



## Welcome!

This newsletter is your go-to source for updates, insights, and innovations in engineering standards at Sydney Water.

Inside this issue, we explore how engineering standards, informed judgement and constructive feedback work together to deliver safer, more resilient and cost-effective infrastructure.

Discover how the updated Sewage Pumping Station Code strengthens reliability and resilience, and how risk-based decisions at Hornsby Heights avoided unnecessary capital expenditure.

Our Innovation Spotlight shows how project deviations have improved reservoir design requirements and enabled higher-workability concrete for complex structures.

We also highlight recently released standards, provide guidance on applying updates to new, in-flight and existing assets, and preview standards currently in development.

We're committed to have an integrated suite of standards that are easy to use, responsive to our evolving needs, and enable innovation. Please contact us at [standards@sydneywater.com.au](mailto:standards@sydneywater.com.au) if you have any feedback.

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## How standards support SPS resilience and reliability (1 of 2)

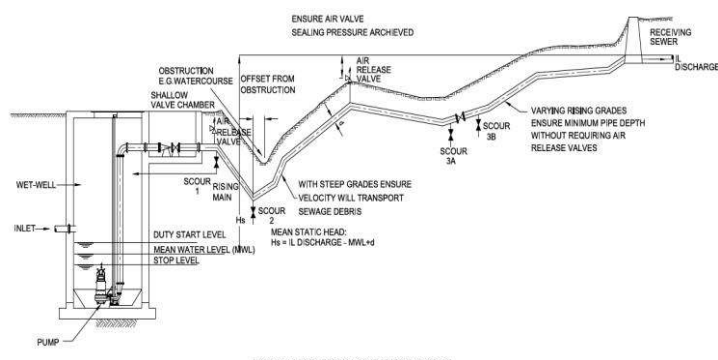
The updated Sydney Water Sewage Pumping Station Code improves the resilience and reliability of new sewage pumping stations and pressure mains. It draws on lessons from incidents, audits, operational experience and stakeholder feedback. The Code provides practical, risk-based requirements for design, construction, operation, maintenance and contingency planning. This article explains how consistent standards support safer work, reduce environmental and service risks, and help critical infrastructure withstand disruptions and recover quickly.

### Why sewage pumping stations matter

Sewage pumping stations (SPSs) keep wastewater moving where gravity alone cannot carry it through the sewer network. They collect sewage and pump it through a pressure main, also known as a rising main, towards another sewer or a treatment plant.

Sydney Water owns and operates about 700 SPSs across its network, making their dependable operation essential to protecting the environment, communities and continuity of service.

A failure at an SPS or its pressure main can quickly become more than an asset problem. It can harm the environment, disrupt operations, affect communities and weaken organisational trust.



Typical SPS and Pressure main long section

### Learning from incidents and audits

Recent high-consequence incidents and an environmental audit highlighted gaps in earlier guidance, particularly for pressure-main resilience, redundancy, contingency planning, and designing to reduce failure risk. A key recommendation from the audit called for new SPS and pressure main design guidance to be published.

The updated Sewage Pumping Station Code of Australia (WSA 04), Sydney Water Edition 2026 responds by bringing current SPS and pressure-main requirements into one code.

### Turning lessons into practical requirements

This matters because standards do more than set compliance expectations. They convert lessons from incidents, audits, operational experience and stakeholder feedback into practical requirements that can be applied consistently to future projects, and be used as a basis for risk assessment of existing SPSs.

### Strengthening reliability and resilience

The updated code strengthens both reliability and resilience. Reliability means assets perform as intended in normal service. Resilience means preventing failures where practicable, limiting their consequences and restoring service efficiently when they occur.

### Overall reliability and resilience model

Taken together, the Code establishes six complementary defence layers.

## SIX DEFENCE LAYERS

A layered approach to reliability and resilience for sewage pumping stations



**STRONGER TOGETHER:** No single measure is enough on its own. These six defence layers work together to protect the environment, communities and continuity of service.

