

Purpose

This Technical Bulletin provides supplementary information to SA Water Technical Standard TS 0520 to ensure a consistent approach to the provision of infrastructure for tankering facilities.

Background

It has come SA Water's attention that a wide range of temporary sewage storage and tankering solutions are being implemented across major land developments, and that these facilities are often not consistent with the requirements of TS 0520.

With the increased use of temporary storage and tankering facilities to manage sewage in major land developments, there has been renewed focus by SA Water and its operators have on these facilities, to ensure safe and serviceable solutions are being provided.

Current Situation

Temporary storage and tankering of sewage is not a common activity in the construction of wastewater assets. However, where downstream wastewater infrastructure is unavailable, consideration needs to be given by the Developer and their Designer as to the most appropriate methods of storage and tankering, in accordance with TS 0520.

Ensuring Safety and Compliance:

SA Water is committed to maintaining the high standards of safety and quality in all construction projects. The unique nature of temporary storage and tankering requires us to emphasise that the following requirements are current and are to be complied with:

- TS 0101 (Safety in Design)
- TS 0520 (Methods of Temporary Storage and Transfer of Sewage)
- Major Land Development (MLD) Safe Design Management Plan

The safety considerations in operating tankering facilities are to be considered during the design and which shall be treated the same as permanent facilities. This includes undertaking Safety in Design workshops to demonstrate hazards have been identified and mitigated so far as is reasonably practicable and providing documentation to articulate hazards to operators of these facilities in accordance with TS 0101.

All documents above can be found on the SA Water [website](#).

Actions

SA Water is currently undertaking the following actions in response to the situation described above:

1) Updating Technical Governance

SA Water recognises that additional clarity is required in TS 0520, and is currently taking the opportunity to revise and update TS 0520 to:

- Clarify storage volumes expectations.
- Provide additional detail on requirements for infrastructure, ensuring due consideration of operator the health and safety.
- Reflect current environmental requirements (where appropriate).
- Nominate the appropriate level of alarms and control for sites.

This work is expected to take approximately 3 months, with release due in late 2023.

2) Providing Interim Guidance

Prior to the updated technical governance being published, it has been identified that interim guidance, in the form of this Technical Bulletin, is required. Table 1 of this Technical Bulletin is provided to supplement current requirements and is to be considered part of TS 0520 until the updated standard is published.

The following points shall be noted when using the interim guidance provided in this Technical Bulletin:

- In the event of any conflict with the information contained in TS0520, this document shall take precedence.
- The scope of this document is for works delivered under a Developer Agreement Formal Instrument (DAFI).

Table 1 - Interim Requirements for Storage and Tankering

Subject	Supplementary Requirement
<p>Storage volumes</p>	<p>Working Volume</p> <p>A minimum storage volume equivalent to 24 hours of Average Dry Weather Flow (ADWF) storage volume shall be provided. In calculating the ADWF, the following shall be adopted:</p> <ul style="list-style-type: none"> • 500 litres per property per day (0.006 L/s/residential property). • Each tankering facility shall service a maximum of 200 residential property equivalents. • Additional non-residential flow allowance(s) shall be based on WSA 02 (including SA Water’s Supplement to WSA 02) and must be agreed with SA Water. • The total, averaged over 24 hours, is to be used in calculating the ADWF. <p><u>Subject to approval by SA Water</u> via a Technical Dispensation Request Form (TDRF) the following parameters may be adopted in calculating the storage volume required:</p>

