Alternative methods - how it all works

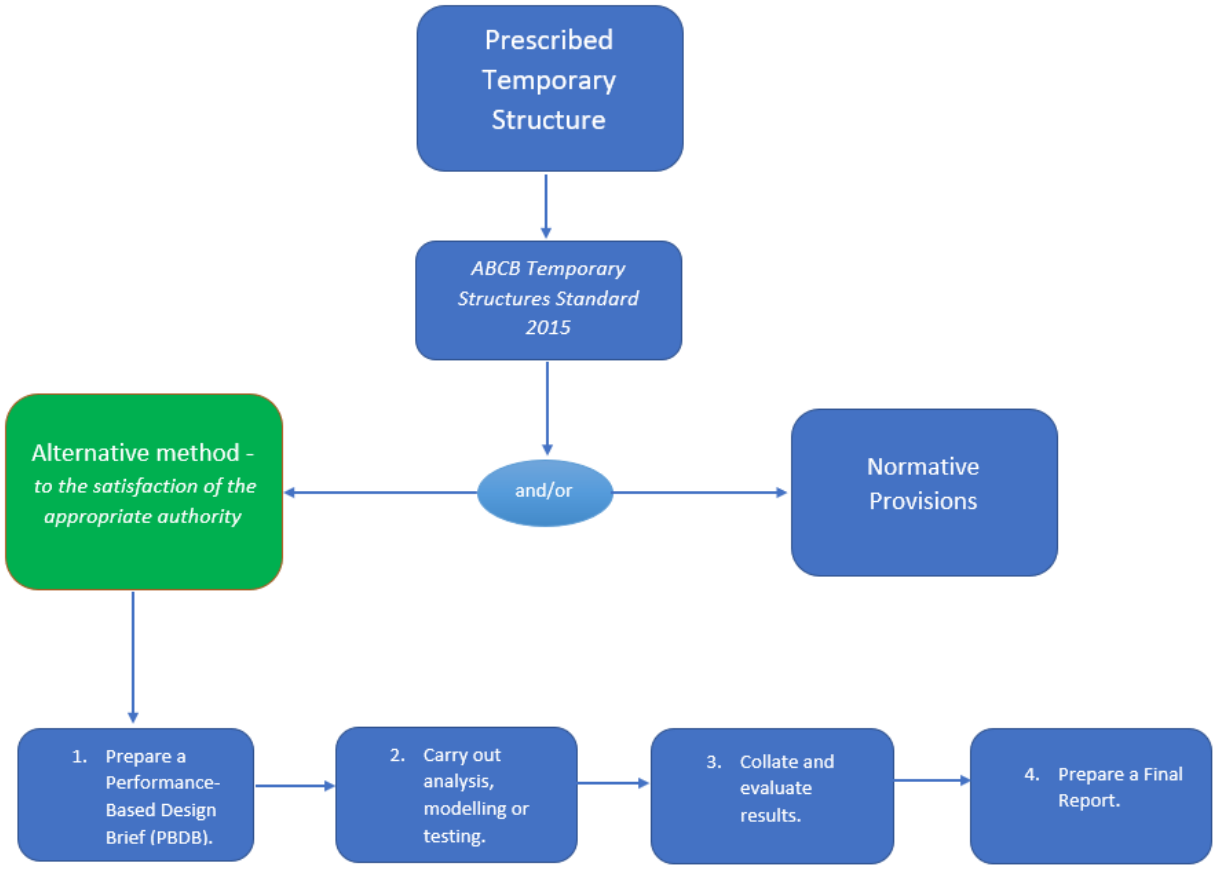
Approval for Occupancy Permits for prescribed temporary structure(s) by the VBA is subject to complying with the National Construction Code (NCC) performance requirements through the **ABCB Temporary Structures Standard 2015**.

The Standard allows for a choice of complying with the normative provisions prescribed within the Standard or for an alternative method to be developed. This allows for flexibility to develop performance-based solutions on a case by case basis. The alternate method pathway, if chosen, would need to be to the satisfaction of the appropriate authority and be fully documented.

The VBA has developed guidance material to assist with the development of alternative methods for temporary structure applications that do not meet the normative provisions. This document contains a four-step process to assist with the preparation and documentation of a compliant alternative method for the processing of an Occupancy permit application and/or amendment t by the VBA.

Figure 1 illustrates how an alternative method can be used to meet compliance with a prescribed temporary structure.