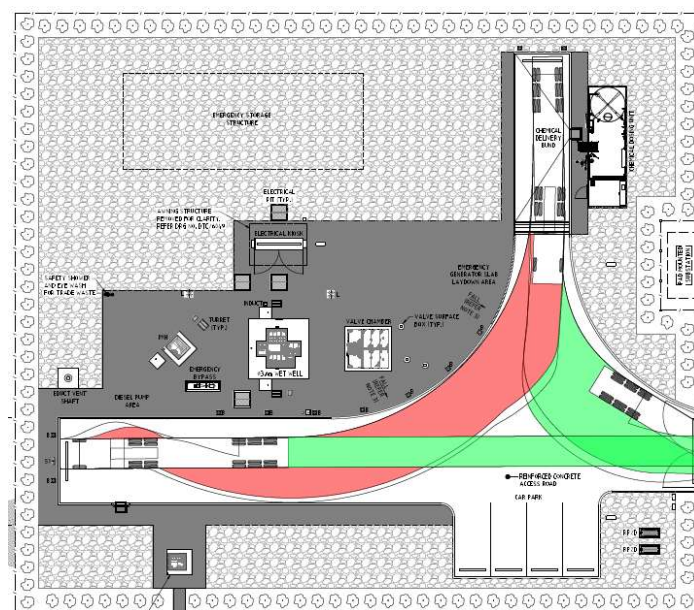
Importantly, the code promotes risk-based choices rather than a single standard solution. Contingency planning considers how flows can be managed if a pressure main is unavailable, using options such as tankering, transfer to another part of the network, temporary pumping, emergency storage or duplication.

## Balancing performance, cost and risk

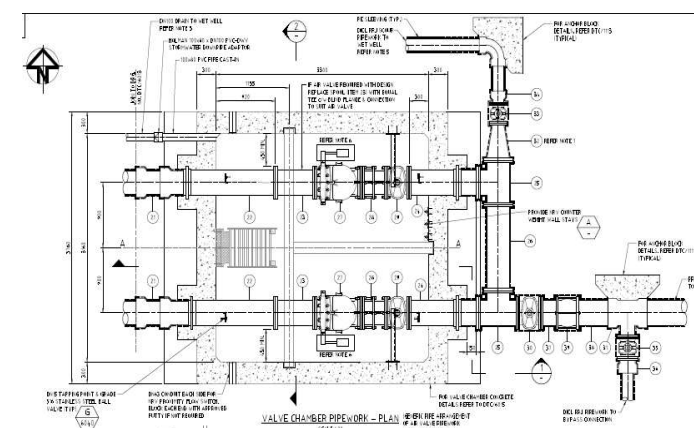
Not every SPS needs every measure. The right combination depends on its criticality, failure consequences and whole-of-life cost. By balancing measures that prevent failure, maintain service, detect problems and support recovery, projects can deliver reliable, resilient infrastructure without unnecessary investment.

A common standard gives planners, designers, delivery teams, operators and decision-makers a shared basis for transparent, repeatable decisions. It connects strategy with frontline delivery and strengthens accountability without implying that every failure can be eliminated.

The greatest value of standards is realised before an incident occurs: when clear, practical requirements help us design, operate and maintain infrastructure that is ready to withstand disruption and recover quickly.



### SPS site layout (DTC 6003)



## SPS valve chamber (DTC 6014)

## Standards, Judgement and Risk: Finding the Right Solution for Hornsby Heights

Engineering standards provide the foundation for safe and consistent decision-making, but achieving the best outcome sometimes requires more than strict compliance. This case study from Hornsby Heights Treatment Plant demonstrates how engineering judgement, risk assessment and operational controls were used to identify a safe, practical and cost-effective alternative to major capital expenditure.

### Standards are the starting point

Engineering standards provide a trusted baseline for safe, consistent decision-making. However, they cannot anticipate every asset, operating environment or project need. Sometimes, applying a standard without considering the specific circumstances can lead to a solution that is safe, but unnecessarily costly.

The prestressed concrete access bridge at Hornsby Heights Treatment Plant provides a useful example. The bridge was originally designed for vehicles weighing up to 33 tonnes with the usual safety margins. A project team later needed vehicles weighing up to 44 tonnes to cross it. One proposal recommended building a new bridge at a cost of about \$1 million.



