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

SEWERAGE CODE SCHEDULE OF AMENDMENTS

Amendment No.1 - April 2016



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UrbanUtilities

(Changes from July 2013 Version 1.0 to April 2016 Version 1.1)

SEQ Sewerage Code

General		Replaced Redland Water logo with the Redland City Council logo.					
		Changed m, mm to have a space to have no space between the let	e between the tters and the r	number and letter. (number.	Changed DN		
PART 0 - GLOSSARY	Code Purpose	In the first dot point under "Condi parts of the documents".	ition", delete	ed the repeated word	ds of "no		
	Branch Sewer	Added the following definition at the end of the first sentence. For SEQ, a branch sewer may also define a sewer line of any diameter joins another sewer line at a Maintenance Structure.					
	Part III – Referenced documents	Added the following reference into the "Referenced documents":4970Protection of trees on development sites					
PART 1 - PLANNING AND DESIGN	4.2.4.3	Inserted the following at the end of this clause Designers and constructors shall take early and due consideration of both the relevant SEQ-SPs requirements and AS 4970 Protection of Trees on Development Sites. Removed the previous addition and replace the second paragraph with the following:					
	4.2.5						
		 Easements shall be provided along the full alignment of any gravity sewer located on private property. Normally easements shall be wholly container within the property in which the sewer is located and located centrally over sewer. Where these criteria conflict, the SEQ-SP may permit the easemed be placed eccentrically over the sewer or the sewer to be placed centrally within a pair of parallel easements created over two adjoining lots. The minimum width of easements to be provided for gravity sewers shall specified in the table below and is dependent on the diameter and depth sewer. Where a maintenance structure (maintenance hole, maintenance or terminal entry point) is located on private property, a minimum 1 m wide easement along the side boundary from the front boundary to the rear boundary, for sewerage purposes, is to be provided to facilitate access to structure. However, in QUU and RCC areas only, easements are not required to be provided over gravity sewers of 300 mm diameter (DN315PE) or less. Th minimum 1 m wide easement required for facilitating access to maintenant structures is to be provided for all maintenance structures on private propirirespective of the diameter of the associated sewer, and is to contain the maintenance structure. 					
		on Council land.	ont Widths fo	r Crovity Sowers			
		Sower Diamator	Seve	Depth (to invert le	evel)		
		(nominal internal diameter)	<=3 m	>3 m to <=5 m	>5 m		
		<=300 mm	3 m*	6 m*	10 m*		
		>300 mm to <=600 mm	6 m	6 m	10 m		
		>600 mm	10 m	10 m	10 m		
	*No easement over gravity sewers of 300 mm diameter (DN 315 PE) or						

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	less required in QUU and RCC areas.
4.3.3	Amended the second sentence on 1st paragraph to read:
	"Consultation and approval of the water Agency and railway owner shall be"
4.3.4	Added the following to the fifth paragraph:
	"as per Clause 4.2.5"
435	Amended Sewer Size in Table 4.1 which reads 7502 to be 750 ²
Table 4	1
	Inserted the following as Note 4 of Table 4.1.
	"QUU does not allow this configuration. The maximum allowed deflection for
	QUU is 120°
4.3.7	Deleted the drawing reference in the third paragraph.
	Replaced paragraphs 4, 5 and 6 with the following:
	Smart Sewers such as NuSewers and RIGSS may include horizontal curves to avoid obstructions and reduce the number of maintenance structures. For NuSewers this may include a combination of Long Radius bends (LRBs) and Short Radius Bends (SRBs) as prescribed below and for RIGSS the sewer line may include LRB's with SRB's at Rodding Ends. The maximum deflection angle for long radius bends shall be 90 degrees with this being achieved for RIGSS by the RRJ connection of two 45 degree bends and for NuSewers by the use of a continuous run of PE pipe as discussed below. The maximum deflection for a NuSewer short radius bend (SRB) shall be 45 degrees. Sections of a curve in a Smart sewer shall not be located under the road carriageway.
	For all NuSewers , a maximum of two long radius bends (LRB) may be used between adjacent maintenance structures. Curves in NuSewers may include both long and short radius bends. For NuSewers, a short radius bend (SRB), with a maximum deflection angle up to 45 degrees, may be provided immediately upstream of a maintenance structure. The standard radius for a SRB is 750 mm. Where a NuSewer approved SRB is provided, only one additional long radius bend up to 90 degrees may be included between maintenance structures. The minimum LRB radius for NuSewers shall comply with the POP202 requirements i.e. 35 times outside diameter for a SDR21 PE pipe. In curved streets, the bend radius shall match the road curvature provided the bend radius limitations in POP202 are not exceeded.
	An acceptable alignment for a NuSewers is shown below.
	45° SRB MS
	MS O
	✓ 90 ⁰ LRB
	An acceptable alignment for a RIGSS sewer is shown in SEQ-SEW-1103-1.
	For DN150 <u>RIGSS installation</u> a maximum of two LRB's may be utilised along the sewer line between maintenance structures. However, additional LRB's may located directly at a maintenance shaft to achieve connection of the sewer line to fixed angle Moulded Maintenance Shaft bases to achieve the required horizontal alignment and vertical grade, refer to SEQ-SEW-1100 and SEQ-











	SEW-1101 drawing sets for details. Short Radius Bend shall only be used at a Rodding End.
	Horizontal curves are not permitted in RRJ sewers without the use of a LRB. For RIGSS, typically DN150 sewer LRBs are directly available from suppliers, refer to the drawing SEQ–SEW-1103-1 and SEQ-SEW-1314-3. DN225 and larger bends in RIGSS are either formed or fabricated bends from Plain Wall PVC-U DWV pipe to AS/NZS1260 and may require pre-ordering . Both fabricated and formed PVC long radius sweep bends are shown in SEQ-SEW- 1314-3. Larger diameter sewer bends for RIGSS are detailed in SEQ-SEW- 1310-1 and require Lead Time for delivery. DN225 and larger bends in RIGSS shall be fabricated bends from AS/NZS1260. Certified Fabrications as shown in SEQ-SEW1314-3.
	Sewer connection junctions shall be placed on straight sections of the sewer.
	 Property connection sewers may incorpoarte sweep bends and sweep junctions as shown on SEQ-SEW-1106 drawing set. Sweep bends/junctions are factory fabricated bends/junctions with a shorter bend radius than SRBs. Sweep bends shall not exceed 45 degrees. The minimum radius of Sweep bends on NuSewer property connection sewers shall be as follows: Nu Sewer (PE): For 1100D PE, the minimum radius shall be 270mm. For 1600D PE, the minimum radius shall be 460mm
4.4.4	Amended the last line of paragraph 2 to read:
	"SPs building over or adjacent to assets (BOAA) requirements"
4.4.4.1	Inserted a New Clause as follows:
	4.4.4.1 Building Over or Adjacent to Assets (BOAA)
	Section 192 of the Water Supply (Safety and Reliability) Act 2008 makes it an offence to interfere with a water service provider's infrastructure without the written consent of the service provider. Activities that constitute interference include, but are not limited to:
	(a) Building over infrastructure;
	(b) Interfering with access to infrastructure;
	(c) Increasing or reducing the cover over infrastructure;
	(d) Changing the surface of land in a way causing ponding of water over an access chamber for infrastructure.
	(e) Building near infrastructure in a manner that has the potential to cause damage to the infrastructure.
	However, the written consent of the service provider is not required for the carrying out of building work for a building or structure, as defined under the Building Act 1975. Building work on a lot that contains, or is adjacent to a lot that contains, a sewer or water main must be assessed against the Queensland Development Code Mandatory Part 1.4 - Building Over Or Near Relevant Infrastructure (QDC MP1.4).
	The building certifier will assess the building works against the QDC MP1.4 acceptable solutions. Where the building works do not comply with the acceptable solutions, the building development application must be referred to the relevant water service provider (owner of the infrastructure) for assessment as a concurrence agency. The relevant water service provider must assess the building works against the QDC MP1.4 performance criteria.











