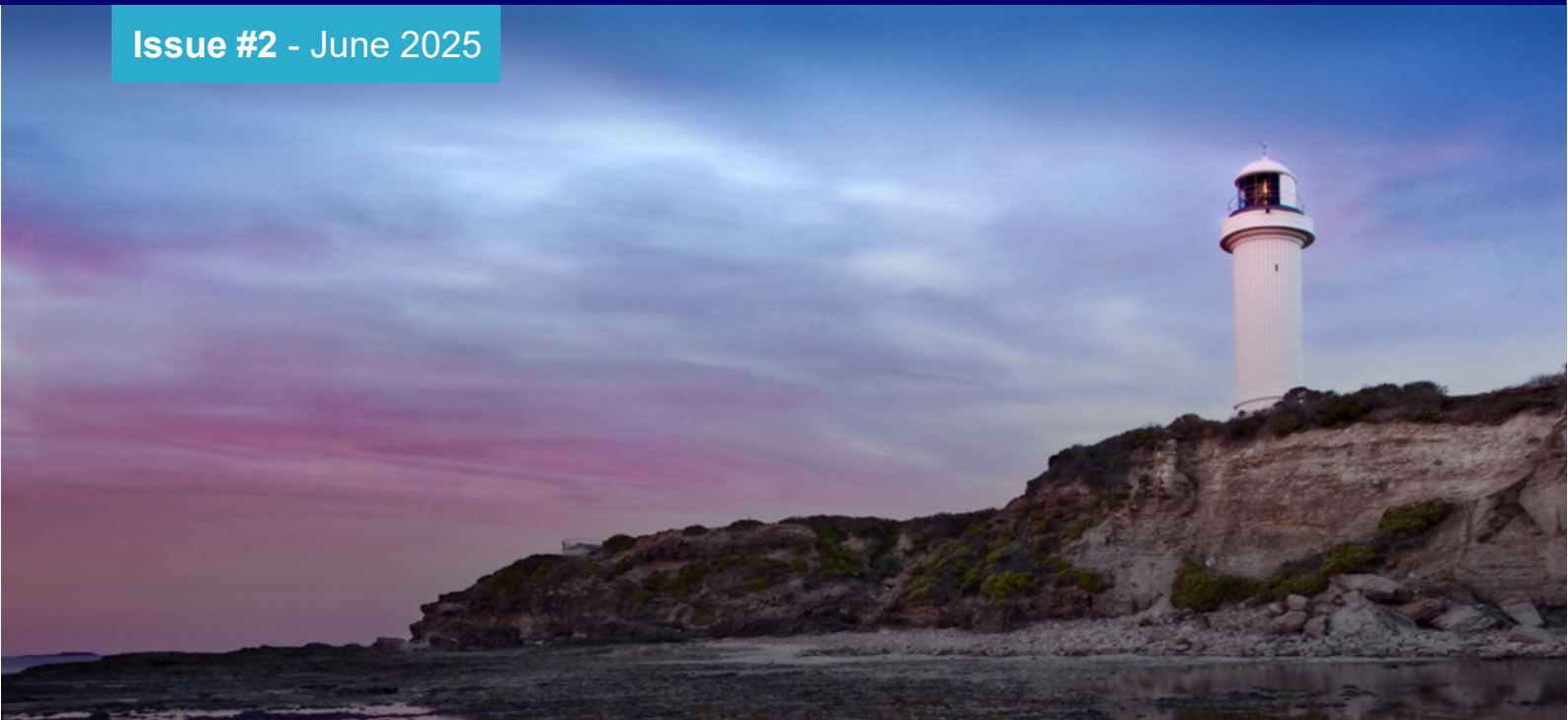


Issue #2 - June 2025



Welcome!

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

This edition offers valuable information on how our standards are evolving to meet user needs, support capital delivery, and align with our strategic goals—including sustainability and net-zero commitments.

Inside, you'll find highlights from recent improvement initiatives, new and updated standards, and collaborative efforts across the industry.

We're committed to have an integrated suite of standards that are easy to use, responsive to our evolving needs, and enable innovation.

Here's what's inside:

News Stories [p 2](#)

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Standards Engineering team transition

Improving standards and user experience

What?

