

BEFORE THE TASMAN DISTRICT COUNCIL  
(COMMISSIONER HEARING)

<b>In the matter of</b>	Applications for resource consents to establish a Motorsport and Recreation Park (Land Use Consent RM100848; Land Use Consent RM100872; Land Use Stream Bed RM100873; Land Use Consent RM100874; Land Use Consent RM100875; Water Permit RM100876; Water Permit RM100877; Discharge Permit RM100878; and Discharge Permit RM100879)
<b>Applicant</b>	Adcock and Donaldson Properties Limited

---

**STATEMENT OF EVIDENCE OF IAN READE**  
8 March 2012

---

---

**Duncan Cotterill**  
Solicitor acting: Camilla C M Owen  
PO Box 827, Nelson

Phone +64 3 546 6223  
Fax +64 3 546 6033  
c.owen@duncancotterill.com

## **Introduction**

1. My name is Ian Barry Reade. I am the Principal Rural Fire Officer for the Waimea Rural Fire District (WRFD). I have held this position since September 2011. Previous to this I was the Chief Operating Officer for Nelson Management Ltd, which is the management company for Nelson Forests Limited.
2. The proposed Motorsport Park is situated within the boundaries of the WRFD.
3. I have been involved in rural fire through a career in forest management starting in 1981. I hold tertiary qualifications in forestry, being a New Zealand Certificate (Diploma) in Forestry, which encompasses rural fire. I have been a member of the Incident Management Team within the WRFD since its inception in 1993. I have been a volunteer with the New Zealand Fire Service since 1992 and have held the position of Chief Fire Officer for the Mapua Brigade since 2007.
4. I have been asked by Nelson Forests Limited to present evidence as to the impact on rural fire management in relation to the establishment of the proposed Motorsport Park in Rabbit Gully, Tapawera.
5. I have read the Environment Court's Consolidated Practice Note and Code of Conduct and have complied with it in the preparation of my evidence, and I agree to comply with it in any oral evidence that I may give before this hearing. I have not knowingly omitted to consider material facts and I consider myself to be suitably qualified to make comment on those areas covered in my Statement of Evidence.

## **The Waimea Rural Fire Authority**

6. Rural fire management is the responsibility of Rural Fire Authorities. The NZ Fire Service Commission is the National Rural Fire Authority, which is responsible for the national coordination of rural fire management and ensuring the effective and efficient functioning of Rural Fire Authorities, which in turn have the role of administering and managing rural fire in their Fire Districts. Commonly, regional Rural Fire Authorities consist of a group of interested bodies, such as the Department of Conservation, the Ministry of Defence, a local council and rural land owners, particularly but not solely forest owners.
7. The Waimea Rural Fire Committee (WRFC), which is the governance body for the Waimea Rural Fire Authority (WRFA), is made up of representatives from Nelson City Council, Tasman District Council, Department of Conservation, Federated Farmers, Nelson Forests Ltd, Tasman Bay Forests Ltd, NZ Fire Service and an independent

Director. The WRFC is a separate entity in itself with its own constitution and strategic planning process. The WRFC contracts my employer, Rural Fire Network Limited, to provide a suitable person to conduct the role of Principal Rural Fire Officer and provide fire management services to the District.

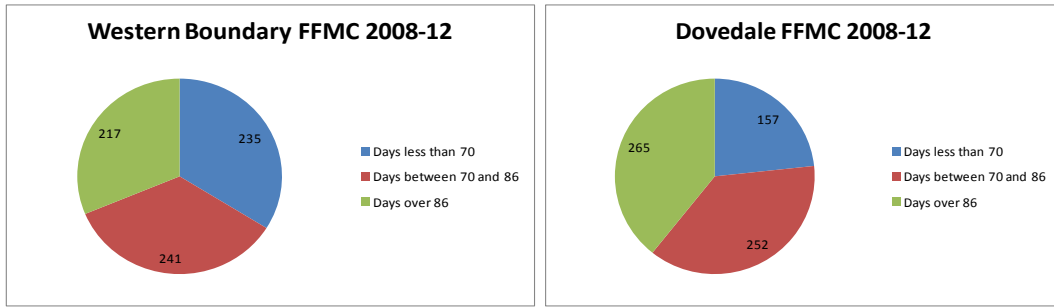
8. The WRFC is responsible for the Waimea Rural Fire District, which encompasses all of Nelson City and Tasman District Council jurisdiction. My role as Principal Rural Fire Officer is to administer and carry out the Reduction, Readiness, Response and Recovery process of rural fire within the WRFD. My role is further specified in section 2.2.3 of the WRFC Fire Management Plan. I **attach** chapter 2 of the Management Plan to my evidence as **Appendix 1**.
9. To assist me with the 4R's process I have 5 Deputy Principal Rural Fire Officers that administer various zones within the rural fire district. Mr Doug Ashford, the DPRFO responsible for the area where the proposed Motorsport Park is planned has held discussions and corresponded via email with Mr Quickfall in regard to the creation of a Fire Management Plan for the proposed Motorsport Park.