4.5.4	Amended the structure and content of Table 4.3 to reflect Unitywater's minimum pipe size for twin property connections as follows:				
	Sewer	Minimum	n size		
		NuSewers	RIGSS		
	-Property connection sewer servicing 1	110	100		
	-Property connection sewer servicing 4 residential lot- 2 residential premises on a single lot or 2 adjoining lots	110 (QUU), 160 (UW)	150		
	 Property connection sewer servicing more than 4 2 residential premises on a single lot; Property connection sewer servicing commercial and industrial lots ≤300 m² development; Reticulation sewers servicing residential lots. 	160	150		
	Reuse of existing property connections serving lots to be redeveloped: where the developer can demonstrate, to the satisfaction of the SEQ-SP, that an existing property connection sewer: (i). is suitably located, and (ii). meets hydraulic capacity requirements ¹ , and (iii). is in sound condition assessed by CCTV, and (iv). is of a material that is acceptable to the SEQ-SP, and (v). has a remaining asset life expectancy in excess of 25 years. NOTES: 1 CoGC will not permit more than 2 residential premises to be connected to an existing DN100 property connection sewer.				
	Reticulation sewer servicing commercial and industrial lots >300 m ²⁻ and other complexes where large flows may be expected	225			
4572	Amended this clause as follows:				
	Reticulation sewers shall be graded to achieve self- once per day in accordance with Design Criteria D8 SEQ WS&S D&C Code - Design Criteria. Where sa in conflict with the objectives of the SEQ Sewerage SEQ-SP may permit sewers to be laid at gradients to cleansing velocity provided that the Minimum Pipe of Criteria D8 are met.	cleansing veloci – Minimum Velo atisfying this requination Code in clause that do not achie Grades set out in	ty at least ocity of the uirement is 1.4.2, the ve self- n Design		
4.6.2	Changed the drawing reference in paragraph 1 to "SEQ-SEW-1101 set".				
	Added the following heading to the top of this clause:				
4.6.2.1 – General					
	Added the following to the bottom of this clause	;			
	4.6.2.2 - Deep Sewers Sewers deeper than 5 meters require prior SEQ-SP	's approval and v	will require		











	specialist design. SEQ-SP may request that additional supporting documentation be submitted with the design.
	The information required may include, but not be limited to:
	Suitable depth geotech boreholes and analysis of native soil modulus:
	 Soils testing – Contaminated soils, acid sulphate soils etc.:
	Groundwater level and testing:
	Detailed cross sections; and
	Calculations on pipeline material and class selection.
4.6.3	
4.0.3	
	Amended Table 4.8 as follows:
	water code table 7.2
4.6.4.	Amended the second sentence of the first paragraph to read;
	This controlling depth is the highest level of the property connection point at which full drainage of the entire lot is provided by gravity via the customer sanitary drain laid in accordance with AS/NZS 3500.2.2.
	After the first paragraph, replaced the previous insertion as follows: For calculation purposes, the house drain alignment shall generally be 1 metre from side and rear boundaries and 6 metres from the front boundary (may vary in waterfront properties and reduced building alignments).
4.6.4.	5 Added the following paragraph to the end of the clause:
	"SEQ-SPs do not require sewers to be designed to provide gravity drainage for the first basement level in central business districts or any other areas. SEQ- SPs do not permit sanitary fittings in basements to drain by gravity to their sewerage systems. In accordance with the Plumbing Code of Australia, fixtures in basements or other locations, where sewerage system surcharge could damage the premises and contents, must be connected to the sewerage system by means of a pumping installation."
4.6.6.4	4 Amended paragraph 3 as follows:
	For NuSewers, no internal drops are permitted in a 900 mm MH. A maximum of one internal drop is permitted in a 1200 mm MH (for existing manholes only). Refer SEQ-SEW-1301 set. <u>Table 4.10</u> is not used for NuSewers.
4.7.2	Inserted the following to the ends of the clause
	Reticulation sewers with no pump system discharges entering the system generally do not require management for internal corrosion.
	Where a pump station discharges into a receiving maintenance structure, internal corrosion protection shall be provided in accordance with the standard drawings and the network checked downstream for potential corrosion hazards (e.g. drop pipes and cement based pipes and pipe linings).
	All maintenance holes, regardless of whether they received a pump system discharge, require protection coatings in the following circumstances: (a) All 1500 mm dia and larger maintenance holes; (b) Maintenance holes greater than 4m in depth; (c) Maintenance holes on sewers > 300 mm nominal bore; (d) Maintenance holes servicing industrial estates; (e) SPS collection maintenance holes; (f) All maintenance holes for 100 m downstream of a Discharge Maintenance hole, and (g) Where additionally required by the Odour Impact Assessment. Refer to Clause 18.8 for the types of coating required by SEQ-SPS











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4.0	Deleted the words "Add a new Clause """ from the amendment table
5.1	Added the following paragraph into Clause 5.1: "Property connection shall be sized in accordance with SEQ Code."
5.2	Added the following exception at the end of Clause 5.2: "LCC only permits property connections to DN225 sewers and for larger sewers, the connection shall be to a Maintenance Hole that will be provided with a Water Seal where directed"
5.5.2	Amended the last paragraph as follows: Only option a) will be permitted by the SEQ-SPs (refer Cl4.1 for details). This option
5.8	Added the following to the end of (a) "(may be increased to up to 25 m for connections in brownfield developments at the discretion of the relevant SEQ-SP)"
5.9	Removed the previously added clause
6.1(c)	Reworded the last line of 6.1(c) as follows: In some situations, a TEP may be used in lieu of the external drop type MH subject to the agreement of the SEQ-SP.
6.2	Added the following detail to table 6.1 Change Intersection of reticulation sewers = 2 inlets at same level change the MS option to "Yes"</td Change Intersection of reticulation Sewers = 3 inlets at any level change the MS option to "YES<sup 3" for the MS option and insert new note 3 into the footnotes as follows: 3. The permissible combinations are: i. 3 (or less) inlets into base, none into riser ii. 2 (or less) inlets into base + 1 x DN150 into riser iii. 2 (or less) inlets into base + 2 (or less) x DN100 into riser
6.6.2	For NuSewers, Pre-cast MH's are not acceptable (except as formwork).
6.6.5	Amended the new Table heading as follows: NuSewers (Only cast-in-situ)
6.6.8	Changed the last line to include LCC and RCC as follows: <u>For UW, GCCC, LCC and RCC</u> : Ladders, step irons and landings are not to be provided within maintenance holes.
6.7.2	 Amended the RIGGS element of the Clause as follows: For RIGSS installations, the following criteria shall apply (see SEQ-SEW-1314 set): (a) Maintenance shafts are limited to DN150 and DN225 sewers with the flow exiting the structure to not exceed 22 L/s. (b) Directly opposing sewer inlets into a MS are permitted. (c) DN225 shafts are permitted only where a single upstream sewer is connecting to the base and there are no connections to the shaft.





