

# Guidelines for remote outlets on water tanks in the Bushfire Management Overlay



## 1. Background

### **Bushfire Management Overlay and Bushfire Protection Measures**

Before a planning permit in the Bushfire Management Overlay (BMO) is granted, the permit application must demonstrate how certain bushfire protection measures will be met.

The bushfire requirements of the Victoria Planning Provisions (VPPs) can be found at Clause 13.02, Clause 44.06 and Clause 53.02. These requirements broadly relate to construction standards, vegetation management, the location and amount of static water and vehicle access to the site and water supply.

### **Access to the Static Water Supply – What does the planning scheme say?**

The size of the land and access to a reticulated water supply forms the basis of both determining how much static water is required and whether access to the water supply must be provided for the fire authority i.e. CFA.

Where the size of the site is greater than 1000 m<sup>2</sup>, you must provide the relevant fire authority with access to a static water supply of at least 10,000 litre for fire fighting. This requirement applies regardless of whether a reticulated water supply is available in the area.

For a site between 500 and 1000 m<sup>2</sup>, fire authority access to the water supply is only needed where a fire hydrant is further than 120m from the development.

Sites less than 500 m<sup>2</sup> do not need to provide fire authority access to the static water supply.

### **How is access to the water supply provided?**

A static water supply required for fire fighting must be provided in a non-combustible water tank constructed of concrete or metal.

To ensure a fire truck can access the water tank, a CFA fitting (known as a coupling) must be provided on the outlet of the tank. A separate connection is needed to provide the owner/occupier of the land with access to the water supply in the event of an emergency.

## **Location of the water tank and outlet**

An outlet is normally attached to the water tank itself and is required to be located so that a fire truck can get within 4m of this outlet. This requirement generally translates to having the water tank within 4m of a driveway.

In some instances, it can be difficult to site a water tank in a location where a fire truck can access it. It may be desirable to locate the outlet of the tank and CFA coupling remotely from the tank. Instead of having the CFA fitting at or on the water tank, it can be provided at another location and connected to the tank via a pipe.

Where water travels through pipes, water flow and pressure can be reduced because of factors such as friction. Unless the system is properly designed, the greater the distance the water needs to travel the greater the reduction in flow and pressure. If the outlet is to be located away from the tank care needs to be taken to ensure that water is available at the outlet at the same level of performance as if the outlet was at the tank. Otherwise, adequate water will not be available for fire fighting.

The purpose of this guideline is to provide applicants with advice and an explanation of the standard requirements and conditions needed to ensure that where a remote outlet is installed adequate water for fire fighting is maintained.

## **2. Glossary**

In this document, the following terms are limited to the meanings described below.

### **CFA Outlet**

This is the outlet from the static water supply that is designed to be used by the fire authority to access the water supply. In the case of a remote outlet, it will be located some distance from the tank.

### **Coupling**

A plumbing fitting that enables a hard suction hose to be connected to a pipe. For example, the 64mm male three thread per inch fitting which allows the CFA to connect to the water supply is a coupling.

### **Effective Capacity**

This is the volume of water in a static water supply that is actually available for fire fighting. If there is nothing to prevent a vortex forming when the tank is getting low, the effective volume will be less than the volume between the top of the outlet and the full supply level.

### **Fire Truck**

This is a vehicle used by a fire authority to combat a fire. It is a truck that has been especially adapted for this purpose.

### **Fitting**

A fitting is a detachable part of the plumbing. Bends, reducers, valves and couplings are all fittings.

### **Hard Suction**

This is a pipe that is used to draw water from a static water supply into a fire truck. It is constructed in such a way that it is flexible enough for the task but is also strong enough to withstand the vacuum from a fire truck's pump.

### **Occupant's Outlet**

This is the outlet from the static water supply that is designed to be used by the occupant of the dwelling in the case of a fire. It may be located either at the static water supply or with the CFA outlet.

### **Riser**

This is the vertical section of pipe at the remote outlet.

**Static Water Supply**

Means a body of water confined within a vessel (such as a tank) set aside for use in the event of a fire. Swimming pools and dams cannot be used to meet the static water supply requirements of the BMO.

