

## Guidelines for Wind Farms March 2016

CFS has an interest in appropriate development planning and response arrangements to mitigate the risks posed by wind turbine operations and risks to those operations from external fire.

CFS's responsibility does not extend to regulating and certifying wind farm building standards, operator's insurance arrangements, or operational restraints on the operator.

While there cannot be any guarantee that an installation involved in electricity generation can never malfunction and cause a fire, the potential for fire of wind turbines is inherently low.

A number of steps can be undertaken by planning authorities, CFS and wind farm operators to minimise the possibility of bushfire being caused by a wind turbine or as critical infrastructure being affected by bushfire entering the site, including:

- Development control processes which guide the siting of installations, the provision of fire vehicle access, water supply for firefighting, and vegetation management
- Development of CFS risk and response plans to define how CFS will respond to fire in wind farm developments.
- Development of emergency risk management plans by wind farm operators.
- Compliance with hazard reduction responsibilities defined under the *Fire and Emergency Services Act, 2005*

### Fire fighting

CFS recognises that there is a risk of wind turbines catching alight but evidence in SA indicates that this risk is low. Additionally there is a risk that wind farm developments may be impacted by fire as is likely with any asset in bushfire prone areas of the State.

CFS has a statutory responsibility for the protection of life, property, and the environment from fire and other emergencies as defined in Section 59 of the *Fire and Emergency Services Act, 2005*.

The CFS response strategy is based on the level of risk. Responses are planned at the local level according an identified hierarchy of risks as defined in the CFS risk and response planning processes. The planning process will identify what resources will be deployed to combat known risks within an area.

The use of fire fighting aircraft may be considered as part of a planned response to an incident but such resources will be included as part of an integrated plan to support the efforts of ground-based resources.

Aircraft may be used to support firefighting activity within wind farm developments but, considering that such developments are likely to be located outside of CFS designated aircraft Primary Response Zones, aircraft will not be considered as part of an initial response by CFS to fires in these areas.

CFS fire suppression aircraft operate under *Visual Flight Rules* and as such, these aircraft only operate in areas during daylight hours where there is clear visibility.

Aircraft operators undertake a dynamic risk assessment of all risks to aircraft safety during an incident. The presence of wind turbines, high towers and voltage transmission lines, on or near a fire ground would be considered in the incident action plan.

## 1. Location of Wind Turbines

It is preferred that wind turbines be located on open grassed areas

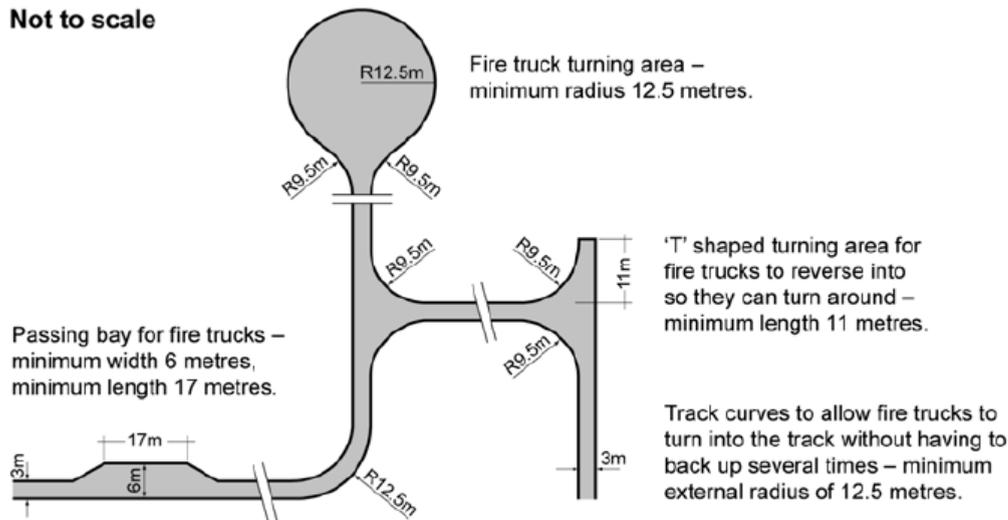
## 2. Fire Vehicle Access

Adequate access to and within wind farm complexes will assist CFS in responding to and managing fires on site.