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- 150-225 mm sewers may use pre-cast concrete maintenance shaft (Quicktee or approved equal), shaft shall be minimum of 600 mm diameter.
- Rodding ends shall be minimum size of 150 mm (k) diameter and only on 150 mm sewers to a maximum depth to sewer invert of 2.0 metres.
- (I) The use of the reticulation access structure shall generally be based on the following percentages per development population. And the following population are rounded out by in-line bends being approximately 15% of structures:
 - (A) maintenance shafts shall generally be 40% of structures.
 - (B) rodding ends or as appropriate HCB terminal ends shall be 10% of structures,
 - (C) those listed in Clause 6.6.5.
- Dimension A Drops through Type 'G', 'H', 'J' and 'K' (m) maintenance shafts shall be as per the manufactured form of the structure.
- (n) For Type 'J' maintenance shafts and their equals, the upstream sewer lines shall be graded only to the bottom centre invert and shall transition to this invert via the ball radius to a maximum of 1 in 1 grade.
- (0) For LCC, RCC and Unitywater, the maximum depth to invert for maintenance shafts shall be 2.0 metres.
- For GCCC, the maximum depth to invert for (p) maintenance shafts with standard construction conditions shall be 4.0 m to top of pipe
- For GCCC, maintenance shafts shall be limited to (q) one 'Z' drop for sewers up to 2.5 metres deep and a maximum of two 'Z' drops for sewers between 2.5 and 4.0 metres deep. For LCC, RCC and Unitywater, a maximum of one 'Z' drop is permitted for maintenance shafts.
- (r) Where the outlet diameter is larger than the inlet, the obvert levels shall be equal.
- The maximum grade of an inlet connection to PVC (s) and Polypropylene MS's and the maximum grade of an outlet connection to a Concrete, PVC, PE and Polypropylene MS's shall be 1 in 10. Where the incoming or outgoing grade is steeper than 1 in 10,

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	Amended Table 8.1	 Requirements for Bulkheads and Trenchstops as
0.10	Bulkhead and trench Drawings and shall b 1206-1 and SEQ-SE bulkheads or trenchs Standard Drawing SE shall be in accordance adjacent to the kerb o	stop requirements shall be detailed in the Design be in accordance with Standard Drawings SEQ-SEW– W-1207-1. Where located adjacent to a road crossing, stops shall be placed adjacent to the kerb as shown in EQ-SEW–1206-1. Spacing of bulkheads and trenchstops be with <u>Table 8.1</u> . Bulkheads may also be required of sealed roads to support the edge of the road formation
8 10	"or in accordance wit	h design Drawings and/or Specification" paragraph to read.
 8.6.2	Amended point g) ii	i) of the clause with the addition of the following:
	De-beading is not to specified by SEQ-SP PE sewers (NuSewe areas except where ground may contain may have an impact on PE chemical resis	be carried out for butt welded joints unless otherwise Ps. ers) shall be used in residential, commercial and industrial there is a possibility that the sewer flow or surrounding certain forms of hydrocarbons or other chemicals which to on the PE material, refer to manufacturer for information stance.
	"The manufacturer's procedure (in particu adhered to" A mechanical/rotation	printed instructions on the electro-fusion welding lar, the surface preparation requirements) are to be strictly nal scraper shall be used to remove oxidised layers during
8.2	Inserted the followi	ng after the line:
	(w) (x) Plastic maintenance	All MSs and TEPs shall have covers and frames that comply with the requirements in SEQ-SEW-1308-1. The vertical distance between a sewer connection entering the riser and the invert of a MS shall be as Tabled in SEQ-SEW-1314-1. Where this distance is less than the nominal for the type of structure, the incoming sewer design shall be graded so that the upstream sewer enters the base of the MS. e shafts for PE shall comply with WSA PS-322, and by with WSA PS-321
	(v)	The surface finish of the MS shall be as shown in SEQ-SEW-1308-1. Due to safety issues, surcharge relief shall be provided for the maintenance shaft from the sewer via a 20 mm hole drilled into the top of the cap (following pressure testing) and a 20 mm-25 mm rubber bung placed within the drilled hole.
	(u)	the factory made outlet and inlet/s. For MS with DN600 risers, due to the pipe connection format only either 1 sewer main or 1 property connection sewer may enter the MS riser as shown in SEQ-SEW-1314-2. In these instances, there is no requirement for a drop fitting and drop pipe to be installed.
		the factory made outlet and inlet/s

For MS's that accommodate grade at the inlet and/or outlet, where the sewer grade exceeds the factory capability of the inlet and/or outlet, the sewer shall be provided with long radius curves to align to the factory made outlet and inlet/s.

to align to the set outlet and the set inlet/s.

the sewer shall be provided with long radius curves



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		follows.				
		Grade %	Requirement	Spacing S m		
		5 <grade<15< th=""><th>Trenchstops</th><th>S=100/Grade%</th></grade<15<>	Trenchstops	S=100/Grade%		
		15≤Grade<30	Concrete bulkhead	S=L/Grade%, where L = 80xPipe length*, m (450 m max) Where L>100 m – use intermediate trenchstops at spacing <100/Grade		
		30≤Grade<50	Concrete encasement (continuous) and concrete bulkheads	S = 100/Grade(%)		
		Grade ≥ 50	Special design			
		*Pipe length is the	standard pipe length in	istalled.		
PART 2 – PRODUCTS AND MATERIALS						
PART 3 -	12.2	Added the following to the first paragraph				
CONSTRUCTION		"The training course must have been completed within the last ten (10) yea				
		Removed the refe	rence to the Accepte	d Products and Materials list		
	13.5.2	Changed the first	paragraph as follows	:		
		The Developer or its Contractor/s shall be responsible for any damage they cause to existing services. If the Developer or its contractor damages any existing services, they shall arrange for the relevant service provider to make good such damage and the cost thereof shall be borne by the Developer or its contractor. 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 Contractor.				
	18.1	Amended the exc	eption as follows:			
		For UW, GCCC, L	.CC and RCC: Ladder maintenance holes.	rs, step irons and landings are not to		
	18.5	Added the following All construction joins seals installed in a	ing as the second pa nts shall include eithe accordance with the ma	aragraph: r PVC water stops or hydrophilic anufacturer's instructions.		
		Amended the original insertion as follows: At each construction joint, place water stops and dowels, remove laits and prime with a wet and dry bonding agent or cement slurry before pouring the next lift. Where hydrophilic seals are to be used in lieu o water stops, place these after the laitance removal.				
	40.0	manner that it will	retain its position dur	ing the pour.		
	18.8	Deleted the existin	ing text and replaced			
		Where required by internal surfaces co	the SEQ-SP (refer to 0 bated with a protective rame does not require	Clause 4.7.2), MH's shall have all coating system as detailed below. coating.		











	Where shown in the drawings, internal neck, converter slab, and wall surfaces shall be coated with either a PE lining system or a two part solvent free 100% solids epoxy protective coating system. The benching and flow channel are to be left uncoated and finished off in accordance with Clause 18.6 with the typical form and profiles. PE lining system - Internal surfaces shall be lined with a PE cast in place lining system with details as per SEQ-SPS-1407 drawing set. Note: Where there is no sewage sitting in the maintenance holes then the lining shall extend to the base of MH and would be covered by the benching.
	Epoxy coating system –Internal surfaces shall be coated with SEQ-SPs approved two part solvent free 100% solids epoxy protective coating system at 2.0mm thick and suitable for application to damp concrete as follows:
	(a) The protective coating system shall be installed to the manufacturer's requirements and the application shall be carried out by an accredited applicator approved by the manufacturer and the Superintendent
	(b) The two part solvent free epoxy protective coating system suitable for wastewater works, shall be a chemical resistant two part epoxy primer/ sealer (if specified by the manufacturer) with a high build capability, resistant to Sulphuric Acid and abrasion with a minimum two coat dry film thickness of 2000 microns that excludes the required primer/sealer thickness
	(c) The pot life of the mixed coating shall be a minimum of 40 minutes with a colour when dry of either light grey, white or off white
	(d) The protective epoxy coating system may include Quartzite aggregates and where used the minimum dry film thickness shall be 4000 microns
	(e) Prior to the application of the coating system the new concrete surface shall be pressure blasted or scabbled so as to remove any laitance, loose or porous material leaving a clean, rough, hard concrete surface
	The Contractor shall:
	(f) certify to the Superintendent (in a manner approved by the Superintendent) that:
	(i) the protective coating has been applied in accordance with the manufacturer's recommendation
	 (ii) the protective coating has been applied by an accredited applicator and that the tests required by the manufacturer have:
	(A) been carried out; and
	(B) met the manufacturer's requirements; and
	(C) passed all necessary tests.
	(g) Provide to the Superintendent a joint manufacturer's and applicators written warranty (in favour of the SEQ-SP) covering the protective coating for a minimum period of 10 years.
	LCC, QUU and UW require PE lining systems only as described above.
	GCCC and RCC require either PE lining systems or epoxy coating systems as described above.
19.1	Removed the words "Sediment Trap" from the heading and first two paragraphs in the clause.
	Changed the first paragraph to read as follows:
	Install MSs, TEPs and Inspection Tees as specified on Standard Drawings. Where the manufacturer's printed installation instructions vary from the Design











