# Forest Flammability Modelling to evaluate the fire flammability on different fire severity in Buangor Forest

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Abstract: The vegetation type is the critical factor in evaluating how a wildfire will behave on-site at the burning time. Plant flammability is tested in a wide range of experiments in a laboratory in Creswick campus to visualize the ability of plants' ignitability and combustibility, as well as the ability to sustain combustion. In this case, based on an exploration of plant flammability and structure of forest stratum, forest flammability model is used to assess the influence of historical flammability in Buangor Forest following the 2010 fire. This research aims to find how fire severity effects predicted flammability using the Forest Flammability Model. The investigators analyse the data collected in different severity types in Buangor Forest from site study and compare their main features. Across three severity types, in Eucalyptus-dominated damp and dry forest, we measured Fuel Hazard Scores and Fuel Weights on-site, dimensions of different species (base height, top height, width). We estimated the spacing and density of them. The study in the essay mainly demonstrates flame height and flame length as referred data to analyse the effect of flammability. However, specific leaf area or bulk density may promote cumulative effects in some instances, or they could create counteractive effects because of high moisture content. Comparing with plant traits in different fire severity in both mild and severe weather condition will be necessary to identify important contributions to forest flammability from the composition of species.

Keywords: Forest Flammability Model, flame height, flame length, plant traits

#### 1. Introduction

Australian Bushfire consistently happens through millions of years and Landscape pattern in some ways is shaped by it. When there is a sharp light in the forest, fires are most likely to start. Black Saturday in March 2010 presented severe Bushfire burning about 1356 hectares from Mount Buangor State Park to Mount Cole State Forest. Fortunately, it was not a devastating catastrophe, and fuel loads can be sampled to the research of large blackened and charred area after fire issue. Over a long period, Bushfire becomes a natural part of the landscape. When it gradually recovers, original plants and vegetation can be collected as samples to analyze potential contributor and connector of fire based on their biological traits. In addition, some interesting things could happen during the process of recovery. For example, aboriginal people previously use fire as a tool to promote the growth of grassland, and they enhance hunting by maintaining the extent of grass. In some ways, fire helps to keep vegetation from being too dense to walk through by reducing levels of fuel. Theoretically, vegetation and individual plants can essentially control forest fire behavior by quantity and density of different fuel loads, flammability of surface fuel, the live parts after a fire, as well as the dimension in each section of forest structure (e.g., the height of the canopy, mid-canopy, elevated). Historical records from past Bushfire help us gain information about duration, the rate of spread and affected area in each stage. Potential fire contributor and connector can be estimated through the expansion map of Bushfire. In order to make fire prediction more accurately and improve fire management in the future, it is necessary to examine the influence of fire history, and this examination needs to be combined with the different weather condition and geographical feature such as slope if possible.

## 2. Aim

Because there are few studies to verify the potential contributor of bushfire in Buangor, comprehensive analysis with multiple forest fire severity types is needed to evaluate the historical fire behavior in this paper. Besides the role of species, the significance of forest structure, as well as weather condition, cannot be ignored to determine fire behavior. This research is trying to collect comprehensive

data to do analysis and understand how fire severity affect flammability prediction with the help of Forest Flammability Model. Each fire severity type we also take some variations in fuels (if any) into consideration to see how these variations could influence fire behavior. Potentially the study can contribute to effective suppression plan and fire management for Buangor Forest in the future.

#### 3. Methods

## 3.1 Study Area

Buangor is a region located in the west Victoria in south-eastern Australia, characterized by large natural area with a few small towns, covering about 181 kilometers west of the state capital, Melbourne. Species in the forest of Buangor is dominated by sclerophyll eucalypt, which makes the natural woodland easier to be ignited [5]. In some special seasons, a large amount of rainfall improves the moisture content of forest and decrease the possibility of wildfires. But periodic conditions of extreme hot weather still make this region prone to incur bushfire with a large area of forest covered by ignitable dry eucalypt and high dense acacia on elevated stratum. As for climate, average annal humidity is about 52% and wind blows at 11km/h with SW direction. Since it is located inland and far from coast, it is less likely to be influenced by coastal climate. According to historical records, Bushfire in 2010 burned approximately 1356 hectares between Mount Buangor State Park and Mount Cole State Forest. Many of the tree trunks were scorched, the canopies had stayed largely intact and there were signs of green leaves and shoots [6].

Based on our site excursion, canopy height in forest ranges from 10 to 40m, most of bars are ribbon bars and they show the low rates of mortality. Mid-canopy is at the height of 8m to 15m, and the elevated, domain by Acacia and PEA, almost grows to 1.2 to 2.5m(manual measurement).

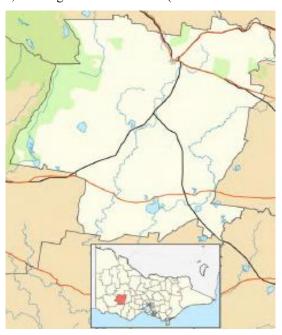


Figure 1: Map of Buargon, west Victoria

## 3.2 Data Collection

Comprehensive data including location, topography, fuel weight, fuel moisture and fuel hazard scores of all stratum are collected from 12 sites in Mt Buangor State Park, with 3 different fire severities, Low severity (fig 2), Control severity (fig 3) and High severity (fig 4).

In each fire severity site, the types of data and approaches to collecting them are listed below:

- -Location: take the name from 'what3words' app based on GPS signal. record longitude and latitude as well.
  - -Photos: 2 photos of each site
  - -Date, name, and assessors

- -Aspect and slope: using compass, clinometer.
- -Fuel Hazard Score: referring to fuel hazard guide.
- -Minimum radius to capture 15 trees.
- -Dimension of canopy: top height, base height and width manually measuring with tapeline or using 'Arboreal' app to estimate the height, especially for canopy top height.
- -Dimension of mid-canopy: top height, base height and width manually measuring with tapeline or using 'Arboreal' app to estimate the height, especially for canopy top height.
  - -Dimension of elevated: manually measuring height and width with tapeline.

