

Design Requirements

Vehicle Access and Water Supply Requirements in Residential Developments

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Introduction

The Country Fire Authority is responsible for the protection of life and property from the adverse effects of fire in country area of Victoria. Loss of life and property in building fires, particularly in dwellings, is a major concern. To reduce the risk, multi-lot residential developments must be designed and located to provide ready access by fire trucks to structures and water supplies.

This guideline is a planning tool for developers, councils and consultants involved in the design and approval of lower rise residential developments. Those are areas where residential buildings do not exceed 3 storeys in height.

The document outlines objectives, how to achieve those objectives and CFA's preferred requirements.

Proposed development should be designed to meet CFA's preferred requirements. Explicit indication of compliance with the CFA preferred requirements on an application will assist in reducing the time required to process the application.

While it is anticipated that most multi-lot residential developments will meet the CFA preferred requirements, an applicant may achieve the objectives in new or innovative other ways. If it can be demonstrated to the satisfaction of CFA that the development will achieve the objectives for both access and water supply. Each case will be considered on its merits. This assessment process may take longer than one that meets the CFA preferred requirements.

We look forward to working closely with our communities and building designers to ensure that we can effectively meet our legislative obligations to prevent and suppress fires, and to protect our communities.



Jason Heffernan
Chief Officer

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How to use this document

All new residential developments should be provided with:

- appropriate vehicle access in accordance with **Part A** of this document.
- an appropriate source of water for firefighting purposes in accordance with **Part B** of this document.

Variations

Where requirements in this document are unable to be complied with for heritage, functional or any other exceptional reason, then details of the proposed development design should be provided to:

Country Fire Authority

Fire Risk, Research & Community Preparedness
8 Lakeside Drive, Burwood East
PO Box 701, Mt Waverley VIC, 3149

firesafetyreferrals@cfa.vic.gov.au

(03) 9262 8444

Part A – Vehicle access requirements

Objective

To provide safe and efficient emergency vehicle access to all properties.

How to achieve the objective

A residential development needs to be designed to allow a fire truck to travel to and be positioned close to each property to allow for an effective emergency response.

The requirements on the following pages outline CFA's expectations on how this should be achieved.

Maximum distances from a hardstand

A fire truck needs to be able to travel to and park close to every property. The maximum distance from where a fire truck is able to park (known as a hardstand) to the rear of every building, property boundary or building envelope should not exceed 60 m.



A hardstand is an all-weather location where an appliance can park safely, and firefighters can then conduct operations from, which may include a road.

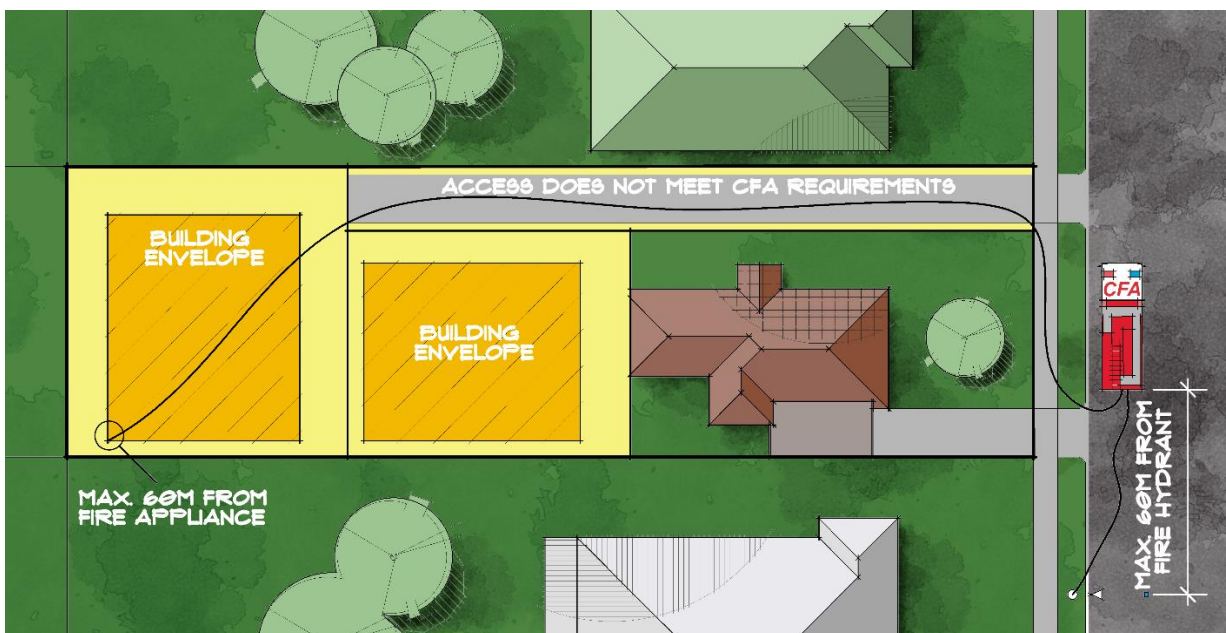


Figure 1: Road as the hardstand.

In Figure 1, the fire truck is unable to access the property. In this instance, the fire truck would need to be parked on the road, and the 60m maximum distance would be

measured from the closest point a fire truck could park to the rear of the property or building envelope. See Part B for details on hydrant coverage.