We listened to our users and stakeholders and identified key areas to improve our standards. Together we developed a priority list of improvement actions to deliver.

We have developed a vision for our standards.

We also need to manage our existing standards: over 30% of our standards are not current.

So What?

Standards Engineering are shifting priorities to focus on delivering improvement projects and managing our standards – changing the way we provide advice.

Design Development: focused on design brief scoping and standardisation. Design reviews done by Design Partners.

Major Projects: focused on standardisation. Design reviews done by Technical Advisors (TAs).

Growth & Development: focused on advice for Engineering Partners. Design reviews done by the Engineering Partners.

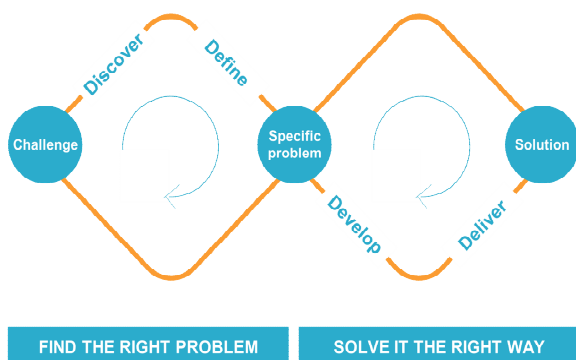
Advice for other areas limited to high-risk activities, requiring other areas to rely more heavily on Engineering Services Panel.

Now What?

Improvement projects have resources assigned (leads and support) targeting completion by April 2026.

Project leads may reach out for input or feedback on the improvement projects as they progress.

Project delivery teams to focus on high-risk items when considering engaging our team.



Our Vision

We now have a clear, user-informed vision—one that puts usability, responsiveness, and value at the heart of our standards

- We have an integrated suite of standards that are easy to use, responsive to our evolving needs, and enable innovation.
- We have key performance indicators that demonstrate the value our standards provide to drive time & cost improvements for our capital program.

This vision sets the foundation for continuous improvement, ensuring our standards evolve with user needs and continue to deliver value.

Improvement initiatives

Following extensive user research, a series of collaborative workshops and prioritisation sessions brought together users, standards authors, and stakeholders to shape the path forward.

The team has identified and prioritised 10 key initiatives aimed at delivering practical, user-focused improvements to our engineering standards, as outlined below.

- User information & feedback sessions
- Support & guidance material
- Frequent updates to standards
- Online feedback forms
- Streamline standards management at Sydney Water with AI proof of concept
- Map Engineering Standards
- Standards Blueprint
- Standards review and redraft
- Performance measures & governance group
- Performance based specifications for certain standards

As we move forward, the team is now focused on finalising the roadmap and detailed project plans to bring these improvement initiatives to life.

Continued engagement with users and stakeholders will be essential to ensure the solutions we deliver are practical and effective.

Further updates and opportunities to get involved will be shared soon—watch this space as we take the next steps toward transforming our engineering standards for the future

SW hosts WSAA Conference: Facilitating industry standardisation

The Standards Engineering team recently hosted delegates from Australian water utilities, industry bodies, and suppliers at the 2025 Water Services Association of Australia (WSAA) Codes and Appraisals Reference Group (CARG) conference, held at Sydney Water's Parramatta office in March.

This annual conference brings together key technical stakeholders from water utilities across Australia to collaborate on industry standards and product appraisals, as well as share knowledge on best practices for design and construction.

Some of the topics of discussion across the two-day conference included:

- Fibre Reinforced Plastic (FRP) maintenance holes and wet wells
- Trenchless rehabilitation of existing sewers by lining
- Pipe material selection in contaminated soils
- Enhancing standards to deliver sustainable solutions
- Engineering standards performance and improvement initiatives
- Design quality management

The conference was well received by attendees and helped establish priorities for WSAA's program of works over the next 12 months.

CARG members will continue to work together and meet virtually throughout the year to progress the identified improvements to WSAA's suite of codes, guidelines, and product specifications.

In addition to regular updates to existing WSAA standards and specifications (e.g. the water and sewer codes), some key initiatives for the CARG include developing:

- Product specifications for sewer lining technologies.
- Industry standards for Fibre Reinforced Polymer (FRP) Maintenance Holes (MHs).
- Industry guidelines for pipe material selection in contaminated soils.