These data were collected in 4 sites of low-fire severity, 4 sites of control-fire severity and 4 sites of high-fire severity. We manage data in 2 sections, table 1 show an overall environmental data about fuel hazard scores in each site. table 2 show the information of species in different stratum and we calculated their density and spacing.

Low Severi	ty	FHS	S		Control Se	verity	FHS	6		High Sever	ity	FHS	6	
Location	L(1)	L(2)	L(3)	L(4)	Location	C(1)	C(2)	C(3)	C(4)	Location	H(1)	H(2)	H(3)	H(4)
Bark	High	Very High	Very High	High	Bark	Extreme	Extreme	Extreme	Extreme	Bark	High	Middle	Extreme	High
(fuel weight)	2	5	5	2	(fuel weight)	0	7	7	7	(fuel weight)	2	1	7	2
Elevated	High	Middle	Middle	Low	Elevated	Low	Low	Low	Middle	Elevated	High	High	Extreme	Extreme
(fuel weight)	2.5	1.5	1.5	1	(fuel weight)	0	1	0.5	1.5	(fuel weight)	2.5	3	6.5	6.5
Near Surface	High	Very High	Very High	Extreme	Near Surface	High	High	Low	High	Near Surface	Very High	High	Extreme	Very High
(fuel weight)	3.5	5	5	7	(fuel weight)	4	3	1.5	3.5	(fuel weight)	5	4	7	5
Surface	High	Middle	Middle	Extreme	Surface	Middle	Middle	Extreme	Low	Surface	High	High	Very High	Very High
(fuel weight)	11	7	7	25	(fuel weight)	5	6	18	3	(fuel weight)	11	7.68	16	16
S-NS	Very High	Very High	Very High	Extreme	S-NS	High	High	Extreme	Middle	S-NS	High	High	Extreme	Low
(fuel weight)	14.5	12	12	32	(fuel weight)	9	9	19.5	6.5	(fuel weight)	16	11.68	23	0
OHS	Very High	Extreme	Extreme	High	OHS	Very High	Very High	Extreme	Very High	OHS	Very High	High	Extreme	Extreme
(fuel weight)	33.5	18.5	18.5	35	(fuel weight)	9	17	27	15	(fuel weight)	20.5	15.68	36.5	29.5

Table 1: Fuel Hazard Scores (FHS) of selected 12 sites in all levels of fire severity

This score is evaluated according to 'Overall fuel hazard assessment guide'. Information of location should be presented by 3 words or quantified latitude or longitude but because data is collected from different groups and not all groups successfully find accurate data, so this is replaced by simplified code.

Low Sever	ity	Spec	ies		Control Se	verity	Speci	es		High Seve	rity	Spec	ies	
Location	L(1)	L(2)	L(3)	L(4)	Location	C(1)	C(2)	C(3)	C (4)	Location	H(1)	H(2)	H(3)	H(4)
Canopy					Canopy					Canopy				
Species	Blue gum	Ribbon	Eucalypetus	Ribbon Gum	Species	Stringy bark	Stringy bark	Eucalypetus	Stringy bark	Species	Blue Gum	Ecucalps	Ribbon bark	Ribbon ba
Radius	25	25	25	25	Radius	25	25	25	25	Radius	25	5	25	25
Total count	51	30	16	12	Total count	29	14	47	15	Total count	48	40	42	10
Density	38.5	65.4	122.7	163.6	Density	67.7	140.2	41.8	130.9	Density	40.9	2.0	46.7	196.3
pacing	10.6	13.8	18.9	21.8	Spacing	14.0	20.2	11.0	19.5	Spacing	15.9	2.4	11.7	23.4
Mid-Canopy					Mid-Canopy					Mid-Canopy				
Species	Silver Wattle	Eucalyptus	Acacia	Black Wood	Species	n/a	n/a	n/a	Ribbon bark	Species	Blue Gum	Ecucalps	Acacia	Ribbon ba
Radius	25	25	10	25	Radius	n/a	n/a	n/a	25	Radius	25	5	25	25
Total count	76	11	19	3	Total count	n/a	n/a	n/a	3	Total count	18	45	67	10
Density	25.8	178.5	16.5	654.5	Density	n/a	n/a	n/a	654.5	Density	109.1	1.7	29.3	196.3
pacing	8.7	22.8	6.9	43.7	Spacing	n/a	n/a	n/a	43.7	Spacing	17.8	2.3	9.2	23.4
levated					Elevated	ļ <sup>*</sup>				Elevated				
Species	Prickly Moses	Acacia	Bracken	Acacia	Species	n/a	Ribbon bark	n/a	Acacia	Species	Blue Gum	Pea	Gum	Ribbon Gr
Radius	25	25	10	25	Radius	n/a	25	n/a	25	Radius	25	2.5	25	1
Total count	37	5	79	3	Total count	n/a	1	n/a	3	Total count	12	35	145	10
Density	53.1	392.7	4.0	654.5	Density	n/a	392.7	n/a	392.7	Density	163.6	0.6	13.5	0.3
pacing	12.4	33.8	3.4	43.7	Spacing	n/a	33.8	n/a	33.8	Spacing	21.8	1.3	6.3	0.9
Near surface					Near surface	'		,		Near surface		2.0	010	•17
Species	Braken	Bracken	Grasstuft	Poa	Species	Braken	Poa	Grasstuft	Fern	Species	Bracken	Tufty Grass	Grass	Bracken/1
Radius	25	15	5	2.5	Radius	7.2	7.5	10	1	Radius	25	5	2	1
Total count	30	10	31	75	Total count	23	74	240	15	Total count	10	30	19	10
Density	65.4	70.7	2.5	0.3	Density	7.1	2.4	1.3	0.2	Density	196.3	2.6	0.7	0.3
Spacing	13.8	14.4	3.7	0.9	Spacing	4.5	2.6	1.9	0.8	Spacing	23.9	2.8	1.4	0.9

Table 2: Species information of selected 12 sites in all levels of fire severity

All data is collected by manual measurement with tapeline and calculated by fire model. The scale of study area is determined by surveyor, but it is representative enough

The species information shown above is generalized from a large amount of information of individual plants, to help build an impression on composition and distribution of plants. The density and spacing influence fire depth as well as the fire intensity when bushfire happens [4].



