replace the reference to Standard Drawing SPS1100 with drawing SEQ-SPS-1100 Series.</td></tr>
</table>

Reference	Amendments to Sewage Pumping Station WSA04-2005 V2.1
1.6.3 Objectives of the system design	**Change item (f) as follows:** Sufficient hydraulic capacity to service and depth to control the full catchment… **Extend item (i) as follows:** …. retention of the peak design sewage flow within the system. **Insert the following after item (o):** (p) Telemetry as per SEQ-SP's requirements (q) Back-up level control system that operates when the primary level control system fails; and (r) Odour management measures where required.
1.6.4 Design output	**Amend item (a) by inserting the following after "pumping station detail":** ….. including a functional description specification and P&I diagram/s, **Insert the following additional sentence at the end of this clause:** Any variations shall be highlighted in a boxed note on the design drawings.
2.1 LIFE CYCLE CONSIDERATIONS	**Delete the reference to package pump stations as follows:** ~~Package pumping stations should also be considered when determining the optimal solution.~~ **Add additional item (f) as follows:** (f) layout design and functionality in accordance with the relevant standard drawings.
2.2 FUNCTIONALITY	**Amend items (a) and (b) as follows:** (a) Efficiently deliver sewage from a defined catchment to an appropriate receiving system via a discharge manhole with appropriate odour management. (b) Achieve pump station design parameters as set out in the SEQ Code Design Criteria.
2.3 MAINTAINABILITY	**Insertion the following as item (f):** (f) Provision for double isolation for all liquid carrying pipeline connections.
2.4 RELIABILITY	**Amend item (b) as follows:** ….. e.g. provision for emergency/standby generator supply, emergency storage or a second electrical supply
2.5 DUE DILIGENCE REQUIREMENTS	**Add the following after the 5th paragraph on EIA requirements:** The requirements set out in "Code of environmental compliance ERA 63—Sewage treatment activities" shall be complied with. The odour impacts associated within the pumping system and within the receiving sewerage system shall be assessed to the requirements of the guide currently (2013) available at: www.ehp.qld.gov.au/licences-permits/business-industry/pdf/guide-odour-impact-assess-developments.pdf. The design submission for the pumping infrastructure and the receiving system shall be accompanied by the Odour Impact Assessment Report. **Add the following to the end of the line starting "Reliable and proven equipment shall be….."::** …. and in accordance with the relevant SEQ-SP's requirements
2.7 STAGING	**Add the following requirement to the end of the clause:** The system shall operate effectively when only a minimal number of properties are connected. For design purposes, the system shall operate effectively when 20% of the design properties are connected This requirement needs to be particularly focussed on by the Developer in new subdivisions, where development may take some time to reach the critical numbers the system was designed for. Septicity should be a key consideration as per Clause 2.8.

Reference	Amendments to Sewage Pumping Station WSA04-2005 V2.1
2.8.1 General	**Add the following mandatory statement after item i)** All sewage pumping systems produce septic sewage to varying degrees during the diurnal curve of flows. The "septicity" of the system shall be managed by application of Clause 2.9.
2.9 ODOUR MANAGEMENT	**Relabel the section from "Odour Control" to "Odour Management"** **Add the following new mandatory paragraph to the end of this clause:** The Odour Impact Assessment Report discussed in Clause 2.5 herein shall address the odour impacts at the air discharge of the vent poles of the SPS and at the rising main discharge point to the down stream gravity network, and gas release valve arrangements.
2.10 NOISE CONTROL	**Add the following to the end of this clause:** As directed by the SEQ-SP, the Designer shall undertake noise studies to: • determine background noise levels, • identify sensitive receivers, including consideration of future development, • estimate expected noise levels from the pumping station, • ensure that the pumping station location and design includes appropriate measures to mitigate any potential noise issues. Mitigation measures may include: • use of silenced plant and equipment, • house all plant and equipment in acoustic enclosures as far as practicable, • physically separate the noise sources and the sensitive receivers (both existing and planned) as far as practicable, • position all openings (e.g. ventilation intake/exhaust) away from sensitive receivers, • use acoustic louvers on ventilation openings, • schedule construction works such that usage occurrences and usage times of noisy equipment are minimised.
2.12 ACCESS	**Add the following sentence to this paragraph:** Unless agreed otherwise with the relevant SEQ-SP, all access roads shall have the same flood immunity criteria as required for the connecting road network.
2.13 SECURITY	**Add the following sentence to this clause:** The Australian Standard for security fencing is AS1725.1 and provides the minimum requirements.
2.15 SUPPORTING SYSTEMS	**Amend item (C) as follows:** (a) Fire detection, monitoring and fighting as per building code requirements.
2.17 COMMISSIONING PLAN	**Add after item (f) sub-item (v), a new sub-item (vi) as follows:** (vi) P and I diagram/s. **Add a new item (g) as follows:** (g) Where staged provision of the pumping system is proposed to be undertaken, a separate Commissioning Plan shall be provided for each stage extension.
2.17.2 Pre-commissioning	**Add the following to the end of item (f):** SEQ -SP Specific Factory Acceptance Tests (FATs) , Pre Site Acceptance Tests and Site Acceptance Tests (SATs)
2.17.3 Commissioning	**Add the following as the last paragraph in this clause:** After commissioning, the Designers shall provide a fully marked up as performed Commissioning Plan with any changes clearly identified with red font or strikethrough.

Reference	Amendments to Sewage Pumping Station WSA04-2005 V2.1
3.1 GENERAL	**Add the following Mandatory sentences to the end of this clause:** All rising mains and gravity mains shall be shown in adequate detail and for their complete length on Longitudinal Sections in addition to Plan Views and specific Detail Plans and Sections. All corridors shall be cleared, easements provided (if unavoidable), and above ground marking of the corridor is required.
3.3 LEVELS	**Add the following Mandatory sentence to the end of this clause:** Maintaining the levels of the pipelines is critical to successful lifetime operation (refer Part 3 Construction to ensure that levels are maintained for the life of the network).
3.7 EASEMENTS	**Change first sentence of this clause from advisory to mandatory:** **Add the following Mandatory paragraphs to the end of this clause:** Rising mains are not permitted within an allotment for new development unless approved by the relevant SEQ - SP. Where alternative routes using road reserves exist, rising mains shall not be located in easements simply to reduce capital cost at the expense of increasing access difficulties for maintenance. Rather whole-of-life principles for the construction, operation, maintenance and decommissioning of the various alternative routes should be evaluated and an optimum choice of route made. Easements shall be a minimum of 6m wide for rising mains ≤ 300mm NB, and 10m wide for rising mains > 300mm NB. Easements shall not be shared with power, gas and telecommunications unless the service is related to the pump station or associated infrastructure such as odour management. Except where the SEQ-SP agrees otherwise, all pumping stations, lift stations, storage tanks etc (including all pump station appurtenances including collection/grit manhole, switchboard/RTU and valve chamber, odour management components, etc) shall be located on land that, at the time of commissioning is owned by the relevant SEQ SP. This land shall be provided at no cost to the relevant SEQ-SP as freehold and appropriately titled. The Developer (or it's Designer) shall confirm easement and property ownership requirements and produce SP plans as required for lodgement with State Government.
3.8.1 General	**First sentence to be italicised as advisory not mandatory.** **Insert new sentence at the end of the first paragraph:** All pipeline crossings shall be designed and constructed in accordance with the (separate) SEQ Water Supply Code and SEQ Sewerage Code.
3.9 FUTURE MAINTENANCE	**Replace the reference to Standard Drawings WAT-1211, WAT-1212 and WAT-1214 with SEQ Standard drawings SEQ-WAT-1211-1, SEQ-WAT-1212-1, SEQ-WAT-1214-1,**
3.10 AC VOLTAGE MITIGATION OF METALLIC PIPELINES	**Add the following sentence at the end of the first paragraph:** In accordance with recommendations in Appendix H AS/NZS 4853, no HV earths or bare copper should be installed within 3 m of a metallic pipeline. **Add as the final paragraph in this clause:** Work around existing water mains shall be undertaken in accordance with the provisions of Section 5.1.3 of the SEQ Water Supply Code.
3.11.1 General	**Amend the first sentence as follows:** Alter the phrase "...determined and shown on the Design Drawings." to "…determined by potholing and shown on the Design Drawings.

