



Unitywater Connection Application/OPW No: _____	SP Plan: _____
Development Name / Street Name: _____	Total Number of Lots: _____ Stage: _____
Unitywater Construction Auditor Name: _____	Phone No: _____
Pre-Start Meeting Date: _____	Construction Commencement Date: _____

Water Supply Construction Audit:

Compliant			<u>Valves</u>
Yes	No	Date	
<input type="checkbox"/>	<input type="checkbox"/>	_____	Valve spindles are fixed to valves, by tugging on the spindles.
<input type="checkbox"/>	<input type="checkbox"/>	_____	Valve spindles are at the correct height of 75mm to 225mm from valve box lid and centrally located in box.
<input type="checkbox"/>	<input type="checkbox"/>	_____	Valve box lids are to trafficable or non-trafficable and have been painted white and with the correct paint.
<input type="checkbox"/>	<input type="checkbox"/>	_____	Valve box is level with the Finished Surface Level (FSL) preventing trip hazards.
<input type="checkbox"/>	<input type="checkbox"/>	_____	Valve boxes are aligned with the Water mains.
<input type="checkbox"/>	<input type="checkbox"/>	_____	Valve (V) Brass kerb markers have been installed on the kerb with a white arrow.
<input type="checkbox"/>	<input type="checkbox"/>	_____	Thrust blocks have been installed.
<input type="checkbox"/>	<input type="checkbox"/>	_____	Stainless steel strapping of the valve to the thrust block.

			Maj	Min	Obs
1	Identified Non - Conformance	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Corrective Action Direction	_____			
2	Identified Non - Conformance	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Corrective Action Direction	_____			
3	Identified Non - Conformance	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Corrective Action Direction	_____			

Compliant			<u>Hydrants</u>
Yes	No	Date	
<input type="checkbox"/>	<input type="checkbox"/>	_____	Hydrants are at the correct height of 75mm to 225mm from hydrant box lid and centrally located to box opening.
<input type="checkbox"/>	<input type="checkbox"/>	_____	Hydrants have been cleaned out properly and the blue marker tape is visible.
<input type="checkbox"/>	<input type="checkbox"/>	_____	Hydrant box lid is painted yellow with the specified paint.
<input type="checkbox"/>	<input type="checkbox"/>	_____	Hydrant box is level with the Finished Surface Level (FSL) preventing trip hazards.
<input type="checkbox"/>	<input type="checkbox"/>	_____	Hydrant boxes are aligned with the Water mains.
<input type="checkbox"/>	<input type="checkbox"/>	_____	Hydrant (HP) Brass kerb markers have been installed on the kerb in the centre of the yellow painted square.
<input type="checkbox"/>	<input type="checkbox"/>	_____	Blue reflector road markers have been installed correctly, just off the centre of the road and in line with the hydrant and brass kerb marker.
<input type="checkbox"/>	<input type="checkbox"/>	_____	Hydrant risers are DN 100 risers.
<input type="checkbox"/>	<input type="checkbox"/>	_____	Hydrants are positioned ≤ 80m apart from each other.
<input type="checkbox"/>	<input type="checkbox"/>	_____	All end of the water lines or connection points are installed with a Ducks Foot hydrant.
<input type="checkbox"/>	<input type="checkbox"/>	_____	Thrust blocks have been installed.
<input type="checkbox"/>	<input type="checkbox"/>	_____	Stainless steel strapping of the hydrant to the thrust block.