Further standards are available on our website [here](#):

Sydney Water's involvement with the WSAA CARG helps to improve standardisation across the industry. This makes it easier for designers, contractors, and suppliers to work with us by minimising the need for bespoke approaches to delivering assets for Sydney Water, leading to reductions in delivery cost and time.



Driving sustainable engineering at Sydney Water

Sydney Water is committed to integrating circular economy principles and achieving net-zero carbon emissions. This commitment includes net-zero emissions for its operations by 2030 and its entire supply chain by 2040. These goals align with customer ambitions and global sustainability objectives.

To help achieve these aims, the Engineering Modernisation Team is looking at ways to embed sustainability and circular economy principles into its engineering specifications.

This is being done through a diverse collaborative working group across various businesses to identify and implement areas where engineering standards can contribute to these corporate sustainability commitments.

Representatives include Major Project Delivery, Strategy & Sustainability, Environment & Heritage, Planning, Procurement and Infrastructure Investment. Key contributors within these groups include Jean Davis, Elliot Cichero, Lawrie Jeavons, Glenda Stowell, Sheila Anderson, Chris Williams and Aidan Tooher.

Moving forward, we will continue to leverage this collaborative platform to:

- Optimize resource utilization (materials, energy, water) through recycled and renewable resources.
- Minimize waste and emissions via reuse, recycling, and low-carbon practices.
- Reduce lifecycle costs by prioritizing durability and adaptability.

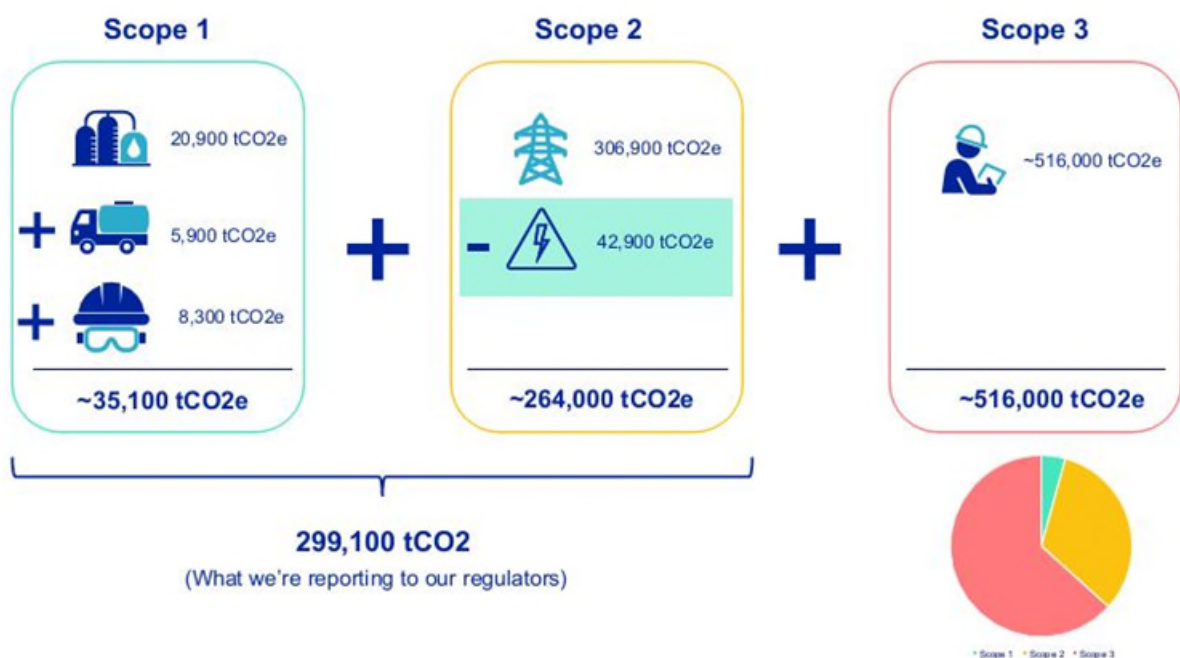
Key initiatives include:

- use of recycled material in asphalt;
- use of glass-sand material in concrete;
- reuse of Bringelly Shale through lime stabilisation;
- partnering (or collaborating) with SmartCrete to advance low-carbon concrete initiatives; and
- recycled water use in concrete and development of circular design guidelines for the built environment.