	Drawings, refer to the Superintendent for written instructions.
	Embed and surround MSs, TEPs and Inspection Tees with embedment materials as specified for the reticulation sewer.
20.3.2.2	In the third paragraph, replaced the words "spring line" with "completed embedment zone"
20.0.2.2	Replaced the whole clause with the following paragraph.
24.4.4	
21.1.1	Placement and compaction of trench fill is critical to avoiding subsidence over or near the trench and consequential damage to pavements and structures.
21.1.2	Replaced the whole clause with the following.
	Comply with the Specification and relevant Design Drawings.
	21.1.2.1 Trafficable areas
	 Trafficable areas include: (a) The full width of any existing or proposed road carriageway plus shoulders and extending to 1 m beyond the shoulders or kerbs. (b) The full width of any property access driveway and extending 1 m either side. (c) The full length of any constructed footway including, but not limited to, concrete, asphalt and crushed rock pavements. (d) The full width of any median strip. (e) Any other areas subject to vehicular traffic.
	Where the filled trench will be subjected to traffic loading, ensure the fill material complies with the road Owner's specifications or Water Agency nominated specifications. In the absence of a directive, obtain approval to use one of the following:
	 For trenches in trafficable areas other than footways less than 1.5 m deep, 20 mm Class 2 plant mixed wet mix crushed rock, for the full depth or a suitable equivalent;
	 (ii) For trenches in trafficable areas other than footways that are 1.5 m deep or greater: (A) 20 mm Class 2 plant mixed wet mix crushed rock for the top 600 mm; or
	 (B) 20 mm Class 4 (or better) crushed rock for the remainder, or other trench fill material specifically approved by the road Owner. (iii) For trenches under footways, 20 mm Class 4 (or better) crushed rock, or other trench fill material specifically approved by the road Owner.
	The specification of trench fill material will vary throughout Australia. To address this issue, WSAA has prepared more than one product specification for trench fill material to accommodate different Water Agency requirements, locally available rock types quarried and processes used to produce these materials. Water Agencies should nominate product specifications that are approved for use.
	21.1.2.2 Non-trafficable areas
	Use a trench fill material complying with the Specification.
	Where well-graded granular materials (e.g. crushed rock) are specified, seek guidance from the Superintendent in relation to moisture conditioning.
	If the Specification permits excavated material to be used as trench fill, ensure it is free of organic material and that it contains no rock or hard clay greater than 75 mm and that it can be compacted to the required degree of









	compaction.
	Where excavated material is a cohesionless soil (e.g. clean sand, silty sand and poorly graded sand and gravel mixtures) use only in those areas where the natural soils within which works are being undertaken are also cohesionless.
	Where cohesionless soil fill is proposed in areas where the natural soils are cohesive (e.g. clayey) do not use unless approved by the Designer, in which case comply with any additional requirements for placement and compaction.
New Clause	Added the following new Clause
	21.1.3 -Placement
	Place trench fill in accordance with the Design Drawing(s).
	Place marker tapes as shown in the Standard Drawings
	Use appropriate methods of compaction to achieve the compaction requirements of the Design Drawings and Specification and to prevent settlement or subsidence over the trench.
	The contract for the works may require the constructor to make good damage caused as a consequence of subsidence (e.g. damage to, including tilting of, fences, buildings and pavements).
	Avoid impact loading of the sewer during placement of trench fill material.
	Do not place trench fill material within 24 h of placing concrete embedment or encasement, or longer period if shown in the Design Drawings or Specification.
	Fill voids behind timber ground support in close-timbered tunnels, drives and shafts by pressure grouting or other approved means.
	Take special care to prevent displacement of access cover assemblies or supports.
	Correct any deficiencies of trench filling exposed by settlement.
	Raise the fill evenly around maintenance and inspection structures and compact in shallow layers to avoid unbalanced lateral loading.
21.1.4	Renumbered the existing clause from 21.1.3 to 21.1.4
	Replaced the first three paragraphs with the following two paragraphs.
	Ensure trench fill compaction satisfies the requirements of Tables 22.1 and 22.2 and Clause 22.3.4.
	Compact trench fill material in layers to achieve the required density uniformly throughout the depth of each layer.
	Inserted the following paragraph at the end of this clause.
	Compact trench fill uniformly and carefully around maintenance and inspection structures.
21.2	Replaced the whole clause with the following.
	Where the route of a sewer requires filling or construction of an embankment, undertake in accordance with the Design Drawings and/or Specification.
	Consult the Superintendent to ascertain if supervision is required by the geotechnical specialist (Designer).









	Where filling in the Desigr	or construction of Drawings and/or S	an embank Specificatior	ment is requir , consult the [ed and is r Designer to	not defined provide:
	(a) the degree of clearing required to establish an embankment foundation;					
	(b)	the level of compac	tion of emb	ankment fill m	aterial requ	ired;
	(c) the preferred method of placement and compaction;					
	(d) pipe	any placement and eline; and	d/or compa	ction limitatior	is over the	top of the
	(e) con	any special con apaction of the remain	nditions as ainder of the	sociated with fill in layers.	n placeme	ent and/or
	NOTE: Geo supervision of	technical assessm of the work may be	ent prior to required at	commencen the request of	nent and s the SEQ-S	ubsequent P.
21.3	Added the f	ollowing sub-clau	se to the er	nd of this clai	use.	
22 3 1	(d) Sand bag Replaced th	is hand placed and e whole clause wi	rammed ith the follo	wing.		
22.0.1	Tables 22.1 and 22.2 specify the default methods of compaction testing an required results that demonstrate adequate pipe support and stable trench					ing and trench fill.
	The Contractor/ consulting engineer shall adopt: (a) alternative test methods and more stringent values specified in the Design					e Design
	(b) for traffica	able areas, the road	d Owner's s	pecification		
	over the default methods of compaction testing and required results specified in Tables 22.1 and 22.2.					
	Deleted Tab	le 22.3 and replac	ed Tables 2	22.1 and 22.2	with the fo	ollowing;
			TABLE 22	2.1		
	FLEXIBLE	PIPES - MINIMUN LL AND EMBANI	I COMPAC (MENT	TION EMBEI	DMENT,	
				Minimum v	alue (%)	
	Material	erial Tost mothod	Trafficable areas		Non-trafficable areas	
	type		Embedmen t	Trench/ embankme nt fill	Embedme nt	Trench/ embank ment fill
	Non- cohesive	Density index (I _D) AS 1289.5.6.1	70 (Note 1)	70 (Notes 2, 3)	60 (Note 3)	60 (Notes 4, 5)
	Cohesiv e	Dry density ratio or Hilf density ratio (R _D) AS 1289.5.4.1 and AS 1289.5.1.1 (Note 6)	95	95	90	90 (Notes 5, 6)
	NOTES: 1 Single s	size coarse aggrega	tes of sizes	5, 7, 10 and 1	4 mm shal	l be
	deemed "self-compacting" and do not require compaction testing					









