

Fire

Access and egress



TOOLBOX

GREENHOUSE CONSTRUCTION AND SAFE OPERATION

Many greenhouses are relatively isolated from the nearest fire station and may lack adequate water supply to fight structural fires. As protected cropping structures become larger and evolve from low technology greenhouses to medium or high technology greenhouses the risk of faults in equipment and wiring and human error may also increase. Plant containers, packaging, glazing and shade cloth are readily-available combustible fuels found throughout a typical greenhouse. As a result of these compounding risk factors, fires can spread rapidly throughout the facility, causing severe economic losses, negative environmental impact and loss of human life.

Under the occupational health and safety (OH&S) and new work health and safety (WHS) legislation an employer is obliged to provide, among others:

- Safe premises
- Safe machinery and materials
- Safe systems of work
- Information, instructions, training and supervision
- A suitable working environment and facilities.

The above safety obligations must also be considered by greenhouse designers/manufacturers, consultants and certifying bodies (local government or private certifiers) during the design and approval process.

For more extensive information please refer directly to the relevant sections of your state Acts that are accessible online.

Fire hazards for access and egress should be considered in accordance with the National Construction Code (NCC). Under the current NCC Part H3, the following Deemed-to-Satisfy Provisions of Part apply.

Table 1: Deemed-to-Satisfy Provisions for fire

NCC SECTION	AREA	DEEMED-TO-SATISFY PROVISIONS FOR GREENHOUSES
H3.9	Fire hydrants and water supply	<ul style="list-style-type: none">- A greenhouse with a total floor area greater than 500 m² and located where a fire brigade is available to attend a building fire must be:<ul style="list-style-type: none">- Provided with a fire hydrant system installed in accordance with AS 2419.1- Located on the same allotment as an access point to a water supply- Water supply for a greenhouse must consist of one or any number of a water storage tank, dam, reservoir, river, lake, bore or a sea- If any part of the water supply is contained in a water storage tank it must be:<ul style="list-style-type: none">- Located not less than 10 m from the building- Fitted with at least one small bore suction connection and one large bore suction connection.

KEY MESSAGES

- Greenhouses or grow structures can be classified under the sometimes onerous and inappropriate classification of Class 7 or Class 8 within the National Construction Code (NCC)
- It's important to understand the fire access and egress requirements of your greenhouse under the NCC
- There are several Deemed-to-Satisfy Provisions for greenhouses under the NCC that you need to be aware of, which cover fire hydrants and water supply, fire hose reels, and portable fire extinguishers



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Table 1 continued

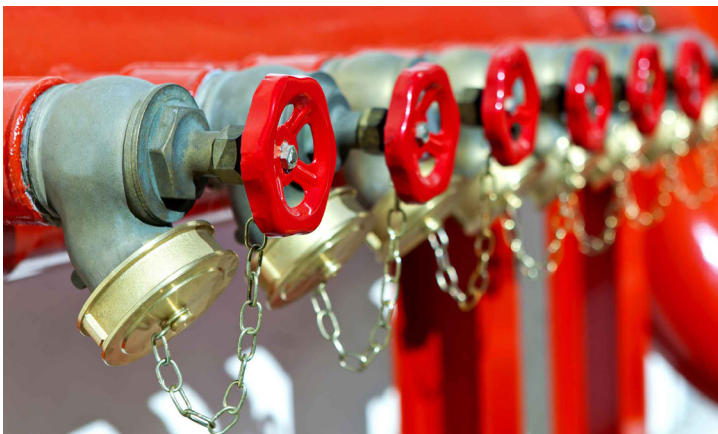
NCC SECTION	AREEA	DEEMED-TO-SATISFY PROVISIONS FOR GREENHOUSES
H3.10	Fire hose reels	A fire hose reel system need not be provided to serve a farm building where portable fire extinguishers are installed in accordance with the below provisions.
H3.11	Portable fire extinguishers	<ul style="list-style-type: none"> - A greenhouse not provided with a fire hose reel system in accordance with the NCC must be provided with: <ul style="list-style-type: none"> - one portable fire extinguisher rated at not less than 5ABE in each room containing flammable materials or electrical equipment - one portable fire extinguisher rated at not less than 4A60BE adjacent to every required exit door - location signs complying with clauses 3.3 to 3.9 of AS 2444 above each required portable fire extinguisher - A farm shed must be provided with not less than one portable fire extinguisher for every 500 m2 of floor area - A portable fire extinguisher must be: <ul style="list-style-type: none"> - Of ABE type - Not less than 4.5 kg in size - Installed in accordance with Section 3 of AS 2444.

Managing fire risk and associated consequences appropriately is becoming increasingly important to the financial viability of the greenhouse and grow structure industry in Australia. There are three major risk management tools that are commonly considered. These are:

- Risk control
- Risk sharing
- Risk communication.

Fire risk control may consist of risk assessment procedures, fire prevention, fire contingency plans and employee training. Insurance is considered a risk-sharing tool. Risk communication is usually between an employer and employees and is covered by a separate toolbox fact sheet Fire prevention and safety in this series.

Read the toolbox fact sheets Access and egress and Construction of exits in this series for further information.



IMPORTANT QUESTIONS TO ASK

- Do I understand my WHS obligations?
- Have I considered and appropriately addressed the Deemed-to-Satisfy Provisions that cover fire hydrants and water supply, fire hose reels and portable fire extinguishers under the NCC?
- Who is my local accredited building certifier and/or professional fire engineer with experience in the protected cropping industry?

REFERENCES AND FURTHER READING

Olivotto, M. (2014) Building codes and greenhouse construction, Osborn Lane Consulting Engineers, Warwick

Australian Building Codes Board (2016) National Construction Code 2016; Volume 1; Building Code of Australia; Class 2 to Class 9 Buildings, Commonwealth of Australia and States and Territories of Australia:

Part H3 Farm Building and Farm Sheds Section 3.9, pp. 378

Part H3 Farm Building and Farm Sheds Section 3.10, 3.11, pp. 379

Case study

Compliance with fire access and egress requirements in the Sydney Basin, NSW

A couple of growers in a cluster of medium technology and older polyhouse designed greenhouses decided to expand their area of production. This was so they could better supply the Sydney markets, which are just down the road. Unbeknown to them some of the conditions placed on the planning permit for fire compliance would prevent them achieving their business vision.

The group of growers had discussed the expansion opportunity for a while, but eventually decided to put their plans into action. They first met with the local Council, and the economic development officers were enthusiastic about the positive impact on the local economy.

After their development application was submitted, there were a number of changes requested by the local Council planning department and Fire Authority. Firstly, this included a height restriction below 3.5 metres because of the close proximity to a residential area. But the growers claimed they needed the additional height and ventilation to create a stable and homogenous climate for plant growth.

“Creating the right environment for plant growth is what it’s all about, that’s our business. We need to do this using the best technology available, not the old stuff we already had” said one of the growers.

Secondly, there were numerous fire safety matters to address. This mainly related to fire pumps and hydrants, however the existing greenhouses didn’t have these installed to the density the new development required. With the assistance of a fire engineer, the growers outlined the planned irrigation system and fire loading of the new structures. The Fire Authority still had concerns with the risk profile due to the existing structures on the farms. The planning officer at the local Council hadn’t seen a development like this before, so was unsure how to weigh-up the different information.

“We just kept meeting these road blocks. The compliance delays were really difficult to deal with” mentioned another grower.

Understanding who the local Council planning contact and main referral authorities are in your area is an integral first step. Often the Fire Authority, in this case metropolitan, will want to understand the site layout, existing structures and risk profile to better inform their requirements for the new development. Making sure you access the right experts is also important.