### **Principles of Fire Management**

10. As background to my evidence I will explain some basic fire weather and fire behaviour principles. Fire behaviour can be very accurately predicted by recording weather parameters and applying mathematical calculations. These are called Fire Weather indices. The indices I will focus are the Fine Fuel Moisture Content (FFMC), Build Up Index (BUI) and Fire Weather Index (FWI).

### **Fine Fuel Moisture Content (FFMC) Fire Weather Index**

11. The FFMC is a measure of the moisture content of fuel that is 6mm and under in diameter. It has a scale of 1 to 101. It is an indicator of how easy a fire will start from a small point source, for example a match dropped onto the ground. At an FFMC of 70 a match dropped onto fuels 6mm in diameter and less will ignite approximately 50% of the time. At a level above 86 then it is probable that ignition will occur.
12. Below are two graphs indicating the number of days FFMC levels have exceeded the trigger levels between the months November to May from 2008 to 2011 and November to February 2012. The information is from the weather stations situated at Dovedale (north of the Motorsport Park) and Western Boundary (southern Golden Downs). Total days represented is 674 for Dovedale and 693 for Western Boundary. November to May are shown because these months are the potential high fire risk months in the Nelson region.

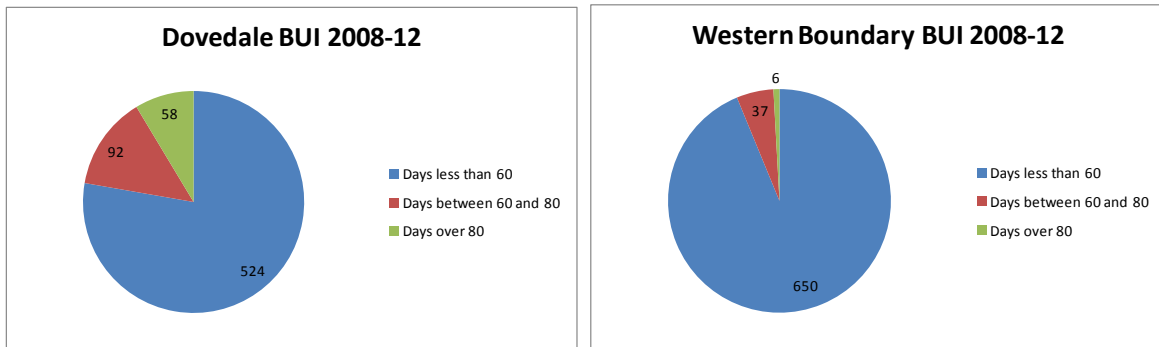


13. The area the proposed Motorsport Park is located is more likely modelled by the Dovedale weather station than the Western Boundary weather station. The graphs above indicate the number of days where fire ignition from a point source, for example a dropped match or burning ember, is likely (between 70 and 86) and probable (above 86).
14. In viewing the FFMC diagrams above it can be said that a lighted match or piece of burning material dropped onto fine fuels in the vicinity of the Motorsport Park between the months of November and May will likely result in a fire starting in 37% of the days, with a fire probably starting on 38% of the days ie: 75% of the time between 1 November and 31 May.

#### Build Up Index (BUI) Fire Weather Index

15. The BUI is a measure of the amount of fuel that is available for a fire to burn. It is a measure of the moisture content of larger fuel. It is an indicator how hard a fire will be to fully extinguish. Within the WRFD the BUI measure is used as a readiness trigger level for fire preparedness. This is detailed in the WRFD Fire Management Plan in section 2.16, which is attached as part of **Appendix 1**. A BUI above 60 is considered high and requires advanced and specific preparedness actions. A BUI above 80 requires the cessation and/or restriction of higher risk ignition activities such as cancellation of all public access and permits to production forests, including through all public access easement roads, and the review of all rotary slashing and mowing operations, in addition to the elevated readiness levels implemented for a BUI over 60. A BUI over 100 requires the closing of higher risk areas and further elevated levels of readiness.
16. It is accepted that a fire during a BUI over 80 will be intense burning and difficult to totally extinguish (mop up). In typical summer temperatures, the BUI can climb between 2 and 3 points each day rain does not fall. For example a BUI can climb between around 17 points per week.
17. Below is graph indicating the number of days BUI levels have exceeded the trigger levels between the months November to May from 2008 to 2011 and November to February 2012 for the weather stations situated at Dovedale (north of the Motorsport

