

Issue

Design requirements for SA Water's wastewater pumping stations (WWPS).

Purpose

This technical bulletin provides interim design requirements for SA Water WWPS projects, which are to be used while updated WWPS technical governance is being developed. The aim of this bulletin is to provide greater clarity on upcoming changes, improve safety outcomes for works constructed before updates are released and reduce rework associated with late design changes.

Background

Since 2009, South Australia's population has increased by approximately 500,000 people, to 1.6M as of 2022 (source: *Australian Bureau of Statistics*). This population growth has seen an increase in the size of SA Water's reticulation network, as well as the total number of WWPS required to service new customers (which now stands at over 400 for the metropolitan area alone).

Alongside this network growth, SA Water has also experienced an escalation in costs to operate and maintain its infrastructure, which for WWPS has been exacerbated by an increased rate of criminal damage. Without action to protect these sites, increased water prices, or reductions in levels of service are a distinct possibility.

SA Water's technical governance in this space also does not reflect contemporary experience and innovation in WWPS infrastructure. Advances in technology, work health and safety (WHS), operational practices that have developed or changed over the last several years are yet to be incorporated to provided consistent benefits to our customers, people, and communities.

Current Situation

SA Water's current technical governance in this space (namely TG11a and the 94-0163 drawing set, both released in the mid to late 1990's), received minor updates in 2009 and 2014, respectively. However, no additional updates have been undertaken to reflect:

- The enactment of South Australia's WHS Act in 2012 (and subsequent amendments), which contain provisions to protect both workers and the public from operational assets (provided in Appendix A).
- Improvement opportunities identified by those undertaking maintenance and operational activities at WWPS sites
- The adoption of the South Australian Protective Security Framework (provided in Appendix B) by the South Australian government and its agencies (of which SA Water is part)
- Recent project experiences across SA Water's capital works program, and the Land Development Industry, through SA Water's Safety in Design process (per TS 0101).

Actions

Updating Technical Governance

With the 2022 update of the Sewage Pumping Station Code of Australia (WSA04), SA Water is taking the opportunity to undertake a major update of its WWPS technical governance to ensure that it:

- Reflects advances in technology, process, and system requirements in this space
- Acts upon continuous improvement opportunities identified by those in the field who own, operate, and maintain this infrastructure
- Satisfies the requirements of WHS legislation and the South Australian Protective Security Framework
- Enables SA Water, Developers and other persons conducting a business or undertaking (PCBU) to meet their Duty of Care obligations under South Australian WHS legislation.

This work is expected to take approximately 12 months, with release expected in late 2023.

Providing Interim Guidance

To reduce confusion and rework regarding coming updates, this Technical Bulletin provides interim details of changes to be adopted in WWPS design in advance of these changes being formalised.

The changes to be applied are presented in Table 1 below, and have been derived from lessons learned, safety in design and risk assessment workshops. These supersede any conflicting requirement contained in TG11a or the 94-0163 standard drawing set, and this Technical Bulletin will become superseded upon release of the updated WWPS drawing set and TS0512 (which will be SA Water's supplement to WSA04).

Table 1 – Interim changes to WWPS requirements

Subject	Cause	Interim Requirement/s
WWPS allotment size	Use of 6-8m deep wet wells has increased due population density and requirements of gravity mains accommodate these flows. Large cranes are needed to lift pumps out of wet well and suitable access and clearances are required.	Larger size allotments to be provided where wet wells depth is 6m or greater. Design vehicle to be adopted in design as follows: <ul style="list-style-type: none"> • Truck Length 7.5 m • Truck Stabiliser width 5.6m • Wheelbase 5.56m • Min working width 7.4m* *Minimum working width includes 900 mm allowances for workers either side of vehicle/crane with stabilisers engaged.
	Odour control devices are now being used more frequently in place of educt vents. At times, a surge vessel may need to be installed.	A minimum 2m x 2m allowance shall be made when odour control devices are to be used. This allowance is dependent on site specific considerations (e.g., orientation, access, maintenance needs, surge vessel needs, emergency storage etc.), which must be noted and addressed in safety in design workshops to ensure sufficient space is provided.