**Vortex**

This is a whirlpool that forms under certain conditions near the outlet of a tank when water is being pumped out. It forms when the level of the water in the tank nears the outlet. When it forms, the pump draws in air with the water and the ability to pump the water is effectively lost.

### **3. Standard Water Supply and Access to Water Supply requirements**

Planning schemes prescribe the basic requirements for the volume of static water needed and whether access to this water supply must be provided. The specific requirements can be found within Tables 4 and 5 of Clause 53.02.

To ensure that a fire truck will be able to use the static water supply, CFA has a standard set of conditions which are generally applied to planning permit applications located in the BMO. These are available on the CFA website (<http://www.cfa.vic.gov.au/plan-prepare/planning-and-bushfire>).

### **4. Using a Remote Outlet**

Where a remote outlet is used the standard requirements of the planning scheme remain in place. This includes, the volume of the static water, access to within 4m of the outlet and the tank being of concrete or steel.

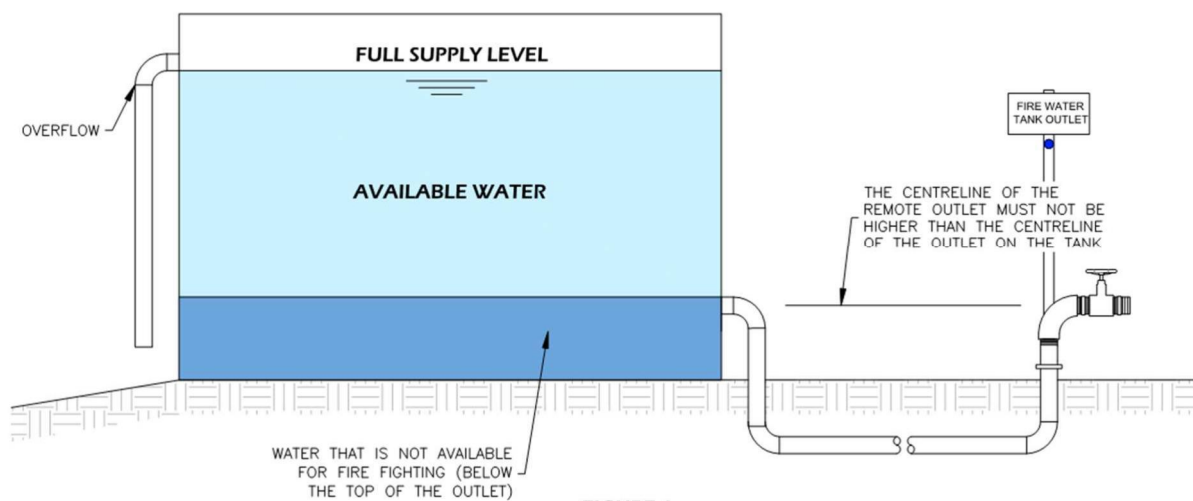
There are however, additional requirements that need to apply when a remote outlet is installed to ensure that the same standard of water availability and access is maintained. Together with the standard conditions, these additional conditions should form part of your Bushfire Management Plan (BMP).

These requirements, in addition to the other information in this guideline, should assist you in designing an appropriate remote outlet system as part of your proposal.

### **5. Design Considerations**

#### **a) Location of Static Water Supply in relation to the Remote Outlet**

The remote outlet must be no higher than the outlet on the tank (See Figure 1 below). This is to simplify the process of priming the pump on the fire truck and so a fire fighter can quickly tell water is available by simply turning on the valve at the remote outlet. This will be the case even if the tank is not completely full.



**FIGURE 1**

**REMOTE OUTLET HEIGHT IN RELATION TO THE TANK OUTLET**

## **b) Pipe size**

The pipe sizes from the tank to the remote outlet are provided in Appendix 1 have been calculated based on a fire truck drawing water from the tank at a rate of 20L/s and represents the minimum sizes and classes of pipe to be used to avoid negative pressure from the pump damaging the pipe. The calculations also assume that a 64mm diameter CFA coupling is being used at the outlet.

## **c) The Outlet**

To allow fire fighters suitable access, the remote outlet must be above ground and its centreline must be between 300mm and 600mm above the surrounding ground level. The CFA coupling must be located horizontally so that a suction hose can be easily attached to it and the truck. There must be good fire fighter access to the outlet and the ground around the outlet should be clear of all vegetation for a distance of 1.5m.