			Maj	Min	Obs
1	Identified Non - Conformance	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Corrective Action Direction	_____			
2	Identified Non - Conformance	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Corrective Action Direction	_____			
3	Identified Non - Conformance	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Corrective Action Direction	_____			



Compliant			<u>Water Meters</u>
Yes	No	Date	
<input type="checkbox"/>	<input type="checkbox"/>	_____	Water meter boxes have been installed 300mm and 500mm of property boundary.
<input type="checkbox"/>	<input type="checkbox"/>	_____	Water meter boxes are level with the Finished Surface Level (FSL) preventing trip hazards.
<input type="checkbox"/>	<input type="checkbox"/>	_____	Water meter box lids are trafficable or non-trafficable and they are attached to the box with either a chain or cable.
<input type="checkbox"/>	<input type="checkbox"/>	_____	Geo fab material has been placed below the water meter box.
<input type="checkbox"/>	<input type="checkbox"/>	_____	Water meters are Unitywater meters, date of manufacture and size of the meter and positioned horizontally in the box.
<input type="checkbox"/>	<input type="checkbox"/>	_____	Water meters have been fitted with a lockable brass ball valve.
<input type="checkbox"/>	<input type="checkbox"/>	_____	Property connections are at least 600mm into the property.
<input type="checkbox"/>	<input type="checkbox"/>	_____	Each water meter valve (when opened) allows water to pass through to ensure that the connection is successful.

		Maj	Min	Obs
1	Identified Non - Conformance	_____	<input type="checkbox"/>	<input type="checkbox"/>
	Corrective Action Direction	_____		
2	Identified Non - Conformance	_____	<input type="checkbox"/>	<input type="checkbox"/>
	Corrective Action Direction	_____		
3	Identified Non - Conformance	_____	<input type="checkbox"/>	<input type="checkbox"/>
	Corrective Action Direction	_____		

Pipe Type: Minimum Depths:			<u>Water Main Construction</u>		
			Location	Pipe <=150NB (mm)	Pipe >=200NB (mm)
			Non-roadways /Sealed Roads	600	1000
			Major Roads/embankment	750	1000
			Highway	1200	1200
Compliant					
Yes	No	Date			
<input type="checkbox"/>	<input type="checkbox"/>	_____	All water mains have been laid to the depths stated in the SEQ Code.		
<input type="checkbox"/>	<input type="checkbox"/>	_____	All water mains are fusion powder coated.		
<input type="checkbox"/>	<input type="checkbox"/>	_____	All beddings have been inspected and are compliant.		
<input type="checkbox"/>	<input type="checkbox"/>	_____	All backfill and associated compaction have been inspected and are compliant.		
<input type="checkbox"/>	<input type="checkbox"/>	_____	Water main alignments.		
<input type="checkbox"/>	<input type="checkbox"/>	_____	Detectable blue marker tape.		
<input type="checkbox"/>	<input type="checkbox"/>	_____	Thrust blocks.		
<input type="checkbox"/>	<input type="checkbox"/>	_____	No bends or curves of oPVC pipes.		
<input type="checkbox"/>	<input type="checkbox"/>	_____	Polythene sleeving of DICL pipes and fittings as per manufactures specifications.		
Deflections:					
<input type="checkbox"/>	<input type="checkbox"/>	_____	Maximum 1° deflection out of a RRJ oPVC spigot joint or 105mm over 6 metre,		
<input type="checkbox"/>	<input type="checkbox"/>	_____	maximum 5° deflection out of DICL fittings or 502mm over 6 metre,		
<input type="checkbox"/>	<input type="checkbox"/>	_____	Unitywater prefer the use of DICL RRJ Connectors when there is a requirement to deflect pipes within joints,		
<input type="checkbox"/>	<input type="checkbox"/>	_____	Deflection out of RRJ oPVC spigot joints requires an approved certified design, detailing lengths and offset,		
<input type="checkbox"/>	<input type="checkbox"/>	_____	Distance Pipes deflected without this approved certified design will be required to be removed from the trench,		
<input type="checkbox"/>	<input type="checkbox"/>	_____	Water mains (future extensions) are constructed and terminated in accordance of SEQ-WAT-1303-1.		