Subject	Cause	Interim Requirement/s
Site access	<p>Site vehicles are required to conduct operational and maintenance activities. By law, obstructing footpaths, roadways, or bike lanes is prohibited</p> <p>Reversing into oncoming traffic or other public use spaces is also a hazard</p>	<p>Adequate space shall be provided for the design vehicle noted above to park, without obstructing footpaths, roadways, or bike lanes.</p> <p>Drive through access shall be the preferred method of site entrance and exit.</p> <ul style="list-style-type: none"> If drive through access is not possible, sufficient space must be available for a 3-point turn without requiring the manoeuvre to be conducted on roadways, footpaths, or bike lanes. <p>Truck movements/turning circles shall be based on the design vehicle provided above and are to be shown on design drawings.</p>
	<p>Stopping in traffic so that Operations or Maintenance staff can unlock and open gates is illegal on arterial roads and causes obstructions in built up areas.</p>	<p>Parking to open gates etc. shall not obstruct roadways or bike lanes and should only result in brief obstructions of footpaths.</p> <p>Allowance for a "slip lane" or similar to be provided where WWPS is located on existing or future arterial road.</p>
	<p>Site vehicles leaving site and re-entering traffic poses hazards for large vehicles that accelerate slowly</p>	
Perimeter fencing	<p>SA Water is obligated to ensure protect SA Water personnel and the community during operation and maintenance activities at WWPS sites.</p> <p>Increased levels of criminal damage to WWPS sites requires greater site security, per SA Government guidelines.</p>	<p>2.4m spear top fencing shall be provided as default fencing around all WWPS sites.</p> <p>For situations where neighbouring properties have a shared fence line, the common fence shall be 2.4m high, with a railing on the WWPS side to prevent climbing.</p> <ul style="list-style-type: none"> "Good neighbour" fencing is not sufficiently secure and <u>shall not be used</u> without a dispensation being approved by SA Water. <p>Any proposed deviations to the requirements above shall have a site security risk assessment undertaken and a Dispensation Requests lodged for approval.</p> <ul style="list-style-type: none"> Dispensation requests will <u>only be assessed where the risk assessment supports</u> reducing the fencing requirement from that provided above.

Subject	Cause	Interim Requirement/s
Valve chamber	Many ergonomic hazards to SA Water personnel are associated with maintaining valves in chambers.	<p>Above ground pipe train shall be provided, with clearance requirements as follows:</p> <ul style="list-style-type: none"> • 800 -1 100 mm, from finished surface level to valve operating height • 600 mm between pipework • 600 mm from pipework to end of curb to the ground • 500 - 600 mm from underside of pipework to finished surface level <p>Below ground valves chambers <u>shall only be used where required by site hydraulics</u>. Chamber size will be dependent on pipe diameter, but the following clearance requirements are to be satisfied irrespective of pipe sizing:</p> <ul style="list-style-type: none"> • 700 mm between pipe and walls (to allow for stairs) • 600 mm between pipework • 500 mm under pipework to floor of chamber
Utility connections	Increases in SA Water's security and access requirements can impact other utilities gaining access to their infrastructure.	Utility connection boxes shall be located outside WWPS perimeter fencing.
Backup power	Temporary generators are used at WWPS sites during power outages	The area adjacent to the switchboard shall allow for a temporary generator to be placed without obstruction.
Finished surface levels	SA Water's current design shows a step down from the wet well and valve plinths, which presents a tripping hazard.	<p>The WWPS hard stand shall be sloped down from the top of concrete plinths to meet the site's finished surface level.</p> <p>Bollards shall also be placed such that drivers are provided with visible indicators to avoid driving over the wet well sump.</p> <ul style="list-style-type: none"> • Bollards do not need to be rated for collision at speed.

Appendix A: Work Health and Safety Regulations 2012

The following WHS regulations provide detail of security expectations to satisfy WHS requirements. These are provided for reference and information only.

Regulation 159 - Unauthorised access to equipment being worked on

Regulation 205 - Preventing unauthorised alterations to or interference with plant

Regulation 298 - Security of workplace

Appendix B: SA Protective Security Framework

Premier and Cabinet Circular PC030 Protective Security in the Government of South Australia (July 2020)

Protective security comprises the policies and procedure to protect people, information and assets from compromise or harm.

The Government of South Australia and its agencies have a responsibility to implement effective protective security policies which maintain the safety, integrity and viability of its people, its information and its assets while continuing to deliver efficient and effective services.

This circular outlines the strategic decision, approved by Cabinet, for a whole-of-government approach to protective security by adopting the South Australian Protective Security Framework (SAPSF) as the protective security policy requirements for the Government of South Australia.

South Australian Protective Security Framework

1. Agencies have a responsibility to ensure their people, information, and assets (resources) are protected from harm, including compromise. This policy ensures agencies take the necessary steps to minimise physical security risks to an agency's resources, while also ensuring agencies incorporate protective security requirements into the planning, selection, design, and modification of their facilities.

Core requirement 13

2. Implement physical security measures that minimise the risk of harm or compromise to people, information, and physical assets.

Version History

Version	Date	Author	Comments
1.0	12/01/2023	Matthew Davis	Final.