Reference	Amendments to Sewage Pumping Station WSA04-2005 V2.1
3.11.4.2 Clearance requirements	**Add the following sentences after the first paragraph:** All rising mains shall be located with sufficient clearance to structures to allow for maintenance and operation activities and provide protection against damage from pipeline bursts. Where practicable, SEQ-SPs' preferred clearances as shown in Table 3.1 shall be maintained.
TABLE 3.1	**Replace the contents of Table 3.1 with the following:**

Utility (Existing or proposed)	Minimum horizontal clearance mm		Minimum vertical clearance[1] mm
	Rising main size NB		
	≤ 200	> 200	
Water mains ≤ 375 mm	1000[4]	1000[4]	500
Water mains > 375 mm	1000[4]	1000[4]	500
Gravity sewers ≤ 300 mm	300[2]	600	500
Gravity sewers > 300 mm	300[2]	600	500
Sewers – pressure	300	600	500
Sewers – vacuum	300	600	500
Gas mains	300[2]	600	500
Telecommunication conduits and cables	300[2]	600	300
Electricity conduits and cables	500	1000	500
Stormwater drains ≤ 300 mm	300	600	150
Stormwater drains > 300 mm	300	600	300
Kerbs	150	600[5]	150 (where possible)

Notes

1. Vertical clearances apply when ~~pressure~~rising mains cross other utility services, except in the case of water mains when a vertical separation shall always be maintained, even when the ~~pressure~~rising main and water main are parallel. *The ~~pressure~~rising main should always be located below the water main to minimise the possibility of backflow contamination in the event of a ~~pressure~~rising main break.*
2. *Clearances can be further reduced to 150 mm for distances up to 2 m when passing installations such as poles, pits and small structures, providing the structure is not destabilised in the process.*
3. *Rising mains should always cross over sewers and stormwater drains.*
4. When the sewer is at the minimum vertical clearance below the rising main (500 mm), maintain a minimum horizontal clearance of 1000 mm. *This minimum horizontal clearance can be progressively reduced to 600 mm as the vertical clearance is increased to 750 mm.*
5. Clearance from kerbs shall be measured from the nearest point of the kerb. *For ~~pressure~~* rising *mains ≤DN 375 clearances from kerbs can be progressively reduced until the minimum of 150 mm is reached for mains ≤DN 200 mm.*

Reference	Amendments to Sewage Pumping Station WSA04-2005 V2.1
4.2.2 Concrete surfaces	**Add the following sentences to the end of this clause:** SEQ-SPs require that all of the internal concrete surfaces of each pumping station wet well, receiving maintenance hole and discharge maintenance hole shall be lined with a mechanically anchored polyethylene lining. External surfaces of all structures (particularly the wet well) which are located in aggressive soils (including Acid Sulphate Soils) shall be assessed for the purposes of corrosion management.
4.2.3 Metallic materials	**After the first paragraph as follows:** Ductile iron valves and rising main bends and fittings shall be provided with a coating that complies with AS/NZS4158. In soils subject to electrical conductivity, ductile iron pipes shall be validated by the pipe supplier or a specialist corrosion consultant for their suitability.
4.2.4 Miscellaneous items	**Add to the end of first sentence :** or equivalent **Insert the following as the second sentence in this clause:** Dissimilar metals shall be effectively insulated to prevent corrosion.
4.2.5 Corrosion protection against aggressive environments	**Change the reference to:** Refer to Clause 4.8.2 of WSA 03.
4.2.6 Cathodic protection	**Change the reference to:** Refer to Clause 4.8.5 of WSA 03.
4.2.7 Stray current corrosion	**Change the reference to:** Refer to Clause 4.8.6 of WSA 03.
4.2.8 Protection against contaminated ground	**Change the reference to:** Refer to Clause 4.8.2 of WSA 03.
5.1 INTRODUCTION	**After Reference Drawings: -delete WSA drawing references and add-** The following table sets out the typical layouts for each SPS for each Service Provider in SEQ covered by this code:

Service Provider	Typical Layout Plan	Typical Pump Station Plan	Typical Pump Station Section
UW	SEQ-SPS -1102-2	SEQ-SPS -1300-1	SEQ-SPS -1300-2
QUU	SEQ-SPS -1102-4	SEQ-SPS -1301-1	SEQ-SPS -1102-5 & SEQ-SPS -1301-3
Redland City Council	SEQ-SPS -1102-1	SEQ-SPS -1300-1	SEQ-SPS -1300-2
Logan City Council	SEQ-SPS -1102-1	SEQ-SPS -1300-1	SEQ-SPS -1300-2
City of Gold Coast	SEQ-SPS -1102-1	SEQ-SPS -1300-1	SEQ-SPS -1300-2

Reference	Amendments to Sewage Pumping Station WSA04-2005 V2.1
5.2.1 Site selection	**Change paragraph 1 as follows to delete items (2) to (7):** (1) Water Agency owned land. ~~(2) Council land.~~ ~~(3) Vacant Crown land.~~ ~~(4) Road reserve.~~ ~~(5) Vacant private property.~~ ~~(6) Developed Crown land.~~ ~~(7) Developed private property.~~ **Change the start of paragraph 2 as follows:** Change "In difficult ground conditions…" to "In all ground conditions…" **Change item (c) as follows:** (c) Buoyancy Effects Written and RPEQ checked calculations shall be provided to the relevant SEQ-SP with regard to flotation. The design factor of safety shall be 1.15 for the structure only with no allowance for the converter/top slab.
5.2.3 Location and Layout	**Change the sentence above the item (a) and item (a) from advisory to mandatory.** **Add the wording "(See drawings for freeboard dimensions)" before "....above the 1 in 100 year...." in Item (a). Delete the reference to WSA standard Drawing in Item (c).** **Replace the last sentence of this clause with "Refer also to Clause 2.5 Due Diligence requirements and ERA63(3)".** **With the above changes the last paragraph reads as follows:** Where the pumping station is to be built in a flood prone area: (a) The top slab of the wet-well should be at least 100 mm (see drawings for freeboard dimensions) above the 1 in 100 year flood level and 500 mm above the estimated maximum ground water table. (b) The power and control cubicle shall be at least 100 mm above the 1 in 100 year flood level. (c) Access roadways and parking areas shall be trafficable in all weathers. ~~These requirements do not apply to existing pumping stations that may be being upgraded.~~ Refer also to Clause 2.5 Due Diligence requirements and ERA63(3).
5.2.4 Site area	**Amend item (a) as follows:** (a) Odour management vent or… **Amend item (f) as follows:** (f) An on-site or mobile emergency generator… **Insert the following paragraphs and table at the end of this clause:** The size of the parcel of land provided shall be large enough to accommodate the infrastructure and its appurtenances, provide for maintenance and for the access and egress of vehicles large enough to maintain the infrastructure, and to satisfy the requirements for the Development Approval. In respect of sewage pumping stations without superstructures or emergency generators, the following minimum clearances shall apply between infrastructure and any lot or road reserve boundary.

Bordering	Pumping Station	Lift Station	Appurtenances
	Minimum Clearance (m)		
Arterial and Collector Roads	5.0	3.0	2.0
Access and Minor Collector Streets	3.0	3.0	2.0
Property Boundaries	3.0	2.0	1.5

Access Roads may be provided as an easement.

Reference	Amendments to Sewage Pumping Station WSA04-2005 V2.1
5.2.5 Site layout and access	**Replace the reference to Standard Drawings SPS 1200, SPS 1201, SPS 1202, SPS 1203 and SPS 1204 with SEQ-SPS-1100-1, SEQ-SPS-1102-1, SEQ-SPS-1102-2, SEQ-SPS-1102-3 and SEQ-SPS-1102-4.**
5.2.6 Landscaping	**Add the following paragraph to the end of this clause:** Landscaping works require an Operational Works approval. A Landscaping Plan prepared by a landscape consultant shall be provided to the relevant SEQ-SP's satisfaction.
5.3.1 Location	**Add the following line:** Where a collector/grit collector manhole is used it shall be as per drawing SEQ-SPS-1400-1.
5.3.2 Design	**Replace item (d) with the following:** (d) Overflow monitoring/telemetry equipment where required by the relevant SEQ-SP. Replace Reference: Standard Drawings: with SEQ-SEW-1300 Series from 1300-1, to 1316-1. Please refer to notes on applicability of drawings to each SEQ-SP's service area.
5.3.3 Pumping station wet-well isolating valve	**Replace the reference to Standard Drawings SPS 1300, SPS 1301 and SPS 1302 with SEQ-SPS-1300-1, SEQ-SPS-1300-2, SEQ-SPS-1300-3, SEQ-SPS-1301-2 and SEQ-SPS-1301-3.**
5.4.1 General	**Replace the reference to Standard Drawings SPS 1300, SPS 1301, SPS 1302, SPS 1303 and SPS 1304 with SEQ-SPS-1300-1, SEQ-SPS-1300-2, SEQ-SPS-1300-3, SEQ-SPS-1300-12, SEQ-SPS-1301-2 and SEQ-SPS-1301-3.**
5.4.3 Pumping control volume and pump starts	**Change the second sentence to read:** The volume shall be calculated in accordance with the SEQ Code Design Criteria. **Delete the second paragraph.**
5.4.4 Control levels	**Add the following at the end of this clause:** "Level descriptions are shown on the following drawings: QUU area: SEQ-SPS-1102-5 and SEQ-SPS-1102-6 CoGC, LCC, RCC and UW areas: SEQ-SPS-1300-2. Actual operational set points will be defined at commissioning in consultation with the relevant SEQ-SP."
5.4.6 Benching	**Replace the reference to Standard Drawings SPS 1300 and SPS 1301 with SEQ-SPS-1300-2, SEQ-SPS-1300-3, SEQ-SPS-1300-9 and SEQ-SPS-1301-3.**
5.5.1 Natural ventilation	**Change paragraph 3 to read as follows:** Ventilation of the wet well shall be provided in accordance with the Odour Impact Assessment Report. **Change the remainder of the clause to be informative only.** **Replace the reference to Standard Drawings SEW-1408 with SEQ-SPS-1405-2 and SEQ-SEW-1307-3 and SEW-1407 with SEQ-SEW-1407-1.**
5.6.1 General	**Replace the reference to Standard Drawings SPS 1102, SPS 1402 and SPS 1403 with SEQ-SPS-1102-2, SEQ-SPS-1102-3, SEQ-SPS-1102-4, SEQ-SPS-1102-5, SEQ-SPS-1102-6 and SEQ-SPS-1402-1.**
5.6.2.1 General	**Add the following at the end of this clause:** For SEQ-SP's the following standard drawings show typical layouts of pump stations with Emergency Storage (or Additional Storage):- SEQ-SPS-1102-2 to 5 and design requirements as per drawing SEQ-SPS-1402-1.
5.6.4 Emergency relief system	**Replace the reference to Standard Drawings SPS-1404 with SEQ-SEW-1409 to 1413.**
5.7 LADDERS AND PLATFORMS	**Replace the reference to Standard Drawings SPS 1310, SPS 1604 and SPS 1606 with SEQ-SPS-1305-1 and SEQ-SPS-1305-2.**