		Maj	Min	Obs
1	Identified Non - Conformance	_____	<input type="checkbox"/>	<input type="checkbox"/>
	Corrective Action Direction	_____		
2	Identified Non - Conformance	_____	<input type="checkbox"/>	<input type="checkbox"/>
	Corrective Action Direction	_____		
3	Identified Non - Conformance	_____	<input type="checkbox"/>	<input type="checkbox"/>
	Corrective Action Direction	_____		

Compliant			<u>Water Services</u>
Yes	No	Date	
<input type="checkbox"/>	<input type="checkbox"/>	_____	Water services pipes have been installed in accordance with SEQ-WAT-1108-1 to 3.
<input type="checkbox"/>	<input type="checkbox"/>	_____	Water services pipework's are PE100 PN16 polyethylene pipe with blue stripe in accordance with AS/NZS 4130.
<input type="checkbox"/>	<input type="checkbox"/>	_____	Water services ≤ 20 m long are DN25 pe 100 pn 16 pipe with blue stripe.
<input type="checkbox"/>	<input type="checkbox"/>	_____	Water services .20 n long are DN25 pe 100 pn 16 pipe with blue stripe.
<input type="checkbox"/>	<input type="checkbox"/>	_____	Any pipework showing signs of kinking or strain from over bending will be rejected.
<input type="checkbox"/>	<input type="checkbox"/>	_____	All connections to polyethylene pipe to be approved brass or plastic mechanical fittings.
<input type="checkbox"/>	<input type="checkbox"/>	_____	PE100 pipe shall be laid with 100 mm minimum surround of sand or approved granular material.
<input type="checkbox"/>	<input type="checkbox"/>	_____	PE100 pipe must be continuous without joints. No joints permitted between the ready tap/tapping saddles and water meters.

			Maj	Min	Obs
1	Identified Non - Conformance	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Corrective Action Direction	_____			
2	Identified Non - Conformance	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Corrective Action Direction	_____			
3	Identified Non - Conformance	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Corrective Action Direction	_____			

Compliant			<u>Water Pressure Release Valve</u>
Yes	No	Date	
<input type="checkbox"/>	<input type="checkbox"/>	_____	Check that the pressure release valve pit is installed level with the FSL preventing a trip hazard.
<input type="checkbox"/>	<input type="checkbox"/>	_____	Check that the pressure release valve is centrally located in pit.
<input type="checkbox"/>	<input type="checkbox"/>	_____	Check that the lid has been fitted to the pit, are they to be trafficable or non-trafficable.
<input type="checkbox"/>	<input type="checkbox"/>	_____	Check that the height of the pressure release valve is between 75mm and 225mm from the lid.

			Maj	Min	Obs
1	Identified Non - Conformance	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Corrective Action Direction	_____			
2	Identified Non - Conformance	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Corrective Action Direction	_____			
3	Identified Non - Conformance	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Corrective Action Direction	_____			

Sewerage Construction Audit:

Compliant			<u>Poo Pits / Maintenance Shafts</u>
Yes	No	Date	
<input type="checkbox"/>	<input type="checkbox"/>	_____	Poo pit lids are 600mm Ductile iron class (D) LID.
<input type="checkbox"/>	<input type="checkbox"/>	_____	Poo pit lids are installed level with the Finished Surface Level (FSL) preventing trip hazards.
<input type="checkbox"/>	<input type="checkbox"/>	_____	Poo pits have been flushed out and free of any silt material and rubbish.
<input type="checkbox"/>	<input type="checkbox"/>	_____	Gravel surrounding the riser shaft is of compacted water resistant material and is not lower than 80mm from the lid.
<input type="checkbox"/>	<input type="checkbox"/>	_____	Poo pit riser shaft heights are between 100mm and 250mm of the Finished Surface Level (FSL) lid.
<input type="checkbox"/>	<input type="checkbox"/>	_____	Bung rubbers have been fitted to the riser shaft lids.
<input type="checkbox"/>	<input type="checkbox"/>	_____	Pink marker tapes are visible.
<input type="checkbox"/>	<input type="checkbox"/>	_____	Maintenance shaft risers are minimum Ø300mm.
<input type="checkbox"/>	<input type="checkbox"/>	_____	All maintenance shaft connection pipes, couplings, flat top taper etc, shall be Plain Wall uPVC, rubber ringed and fibreglass reinforced.