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	<ul style="list-style-type: none"> • Where an alternative strategy, including tankering feasibility and peak flowrate management, can demonstrate that a smaller volume would be acceptable. • It can be demonstrated that a larger number of properties is feasible, with consideration made for spatial requirements for infrastructure and tankering capacity. • It can be demonstrated that staging interim infrastructure is an effective approach. <p>Emergency Storage Volume</p> <p>An additional 100% of working volume shall be provided for emergency storage, which can be balanced between multiple tanks.</p> <p>This emergency storage is to allow for:</p> <ul style="list-style-type: none"> • Any unexpected Wet Weather Flow infiltration/inflow • Interruption of tankering activities. • Higher occupancies producing greater than 500 litres per residential property per day. • Predicted allotments of a development being exceeded. <p>Effective storage volume for below ground tanks fed by gravity</p> <p>The effective storage volume for any below ground infrastructure shall allow for:</p> <ul style="list-style-type: none"> • A minimum of 1 metre freeboard at the storage site, or; • Invert level of the lowest Inspection Point (IP). <p>The lowest level shall be applied in calculation of effective storage volumes.</p> <p>Proposed pumping stations may be utilised temporarily to pump, where appropriate.</p> <p>Method of temporary storage</p> <p>The required storage volume may be achieved by either of the methods outlined in TS 0520.</p> <ul style="list-style-type: none"> • Recent tankering sites have adopted above ground tanks as the most practical solution, making use of a pumping station constructed for the development. An example of an above ground facility is shown in Appendix A. <p>Approval requirements for on-site treatment will be outlined in the updated TS 0520.</p>
Tankering	<p>Pumping rate</p> <p>The pumping rate shall be based on a factor of 4.2 x ADWF.</p> <p>This factor allows for PDWF and a factor for WWF for a theoretical maximum design flow, so any collection point is not inundated.</p> <p>Tankering Management Plan</p> <p>The Developer and their Designer shall prepare and submit a tankering management plan for the development to SA Water. Acceptance of this document by the SA Water Representative is a HOLD POINT under TS 0520.</p> <p>The management plan shall use 8,000 litre tankers with a 2-hour turnaround time and include:</p>

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	<ul style="list-style-type: none"> • Consideration of any staging required to accommodate ultimate flows in storage volume sizing. • A sewer master plan for the development. This shall be aligned with SA Water’s Systems Planning master plan. • Nominated tankering facility locations, based on stage release/timing, which also address potential odour impacts. • Expected hours of operation of the tankering facility, with consideration made for noise impacts and opening hours of emptying locations.
Pumps	<p>Any collection point using pumps shall be designed in accordance with TS146b for the following maximum starts:</p> <ul style="list-style-type: none"> • Submersible pumps 15 times per hours. • Above ground pumps 8 times per hour.
Physical Infrastructure	<p>In addition to the forging requirements, the following shall be provided in designing and constructing tankering facilities:</p> <ul style="list-style-type: none"> • Spatial requirements for safe access/egress and operation for 20,000 litre tankers in all weather conditions. • Storage bund equivalent to 120% of total tank volume with: <ul style="list-style-type: none"> ○ 200 mm of freeboard provided and ○ A suitable drainage point for rainwater. • For any below ground structures, provide: <ul style="list-style-type: none"> ○ A depth <u>no greater than 6 metres</u> measured from finished surface level to top of the wet well base slab. ○ A camlock type fitting at ground level, where storage is being emptied by vacuum ○ Fall protection ○ A safe means to remove any pumps or other equipment ○ A wet well internal diameter of <u>not less than 1.8 metres</u> where submersible pumps are to be used • Lighting, where tankering is expected to be in non-daylight hours • Wash water, with backflow prevention fitted • 2.4 metre high chain mesh fence in accordance with TS 0121 <ul style="list-style-type: none"> ○ Other site specific requirements may be identified by a SA Water Security Risk Assessment • Provision for emergency generators to supply pumps • Provision for future expansion of infrastructure, where ultimate flows are not included in initial tank sizing.
Alarms and Telemetry	<p>As a minimum a high-level alarm level at 80% of working volume capacity is required.</p> <p>The electrical standards quoted in TS 0520 Section 4.3 have been superseded. For tankering sites to be operated by SA Water, telemetry and alarms shall comply with the requirements of TS 0300, TS 0302, TS 0350 and TS 0360.</p>
Safety in Design	<p>Designers are reminded that in applying the requirements of this Technical Bulletin to SA Water infrastructure, they are not absolved of any Safety in Design, detailed design or statutory obligations to which they may be subject.</p>