The riser must be made of corrosive resistant metal (see item e) below). It must also be adequately supported by a steel post which is concreted into the ground. (See Figure 3)

The remote outlet should be located so that a fire truck is able to park safely and not impede passing traffic. Below ground outlets are not permitted.

Figure 2 below shows examples of a remote outlet with only a CFA coupling only and a remote outlet with both a CFA coupling and a coupling for occupant use.





CFA Outlet Only



CFA & Occupant Outlet

**FIGURE 2**

Example remote Outlets

#### **d) Identification**

A permanent sign is required to be attached to the top of the post supporting the riser so that fire fighters can quickly identify that the outlet is connected to a static water supply for fire fighting. A blue reflector is also required to be attached to this post to aid in locating the outlet at night. The specifications for this reflector should be in accordance with the details given under item 5.1.1 of the "Identification of Street Hydrants for Fire Fighting Purposes".

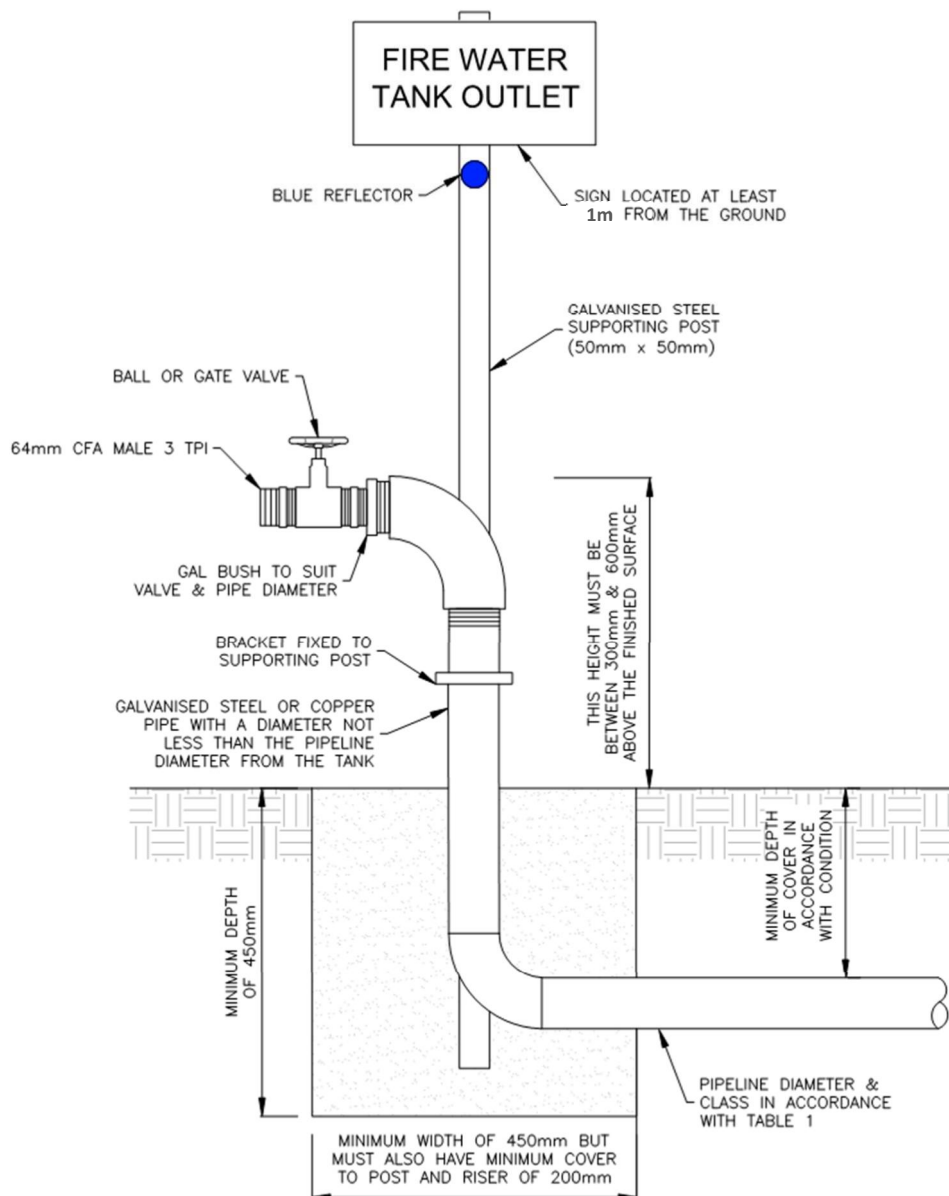
The remote outlet should be readily identifiable from the entrance to the property or the dwelling/ building. This is so that fire fighters don't waste valuable time in searching for it. If the outlet is not readily identifiable, standard signage must be installed to direct fire fighters to the outlet.

