

Prevention of surface water entry

P2.2.1

The Performance Requirements of the National Construction Code (NCC) can be met using either a Performance Solution, a Deemed-to-Satisfy (DTS) Solution, or a combination of both. The following demonstrates the performance-based design process, aligning with the ABCB's Performance Solution Process guidance document.



Scenario

A single storey house is to be built in Darwin, Australia. The building owner wishes to have a level entry threshold at the front main entrance to enhance its accessibility. The building designer will use a Performance Solution to demonstrate compliance with the NCC Performance Requirements for the disposal of surface water, without compromising the owner's request for a level entry threshold.



Prepare a performance-based design brief

What are the design objectives?

To provide a continuous, step-free entry to the dwelling while also enabling surface water to be disposed of safely as required by the NCC.

Who should be consulted?

The building owner, the building designer, the builder, the engineering consultant and the regulatory approval authority.

What is the basis of the Performance Solution?

A level entry threshold is not required by NCC Volume Two; however, the DTS Provisions require a step-up to prevent water ingress. To achieve compliance with the NCC as well as meeting the needs of the owner, a Verification Method (as described in A2.2(b)(ii) of the NCC) is the Assessment Method that will be used to demonstrate NCC compliance for the proposed Performance Solution.

What evidence is proposed?

The application of the Verification Method and the suitability of the proposed solution will be described in a report by the engineering consultant, which is a form of Evidence of Suitability as described in A5.2(1)(e) of the NCC.

Which DTS Provisions are applicable?

- Part 3.1.3 Drainage, for the drainage of surface water away from a Class 1 building.

Which Performance Requirement is applicable?

P2.2.1 Rainwater management.

Note: for brevity, the applicable Performance Requirements and DTS Provisions have been limited. When determining which Performance Requirements and DTS Provisions are applicable, consideration should be made to the latest edition of the NCC. This solution may also impact other Performance Requirements and DTS Provisions and must be considered in accordance with Part A2 of NCC 2019.



Carry out analysis

Which Assessment Methods are the most suitable and where can they be found?

A2.2 of Part A2 in Section 1 of NCC Volume Two states that any Assessment Method, or combination of them, may be used to determine that a solution complies with the Performance Requirements. In this scenario a Verification Method is used as the Assessment Method.

The engineering consultant will develop detailed drawings and use average rainfall duration intensities and average wind direction to calculate the disposal of surface water and so determine the minimum roof and awning cover. As the engaged engineer is a registered professional engineer, an appropriate report with design calculations will be submitted to the certifying authority for approval as Evidence of Suitability.

In analysing the scenario, the following were considered:

- location of entry door
- requirement for a level entry threshold
- wind direction
- average rainfall duration intensities
- termite management system
- roof and awning cover, and
- disposal of surface water.



Evaluate results

The engineering consultant develops a report using the design calculations and detailed drawings. The report is provided to the building designer and the builder for review ensuring the proposed design satisfies the acceptance criteria and meets the requirements of P2.2.1 and P2.2.2.



Prepare a final report

What should be in the final submission?

The final submission contains:

- a summary of the Performance Solution, including reference to the applicable Performance Requirements and the Assessment Method used
- an overview of the engineering consultant's analysis
- detailed drawings of the construction method (i.e. weatherproofing, roof and awning cover, etc.)
- a statement confirming the design satisfies the relevant Performance Requirements.

The report is submit to the regulatory approval authority as part of the required documentation for approval.