Information Guide

PERFORMANCE SOLUTIONS FOR PLUMBING INSTALLATIONS

VICTORIAN BUILDING AUTHORITY
BUILDING CONFIDENCE

OBJECTIVE

This information is intended to provide guidance for plumbing practitioners on the procedures and documentation requirements for carrying out a Performance Solution.

PERFORMANCE REQUIREMENTS

The Plumbing Code of Australia (PCA), Volume 3 of the National Construction Code (NCC), is adopted by, and forms part of, the *Plumbing Regulations 2018* (the Regulations). The Performance Requirements of the Plumbing Code of Australia (PCA) can be achieved through:

1. Formulating a Performance Solution that complies with the Performance Requirements, or is demonstrated to be at least equivalent to the deemed-to-satisfy (DTS) provisions; or
2. Complying with the DTS provisions, such as the referenced Standard AS/NZS 3500 Plumbing and drainage suite and/or other relevant plumbing standards where applicable; or
3. A combination of the above.

WHAT IS A PERFORMANCE SOLUTION?

A **Performance Solution** is one of the three pathways to achieve compliance with the Performance Requirements of the PCA. Most plumbing installations use the DTS method, by following the requirements in the referenced Standards - such as the AS/NZS 3500 Plumbing and drainage suite. However, where a DTS method for a particular plumbing installation does not exist, or where a unique or site-specific solution is required/desired, then a Performance Solution approach may be used. A Performance Solution may be used for any design and must be developed prior to the commencement of installation.

PERFORMANCE SOLUTION OR PLUMBING MODIFICATION

The Victorian Building Authority (VBA) may modify the Regulations to not apply or apply with specified variations under Section 221ZZO of the *Building Act 1993* (see the VBA website for further information on how to apply for a modification). The VBA must be satisfied the plumbing regulation is inappropriate in the particular circumstances and that the modification is reasonable and not detrimental to the public interest. For example, the VBA may issue a modification declaration to an applicant declaring that a provision of the Regulations, the PCA or referenced standard does not apply, or applies with specified variations, to specified plumbing work.

In contrast, a Performance Solution is an alternative pathway for complying with the performance requirements of the PCA. A Performance Solution uses a non-DTS method to demonstrate compliance with the Performance Requirements specified within the PCA.

ADDITIONAL INFORMATION ON PERFORMANCE SOLUTIONS

As well as this information guide, there is additional guidance information including online videos and case studies available on the website of the Australian Building Codes Board (ABCB) at www.abcb.gov.au. Section A: Governing Requirements of the PCA also provides further information on the use of Performance Solutions. It is recommended that practitioners also consult these documents when considering or developing Performance Solutions.

RECOMMENDED PROCESS FOR DEVELOPING A PERFORMANCE SOLUTION

The following process outlines the key stages in the development of a Performance Solution. Steps 1 to 6 should be completed **before** the plumbing work is carried out. Steps 8 and 9 must be completed after the work is carried out.

1. Consult with key stakeholders including the building owner or owner's representative
2. Prepare a performance-based design brief
3. Carry out analysis
4. Undertake any necessary modelling or testing
5. Collate and evaluate results
6. Prepare a final report
7. Carry out the installation
8. Detail the Performance Solution on the compliance certificate
9. Copies of the documentation should be kept along with the compliance certificate by the practitioner and the property owner.

As the licensed plumbing practitioner is required to certify and sign off on the plumbing installation as part of the compliance certificate process, it is their responsibility to ensure the above requirements are met. The responsible plumbing practitioner may consider engaging one or more recognised experts to assist with some of the above requirements.

More detailed information on each of the steps for developing a Performance Solution is contained in Appendix 1.

ASSESSMENT METHODS

The PCA offers practitioners four methods (or any combinations of them) to determine whether a Performance Solution complies with the Performance Requirements. These are:

1. Evidence of the suitability in accordance with Part A5 that shows the use of a material, product, plumbing and drainage product, form of construction or design meets the relevant Performance Requirement.
2. Verifying compliance of the Performance Solution using the following:
    i. The verification methods provided in the PCA, or;
    ii. Other verification methods accepted by the VBA that shows compliance with the relevant Performance Requirements.