Figure 2: Low severity site. Location- L3



Figure 3: Control severity site. Location- C2



Figure 4: High severity site. Location- H1

## 4. FFM (Forest Flammability Model)

Forest fire behavior needs to be quantified with key factors to infer the influence of composition of plant species and forest structure. Currently, Forest Flammability Model has been verified to be able to quantify the way that plant influence it, which help us better understand fire behavior and make prediction, leading to better management ultimately[1].

According to (Gill and Zylstra 2005), The FFM models behavior mechanistically and there are 3 components to determine flammability-ignitability, combustibility, and sustainability. This study tends to focus on analysis of outputs from model to identify the leaf traits with significant determinants of fire behavior. Some leaf traits may have accumulative effects to intensify the influence of fire.

The FFM predicts fire behavior is based on plant structure and leaf traits and it is used to test their effects on flame expansion and dimensions. The principle is shown as follows:

- 1) A leaf ignites as the heat donor, and it creates a convective plume which fall in temperature as it flows along a flame angle defined vector to a distance from original heat source. In this process combustibility, the heat output from a burning leaf determines the scale of plume and temperature.
- 2) As the function of the leaf ignitability and temperature in the plume, leaves ignite when the duration of flame created by the donor leaf is beyond the time to ignition for the receiver.
- 3) Repeating process 1&2 in one-second time steps vertically from leaf to branch, plant, and plant stratum.

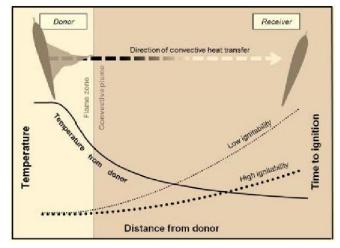


Figure 5: Diagram about Ignition from a donor to a receiver

Similarly, we can summarize that a convective plume of the flame from the donor substance follows a direction with controlled by the angle of the flame (dashed arrow). And the air temperature in the plume gradually decreases as it flows far from the donor (solid line). Thus, heating time to make receiver ignite increases at a rate depending on the leaf ignitability.

To determine the flame depth, combustibility and ignitability interact with each other. The number of leaves ignited in an area determine the density of foliage. A plume pattern or potential depth of ignited foliage can be figured out by the angle at which the burning plume intersects a plant stratum. However, the angle can be changed at each time step with the influence of wind speed and flame dimensions, correspondingly, plume pattern changes over time.

We can get the number of leaves in burning by the formular below:

N (leaves burning in a time step) =

N (the sum of leaves burning in the previous step) + N (newly ignited leaves) - N (extinguished leaves determined by sustainability properties)

As a result, flame length for that step is determined by the collaborative function of the amount of burning leaves and their combustibility, as well as physical process of heat transfer and air entrainment between them.

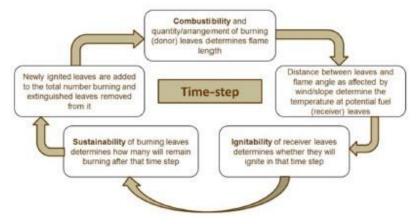


Figure 6: Processes involved in one time-step of FFM operation

The flame capacity to ignite strata above can determine the combustion height in each stratum, which

reflect the fire severity in vegetation with multiple stratums. Fire severity overall is determined by both the heat produced from the donor strata and that required for the receiver stratum ignition. However, it must be influenced by the spacing relationship between donor and receiver because convective heat can lose through heat-transfer process. on the other hand, if plants in higher strata above a flame but is not burned, the speed and direction of wind in burning strata may cause fire behavior on strata at higher level[2].

In the FFM, Leaf Area Index (LAI) can model such effects with a function of the shelter formed by the foliage overhead. This index is combined with key factors including leaf size, density and spacing of branches, as well as physical size and spacing of plant crowns. Moreover, wind in turn, works on the heat plume and further affect the plume pattern, possibly making a difference of the distance and the angle to receiver fuel loads. Therefore, the flammability of donor and the ignitability of receiver contribute to evolving flame dimensions (angle & height) and propagation affected by leaf traits. Environmental effects from overstorey sheltering also make a difference as well. Both exogenous and endogenous factors are simulated in the Forest Flammability Model, and we can effectively figure out not only flame characteristics, but the propagation of fire[3].

There is a dominated environmental wind with a greater speed and a convective heat plume flow near the cluster of plants in each scenario,

Scenario a: Donor plants created a convective plume, intersecting with the receiver plants, but the condition is not strong enough support ignition for receiver.

Scenario b: The flammability of donor increases and gives a larger flame to ignite the receiver.

Scenario c: Receiver ignitability is greater on the condition that the flammability of donor keeps the same in that of scenario b.

Scenario d: The same flammability of plants as that in scenario a, wider tree spacing, wind speed is greater at the flame level. the flame depth goes up. Larger flame contributes to the ignition of receiver.

Scenario e: The same pre-condition as scenario d. Flame dimensions remain unchanged as the heat plume dissipates in the long distance between donor and receiver. The stratum above is less likely to be ignited comparing with scenario a.

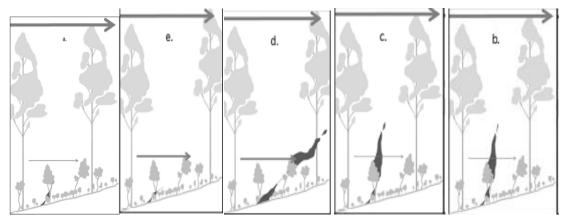


Figure 8: Effects of donor flammability, receiver ignitability and overstorey sheltering on fire severity

## 4.1 Model Operation

FFM works as a C++ based exe file. It uses Notepad for inputs and runs in the Windows command prompt. Based on our collected data, we refer to Monte Carlo parameter to run our model in process, which can be used to create probabilistic results by a csv output file.