Minimum widths

In areas where residential development is less than 3 storeys, then the minimum trafficable width for fire truck access to a hardstand must be:

- **3.5 m, with no parking on either side** (with appropriate signage restricting parking on both sides), or;
- **5.5 m with parking on one side** (with appropriate signage restricting parking on one side), or;
- **7.3 m with parking on both sides.**

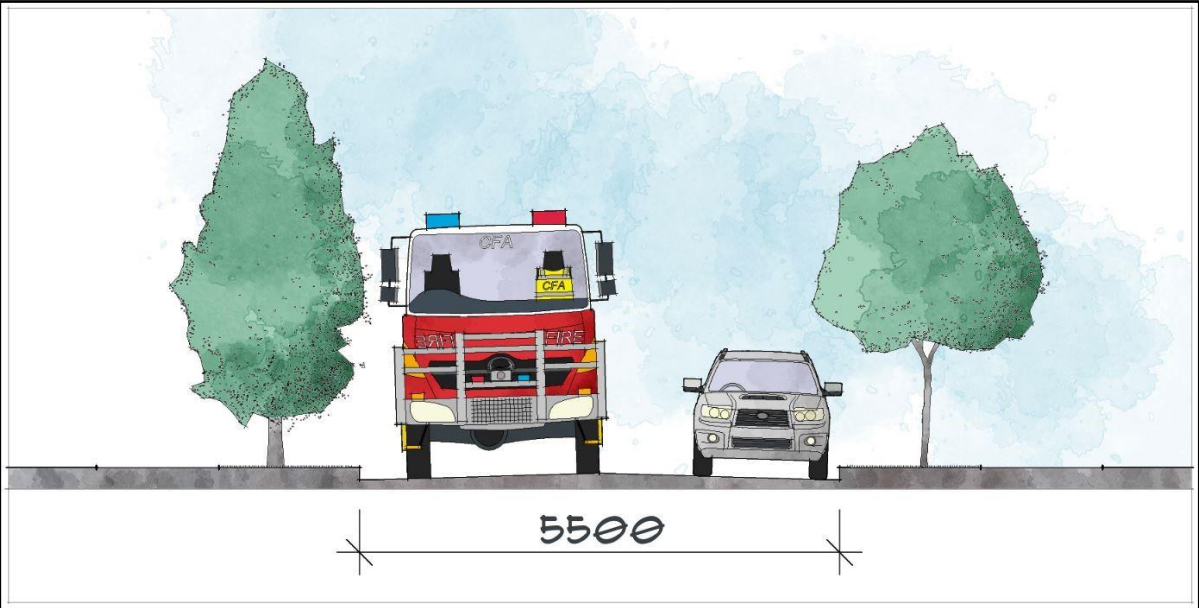


Figure 2: Parking on one side of the street.

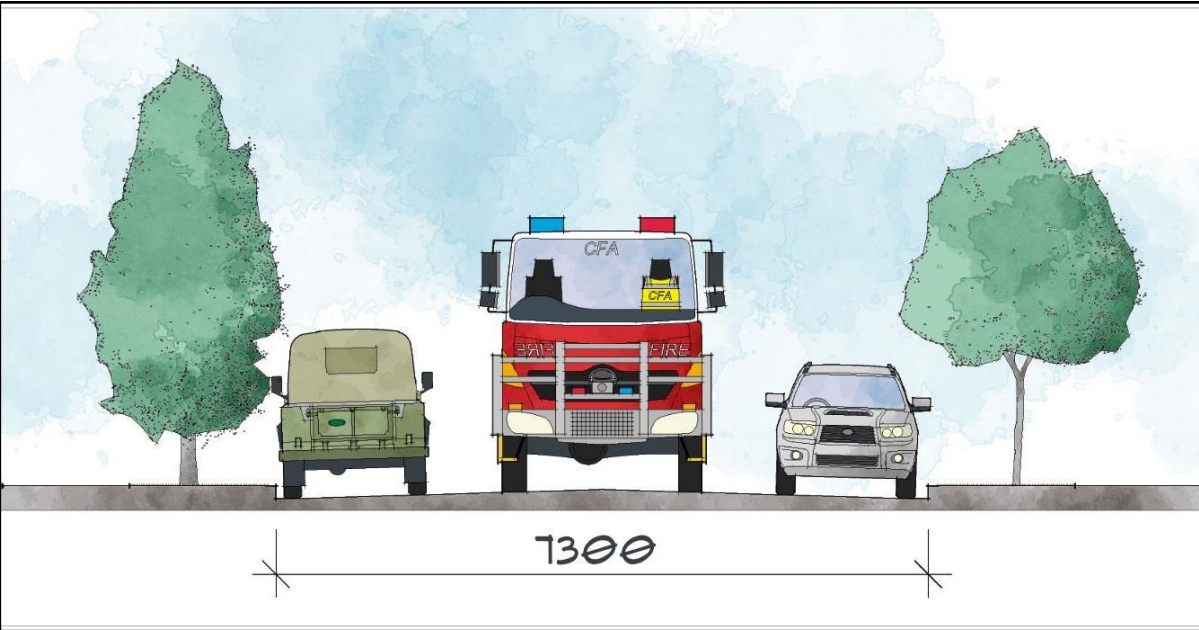


Figure 3: Parking on both sides of the street.

The trafficable width must only include that part of a roadway a fire truck can safely traverse. The trafficable width should not include barrier kerbs such as vertical gutters or traffic calming devices but may include mountable or semi-mountable kerbs.