			Maj	Min	Obs
1	Identified Non - Conformance		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Corrective Action Direction				
2	Identified Non - Conformance		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Corrective Action Direction				
3	Identified Non - Conformance		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Corrective Action Direction				

Compliant			<u>Sewer Mains</u>
Yes	No	Date	
<input type="checkbox"/>	<input type="checkbox"/>	_____	Minimum cover of sewer mains ≥ 600mm.
<input type="checkbox"/>	<input type="checkbox"/>	_____	All beddings have been inspected and are compliant.
<input type="checkbox"/>	<input type="checkbox"/>	_____	All backfill and associated compaction have been inspected and are compliant.
<input type="checkbox"/>	<input type="checkbox"/>	_____	The invert of all ends of all sewer lines and house connection are to be marked by single length, 2m long, Ø40mm, orange, PVC conduit in accordance with SEQ-SEW-1106-2 to 5.
<input type="checkbox"/>	<input type="checkbox"/>	_____	All SEQW Service Providers accept only Plain Wall uPVC for non-pressure sewerage system. Other type of uPVC such as foam core sandwich and solid core sandwich are not accepted.
<input type="checkbox"/>	<input type="checkbox"/>	_____	Bung rubbers have been fitted to the riser shaft lids.
<input type="checkbox"/>	<input type="checkbox"/>	_____	Ensure all fittings such as long radius bends, moulded oblique junctions, bends, inspection I.O junctions, shorts, sanded shorts, and maintenance shaft connections have been constructed from Plain Wall uPVC.
<input type="checkbox"/>	<input type="checkbox"/>	_____	Detectable cream marker tape "SEWER" shall be provided either above the embedment zone of the sewer main or 1m below the F.S.L., whichever is closer to the F.S.L.

			Maj	Min	Obs
1	Identified Non - Conformance		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Corrective Action Direction				
2	Identified Non - Conformance		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Corrective Action Direction				
3	Identified Non - Conformance		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Corrective Action Direction				

Compliant			<u>House Connections</u>
Yes	No	Date	
<input type="checkbox"/>	<input type="checkbox"/>	_____	Offset: Minimum 0.5m into property and minimum 1m off sewer line.
<input type="checkbox"/>	<input type="checkbox"/>	_____	Depths: Minimum 0.6m and maximum 1.5 deep unless approved.
<input type="checkbox"/>	<input type="checkbox"/>	_____	All uPVC house connection branch fittings such as moulded oblique junctions, bends, inspection I.O. junctions, shorts, sanded shorts, maintenance shaft connections shall be Plain Wall uPVC, rubber ringed and fibreglass reinforced in accordance with SEQ-SEW-1 104-1

			Maj	Min	Obs
1	Identified Non - Conformance	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Corrective Action Direction	_____			
2	Identified Non - Conformance	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Corrective Action Direction	_____			
3	Identified Non - Conformance	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Corrective Action Direction	_____			