The process makes each record represent one run in process and provide detailed level information, although it is not a deterministic result, but it can be referred to make comparison in different condition of fuel types and climate change. The output file contains overall information of flame length and angles at basic level. The flame height is defined not clearly and an original flame above the ground is possible to grow higher than the flame tip so this factor is divided into tip heights and original heights (Fig. 9).

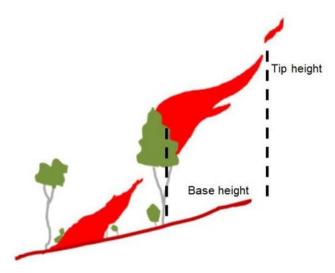


Figure 9: Origin and tip height in flames

We use our required input file and ffm.exe to run the model in the Window command. The steps are listed below:

- 1) Set a director to place the exe and input file (information about table 1&2).
- 2) Copy the address information.
- 3) Open a Windows Command Prompt window.
- 4) Type 'cmd' into windows search bar.
- 5) Type cd-[space]-right click in the window- paste [Enter].
- 6) Type ffm [input file name].txt-[Enter]. Run the model within cmd.
- 7) Type ffm [input file name].txt-[output file name].txt/csv. Save the results in a txt file.

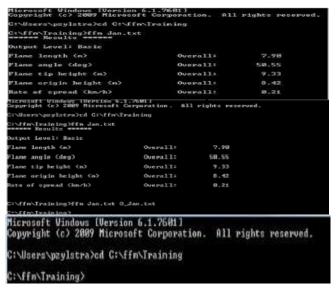


Figure 10: Process to run the model

#### 4.2 Comparison between different fire severity classes

Model each severity site and we can get a variety of information in terms of flame height and flame angle. We even model the site under two different weather condition, Prescribed burning weather (PB)-mild weather conditions; Black Saturday weather (BS)- severe weather conditions. The comparison is done in two different ways:

- 1) In the same fire severity sites (4 sites in each severity), compare flame height, length and angle the with each other to generalize main features.
- 2) In the same fire severity (low, control and high), compare flame height, length, and angle under different weather conditions (PB & BS) respectively. Figure out how the weather can influence overall fire behavior.

- 3) Under the same weather condition, compare flame height, length, and angle in different fire severity sites, generalize the main traits in each severity level.
- 4) Combine with the above two comparisons, comparing with their changing rate and if possible, try to figure out whether extreme weather condition (BS) would affect more in some severity sites than others (e.g. flame height will change more in high severity sites than that in low severity sites, probably).

## 5. Results

Under mild weather condition, fire behaviors in each fire severity are shown below:

Table 4: Fire behavior in Control-severity sites calculated by Forest Flammability Model under the condition of prescribed weather