#### **e) Protection of pipework**

The pipeline between the tank and the remote outlet must be installed so that it is not easily damaged. For the below-ground pipework, this can be achieved by ensuring that there is adequate cover over the pipeline. To achieve adequate cover, all below-ground water pipes must be installed to be at least the following depth below the finished surface:

- 300 mm for pipes subject to vehicle traffic
- 75 mm for pipes under dwellings or concrete slabs
- 225 mm for all other locations

All above ground pipework (e.g. the riser) and fixings and fittings must be made of corrosive resistant metal.



**FIGURE 3**  
**REMOTE OUTLET ARRANGEMENT**

#### **f) Distance of Outlet from a dwelling**

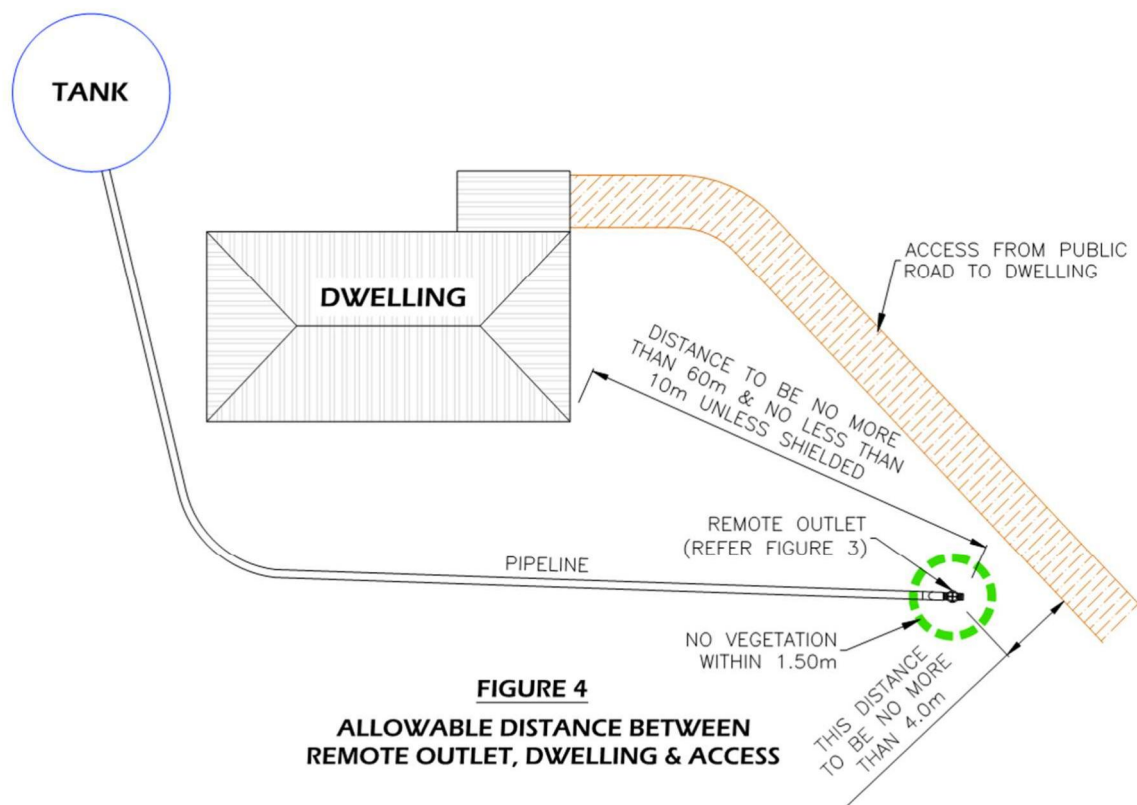


The remote outlet should be located within 60m of the dwelling and be no closer than 10m unless adequate shielding is provided.