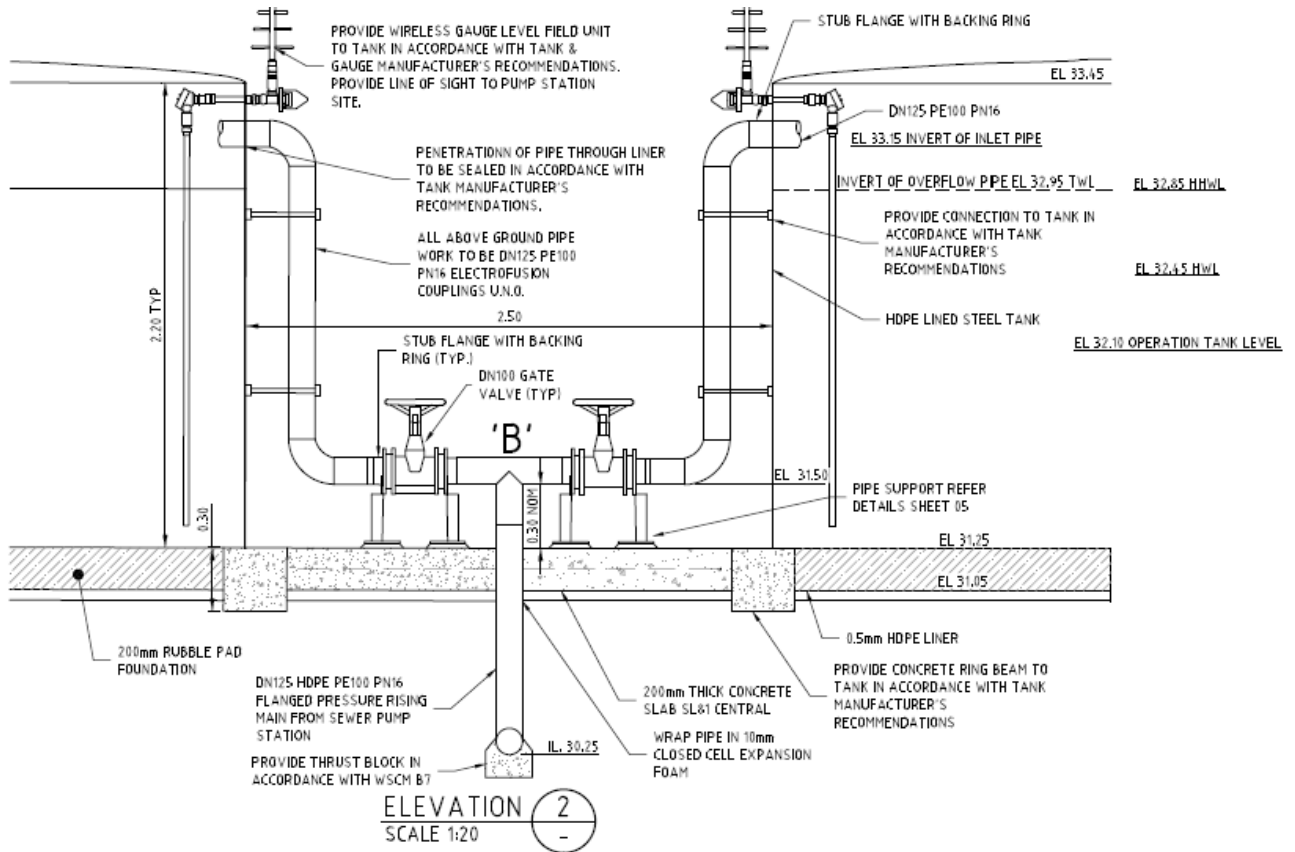


Figure 2 – Example elevation: Between above ground storage tanks

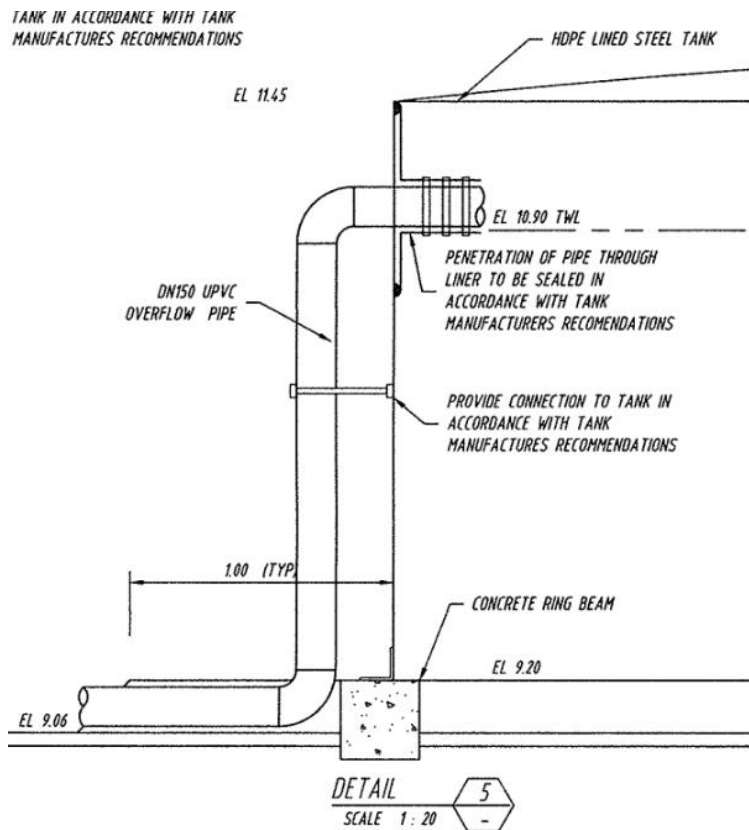


Figure 3 – Example section: overflow from above ground storage tank

