

Using the Building Code of Australia

This updates the previous *Practice Note 2005-29* issued June 2005.

1. Summary

The Building Code of Australia (BCA) significantly changed the way building regulations were expressed and applied, by introducing a mandatory performance compliance level.

The method of compliance can be achieved by two processes: the traditional prescribed requirements ie. Deemed-to-satisfy (DTS) provisions or secondly, Alternative Solutions.

Where practitioners choose to use the Alternative Solution, they should ensure that verification of compliance with the performance requirements is satisfied by appropriate use of assessment methods.

This practice note considers issues relating to the fully performance-based BCA. Part A examines issues relating to the performance based system. Part B examines the Building Appeals Board operations.

Part A – Performance based system

A1 The BCA structure

A performance based approach defines the way of achieving an outcome, without prescribing a particular method.

To use an analogy, in some countries speed limits are set in legislation as performance statements, such as “drivers must travel at safe speeds having regard to the road, weather and traffic conditions at the time and the vehicle itself”. Advisory signs on the roadside recommend speed limits, but ultimately it is up to the driver to prove safety. The advantage of this system is that as cars, drivers, roads, and technology improve, the system does not restrict or inhibit advances or innovation. The obvious disadvantage is the problem of differing interpretations or levels of “safe” driving.

A1.1 Performance requirements

The BCA puts in place performance requirements which are the only mandatory provisions.

A2 Key terms

A2.1.1 Use of the term ‘appropriate to’

Some performance requirements state that a particular provision must be ‘appropriate to’ certain matters, meaning that these matters must be taken into consideration when dealing with that performance requirement.

A2.1.2 Use of the term ‘to the degree necessary’

Several performance requirements contain the term ‘to the degree necessary’,¹ meaning that a designer must consider all the relevant information and, if appropriate, may not need to incorporate any specific measures.

A2.2 Deemed-to-satisfy provisions (DTS)

Deemed-to-satisfy (DTS) provisions comprise the bulk of the BCA. If any designer, builder or manufacturer for any reason does not want to develop a new means of achieving the performance requirements, they can choose to adopt one of the ‘tried and true’ solutions used over previous years.

A2.3 Alternative solutions

In the BCA, any means of achieving compliance with the performance requirements which is not in or differs in any way from a DTS provision, is referred to as an ‘alternative solution’. These include the use of:

- ▶ The International Fire Engineering Guidelines developed by the Australian Building Codes Board (ABCB)
- ▶ The Fire Brigade Intervention Model (FBIM) developed by the Australasian Fire Authorities Council (AFAC).
- ▶ An appropriate international standard or code.

¹ Clause A1.7(b) of Volume One of the BCA explains its use.

A2.3.1 International Fire Engineering Guidelines

The International Fire Engineering Guidelines provide a link between the regulatory system and fire engineering and provides guidance for the process of fire engineering along with methodologies and data that can be used by suitably qualified and competent practitioners (refer regulation 113).

A2.3.2 Fire Brigade Intervention Model (FBIM)

- ▶ A number of performance requirements in the fire safety-related Parts of the BCA depend to some degree on fire brigade intervention.
- ▶ AFAC have developed a world-first model, capable of determining the time of arrival and likely action by a fire brigade.
- ▶ Building designers can use the FBIM where a performance requirement refers to something being appropriate to 'fire brigade intervention'.

A2.4 Assessment methods

Assessment methods² are the means used to prove (in the case of a building owner or agent), or to assess (in the case of the RBS), whether all or part of an application for a building permit achieves or is likely to achieve:

- i) for an alternative solution:
 - a) absolute compliance with the relevant provisions of the performance requirements, or
 - b) at least equivalence with the performance achieved by a relevant DTS provision; or
- ii) compliance with the relevant DTS provisions.

The use of appropriate assessment methods must be undertaken by the designer (or person proposing the alternative solution) to establish compliance of the alternative solution with the relevant performance requirement. The RBS' are reminded that they can also use an assessment method to check the alternative solution, but that section 79 of the Act prohibits the RBS from designing the building work. Where an approval is based on use

of an alternative solution, this means that the use of an assessment method by the RBS must not be the sole method of determining compliance.

