

Instructions:

This Checklist must be completed by a Unitywater Accredited Registered Certifier.

Applicant Details:

Name (individual or company name in full): _____

Daytime contact number: _____ Mobile No: _____

Email: _____ Applicant Reference No: _____

Accredited Entity Details:

Name (individual or company name in full): _____

Daytime contact number: _____ Mobile No: _____

Email: _____ Accredited Entity Reference No: _____

Registered Certifier Details:

Name: _____ Registered Certifier Registration No: _____

Registered Certifier Category: Major Connections Certifier OR Minor Connections Certifier

Daytime contact number: _____ Mobile No: _____

Email: _____

Connection Application Details:

Connection Application No: _____

Connection Application Approval Date: _____

Approving Accredited Entity: _____

Property Details:

Table 1 – Property Details

Street Address			Property Description		Local government area
Unit/House No	Street Name	Suburb	Lot No:	Plan Type/No:	MBRC, SCRC or NSC

Development Details:

Brief Description of Development (Including description of the use in accordance with the relevant Council Planning Scheme):

Previous Design Approval:

Brief Description of any previous development/connection approvals on the property (Including any previous council approvals):

Instructions:

The Registered Certifier must make every effort to ensure all information contained in this checklist is accurately addressed.

General

Notwithstanding the content of this checklist, it is the responsibility of the Registered Certifier to ensure the submission fully complies with the [Unitywater Connections Policy](#), [SEQ Code](#) and the Accreditation and Certification Manual; (insert links to each document).

Specific

The Registered Certifier must address each item listed in the tables below as a minimum for each Unitywater service. For each item:

1. Confirm if it complies with the relevant standards/Unitywater requirements;
2. For item not complying with relevant standards/Unitywater requirements, complete the **Statement of Alternative Solutions (SOAS)** section of the checklist.

Table 2 – Plan (Drawing) Details

Plan (Drawing) No:	Revision	Date of Last Revision	Drawn By	Consulting Company

Table 3 – Sewerage Design Assessment Checklist

Item No:	Item Description	Compliant:			Supporting Comments
		Yes	No	NA	
Properly Completed Application:					
	Connection Assessment Checklist Completed.				
	Owners consent is provided.				
	Correct application fees is paid.				
Connection Approval: (that triggers the design plans)					
	Ensure design plans are in compliance to the connection approval conditions, sewer Network Analysis, sewer Master Plans and sewer Servicing Strategy etc, (Unitywater Approved).				

Item No:	Item Description	Compliant:			Supporting Comments
		Yes	No	NA	
Plan (Drawing):					
	Each plan has been signed by an RPEQ.				
	Ensure plans contain the following statement, "All works on existing sewer mains are to be carried out by Unitywater at the developer's expense, or as directed by Unitywater".				
	A 'Live Sewer Works Table' (As per Std Drwg SEQ-SEW-1102-1) detailing all work relating to existing sewers must be prepared and attached.				
	Provision in Live Sewer Works Table for a 5.0m Unitywater connection, to be carried out after new works have been accepted 'On-Maintenance'.				
	Consultation with Unitywater Private Works for difficult connections i.e. (deeper than 2.5m, trunk mains etc).				
	Plans to include details of sewer main connection. Detail must be sufficient to allow Unitywater Private Works to provide accurate quotation for works.				
	Notes provided reflect current specifications and standard drawings (suggest putting SEQ Std Drwg Nos.).				
Existing Sewerage Infrastructure:					
	Existing sewerage reticulation clearly detailed on the plans (i.e. diameter, invert levels, pipe material, pipe class etc.).				
	Proposed treatment of the existing sewer main/s to be abandoned are to be clearly detailed on the plans (i.e. grout-filled, removed or abandoned). Ensure details are included in Live Works Table.				
	Do any other works associated with this development impact on the existing sewerage infrastructure? Eg Roads, Drainage, E'wks.				
Note	Liaison with Unitywater Private Works may be required.				
	Any works which directly or indirectly impact existing Unitywater infrastructure are clearly indicated on the drawings.				
	Structures (including retaining walls) proposed to be built over/adjacent to proposed or existing sewer mains must comply with the following and be RPEQ certified prior to acceptance On-maintenance. 1. Structures/walls must be self-supporting in event of sewer or water main excavation; 2. A minimum horizontal clearance of 300mm between the outside of the sewer or sewer MH and the structure/wall must be achieved;				

