FTMA TECH TALK

APRIL 2024 - ED.62

Dean Ashton - Multinail Senior Structural Engineer

OUTSIDE THE LIMITATIONS

There have been previous Tech Talk articles about compliance with *the National Construction Code (NCC)*. In Queensland we have recently seen an increase in the number of requests by Building Surveyors for certification of designs by Registered Engineers, so it is timely for a reminder on the limitations of projects without requiring additional engineering.

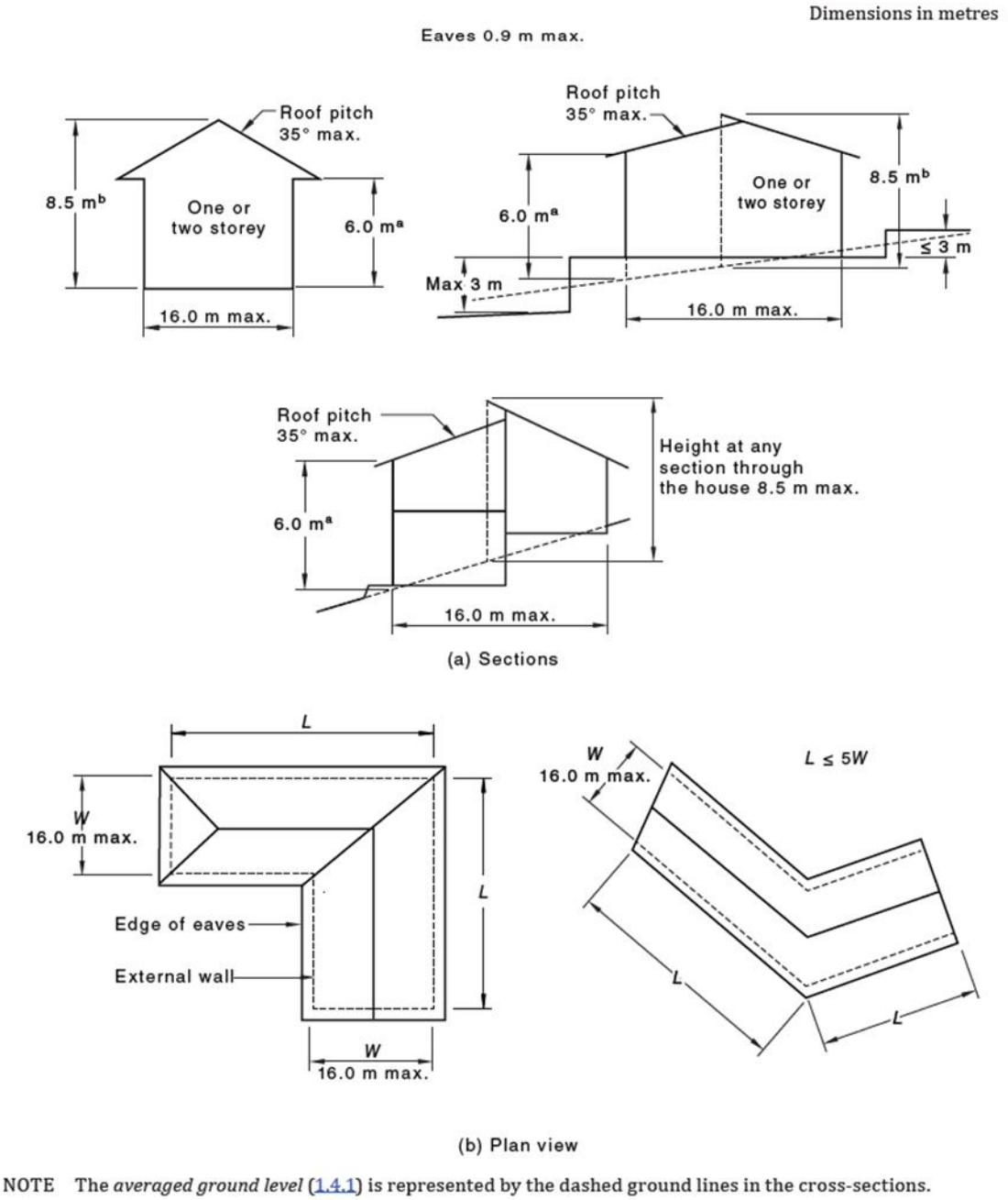
The *NCC* sets out the minimum performance requirements for all buildings constructed in Australia. Under the *NCC* compliance can be achieved by using a *Performance Solution* and/or *Deemed-to-Satisfy (DTS) Solution* and will typically require *Evidence of Suitability* of how this is achieved. DTS provisions are the simplest method (it can be likened to following a recipe) and the performance requirement can be satisfied if using prescriptive documents such as *AS 1684* or the use of software that follows the *ABCB Protocol for Structural Software*.

It should be noted that some Australian Standards such as *AS 1684* and the *ABCB Protocol for Structural Software* have limitations of use. Going beyond these limitations will require additional engineering. Table 1 below lists some of the typical limitations.

Table 1 Limitations

	AS 1684.2	***AS 1684.3***	***AS 1684.4***	***AS 4055***	***ABCB Software Protocol***
Building Class	NCC Class 1 and 10a				-
Wind Classification	N1-N4	C1-C3	N1-N2	N1-N6 C1-C4	-
Number of Storeys	2			-	
Building Width	16.0m		12.0m	16.0m	
Wall Height	3000mm		2700mm	-	
Distance to underside of eaves[1]	-			6.0m	
Building Height[1]	8.5m (when AS 4055 is used to determine wind classification)			8.5m	
Building Length	-			5 x Width	
Roof Pitch	35°		30°	35°	
Notes: - Refer to the specific documents for further limitations.					

Some of the recent requests for engineer certification in Queensland have been when the overall building height has been greater than 8.5m. It should be noted that just looking at a section view may not indicate that the building height exceeds this level. The 2021 edition of *AS 4055* clarified this by introducing the *averaged ground level* to allow for sites with major earthworks as can be seen by the dashed lines in Figure 1 (page 2).



NOTE The *averaged ground level* (1.4.1) is represented by the dashed ground lines in the cross-sections.

Figure 1 *AS 4055* Geometry Limitations

When outside the limitations of *AS 4055* the standard wind classifications may no longer apply and *AS 1170.2* can be used to determine the Ultimate Limit State Design Wind Speed. This can then be used to adopt an "equivalent" N1-N6 or C1-C4 Wind Classification when referring to *AS 1684*.

For projects that go beyond the limitations contact your local engineering department at your nail-plate manufacturer as the various States of Australia have different requirements on the forms that can be used for certification and who can sign these forms.