The application for a building permit must include one or more appropriate assessment methods, to substantiate the use of that alternative solution.

One assessment method that requires some further discussion is "expert judgement". This term is defined in the BCA as follows:

***Expert Judgement** means the judgement of an expert who has the qualifications and experience to determine whether a building solution complies with the performance requirements.*

In relation to a DTS provision that, subject to regulation 1502 and Minister's Guideline MG/04, an RBS would be able to decide compliance by "expert judgement". The RBS might also rely on another expert's judgement to determine compliance.

There are several ways that expert judgement can be obtained, including certification and reports. These can be used for verification of either design or inspection and include (but are not exclusive to) certificates under section 238 of the Act issued by experienced and relevant building practitioners.

Since the introduction of the registration of building practitioners, there has been a notable shift in the way in which building surveyors obtain expert advice on the compliance of certain elements of buildings. In the area of DTS fire safety (for example fire sprinkler system design and installation), many building surveyors have sought certificates from professional engineers, rather than from the number of less qualified, but very experienced and competent certifiers who have provided this service for many years.

While some RBS might seek a certificate under section 238 of the Act to cover fire safety design, this is not a requirement of the regulations, unless the matter relates to determining compliance with an alternative solution in accordance with regulation

² Assessment methods are described in Clause A0.9 of Volume One, Clause 1.0.9 of Volume Two and in the definitions of the BCA.

113. However, building surveyors are encouraged to obtain fire safety compliance reports for their consideration and assistance in determining compliance.

In determining compliance with an alternative solution under the BCA, the RBS must first consider regulation 113, then regulation 1502 and Minister's Guideline MG/04. Then, they must be satisfied that in relation to the specific matter being considered, that person is an expert. This test must only be made after due consideration of the experience and qualifications of the person involved.

In this case (determining compliance with an alternative solution), significant years of experience might not by itself be sufficient justification to verify expertise. Building surveyors and engineers are reminded that the liability immunity provisions that a certificate under section 238 of the Act offers are limited by the acceptance of the certificate by the building surveyor "in good faith". This means that if the building surveyor should have reasonably known that the practitioner issuing the certificate was not qualified and/or experienced to do so (even though they are a registered building practitioner), then the liability immunity might not apply.

In relation to Minister's Guideline MG/04 and whether or not engineers can certify their own designs for compliance with a particular performance requirement, the RBS must consider:

- ▶ Design complexity.
- ▶ Practitioners involved.
- ▶ Whether it is appropriate for the engineer to certify that design, without further independent review.

A3 How to use the performance-based system

A3.1 Choose a building solution

The BCA has performance requirements as the mandatory requirements. If compliance is achieved with the DTS provisions, a building proposal is deemed to have complied with the BCA performance requirement. However, a building owner (or agent) may take another approach entirely, on the understanding that the proposal must still meet the performance requirements.

The first step in preparing a building permit application is to choose the means of achieving compliance with the BCA. This will comprise either:

- ▶ A DTS.
- ▶ An alternative solution.
- ▶ A mixture of DTS provisions and alternative solutions.

Note that any change from a DTS provision must be treated as an alternative solution, if this change is not:

- 1) specified in the DTS provisions, or
- 2) in accordance with a performance standard within the DTS provisions.