This proactive approach not only supports Sydney Water's net-zero commitments but also reinforces our alignment with global sustainability frameworks, enhancing resilience and promoting integrated solutions across our operations.

Watch this space for further updates and initiatives. If you would like to be part of this initiative, please contact farzad.moghaddam@sydneywater.com.au.

Total emissions



Scope of Emissions across Sydney Water

Reuse of Bringelly Shale

Bringelly Shale, a common geological formation across Western Sydney, has long posed challenges in construction due to its poor long-term performance. As a result, Sydney Water's specifications have traditionally excluded it from use as Select Fill. However, in projects requiring excavation and backfill—such as pipe laying—discarding this material and importing new fill is both costly and environmentally inefficient.

To address this, Sydney Water trialled a lime stabilisation technique to enable the reuse of Bringelly Shale as backfill. This initiative was piloted at the SP1211 Interim Pump Station/IMH site, part of the Austral Leppington Project. During construction, the platform level was reduced by approximately 3 metres, and the excavated shale was stockpiled on site.

Faced with the choice between reusing the shale or importing Select Fill, the Engineering Modernisation team was approached by WRDT to assess the feasibility of reuse. Recognising the potential for long-term issues, we proposed a series of laboratory trials to test various lime dosages. The optimal dosage was then applied on site—with excellent results. Post-construction monitoring showed no measurable settlement, validating the approach.



Hydrated Lime for mixing with excavated material

This success was shared with the Upper South Creek Network (USCN) project team, who concluded that even under conservative estimates, reusing on-site soils could lead to substantial cost savings. Building on this momentum, we are now collaborating with our USCN partners to develop a Bringelly Shale Reuse Guide, which will outline best practices for treatment and reuse. This initiative marks a significant step toward more sustainable and cost-effective infrastructure delivery—turning a long-standing challenge into an opportunity for innovation.



Spreading and mixing of Lime with Bringelly Shale



Excavation in Bringelly Shale at SP1211

Recent Releases

We've outlined the 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.

Design guideline for minimising odour-causing turbulence in wastewater networks (D0002356)

This is a new guideline that was prepared in response to recommendations from the EPA.

- The guideline provides best practice design principles to help minimise turbulence, managing odour and associated risks, consolidating requirements from various existing industry standards into a single reference document for ease of use.
- To assist designers to better understand the requirements, is also includes an explanation of relevant hydraulic principles.

Technical Specification – Arc Flash (D0002263)

This update is in response instances where different interpretations of the requirements have led to delay and rework:

Reduce project time and cost by providing clarity on which of two arc flash calculation methods should be used (IEEE 1854 or Ralph Lee), specifically addressing,

- What inputs are required
- Assumptions and use reference values
- How to manage the results derived from different calculation methods.

Minimise project effort spent by providing clarity on arc flash mitigation requirements. Updates focus on the protective devices managed by the Distribution Network Service Provider (not Sydney Water)