			0 1				
Mild weather	condition	Stratum	Site	L(1)	L(2)	L(3)	L(4)
			Species	Acacia dealbata	n/a	n/a	n/a
		Surface	Plant seperation	22.8	n/a	n/a	n/a
			Leaf mositure Igition temperature(℃)	0.79 220	n/a n/a	n/a n/a	n/a n/a
			Species	Pteridium	Bracken	n/a	Poa tenera
		Near-Surface	Plant seperation	esculentum 14.35	0.873	n/a	2.72
			Leaf mositure	0.89	0.52	n/a	0.52
			Igition temperature(℃) Species	260 Eucalyptus	260 n/a	n/a Pteridium	260 Pteridium
	Input	Elevated	Plant seperation	obliqua 22.8	n/a	esculentum 13.8	
	mpac	Lievated	Leaf mositure	0.78	n/a	0.89	0.89
			lgition temperature(℃)	220 Eucalyptus	n/a	260 Acacia	260 Eucalyptus
			Species	obliqua	n/a	dealbata	obliqua
		Mid-Storey	Plant seperation Leaf mositure	2.47 0.78	n/a n/a	8.7 0.79	6.94 0.78
			lgition temperature(°C)	220	n/a	220	220
			Species	Eucalyptus obliqua	Ribbon gum	Blue gum	Eucalyptus obliqua
		Canopy	Plant seperation	13.8	21.837	10.6	18.91
			Leaf mositure Igition temperature(℃)	0.78 220	0.78 220	0.78 220	0.78 220
			Flame length(m)	1.07	1.12	0.49	2
		Surface	Flame angle(deg) Flame tip height(m)	65.55 0.96	60.37 0.94	47.01 0.34	12.08 0.32
		Surrace	Flame orginal height(m)	О	О	О	О
Low fire			Species flame tip heights (m) Flame length(m)	n/a 1.77	Poa 1.50 2.19	n/a n/a	n/a 0.85
severity			Flame angle(deg)	75.32	74.62	n/a	4.8
		Near-Surface	Flame tip height(m) Flame orginal height(m)	1.71 1.07	2.11 1.34	n/a n/a	0.42 0.46
		Near-surface		Pteridium	Bracken		Poa tenera
			Species flame tip heights (m)	esculentum	2.74	n/a	0.42
			Flame length(m)	1.71 3.95	n/a	1.6	1.29
			Flame angle(deg)	69.82	n/a	63.5	4.92
		Elevated	Flame tip height(m) Flame orginal height(m)	5.32 3.8	n/a n/a	1.44 0.91	0.54 0.69
				Eucalyptus		Pteridium	Pteridium
	Output		Species flame tip heights (m)	obliqua 7.42	n/a	esculentum 1.44	esculentun 0.54
			Flame length(m)	8.33	n/a	n/a	0
			Flame angle(deg) Flame tip height(m)	74.8 10.01	n/a n/a	n/a n/a	0
		Mid-Storey	Flame orginal height(m)	4.66	n/a	n/a	0
			Species flame tip heights (m)	Eucalyptus obliqua	n/a	n/a	Eucalyptus obliqua
				10.01 15.01			0.00
			Flame length(m) Flame angle(deg)	15.01 72.12	0	0	0
			Flame tip height(m)	22.14	О	0	О
		Canopy	Flame orginal height(m)	14.13 Eucalyptus	0	0	0 Eucalyptus
			Species flame tip heights (m)	obliqua	Stringy Bark 0.00	Blue Gum 0.00	obliqua
			Flame length(m)	22.14 21.32	2.19	1.6	0.00 2.23
		Overall	Flame angle(deg)	72.52	69.8	59.62	8.36
		0.10.0	Flame tip height(m) Flame orginal height(m)	22.14 14.13	2.11 1.34	1.44 0.91	0.54 0.69
Mild weathe	r conditior	Stratum	Site	C(1)	C(2)	C(3)	C(4)
			Species Plant seperation	n/a n/a	n/a n/a	n/a n/a	n/a n/a
	1	Surface	Leaf mositure	n/a	n/a	n/a	n/a
	1		lgition temperature(℃)	n/a Lomandra	n/a	n/a Lomandra	n/a Pteridium
	1		Species	filiformis	Poa	filiformis	esculentum
	1	Near-Surface	Plant seperation Leaf mositure	0.78 0.52	2.638 0.52	1.9 0.52	0.78 0.89
	1		lgition temperature(℃)	260	260	260	260
	1		Species	n/a	n/a	n/a	Acacia dealbata
	Input	Elevated	Plant seperation	n/a	n/a	n/a	33.83
	1		Leaf mositure Igition temperature(℃)	n/a n/a	n/a n/a	n/a n/a	0.79 220
	1		Species	n/a	n/a	n/a	n/a
	ı	Mid-Storey	Plant seperation Leaf mositure	n/a n/a	n/a n/a	n/a n/a	n/a n/a
	ı		lgition temperature(℃)	n/a	n/a	n/a	n/a
	ı		Species	Eucalyptus obliqua	Stringy Bark	Eucalyptus obliqua	Eucalyptus obliqua
	ı	Canopy	Plant seperation	14	20.216	11	19.53
	ı		Leaf mositure Igition temperature(℃)	0.78 220	0.78 220	0.78 220	0.78 220
			Flame length(m)	0.92	2	2	0.91
	ı	Surface	Flame angle(deg) Flame tip height(m)	43.25 0.53	37.15 0.63	28.98 0.66	39.38 0.49
	ı		Flame orginal height(m)	О	О	0	0
Control fire	ı		Species flame tip heights (m) Flame length(m)	n/a 1.14	n/a 1.81	n/a 1.21	n/a 0.93
severity	ı		Flame angle(deg)	49.85	34.16	1.21 17.76	40.25
	ı	Near-Surface	Flame tip height(m) Flame orginal height(m)	0.8 0.58	0.62 0.94	0.21	0.68 0.49
	ı			Lomandra	Poa	Lomandra	Pteridium
	I		Species flame tip heights (m)	filiformis 0.66	0.54	filiformis 0.21	esculentum 0.68
	I		Flame length(m)	n/a	n/a	n/a	n/a
	I	Elevated	Flame angle(deg) Flame tip height(m)	n/a n/a	n/a n/a	n/a n/a	n/a n/a
	I		Flame orginal height(m)	n/a	n/a	n/a	n/a
	Output		Species flame tip heights (m) Flame length(m)	n/a n/a	n/a n/a	n/a n/a	n/a O
	I		Flame angle(deg)	n/a	n/a	n/a	0
	I	Mid-Storey	Flame tip height(m) Flame orginal height(m)	n/a n/a	n/a n/a	n/a n/a	0
			Species flame tip heights (m)	n/a	n/a	n/a	Acacia dealba
	1	1	Flame length(m)	0	n/a 0	n/a 0	0.00
				О	О	0	О
			Flame angle(deg)		0	0	О
		Career	Flame tip height(m)	0		C	
		Canopy	Flame tip height(m) Flame orginal height(m)	0 Eucalyptus	О	0 Eucalyptus	O Acacia dealba
		Canopy	Flame tip height(m)	0 Eucalyptus obliqua		Eucalyptus obliqua	_
		Canopy	Flame tip height(m) Flame orginal height(m) Species flame tip heights (m) Flame length(m)	0 Eucalyptus obliqua 0.00 1.14	O Stringy Bark 0.00 2.02	Eucalyptus obliqua 0.00 2.05	Acacia dealbat 0.00
		Canopy	Flame tip height(m) Flame orginal height(m) Species flame tip heights (m)	O Eucalyptus obliqua 0.00	0 Stringy Bark 0.00	Eucalyptus obliqua 0.00	Acacia dealbat 0.00

Table 5: Fire behavior in High-severity sites calculated by Forest Flammability Model under the condition of prescribed weather