A3.2 Choose an assessment method

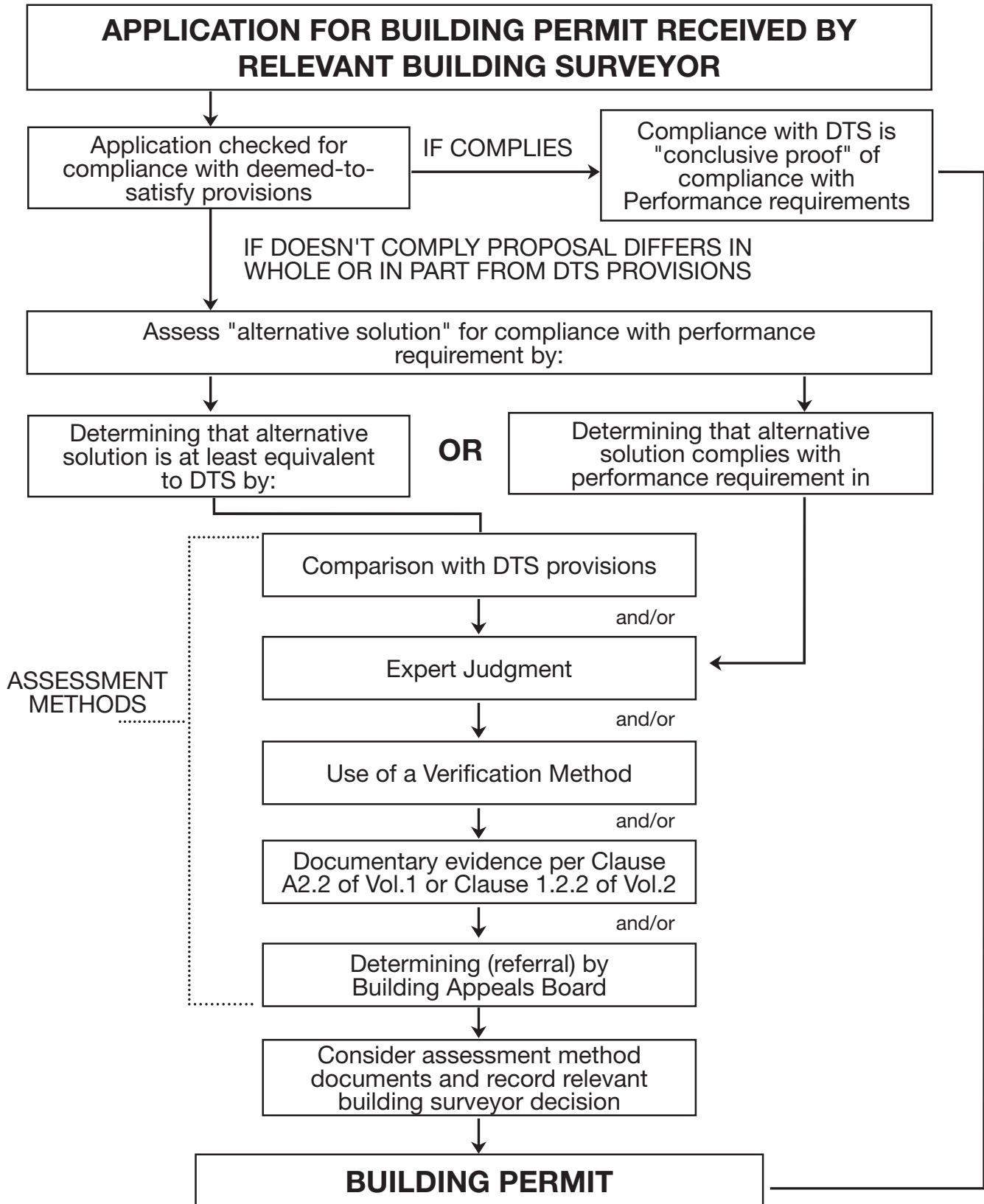
It is the responsibility of a building owner (or agent) to satisfy the RBS that the building and all elements within the building achieve the performance requirements of the BCA.

The building owner (or agent) must make sure that the assessment method or methods adopted satisfactorily indicate that the building will achieve the requirements of the BCA.

The method chosen will largely depend on the nature of the building proposal, so that:

- a) In the case of a very simple house renovation, a set of plans which clearly indicate compliance with the DTS provisions may be all that is required.
- b) In the case of a more complex proposal, an alternative solution may be used, in which case it will need to be fully documented, clearly indicating the nature of the solution, and satisfactorily proving the means by which the performance requirements will be achieved.

The BCA approval process is shown on the following page.



ASSESSMENT METHODS

A4 Processes for detemining compliance with alternative solutions

The following points provide some guidance for the RBS.

A4.1 Information required from designer, builder and/or building owner

- ▶ Technical supporting evidence.
- ▶ Reasons why the DTS provisions cannot be met, or why the designer/owner/builder feels they are not suitable. (This is a “negative” request but is probably necessary for assessment of the application, especially if using equivalence to DTS).
- ▶ Owners request/consent/approval for use of performance methodology and outcome.
- ▶ Statement as to whether design (or part of the design) has used alternative solution or DTS provision. (Without this, it may be difficult for the RBS to assess the application.)