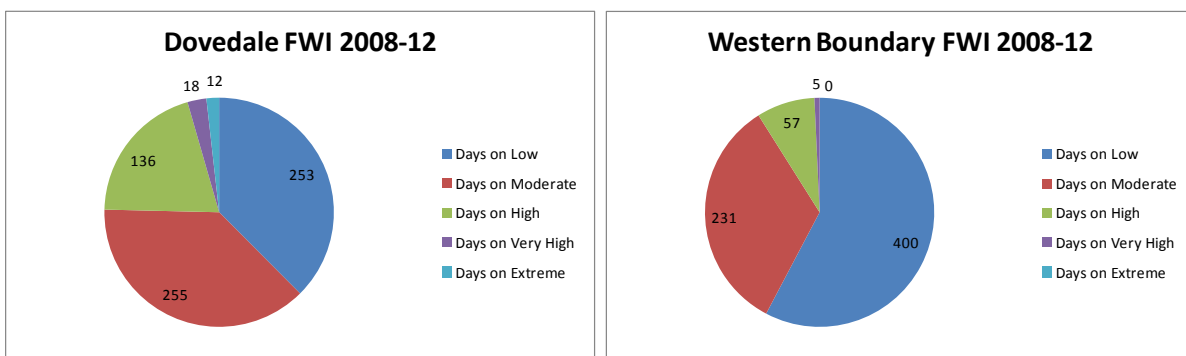
Park) and Western Boundary (southern Golden Downs). Total days represented is 674 for Dovedale and 693 for Western Boundary.



### Fire Weather Index (FWI)

18. FWI is an index that is the product of a number of indices that include the FFMC and the BUI. The FWI is an indicator of head fire intensity. The FWI can be very dynamic throughout the day with the effect of temperature and wind. At levels over 23 (Very High) fire intensity is such that fire suppression is difficult. At levels over 29 a fire is usually unable to be controlled by ground and aerial methods, until such time as the FWI decreases or there is a change in fuel availability. The FWI Index is normally separated into low 0-3, moderate 4-13, high 14-23, very high 24-28 and extreme which is 29 and over.

19. Below is graph indicating the number of days FWI levels have exceeded the trigger levels between the months November to May from 2008 to 2011 and November to February 2012 for the weather stations situated at Dovedale (north of the Motorsport Park) and Western Boundary (Southern Golden Downs). Total days represented is 674 for Dovedale and 693 for Western Boundary.



### Reduction Trigger Levels

20. Currently within the WRFD Fire Plan there are prescribed trigger levels using the Fire Weather indices. These are implemented to reduce the likelihood of a vegetation fire starting when control of the fire may be difficult or not possible. For example above a

BUI of 60 public access to commercial forests may be restricted depending on the FWI at the time. Above a BUI of 80 public access to commercial forests, including public easement roads, is closed. This is done through section 32 of the Forest and Rural Fire Act. Above a BUI of 100 access to all public walkways across the region is restricted and may be closed.

### **Effect of the Motorsport Park on Rural Fire Risk**

21. I will present my evidence in two parts, the first being the risk of a vegetation wildfire fire starting from the change in land use within the Park and around its borders. The second part will address the effect on risk of wildfire in the surrounding rural area as a result of the proposed activities to be held at the Park.

### ***Risk of vegetation wildfire starting from within the Park boundaries and around its borders.***

22. For the purposes of this evidence I have included the access way from the Motueka Valley highway through to the Motorsport Park in Rabbit Gully as being within the Park boundary.
23. The likely causes of a vegetation fire spreading outside of the Park environs are:
  - 23.1 Structure fires in buildings within the boundary;
  - 23.2 A mobile vehicle catching fire within the boundary; and
  - 23.3 A vegetation fire starting within the boundary of the Park and spreading to the outside.
24. During times when the Fire Weather Index of Fine Fuel Moisture Content (FFMC) is above 70 then ignition from burning embers falling onto fine fuels less than 6mm diameter is likely. Above 86 FFMC ignition is probable.
25. Embers are transported through convection from the fire source and can travel, depending on wind strength and stability of the atmosphere, for some distance. Personally I have witnessed ember transport starting fires 500m from the fire source and have heard of greater distances being achieved. Because the forest surrounding the Motorsport Park contains a large amount of gorse and fern there is a large volume of material of less than 6mm diameter available to ignite.
26. In terms of mitigating the three identified sources of ignition a sound and practiced fire management plan will lower the risk of fire spread by suppressing a fire start before it has the ability to create convection heat currents capable of carrying embers. Although the risk may be lowered it will not be eliminated.