Item No:	Item Description	Compliant:			Supporting Comments
		Yes	No	NA	
	<p>Structures (including retaining walls) proposed to be built over/adjacent to proposed or existing sewer mains must comply with the following and be RPEQ certified prior to acceptance On-maintenance;</p> <ol style="list-style-type: none"> 3. Structures/walls must be self-supporting in event of sewer or water main excavation; 4. A minimum horizontal clearance of 300mm between the outside of the sewer or sewer MH and the structure/wall must be achieved; 5. No loads from structure/wall must impact either the sewer or water main trench/s; 6. Base of structure/wall footings must be located below the zone of influence of any water supply and sewerage infrastructure; and 7. A minimum distance of 600mm between the outside of bored holes and the outside of any sewer main must be maintained. 				
Sewer main located on land other than road reserve or Unitywater owned land:					
	If the sewer main/s are located on land not owned by the applicant, the applicant must provide written consent/s from each of the property owners permitting the construction of the sewer main/s on their land and the provision of easements.				
	If the sewer main/s are located on state or local government controlled land (other than QR land), has the applicant provided written consent/s from the property owner permitting the installation of the main on their land.				
	If the sewer main/s are located on state or local government controlled land (other than QR land), do the design plans show the necessary easement?.				
	For each easement over the sewer main/s on private, state or local government controlled land (other than QR land), the applicant has shown location of required easements on design drawings.				
	If the sewer main/s are located on QR land, has the applicant provided 'Right of Access' [called Way Leave] documentation signed by QR for execution by Unitywater?.				
	<p>If easements need to be registered over sewer main on private property/ies, state and /or local government controlled land, they must comply with the following:</p> <ol style="list-style-type: none"> 1. Easements need to be centred over pipe; 2. 3.0m wide where sewer < 3m deep and sewer diameter ≤ 300 Ø; 				

Item No:	Item Description	Compliant:			Supporting Comments
		Yes	No	NA	
	3. 6.0m wide where depth is between 3 and 5m and/or sewer diameter greater than $\geq 300\varnothing$ but $\leq 600\varnothing$; 4. 10.0m wide where sewer $> 5\text{m}$ depth and $> 600\varnothing$; 5. 1.0m wide access easement to any structure located in rear of property.				
Note	1. The applicant must negotiate with the relevant property owner for consent to construct the main on their land as well as registering the necessary easement over the main; 2. QR requires the execution of a 'Right of Access' [called Way Leave] with Unitywater in lieu of an easement.				
Proposed Sewer Main alignment:					
	The preferences for sewer main location (#1 is most preferred) shall be as follows: 1. Sewer main is located in the footpath, on the opposite road verge to the water main; (1.75m alignment); 2. Sewer main is located on the same side as water main; (2.7m alignment); 3. Sewer main is located on the rear of private properties; and 4. Sewer mains are located between front property boundary and standard setback for building works.				
Note	All sewer structures and property connections need to be located clear of structures, be unobstructed, allow for future maintenance and have unrestricted street access at all times. Minimum clearance around a property connection 1.5m.				
Note	Unitywater service corridors are generally as follows: 1. 1.0 to 2.0m for footpaths widths $< 5.0\text{m}$; and between 1.0m and 2.0m from front property boundary; 2. 1.0 to 3.0m for footpaths widths $> 5.0\text{m}$ and between 1.0m and 3.0m from front property boundary; 3. Where Unitywater infrastructure cannot be located within this corridor, provide road owner permission for non-standard alignment.				
	Sewers located within residential properties need to be on 1.0 to 1.5m alignment with 1.5m preferable.				
	Sewers to be located clear of industrial or commercial property/ies wherever practicable. If this is not possible, then it should be located on 2.0 – 4.0m alignment from side or rear boundary complete with applicable easements.				
	Where sewer and stormwater drains traverse a lot on the same side of the building envelope, the sewer should be closer to the building envelope than the stormwater drain.				
	Sewers being provided to any un-serviced upstream property boundary/ies must be at a reasonable depth to provide service to the greatest possible area. This may require submission of catchment plan and longitudinal sections to demonstrate conformance.				