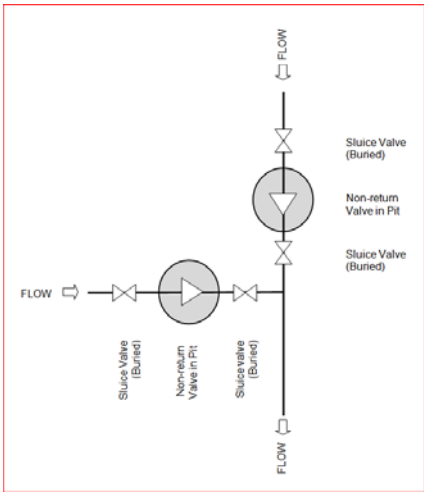
Reference	Amendments to Sewage Pumping Station WSA04-2005 V2.1
5.8 WET-WELL ACCESS COVERS	**Replace the reference to Standard Drawings SPS 1304, SPS 1506 and SPS 1507 with SEQ-SPS-1304-0 to SEQ-SPS-1304-29.**
5.9 SAFETY SYSTEMS	**Add the following to the end of this clause:** Where parts of a sewage pumping station involve confined space entry requirements, provision shall be made for safety equipment attachment points in accordance with AS 2865. The specific requirement shall be as agreed with the relevant SEQ SP.
5.10 GRIT COLLECTION	**Replace the reference to Standard Drawings SPS 1400 and SPS 1401 with SEQ-SPS-1102-5, SEQ-SPS-1400-1 and SEQ-SPS-1401-2.**
5.11 SCREENS	**Replace the reference to Standard Drawings SPS 1400 and SPS 1401 with SEQ-SPS-1400-1 and SEQ-SPS-1401-1.**
6 PUMPING SYSTEM	**Add the followings:** This clause shall apply in conjunction with the following SEQ-SP Supplementary Specifications whose requirements will supersede any identified conflicting requirement with this WSA Code. Any conflicting requirement shall be communicated to the SEQ-SP for resolution. The Supplementary Specifications are: CoGC : • SEWERAGE NETWORK WATER SUPPLY NETWORK SUPPLEMENTARY MECHANICAL & ELECTRICAL SPECIFICATION QUU: • SSM001 Metal Clad Switchboards and Enclosures • SSM002 Electrical and Instrument Installation UNITYWATER: • Specification for Electrical Installations at Network Sites • MECHANICAL Specification Logan City Council: • Standard Electrical Specification for Water & Sewer Pump Stations Redland City Council :
6.1 STAGING	**Add the following to paragraph 2:** VSDs may be an acceptable alternative subject to the approval of the relevant SEQ-SP.
6.4 PUMP SELECTION	**Add the following to the end of the first sentence of the second paragraph:** …. shall extend to intersect all system curves and shall be in a format consistent with drawings SEQ-SPS-1100 series as required in the design submission. **Change Clause 6.4 (i) to read:** (i) 100% stand-by capacity i.e. one duty pump and one stand-by pump or duty/assist pump operation mode, refer Table 10 of the Design Criteria for SEQ SPs requirements; **Replace the reference to Standard Drawings SPS-1300 and SPS-1301 with SEQ-SPS-1300-1, SEQ-SPS-1300-2 and SEQ-SPS-1301-4.**
6.5 TRIPLE-PUMP PUMPING STATIONS	**Add the following paragraph to the end of this clause:** Pump operation mode of a pump station using three or more pumps shall be determined in accordance with hydraulic analysis and O & M strategies of the pump station and shall be approved by SEQ-SPs.
6.6.1 General	**Delete all of paragraph 2 as follows:** ~~Where the total hydraulic head to be overcome is greater than the capacity of a single submersible pump, two such pumps of the same capacity may be installed in series. The first pump is usually installed in the wet well in the normal way, with the second pump being located in a separate chamber beside the wet well and above the normal top water level~~.

Reference	Amendments to Sewage Pumping Station WSA04-2005 V2.1
6.6.3 Motor Selection	**Change item (f) to read as follows:** (f) have a power rating 10% above the shaft power at the duty point; and **Add a new item (h) as follows:** (h) be fitted with one PTC semiconductor type temperature sensing device in each phase; **Insert the following sentence after item (g):** The stated voltage shall be consistent with the latest standard.
6.6.4 Standard discharge connection	**Amend the second paragraph to read as follows:** Refer to SEQ-SPS-1300 series inclusive for details of a pump-set connection system that enables removal and maintenance of pump-set and ancillary items without the need to enter the wet-well.
6.6.5 Junction boxes	**Clause shall be amended as follows:** 6.6.5 Motor cable disconnection box All motor cables shall terminate in the motor starter cabinet. Where a motor cable length of greater than the standard 15 m is required (unless noted otherwise), a disconnection box for external use or a junction box for internal use shall be provided to enable an additional length of cable to connect to the motor starter. A disconnection box can include: (a) De-contactors (b) Links (c) Studs (d) Full load isolator Each disconnection box shall be provided in accordance with the requirements of the SEQ SP. Attachments shall be fitted to hold the cables so that the box does not support the cable weight. If boxes are located in the dry well, they must be above the overflow level. All boxes shall be IP56 and shall be Grade 316 SS including all door hardware, fixings and fasteners.
6.6.6 Pump set lifting equipment	**Add the following to the end of paragraph 1:** Pump lifting equipment shall be included in relevant drawings.
6.8.1 General	**Change reference from "autotransformers" to "variable speed drives"** **Insert the following informative line to the bottom of the clause:** Arrangements shall be confirmed with the relevant SEQ–SP.
6.8.2 Single and double speed starters	**Change clause title to read as follows:** 6.8.2- Motor starters **Delete item (f) from this clause, the reference has been moved to item (h) in Clause 6.6.3:**
6.8.3 Soft starters	**Change item (b) as follows:** (b) be by-passed using suitably rated internal or external bypass contactors after ramp-up; **Insert new items (f) and (g) as follows:** (f) shall be capable of providing communications links in accordance with the requirements of the relevant SEQ-SP; and (g) shall provide appropriate overload and fault protection including for a locked rotor condition.