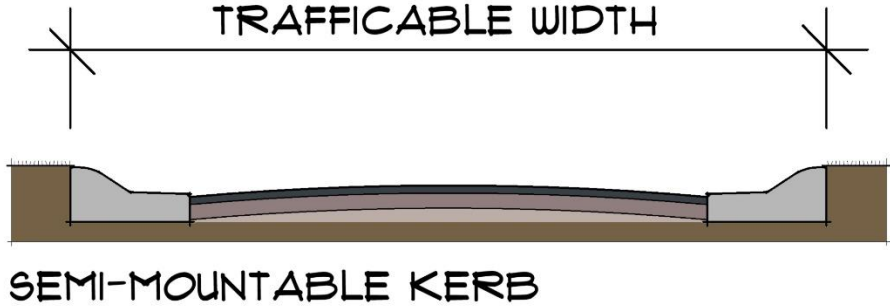
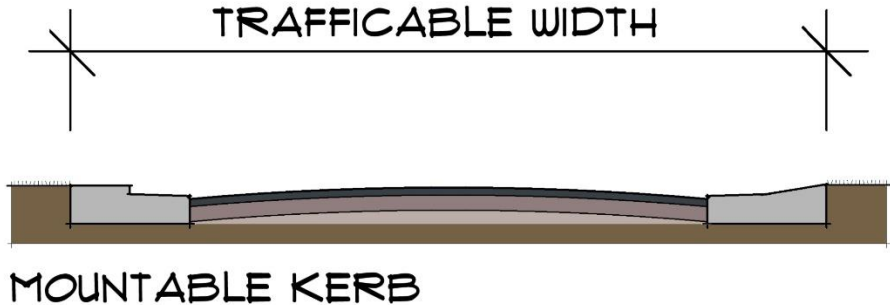
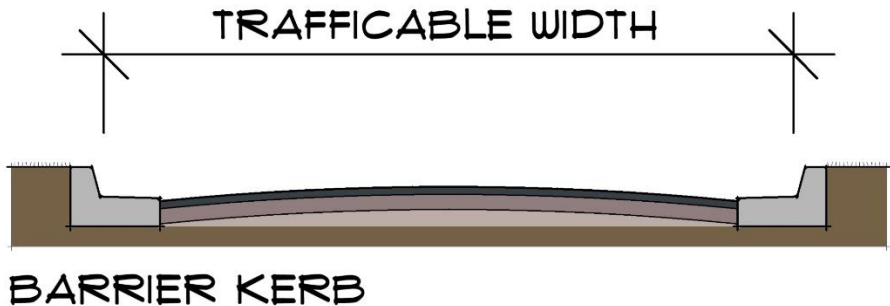


Figure 4: Measuring trafficable width.

Minimum clearances

All areas of vehicle access to a hardstand must be clear of encroachments for at least 0.5 m either side and 4 m vertically.

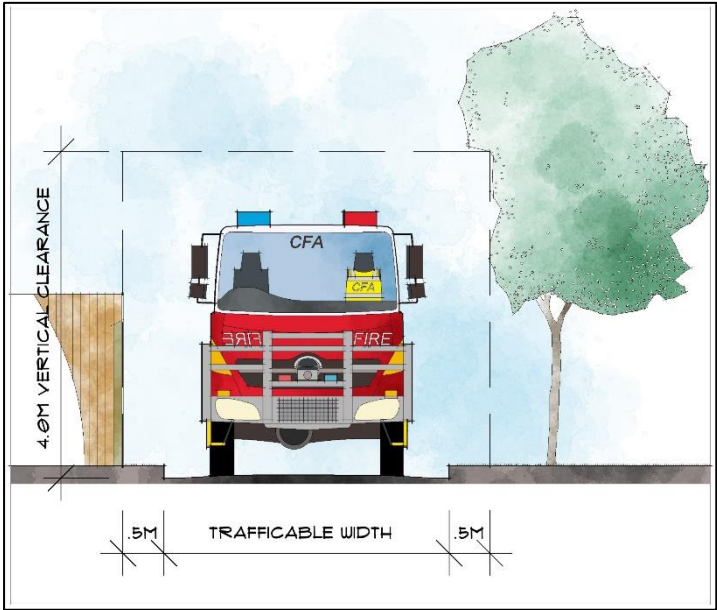


Figure 4.1: Clearance envelope example.

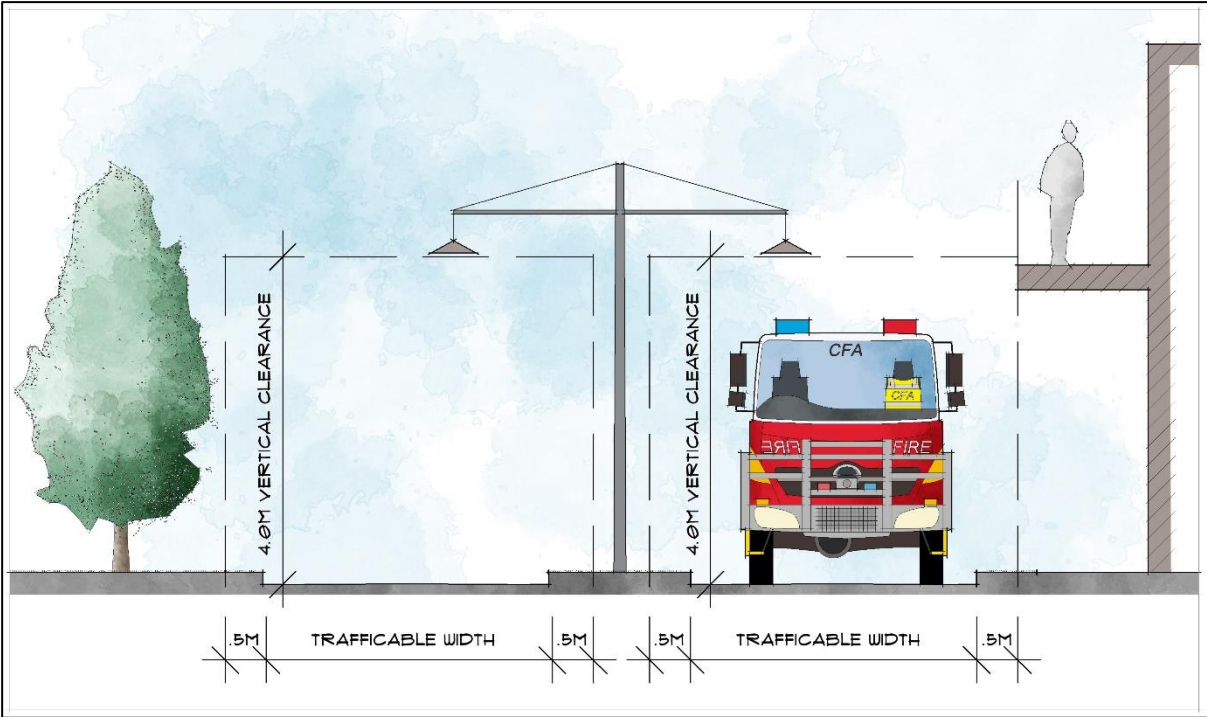


Figure 4.2: Clearance envelope example.