Item No:	Item Description	Compliant:			Supporting Comments
		Yes	No	NA	
	Providing self-cleansing velocity can be maintained sewers crossing freeways, arterial roads and major road reserves need to be constructed one size larger than hydraulically necessary.				
Pipe Types and Sizes:					
	Sewer mains must be sized to carry design flows (PWWF) without exceeding 75% of flow depth: RIGSS - Approximate Values. 150 Ø – 10.5l/s (approx. 900 EP's) 225 Ø – 23.9l/s (approx. 2100 EP's) 300 Ø – 44.8l/s (approx. 3900 EP's) 375 Ø – 69.2l/s (approx. 6000 EP's) NuSewer - Approximate Values. 160 Ø – 9.4l/s (Approx. 1150 EP's) 250 Ø – 24.0l/s (Approx. 2900 EP's) 315 Ø – 39.1l/s (Approx. 4700 EP's) 400 Ø – 63.0l/s (Approx. 7600 EP's)				
Note	PE material not permitted in areas contaminated with hydrocarbons.				
Horizontal Curves:					
	Conditions for horizontal curves in sewers: 1. Maximum of two Long Radius Bends permitted, (LRB) between adjacent maintenance structures; 2. Curves not to be located under road carriageway; and 3. Sewer connections to be placed on straight sections of sewer. RIGSS: 1. Maximum deflection for RIGS bend is 45 degrees; 2. Horizontal curves only achieved through use of long radius bends (maximum deflection 45 degrees and 3000mm radius bends only); and 3. Only one bend between structures permitted on 225mm Ø sewer. NuSewer: 1. Maximum deflection for NuSewer LRB is 90 degrees; 2. Short Radius Bend (SRB) maximum deflection angle of 45 degrees may be provided immediately upstream of a maintenance structure; 3. Where SRB provided between structures only one LRB may be included; 4. Minimum LRB radius is 35 times outside diameter of a SDR21 PE pipe; 5. Bend radius to match road curvature where bend radius limitations not exceeded.				
Pipe Covers:					
	As per requirements of SEQ standard drawing SEQ-SEW-1200-2 (A).				

Item No:	Item Description	Compliant:			Supporting Comments
		Yes	No	NA	
Vertical Clearances:					
	Minimum vertical clearances must be in accordance with SEQ WSA02 table 4.2: 1. Water mains $\geq 500\text{mm}$; 2. Other gravity sewer mains $\geq 300\text{mm}$ and 500mm for pressure and vacuum sewer mains; 3. Gas $\geq 500\text{mm}$ and for Telecommunication conduits/cables $\geq 300\text{mm}$; 4. Electricity conduits/cables mains $\geq 500\text{mm}$; 5. Stormwater mains $\leq 300\text{mm } \varnothing \geq 150\text{mm}$; and 6. Stormwater mains $>300\text{mm } \varnothing \geq 300\text{mm}$;				
Note	Reduced clearances to other services will require the consent of the Registered Certifier, however must be listed in the SOAS and reasons for granting the consent explained in detail for Unitywater's audit.				
Horizontal Clearances:					
	Minimum horizontal clearances must be in accordance with SEQ WSA02 table 4.2: 1. Water mains $\geq 600\text{mm}$; 2. Other gravity sewer mains $\geq 600\text{mm}$ and 300mm for sewer mains $\leq 200\text{mm } \varnothing$ and pressure and vacuum sewer mains; 3. Gas and Telecommunication cables mains $\geq 600\text{mm}$ and 300mm for sewer mains $\leq 200\text{mm } \varnothing$; 4. Electricity conduits/cables mains $\geq 1000\text{mm}$ and 500mm for sewer mains $\leq 200\text{mm } \varnothing$; 5. Stormwater mains $\leq 200\text{mm } \varnothing \geq 300\text{mm}$; and 6. Stormwater mains $>200\text{mm } \varnothing \geq 600\text{mm}$. Clearances from trees: 1. 1.5m for mature tree $\leq 5.0\text{m}$ tall; and 2. An arborist assessment and recommendation for trees $> 5.0\text{m}$ tall.				
Note	Reduced clearances to other services will require the consent of the Registered Certifier, however must be listed in the SOAS and reasons for granting the consent explained in detail for Unitywater's audit.				
	Sewers crossing a water main $>300\text{mm } \varnothing$ need to have details shown and design appropriately approved by an RPEQ.				
	Stormwater drain $>600\text{mm } \varnothing$ crossing sewer need to be supported by bridging structure. The structure will need to be designed and approved by an RPEQ. Approved sewer bridging detail must be included on the approved storm water drawings for this development.				
	Sewer mains must be designed to cross retaining walls as close as practicable to perpendicular. An RPEQ certificate verifying structural integrity of sewer will need to be attached.				