Other points to consider:

- ▶ Does this approval process and/or outcome impinge on owner/occupiers’ occupational health and safety/workplace responsibilities?
- ▶ Do all the people involved (owner, other consultants, authorities, RBS, etc.) understand the design methodology? (For example, does it limit future uses of the building, or require additional maintenance provisions?)

A4.2 Consideration of assessment methods

Some reasons which, by themselves, may be inappropriate or insufficient to determine compliance with a performance requirement are:

- ▶ Compliance too costly (e.g. cannot be considered equivalent to DTS, unless tested to DTS and testing is too expensive).
- ▶ Building Appeals Board or other approval body has previously approved a similar application.
- ▶ Cost savings to owner/builder/developer.

- ▶ Method proposed has been used before.
- ▶ Supporting argument of compliance with other regulatory required items (e.g. stair has handrail, therefore riser height can be increased).
- ▶ Regulation not required in other States or Territories.
- ▶ Approval by expert judgement when Building Appeals Board/council or other approval body might not approve (e.g. access for people with disabilities, thermal insulation).

Other points to consider are:

- ▶ Does your insurance and that of all other practitioner’s insurance allow design/approval to be exercised to the degree proposed?
- ▶ When considering building occupants, don’t forget cleaners, maintenance staff, visitors, emergency services personnel, etc.
- ▶ Sensitivity analysis. (Has the alternative solution considered variations to the input data and the effect on the results?)
- ▶ Available redundancy. (Is there a heavy reliance on a single subsystem, such as sprinklers, so that a failure of that one subsystem may have significant consequences?)
- ▶ Are safety factors to be applied to any calculations? (For example, in egress calculations, a factor of safety of 2–3 might be applied)
- ▶ Risk/consequences. (Is the consequence greater with the proposed solution than if the deemed-to-satisfy provisions were used?).

If consequences are greater for the proposed alternative solution, then substantial rechecking and justification may be required.

A4.3 Consideration of other requirements

Check if there are any additional “in use” requirements — such as durability, servicing, and maintenance — that might be affected or required by the alternative solution. Also consider the method of checking and enforcement.

Part B — Building Appeals Board (BAB) Operations

B1 Background

The adoption of the Building (Further Amendment) Act 1997 and the introduction of the performance based BCA created a change to the method of operation of the BAB.

The amendment to the Act allows an application to be made to the BAB for a determination that a particular design of a building or an element of a building complies with the relevant legislation. These applications are known as determination (compliance).

Determinations (compliance) avoid possible appeal situations and allow further flexibility in the building control process.

The modification process has remained but only applies where compliance with a performance requirement cannot be met.

B2 Applications to the Board

B2.1 Determination (Compliance section 160A)

The BCA requires detailed assessment of applications by the BAB and their technical advisors. Applicants need to differentiate between determination modifications and determination compliance, give reasons for the type of application and submit detailed technical justification (see below).

Compliance applications seeking to confirm that a design complies with the performance requirements need to be supported by an analysis of the design, using assessment methods similar to those contained in the BCA.

B2.2 Determination / Modifications (section 160)

Applications for modifications need to demonstrate:

- ▶ The extent to which the proposal fails to meet the performance requirement.
- ▶ Why the performance requirement is inappropriate in the circumstances.
- ▶ Adequate technical justification for the proposal.

Analysis of the proposal against the relevant performance requirement may, in some cases, require the use of assessment methods similar to those used for compliance applications.

B2.3 Fees

The BAB fees applying to such determination (modifications) are \$90 for a Class 1 or 10 building; \$200 for any other class of building.

Fees, for applications for determinations of compliance with a performance requirement of the BCA are \$200.