when us	ed for pipe emb	edment (Re	efer to <u>Clause</u>	<u>20.3.2</u>).	
2 The roa	d Owner may s	pecify alter	native values.		
3 Degree on:	of compaction	of the trer	ich fill in traffi	cable areas	depends
(a) z	the backfill zor ones closer to t	ne – higher the surface;	degrees of co and	ompaction is	s required in
(b)	the road type - equire higher de	 freeways egrees of contract 	and arterial roompaction.	oads carryi	ng greater lo
4 The v settleme compact site requ	alue given is nt is not permi ion of the treno irements.	a default tted. Speci ch fill in no	where exce fication of an n-trafficable a	ssive initia alternative reas depen	I surface degree of ds on the
5 Compa Specifica 6 Graded shall have the	action shall be ation or the defa gravels and s eir compaction	e to the ault value ir ands havin determined	degree speci Table 22.1 if g fines (silts by dry density	fied in the not specifie and clays) ratio test m	e Project d. greater than nethod.
		ТАВ	LE 22.2		
RIGID PIPE AND EMBA	S - MINIMUM NKMENT	COMPAC	TION EMBE	DMENT, T	RENCH FIL
			Minimun	n value (%)	
Material	Test	Traffic	able areas	Non-traf	ficable area
type	method	Embedme nt	Trench/ embankme nt fill	Embedme nt	Trench/ embankme fill
Non- cohesive	Density index (I _D) AS 1289.5.6. 1	60 (Note 1)	70 (Notes 2, 3)	60 (Note 3)	60 (Notes 4, 5
Cohesiv e	Dry density ratio or Hilf density ratio (R _D) AS 1289.5.4.1 and AS 1289.5.1.1 (Note 6)	90	95	90	90 (Notes 5, 6
NOTES: 1 Single : "self-com	size coarse agg pacting" and do embe	gregates of not require dment (Ref	sizes 5, 7, 10 a compaction te er to <u>Clause 2(</u>	and 14 mm esting when <u>0.3.2</u>).	shall be deen used for pipe
2 The roa	d Owner may s	pecify alter	native values.		
3 Degree on:	of compaction	of the trer	nch fill in traffi	cable areas	depends
(a) z	the backfill zor ones closer to t	ne – higher the surface;	degrees of co and	ompaction is	s required in
(b)	the road type	freeways	and arterial r	oade carryii	na areater k











	require higher degrees of compaction.
	4 The value given is a default where excessive initial surface settlement is not permitted. Specification of an alternative degree of compaction of the trench fill in non-trafficable areas depends on the site requirements.
	 5 Compaction shall be to the degree specified in the Project Specification or the default value in Table 22.2 if not specified. 6 Graded gravels and sands having fines (silts and clays) greater than 5% shall have their compaction determined by dry density ratio test method.
	Adopt test methods for determining the degree of compaction that comply with the appropriate part of AS 1289.
	The Contractor (or the consulting engineer for development works) shall be responsible for all compaction testing and shall arrange for the testing to be carried out by a NATA certified Test Laboratory. Modified compaction tests to be used.
	Prior to commencing work the Contractor/ consulting engineer shall prepare a test plan showing the number of tests and depths in each zone where tests are to be carried out.
	The Laboratory shall randomly select test locations in each zone. The road authority supervisor may direct the Laboratory to undertake additional tests in any zone. The test locations shall be uniformly distributed over the works.
	Testing shall not be clustered within a zone or at boundaries of a zone. In deep trenches where more than 1 layer is to be tested, the test locations shall, where practicable, be staggered from those layers above or below by at least 5 m for sewers and 2 m for property connections.
	The compaction tests including retests shall be carried out at the Contractors/Consulting Engineers' cost until satisfactory compaction levels are achieved.
22.3.2	Changed the clause title to "Compaction testing requirements".
	Replaced the whole clause with the following.
	Undertake field density testing of engineered or controlled fill, pipe embedment, trench fill and embankments in accordance with the methods specified in Tables 22.1 and 22.2.
	Test at locations representative of the fill, embedment, trench or embankment.
	Accept fill, embedments, trench fill and embankments with test results conforming to the requirements of Tables 22.1 and 22.2.
	Drives and tunnel fill do not require compaction testing.
22.3.3.2	embedment zone".
	In the second paragraph change ">375mm" to " \ge 375 >300mm", and change "spring line (±100mm)" to "completed embedment zone".
22.3.4.4	Deleted this clause
22.3.4.5	Replaced the reference of "Table 22.3" with "Tables 22.1 and 22.2".
22.4.2.2	Replaced the clause (including title) with the following.
	22.4.2.2 Vacuum testing – Welded jointed PE sewers









	All components of the sewer including MS's and property connection sewers shall be subject to a vacuum test. Plug all sewer inlets and outlets and cap and seal all MS risers in the test length of sewer.
	The vacuum test for NuSewers Welded jointed PE sewers shall be carried out in accordance with
22.6.2	Added the following to the bottom of the clause;
	Where the infrastructure includes long-radius bends, the proving tool shall be a rigid non-adjustable spherical ball. Where the infrastructure does not include long-radius bends the proving tool shall have an effective length of more than the sewer's nominal diameter, have an odd- numbered minimum of 9 legs and be rigid and non-adjustable.
22.6.3	Added the following to the bottom of the clause
	GCCC and UW: require all flexible gravity sewers where DN300 to be
	ovality tested using ovality proving tool as defined in <u>Clauses 22.6.2</u> & <u>22.6.4</u> .
22.7.1	Removed the last paragraph including dot point's f to j.
	Added in the following text at the end of the clause:
	Information from the CCTV inspections shall be provided in accordance
	with clause 4.2 of the SEQ Code Asset information Specification prior to
24.2	Deleted clause numbers 24.2.1 and 24.2.2.
	Changed clause 24.2 to the following:
	All works undertaken within SEQ – SPs service area which involve connection to, or modification of, the existing sewerage system are known as "Live Sewer Works" and shall be undertaken by the SEQ - SP.
	Should an SEQ-SP permit a developer/contractor to carry out live connection works, the administrative procedures, method, protocols, inspection and supervision requirements for a live sewer connection shall be agreed with the relevant SEQ-SP prior to the works being carried out

Part 4 - SEQ Sewerage Standard Drawings		
Drawing Number	Change	
SEQ-SEQ-INDEX-01B	Updated revision numbers	
SEQ-SEW-INDEX-02B	Updated revision numbers	
SEQ-SEW-1100-1B	Drawing updated to keep the content and symbols consistent	
SEQ-SEW-1100-2B	Drawing updated to keep the content and symbols consistent	
SEQ-SEW-1101-1B	Added Additional Note 7 as follows: "7. Refer to SEQ-SEW-1206-1 for bulkheads and trenchstop details. For spacing requirements refer Table 8.1 of the Sewerage Code"	
SEQ-SEW-1101-2B	Added Additional Note 7 as follows: "7. Refer to SEQ-SEW-1206-1 for bulkheads and trenchstop details. For spacing requirements refer Table 8.1 of the Sewerage Code"	
SEQ-SEW-1102-1B	Added note in under the * "Agency may permit contractors to carry out all or part of the live works, refer to SEQ-SP connection policy for details."	