Item No:	Item Description	Compliant:			Supporting Comments
		Yes	No	NA	
Specific Details:					
	All PE – PE connections shall be welded. Welding requirements as per SEQ WSA02 Clause 8.2.				
	Sewers under existing roads need to be tunnel-bored unless evidence by road owner provided permitting open-cut.				
	A geotechnical assessment of soil conditions along the route is to be provided for sewer main > 450mm Ø.				
Horizontal Direction Drill (HDD):					
	Refer to Section 7.6 of SEQ-WSA02. Method chosen to be suitable according to: <ol style="list-style-type: none"> 1. Accuracy required in line and level 2. Proximity to other services 3. Diameter of bore 4. Length of bore 5. Ground conditions 6. Minimum depth of cover 7. Access for equipment 8. Pipe Lengths 9. Tolerances as per SEQ-WSA02 Table 7.1. 				
	Drawings to detail HDD location, type, material and all necessary construction details.				
	HDD Acceptance criteria as per SEQ WSA02 Clause 7.6.4. Before issuing OPW's approvals consulting engineer shall agree in writing to accept the following requirements: <ol style="list-style-type: none"> 1. Where ponding found by CCTV, consultant to ensure PDWF will not exceed 70% pipe depth; and 2. If above requirement not met than works excavated and made good or abandoned and started again. 				
Sewer Structures:					
	MH's, MS's and TEP's to be constructed in locations according to Table 6.1 of SEQ WSA02.				
	Maintenance structures are to be located at change of pipe material, permanent or temporary ends of line.				
Note	<ol style="list-style-type: none"> 1. Maintenance structures shall not be located within a building or under a building overhang; 2. Maintenance structures must not to be located in swales, drains or detention basins. 				
	Where MH's are specified in areas subject to flooding or with a high water table level only cast in-situ MH's shall be used and include bolt down covers.				
	Unitywater permits the use of straight back taper or conversion slab MH's as per Std Drwg SEQ-SEW-1300-1.				
	Use 1500mm Ø MH's for sewer mains 300mm Ø to 600mm Ø.				

Item No:	Item Description	Compliant:			Supporting Comments
		Yes	No	NA	
	MH's > 6.0m depth needs to be designed specifically for application. Provide RPEQ certified structural drawings.				
	Maintenance Holes are located where: 1. Convenient vehicular access must be available; 2. Intersection of more than 3 incoming sewers lines; 3. At complex sewer junctions e.g. entry angle exceeds 90 degrees; and 4. On branch and trunk sewers 375mm Ø or greater.				
	Maximum distance between Maintenance Structures ≤120m.				
Note	Maximum spacing of 480m between MH's (when used with intermediate MS's).				
	Concrete used for MH construction shall be special class to WSA PS-358.				
	Ladders, step-irons and landings are not permitted within MH's. Ensure note to this effect on drawings.				
	Clear Opening into MH's shall be 600mm.				
	Cover requirements: 1. Class 'D' covers in areas subject to vehicular traffic; 2. Class 'B' type in other areas, 3. Top slab thickness increased from 115mm to 150mm for Class 'D' covers; and 4. Concrete infill covers are not accepted.				
Note	Where driveway location is not identified, Class "D" covers shall be used.				
	Bolt-down covers must be used in the following areas: 1. Where risk of sewer overflow is high; 2. Areas below Q10 (Q100?) flood level; 3. In tidal areas; and 4. Parks and reserves subject to flooding or vandalism.				
	Maximum slope of covers: 1. 'B' Class 1 in 4; 2. 'D' Class 1 in 10.				
	RIGSS MH requirements are: 1. 1050mm Ø manholes shall generally be 35% of structures; 2. Cast in-situ and precast MH bases as per Std Drwg SEQ-SEW-1302-1; 3. Internal and external drops into MH's as per Std Drwg SEQ-SEW-1303-1; 4. Maximum deflection through MH's (150 to 300mm Ø): a. Up to 90 degrees for fall along MH channel; b. Up to 120 degrees using internal or external drop (Refer Std Drwg SEQ SEW-1304 to 1306); and c. Up to 150 degrees using internal or external drop (Refer Std Drwg SEQ SEW-1306).				