Mild weather	r condition	Stratum	Site	L(1)	L(2)	L(3)	L(4)
			Species	n/a	n/a	n/a	n/a
		Surface	Plant seperation	n/a	n/a	n/a	n/a
		Surrace	Leaf mositure	n/a	n/a	n/a	n/a
			lgition temperature(℃)	n/a	n/a	n/a	n/a
			Species	Pteridium	Poa tenera	Lomandra	n/a
			·	esculentum		filiformis	
		Near-Surface	Plant seperation	23.921	2.76	1.4	n/a
			Leaf mositure	0.89	0.52	0.52	n/a
			lgition temperature(℃)	260	260	260	n/a
			Species	Eucalyptus	Acacia dealbata	n/a	eridium esculenti
		Elevated	Plant seperation	21.837	1.28	n/a	0.96
	Input	Lievated	Leaf mositure	0.78	0.79	n/a	0.89
			lgition temperature(℃)	220	220	n/a	260
			Species	Eucalyptus	Eucalyptus	n/a	n/a
			Species	obliqua	obliqua	11/4	11/ a
		Mid-Storey	Plant seperation	17.8295	2.26	n/a	n/a
			Leaf mositure	0.78	0.78	n/a	n/a
			lgition temperature(℃)	220	220	n/a	n/a
			Species	Eucalyptus	Eucalyptus	Eucalyptus	Ribbon Gum
			Species	obliqua	obliqua	obliqua	Kibboli Gulli
		Canopy	Plant seperation	2.47	2.39	11.7	23.9
			Leaf mositure	0.78	0.78	0.78	0.78
			lgition temperature(℃)	220	220	220	220
			Flame length(m)	0.6	0.35	1.77	0.65
			Flame angle(deg)	34.69	80.6	54.25	33.62
		Surface	Flame tip height(m)	0.32	0.34	1.25	0.33
			Flame orginal height(m)	0	0	0	0
			Species flame tip heights (m)	n/a	n/a	n/a	n/a
			Flame length(m)	1.47	0.66	0.91	n/a
High fire			Flame angle(deg)	61.18	85.22	33.94	n/a
severity			Flame tip height(m)	1.48	0.66	0.4	n/a
,		Near-Surface	Flame orginal height(m)	0.91	0.3	0.3	n/a
			Traine organic neight(m)	Pteridium		Lomandra	.,, -
			Species flame tip heights (m)	esculentum	Poa tenera	filiformis	n/a
			openie name up neighte (m,	1.48	0.66	0.40	.,, -
			Flame length(m)	7.53	0.77	n/a	0.53
			Flame angle(deg)	82.84	62.89	n/a	25.92
			Flame tip height(m)	8.68	1.32	n/a	0.21
		Elevated	Flame orginal height(m)	3.6	1.03	n/a	0.15
		Lievatea	Traine organar neight(m)	Eucalyptus	Acacia	11, 4	Pteridium
			Species flame tip heights (m)	obliqua	dealbata	n/a	esculentum
	Output		Species name up neights (m)			11/4	
	Output		Flame length(m)	8.68 11.33	1.32 0	n/a	0.21 n/a
			Flame angle(deg)	83.05	0	,	,
			Flame tip height(m)	15.39	0	n/a n/a	n/a n/a
		Mid-Storey	Flame orginal height(m)	9.01	0	n/a	n/a
		iviiu-storey	Fiame orginal neight(m)		•	II/a	II/ a
			Species flame tip beights (m)	Eucalyptus	Eucalyptus	-/-	2/2
			Species flame tip heights (m)	obliqua	obliqua	n/a	n/a
			Flores Location	15.39	0.00		•
			Flame length(m)	23.6	0	0	0
			Flame angle(deg)	81.59	0	0	0
			Flame tip height(m)	39.79	0	0	0
	I	Canopy	Flame orginal height(m)	27.09	0	0	0
			I	Eucalyptus	Eucalyptus	Eucalyptus	Ribbon Gum
			Species flame tip heights (m)	obliqua	obliqua	obliqua	
				obliqua 39.79	0.00	obliqua 0.00	0.00
			Flame length(m)				
		Overall	Flame length(m) Flame angle(deg)	39.79 35.81 80.87	0.00 0.77 74.7	0.00 1.8 47.36	0.00 0.67 30.18
		Overall	Flame length(m)	39.79 35.81	0.00 0.77	0.00 1.8	0.00

Among the information in input file, we consider the species, plant separation(density), live leaf moisture are the most important variations to affect fire behavior. For output file, we select flame height, flame length and flame angle to reflect fire behaviors. Tip height and original height can help us to predict ordinary and extreme situation in bushfire. Serious condition is more likely to happen in low and high severity site.

Considering historical bushfire in 2010, we collect environmental data from Black Saturday and put it into FFM. Each severity site has been remodeled and the results are collected as comparing groups (BS). The information on each site in different fire severity are shown as following tables.

Table 6: Comparable Fire behavior in Low-severity sites under the conditions of both mild and Severe weather