Fig 1. Alternative method - Prescribed Temporary Structure



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STEP 1 - Prepare a Performance-Based Design Brief (PBDB)

1. *Performance based design brief*

This section requires the development of a performance-based design brief. The brief provides a record of the key activities, outcomes and the design processes. The minimum requirements of the PBDB are provided in the sub-headings below (1.1 – 1.8)

1.1 *Summary of proposal*

The brief should provide information summarizing the proposal, scope of the solution, key stakeholders and all relevant information and data of the building (structure) such as drawings with dimensions, materials and location of structure etc.

Example:

The alternative method is in relation to (x structure). The application for an Occupancy Permit for the structures includes fabric/material which does not comply with the normative provisions under Part 4 of the ABCB Temporary Standards 2015. As such an alternative method has been developed as means of complying with the relevant performance requirements of the NCC 2016 which would satisfy the requirements under Part 4 of the Standard.

1.2 *Stakeholders*

Provide an account of the relevant key stakeholders in the alternative method. The key stakeholders are people, groups and/or organizations who have a role in the development and implementation of the alternative method for the building or structure. This can be presented in the form of a table, list etc.

Example:

The alternative method for the prescribed temporary structure includes the following key stakeholders

	Stakeholder	Organisation
1.		
2.		
3.		

1.3 *Agreed analytical assessment processes*

In this section, the applicant is to provide the agreed analytical assessment processes for the alternative method.

Example

A departure from the Normative Provisions of clause 4.1.2 and Table 4.1.2 of the ABCB Temporary Structure Standard 2015 has been adopted for the design of the structures for A and B Circuses, therefore the proposed alternative method is:

To permit the roof and/or wall covering material of the temporary structure to have a flammability index of X In lieu of Y for the purpose of adopting AS1530.2 1993

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1.4 *Agreed acceptance criteria*

In this section, details of the agreed acceptance criteria for the alternative method should be provided. The criteria should include the relevant performance requirements from the NCC the relevant normative provisions from the Standard and any other documentation agreed on as part of the criteria.

Example

The agreed acceptance criteria for a **Wind alternative method** may be as follows:

Approval of the proposed alternative method is subject to the following acceptance criteria:

- *The structure is to be designed and operated using a Wind Speed Management Plan and to have the design peer reviewed to demonstrate compliance with Performance Requirements BP1.1 & BP1.2 of Volume One of the National Construction Code 2016.*

Example

The agreed acceptance criteria for a **Fire alternative method** may be as follows:

Approval of the proposed alternative method is subject to the following acceptance criteria:

- *An AS1530.3 fire test report must be submitted that complies with the required fire indices given in Table 4.1.2 of the ABCB Temporary Structure Standard 2015.*
- *A Group Number must be predicted from the results of the AS/NZS 3837 test in accordance with Specification A2.4 of Volume One of the National Construction Code.*
- *The Group Number predicted must be a Group 1, Group 2 or Group 3 material and must have:*
    - *A smoke growth rate index not more than 100.*

1.5 *Required scope of supporting evidence and documentation*

This section requires the provision of the supporting evidence and documentation for the alternative method.

Example

*Supporting evidence and documentation can be provided in the form of an **Fire Engineering Report** where a structure does not meet the Fire resistance requirements in Part 4.1 of the Standard.*

In the event that an Emergency Management & Evacuation Plan has been proposed as part of the alternative method, the following information below (at a minimum) is required as part of the evidence and documentation. The information should also be specific to the structure.

- *Communications management procedures*
- *Emergency evacuations procedure*
- *A Risk assessment – including evacuation time, ignition times etc.*

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1.6 *Format and content of the final report*

Provide a format with the type of information to the supplied as part of the final report.

1.7 *Acknowledgement of participants*

Provide an acknowledgement of the participants in the development of the alternative method. This may include the key stakeholders and any additional participants.

1.8 *Owners Consent*

Provide the owner's consent if the owner is not the applicant for the Occupancy Permit. The owner's consent is to be provided in writing and to provide a statement that they agree with the alternative method and understand the alternative method of compliance being proposed.

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STEP 2 – Carry out analysis, modelling and/or testing

The agreed-on method of analytical assessment should then be tested to evaluate the effectiveness of the material, form of construction or design as an alternative method.

When carrying out the analysis, modeling or testing, the suitability of materials, form of construction or design requirements relates to the testing of products, permissible calculation methods and other relevant information to ensure that a material, form of construction or design is suitable.

a) Every part of a temporary structure must be constructed in an appropriate manner to achieve the requirements of the Standard, using materials that are fit for the purpose for which they are intended.