If the outlet is too far from the dwelling it becomes inefficient for a fire truck to use it to protect that dwelling. If the dwelling is on fire where the outlet is less than 10m from the dwelling, it may not be possible to access the water supply because of radiant heat. However, if the remote outlet is provided with adequate heat shielding it may be permitted to be closer than 10m. For example, a brick wall without windows extending for 2m on each side of the outlet and 3m above would provide suitable shielding.

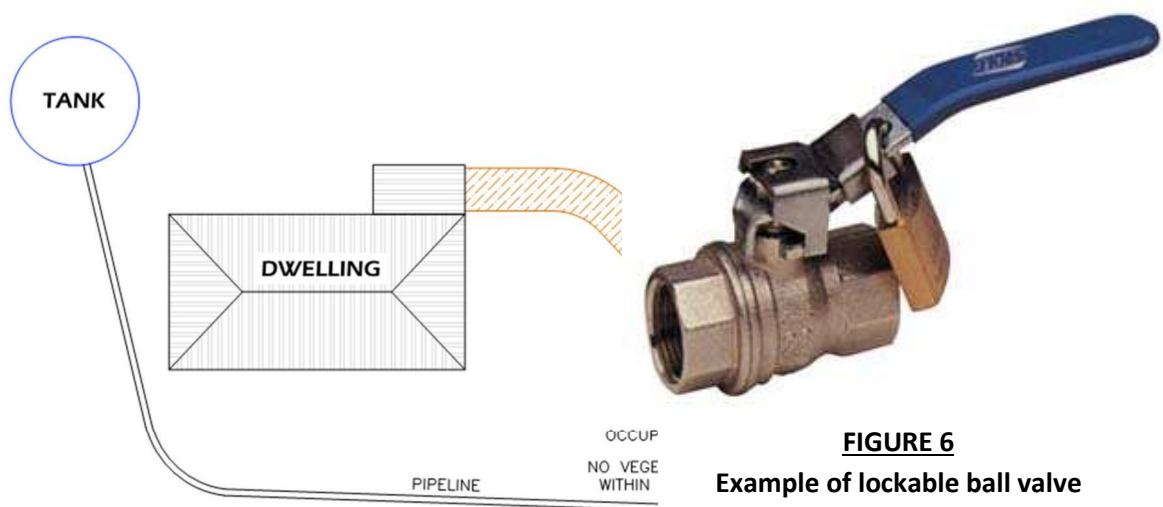
#### **g) Distance between Tank and Remote Outlet**

As can be seen from Appendix 1, the pipe diameter must be increased as the pipeline between the remote outlet and the tank increases. The maximum distance which is allowed using Appendix 1 is 100m. If the pipeline length is greater than this, calculations from a hydraulic engineer demonstrating that the pipe size and class is adequate must be submitted for assessment. Figure 4 shows the limitations on the distances between the dwelling, the tank and the remote outlet.