Part 4 - SEQ Sewerage Standard Drawings		
Drawing Number	Change	
SEQ-SEW-1103-2B	Removed sediment trap from the diagram . Also remove the note regarding Unitywater and sediment trap requirement.	
	Remove the note regarding Unitywater requiring an inspection wye at property connection points.	
SEQ-SEW-1104-1B	Amended Drawing detail as follows:	
	House drain on detail of PLAN TYPE A change to dash lines to keep it consistent.	
	Change Note 1 from "1 in 80" to "1 in 100" for DN150 branches. This aligns with the national plumbing code (AS/NZS 3500) which has standardised these to 1 in 60 and 1 in 100 for DN100 and DN150 property connections.	
	Add a note Plan A and Plan B house connections stating that Unitywater does not require a short pipe on sewer, each side of junction.	
	Inserted a new note that the SP Dual House Connection detail is not applicable to Unitywater (replaced by new drawing SEQ-SEW-1104-2)	
	Amend note 3 by adding "For UW, refer SEQ-SEW-1104-2"	
	Level, refer SEQ-SEW-1100-2 and SEQ-SEW-1101-2 for design format"	
SEQ-SEW-1104-2A	Developed new drawing showing UWs requirements for a maintenance shaft over the top of the junction of twin property connections	
SEQ-SEW-1105-1B	Changed title at the centre of the drawing from "Maintenance Responsibility' to "Typical Connection Maintenance Responsibility" Added Note to Plan View Type "D" that states:	
	"Unitywater requires a MS at the junction of a dual house connection and located within the property. Refer Drawing SEQ-SEW01104-2"	
	Inspection Tees (Lot 1 and 2) inserted into each branch line shown on the elevation	
	Boxed note inserted stating that "Type D Junctions Used for Sewers deeper than 2500"	
	Inserted new Note 5 stating: "For typical installation details for house connection options and for the house connection inspection tee and fro the connection point depth control, refer SEQ-SEW-1104-1"	
	Add the following note under the heading "Type 'D' Junction Fitting", "(Servicing 2 or more premises)"	
SEQ-SEW-1106-1B	Updated note 3 to say:	
	Each single residential premise allotment shall be served by a minimum DN110 diameter property connection.	
	Updated Note 5 to say:	
	"5. The centre of the opening of property connection branches shall extend into the property a minimum"	
	References to sediment traps removed from the diagrams and legend. Unitywater specific note regarding the use of sediment traps removed	
SEQ-SEW-1106-2B	Added Note 6 and 7 as follows:	
	"6. The radius of a sweep bend refer clause 4.3.7 of the Sewerage Code	
	7. an 88° sweep junction may be used in lieu of a 45° junction and 45° sweep bend"	
	Remove sediment traps from the diagrams. Remove the Unitywater specific	











Part 4 - SEQ Sewerage Standard Drawings			
Drawing Number	Change		
	note regarding the use of sediment traps.		
	Change the reference to Short Radius bend to "45° Sweep Bend" on Plan Type A2		
	Remove the note requiring a Wye junction for UW.		
	Change the reference on Plan – Type A2 from "Short Radius bend" to refer to a "45° Sweep bend"		
	Change note on Plan Type A1 to refer to "45° Junction or approved Saddle"		
SEQ-SEW-1106-3B	Amended Drawing as follows:		
	Update to make good the property connection tables, i.e. showing connection to the bottom of the MS.		
	Removed sediment traps from the diagrams. Removed the Unitywater specific note regarding the use of sediment traps.		
	Change the note requiring a Wye Junction for Unitywater to refer to a tee junction		
SEQ-SEW-1106-4B	Amended Drawing as follows:		
	Add drawing reference "Sweep Bend degree to suit" to the Type B2 Elevation detail.		
	Change drawing references on Plan Type B2 to refer to a "Sweep bend" and "45° Junction or approved saddle (or 88° sweep junction)"		
	Change drawing reference on Elevation – Type B4 to "Sweep bend"		
	Delete the 500 and 1500 max requirements. Retained 1.5m depth requirement (from PC point to surface level) to allow Designer to use either Type B or C, as fit for purpose.		
	Updated to make good the property connection tables—connection to the bottom of the MS.		
	Removed sediment traps from the diagrams. Removed the Unitywater specific note regarding the use of sediment traps.		
	Change the note requiring a Wye Junction for Unitywater to refer to a tee junction		
SEQ-SEW-1106-5B	Amended Drawing as follows:		
	Change "45° BEND" to "45° Sweep Bend" on Type C1 & C2 ELEVATION details.		
	Delete the 500 and 1500 max requirements. Just keep 1.5 m depth requirement (from PC point to surface level). Therefore Designer can use either Type B or C, and fit for purpose.		
	Remove sediment traps from the diagrams. Remove the Unitywater specific note regarding the use of sediment traps.		
	Change the note requiring a Wye Junction for Unitywater to refer to a tee junction		
	Change the notes on Elevation Type C1 and C2 as follows:		
	 45° Junction or approved saddle (or 88° sweep junction) 45° DN160 Sweep Bend 		
	 DN160/DN110 45° Junction or approved saddle (or 88° sweep junction) 		
	Riser to be DN110 or DN16- refer Note 3		
	Insert new Note 3 as follows:		
	"3. Diameter of riser is not to be less than the largest connected property		