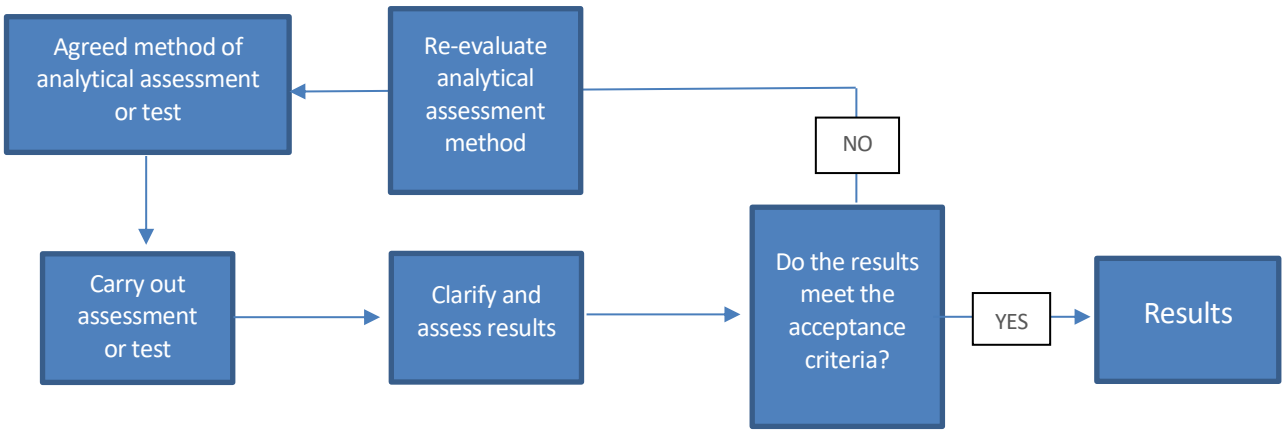
b) Evidence to support the use of a **material, form of construction or design** to satisfy the requirements of the Standard may be in the form of one or a combination of the following:

(i) A report issued by a registered testing authority, showing that the material, form of construction or design has been submitted to the tests listed in the report, and setting out the results of those tests and any other relevant information for its suitability for use.

(ii) A certificate from a professional engineer or other appropriately qualified person which—
(A) certifies that a material, design or form of construction complies with the requirements of this Standard; and
(B) sets out the basis on which it is given and the extent to which relevant specifications, rules, codes of practice or other publications have been relied upon.

Detailed information is to be provided clearly indicting the process of analysis modeling and/or testing used. The results of the test(s) should meet all the agreed acceptance criteria. The process is described in Figure 2 below.

Fig. 2.



Example

*When developing a **Fire Alternative method** which incorporates a Fire Engineering Report and/or an Emergency Management Evacuation Plan, the proposed structure and the EMEP processes and procedures are modelled using computer aided modelling to simulate a circus event at varying capacities.*

By demonstrating that the evacuation of occupants is complete well before untenable conditions occur, this can satisfy some to the acceptance criteria and can be used as a means of establishing that the structure is designed to be safe for occupants.

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STEP 3 – Collate and Evaluate Results

It is then necessary to collate and evaluate these results and draw conclusions to form the final report. The evaluation needs to take into account the agreed acceptance criteria for the analysis as set out in the PBDB and the results of any uncertainties or sensitivities.
Further analysis, modelling and/or testing may be required if the outcomes are not consistent with the agreed acceptance criteria.

Step 4 – Prepare a Final Report

The final report should clearly demonstrate that the agreed acceptance criteria and compliance with the Standard and relevant performance requirements agreed in the PBDB have been met. The content of a final report may include the following:

An overview of the PBDB, including

- Scope of the project
- Relevant stakeholders
- Relevant normative requirement in the Standard
- Applicable NCC Performance Requirements
- Approaches and methods of analysis
- Any assumptions that were made
- Acceptance criteria and safety factors agreed to by stakeholders

Overview and outline of the analysis, modelling and/or testing carried out

- Method of analysis used
- Calculations and outcomes
- The sensitivities, redundancies and uncertainty studies carried out
- The results obtained and relevance to the PBDB

Evaluation of results including:

- Comparison of results with acceptance criteria
- Any further sensitivity studies undertaken
- Any expert judgement applied and its justification

Conclusion

- Specifications of the final design that are deemed to be acceptable
- The NCC Performance Requirements that were met
- All limitations to the design and any conditions of use

In addition, the final report may be required to include a reg 126 Certificate of Compliance in accordance with Reg 124 of the Building Regulations 2018, recording the following in writing:

- the performance requirements with which the performance solution complies with, and
- details of any of the following that are used or relied on in determining that the performance requirement complies with the performance solution—

    1) the assessment method or methods;
    2) the details of any expert judgement;
    3) the details of any tests or calculations;
    4) the details of any standards or other information.

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