Turning provisions

Vehicle access to a hardstand should be designed to allow for a fire truck to leave the hardstand in a forward direction. This can be achieved with loop roads, perimeter roads and the like. Where this cannot be achieved, then the maximum distance that a fire truck can be expected to reverse safely is 60 m.

Where vehicle access to a hardstand is greater than 60 m, such as dead-end roads or a single access, a turning area complying with one of the following options should be provided. No parking is permitted in the turning area at any time (appropriate signage should be provided).

Where vehicle access to a hardstand is greater than 60 m but is to be continued in the future, for example, in a staged subdivision, temporary turning provisions must still be provided to enable safe access and egress during an emergency.



If the local government has adopted the Infrastructure Design Manual, or there are specific requirements outlined in a Structure Plan or the like, turning provisions or court bowls should be provided to the relevant requirements. Roads designed to Austroads standards for an 8.8m service vehicle will meet CFA's requirements.

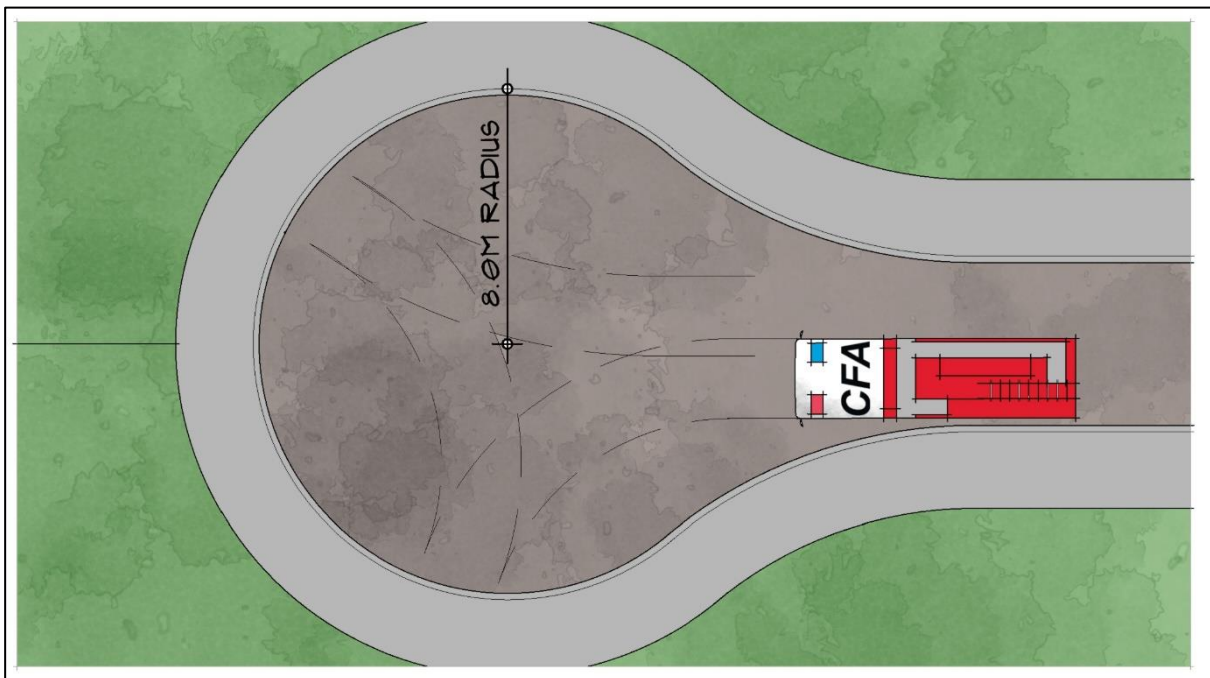


Figure 5: Court bowl example.