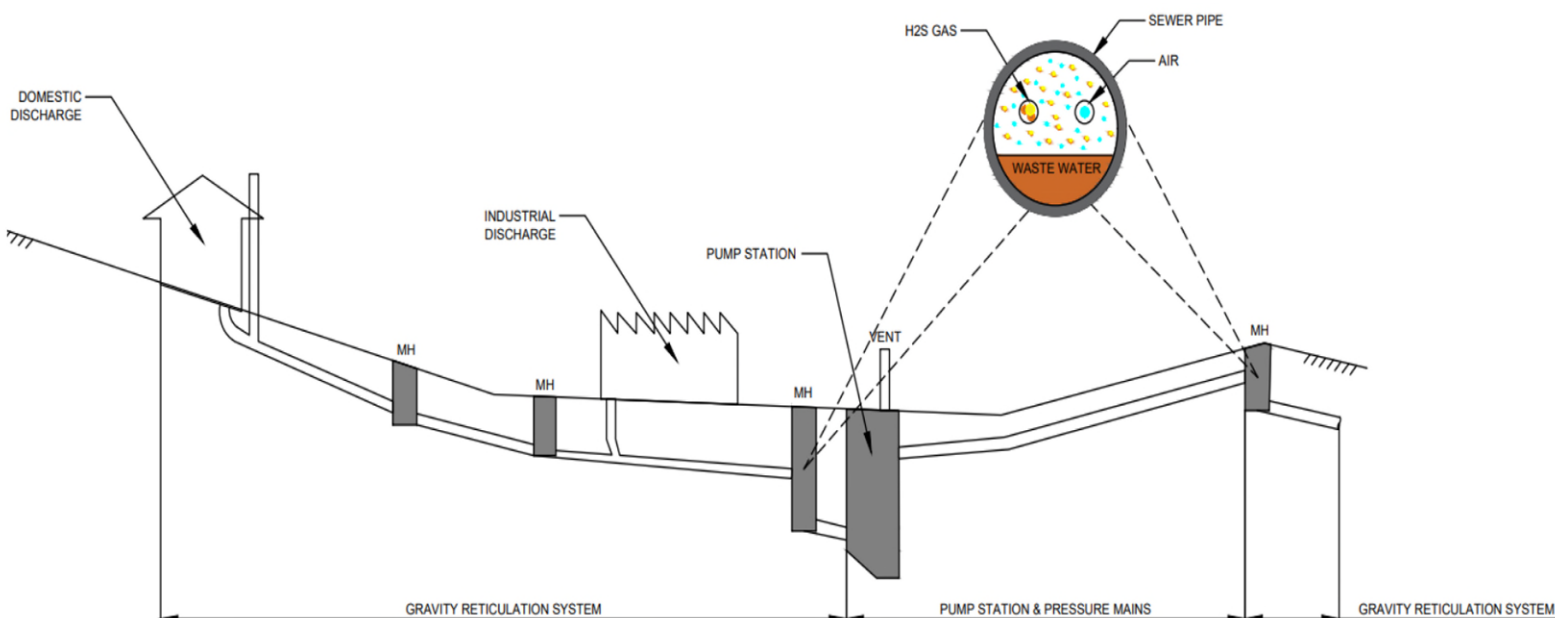


Diagram of typical wastewater network and H2S production

Recent Releases

Technical Specification - Batteries and Chargers for HV Installations (DOC0008)

The key impacts of this update are:

- Environmental resilience: Enhanced requirements ensure reliable operation in extreme temperatures and humidity, improving equipment durability.
- Battery and rectifier optimisation: Updated battery sizing (IEEE485) and introduced modular rectifiers with load-sharing and hot-swapping for improved reliability and maintenance.

High-Rate Clarification Guidelines (D0002440)

This new guideline focuses on the following aspects of design:

- Principles, performance standards, and safety considerations.
- Criteria for technology selection and vendor evaluation.
- Case Study summarising key outcomes from the Orchard Hills WFP pilot trial.

Wet Well SPS Design checklist (Civil, Mechanical & Structural) (D0001217)

Key changes from the previous version include:

- Improved project deliverables through inclusion of structural design in the checklist.
- Some items have been further detailed to align with the referenced Codes and Standards.
- The document has been reformatted to align with Sydney Water style guides.

Chemical Dosing Specification (ACP0002)

The updated Specification represents a summary of already accepted and proven design solutions and lessons learnt on recently completed similar projects. Its benefits include:

- Saving over the next 5 years in reduced CAPEX (\$40k) and reduced OPEX (\$84k)
- Update RTU connection, power supply requirements and telecommunications requirements.

Technical Specification – HV Power Factor Correction (DOC0011)

Key impacts of this update were to:

- Reduce project time by aligning with the recently published HV switchgear specification in terms of interfaces between PFC and Switchgear.
- Improvements to customer interface by updating surface preparation and coating requirements to align with SW requirements.

Technical Specification – HV Electrical Cables V4 (DOC0009)

Key changes from the previous version include:

- Remove the reference that implied the use of paper insulated cable was acceptable.
- Set the preference for all HV cable sheaths to be XLPE.
- Prohibit direct buried HV cable installations.
- Alignment with earthing and lightning spec on screen bonding requirements.