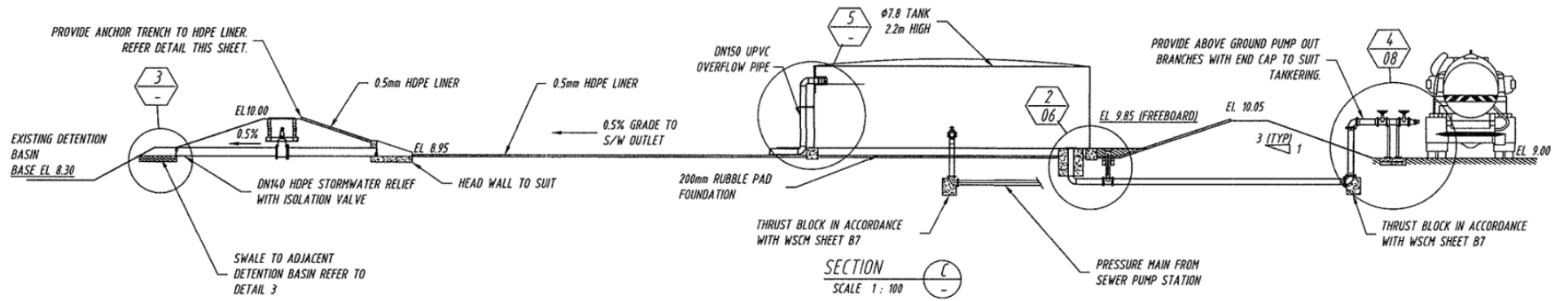


Figure 4 – Example cross section: Above ground storage and tankering facility

Version History

Version	Date	Author	Comments
1.0	11/09/2023	Matthew Davis	Final.