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## 1. Purpose<sup>1</sup>

Unitywater has been requested to consider allowing design and construction of precast sewage pump stations in the Unitywater Catchment. This technical note has been prepared to provide supporting guidance relating to the minimum requirements for these structures.

All infrastructure, regardless of the method of construction, must meet the SEQ Code requirements in relation to design. The safety of the structure must also be considered during the construction, operation and decommissioning phases.

## 2. Scope

This technical note considers the design and construction of precast concrete sewage pump stations in the Unitywater Catchment and provides supporting guidance relating to the minimum requirements for these structures.

This technical note covers the following suppliers:

- Xylem (WSAA product appraisal PA1512 Issue 3)
- Aquatec (WSAA product appraisal PA 1011 Issue 5)
- Q-Max (WSAA product appraisal PA 2310).

## 3. Recommendations

Unitywater will allow the construction of Pre-Cast Wet Wells for sewage pump stations subject to suppliers provide standard drawings demonstrating:

- Full compliance with existing WSAA product appraisals prior to commencement of delivery and construction.
- Only circular pre-cast wet wells shall be used.

Maximum allowable depths are detailed in Table 1, Table 2, and Table 3 below.

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Table 1: Maximum allowable depths for Xylem precast pump stations

Diameter	Maximum Allowable Depth WSAA	Maximum Allowable Depth UW
1.8m	8m	8m
2.2m	14m	10m
3.0m	14m	10m
3.8m	15m	10m

Table 2: Maximum allowable depths for Aquatec precast pump stations

Diameter	Maximum Allowable Depth WSAA	Maximum Allowable Depth UW
1.8m	15m	8m
2.25m	15m	10m
3.2m	15m	10m
3.6m	15m	10m

Table 3: Maximum allowance depths for Q-Max precast pump stations

Diameter	Maximum Allowable Depth WSAA	Maximum Allowable Depth UW
2.2m	15m	10m
3.2m	15m	10m
3.6m	15m	10m

- All infrastructure regardless of the method of construction must meet the WSA04-2005 SEQ WS&S D&C Code requirements in relation to design including design life.
- Written evidence that the safety of the structure has been assessed for the Safety (Safety in Design) of the structure during:
  - Construction
  - Operation
  - Decommissioning (if and when that may occur).
- The top slab shall not be included in any buoyance calculations. Buoyancy shall be calculated as required in Sections 5.2.1 and 11.2.1 of WSA04-2005 SEQ WS&S D&C Code.
- Adequate benching or defined sumps for each pump is provided to ensure flows will be directed to the pump without opportunity for build-up.

- Consideration of Cable entry requirements to reduce handling during maintenance. Notching or trenching is preferred over conduits.
- Integral valve chambers similar to that shown in drawing SEQ-SPS-1300-2 are preferred.
- Where precast joints in the wet well are below the average ground water table level, subjecting the joint to constant water pressure. These joints shall be constructed with an insitu concrete collar with a hydrotrite seal between the precast and insitu concrete. This will provide additional sealing against groundwater infiltration.

On the Aquatec standard drawings this is detailed as a type 2 joint, details CC, DD and EE. These details have cast in ferrules to the precast sections to allow for anchorage of the rebar for the insitu collar. Similar details for Xylem and Q-Max Precast Pump stations can be adopted as an alternative. Unitywater has a proposed detail in Figure 1 below an example of the construction joint type, proprietary systems can be adopted on review and acceptance by Unitywater.