B2.4 Other Issues

B2.4.1 Documentation to be submitted

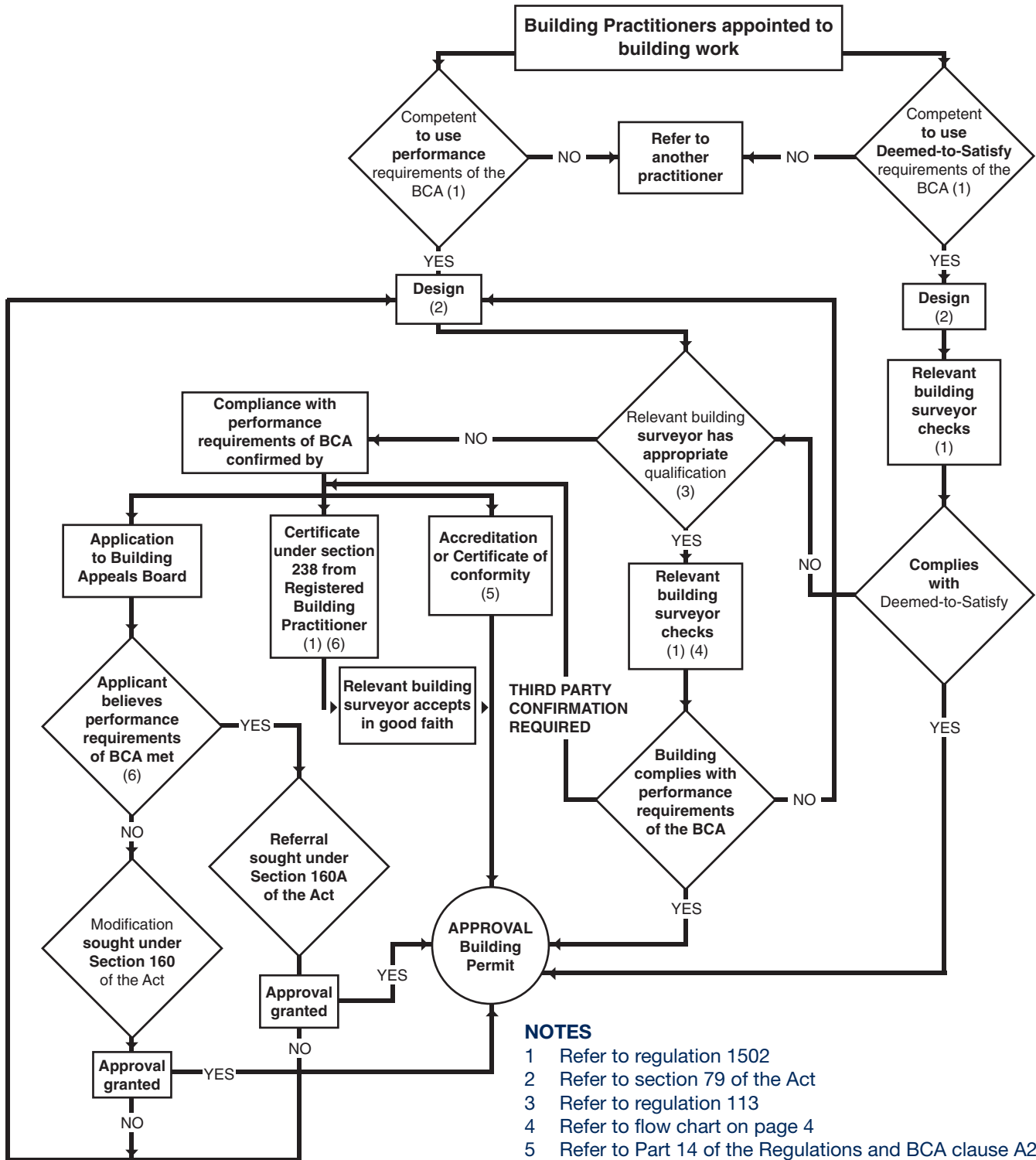
Refer to BAB application forms.

B2.4.2 Consultation

Other bodies or persons having an interest in an application will be consulted. Applicants are able to obtain these comments themselves.

Further information on the BAB is contained in Practice Note 2006-39.

If you have any queries regarding the BCA, then call the Technical and Research Services on 1300 360 380.



NOTES

- 1 Refer to regulation 1502
- 2 Refer to section 79 of the Act
- 3 Refer to regulation 113
- 4 Refer to flow chart on page 4
- 5 Refer to Part 14 of the Regulations and BCA clause A2.2
- 6 Refer to regulation 1505

Determination of Compliance with a particular performance requirement of the BCA