Compliant			<u>Sewer Man Holes</u>
Yes	No	Date	
<input type="checkbox"/>	<input type="checkbox"/>	_____	Sewer M/H lids are installed level with the Finished Surface Level (FSL) preventing trip hazards in pathways and 80mm to 100mm above Finished Surface Level (FSL) within the lots
<input type="checkbox"/>	<input type="checkbox"/>	_____	Sewer M/H's are clean and all benching have been constructed properly
<input type="checkbox"/>	<input type="checkbox"/>	_____	Interior joints have NOT been bagged.
<input type="checkbox"/>	<input type="checkbox"/>	_____	Check that there are no leaks at the joint sections inside the M/H.
<input type="checkbox"/>	<input type="checkbox"/>	_____	Sewer M/H's have been centrally positioned over the sewer main.
<input type="checkbox"/>	<input type="checkbox"/>	_____	The lids fitted to the sewer M/N's are sewerage lids.
<input type="checkbox"/>	<input type="checkbox"/>	_____	The neck of the sewer M/H's are not deeper than 350mm with an extension, normally 100mm deep.
<input type="checkbox"/>	<input type="checkbox"/>	_____	Every property has a 40mm orange conduit house connection installed starting at the invert level.
Note: Pre cast manholes are not acceptable in the following cases;			
<ul style="list-style-type: none"> • NUSEWERS (PE) systems • Deeper sewer systems greater than 6m • In areas subject to Q100 flooding • In areas where there is a risk of surcharge • In water charged ground • In conjunction with bolt down lids • In sulphide control sewer maintenance hole (e.g. rising main receiving manhole) in areas with unsuitable soil conditions 			
<input type="checkbox"/>	<input type="checkbox"/>	_____	Apply a 150mm wide external bitumastic seal tape (DENZO) over a coat of manufacturer's recommended prime seal to all external joints in accordance with SEQ-SEW-1300-1

			Maj	Min	Obs
1	Identified Non - Conformance	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Corrective Action Direction	_____			
2	Identified Non - Conformance	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Corrective Action Direction	_____			
3	Identified Non - Conformance	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Corrective Action Direction	_____			

Note:

The following additional items are not complaint and must be rectified.

Upon rectification of non-compliant items, the Unitywater Construction Auditor will determine whether or not a re-audit is necessary.

		Yes	Date
1	Identified Non - Conformance	<input type="checkbox"/>	_____
	Corrective Action Direction		
2	Identified Non - Conformance	<input type="checkbox"/>	_____
	Corrective Action Direction		
3	Identified Non - Conformance	<input type="checkbox"/>	_____
	Corrective Action Direction		
4	Identified Non - Conformance	<input type="checkbox"/>	_____
	Corrective Action Direction		
5	Identified Non - Conformance	<input type="checkbox"/>	_____
	Corrective Action Direction		
6	Identified Non - Conformance	<input type="checkbox"/>	_____
	Corrective Action Direction		
7	Identified Non - Conformance	<input type="checkbox"/>	_____
	Corrective Action Direction		
8	Identified Non - Conformance	<input type="checkbox"/>	_____
	Corrective Action Direction		

Testing:

The Unitywater Construction Auditor may audit any testing undertaken during and after the construction to ensure compliance with the SEQ Code requirement.

Trench Backfill Compaction Testing:

(Water Supply (225mm and greater) and Sewerage)

Item	Testing	Compliant		Date
		Yes	No	
Trafficable Area (one test for each 300mm layer of fill above bedding layer)	1. 300 sq.m of trench backfill area or part thereof for water mains; and or 2. 50 lineal metres for sewer mains			
Non-Trafficable Areas (one test for each 900mm layer of fill for each)	1. 1200 sq.m of trench backfill area or part thereof for water mains; and or 2. 100 lineal metres for sewer mains			
Man Holes	Conduct one test within each 1m layer depth within 300 mm of each manhole			

Vacuum Testing (Sewer):

Manholes (Water drop testing is not acceptable)

Apply -34 kPa and record time to drop to -30 kPa.

Depth (mm)	Time (seconds)	Compliant		Date
		Yes	No	
0 – 2.4m	17			
2.4 – 3.0m	21			
3.0 – 3.7m	25			
3.7 – 4.3m	30			
4.3 – 4.5m	34			
4.5 – 5.5m	38			
5.5 – 6.1m	42			

Sewer pipe (Pressure testing is not acceptable):

Apply -27 kPa for 3minutes and allow to stabilise. Once stabilised establish -23.6 kpa and record time and drop (not greater than 7kpa).

