

EVC

ENGINEERING

**NCC Section G
Specification 43
Assessment**

Section G Assessments

Specification 43 Bushfire protection for certain Class 9 Buildings S43C9 Internal Tenability.

The intent of S43C9 is to provide a framework of protection measures to reduce the risk of occupant harm in a bushfire event. Through efficient air handling system selection and appropriate consideration of the building envelope material properties, the heat and smoke infiltration risks associated with internal tenability can be minimised in line with the National Construction Code.

To be able to state that internal tenability could be maintained throughout the duration of occupancy during a bushfire event, it must be shown that the proposed building internal air space temperature and/or building fabric does not exceed the following temperature limits as stated within the NCC S43C9 for internal tenability:

Functioning air handling system	
Internal Air Temperatures	25°C
Failed air handling system	
Internal Air Temperatures	39°C
Internal Surface Temperatures	60°C

In conjunction with project stakeholders and the project design team, EVC can undertake computational fluid dynamics (CFD) modelling, analysis, and reporting to provide advice on the building fabric and air handling systems. This advice and reporting will identify and outline how compliance with S43C9 Internal Tenability can be attained for the proposed building based on its specific use and environment.

Ethical engineering practice require judgment, interpretation and balanced decision-making; EVC act on the basis of well-informed conscience ensuring that the following elements which in our opinion are crucial are included to simulate close to real world scenario:

- Solar / Flame / Environmental Radiation impacting the building fabric and how the building fabric will store / dissipate heat;
- Heat from not only radiation, but from convection and conduction as these all influences heat transfer into the building and increase how much heat is stored within the building envelope;
- Occupant density and activity levels being appropriately accounted for, in this instance toddlers in distressed or otherwise active will differ to an office setting;
- Relevant site wind conditions as outlined by the bushfire consultant.

EVC continue to develop their expertise while acting on the basis of adequate knowledge and would like to offer our support to the continued professional development to other industry professionals wherever we can.

Section G Assessments Report Extracts

The following images are direct extracts from EVC building tenable reporting

The CFD analysis of the proposed childcare centre was conducted in order to assess the internal tenability during a bushfire event. The results produced show that when the building fabric is simulated in accordance with Section 3, the intent of Specification 43 – Clause 9a(ii) & 9b for internal tenability is met.

Figure 1 below shows the temperature map of the proposed building during the bushfire event.

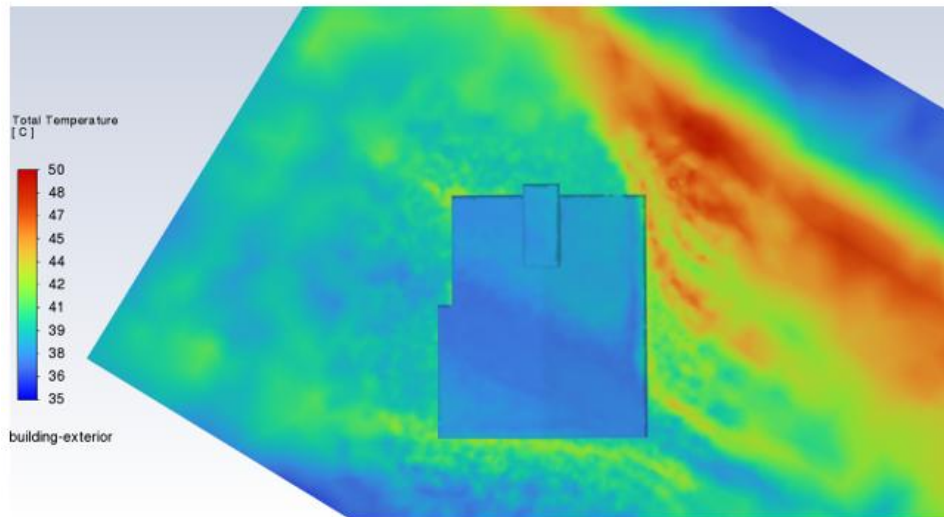


Figure 1: Temperature Map.

Internal Air Temperatures

The results from the building simulation indicate that in the prescribed bushfire event, the internal air temperature will remain below 39°C. EVC note that the internal air temperature ranged from 32.1–35.8°C, within the defined limits of the NCC.

The results can be visualised in Figure 2 below.

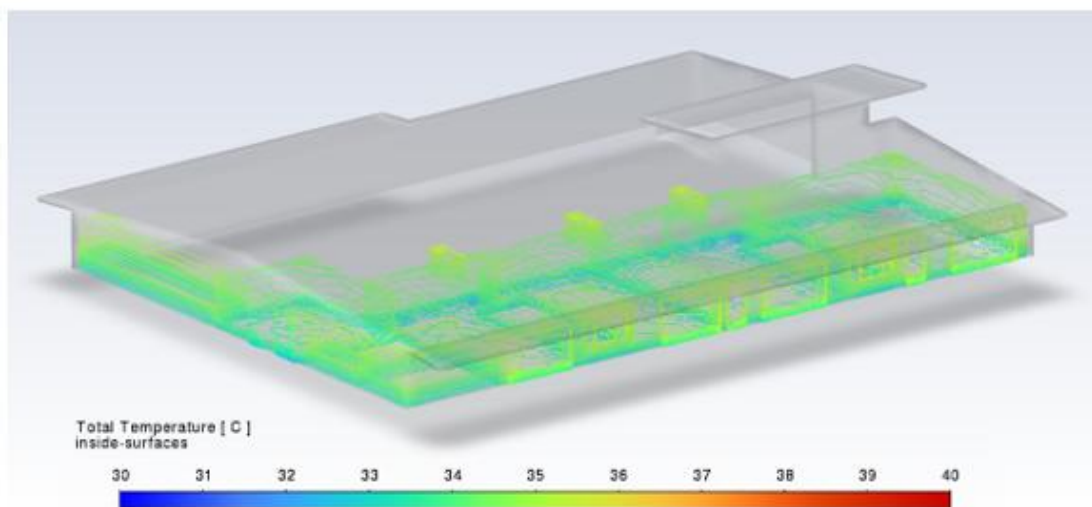


Figure 2: Internal Air Temperature Visualisation.

Team EVC Engineering

The EVC Engineering team are dedicated to creating high quality designs for our clients. We strive for great results, always striving to affirm our tag line of '**A World Apart**'.



Contact

We encourage prospective clients to obtain consultancy services advice early on in the project design phase; this provides an opportunity to contribute and provide a more efficient design for the overall project.

EVC recommend obtaining advice prior to applying for development approval and whilst in early discussions with town planners, the building's geometry and planned site orientation could be well considered to improve the ability of proposed buildings to passively resist a bushfire attack whilst making consideration of desired aesthetics, building function and construction methodology.



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