	Low-severity Site		L(1)			Low-severi		DD.	L(2)	
	Weather condition	PB	BS	Increment		Weather co		PB 1.12	BS 2	0.88
	Flame length(m) Flame angle(deg)	1.07 65.55	2 11.04	0.93 -54.51			lame length(m) ame angle(deg)	1.12 60.37	20.09	-40.28
Surface	Flame tip height(m)	0.96	0.35	-0.61	Surface		me tip height(m)	0.94	0.59	-0.35
Juliace	Flame orginal height(m)	0.90	0.55	0.01	Surface		e orginal height(m)	0.54	0.55	0
	Species flame tip heights (m)	n/a	n/a	n/a			flame tip heights (m)	Poa 1.50	n/a	n/a
$\overline{}$	Flame length(m)	1.77	1.83	0.06			lame length(m)	2.19	2.48	0.29
	Flame angle(deg)	75.32	10.02	-65.3			ame angle(deg)	74.62	24.81	-49.81
	Flame tip height(m)	1.71	0.3	-1.41			me tip height(m)	2.11	0.96	-1.15
Jear-Surfac	Flame orginal height(m)	1.07	0.25	-0.82	Near-Surface		e orginal height(m)	1.34	0.52	-0.82
	0 0 1 7	Pteridium	Pteridium					D I	n	
	Species flame tip heights (m)	esculentun 1.71	esculentum 0.30	n/a		Species	flame tip heights (m)	Bracken 2.74	Bracken 1.07	n/a
	Flame length(m)	3.95	0	-3.95		FI	lame length(m)	n/a	n/a	n/a
	Flame angle(deg)	69.82	0	-69.82		FI	ame angle(deg)	n/a	n/a	n/a
	Flame tip height(m)	5.32	0	-5.32			me tip height(m)	n/a	n/a	n/a
Elevated	Flame orginal height(m)	3.8	0	-3.8	Elevated	Flame	e orginal height(m)	n/a	n/a	n/a
		Eucalyptus								
	Species flame tip heights (m)	obliqua	dealbata	n/a		Species	flame tip heights (m)	n/a	n/a	n/a
	Flame langth(m)	7.42 0.00 8.33 0		-8.33		- CI	lama lanath/m\	n/a	n/a	n/2
	Flame length(m) Flame angle(deg)	74.8	0	-8.33 -74.8		Flame length(m) Flame angle(deg)		n/a n/a	n/a	n/a n/a
	Flame tip height(m)	10.01	0	-10.01			me tip height(m)	n/a	n/a	n/a
Mid-Storey	Flame orginal height(m)	4.66	0	-4.66	Mid-Storey		e orginal height(m)	n/a	n/a	n/a
Wild-Storey	rianic organar neight(m)	Eucalyptus				e organar neight(in)	1,7 4	11, 4	.,,	
	Species flame tip heights (m)				flame tip heights (m)	n/a	n/a	n/a		
	apares manne als meights (III)			,		5,000.03	(111)	.,, .,	.,.	,
+	Flame length(m)	15.01	0.00 18.7	3.69		FI	lame length(m)	0	0	0
	Flame angle(deg)	72.12	15.49	-56.63			ame angle(deg)	0	0	0
	Flame tip height(m)	22.14	17.33	-4.81			me tip height(m)	0	0	o
Canopy	Flame orginal height(m)	14.13	14.47	0.34	Canopy		e orginal height(m)	0	0	0
canopy		Eucalyptus			curiopy			Stringy	Ribbon	
	Species flame tip heights (m)	obliqua	obliqua	n/a		Species	flame tip heights (m)	Bark	Gum	n/a
		22.14				.,	, , , , ,	0.00	0.00	.,
	Flame length(m)	21.32	17.33	-2.62		FI	lame length(m)	2.19	2.48	0.29
	Flame angle(deg)	72.52	14.65	-57.87			ame angle(deg)	69.8	22.71	-47.09
Overall	Flame tip height(m)	22.14	17.33	-4.81	Overall		me tip height(m)	2.11	0.96	-1.15
	Flame orginal height(m)	14.13	14.47	0.34			e orginal height(m)	1.34	0.52	-0.82
		1						1		
	Low-severity Site	_	20	L(3)			Low-severity Site		L(4)	
	Weather condition	,	PB	BS	Increment		Weather condition	PB	BS	Increment
	Flame length(n	n)	0.49	2	1.51		Flame length(m)	2	2	0
	Flame angle(de	g)	47.01	28.54	-18.47		Flame angle(deg)	12.08	12.08	0
Surface	Flame tip height	(m)	0.34	0.86	0.52	Surface	Flame tip height(m)	0.32	0.32	0
	Flame orginal heig		0	0	0		Flame orginal height(m)	0	0	0
	Species flame tip heig		n/a	n/a	n/a		Species flame tip heights (m)	n/a	n/a	n/a
								_		
	Flame length(n		n/a	n/a	n/a		Flame length(m)	0.85	0.85	0
	Flame angle(de	g)	n/a	n/a	n/a		Flame angle(deg)	4.8	4.8	0
				n/a	n/a		Flame tip height(m)	0.42	0.42	0
	Flame tip height		n/a	n/a	,		rianic tip neight(iii)	0.42		
Near-Surfa		(m)	n/a n/a	n/a n/a	n/a	Near-Surface	Flame orginal height(m)	0.42	0.46	0
Near-Surfa		(m)				Near-Surface		0.46		0
Near-Surfa	ace Flame orginal heig	(m) ht(m)	n/a	n/a	n/a	Near-Surface	Flame orginal height(m)		0.46 Poa tenera	
Near-Surfa		(m) ht(m)				Near-Surface		0.46		0 n/a
Near-Surfa	Species flame tip heig	(m) ht(m) ghts (m)	n/a n/a	n/a n/a	n/a n/a	Near-Surface	Flame orginal height(m)  Species flame tip heights (m)	0.46 Poa tenera 0.42	Poa tenera 0.42	n/a
Near-Surfa	ace Flame orginal heig	(m) ht(m) ghts (m)	n/a	n/a	n/a	Near-Surface	Flame orginal height(m)	0.46 Poa tenera	Poa tenera	
Near-Surfa	Species flame tip heig	(m) ht(m) ghts (m)	n/a n/a	n/a n/a	n/a n/a	Near-Surface	Flame orginal height(m)  Species flame tip heights (m)	0.46 Poa tenera 0.42	Poa tenera 0.42	n/a
Near-Surfa	Species flame tip heig	(m) ht(m) ghts (m) n)	n/a n/a 1.6	n/a n/a 3.71	n/a n/a 2.11 -34.6	Near-Surface	Flame orginal height(m)  Species flame tip heights (m)  Flame length(m)	0.46 Poa tenera 0.42 1.29	Poa tenera 0.42 1.29	n/a
	Species flame tip heig  Flame length(n  Flame angle(de  Flame tip height	(m) ht(m) ghts (m) n) g) (m)	n/a n/a 1.6 63.5 1.44	n/a n/a 3.71 28.9 1.7	n/a n/a 2.11 -34.6 0.26		Flame orginal height(m)  Species flame tip heights (m)  Flame length(m)  Flame angle(deg)  Flame tip height(m)	0.46 Poa tenera 0.42 1.29 4.92 0.54	Poa tenera 0.42 1.29 4.92 0.54	n/a 0 0 0