**Existing bridge crossing**

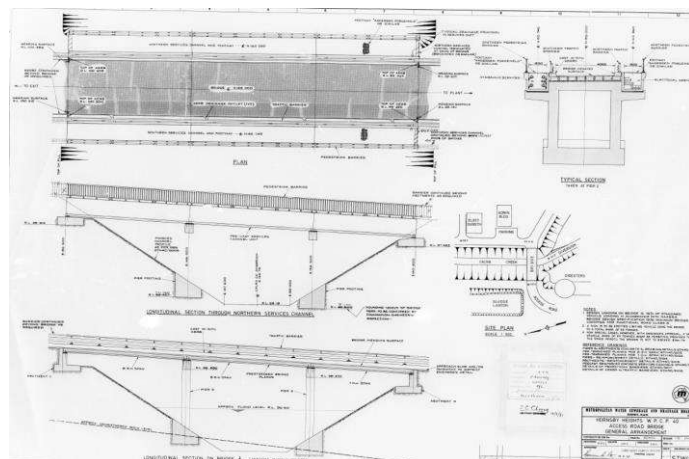
### The Hornsby Heights Case Study

Rather than accepting that proposal without further review, Sydney Water's structural engineering team inspected the bridge, reviewed the available drawings and carried out a detailed structural assessment. The assessment found that heavier vehicles could use the existing bridge, provided strict controls were put in place.

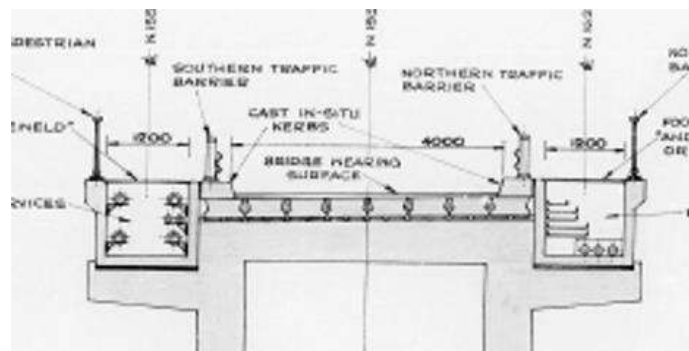
These controls included:

- Installing a continuous steel road plate
- Restricting traffic lane width
- Limiting vehicle configurations to TfNSW requirements
- Limiting axle loads and gross vehicular mass to 44 tonnes
- Restricting vehicle speed to 10 km/h.
- Measures to prevent harsh braking
- Requirements for monitoring and inspection

This was possible because the bridge is within a controlled treatment plant. Heavy vehicle movements are infrequent and can be planned and supervised. This is very different from a public road bridge, where vehicle movements are continuous and difficult to control.



**Bridge general arrangement**



**Bridge typical section**

### Delivering Better Value

The case also demonstrates the value of involving the Standards Engineering team early. By combining asset knowledge, first-principles assessment and operational input, the team identified a safe and practical alternative to major capital expenditure.

### Balancing Performance, Cost and Risk

Standards should be our starting point, not a substitute for engineering judgement. Where standard requirements do not provide a cost-effective solution, the Deviation from Standard Procedure offers a structured way to assess alternatives, manage risk and deliver better value for customers.

## From Project Deviation to Standards Improvement

### From deviation to improvement

A recent deviation request has led to an important improvement in Sydney Water's reservoir design requirements. The outcome demonstrates how constructive feedback from project teams can challenge established requirements, strengthen engineering standards and deliver long-term value across future projects.

### Challenging an existing requirement

During the design of a reservoir roof platform, the project team submitted a deviation against the requirement to design platform areas for a uniformly distributed live load of 4 kPa. The team noted that relevant Australian Standards, other Sydney Water standards and some previous reservoir projects had previously adopted a live load of 2.5 kPa. This raised a reasonable question about whether the higher loading requirement remained necessary for the platform's intended use.

### A collaborative, evidence-based review

The deviation prompted a review involving engineering, operations and maintenance stakeholders. The assessment considered the intended use of reservoir roof platforms and the loading conditions they are expected to experience throughout their service life. The review confirmed that reservoir roof platforms are not intended for equipment storage or other activities requiring a 4 kPa live load.

### Delivering more efficient designs

Following the review, the reservoir specification was updated to reduce the roof platform live load requirement from 4 kPa to 2.5 kPa. This enables more efficient structural designs, including potential reductions in the size and spacing of supporting aluminium purlins, while continuing to satisfy operational needs.

### Turning feedback into long-term value

The change is expected to reduce material use, construction costs and design effort across future reservoir projects. More broadly, it highlights the value of Sydney Water's deviation process as a structured pathway for continuous improvement.