Recent Releases

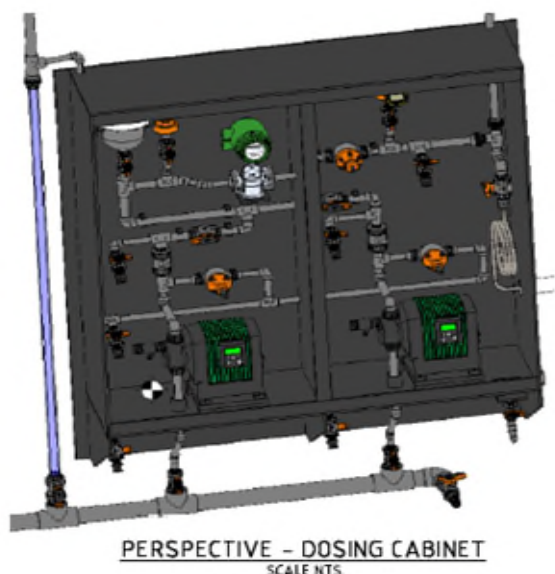
CDU and RCP Deemed to Comply Drawings Update (DTC-7002, 7008, 7021, 7023)

[DTC drawings](#) provide a pre-approved solution that streamlines and reduces the cost of design and construction.

These drawing sets cover a range of common linear asset types and have been updated to:

- Better align to current standards and specifications, industry practices.
- Include reference to newly available products and market changes.

Please note DTC drawings are subject [to terms and conditions of use](#).



Technical Specification – Permanent Diesel Engine Driven Generator – version 3 (D0002061)

The revised document improves cost and delivery timeframes by relaxing Sydney Water's requirements for witness testing.

The Specification is aligned with industry best practice and recently installed diesel generators.

Safety in Design Procedure (D0000653)

Updates provide the following key benefits to users:

- Alignment of requirements to remove additional time or cost to projects.
- All relevant safety requirements are considered and addressed during the design phases of a project.
- Project safety risks are consistently identified and mitigated during design so far as is reasonably practicable.

Water and Wastewater Network DTC Drawings Update

Key changes from the previous versions include:

- Corrections to soil types in the table on DTC-1115
- Significant amendments to reinforcement detailing for precast concrete MH roof slabs on DTC-2223 to address issues with bar congestion and clashes.

Odour Control Unit Specification (ACP0004 - Version 7)

This specification sets out design and construction requirements for a standard Odour Control Unit (OCU) located both in the sewer network and treatment plants.

It has been updated in response to:

- Deviations from standard relating to damper material.
- Findings from the Odour PRP – Odour Best Practice Review.
- Feedback from operations and projects.

Coming Soon

The Engineering Modernisation standards team is working on new and updated standards to ensure they support you in delivery of our capital program, meeting our customer outcomes and to help achieve our commitment to achieve net carbon zero emissions.

If you wish to contribute to development of these standards or provide feedback at any time, please email standards@sydneywater.com.au.

Q3 2025

- Approved supplier concrete mix register
- Earthing and Lightning Technical Specification
- HV Batteries and Charger Technical Specification
- Power Transformer Technical Specification
- WRRF Operational Requirements Specification
- Rechlorination Plant Specification
- Specialist Engineering Assessment Procedure
- Building Over or Adjacent to our Assets Specifications
- Building Design Specification
- Fibre Polymer Composite Specification
- Technical Specification - Reticulation Sewers in Basements

Q4 2025

- Sewer Lining Rehabilitation Specifications
- Vent Shaft DTC's
- Sydney Water Edition of the Sewage Pumping Station Code of Australia (WSA-04)