Item No:	Item Description	Compliant:			Supporting Comments
		Yes	No	NA	
	NuSewer MH requirements are: 1. Type 'F' MH (1200mm Ø) up to 315mm Ø NuSewer;. 2. Type 'G' MH (900mm Ø) up to 250mm Ø NuSewer; 3. Type 'G' MH (900mm Ø) maximum depth 3m.				
	Maintenance shafts are not permitted on branch or trunk sewers.				
	'End of Line' shall not exceed 30m from the nearest downstream structure. Consists of rubber ring screwed cap.				
Note	Where 'End of Line' > 30m from the nearest downstream structure a maintenance structure (Terminal Entry Point) shall be used.				
	Dead Ends at boundary of development to be constructed 1.0m past boundary.				
	Design Parameters for Maintenance Shafts shall be: 1. Generally be 40% of structures; 2. Maximum of 1 x 150/160mm Ø sewer OR 2 x 100/110 Ø property connections (at different levels) into the riser; 3. Fitted with DI covers and frames.				
	RIGSS: 1. Permitted MS type are Type G, H and J; 2. MS, TEP and drops as per Std Drg SEQ-SEW-1314-1; 3. Riser to be 300mm Ø; 4. Maximum depth 3.0m from FSL to top of pipe; 5. Incoming lines to be a minimum of 750mm above IL, enter at base with 30mm fall or graded obvert to obvert.				
	NuSewer: 1. Permitted MS types are Type G, H, J, K, L and N; 2. MS, TEP and drops as per Std Drg SEQ-SEW-1315-1; 3. Flow into MS not to exceed 22l/s (approx. 2650 EP's); 4. Flow in excess of 12l/s (approx. 1440 EP's) not to exceed deflection of greater than 45 degrees; 5. Directly opposed inlets not permitted; 6. Riser to be PE 100 x 250mm Ø; 7. Only installed on sewers up to 250mm Ø; 8. Surcharge relief provided by rubber ring seal PE/PVC connector. The cap for the riser shall comprise of rubber ring push-on cap; 9. Maximum depth 3.0m in footpath and 5.0m elsewhere; 10. Incoming lines to be a minimum of 750mm above IL, enter at base with 20mm fall or graded obvert to obvert.				

Item No:	Item Description	Compliant:			Supporting Comments
		Yes	No	NA	
Longitudinal Section Specific Checks:					
	Is sewer design deeper than required to achieve objective? Consider whether a high level reticulation sewer is required where main sewer is deeper than 3.0m.				
	Details of all property connections are shown on long section/s as per requirements of SEQ Code Standard Drawings SEQ-SEW-1101-1 & 1101-2.				
	Details of sewer mains crossing other services are shown/provided.				
	Details are shown/provided where a sewer main crosses a water main >300mm Ø.				
	Bridging details spanning the sewer trench are shown/provided where a stormwater drain ≥ 600mm Ø crosses over sewer.				
	All clearances between services are in accordance with SEQ WSA02 Table 4.2				
	Ensure minimum grades are achieved. For information see below: 1. Pipe size 100/110mm Ø - 1 in 60 (Property connections only); 2. Pipe size 150/160mm Ø - 1 in 100 (Property connections or sewer for first 10 allotments); 3. Pipe size 150/160mm Ø - 1 in 180 (Sewer after first 10 allotments); 4. Pipe size 225/250mm Ø - 1 in 300; Pipe size 300/315mm Ø - 1 in 400; 5. Pipe size 375/400mm Ø - 1 in 550.				
	Ensure minimum cover are achieved as per below: 1. Existing development – 450mm; 2. New development – 600mm; 3. Private residential property subject to vehicular loading – 750mm; 4. Sewer in footpath – 900mm; 5. Road crossing, unsealed, arterial, future and rail – 1200mm.				
	Minimum falls through MH's shall be: 1. 0 degrees – 20mm; 2. Up to 45 degrees – 30mm; 3. 45 – 90 degrees – 40mm; 4. Branch <30 degrees – 30mm; 5. Branch 30 – 60 degrees – 50mm; 6. Branch 60 – 90 degrees – 80mm.				
Note	1. RIGS other drop type dimensions refer Std Drwg SEQ-SEW-1303-1; 2. NuSewer other drop type dimensions refer Std Drwg SEQ-SEW-1301-2 & 1301- 4.				
	Sewer mains at change of diameters must be graded obvert to obvert and can only occur at a maintenance structure.				
	Bulkhead spacing as per Std Drwg SEQ WSA02 Table 8.1.				
Note	Grades of 1 in 20 or steeper require bulkheads. Provide details where applicable.				
	Sewer mains graded ≥ 1 in 4 is subject to approval.				