3. Comparing their solution with the DTS provisions contained in the PCA (this will likely require a comparison with provisions in the relevant Australian Standards).

   NOTE: Practitioners should be aware that they must provide suitable evidence to demonstrate the comparison.

4. The expert judgement of a person who has the qualifications and experience to determine whether an installation complies with all relevant Performance Requirements.

PERFORMANCE SOLUTIONS AND WATERMARK

Practitioners should note that a Performance Solution cannot be used to exempt a plumbing material or product from the WaterMark product certification scheme. That is, the plumbing product or material used in a Performance Solution must be WaterMark certified (where required by clause **A5.3: Evidence of suitability** of the PCA).

Where the plumbing product or material is not required to be WaterMark certified, a product or material is still required to demonstrate it is "fit for purpose".

PERFORMANCE SOLUTIONS AND INSURANCE

Current plumbing insurance provides for consumers to make a claim against the plumbing practitioner's insurance policy in a number of circumstances. As Performance Solutions may carry increased risk for the plumbing practitioner and/or consumer, it is important that any work carried out under this method complies with all relevant requirements under the plumbing regulatory framework. Failure to do so may affect the practitioner's insurance cover and/or premium.

It is recommended that plumbing practitioners consult their insurance company to confirm their insurance covers them for plumbing work carried out under a Performance Solution method.

RECOGNISED EXPERTS AND LIABILITY

In formulating a Performance Solution, practitioners may engage the services of appropriately qualified and relevant recognised experts to assist with the design. It is recommended that practitioners consider what forms of redress (e.g. civil, legal, others) they may have in the event that the advice relied upon from the recognised expert results in the Performance Solution failing to comply with the Performance Requirements (i.e. non-compliant plumbing work).

Under Victorian plumbing laws, a plumbing practitioner will be deemed responsible for the plumbing work and held liable for any Performance Solution failing to comply with the Performance Requirements (i.e. non-compliant plumbing installations), even if the work was installed on the basis of an expert judgement and/or advice from a *recognised expert*. i.e. a plumbing practitioner cannot transfer their liability to a third party even if the third party was relied upon as recognised experts.

In determining whether the persons/organisations engaged are adequately qualified and experienced to be recognised experts, the VBA recommends as a minimum the following tests:

1. Does the person/organisation have the relevant qualifications and experience to determine whether the proposed Performance Solution complies with the performance requirements?

2. What type of relevant qualifications and experience do they have? Is it in the same or similar area as that proposed for the Performance Solution?
3. Is the level of expertise consistent with the degree of complexity of the plumbing installation, site or building?

NOTE: The VBA does not make formal or individual determinations on who may be considered as a recognised expert due to the complexity and variability of each installation.

COMPLIANCE CERTIFICATES

The costs associated with the development of a Performance Solution must be factored into the total value of plumbing work when determining whether the work may trigger the need for the issue of a compliance certificate under section 221ZL of the *Building Act 1993*. Due to the anticipated time, costs, level of evidence required, and complexity associated with a Performance Solution, it is highly likely that the total cost alone of a proposed Performance Solution will exceed the threshold $750 required for issuing a compliance certificate, even before factoring in materials and labour costs associated with the installation.

Where a practitioner carries out work as a Performance Solution, this must be identified as such on the compliance certificate. This will identify the installation as being carried out under a Performance Solution approach (instead of the DTS approach) and allow the installation to be assessed differently when the installation is being audited, investigated by the VBA or accessed by other practitioners in the future. In the absence of this information, the VBA can only assume that the installation was carried out according to the DTS method.

All supporting information, documentation, reports and correspondence collected for the Performance Solution must be kept with the compliance certificate. A copy of the Performance Solution documentation report should be provided to the property owner so that any future maintenance, repairs, alterations, etc by others can be informed of what was previously carried out.