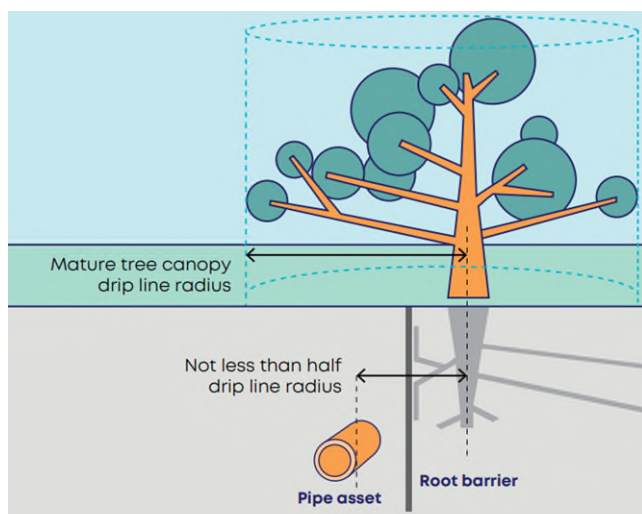


Diagram from the Building Over and Adjacent to our Assets Specification

Implementing new standards

When new or updated engineering standards are published, they typically apply to construction of new assets. Unless required by regulation or other critical risk, existing assets should not be automatically upgraded to meet new standards.

In cases where asset upgrades are necessary, full compliance to modern 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.

Timing

New or updated standards generally apply only to projects that begin after the standard's publication date. There is no need to apply them retrospectively. However, in exceptional cases—such as those involving critical safety risks—early adoption may be advised.

There can also be upsides to adopting new standards early, especially if they offer streamlined requirements that reduce costs or other benefits. Ultimately, the decision to apply a new standard to an existing project lies with the Project Manager, who must weigh project-specific risks and contractual obligations.

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.

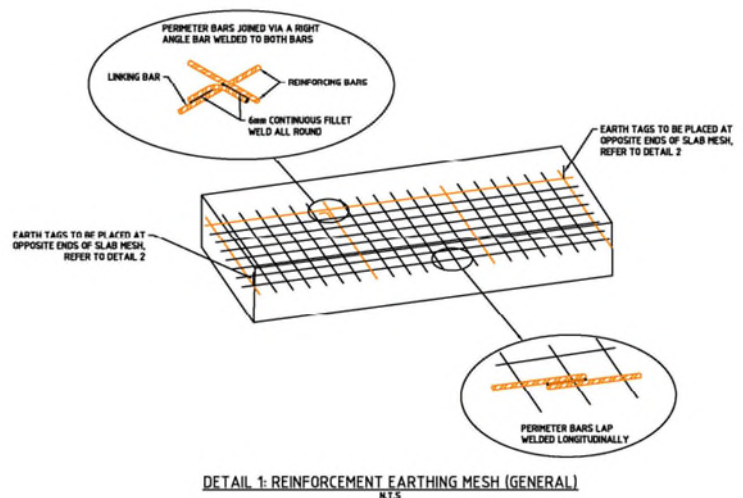


Diagram from the Earthing and Lightning Technical Specification

Connect With Us

Accessing Sydney Water Standards

Our standards 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 are available for free through our [website](#)

Past newsletters and Standards Alerts can also be found via those links.

Accessing WSAA Codes

WSAA publishes Codes of Practice, which include Sydney Water versions.

These are available through their website.

[WSAA Codes](#)

[Sydney Water WSAA Codes](#)

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

WSAA have also recently updated their process for registration to access their codes. Instructions for setting up an account to access standards is available here: [Welcome to WSAA's New Website: Easy steps to set up your account](#)

Contact Us

standards@sydneywater.com.au is back!

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.

Please use this email address if you have any feedback or general queries. For general Sydney Water enquiries please follow this [link](#). All project enquiries should be made through your project manager.

Introducing the Standards Governance Group

We're pleased to introduce the newly established Standards Governance Group, a key initiative to strengthen how we manage, improve, and apply engineering standards across the business. With over 110 standards currently maintained by various teams, the group will provide centralised oversight to ensure consistency, clarity, and alignment with Sydney Water's strategic goals.

The group's purpose is to oversee the development, implementation, and continuous improvement of engineering standards. Its objectives include supporting capital delivery, enabling innovation, embedding best-practice asset management, and aligning standards with customer outcomes and sustainability goals. By fostering collaboration and providing a forum for resolving issues, the group will help ensure standards are practical, effective, and future-ready.

This initiative follows extensive user research and co-design workshops, which identified key challenges such as inconsistent governance, difficulty interpreting standards, and barriers to innovation. The Governance Group will address these through a structured roadmap, performance measures, and user engagement.

Meeting every two months, the group will report progress and recommendations to Heads of Business. This marks a significant step toward a more agile, user-focused approach to standards that supports better project outcomes and continuous improvement.