RE Future
Wind Farms & Bushfires

INTRODUCTION

Wind Farms have been introduced to the Australian landscape over the past two decades. In response to this infrastructure development, fire agencies have released Guidelines that provide developers with direction on how to introduce these developments safely and ensure that any bushfire risk is managed effectively.

Whilst the occurrence of fires within wind turbines is an increasingly rare event, modern wind farms now contain several advanced safety systems that can detect smoke early and extinguish fires. Additional safety systems include heat sensors, low or non-flammable/combustible oils, and the ability to operate and shut down the turbines remotely at any time.

RE Future Pty Ltd is focussed on managing bushfire risk and where possible, reducing the existing fire risk in the landscape. We work with communities and fire agencies to determine appropriate bushfire mitigation strategies during both the construction and operation phases of our projects.

BUSHFIRE RISK

The bushfire risk posed by a wind farm will vary depending on its location. Most wind farms are located in areas dominated by farming activities including grazing, fodder production and cropping. Often the predominant bushfire risk in areas like this is already present before the wind farm is built in the form of existing vegetation and electrical infrastructure. In these circumstances a wind farm will not result in a material increase in fire risk, and will often actually reduce bushfire risk through improved access (from newly built tracks), additional firefighting water supplies which are supplied by the wind farm, and the management of vegetation in areas surrounding wind farm infrastructure.

Every project that RE Future Pty Ltd develops is based on a detailed bushfire risk assessment that uses information supplied by the fire agencies and regulatory framework. The bushfire risk assessment will include any community knowledge and community concerns relating to bushfire risk, and will utilise all available information including that produced by the fire agencies. The key guidelines available to Wind Farm developers to utilise during a bushfire risk assessment are:

- Australasian Fire and Emergency Service Authorities Council 2018, Wind Farms and Bushfire Operations (AFAC Publication No. 2053), AFAC, Melbourne, Australia[1]; and
- Country Fire Authority 2021, Guidelines for Renewable Installations, CFA, Melbourne, Australia[2]

These guidelines are extensive and ensure that all components of the wind farm are considered during the bushfire risk assessment, including the turbines themselves, their connection to the electricity grid, battery storage facilities and access roads. They also outline a range of considerations including requirements for managing vegetation surrounding the wind farm, how aerial firefighting resources need to be catered, for and the importance of emergency management planning.

[1] https://www.afac.com.au/docs/default-source/doctrine/afac_doctrine_ windfarmsbushfiresoperations_ position_2019-08_04-v1-0.pdf

[2] https://www.cfa.vic.gov.au/articledocuments/550/210303-CFA%20Renewable% 20Energy%20 Guidelines%202021.pdf.aspx

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FIRE DETECTION AND SUPPRESSION

Modern wind turbines are now provided with advanced smoke detection and fire suppression systems. These are in addition to the many sensors installed within a wind turbine turbine that alert the operator in the event of a fault and provide the ability to shut down the turbine remotely at any time.

Smoke detection systems provided within wind turbines operate in the same way as those installed within your home. That is, when they detect smoke, they will send an alert to the operator who will immediately shut down the turbine and notify the fire agency. In most situations this will be well before flames start.

Suppression systems are provided within the electrical cabinets and other areas and will activate when the heat rises to a predetermined level. Once this occurs, the system will deliver a gas suppressant that will extinguish the fire. The types of gas utilised are environmentally safe and will both cool the fire and remove the oxygen.

USE OF FIREFIGHTING AIRCRAFT AROUND WIND FARMS

It is a common myth that aircraft cannot fly between wind turbines.

The CFA and AFAC guidelines both identify the minimum separation distances between turbines required to ensure aircraft can still undertake firefighting activities within a wind farm. In most cases this distance is 300 m. Thus, provided there is a minimum of 300 m separating wind turbines, firefighting aircraft will be able to continue to operate in the area. All modern wind farms have turbine separation distances of at least 500 m, if not more.

The CFA and AFAC guidelines also stipulate that the wind farm operator, upon notification of a fire in the local area, must immediately shut down all wind turbines and place them in the 'Y' position. They must also rotate the turbines so that they are all facing the same direction. This enables pilots to safely fly around the wind farm with the knowledge that the turbines are in the same position.

The emergency management planning requirements specified by fire agencies require the wind farm operator to be in regular contact with relevant authorities during bushfires. This ensures that any requests by pilots or firefighters will be immediately implemented. An example of how this takes in real-life is outlined by the Clean Energy Council in their summary of how firefighting aircraft were successfully utilised within an operating wind farm during a bushfire in South Australia[3]

CONCLUSION

Wind farms are often developed in regional areas prone to bushfire and do not result in a material increase of the existing bushfire risk in any given area. Moreover, the requirement for wind farms to assess and mitigate bushfire risk is enshrined within legislation and guidelines, which all wind farm developments must comply with. These guidelines are designed by fire authorities such as the CFA to ensure that the risk of bushfire is managed in a safe and effective manner.

ABOUT THIS INFORMATION SHEET

This information sheet was prepared in partnership with Fire Risk Consultants Pty Ltd. Fire Risk Consultants have extensive experience in bushfire and emergency management, and work with both the public and private sector to improve all aspects of fire planning, fire management and fire prevention. They have supported many organisations both government and non government to effectively assess their bushfire risk and develop treatments. For more information about Fire Risk Consultants please visit their website at https://fireriskconsultants.com.au.

[3] https://www.cleanenergycouncil.org.au/news/in-case-of-fire-a-real-life -experience -at-a -wind-farm-site

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