These will need to be retained for a minimum 10-year period with the relevant compliance certificate by the plumbing practitioner responsible for the installation.

Appendix 1: Process for developing a Performance Solution

The following recommended steps provide more detailed information on how to develop a Performance Solution.

STEP 1: PREPARE A PERFORMANCE BASED DESIGN BRIEF

A performance based design brief is a document that sets out the proposed Performance Solution. It should include and describe the following elements:

1. **What is the proposed Performance Solution, its scope, the rationale for it, where is it to be installed, and the type of plumbing work?**

2. **What are the applicable performance requirements and applicable DTS (if any) provisions?**

   Part A2.2 Performance Solution (relevant extract below):

   "Where a Performance Requirement is satisfied entirely by a Performance Solution, in order to comply with (1) the following methods must be used to determine the Performance Requirements or Performance Requirements relevant to the Performance Solution:

   i. Identify the relevant Performance Requirements from the Section or Part to which the Performance Solution applies.

   ii. Identify Performance Requirements from other Sections or Parts that are relevant to any aspects of the Performance Solution proposed or that are affected by the application of the Performance Solution."

   Part A2.4 A combination of solutions

   "Where a Performance Requirement is satisfied by a Performance Solution in combination with a Deemed to Satisfy Solution, in order to comply with (1), the following method must be used to determine the Performance Requirement or Performance Requirements relevant to the Performance Solution:

   i. Identify the relevant Deemed to Satisfy Provisions of each Section or Part that are to be the subject of the Performance Solution.

   ii. Identify the Performance Requirements from the same Sections or Parts that are relevant to the identified Deemed to Satisfy Provisions.

   iii. Identify Performance Requirements from other Sections or Parts that are relevant to any aspects of the Performance Solution proposed or that are affected by the application of the Deemed to Satisfy Provisions that are the subject of the Performance Solution."

3. **Who has been consulted in developing the Performance Solution?**
   Examples can include:

   - the building owner,
   - relevant recognised expert,
   - builder/developer (if applicable),
   - other relevant regulatory bodies e.g. water authorities, EPA, council, fire authorities, and
   - the VBA.

4. **Are the owners aware of, and do they agree to, the Performance Solution? How will this be demonstrated?**

   Before commencing a Performance Solution, the property owners should be consulted. Agreement from an owner may be demonstrated through an acknowledgment letter or some other form of approval.

5. **What Assessment Method (see A2.2 of the PCA) will be used to demonstrate that the Performance Solution complies with the Performance Requirements?**

   The PCA provides for four different assessment methods, or any combination of, that can be used to determine that the Performance Solution complies with the relevant performance requirements. The plumbing practitioner will need to determine which of the assessment methods will be used. This information will need to be provided in the design brief, including the results, analysis, modelling and calculations used under "Step 2 – Carry out analysis, modelling or testing" below.

   Assessment Method A – Evidence of Suitability
   Evidence of suitability in accordance with Part A5 that shows the use of a material, product, plumbing and drainage product, form of construction or design meets the relevant Performance Requirement.

   Where a recognised expert is used to assist in the formulation of a Performance Solution, the relevant person(s) must have appropriate and relevant qualifications and experience in the area of plumbing and drainage in question. Depending on the nature and complexity of the proposed solution, a recognised expert may include manufacturers, engineers, industry expert and the like.

   Assessment Method B – Verification Methods
   Verification Methods such as—

   i. The Verification Methods in the PCA; or
   ii. Such other Verification Methods as the VBA accepts for determining compliance with the Performance Requirements.

   Assessment Method C – Comparison to Deemed-to-Satisfy Provisions
   Comparison with the Deemed-to-Satisfy Provisions.

Assessment Method D - Expert Judgment

Expert Judgement is the judgement of a person who has the qualifications and experience to determine whether the plumbing or drainage solution complies with the Performance Requirements. The principles applying to determining who is a recognised expert applies in this context.