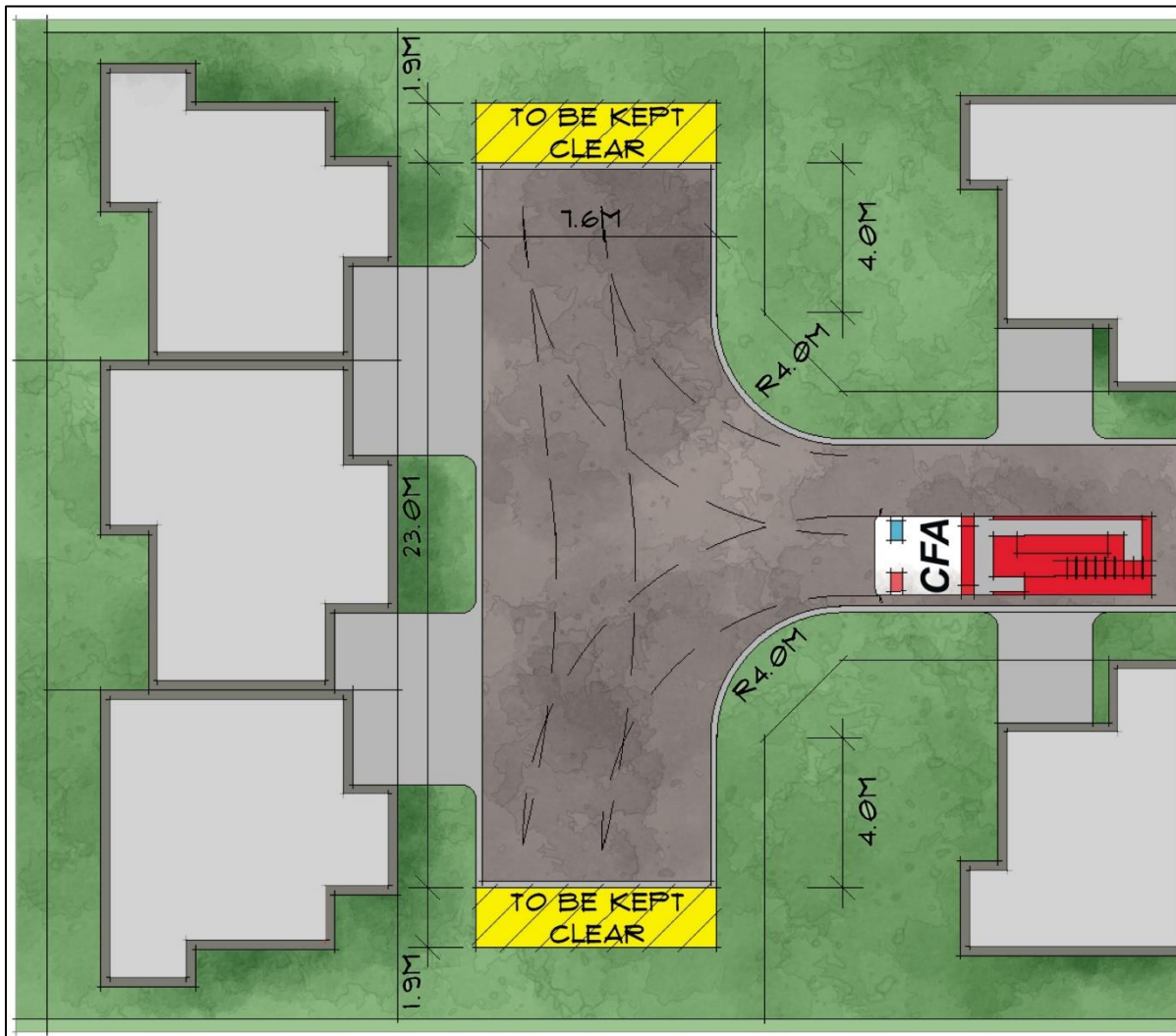


Figure 6: A 'T' head example.

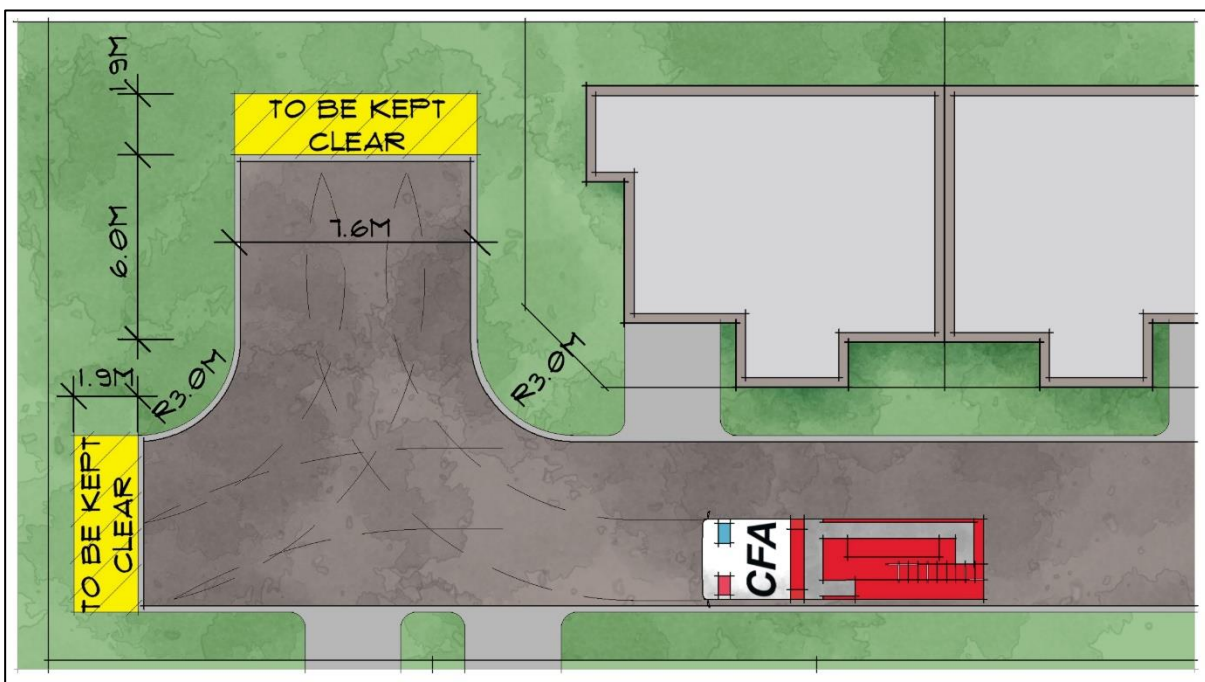


Figure 7: A side turning bay example.

Maximum gradients

Vehicle access gradients must not exceed 11.3 degrees (1 in 5 or 20%) for no more than 50 m and the average grade must be no more than 8.1 degrees (1 in 7 or 14.4%).

Any dedicated turning area must not have a gradient that exceeds 3 degrees (1 in 19.3 or 5.25%) cross fall.