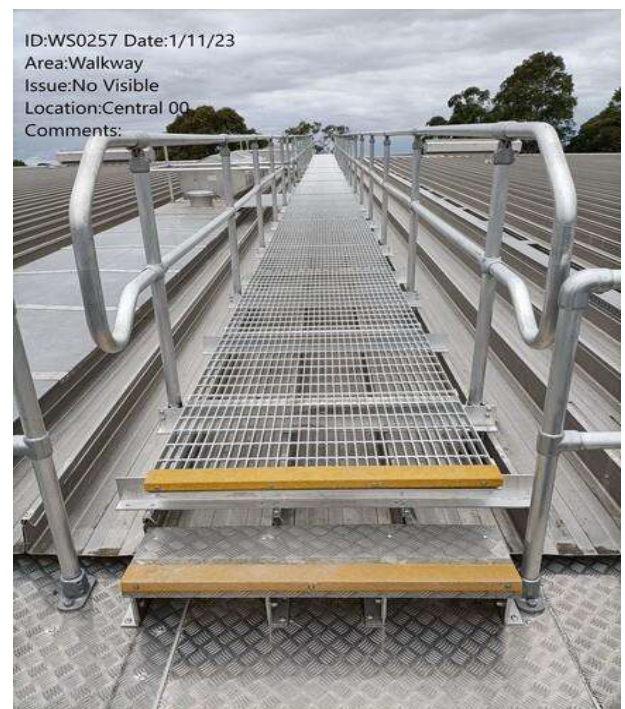
By encouraging project teams to question requirements, provide evidence and collaborate with relevant stakeholders, deviations can identify opportunities to better balance performance, cost and risk without compromising safety. This example shows that well-considered feedback does more than resolve a project issue. It helps keep engineering standards practical, current and aligned with operational needs.



Access with equipment hatch



Personnel access hatch with walkway



Cross walk entry

## Driving Innovation through Deviation from Standards

Deviation from standards unlock innovation to solve engineering problems ensuring appropriate justification, while balancing performance, cost and risk. The deviation below has led to changes in our standards so future projects can benefit from the time and cost savings.

### Enhanced Concrete Workability for Complex Water-Retaining Structures

#### Innovation During Construction of the Prospect Pre-Treatment Plant

During the construction of the Prospect Pre-Treatment Plant, Sydney Water's Standards Engineering team worked with Major Projects, designers, contractors, concrete suppliers and independent technical reviewers to address constructability challenges associated with heavily reinforced water-retaining structures.

#### The Challenge

Construction of the Densadeg units and Raw Water Pump Station walls involved:

- Tall wall pours
- Congested reinforcement
- Low-heat concrete requirements
- Increased risk of placement and compaction defects

#### The Solution

To improve constructability, the project adopted a higher-workability concrete mix with:

- Target slump: 150 mm
- Delivery range: 120-180 mm
- Workability achieved using AS 1478 compliant admixtures
- No increase in water content
- Water-cement ratio and durability requirements maintained

#### Technical Assessment

A comprehensive review and testing program confirmed that the proposed concrete:

- Met structural performance requirements
- Satisfied durability and shrinkage criteria
- Maintained long-term asset performance
- Supported improved constructability without compromising quality



**Workability of Concrete**

#### Benefit Delivered

- Improved concrete flow through congested reinforcement
- Enhanced placement and compaction in complex structures
- Reduced risk of honeycombing and voids
- Lower potential for rework and defect rectification
- Maintained compliance with Sydney Water standards

#### Key Outcome

This initiative demonstrates how Sydney Water's standards framework enables practical innovation during project delivery, supporting safer and more efficient construction while protecting the long-term durability and service life of critical water infrastructure assets.



**Honeycombing in concrete wall**

# Recent Releases

These are latest updates to our existing standards, along with newly introduced standards. There are links for accessing all our standards on the last page of this newsletter.

## Digital Engineering Standard - Appendix B Asset Information Requirements (AIR)

- Overall user experience improvements.
- Improvements to attribute naming for consistency in style and to accommodate software requirements.
- 10 new attributes added and 1 attribute removed.
- References to Autodesk ACC replaced with Autodesk Forma.

## Technical Specification – HV Installation

The updated Technical Specification – HV Installation incorporates stakeholder feedback, supplier engagement, lessons learned from recent projects, and industry benchmarking to improve clarity, consistency and usability.