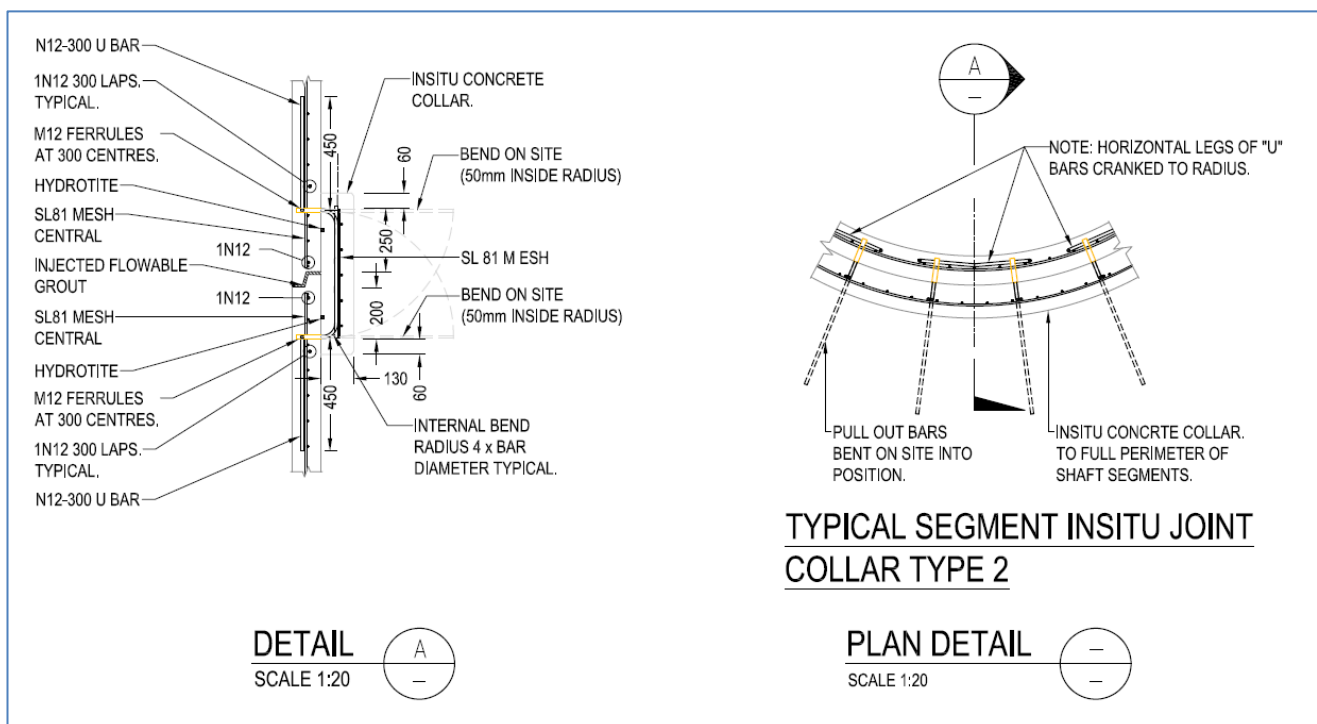


Figure 1: Insitu concrete joint 'type 2' for construction underground water pressure

- All drawings **Issued for Construction** must provide full RPEQ certification including all relevant assessment of locality, ground conditions, soil types, depth of water table and anything else that may impact on the construction and stability of the structure.
- Suppliers must provide fully certified **As Constructed** drawings in accordance with the requirements of [Pr8701](#) - Specification for Asset Information, as part of the Handover Documentation.
- All Commissioning must be in accordance with [Pr11211](#) - Specification for Commissioning and Handover of Active and Passive Assets

## 4. Definitions

Table 4: Definitions, abbreviations and acronyms

Term	Meaning
N/A	No terms to define

## 5. References and resources

Table 5: References and resources

Source	Reference
<b>External</b>	<a href="#">SEQ Water Supply and Sewerage Design &amp; Construction Code Design Criteria V2.0 (SEQ WS&amp;S D&amp;C Code)</a> <a href="#">SEQ Sewage Pumping Station Code WSA04-2004 V2.1 – February 2020 (WSA04-2005 SEQ WS&amp;S D&amp;C Code)</a> Including drawing: SEQ-SPS-1300-2 SEQ Sewage Pump Station Drawings – 2.4m Wet well Section Details
<b>Internal</b>	<a href="#">Pr8701</a> - Specification for Asset Information <a href="#">Pr11211</a> - Specification for Commissioning and Handover of Active and Passive Assets