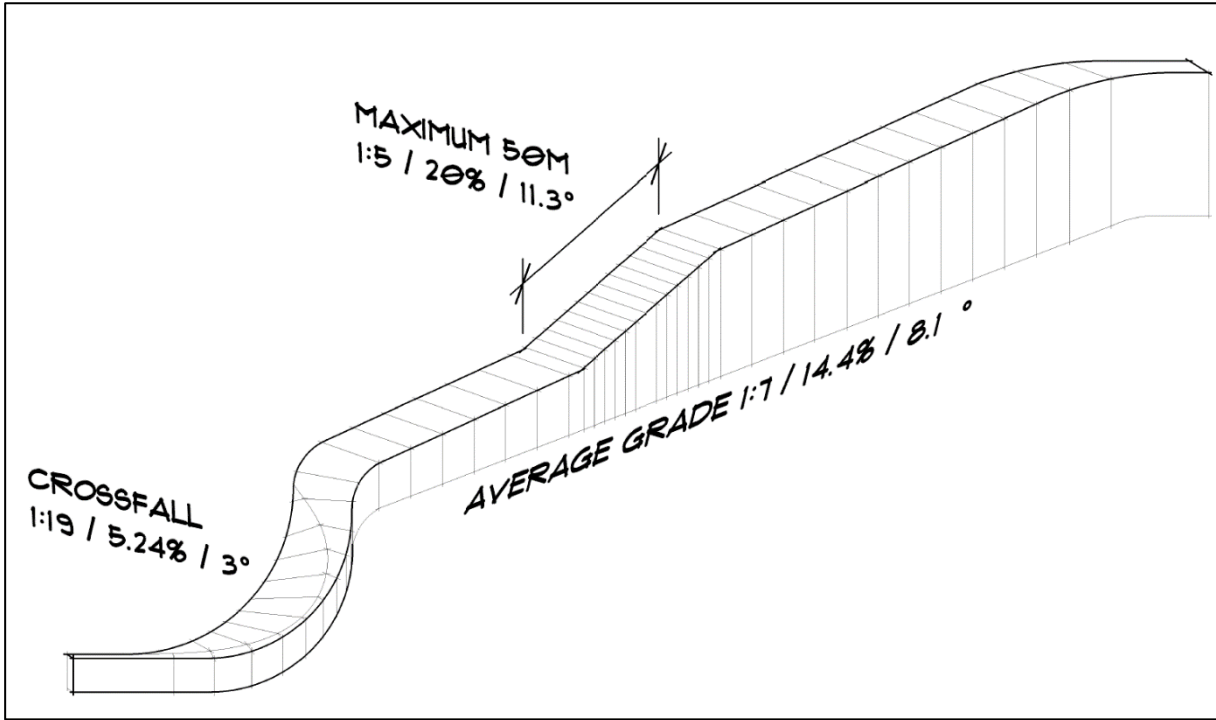


Figure 8: Maximum gradients for vehicle access.

Part B - Water supply requirements

Objective

To provide fire fighters with efficient access to an appropriate water source for firefighting purposes.

How to achieve the objective

Fire hydrants should be provided in areas of reticulated water.

Dedicated firefighting water tanks should be provided in areas without reticulated water.

The following requirements outline CFA's expectations on how this should be achieved.

Areas with reticulated water

A fire hydrant needs to be located within 120 metres from the rear of all buildings, building envelopes or lots.

This distance is derived by adding 60 m from the hydrant to the hardstand, plus 60 m from the appliance to the rear of the allotment or building envelope.

This distance must be measured as a hose would be laid. That is along the ground and around fences and the like.



Firefighting operations are restricted by hydraulics and beyond 60 m efficiency and effectiveness begins to deteriorate significantly. This also considers operational requirements and firefighter safety.

Fire hydrants need to also be located so that they are no more than 200 metres apart and reasonable clearance is provided around them from obstructions (gardens, fences, bollards and the like).



Figure 9: If building envelopes (or buildings) are provided.

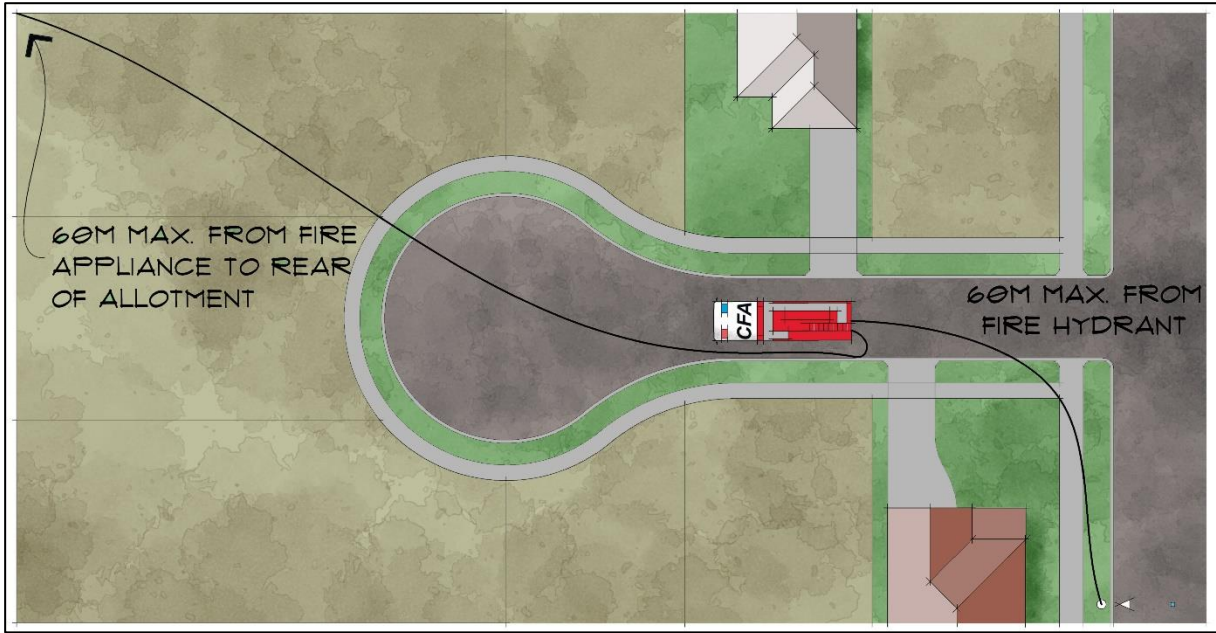


Figure 10: Hydrant coverage the rear of the allotment.