Drawing Number Change SEQ-SEW-1106-6B Amended Drawing as follows: Remove sediment traps from the diagrams. Insert a note on the Plan identifying all bends as "450 DN110 Sweep bends" Replace reference to 45 junction at the main sewer to read "45° junction or Approved Saddle (or 88" Sweep Junction)' Add a note to the property connection junction to read: "45° Junction or Approved Saddle" Add note "PLC Socket with Cap see Note 5 of SEQ-SEW-1106-2" to both connections on the plan Add note "PE/PVC adaptor Min socket depth 180mm" to elevation Change notes on grading shown on elevation to read: • "Grade Min 1 in 100 for DN110 Property Connections" • "Grade Min 1 in 100 for DN110 Property Connections" • "Grade Min 1 in 100 for DN110 Property Connections" Add concrete at mains junction (450 long and 150 cover to mains on all sides) to both plan and elevation with a note "Class N20 Concrete" SEQ-SEW-1106-7B Inserted detail regarding "Typical Connection Maintenance Responsibility" Changed the bend adjacent to the 45deg junction to "Sweep Bend DN160" Amend the reference to "45" junction" to "45" Junction or Approved Saddle (or 86° Sweep Junction)" Add the following to the Plan – Twin Property Connection (Typical): "For Road and Non Road Crossing" SEQ-SEW-1206-1B Updated note 3 to say Construct road crossing bulkhead adjacent to kerb and gutter where road formation requires support due to pipe gradient or ground conditions Added new note 12 Top of Bulkheads and Trenchstops to be in the range 50mm above the pipe embedment material and 300mm below FSL as determined by the designer to suit local government conditions. SEQ-SEW-1300-1B Changed note 1 to read "All price stam manholes to be max 6 m." Changed note 1 to read "All pricast manholes to have externally applied a 150 wide B	Part 4 - SEQ Sewerage Standard Drawings				
SEQ-SEW-1106-6B Amended Drawing as follows: Remove sediment traps from the diagrams. Insert a note on the Plan identifying all bends as "450 DN110 Sweep bends" Replace reference to 45 junction at the main sewer to read "45° junction or Approved Saddle (or 88° Sweep Junction)" Add note to the property connection junction to read: "45° Junction or Approved Saddle" Add note "PUC Socket with Cap see Note 5 of SEQ-SEW-1106-2" to both connections on the plan Add note "PE/PVC adaptor Min socket depth 180mm" to elevation Change notes on grading shown on elevation to read: • "Grade Min 1 in 60 for DN110 Property Connections" • "Grade Min 1 in 100 for DN100 Property Connections" • "Grade Min 1 in 100 for DN160 Property Connections" • "Grade Min 1 in 100 for DN160 Property Connections" • "Grade Min 1 in 100 for DN160 Property Connections" • "Grade Min 1 in 60 for DN160 Property Connections" • "Grade Min 1 in 00 for DN160 Property Connection Maintenance Responsibility" SEQ-SEW-1106-7B Inserted detail regarding "Typical Connection Maintenance Responsibility" Change dtb bend adjacent to the 456e junction to "Sweep Bend DN160" Amend the reference to "45° junction" to "45° Junction or Approved Saddle (or 88° Sweep Junction)" Add the following to the Plan – Twin Property Connection (Typical): "For Road and Non Road Crossing" SEQ-SEW-1206-1B Updated note 3 to say Construct road crossi	Drawing Number	Change			
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SEQ-SEW-1106-6B Amended Drawing as follows: Remove sediment traps from the diagrams. Insert a note on the Plan identifying all bends as "450 DN110 Sweep bends" Replace reference to 45 junction at the main sever to read "45° junction or Approved Saddle" Add a note to the property connection junction to read: "45° Junction or Approved Saddle" Add a note to the property connection junction to read: "45° Junction or Approved Saddle" Add note "PVC Socket with Cap see Note 5 of SEQ-SEW-1106-2" to both connections on the plan Add note "PC/C Socket with Cap see Note 5 of SEQ-SEW-1106-2". to both connections on the plan Add note "PE/P/C adaptor Min socket depth 180mm" to elevation Change notes on grading shown on elevation to read: . "Grade Min 1 in 100 for DN160 Property Connections" . . "Grade Min 1 in 100 for DN160 Property Connections" Add concrete at mains junction (450 long and 150 cover to mains on all sides) to both plan and elevation with a note "Class N20 Concrete" SEQ-SEW-1106-7B Inserted detail regarding "Typical Connection Maintenance Responsibility" Changed the bend adjacent to the 456 guinction to "Sweep Bend DN160" Amend the reference to "45° junction" to "45° Junction or Approved Saddle (or 88° Sweep Junction)" Add the following to the Plan – Twin Property Connection (Typical): "For Road and Non Road Crossing" SEQ-SEW-1206-1B Updated note 3 to say Construct road crossing bulkhead adjacent to kerb and gutter where r					
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Insert a note on the Plan identifying all bends as 450 DN110 Sweep bends Replace reference to 45 junction at the main sewer to read "45° junction or Approved Saddle (or 88° Sweep Junction)" Add note to the property connection junction to read: "45° Junction or Approved Saddle" Add note "PVC Socket with Cap see Note 5 of SEQ-SEW-1106-2" to both connections on the plan Add note "PE/PVC adaptor Min socket depth 180mm" to elevation Change notes on grading shown on elevation to read: • "Grade Min 1 in 60 for DN110 Property Connections" • "Grade Min 1 in 100 for DN160 Property Connections" • "Grade Min 1 in 100 for DN160 Property Connections" • "Grade Min 1 in 100 for DN160 Property Connections" • "Grade Min 1 in 100 for DN160 Property Connections" • "Grade Min 1 in 100 for DN160 Property Connections" • "Grade Min 1 in 100 for DN160 Property Connections" • Add oncere at mains junction (450 long and 150 cover to mains on all sides) to both plan and elevation with a note "Class N20 Concrete" SEQ-SEW-1106-7B Inserted detail regarding "Typical Connection Maintenance Responsibility" Changed the bend adjacent to the 45deg junction or Approved Saddle (or 86° Sweep Junction)" Add the following to the Plan – Twin Property Connection (Typical): "For Road and Non Road Crossing" SEQ-SEW-1206-1B Updated note 3 to say Construct road cros		Remove sediment traps from the diagrams.			
SEQ-SEW-1106-18 Update for 88° Sweep Junction" Add note "PVC Socket with Cap see Note 5 of SEQ-SEW-1106-2" to both connections on the plan Add note "PVC Socket with Cap see Note 5 of SEQ-SEW-1106-2" to both connections on the plan Add note "PVC adaptor Min socket depth 180mm" to elevation Change notes on grading shown on elevation to read: • "Grade Min 1 in 60 for DN110 Property Connections" • "Grade Min 1 in 100 for DN160 Property Connections" • "Grade Min 1 in 100 for DN160 Property Connections" • "Grade Min 1 in 100 for DN160 Property Connections" • "Grade Min 1 in 60 for DN110 Property Connections" • "Grade Min 1 in 100 for DN160 Property Connections" • "Grade Min 1 in 60 for DN110 Property Connections" • "Grade Min 1 in 100 for DN160 Property Connections" • "Grade Min 1 in 100 for DN160 Property Connections" • "Grade Min 1 in 60 for DN110 Property Connections" • "Grade Min 1 in 60 for DN110 Property Connections" • "Grade Min 1 in 60 for DN160" Add concrete at mains junction (450 Junction or Approved Saddle (or 88° Sweep Junction)" • Mdd the following to the Plan – Twin Property Connection (Typical): *For Road and Non Road Crossing" SEQ-SEW-1206-18 Updated note 3 to say Construct road crossing bulkhead adjacent to kerb and gutter where road formation requires support due to pipe gradient or ground conditions Added new note 12 Top of Bulkheads and Trenchstops to be in the range 50mm abo		Replace reference to 45 junction at the main sewer to read "45° junction or			
Add a note to the property connection junction to read: "45° Junction or Approved Saddle" Add note "PVC Socket with Cap see Note 5 of SEQ-SEW-1106-2" to both connections on the plan Add note "PE/PVC adaptor Min socket depth 180mm" to elevation Change notes on grading shown on elevation to read: • "Grade Min 1 in 60 for DN110 Property Connections" • "Grade Min 1 in 00 for DN110 Property Connections" • "Grade Min 1 in 00 for DN110 Property Connections" • "Grade Min 1 in 00 for DN110 Property Connections" • "Grade Min 1 in 00 for DN110 Property Connections" • "Grade Min 1 in 00 for DN160 Property Connections" • "Grade Min 1 in 00 for DN160 Property Connections" • "Grade Min 1 in 00 for DN160 Property Connections" • "Grade Min 1 in 00 for DN160 Property Connections" • "Grade Min 1 in 60 for DN160" Amend the reference to "45° junction to "Sweep Bend DN160" Amend the reference to "45° junction to "Sweep Bend DN160" Amend the reference to "45° junction or Approved Saddle (or 88° Sweep Junction)" Add de note 3 to say Construct road crossing bulkhead adjacent to kerb and gutter where road formation requires support due to pipe gradient or ground conditions Added new note 12 Top of Bulkheads and Trenchstops to be in the range 50mm above the pipe embedment material and 300mm below FSL as determined by the designer to suit lo		Approved Saddle (or 88° Sweep Junction)"			
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SEQ-SEW-1301-4BUp to 45° change to $>0^{\circ}-\le 45^{\circ}$ From 45° to 90° change to $<45^{\circ}-\le 90^{\circ}$ Branch $<30^{\circ}$ change to $<30^{\circ}$ Branch 30° to 60° change to $>30^{\circ}-\le 60^{\circ}$ Branch 60° to 90° change to $>60^{\circ}-\le 90^{\circ}$ SEQ SEW 1321 4B	SEQ-SEW-1301-2B	Updated "Fall across Maintenance hole" table (based on GCCC drawing 08-07-108(A1)) including angle descriptions as follows:			
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 Branch 30° to 60° change to >30°-≤60° Branch 60° to 90° change to >60°-≤90° 		• From 45° to 90° change to $<45^\circ-\le90^\circ$ • Branch $<30^\circ$ change to $<30^\circ$			
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CEO CEW 4204 4D Drawin a 4204 4 show and the internal data datail title to Waternal data		 Branch 60° to 90° change to >60°-≤90° 			
SEQ-SEW-1301-4B, Drawing 1301-4 changed the internal drop detail title to internal drop	SEQ-SEW-1301-4B,	Drawing 1301-4 changed the internal drop detail title to "Internal drop			
SEQ-SEW-1301-8B and existing MH only".	SEQ-SEW-1301-8B and SEQ-SEW-1301-9B	existing MH only".			