Reference	Amendments to Sewage Pumping Station WSA04-2005 V2.1
6.8.4 Variable speed drives	**Delete paragraph 1 as follows:** ~~Variable speed drives are not normally used in submersible type stations and their use should be limited to situations where hydraulic control is required for particular pumping situations e.g. pumping directly to sewage treatment plants or where their application significantly improves the cost of pumping.~~ **Amend item (e) as follows:** (e) provide appropriate overload and fault protection including for a locked rotor condition; **Insert new item f) as follows:** (f) have a harmonics profile acceptable to the SEQ SP's electricity supply company i.e. the total harmonic voltage distortion at the PCC during start shall be within the electricity supply company's prescribed limits;
7 POWER SYSTEM	**Add the following to this clause:** This clause shall apply in conjunction with the following SEQ-SP Supplementary Specifications whose requirements will supersede any identified conflicting requirement with this WSA Code. Any conflicting requirement shall be communicated to the SEQ-SP for resolution. The Supplementary Specifications are: CoGC: • SEWERAGE NETWORK WATER SUPPLY NETWORK SUPPLEMENTARY MECHANICAL & ELECTRICAL SPECIFICATION QUU: • SSM001 Metal Clad Switchboards and Enclosures • SSM002 Electrical and Instrument Installation UNITYWATER: • Specification for Electrical Installations at Network Sites • MECHANICAL Specification Logan City Council: • Standard Electrical Specification for Water & Sewer Pump Stations Redland City Council :
7.2.2 Security of Supply	**Change paragraph 1 from informative to normative** **Change paragraph 3 as follows:** After the phrase, "…duplicate power supply from the electricity supply company….." **insert the words** "….or a permanent on-site generator…."
7.2.6 On-site generator	**Insert the following as the first paragraph in this clause:** Unless advised otherwise by the relevant SEQ-SP, onsite emergency or standby generators shall be sized to start all of the duty pump(s). **Replace the last sentence of the clause with the following:** Where external fuel storage is available on site, bunding complying with Australian Standards and local regulations shall be provided to contain potential spills, e.g. diesel.
7.2.7 Mobile generator	**Insert as the first paragraph in this clause:** Unless advised otherwise by the relevant SEQ-SP, mobile generators are to be sized for the duty pump(s). An appropriate pad shall be provided on site for portable generators as required by the relevant SEQ-SP.
7.3.1 Design	**Replace the reference to Standard Drawings SPS 1103 and SPS 1305 with the SEQ-SPS-1300-1, SEQ-SPS-1300-11 and SEQ-SPS-1301-1.**

Reference	Amendments to Sewage Pumping Station WSA04-2005 V2.1
7.3.2.4 Degree of protection	**Change the first sentence of the clause as follows:** Indoor low voltage switchboards shall have a degree of protection rating in accordance with the requirements of the relevant SEQ-SP for each type of compartment. **Replace the last sentence of the clause with the following:** The external surfaces on outdoor low voltage switchboards shall be painted in accordance with the requirements of the relevant SEQ-SP.
7.3.4 Lighting	**Change the first sentence to remove the word "fluorescent". This paragraph should read:** Lighting shall be specified…. **Add the following sentence after paragraph 2:** Explosion and corrosion proof lighting shall be provided for wet wells where required by the relevant SEQ-SP.
8 CONTROL AND TELEMETRY SYSTEM	**Add the following to this clause:** This clause shall apply in conjunction with the following SEQ-SP Supplementary Specifications whose requirements will supersede any identified conflicting requirement with this WSA Code. Any conflicting requirement shall be communicated to the SEQ-SP for resolution. The Supplementary Specifications are: CoGC: • SEWERAGE NETWORK WATER SUPPLY NETWORK SUPPLEMENTARY MECHANICAL & ELECTRICAL SPECIFICATION QUU: • SSM001 Metal Clad Switchboards and Enclosures • SSM002 Electrical and Instrument Installation UNITYWATER: • Specification for Electrical Installations at Network Sites • MECHANICAL Specification Logan City Council: • Standard Electrical Specification for Water & Sewer Pump Stations Redland City Council:
8.1 GENERAL	**Change the second last sentence to read a follows:** The telemetry system shall be capable of connection to the relevant SEQ SP's SCADA system. **Replace the reference to Standard Drawings SPS 1103, SPS 1305 and SPS 1505 with SEQ-SPS-1300-1, SEQ-SPS-1301-1, SEQ-SPS-1101-1, SEQ-SPS-1101-2 and SEQ-SPS-1300-6.**
8.2 OPERATING LEVELS AND SETTINGS	**Add the word "level" to items (c) and (d).**
8.3.1 Control design	**Replace paragraph 4 with the following:** In a pump station equipped with two pumps (i.e. one duty pump and one standby pump) an interlock shall be provided to prevent both pumps from starting simultaneously, on both automatic and manual control. In a pump station equipped with multiple pumps (e.g. duty pump, duty assist pump and one standby pump) an interlock shall be provided to prevent all pumps from starting simultaneously, on both automatic and manual control.

Reference	Amendments to Sewage Pumping Station WSA04-2005 V2.1
8.5.2 Reliability	**Add the following sentence after the first paragraph:** For critical sites, backup telecommunications facilities may be required by the relevant SEQ-SP.
8.8.5 Level Sensors	**Replace the reference to Standard Drawings SPS 1505 with SEQ-SPS-1101-1, SEQ-SPS-1101-2 and SEQ-SPS-1300-6.**
8.8.6 Float-switch	**Change the clause title to read:** 8.8.6 Float-switch or fail safe level probe **Replace references to "digital float switch" in paragraphs 1 and 2 with "discrete float switch or fail safe level probe"**
8.8.10 Contactors	**Delete item (h)**
9.1.1 General	**Replace the reference to Standard Drawings SPS 1300, SPS 1301 and SPS 1302 with SEQ-SPS-1300-1, SEQ-SPS-1300-2, SEQ-SPS-1300-3, SEQ-SPS-1301-3 and SEQ-SPS-1301-4.**
9.2.1 Isolating valves	**Insert as a separate paragraph (paragraph 5):** In specific circumstances, the relevant SEQ SP may require additional sluice valves for operational requirements. **Replace the reference to Standard Drawings SPS 1306 and SPS 1307 with SEQ-SPS-1300-1, SEQ-SPS-1300-2, SEQ-SPS-1300-3, SEQ-SPS-1301-2 and SEQ-SPS-1301-3.**
9.2.4 Sewage air-release valves	**Insert the following at the beginning of clause:** For all installations, gas air management facilities shall be provided as required by the relevant SEQ-SP. Refer to Standard Drawings SEQ-SPS-1606-1 **Change the remainder of text to be informative** **Replace the reference to Standard Drawings SPS 1605 with SEQ-SPS-1605-1 and SEQ-SPS-1606-1.**
9.3.1 Valve Chamber, General	**Replace the first two paragraphs with the following:** Valve chambers shall be provided for all valves, flowmeters and other appurtenances. Adequate space shall be provided for pipework assembly and dismantling. **Replace the reference to Standard Drawings SPS 1306 and SPS 1307 with SEQ-SPS-1300-1, SEQ-SPS-1300-2, SEQ-SPS-1300-3, SEQ-SPS-1301-2 and SEQ-SPS-1301-3.**
9.3.2 Design	**Replace the reference to Standard Drawings SPS 1301, SPS 1302, SPS 1306, SPS 1307 and SPS 1308 with SEQ-SPS-1300-1, SEQ-SPS-1300-2, SEQ-SPS-1300-3, SEQ-SPS-1301-2 and SEQ-SPS-1301-3. SEQ-SPS-1508-1, SEQ-SPS-1508-2 and SEQ-SPS-1509-1.**
9.3.5 Rising main tappings	**Replace the reference to Standard Drawings SPS 1301 with SEQ-SPS-1300-3, SEQ-SPS-1301-2 and SEQ-SPS-1301-3.**
9.3.6 Access covers	**Replace the reference to Standard Drawings SPS 1306, SPS 1506, SPS 1507 and SPS 1508 with SEQ-SPS-1300-1, SEQ-SPS-1301-1, SEQ-SPS-1304-0 to SEQ-SPS-1304-29 and SEQ-SPS-1508-1.**
9.4 EMERGENCY PUMPING ARRANGEMENTS	**Replace the reference to Standard Drawings SPS 1307, SPS 1309, SPS 1310 and SPS 1508 with SEQ-SPS-1300-1, SEQ-SPS-1300-2, SEQ-SPS-1301-2, SEQ-SPS-1301-3 and SEQ-SPS-1608-1.**

Reference	Amendments to Sewage Pumping Station WSA04-2005 V2.1
10.1 RISING MAIN - DESIGN	**Add the following paragraph for this clause:** This Code refers to the SEQ Water Supply Code for rising main design and construction requirements. In general, the SEQ-SPs requirements for water supply mains also apply to rising mains.
10.1.1 General	**Insert the following at the start of this clause:** Rising mains shall be designed to have a minimum continuous rise of 1:500 where feasible. If it is not feasible they shall have minimum rises and falls of 1:500 and 1:250 respectively. Where feasible, the rises and falls of the rising mains shall be such that it would minimise the requirement of using gas release valves. The minimum working/operating pressure of Gas Release Valves (generally 2m – 5m, depending on the make) is to be taken into account when designing the hydraulics of rising mains. Scour valves shall be provided at all low points. Section sluice valves shall be provided every 1000 metres unless otherwise approved by the relevant SEQ-SP. Where a new rising main injects into an existing rising main, a sluice valve shall be installed on the new rising main at the injection point. In addition a sluice valve shall be installed on the upstream side of the injection point on the existing pressure main. The format of the injection point fitting shall provide for the best possible hydraulic flow such as a flanged 'Y' Ductile Iron fitting. Unitywater requirement: In addition to the sluice valves stated above, Unitywater requires the installation of a non-return valve within a maintenance structure and an additional sluice valve as shown on the configuration below. All end of line valves, including valved off-takes for future connections to include end cap or blank flange to ensure no valve leakage.  **Replace the reference to Standard Drawings SPS 1104 and SPS 1600 with SEQ-SPS-1101-3 and SEQ-SPS-1101-4.**
10.2.3 Railway reserves	**Replace the reference to Standard Drawings WAT 1213 with SEQ-WAT-1213-1.**
10.2.6 Easements	**Delete this clause**
10.3.1 Hydraulic Design, Total mean head	**Add the following as the first sentence of this clause:** The hydraulic design shall reflect the parameters outlined in the SEQ Code Design Criteria.
10.3.3 Friction head loss	**Amend this clause:** k=0.15 mm for mean rising main velocity of 2 m/s and above.