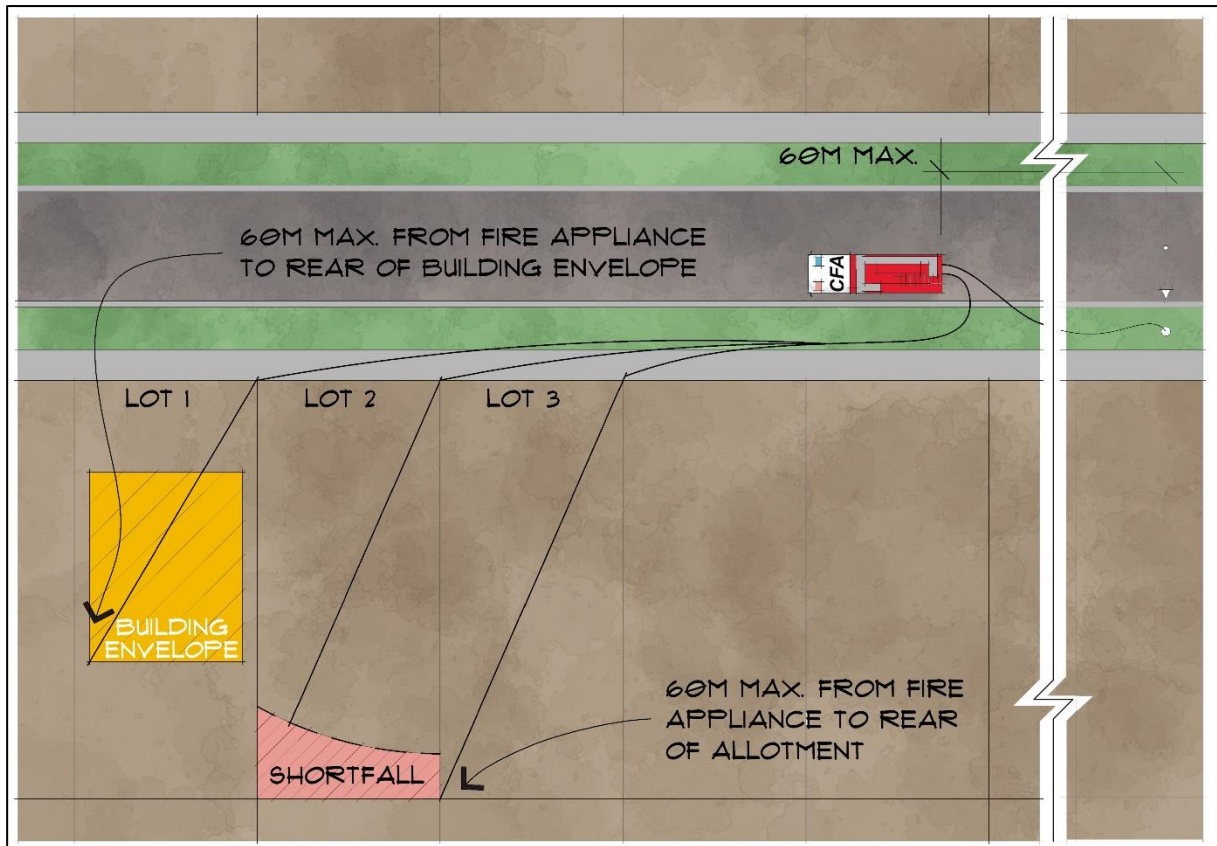


Figure 11: Hydrant coverage scenarios.

Figure 11 shows three common scenarios:

- As the rear of the allotment is not within 120 m of the hydrant, Lot 1 achieves hydrant coverage by having a building envelope that **is** within 120 m of the hydrant.
- Lot 2 **does not** achieve hydrant coverage. A solution may be to provide a building envelope or install a closer street hydrant to provide compliant coverage.
- The rear boundary of Lot 3 is within 120 m of the street hydrant and achieves coverage.

Care should be taken at the design stage to ensure that the proposed lot layout will enable hydrant coverage to be achieved.

Fire hydrants must be identified as specified in the CFA publication titled “Identification of street Hydrants for Firefighting Purposes” (available at <http://www.cfa.vic.gov.au>).



Areas without reticulated water

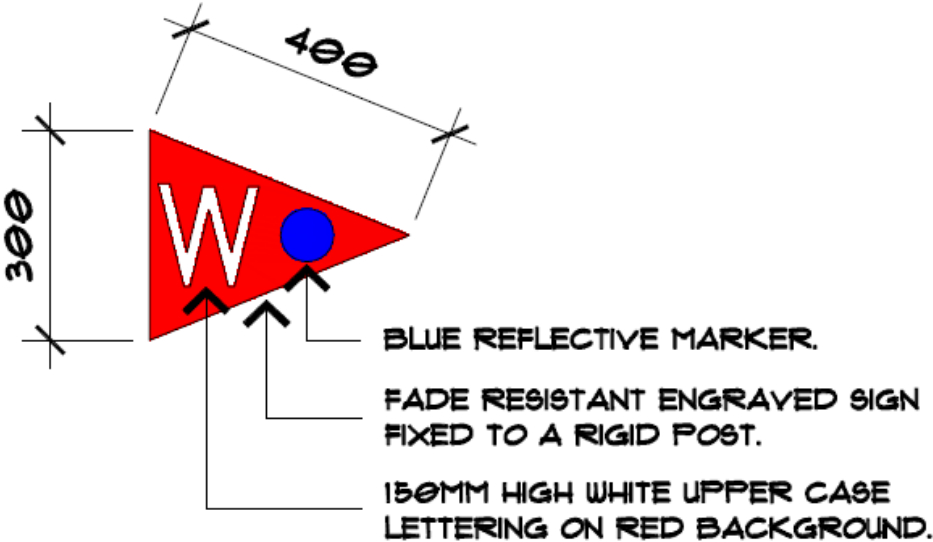
A water tank should be provided within 60 m from the rear of all buildings, building envelopes or lots. The minimum requirement under the Bushfire Management Overlay and other parts of the Victoria Planning Provisions is a 10,000-litre (per dwelling) water supply for firefighting purposes, stored in an above ground water tank constructed of concrete or metal.

Water is the primary fire suppression tool and critical to support search and rescue. In areas without reticulated water it may be difficult to secure water, so it is important that an adequate water supply is readily available for firefighting purposes. While 10,000 litres may be sufficient to suppress embers around an individual house from a bushfire, it may not allow firefighters to conduct search and rescue operations or contain a structure fire.

CFA recommends a minimum capacity of 20,000 litres should be provided for structural firefighting purposes where a hydrant is not available. This would give firefighters approximately 30 minutes of water supply to begin search and rescue and firefighting operations (based on two branches/hoses operating) and provide enough time to respond with extra appliances to supply additional water.