### Key Improvements

- Aligned with Sydney Water's latest electrical and HV specifications.
- Simplified and streamlined through removal of duplicated requirements.
- Clearer HV cable jointing requirements and approval processes.
- Improved guidance for designers and contractors.
- Greater consistency across HV installations.
- Reduced technical queries, rework and delivery delays.

### Key Outcome

A clearer, more practical specification that supports consistent, high-quality HV installations and more efficient project delivery.

## Technical Specification – Asset Commissioning and Transition on to Operation Version 3

The updated specification has been transformed from a largely prescriptive document into a clearer, more outcome-focused standard, improving usability, flexibility and delivery efficiency across Sydney Water projects.

### Key Improvements

- **Simplified and easier to use** with clearer separation of requirements, guidance, templates and asset-specific information.
- **Scalable approach** that can be tailored to asset risk, complexity and project size while maintaining consistent outcomes.
- **Earlier planning focus** to address commissioning, operational readiness, asset data, cutover and system integration requirements sooner.
- **Smoother transition to operations** through clearer definition of commissioning, process proving and operational handover activities.
- **Greater flexibility** for service providers to use their own systems and processes while demonstrating compliance with required outcomes.

### Key Outcome

Version 3 supports more efficient project delivery, improved operational readiness and a smoother transition of assets into service, while maintaining robust governance and assurance requirements.



**Transforming Commissioning: Simpler, Scalable, Outcome-Focused**

## Technical Specification - Permanent Diesel Engine Driven Pump

The updated specification improves safety, maintainability, operational performance, and design consistency while aligning with current industry practices.

### Key Improvements

- Greater design flexibility through alignment with industry best practice.
- Improved equipment layout, operation and maintenance access.
- Enhanced safety and environmental protection measures.
- Better monitoring, control and system integration capabilities.
- Increased consistency through clearer, standardised requirements.
- Expanded supplier and equipment options.
- More efficient design, procurement and delivery outcomes.

### Key Outcome

A more practical and contemporary specification that improves safety, reliability and maintainability while supporting more efficient project delivery.

## Instrumentation and Control Standards – Water and Recycled Water Distribution Standards TOG\_TS02

The updated standard adopts new technologies and equipment to improve safety, simplify installation, and reduce project costs.

### Key Improvements

- Standardised use of Ethernet technology for pump control and monitoring.
- Safer reservoir level monitoring using ground-based pressure transmitters, reducing work at heights.
- Reduced cabling requirements, lowering installation costs and material usage.
- Clearer requirements based on extensive stakeholder feedback, reducing RFIs and improving design efficiency.

### Key Outcome

A safer, more efficient and cost-effective approach to instrumentation and control, supporting innovation and improved project delivery outcomes.

## Technical Specification – OCUs (V8)

The updated specification improves clarity, maintenance and operational performance while aligning with current industry practices and Sydney Water requirements.

### Key Improvements

- Simplified ventilation, fan and noise requirements.
- Improved maintenance and safety provisions.
- Greater alignment with industry Standards.
- Updated electrical and H<sub>2</sub>S monitoring requirements.

### Key Outcome

A simpler, more practical specification that improves operability, maintenance and consistency across OCU installations.

## Fibreglass Reinforced Plastic (FRP) Chemical Storage Tanks Technical Specification (V2)

The updated specification improves safety, constructability and design flexibility while aligning with industry best practice.

### Key Improvements

- Greater flexibility in design and testing requirements.
- Updated design criteria and resin system requirements.
- Improved safety through enhanced access provisions.
- Additional guidance for ferric chemical storage tanks.

### Key Outcome

A more flexible and practical specification that improves safety, constructability and consistency across FRP chemical storage tank installations.

## Technical Specification – Waste Gas Burner Installations (V8)

The updated specification improves safety, reliability and compliance through the adoption of an industry-standard burner management system.

### Key Improvements

- Enhanced safety and regulatory compliance.
- Improved reliability and reduced shutdowns.
- Simpler burner control and gas train design.
- Stronger hazardous area certification requirements.

### Key Outcome

A safer and more reliable standard that aligns with industry best practice.

## WSA 04 – Sewage Pumping Station Code of Australia Sydney Water Edition 2026

The updated code aligns with the latest national WSA 04 requirements and strengthens Sydney Water's approach to safety, resilience and operational performance.