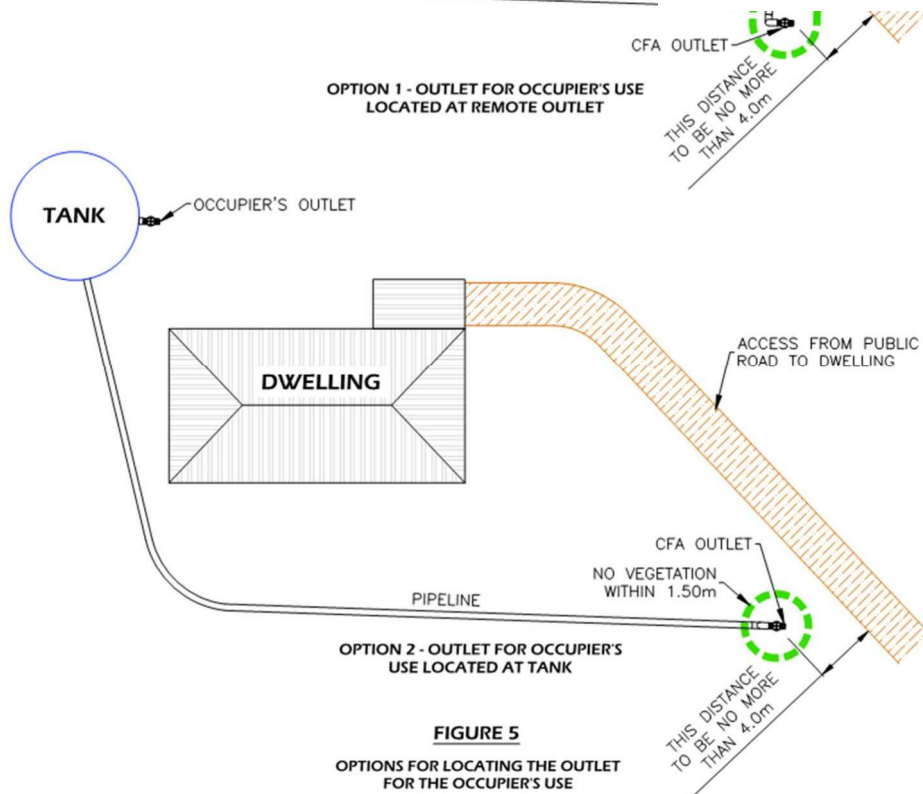
## Additional Outlet for Occupier Use

The static water is for use in an emergency and must be accessible by not only the fire brigade but also the occupants of the dwelling. Where the CFA outlet is remote from the tank, the occupant's outlet may be located either at the tank or at the remote outlet. The outlet for the occupier's use must have a ball or gate valve but the sizing and type of fitting is optional and should be designed to suit the occupier's needs. For example, it may be designed to either connect to a pump or for filling buckets. The plumbing for the occupant's outlet must not impede the performance of the CFA outlet. Figure 5 shows the plumbing arrangements that may be used for locating the outlet for the occupier's use at the tank or at the remote outlet.



**FIGURE 6**

**Example of lockable ball valve**



**FIGURE 5**

**OPTIONS FOR LOCATING THE OUTLET FOR THE OCCUPIER'S USE**

## h) Only One Valve Permitted

Version 2 September 2017 (reviewed January 2020)

A ball or gate valve between the tank and the CFA outlet may be needed so that maintenance can be carried out on the pipeline. Where ball or gate valves, other than those at the remote outlet are installed they must be locked in the open position (e.g. with a padlock as shown in Figure 6). This is to prevent the possibility of a valve at the tank being turned off when the water is needed at the remote outlet in an emergency.

## Appendix 1: Pipe Sizes & Classes Required for Remote Drafting

Length of pipe between tank and remote outlet	10m		20m		30m		40m		50m		60m		80m		100m	
Pipe Type	PVC/Cu	HDPE	PVC/Cu	HDPE	PVC/Cu	HDPE	PVC/Cu	HDPE	PVC/Cu	HDPE	PVC/Cu	HDPE	PVC/Cu	HDPE	PVC/Cu	HDPE
Vertical Height between tank outlet and remote outlet																
Level (0m)	80	90	80	90	100	125	100	125	100	125	100	125	150	180	150	180
Remote Outlet 1m below tank outlet	80	90	80	90	100	125	100	125	100	125	100	125	100	125	150	180
Remote Outlet 2m below tank outlet	80	90	80	90	100	125	100	125	100	125	100	125	100	125	100	125
Remote Outlet 3m below tank outlet	80	90	80	90	80	90	100	125	100	125	100	125	100	125	100	125
Remote Outlet 4m below tank outlet	80	90	80	90	80	90	100	125	100	125	100	125	100	125	100	125
Remote Outlet 5m below tank outlet	80	90	80	90	80	90	100	125	100	125	100	125	100	125	100	125

Notes:

1. PVC pipe is to be Class 12
2. Copper pipe is to be Class A
3. HDPE pipe is to be PN 12.5
4. Nominal pipe diameters in mm are shown in blue (PVC and Cu) and red (HDPE)