Part 4 - SEQ Sewerage	Standard Drawings
Drawing Number	Change
	MH only Main sewers". Drawing 1301-09 Changed the detail title to "Internal drop pipe with existing MH only pipes 675 to".
SEQ-SEW-1301-9B	Changed Note 1 to read: " 1. REFER SEQ-SEW-1301-6 FOR NOTES INCLUDING BOXED NOTES"
SEQ-SEW-1301-12B	Changed the typical ladder arrangement for deep maintenance holes as follows:
	 Add max to 1500 on the diagram Add note M16 chemical anchors to attach bracket to wall Add note provide 12 thick sponge neoprene gasket between and wall where wall has mechanically anchored with polyethylene lining.
	Top of ladder detail:
	1. Amend note to slotted holes for ladder bracket
	Details of slotted hole in ladder stile
	 Add hole 75 x 12 hat ladder stile Amend note to slotted holes to attach bracket using 45 long M16 bolts with washers each side
	Bottom of ladder detail:
	 Remove note 75 x 12 F.M.S (F.S S) stringers Amend not to slotted holes for ladder bracket Remove note rungs of \u00f820 BHP "tempcore" (\u00d820 SS) Add new note \u00d820 deformed reinforcement bar rung
	Plan:
	 Amend note to slots 18 x 40 and include a second arrow to the top of the ladder Change 75° to 66.2° Demove the number 25 from the measurements
	3. Remove the number 35 from the measurements
	1 Remove mass: 1.74KG under the title
	Details of splice plate and connection for ladder stringers:
	 Remove F.M.S. (F.S.S) from the end of the note Move the location of the arrow for note 4 No off M16 hexagonal blots, 45 long with washers each side Remove note Mass: 1.69KG
	Rung fixing Detail:
	 Amend note \$20 deformed reinforcement bar rung Amend note 75 x 12 stile Add fully seal weld on each side of the bottom detail Add drill holes in stile to suit deformed bar rung
SEQ-SEW-1303-1B	Amended the angle descriptions in the Maintenance hole table as
	Tollows: Up to 45° change to $>0^{\circ}-\le 45^{\circ}$ From 45° to 90° change to $<45^{\circ}-\le 90^{\circ}$ Branch $<30^{\circ}$ change to $\le 30^{\circ}$ Branch 30° to 60° change to $>30^{\circ}-\le 60^{\circ}$ Branch 60° to 90° change to $>60^{\circ}-\le 90^{\circ}$









Part 4 - SEQ Sewerage Standard Drawings			
Drawing Number	Change		
	Amended Note 11 as follows: 11. FOR UNITYWATER, DI FITTINGS SHALL BE REPLACED WITH uPVC FITTINGS RRJ. FOR LOGAN CITY COUNCIL, THSI FITTING MAY BE DI OR UPVC"		
SEQ-SEW-1308-1B	Updated note 8 to reflect the changes below: Lock down quick release end caps are SWJ fixed to the riser and are rubber ring sealed between the cap and its frame and open with less than a 15 degree turn,. Screw down caps are not permitted. Prior to On Maintenance, all MS Caps shall be provided with 20-25mm diameter rubber bungs in a 20mm drill hole. Contractor to drill hole and fit bung following pressure test pass" Change Title Block to "Typical Maintenance hole and shaft cover and		
SEQ-SEW-1309-1B	surround detail" Amended Drawing and Notes as follows: Note 1 – change concrete from N32 to S40 min Note 6 - Change min wall thickness from 225 min to 250 min Change section B to show min manhole wall of 225mm (instead of 250 min)		
SEQ-SEW-1313-1B	Amended Drawing Notes as follows: Amend Notes 3 & 4 from "Hydrophyllic" to read "Hydrophilic". Amend Note 3- "Contract" to read "contact" and "Its self" to "itself".		
SEQ-SEW-1314-1B	Amended Drawing as follows: Update Table at RHS of drawing for Polypropylene to provide greater detail on bends (15-90 deg). uPVC also amended to include 90deg bends Remove need for concrete support on Terminal Maintenance shaft. Minor changes in jointing (RRJ to SWJ) Additional detail provided regarding drop junctions or uPVC Maintenance Shaft		
SEQ-SEW-1314-2B	Amended Drawing Titles as follows"Type K1 Maintenance Shaft"Type L1 Similar"to read"Type K1 DN1050 PE smart Pit;Type L1 DN 600 PE Mini pit similar"		
SEQ-SEW-1314-3B	 Changed Plan titles to ensure that the plan on the left clearly relates to 150 dia and the plan to the right relates to 225 dia. Modified the Detail A to show minimum length and angle of cut/weld bends Change left hand side Plan to read "150 dia Plan" and right hand side Plan to read "225dia Plan". Change Long section title to read "150 dia Longitudinal section" Remove detail B Changed Note 6 to read: Fabricated uPVC bends may be permitted to 45°. The maximum cut angle shall be 7.5°. Each segment shall have a length of 300 to 400 with the completed bend fibreglass wrapped to the details in SEQ-SEW-1104-1. Finish wrapping 200 before spigot. For compliance test use PVC sized round ball. 		
SEQ-SEW-1315-1B	Amended the riser junction detail within the elevation PE shaft riser diagram. Put in a combined base and shaft inlets configuration next to (or		









Part 4 - SEQ Sewerage Standard Drawings				
Drawing Number	Change			
	within) the existing configuration table to make it more straight forward for designer. Amended the riser junction details within the elevation PE shaft riser diagram.			
	Made small adjustments to notes 2, 5, 6 and 8.			
SEQ-SEW-1403-1B	Corrected Note 3 to read as below:			
	FULLY BUTT WELDED STEEL ENCASING PIPES PREFERRED.			
SEQ-SEW-1404-1B	Amended note 7 to read "Straps to be graded 316 stainless steel. Place a 3 think x 100 wide EPDM rubber insertion around the pipe where in contact with the strap. Use neoprene pads and nylon washers on all dissimilar metal contacts.			
	Amended note 8 to read "As specified in the design drawings, additional protection/ coating to be provided to make aqueduct pipes more environmentally acceptable, refer note 8a on SEQ-SEW-1406-1".			
SEQ-SEW-1405-1B	Amended Drawing as follows:			
	Amend Drawing Block to allow use by QUU			
SEQ-SEW-1406-1B	Amended as follows:			
	Option 2 new and existing bridges:			
	 Add new note and arrow "approved tie-rod connection points." Add lateral thrust restraint before existing note "tie-rod and cradle pipe support (see note 3 & 4)" Add new note and arrow "EPDM pad 3 thick" 			
	Option 3 new bridge:			
	 Add new note and arrow "valve access (see note 9)" Remove DI or steel from note regarding corrosion protection 			
	Option 4 new and existing bridges:			
	 Add new note and arrow "valve access (see note 9)" Remove DI or steel from note regarding corrosion protection Add new note and arrow "bolt on support beams designed for full pipe load" 			
	Notes:			
	 Note 2 add "Option 2 is for dry creeks." at the end of the note Note 3 remove the word coated Remove the existing note 4 			
	 4. Add note 4A "in corrosive environments (within 1 km of coast) use stainless steel min grade 316 for support beams, tie rods, cradle supports, clamps, bolts, nuts and washers." 			
	 Add note 4B. "Provide neoprene pads and nyion washers on all dissimilar metal contacts." 			
	6. Move note 6 to note 7 and amend to read "DI to be used for options 2.			
	7. Note 6 new note "SCL pipe only for option 1. justify for options 2 and			
	3."			
	 Remove the old note 7 Add new note 8A "all DI pipes shall be provided with a coloured epoxy coating at 500 microps thick. Pipe colour to suit local environment with 			
	product markers at each socket."			
	10. Add new note 8B "all flange joints shall be protected by a Denso 400 steelcoat system or equal "			
	11. Add new note 9 "all appurtenances shall be accessible via platforms and handrails to AS 1657."			











Part 4 - SEQ Sewerage Standard Drawings		
Drawing Number	Change	
	 Add new note 10 "all supports shall manage all test and operational thrusts at full pipe loads." 	
SEQ-SEW-1413-1B	Added comb separator details and amended screen height	

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