Ultimately, the responsible plumbing practitioner will have to approve the Performance Solution as they will carry the liability for the work. This is different to the building industry where the relevant building surveyor approves the proposed Performance Solution.

REMINDER 1:
Performance Solutions are only used for installations. It cannot be used to exempt plumbing materials and products from the requirement to be certified and authorised. Where a product or material is required to be WaterMarked, it must be certified under the WaterMark scheme.

6. **Based on the preferred assessment method to be used, a set of agreed acceptance criteria will then need to be developed.**

   The acceptance criteria are a set of parameters that must be met for the responsible practitioner to be satisfied that the assessment method and results will comply with the Performance Requirements.

STEP 2: CARRY OUT ANALYSIS, MODELLING OR TESTING

Based on the preferred assessment method and acceptance criteria to be used, the next step is to carry out analysis, modelling or testing. This could take one or more forms, depending on the proposed Performance Solution. Examples of possible tools or methods of analysis, modelling or testing include:

- Comparative or absolute analysis
- Qualitative or quantitative analysis
- Deterministic or probabilistic analysis
- Empirical calculations
- In-situ or laboratory testing, e.g. testing by a recognised laboratory registered with the National Association of Testing Authorities (NATA)
- Computer aided modelling.

STEP 3: COLLATE AND EVALUATE RESULTS

Once the analysis, modelling or testing is completed, it needs to be collated and evaluated to determine whether it meets the agreed acceptance criteria. Further analysis, modelling or testing may be required if the results are not consistent or do not meet the agreed acceptance criteria. Relevant parties should review and agree that the results will satisfy the requirements.

STEP 4: PREPARE A FINAL REPORT

The final report is an essential part of the mandatory documentation.

The report will need to document how the proposed Performance Solution will meet the Performance Requirements and contain all the necessary documentation and information described above. These will need to be retained for a minimum 10-year period with the relevant compliance certificate (where applicable) by the plumbing practitioner responsible for carrying out the installation.

Full copies of the Performance Solution, including the design brief, plans, results and final report, should also be provided to the property owner. This information will also be relevant and important when the installation subjected to the Performance Solution needs to be worked on in future, such as for repairs, servicing, alteration, and/or maintenance.

STEP 5: CARRY OUT THE INSTALLATION

Carry out the Performance Solution installation in accordance with the approved design. The approved Performance Solution is similar to a DTS design solution in that deviations from the Performance Solution or approved design, like deviations from a DTS, will be treated as non-compliant work.

It is critical that the plumbing installation is in accordance with the Performance Solution and approved design as it is the Performance Solution and approved design that have been assessed and developed to meet the relevant Performance Requirement.

VBA audits on a Performance Solution will assess whether the plumbing installation is in accordance with the Performance Solution and approved design. In addition, the VBA will determine whether the correct process was followed in the development of the Performance Solution including ensuring the assessment method is correctly undertaken.

STEP 6: DETAIL THE PERFORMANCE SOLUTION ON THE COMPLIANCE CERTIFICATE

Where an installation is carried out based on a Performance Solution instead of the DTS provisions, the responsible plumbing practitioner must also identify this information on the compliance certificate.

The following is an example of acceptable information to be included on the compliance certificate:

> "This plumbing work [DESCRIBE WHICH WORK IS CARRIED OUT UNDER A PERFORMANCE SOLUTION] has been installed as a Performance Solution to meet the performance requirements of [INSERT RELEVANT PERFORMANCE REQUIREMENTS] using the [INSERT ASSESSMENT METHOD USED] of the Plumbing Code of Australia [INSERT YEAR OF PUBLICATION]."

This should also include the Performance Solution report name, date, identification number, address and who it was prepared by.

REMINDER 2: A Performance Solution must be developed in accordance with the process as per section 6 before the plumbing work is carried out.

STEP 7: RETAIN DOCUMENTS

All documents. including reports, tests and analysis, must be retained by the plumbing practitioner for a minimum of 10 years.

All documents should be provided to the property owner along with copies of the compliance certificate.