Reference	Amendments to Sewage Pumping Station WSA04-2005 V2.1
10.3.5 Velocity in ~~pressure~~ rising mains	**Delete Paragraph 2 and replace with the following:** For rising mains less than DN 300, the flow velocity shall be in accordance with the parameters identified in the SEQ Code Design Criteria. Surge and water hammer analysis shall be undertaken as outlined in Clause 5.7 of the SEQ Code Design Criteria. **Amend the third last sentence to read as:** The default maximum allowable velocity of flow in the rising main shall be as defined in the SEQ Code Design Criteria.
10.3.6 Sizing of pressure mains	**Insert the following mandatory sentence at the end of paragraph 1:** Consideration of lifecycle operating versus capital costs of alternative rising main diameters shall be undertaken in accordance with sections 2.5 and 2.6 of the SEQ Code Design Criteria.
10.6.1 Temperature de-rating of plastic pipes and fittings	**Change the title of this clause to:** 10.6.1 Plastic pipes and fittings requirements **Insert the following at the beginning of this clause:** The minimum pipe and fitting pressure class shall be PN16.
10.7 METALLIC PIPES AND FITTINGS	**Insert the following mandatory paragraph to the end of this clause:** Any part of the rising main that comes within 5.0 metres of the rising mains HGL when the pumps are not operating shall be considered as potentially corrodible from gas attack. The design for these sections shall provide pipe, pipe fitting and manhole materials that are non-corrosive. For these specific locations, all forms of cement mortar lining are regarded as corrodible.
10.8 PIPELINE MATERIALS	**Add the following to the end of this clause:** Where PE systems are specified, the manufacturer's printed instructions on the electro-fusion welding procedure (in particular, the surface preparation requirements) are to be strictly adhered to. A mechanical/rotational scraper shall be used to remove oxidised layers during electro-fusion joint preparation. The use of hand scrapers is not permitted. De-beading is not to be carried out for butt welded joints unless otherwise specified by SEQ-SPs.
10.9.1 General	**Replace the reference to Standard Drawings SPS 1602, SPS 1603, SPS 1604 and SPS 1605 with SEQ-SPS-1602-1, SEQ-SPS-1603-1, SEQ-SPS-1604-1, SEQ-SPS-1605-1 and SEQ-SPS-1606-1.**
10.11.2 Discharge MHs	**Add the following as the first paragraph in this clause:** When a rising main discharges to a gravity system, the receiving structure shall be a separate and independent discharge maintenance hole that is either PE lined or provided with an approved alternative internal protective coating. Connection of the discharge structure to the relevant SEQ-SP's sewer system shall then be via a gravity pipe into an existing or provided maintenance hole on the receiving gravity sewer with any odours generated at this connection point managed as required by the Odour Impact Assessment Report. Refer to Standard Drawings SEQ-SPS-1406 series. **Replace the reference to Standard Drawings SPS 1405 with SEQ-SPS-1406-1, SEQ-SPS-1406-2, SEQ-SPS-1406-3 and SEQ-SPS-1406-4.**
11.1 DIFFICULT GROUND CONDITIONS	**Insert the following in this clause:** SEQ SPs require a Geotechnical Assessment Report in all cases regardless of ground conditions for wet wells.

Reference	Amendments to Sewage Pumping Station WSA04-2005 V2.1
11.1.1 Foundation design and ground water control	**Insert the following at the end of Clause 11.1.1:** Flotation prevention using emergency pop-up valves, ground water relief valves or similar arrangements are not permitted.
11.1.2 Geotechnical assessment	**Insert the following at the end of the first paragraph:** SEQ-SPs require geotechnical assessment for rising mains ≤ DN 300 where difficult ground conditions exist. **Insert 'Refer Clause 11.1.1' at the end of item (iii).** **Replace the reference to Standard Drawings WAT1203 and WAT 1204 with SEQ-WAT-1202-1 and SEQ-WAT-1203-1.**
11.2.1 Design loads and forces	**Delete item iii) and insert the sentence:** Flotation prevention using emergency pop-up valves, ground water relief valves or similar arrangements are not permitted.
11.2.2.2 Concrete strength	**Change the wording in the clause as follows:** The grade of concrete for all liquid retaining structures shall be SCC40 in accordance with WSA 114.
11.2.2.3 Minimum cover	**Remove the second sentence of this clause from "For exposure classification D…….. or approved equivalent".**
11.3.4.2 Pipe cover	**Change paragraph 4 to read as follows:** The minimum depth of cover for each section of rising main shall be shown on the Design Drawings. For rising mains less than or equal to 200mm NB, the minimum pipe cover shall be 600mm. For rising mains greater than 200mm NB, the minimum cover shall be 1000mm. In a footpath, the depth of cover shall be measured from the lip of kerb, or if there is no kerb, from the road shoulder. If the footway cross fall is non-standard, i.e. greater than 1 in 50, the finished surface level shall be the reference point. A cross-section at a scale of 1: 50 shall be provided within the Design Drawings. In a road carriageway, the depth of cover shall be measured from the road shoulder or lip of kerb. Where site works will reduce the depth of cover below the required pipe cover, the rising main shall be redesigned to provide the required cover. The maximum depth to invert shall not exceed 1.5 m for rising mains less than or equal to DN300 and, for rising mains greater than DN300, the maximum pipe cover shall not exceed 1.5 m, unless a special design for the pipeline and its installation is submitted to and approved by the relevant SEQ-SP. **Replace the reference to Standard Drawings SPS 1601 with SEQ-SPS-1601-1.**
11.3.4.4 *Pipe embedment*	**Replace the reference to Standard Drawings WAT 1201, WAT 1202, WAT 1203 and WAT 1204 with SEQ-WAT-1200-2, SEQ-WAT-1201-1 SEQ-WAT-1202-1, SEQ-WAT-1203-1 and SEQ-WAT-1204-1.**
11.3.5 Specific Geotechnical Considerations	**Add the following to this clause:** Where difficult ground conditions are anticipated or encountered, then a Geotechnical Assessment Report and a Construction Method Report shall be submitted with the Detailed Design to the relevant SEQ-SP.
11.3.5.6 *Water-charged ground*	**Replace the reference to Standard Drawings SEW 1203 and SEW 1204 with SEQ-SEW-1202-1 and SEQ-SEW-1203-1.**

<table>
<tr><th>Reference</th><th>Amendments to Sewage Pumping Station WSA04-2005 V2.1</th></tr>
<tr><td>11.3.6 Above ground crossings</td><td>
Add the following before the last sentence :

Where a gas release valve is located on the rising main at a location where the main is above the ground, then an access platform to facilitate Valve maintenance shall be provided that conforms to AS 1657-2013. Discussions with the SEQ SP will determine if a walkway or ladder or stair arrangement is required or not for access to the maintenance platform.

Design to incorporate allowance for expansion at bridge expansion joints and at ends of bridge.

Replace the reference to Standard Drawings WAT 1310, WAT 1311 and WAT 1312 with SEQ-WAT-1312-1.
</td></tr>
<tr><td>11.3.7 Bulkheads and trench stops</td><td>
Amend the first paragraph to read:

Bulkhead and trenchstop requirements shall be detailed in the Design Drawings and shall be in accordance with Standard Drawings SEQ-WAT-1209-1 and SEQ-WAT-1210-1. Where located adjacent to a road crossing, bulkheads or trenchstops shall be placed adjacent to the kerb as shown in Standard Drawing SEQ-WAT-1209-1. Spacing of bulkheads and trenchstops shall be in accordance with Table 11.1. Bulkheads may also be required adjacent to the kerb of sealed roads to support the edge of the road formation.

Amend the third paragraph to read:

In addition to the grade of the sewer, when determining the need for bulkheads and trenchstops, trench location, annual rainfall, native soil permeability, natural water table, the occurrence of underground streams and other Water Agency criteria shall also be taken into consideration. Where wide trenching with step batters is used, trenchstops and bulkheads should not extend above the lowest un-stepped trench section.