### Key Improvements

- Simplified and streamlined requirements.
- Improved safety and maintenance access.
- Enhanced pressure main resilience and bypass arrangements.
- Better wet weather flow management.
- Greater operational flexibility during emergency events.

### Key Outcome

A more resilient and user-friendly code that improves safety, reliability and operational continuity for sewage pumping stations.



Construction of Northmead SP1220 – Capacity 840 l/s



Marsden Park SP1173 wet well – Capacity 330 l/s

## SS208 and SS210 Specifications Updated

Sydney Water has released revised editions of SS208 – Rehabilitation and Corrosion Protection of Wastewater Assets using Calcium Aluminate Cement Mortar and SS210 – Corrosion Protection and Rehabilitation of Maintenance Holes.

### Key Update

Minor grammatical, formatting and editorial improvements, with no changes to technical requirements, specifications or processes.

### Key Outcome

The updates improve document clarity and usability while maintaining existing technical requirements and industry practices.

## Implementing new standards

### In-flight projects

When new or updated engineering standards are published, they apply to projects commenced after the publication date. There is no requirement to apply them retrospectively.

Where changes are driven by regulation or other critical risk, they may need to be applied to in-flight projects – that would be a special case with dedicated communication.

Adopting new standards early can be beneficial where they offer streamlined requirements that reduce costs or other benefits. Project managers have the discretion to apply new requirements to in-flight projects where they see benefit. In these circumstances, the Sydney Water Project Manager will issue an instruction.

Look out for communication material such as 'Standards Alerts' that will outline benefits and other implications of the new or updated standard to help you make an informed decision.

### Existing assets

When upgrading existing assets, full compliance to current standards may not be practical or cost-effective. Instead, a value engineering and risk-based approach should be adopted to determine the optimal upgrade scope—balancing performance, cost, and risk.

Standards apply to construction of new assets and do not automatically trigger upgrades to existing assets.

New and updated standards are being developed to support you in delivery of our capital program, meeting our customer outcomes and to help achieve our commitment to achieve net zero carbon emissions.

## Standards Nearing Completion

The following standards will be released over the next 3 months.

- Pressure Reducing Valve DTC Checklist
- Technical Specification – Civil
- Technical Specification – Permanent Gas Engine Driven Pump
- Guidelines – Building Over and Adjacent to Sydney Water assets
- Specialist Engineering Assessment (SEA) Procedure
- Technical Specification - Technical requirements and work instruction for Minor Works (Sewer)
- Sydney Water Management Specification
- Sydney Water Technical Guideline - Treatment Plant Hydraulics
- Technical Specification Solar PV
- Inlet screen design guidelines
- Engineering Competency Standard

## Upcoming Standards Development

We are commencing work on the following standards soon. If you wish to contribute to development of these standards, please email [standards@sydneywater.com.au](mailto:standards@sydneywater.com.au).

- Electrical Substation Control and Monitoring Guidelines
- Water Pumping Station Design Specification
- Sydney Water Edition of the Sewerage Code of Australia (WSA-02)
- SPS DTC Drawings



**Engineering Standards Development**

## Accessing Sydney Water Standards

All our standards and alerts are available to our staff through our [iConnect](#) page.

For our design and delivery partners, they are available through [SW Delivery Portal](#).

For public users, our standards that do not contain sensitive information are available for free through our [website](#). Past Standards Alerts and newsletters can also be found on our website.

If you cannot find a standard that you need please reach out to us through our standards [inbox](#).

## Accessing WSAA Codes

WSAA publishes Codes of Practice, which include Sydney Water versions. These are available through their website.

Sydney Water has purchased access for our staff. These documents are available through the links below.

Instructions for setting up an account and accessing WSAA codes is available here: [Welcome to WSAA's New Website: Easy steps to set up your account](#)

- [WSAA Codes](#)
- [Sydney Water WSAA Codes](#)

## Contact Us

[standards@sydneywater.com.au](mailto:standards@sydneywater.com.au) is back!

Please use this email address if you have any feedback or general queries. Keep telling us what works and where friction remains.

Providing feedback on our engineering standards is key to ensuring they meet user needs and are continuously improved. We welcome constructive feedback at any time.

For general Sydney Water enquiries please follow this [link](#). All project enquiries should be made through your project manager.