Item No:	Item Description	Compliant:			Supporting Comments
		Yes	No	NA	
	Correct invert levels are shown for connection to existing infrastructure.				
	Confirm MH and MS type/s are clearly shown on drawings.				
	Internal drops into MH's: 1. No internal drops into 900mm Ø MH (Type 'G') – 150mm Ø sewer only; 2. Maximum of 1 x internal drop into 1200mm Ø MH (Type 'F') – 150mm Ø sewer only.				
	External drops into MH's: 1. Maximum of 3 x external drops into MH – 150-300mm Ø sewer.				
	Vertical Curve requirement: 1. Depth to be > 1.50m; 2. Maximum of 1 x compound long radius bend (excluding bends immediately adjacent MH or MS). Maximum horizontal deflection 90 degrees and vertical deflection 30 degrees.				
	RIGSS: 1. Only constructed using long radius bends; 2. No more than 2x vertical curves between adjacent Maintenance Structures with maximum grade change of 30%.				
	NuSewer: 1. No more than 3 x vertical curves between adjacent Maintenance Structures with maximum grade change of 30%; 2. Manufactured bends to be located immediately adjacent MH or MS either upstream or downstream.				

Condition Checklist:

The assessing Registered Certifier will need to:

1. Imposes *relevant and reasonable* condition on the connection application;
2. Impose *Standard Conditions* where relevant;
3. Write and impose *Specific Conditions* if standard conditions are or will not be relevant;
4. Ensure that for any items that are Not Compliant to relevant standards on this checklist, alternative solutions must be identified and listed under *Statement of Alternative Solutions* section; and
5. Copy each of the imposed conditions (Standard or Specific) into the *Draft Decision Notice*.

Table 4 – Conditions Checklist

Condition No:	Condition	Supporting Comments	Compliance Audit			Supporting Statements
			Yes	No	NA	
Standard Sewerage Conditions:						

Table 5 – Conditions Checklist

Condition No:	Condition	Supporting Comments	Compliance Audit			Supporting Statements
			Yes	No	NA	
Specific Conditions – Sewerage:						

Table 6 – Conditions Checklist

Condition No:	Condition	Supporting Comments	Compliance Audit			Supporting Statements
			Yes	No	NA	
Statement of Alternative Solutions:						

Certification:

The assessing Registered Major Connections Certifier or the Registered Minor Connections Certifier must completed the following certification prior to lodging the connection approval.

Certification

The Registered Certifier will need to authenticate this Design Assessment Checklist by certifying that the assessment has been undertaken as follows:

I, _____ from _____ on _____, certify that:
Name of Registered Certifier Accredited Entity Date

1. This Design (Sewerage) Assessment Checklist is a true and accurate record of the connection application assessment undertaken by myself;
2. The application assessment has been carried out in accordance with the following relevant standards:
 - a. Unitywater Connections Policy;
 - b. The SEQ Code; and
 - c. The Accreditation and Certification Manual.
3. All alternative solutions have been carefully considered and in my professional opinion, they are optimum solutions.

Registered Connections Certifier Number: _____

Registered Connections Certifier Signature: _____