Replace the contents of Table 11.1 with the following:

<table>
<tr><th>Grade
%</th><th>Requirement</th><th>Spacing S
m</th></tr>
<tr><td>5<Grade<15</td><td>Trenchstop</td><td>S=100/Grade%</td></tr>
<tr><td>15≤Grade<30</td><td>Concrete bulkhe d</td><td>S=L/Grade%, where
L = 80xPipe length*, m (450 m max)
Where L>100 m – use intermediate trenchstops at spacing <100/Grade</td></tr>
<tr><td>30≤Grade<50</td><td>Concrete encasement (continuous) and concrete bulkheads</td><td>S = 100/Grade(%)</td></tr>
<tr><td>Grade≥50</td><td>Special design</td><td></td></tr>
</table>
* Pipe length is the standard pipe length installed
</td></tr>
<tr><td>11.3.9.2 Thrust blocks</td><td>Replace the reference to Standard Drawings WAT 1205, SEW 1201 and SEW 1200 with SEQ-WAT-1205-1, SEQ-SEW-1200-2 and SEQ-SEW-1200-1 respectively.</td></tr>
<tr><td>11.3.10 Restrained elastomeric seal joint pressure mains</td><td>
Insert the following before the second last paragraph:

Where space available for thrust blocks is limited, a commercial restrained joint system approved by the relevant SEQ-SP may be used subject to the approval of the relevant SEQ-SP’s delegate. Installation of joints shall follow the manufacturer’s specifications.

Add the following before the last sentence:
For “Tyton-Loc” restrained elastomeric seal joints, refer to the product limitations advised by the manufacturer.

Replace the reference to Standard Drawings WAT 1208 with SEQ-WAT-1208-1
</td></tr>
</table>

Reference	Amendments to Sewage Pumping Station WSA04-2005 V2.1
12.1.2 Water	**Replace the reference to Standard Drawings with the following:** SEQ-SPS-1102-2, SEQ-SPS-1102-3, SEQ-SPS-1102-4, SEQ-SPS-1300-2, SEQ-SPS-1300-3, SEQ-SPS-1300-6, SEQ-SPS-1301-1, SEQ-SPS-1301-2, SEQ-SPS-1301-3 and SEQ-SPS-1308-1.
12.1.5 Drainage	**Delete the reference to Standard Drawing SPS 1205.**
15.2.1 General	**Change the first sentence to:** Design Drawings shall be prepared in accordance with the SEQ Asset Information Specification.
15.2.8 Other	**Add the following to the end of this clause:** The following boxed note shall be included on the Design Drawings. All water and sewer construction work shall comply with the requirements of the latest revision of the Queensland Workplace Health and Safety Act. Contact the Division of Workplace Health and Safety for information. Telephone: 1300 369 915
15.2.9 Electrical and telemetry	**Change the first sentence to read as follows:** Design Drawings shall include but will not be limited to the following: **Amend item (g) to be advisory** **Insert new items (j) and (k) as follows:** (j) Site specific Functional Description Specification. (k) Provide RPEQ approved detailed design documentation issued for construction. **Amend the last paragraph to be advisory and to read as follows:** *The PLC/RTU ladder diagrams or logic coding shall be provided as a separate document, using propriety software associated with the equipment. PLC and logic diagrams and functional specification shall be as per the requirements of the relevant SEQ-SP.*
15.3.3 Recording of as-constructed information	**Add as the first paragraph in this clause:** The Asset Manual and asset handover documentation for each sewage pump stations shall be completed and submitted to the relevant SEQ-SP prior to either practical completion; acceptance by the relevant SEQ SP; or setting the pump station into service.
APPENDIX A TYPICAL PRECOMMISSIONING CHECKLIST	**Add to BOTH the Mechanical and Electrical Pre-commissioning Checklist the following rows and renumber all other items:** Item | Action/Requirement | Constructor to certify compliance 1 | All Factory Acceptance Tests (FATs) for each item of equipment | 2 | All Pre-Site and Site Acceptance Tests (SATs) for each item of equipment | **Alter text for "ohm" to symbol "Ω" in new rows 40, 41 and 42 of "Electrical Items"**
APPENDIX B TYPICAL COMMISSIONING SCHEDULE	**Replace the reference to Standard Drawings SPS-1508 with SEQ-SPS-1508-1.**

Reference	Amendments to Sewage Pumping Station WSA04-2005 V2.1
APPENDIX E DETAILED DESIGN CHECKLIST	**Amend the requirement for Guide rails as below:** Guide rails – To be stainless steel, and to allow removal of pumps through access cover. **Replace the reference to Standard Drawings SPS-1508 with SEQ-SPS-1508-1.**
PART 2 – PRODUCTS AND MATERIALS	
16.1 PURPOSE	**Add the following paragraphs after the second paragraph:** Reference to "Water Agency" or the like shall be taken to read as a reference to the individual south east Queensland service provider within whose sewerage network the sewage pumping station and rising main will be designed and constructed. Any reference to the WSA Code shall be deemed to refer to the SEQ Code which contains the SEQ Amendments. The SEQ Code specifies mandatory requirements for the design and construction of Sewage Pump Stations that are to become the responsibility of the SEQ-SPs. Each SEQ-SP reserves the right to specify or approve other design and/or construction requirements for particular projects and/or developments. Before commencement of any construction, approval from the SEQ-SPs shall be obtained to any design and/or installation that do not comply with the SEQ-SP's Code.
PART 3 - CONSTRUCTION	
17.1 SCOPE	**Add the following paragraphs after the second paragraph:** Reference to "Water Agency" or the like shall be taken to read as a reference to the individual south east Queensland service provider within whose sewerage network the sewage pumping station and rising main will be designed and constructed. Any reference to the WSA Code shall be deemed to refer to the SEQ Code) which contains the SEQ Amendments. The SEQ Code specifies mandatory requirements for the design and construction of Sewage Pump Stations that are to become the responsibility of the SEQ-SPs. Each SEQ-SP reserves the right to specify or approve other design and/or construction requirements for particular projects and/or developments. Before commencement of any construction, approval from the SEQ-SPs shall be obtained to any design and/or installation that do not comply with the SEQ-SP's Code.
17.2 INTERPRETATION	**Add the following definition in alphabetical order:** SEQ Code means the SEQ Water Supply and Sewerage Design and Construction Code which is required by legislation and which is an instrument: • made jointly by the SEQ-SPs; and • that provides for technical standards relating to the design and construction of water infrastructure in the SEQ region.
18.1.1 General	**Add the following as the second sentence to this clause:** Specific requirements of the relevant SEQ-SP (in terms of compliance with AS 9000 series etc) may be specified in an internal document.

Reference	Amendments to Sewage Pumping Station WSA04-2005 V2.1
18.2 PERSONNEL QUALIFICATIONS	**Add the following as the final sentence to this clause:** During any construction activity at least one person on site must have completed a pipe laying training course approved by the supplier and appropriate to the pipeline under construction. The training course must have been completed within the last ten (10) years. The contractor will provide documented evidence of such qualification prior to commencement of the works.
19.5.2 Protection of other services	**Insert the following at the start of this clause:** The Developer or its Constructor/s shall be responsible for any damage they cause to existing underground services. If the Developer or its Constructor damages any existing services, they shall arrange for the relevant service authority to make good such damage and the cost thereof shall be borne by the Developer or its Constructor. If in the opinion of the relevant SEQ-SP, the failure or damage causes an emergency situation, then remedial action will be taken by the relevant SEQ-SP and the full cost of such action shall be borne by the Developer or its Constructor.
20 PRODUCTS, MATERIALS AND EQUIPMENT	**Add the following to this clause:** This clause shall apply in conjunction with the following SEQ-SP Supplementary Specifications whose requirements will supersede any identified conflicting requirement with this WSA Code. Any conflicting requirement shall be communicated to the SEQ-SP for resolution. The Supplementary Specifications are: CoGC: • SEWERAGE NETWORK WATER SUPPLY NETWORK SUPPLEMENTARY MECHANICAL & ELECTRICAL SPECIFICATION QUU: • SSM001 Metal Clad Switchboards and Enclosures • SSM002 Electrical and Instrument Installation UNITYWATER: • Specification for Electrical Installations at Network Sites • MECHANICAL Specification Logan City Council: • Standard Electrical Specification for Water & Sewer Pump Stations Redland City Council :
20.3 ELECTRICAL EQUIPMENT	**Change the second paragraph to read as follows:** Only use clean Grade 316 SS or marine grade aluminium in the construction of the switchboard cubicle and panels. **Add the following sentence to the end of the second paragraph:** Thoroughly pickle and passivate all fabricated components both internally and externally at the end of the fabrication and/or site modification processes. **Change the first line of the last paragraph to read as follows:** Calculate and show prospective …….
20.8 FASTENERS	**Add the following sentence as a paragraph after the first paragraph:** Where stainless steel fixings, nuts and bolts are used, nickel based anti galling or anti-seize compound shall be applied to the thread and/or nut before assembly.

