

## **The Rise of Performance Based Solutions (PBS) in Hydraulic Services Design**

In Queensland's fast-evolving construction landscape, hydraulic consultants are increasingly turning to performance based solutions to meet the growing demands of Architects and Developers. As building designs become more complex and innovative, traditional prescriptive approaches in accordance with Deemed to Satisfy (DtS) provisions in the Australian Standards often fall short in accommodating the vision of modern architecture. In parallel, shifting construction methodologies and the growing focus on cost and program efficiency are further driving the adoption of performance-based approaches.

### **What Are Performance Based Solutions?**

Performance based solutions are typically prepared for designs where definitions or descriptions in the standards are either; not covered, unclear or it can be proven that a more efficient design can be adopted. A PBS supports solutions that are tailored to meet or exceed the performance requirements of the NCC, focussing on outcomes in terms of safety, functionality, sustainability, and cost-efficiency. It is important to note that performance based solutions still need to meet the relevant performance requirements set out in the NCC.

Some examples of where a PBS may be required:

- Installation method – e.g. trenchless pipework outside the DtS provisions of AS/NZS 3500
- Alternative Plumbing systems – Supertube, siphonic stormwater systems
- Reduction in pipe size – when supported by appropriate evidence such as modelling or usage data
- Designs outside the scope of the standards – box gutter design over 16L/s
- Extended floor waste depths – e.g. where structural elements such as beams require deeper floor waste installations to achieve adequate drainage.

### **The Benefits of Performance Based Solutions**

A PBS offers a range of advantages that make it an increasingly valuable approach in modern plumbing projects. One of the key benefits is design flexibility. A PBS can allow hydraulic systems to be tailored to suit complex architectural layouts and site-specific constraints, enabling alignment with the broader design intent of a project.

This approach also fosters innovation by supporting the use of modern technologies, alternative materials, and system configurations that may not be recognised under traditional deemed-to-satisfy pathways. As a result, Consultants can deliver more efficient and forward-thinking outcomes.

Sustainability is another significant advantage. Performance based solutions often lead to improved environmental performance, allowing for smarter water use and greater efficiency that contribute to lower environmental impact.

PBS allow for highly customised, project specific solutions that better reflect the real-world demands of a site or client brief. While deviating from prescriptive standards, well-prepared performance based solutions still meet, and in many cases exceed the performance requirements of the NCC. When supported by strong technical justification, these solutions give both regulators and stakeholders confidence in the safety, functionality, and compliance of the final system.

## Risks and the Need for Caution

While a PBS allows innovation, it must be approached with caution. Poorly conceived or insufficiently supported solutions can result in non-compliance, safety concerns, costly rework and potential litigation.

Key risks include:

- Insufficient technical justification or documentation
- Lack of clarity on how performance requirements are achieved.
- Over-reliance on supplier claims without independent validation

To mitigate these risks, it's critical that performance based solutions are developed with a thorough understanding of the National Construction Code (NCC), supported by technical evidence, and peer-reviewed where necessary. Collaboration between Hydraulic consultants, Architects, Certifiers and Plumbing Contractors from the early design stages can also help ensure smoother approvals and robust outcomes.

**It is important to note that the PBS is valid as long as it continues to meet the relevant performance requirements of the NCC., There is no expiry date, however, the PBS must remain applicable to actual conditions and use of the building.**

To mitigate the risks involved, it's critical that a PBS is:

- Developed with a sound understanding of the NCC
- Backed by professional judgment, modelling, and/or verified performance data
- Peer-reviewed or validated through collaboration with authorities and Certifiers
- Clearly documented and communicated to all relevant stakeholders

## Conclusion

As architectural and construction demands in Queensland continue to evolve, the need for agile, forward-thinking plumbing designs is greater than ever. Performance based solutions provide the bridge between creative ambition and practical implementation, ensuring that projects meet both regulatory requirements and design intent. **Ideally, performance based solutions should be prepared in advance of construction and not as a reactive measure to resolve issues onsite.**

To truly succeed, these solutions must be developed with diligence, technical accuracy, and a commitment to compliance. A poorly executed PBS can carry significant risk, which is why a disciplined, collaborative, and well-documented approach is vital. A Performance Based Solution can unlock smarter solutions, enable better project outcomes, and support the continued advancement of the hydraulics industry.

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