Private roads and driveways to buildings, where the structure is located more than 30 metres from the nearest public road, shall;

- be connected to an all-weather public road
- be constructed with a formed, all-weather surface
- be constructed away from vegetation such as overhanging limbs and/or continuous cover of thick vegetation
- be located such that the need to clear native vegetation is avoided
- have a minimum formed width of 3 metres (or 4 metres in steeper terrain)
- have a gradient of not more than 16 degrees (i.e. a maximum slope of 1:3.5) at any point along the road or driveway
- allow firefighting vehicles to travel in a continuous forward movement by constructing curved roads and driveways with curves that have a minimum external radius of 12.5 metres (*refer to Figure 5*)
- allow fire-fighting vehicles to safely enter and exit an allotment in a forward direction by incorporating either –
  - a loop road around the building
  - a turning area with a minimum radius of 12.5 metres
  - a 'T' or 'Y' shaped turning area with a minimum formed length of 11 metres and minimum internal radii of 9.5 metres (*refer to Figure 5*)
- incorporate solid, all-weather crossings that are capable of supporting firefighting vehicles with a gross vehicle mass (GVM) of 21 tonnes, over any watercourse identified on either a current State Government topographic map (1: 50 000) or otherwise identified as a crossing required to provide appropriate access for firefighting vehicles. A current State Government topographic map (1:50 000) can be obtained from the Map Shop [www.mapshop.net.au/msnindex.htm](http://www.mapshop.net.au/msnindex.htm)
- incorporate passing bays with a minimum formed width of 6 metres (or 7 metres in steeper terrain), including the road or driveway width, and a minimum formed length of 17 metres (*refer to Figure 5*). The passing bays should be constructed at 200 metre intervals along the road or driveway. Where it is necessary to provide adequate visibility, such as the nearest point to a public road or other passing bay, passing bays may be required at intervals of less than 200 metres.

Not to scale



**Figure 5**

*Note: The above requirements may not apply to private roads and driveways where the building is located less than 30 metres from the nearest public road, except where there are conditions such as proposed all-weather materials, slope, width etc. for the relevant planning authority to take into account.*

### 3. Water Supply

Appropriate location of water access points will assist safe, effective and timely fire suppression activities. To ensure adequate access to water for CFS, the allocation of static water supplies may be necessary.

Location of water access points should be consistent with the type of risk that exists within a given area. There may be a need for multiple treatments to address the type of risk and community requirements. In the event of a fire, water should be available and accessible to ensure that fire suppression activities are not hindered in any way and to ensure that fire appliances can identify and access water points efficiently.

The following measures should be considered;

3.1 Bulk firefighting water supply (22,500 litres) should be provided adjacent to main access points in consultation with the CFS.

3.2 The firefighting water supply (and any support structure) shall be constructed of non-combustible material (AS1530 Combustibility test for materials).

3.3 The firefighting water supply is to be fitted with a 65mm Storz fitting which is to be easily accessed by fire appliances.

3.4 Firefighting water access points shall be located in safe, easily identifiable areas, and accessible in all weather conditions.

3.5 Firefighting water access points should be designed, constructed and maintained for a load limit of at least 21 tonnes.

3.6 A turning circle with a minimum radius of 12.5 metres is required for fire appliances at all firefighting water access points.

3.7 Fire appliances should be able to park within six (6) metres of the water supply outlet on a hard standing area.

#### 4. Vegetation Management

All private land holders must comply the provisions of Section 105F of the *Fire and Emergency Services Act, 2005* to;

- prevent or inhibit the outbreak of fire on the land; and
- prevent or inhibit the spread of fire through the land; and
- protect property on the land from fire; and
- minimise the threat to human life from a fire on the land.

These provisions are enforced by the local council Fire Prevention Officer who may issue a hazard reduction notice to ensure compliance.

In addition, CFS has some specific vegetation management expectations that should be complied with during the Fire Danger Season (FDS);

4.1 Grass should be no more than 10cm in height and leaf litter no more than 10mm deep for a distance of ten (10) metres around buildings and viewing platforms;

4.2 A fuel reduced area of five (5) metres width should be maintained around the perimeter of electricity compounds and substation type facilities;

4.3 There should be no long grass or deep leaf litter in areas where plant and heavy equipment will be working; and

4.4 All plant and heavy equipment should carry at least one 9 Litre Water Stored Pressure fire extinguisher with a minimum rating of 3A.

#### 5. Infrastructure

5.1 Building Code of Australia and the Australian Standards will determine requirements for any structures on the site and fire protection measures for plant and machinery operating on the site. CFS may have subsequent input into some of these matters if required, possibly upon a referral under Regulation 28 of the *Development Regulations 2006*, including:

5.1.1 Internal fire protection systems, where appropriate, to assist with fire suppression;

5.1.2 Lightning protection devices installed on each wind turbine;

5.1.3 Electrical and communications cables underground; and

5.1.4 Dedicated monitoring systems within each wind turbine that detect temperature increases in the turbines and shuts them down when the threshold temperature is reached.

#### 6. Consultation

6.1 Wind farm operators should engage with the CFS, when designing, installing and operating wind farms to ensure that CFS response processes are not compromised.

#### References

1. Australian Wind Energy Association (AusWEA) (2001). Wind Farm Safety in Australia, [http://www.auswind.org/WIDP/assets/BP11\\_Safety.pdf](http://www.auswind.org/WIDP/assets/BP11_Safety.pdf).