Reference	Amendments to Sewage Pumping Station WSA04-2005 V2.1
20.10.7 Compaction	**Amend the following sentence at the end of the first paragraph:** Do not vibrate to the point where segregation of the ingredients occurs but ensure that all the air bubbles are expelled from the concrete mass i.e. well graded concrete mixes that are in the target slump range do not tend to ingredient segregate until well after the entrained air is expelled.
21 ELECTRICAL WORKS	**Add the following to this clause:** This clause shall apply in conjunction with the following SEQ-SP Supplementary Specifications whose requirements will supersede any identified conflicting requirement with this WSA Code. Any conflicting requirement shall be communicated to the SEQ-SP for resolution. The Supplementary Specifications are: CoGC: • SEWERAGE NETWORK WATER SUPPLY NETWORK SUPPLEMENTARY MECHANICAL & ELECTRICAL SPECIFICATION QUU: • SSM001 Metal Clad Switchboards and Enclosures • SSM002 Electrical and Instrument Installation UNITYWATER: • Specification for Electrical Installations at Network Sites • MECHANICAL Specification Logan City Council: • Standard Electrical Specification for Water & Sewer Pump Stations Redland City Council :
21.1 COMPLIANCE WITH AUTHORITIES, STATUTES, REGULATIONS AND STANDARDS	**Change item d) to read as follows:** (d) all relevant Statutory Authorities including the Electrical Safety Act and Electricity regulations; and
21.2 SCOPE OF WORK	**Change the title to read:** 21.2 Typical Scope of Work **Change the first sentence to read as follows:** The scope of work will be advised by the relevant SEQ-SP. As a minimum, the Developer or its Constructor shall carry out the following works: **Change items (a) and (b) to read as follows:** (a) Arrange supply with the Supply Authority. (b) Supply and install all electrical equipment. **Change item (m) to read as follows:** (m) Arrange and install data communications media including all cabling/connections as required. **Add new item (p) as follows:** (p) Provide RPEQ approved as constructed documentation.

Reference	Amendments to Sewage Pumping Station WSA04-2005 V2.1
21.3 SUPPLY AUTHORITY REQUIREMENTS AND METERING	**Delete the first three paragraphs and replace with the following :** The Developer or its Constructor shall submit all forms required by the relevant SEQ SP's electrical supplier as the SEQ-SP's agent to ensure that permanent power is connected prior to commissioning of the pump station. **Amend the fourth paragraph to read:** The Developer or its Constructor shall forward the Customer Copy of all forms to the relevant SEQ-SP. **Amend the fifth paragraph to read:** The Developer or its Constructor shall arrange for the mounting of the metering equipment inside the switchboard or as shown on the Design Drawings.
21.4.2 Cable size	**Change this clause to read:** Determine the size of consumer mains based on the maximum demand of the pump station.
21.4.3 Maximum demand	**Change the first line in the clause as follows:** Base the maximum demand for pumping stations with up to two pumps installed on all pumps running simultaneously plus auxiliaries.
21.4.4 Calculations to be submitted	**Change the clause to read:** Submit all calculations as required by the relevant SEQ-SP as a part of the documentation required prior to acceptance.
21.4.6 Mains requirements	**Delete items (a), (b) and (d)** **Change heading for item (c) and revise the text as follows:** Underground reticulation The Developer or its Constructor shall extend underground cable from main switchboard to the relevant SEQ SP's electrical supplier's substation, underground reticulation or distribution pillar as nominated. The Developer or its Constructor shall provide all materials required by the relevant SEQ SP's electrical supplier to terminate the cable.
21.4.7 Lead-in pole and overhead mains construction	**Delete the entire clause.**
21.4.8.1 *General*	**Delete item (a)** **Delete the last line beginning** Bury underground low voltage ……"
21.4.8.2 *Location*	**Revise the text in the paragraph 1 as follows:** Locate the cable within any public roadway from the base of the pole, perpendicular to the kerb and then along the relevant SEQ SP's electrical supplier's underground cable footway allocation in accordance with local requirements for allocation of space in footways.
21.4.8.5 *Cable installation on poles*	**Delete the entire clause.**
21.5.1 General	**Amend this clause as follows:** **Delete the first sentence of paragraph 4 starting "Install an equipotential earth bond……"** **Delete paragraph 6 starting: "Use a main earth electrode complying….."** **Delete paragraph 7 starting: "Bond the main earth and ….."**
21.5.2 Earth circuits	**Delete the entire clause.**

Reference	Amendments to Sewage Pumping Station WSA04-2005 V2.1
21.6.3 Thermal derating of equipment	**Delete this clause and replace with the following clause:** Switchgear installed in indoor switchboards shall be derated in accordance with the manufacturer's recommendations.
21.6.4 Labelling	**Delete sub-clauses (21.6.4.1 to and including 21.6.4.6) and replace with the following clause:** Labelling shall be undertaken as per the requirements of the relevant SEQ-SP.
21.7 CIRCUITS	**Delete subclauses 21.7.1 and 21.7.2 and replace with the following clause:** Circuits shall meet the requirements of the relevant SEQ-SP. **Delete Table 21.1.**
21.8.1 General	**Delete this clause and replace with the following clause:** Cabling shall be undertaken in accordance with the requirements of the relevant SEQ-SP.
21.10.2 Wet-well level sensor probes	**Delete this clause.**
21.11 TERMINATIONS	**Delete sub-clauses 21.11.1 to 21.11.3 (inclusive) and replace with the following clause:** Terminations shall be undertaken in accordance with the requirements of the relevant SEQ-SP.
21.12 PAINTING	**Delete sub-clauses 21.12.1 to 21.12.3 (inclusive) and replace with the following clause:** Painting shall be undertaken in accordance with the requirements of the relevant SEQ-SP.
21.14 NOTIFICATION OF ELECTRICAL WORK	**Delete this clause and replace with the following:** Notification of electrical work shall be undertaken in accordance with the requirements of the relevant SEQ-SP.
22 TELEMETRY SYSTEM	**Delete this clause and subclauses and replace with the following:** This clause shall apply in conjunction with the following SEQ-SP Supplementary Specifications whose requirements will supersede any identified conflicting requirement with this WSA Code. Any conflicting requirement shall be communicated to the SEQ-SP for resolution. The Supplementary Specifications are: CoGC: • SEWERAGE NETWORK WATER SUPPLY NETWORK SUPPLEMENTARY MECHANICAL & ELECTRICAL SPECIFICATION QUU: • SSM001 Metal Clad Switchboards and Enclosures • SSM002 Electrical and Instrument Installation UNITYWATER: • Specification for Electrical Installations at Network Sites • MECHANICAL Specification Logan City Council: • Standard Electrical Specification for Water & Sewer Pump Stations Redland City Council : Telemetry system configuration and installation shall be undertaken in accordance with the requirements of the relevant SEQ-SP.

Reference	Amendments to Sewage Pumping Station WSA04-2005 V2.1
24 MECHANICAL INSTALLATION OF PUMPS, VALVES AND FITTINGS	**Add the following to this clause :** This clause shall apply in conjunction with the following SEQ-SP Supplementary Specifications whose requirements will supersede any identified conflicting requirement with this WSA Code. Any conflicting requirement shall be communicated to the SEQ-SP for resolution. The Supplementary Specifications are: CoGC: • SEWERAGE NETWORK WATER SUPPLY NETWORK SUPPLEMENTARY MECHANICAL & ELECTRICAL SPECIFICATION QUU: • SSM001 Metal Clad Switchboards and Enclosures • SSM002 Electrical and Instrument Installation UNITYWATER: • Specification for Electrical Installations at Network Sites • MECHANICAL Specification Logan City Council: • Standard Electrical Specification for Water & Sewer Pump Stations Redland City Council :
25.4 FASTENERS	**Revise the text in last two paragraphs as follows:** Apply Loctite or similar nickel anti-seize thread lubricant to the threads of all stainless steel nuts and bolts and other threaded items prior to assembly. *Depending on the application fasteners manufactured from Grades 304, 304L, 316, 316L, 321 or S32304 stainless steel are acceptable alternatives to hot dip galvanised steel fasteners.*
28 EXCAVATION	**Delete this clause and subclauses and replace with the following:** See SEQ WS&S D&C Water Supply Code (WSA 03 -2011-3.1) “Clause 13” EXCAVATION.
29 BEDDING FOR PIPES, BENDS, WET-WELLS AND MAINTENANCE STRUCTURES	**Delete this clause and subclauses and replace with the following:** For Rising Mains -See SEQ WS&S D&C Water Supply Code (WSA 03 -2011-3.1) “Clause 14” BEDDING FOR PIPES”. For Gravity mains, Wet Wells and Maintenance Structures See SEQ WS&S D&C Sewerage Code (WSA 02 -2002-2.3) “Clause 16” BEDDING FOR PIPES AND MAINTENANCE STRUCTURES”.
30 PIPE LAYING AND JOINTING	**Delete this clause and subclauses and replace with the following:** For Rising Mains -See SEQ WS&S D&C Water Supply Code (WSA 03 -2011-3.1) “Clause 15” PIPE LAYING AND JOINTING”. For Gravity mains- See SEQ WS&S D&C Sewerage Code (WSA 02 -2002-2.3) “Clause 17” PIPE LAYING AND JOINTING.
31 WET-WELLS AND MAINTENANCE HOLES (MHS)	**Retitle this clause as below and add the following to this clause:** 31 WET-WELLS For Maintenance Holes - See SEQ WS&S D&C Sewerage Code (WSA 02 -2002-2.3) “Clause 18” MAINTENANCE HOLES (MHS).
31.1 GENERAL	**Amend this clause to read as below:** Construct wet-wells and valve chambers and install covers, surrounds and ladders as specified. Reference: Standard Drawings SEQ-SPS–1300-1 to SEQ-SPS-1308-1.