Minimum time to record vacuum drop:

Diameter (mm)	Length						Compliant		Date
	50 m	100 m	150 m	200 m	250 m	300 m	Yes	No	
100	2 min.	2 min.	2 min.	2 min.	3 min.	3 min			
150	3 min.	3 min.	3 min.	5 min.	6 min	6 min			
225	4 min.	5 min.	8 min.	10 min.	13 min.	15 min			
300	6 min.	9 min.	14 min.	18 min.	23 min.	29 min			

* Timing in table above shall not commence until after initial 3min stabilising period is completed.

Deflection (Ovality) Testing (Sewer):

Review ovality test report and confirm it complies with the SEQ Code requirements.

Pressure Testing (Water):

Shall be done after water services are connected and electrical conduits installed.

1. All dead ends lines are to be tested. This may require temporary hydrants or tapping bands. Temporary tapping bands to be cut off when connection to live main occurs.
2. Preliminary pressurise the mains to 75% of the test pressure for a minimum of twelve (12) hours.
3. Apply test pressure (1200kPa) at the highest point of the water main for four (4) hours.
4. Ideally there should be no pressure loss after four (4) hours or alternatively as per below

Volume of makeup water after a 3 hour test is to be not more than:

Diameter (mm)	Length					Compliant		Date
	50 m.	100 m.	200 m.	300 m.	400 m.	Yes	No	
100	0.27 L	0.55 L	1.09 L	1.64 L	2.18 L			
150	0.41 L	0.82 L	1.64 L	2.46 L	3.28 L			
200	0.55 L	1.09 L	2.18 L	3.28 L	4.37 L			
250	0.68 L	1.36 L	2.73 L	4.10 L	5.46 L			
300	0.82 L	1.64 L	3.28 L	4.91 L	6.55 L			
375	1.02 L	2.05 L	4.09 L	6.14 L	8.19 L			
450	1.23 L	2.46 L	4.91 L	7.37 L	9.83 L			

Chlorination/Disinfection and Bacteriological Testing:

Chlorination/disinfection and bacteriological testing must be undertaken in accordance with Unitywater's "Procedure for Determination of Acceptance of New Water Mains".

Following test results are required

Water Quality Parameters	Unit	Acceptable range (new main)	Compliant		Date
			Yes	No	
PH		>6.5 – <8.5 +/- 0.5			
Apparent Colour	PCU	≤15 +5			
Turbidity	NTU	≤5 +5			
EC	uS/cm	≤1250 +50			
Free Chlorine Residual (Health)	Mg/L	<5 +/-0.2			
Free Chlorine Residual (Aesthetic)	Mg/L	<0.6 +/-0.2			
Total Chlorine Residual	Mg/L	<5 +/-0.2			
Faecal Coliform Count or E. Coli. Count	orgs/100mL	<1			
Total Coliform Count	Cfu/100ml	<1			
Heterotrophic Plate Count (HPC)	Cfu/100mL	<100			

Note:

The following additional items are not complaint during the testing of the constructed works and must be rectified.

Upon rectification of non-compliant items, the Unitywater Construction Auditor will determine whether or not a re-audit is necessary.

		Yes	Date
1	Identified Non - Conformance	<input type="checkbox"/>	_____
	Corrective Action Direction		
2	Identified Non - Conformance	<input type="checkbox"/>	_____
	Corrective Action Direction		
3	Identified Non - Conformance	<input type="checkbox"/>	_____
	Corrective Action Direction		
4	Identified Non - Conformance	<input type="checkbox"/>	_____
	Corrective Action Direction		
5	Identified Non - Conformance	<input type="checkbox"/>	_____
	Corrective Action Direction		
6	Identified Non - Conformance	<input type="checkbox"/>	_____
	Corrective Action Direction		
7	Identified Non - Conformance	<input type="checkbox"/>	_____
	Corrective Action Direction		
8	Identified Non - Conformance	<input type="checkbox"/>	_____
	Corrective Action Direction		