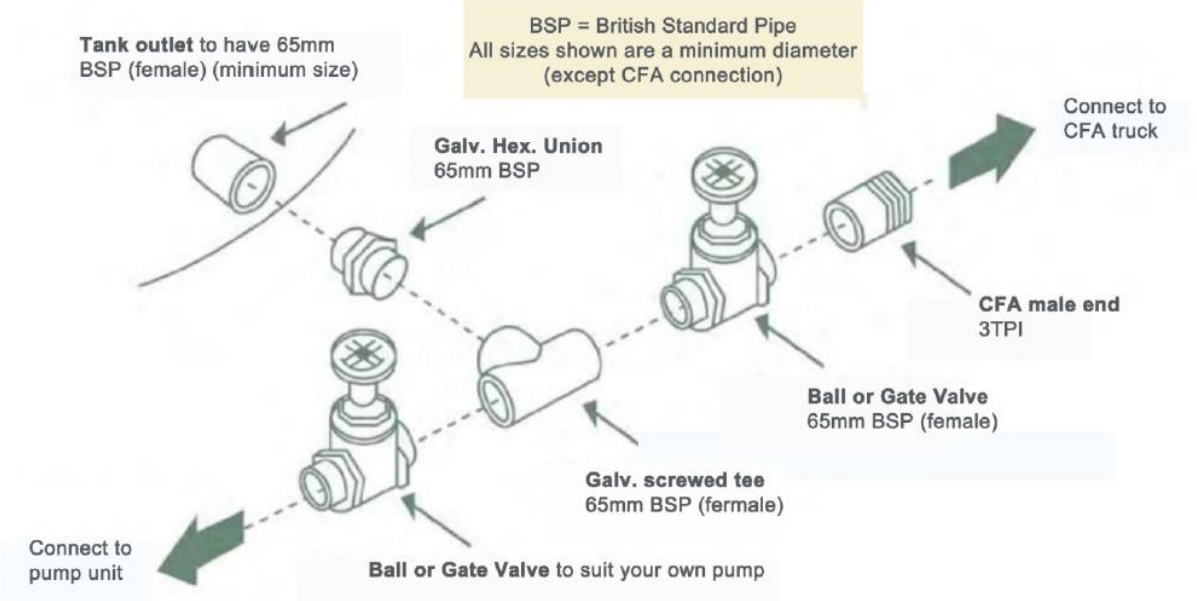
Firefighting water can be stored within the same tank as domestic water. However, the outlet for domestic use should be located above the firefighting outlet to ensure the effective capacity of dedicated water for firefighting purposes is provided.

The location of the water tank should be visible from the direction of vehicle approach to the property, or the following signage must be provided pointing to its location.



The fire water tank should include a ball or gate valve and a CFA male 64 mm 3 thread per inch fitting.

! It is also recommended that a separate outlet for firefighting for the use of the occupants of the building. This is particularly important in areas which may be at risk from bushfire.



The water tank should include signage on it stating “FIRE WATER” in a colour that contrasts with the tank with lettering that is at least 50 mm in height.



A fire truck must be able to park at a hardstand that is within 4 m of the CFA outlet connected to the water tank (**please refer to Part A for access requirements**).

The distance from the hardstand to the water tank outlet must be measured across the ground as a hose would be laid.

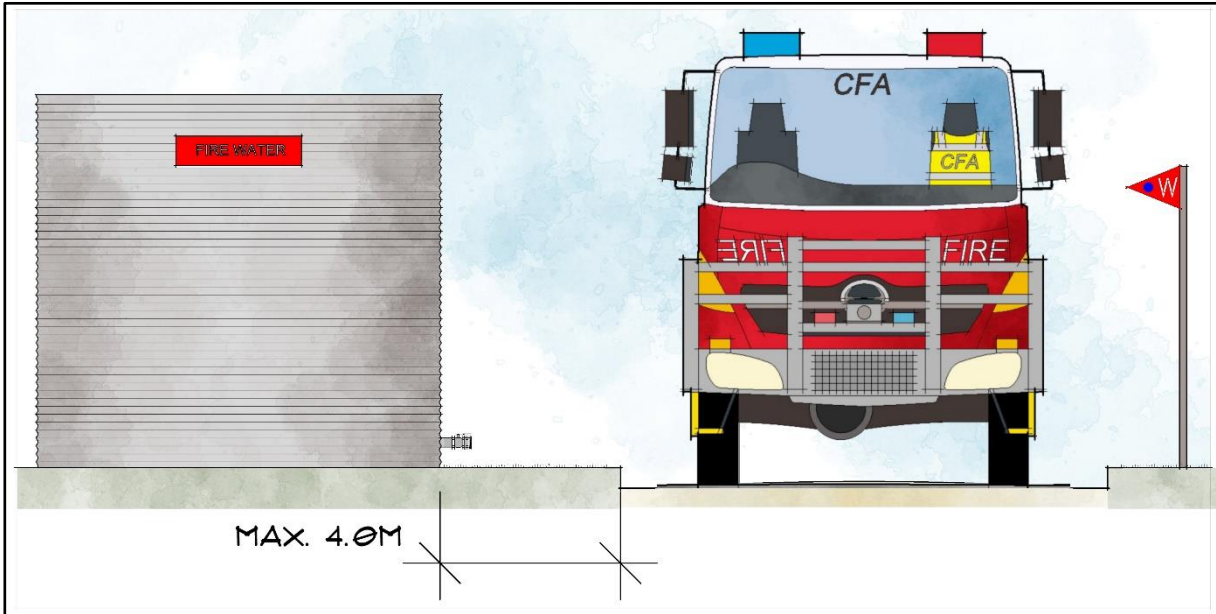


Figure 12: Maximum distance from hardstand to outlet.

Remote outlets

Sometimes a fire truck cannot get within 4 m of the outlet for a variety of reasons including siting constraints, site slope, existing buildings and the like. In these circumstances a remote outlet might be a suitable option.

Further guidance on the design and installation of a remote outlet can be found in the CFA publication titled “Guidelines for remote outlets on water tanks in the Bushfire Management Overlay” (available at <http://www.cfa.vic.gov.au>).