Alert #2 March 2025 – D0002356 – Design guideline for minimising odour-causing turbulence in wastewater networks

Standards Alert

A new guideline for minimising odour-causing turbulence in wastewater networks is now available.

This guideline provides designers with:

- Best practice design principles to minimise turbulence in our wastewater networks to limit odour generation, protect assets from long-term corrosion and improve safety.
- A consolidation of best practice design requirements from various existing industry standards into a single reference document for ease of use.
- Explanation of hydraulic principles to help designers better understand our requirements, with discussion on the mechanisms of H₂S, odour generation and Sydney Water's requirements for managing turbulence and odour.

Why has the guideline been created?

Odour issues in wastewater systems are exacerbated by turbulence in wastewater flow. Designing systems to minimise turbulence is complex, with requirements and guidance spread across various Sydney Water standards.

As part of its commitment to the Environmental Protection Agency (EPA) Pollution Reduction Program (PRP), Sydney Water has created this guideline to assist in design of wastewater systems that limit turbulence, odour generation, reduce corrosion of infrastructure and minimize potential health hazards.

What are the key features of this guideline?

This guideline is intended to be used as a supporting document to help designers better understand odour mitigation requirements that are nominated across various existing Sydney Water standards.

It emphasizes best practices for minimizing turbulence, managing odour and associated risks within wastewater networks. It outlines key principles for the effective design of network assets, such as pump stations and pipelines, to mitigate the release of odorous gases, particularly hydrogen sulphide (H_2S).

In broad terms, the document includes:

1. Overview of H₂S production mechanisms and the impact of turbulence in wastewater flow causing odour issues.





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- Risks and strategies Excess H₂S release leads to odour complaints, corrosion of wastewater infrastructure and potential health hazards. The guideline provides preventative and curative strategies to manage odour while ensuring asset longevity and regulatory compliance.
- Discussion of turbulence and its causes Turbulence is a primary driver of odour release, commonly occurring at maintenance holes, drop junctions, pumping stations inlets and pressure mains due to rapid velocity changes, hydraulic jumps and poor flow transitions.
- Specific turbulence mitigation measures Best practice design measures including smooth grading through maintenance holes, avoiding drops, minimising hydraulic jumps, using proper ventilation strategies and maintaining selfcleansing and slime stripping velocities.
- Benefits of reducing turbulence Implementing these principles reduces odourrelated complaints, improves operational efficiency, extends asset lifespan and enhances workplace health and safety.

When can I start using the new guideline?

You can start using this guideline right away.

This guide provides further insights regarding odour reduction and does not nominate any new or additional requirements. It is not intended to replace any existing Sydney Water standards and designers must comply with all relevant standards.

Where can I find the new guideline?

The guideline is available on <u>iConnect</u> (for SW staff), SW <u>Delivery Portal</u> (for SW contractors), and <u>SW website</u> (for developers, WSCs and other external users)

How can I provide feedback?

If you have any feedback on this design guideline, please contact the author by email at: <u>standards@sydneywater.com.au</u>.

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Please feel free to pass this alert onto others that may benefit.