Reference	Amendments to Sewage Pumping Station WSA04-2005 V2.1
31.2 WET-WELL AND MH BASES	**Replace the reference to Standard Drawings SEW–1302, SEW–1303, SEW–1304, SEW–1305 and SEW–1306 with SEQ-SEW-1302-1, SEQ-SEW-1303-1, SEQ-SEW-1304-1, SEQ-SEW-1305-1, SEQ-SEW-1306-1, SEQ-SPS-1301-2 to SEQ-SPS-1301-10 and SEQ-SPS-1304-Series.**
31.3 TRENCH DRAINAGE AROUND WET-WELLS AND MHs	**Replace the reference to Standard Drawings SEW–1207 with SEQ-SEW-1207-1.**
31.4 PRECAST CONCRETE SYSTEMS	**Replace the reference to Standard Drawings SEW–1300, SEW–1301, SEW–1302, SEW–1303, SEW–1304, SEW–1305 and SEW–1306 with SEQ-SEW-1300-1, SEQ-SEW-1301-1, SEQ-SEW-1302-1, SEQ-SEW-1303-1, SEQ-SEW-1304-1, SEQ-SEW-1305-1, SEQ-SEW-1306-1, SEQ-SPS-1300-1, SEQ-SPS-1300-2, SEQ-SPS-1300-5, and SEQ-SPS-1300-6.**
31.5 CAST IN_SITU CONCRETE WET-WELSS AND MHs	**Replace the reference to Standard Drawings SEW–1301 SEQ-SPS-1300 set.**
31.8 COVERS	**Replace the reference to Standard Drawings SEW–1300, SEW–1301 and SEW–1308 with SEQ-SPS-1304-series.**
31.9 CONNECTIONS TO WET-WELLS AND MHs	**Replace the reference to Standard Drawings SEW–1302 and SEW–1303 with SEQ-SEW-1302-1, SEQ-SEW-1303-1**
31.10 MH DROPS	**Replace the reference to Standard Drawings SEW–1303 and SEW–1306 with SEQ-SEW-1301-2, SEQ-SEW-1301-4, SEQ-SEW-1301-8, SEQ-SEW-1303-1, and SEQ-SEW-1306-1.**
32 PIPE EMBEDMENT AND SUPPORT	**Delete this clause and subclauses and replace with the following:** For Rising Mains -See SEQ WS&S D&C CODE Water Supply Code (WSA 03 -2011-3.1) “Clause 16” PIPE EMBEDMENT AND SUPPORT. For Gravity mains- See SEQ WS&S D&C CODE Sewerage Code (WSA 02 -2002-2.3) “Clause 17” PIPE EMBEDMENT AND SUPPORT.
33 FILL	**Delete this clause and subclauses and replace with the following:** For Rising Mains -See SEQ WS&S D&C CODE Water Supply Code (WSA 03 -2011-3.1) “Clause 17” FILL. For Gravity mains- See SEQ WS&S D&C CODE Sewerage Code (WSA 02 -2002-2.3) “Clause 21” FILL.
34 CONNECTION TO EXISTING GRAVITY SEWERS	**Delete this clause and subclauses and replace with the following:** For “Connection To Existing Gravity Sewers” - See SEQ WS&S D&C CODE Sewerage Code (WSA 02 -2002-2.3) “Clause 24” CONNECTION TO EXISTING SEWERS.
35 RESTORATION	**Delete this clause and subclauses and replace with the following:** For “Restoration” - See SEQ WS&S D&C CODE Sewerage Code (WSA 02 -2002-2.3) “Clause 25” RESTORATION.
36.1 PIPELINES	**Insert the following clause immediately before Table 36.1:** Vacuum testing of pumping station wet wells is not permitted. These structures must be tested hydrostatically in accordance with the requirements of AS 3735 and shall be filled to 500 mm above the overflow level. The pump station shall be covered to remove the effect of sun and wind induced evaporation and to prevent the entry of rainwater or stormwater. A test bucket shall be suspended within the pump station to measure evaporation. No leakage (other than the loss measured by the change of the surface level of the test bucket) shall occur over 48 hours. The Designer shall certify compliance with AS 3735.

Reference	Amendments to Sewage Pumping Station WSA04-2005 V2.1
36.3 COMPACTION TESTING	**Add the following to this clause:** For "Compaction Testing" - See SEQ WS&S D&C CODE Water Code (WSA 03 -2011 -2-3.1) "Clause 19.3 COMPACTION TESTING. **Delete the sub-clauses of this clause.**
36.4.2.2 Low pressure air testing	**Delete this clause and replace with the following:** Gravity mains shall be tested in accordance with the provisions contained in the SEQ Sewerage Code Clause 22 "Acceptance Testing".
36.4.3.1 General	**Replace the first two paragraphs with the following:** Vacuum test all concrete MHs regardless cast in-situ MHs or precast MHs. **Delete Table 36.4**
36.5.1 General	**Replace the third paragraph with the following:** Test, report and accept the test in accordance with Section 6 of AS/NZS 2566.2:2002 using the test method appropriate for the pipe material as nominated in this AS/NZS standard i.e. Clause 6.3.4.1 (method M4) for DI and PVC pipes and Clause 6.3.4.2 (method M5) for PE pipes.
36.5.2 System test pressure	**Add the following before the second paragraph of this clause after the formula DP<STP< 1.25 × DP.** The STP shall also be min 900kPa.
36.5.3 Maximum allowable loss	**Delete this clause.**
36.5.4 Test procedure	**Delete this clause.**
36.5.5 Satisfactory pressure test	**Delete this clause.**
36.6 INFILTRATION TESTING	**Delete this clause and replace with the following:** Infiltration for gravity sewers shall be tested in accordance with the provisions contained in the SEQ Sewerage Code Clause 22.5 "INFILTRATION TESTING."
36.7 DEFLECTION (OVALITY) TESTING OF FLEXIBLE GRAVITY SEWERS	**Delete this clause and replace with the following:** Deflection (ovality) of flexible GRAVITY sewers mains shall be tested in accordance with the provisions contained in the SEQ Sewerage Code Clause 22.6 DEFLECTION (OVALITY) TESTING OF FLEXIBLE GRAVITY SEWERS.
36.8 CCTV INSPECTION	**Delete this clause and replace with the following:** CCTV INSPECTION shall be performed in accordance with the provisions contained in the SEQ Sewerage Code Clause 22.7 CCTV INSPECTION.
37.2.4 Handover	**Revise the text in paragraph 1 as follows:** Handover is when the system is accepted by the Water Agency as fit-for-purpose and subsequently put into operation by the Water Agency. It is also when all documentation is completed and supplied to the Water Agency by the Developer/ Designer/ Constructor having been endorsed by an RPEQ, and when all system defects are closed out.

Reference	Amendments to Sewage Pumping Station WSA04-2005 V2.1
39.1 GENERAL	**Delete existing clause 39.1 and replace with the following:** Prepare and submit asset "as-constructed" data and asset manuals to the SEQ-SP in accordance with SEQ WS&S D&C Asset Information Specification.
PART 4 - DRAWINGS	**Amendments to WSA04-2005 V2.1**
40.1 GENERAL	**Revise the text in paragraph 2 as follows:** The Drawings included in the SEQ Code have been prepared by the SEQ-SPs. To meet special needs, Designers and Constructors are encouraged to identify improved construction methods and other variations from the requirements set out in the Standard Drawings. Authorisation by the relevant SEP-SP will be necessary before any major departure from the principles outlined in the drawings are implemented. Successful initiatives will be considered by the SEQ-SPs for inclusion in future editions of this version of the SEQ Code.
40.1 GENERAL	**Add the following paragraphs after the second paragraph:** Reference to "Water Agency" or the like shall be taken to read as a reference to the individual south east Queensland service provider within whose sewerage network the sewage pumping station and rising main will be designed and constructed. Any reference to the WSA Code shall be deemed to refer to the SEQ Code which contains the SEQ Amendments. The SEQ Code specifies mandatory requirements for the design and construction of Sewage Pump Stations that are to become the responsibility of the SEQ-SPs. Each SEQ-SP reserves the right to specify or approve other design and/or construction requirements for particular projects and/or developments. Before commencement of any construction, approval from the SEQ-SPs shall be obtained to any design and/or installation that do not comply with the SEQ-SP's The Sewage Pump Station Code of Australia.
40.2 DRAWING COMMENTARY	**Delete the first paragraph:**
41 LISTING OF STANDARD DRAWINGS	**Delete the listed WSA Standard Drawing.** **Add the listed drawings of the SEQ-SPs as per the table of Drawing Index.**