27. Mobile vehicle fires along the access road will be very difficult to contain in times of high Fire Weather Indices.
28. A well formulated and practiced fire management plan would contain at least:
  - 28.1 Defensible spaces of managed ground cover around the boundary of the site and high risk areas within the Park;
  - 28.2 Inbuilt ceiling / roof sprinkler systems be fitted to all buildings within the Park;
  - 28.3 Fire suppression equipment and storage of water;
  - 28.4 Training and provision of people onsite for fire fighting purposes;
  - 28.5 Provisions for fuel storage;
  - 28.6 Crowd control and containment during events; and
  - 28.7 Trigger levels and procedures that allow for the shutting of the Park during very high and extreme fire weather situations.
29. The Draft Fire Management Plan which Mr Quickfall has attached to his evidence has received input from the Deputy Principal Rural Fire Officer, particularly in terms of the items listed above. Whilst a sound and practiced fire management plan is a basic tool to assist in the control of fires, including measures to lessen the risk of a fire start, it cannot eliminate the occurrence of fires. In that regard I now turn to the second part of my evidence, which addresses the risk of a fire starting.

***The effect on the risk of wildfires starting in the rural environs as a result of the change in land use.***

30. In managing rural fire risk in New Zealand it is well proven that risk and likelihood of a fire starting is directly relative to the amount and type of human activity in a given area. Generally people and the activities they are partaking in start rural fires. This can be demonstrated by comparing the vegetation fires experienced each year in the rural /coastal area of Tasman District Coastal Zone (Zone 1 in the WRFD) and those of the low density population but larger area of Golden Downs / Tapawera (Zone 3) of the WRFD. Zone 3 is where the proposed Motorsport Park is planned. Zone 1 experienced 226 vegetation fires over the last 3.5 years where zone 3 experienced 19.
31. The main focus of my discussion revolves around the number of people who will be drawn into what is a rural / forestry area with the creation of the Motorsport Park. It is my and Doug Ashford's experience that previous events held in the Golden Downs area have attracted an influx of people into the area with some of the attendees camping along the many forest roads on the way to and/or from the event. These people do not

necessarily have knowledge or sense of the risk of rural fire. Camping often involves fires being lit for either cooking or warmth.

32. The National Rural Fire Authority of New Zealand provides a workbook template for Rural Fire Districts to develop a “Wildfire Threat Analysis” (WTA) for their regions. This is a GIS based tool that determines for any given point on a map the Threat of wildfire. The Threat is developed by combining risk score, associated hazard score and the value score of any given area and then totaling them up to give a Threat score for any given area. ‘Risk’ is defined as the probability of a fire starting and spreading. ‘Hazard’ is the potential of fire behaviour once a fire starts and the ‘Value’ can be defined as the quantification of the worth or value to the community of a given area, whether it is natural or developed.
33. I will focus on the changes to Risk score associated with changing what is now a low population farming and forest area into a higher transient recreational area as it would become with the development of a Motorsport Park. The change will markedly increase the incidence of wildfire starts in the rural environment around the Motorsport Park. This can be best explained by using some of the analysis within the WTA risk evaluation process. I will detail the relative changes in some of the components that formulate the Risk score.
34. In the Population Density Component of the WTA an unpopulated area carries a score of 0 versus a low density rural and urban population carrying a score of 5. A high density populated area of urban or rural has a risk score of 15.
35. On the same scale the transient population component of a low infrequent use &/or low numbers passing through an area carries a score of 1 versus a high (frequent use &/or large numbers) with a score of 5. To put this theory to the change in land use the Motorsport Park would bring, currently the area would have a Population Density and Transient Population score of 1. I.e: unpopulated area 0 plus 1 for low transient population. With development and intended use of the Park the score for the Park and its surrounds will increase to 10. I.e: low density rural and urban population 5 plus 5 for high transient numbers.
36. This theory is backed up by the reality of what happens currently as explained previously where the high population area of zone 1 in the WRFA has twelve times more vegetation fires than the lower populated zone 3.



## **Conclusion**

37. Fire Weather Indices combined with quantitative data taken from the National Rural Fire Authority wildfire threat analysis indicate that changing the land use of Rabbit Gully, which is currently a largely unpopulated area, to that of a frequently highly populated area through the creation of a Motorsport Park will increase the incidence of fire starts in the immediate and surrounding areas. The highest risk period for fire starts will mostly be between the months of November and May each year.

Ian Reade  
Principal Rural Fire Officer  
Waimea Rural Fire District

8 March 2012