Near-Surfa	Species flame tip heig  Flame length(n  Flame angle(de  Flame tip height	(m) ht(m) ghts (m) n) g) (m)	n/a n/a 1.6 63.5 1.44 0.91	n/a n/a 3.71 28.9 1.7 0.78	n/a n/a 2.11 -34.6	Near-Surface	Flame orginal height(m)  Species flame tip heights (m)  Flame length(m)  Flame angle(deg)	0.46 Poa tenera 0.42 1.29 4.92 0.54 0.69	Poa tenera 0.42 1.29 4.92 0.54 0.69	n/a 0 0
	Species flame tip heig  Flame length(n Flame angle(de Flame tip height d Flame orginal heig	(m) ht(m) ghts (m) n) g) (m) ht(m)	n/a n/a 1.6 63.5 1.44 0.91 Pteridium	n/a n/a 3.71 28.9 1.7 0.78 Pteridium	n/a n/a 2.11 -34.6 0.26 -0.13		Flame orginal height(m)  Species flame tip heights (m)  Flame length(m)  Flame angle(deg)  Flame tip height(m)  Flame orginal height(m)	0.46 Poa tenera 0.42 1.29 4.92 0.54 0.69 Pteridium	0.42 1.29 4.92 0.54 0.69 Pteridium	n/a 0 0 0
	Species flame tip heig  Flame length(n  Flame angle(de  Flame tip height	(m) ht(m) ghts (m) n) g) (m) ht(m)	n/a n/a 1.6 63.5 1.44 0.91 Pteridium esculentum	n/a n/a 3.71 28.9 1.7 0.78 Pteridium esculentum	n/a n/a 2.11 -34.6 0.26		Flame orginal height(m)  Species flame tip heights (m)  Flame length(m)  Flame angle(deg)  Flame tip height(m)	0.46 Poa tenera 0.42 1.29 4.92 0.54 0.69 Pteridium esculentum	0.42 1.29 4.92 0.54 0.69 Pteridium esculentum	n/a 0 0 0
	Species flame tip heig  Species flame tip heig  Flame length(n Flame angle(de Flame tip height d Flame orginal heig  Species flame tip heig	(m) ht(m) ghts (m) n) g) (m) ht(m) ghts (m)	n/a n/a 1.6 63.5 1.44 0.91 Pteridium	n/a n/a 3.71 28.9 1.7 0.78 Pteridium esculentum 1.70	n/a n/a 2.11 -34.6 0.26 -0.13 n/a		Flame orginal height(m)  Species flame tip heights (m)  Flame length(m)  Flame angle(deg)  Flame tip height(m)  Flame orginal height(m)  Species flame tip heights (m)	0.46 Poa tenera 0.42 1.29 4.92 0.54 0.69 Pteridium	0.42 1.29 4.92 0.54 0.69 Pteridium	n/a 0 0 0 0 0
	Species flame tip heig  Flame length(n Flame angle(de Flame tip height d Flame orginal heig	(m) ht(m) ghts (m) n) g) (m) ht(m) ghts (m)	n/a n/a 1.6 63.5 1.44 0.91 Pteridium esculentum	n/a n/a 3.71 28.9 1.7 0.78 Pteridium esculentum	n/a n/a 2.11 -34.6 0.26 -0.13		Flame orginal height(m)  Species flame tip heights (m)  Flame length(m)  Flame angle(deg)  Flame tip height(m)  Flame orginal height(m)	0.46 Poa tenera 0.42 1.29 4.92 0.54 0.69 Pteridium esculentum	0.42 1.29 4.92 0.54 0.69 Pteridium esculentum	n/a 0 0 0
	Species flame tip heig  Species flame tip heig  Flame length(n Flame angle(de Flame tip height d Flame orginal heig  Species flame tip heig	(m) ht(m) n) g) (m) ht(m) ht(m) ht(m)	n/a n/a 1.6 63.5 1.44 0.91 Pteridium esculentum 1.44 n/a	n/a n/a 3.71 28.9 1.7 0.78 Pteridium esculentum 1.70 n/a	n/a n/a 2.11 -34.6 0.26 -0.13 n/a		Flame orginal height(m)  Species flame tip heights (m)  Flame length(m)  Flame angle(deg)  Flame tip height(m)  Flame orginal height(m)  Species flame tip heights (m)	0.46 Poa tenera 0.42 1.29 4.92 0.54 0.69 Pteridium esculentum 0.54	Poa tenera 0.42 1.29 4.92 0.54 0.69 Pteridium esculentum 0.54	n/a 0 0 0 0 0
	Flame orginal heig  Species flame tip heig  Flame length(n Flame angle(de Flame tip height d Flame orginal heig  Species flame tip heig  Flame length(n Flame angle(de	(m) ht(m) thts (m) n) g) (m) ht(m) thts (m) thts (m)	n/a  1.6 63.5 1.44 0.91 Pteridium esculentum 1.44 n/a n/a	n/a n/a 3.71 28.9 1.7 0.78 Pteridium esculentum 1.70 n/a n/a	n/a n/a 2.11 -34.6 0.26 -0.13 n/a n/a		Flame orginal height(m)  Species flame tip heights (m)  Flame length(m)  Flame angle(deg)  Flame tip height(m)  Flame orginal height(m)  Species flame tip heights (m)  Flame length(m)  Flame angle(deg)	0.46 Poa tenera 0.42 1.29 4.92 0.54 0.69 Pteridium esculentum 0.54 0	Poa tenera 0.42 1.29 4.92 0.54 0.69 Pteridium esculentum 0.54 0	n/a  0 0 0 0 0 n/a  0 0 0
Elevated	Flame orginal heig  Species flame tip heig  Flame length(n Flame angle(de Flame tip height d  Species flame tip heig  Flame length(n Flame angle(de Flame tip height	(m) ht(m) n) g) (m) ht(m) ht(m) ht(m) ht(m) ht(m) n) g) (m) ht(m) n) (m)	n/a  1.6 63.5 1.44 0.91 Pteridium esculentum 1.44 n/a n/a n/a	n/a n/a 3.71 28.9 1.7 0.78 Pteridium esculentum 1.70 n/a n/a n/a	n/a  n/a  2.11  -34.6 0.26 -0.13  n/a  n/a  n/a n/a	Elevated	Flame orginal height(m)  Species flame tip heights (m)  Flame length(m)  Flame angle(deg)  Flame tip height(m)  Flame orginal height(m)  Species flame tip heights (m)  Flame length(m)  Flame angle(deg)  Flame tip height(m)	0.46 Poa tenera 0.42 1.29 4.92 0.54 0.69 Pteridium esculentum 0.54 0 0	Poa tenera	n/a  0 0 0 0 n/a  n/a
	Flame orginal heig  Species flame tip heig  Flame length(n Flame angle(de Flame tip height d  Species flame tip heig  Flame length(n Flame angle(de Flame tip height	(m) ht(m) n) g) (m) ht(m) ht(m) ht(m) ht(m) ht(m) n) g) (m) ht(m) n) (m)	n/a  1.6 63.5 1.44 0.91 Pteridium esculentum 1.44 n/a n/a	n/a n/a 3.71 28.9 1.7 0.78 Pteridium esculentum 1.70 n/a n/a	n/a n/a 2.11 -34.6 0.26 -0.13 n/a n/a		Flame orginal height(m)  Species flame tip heights (m)  Flame length(m)  Flame angle(deg)  Flame tip height(m)  Flame orginal height(m)  Species flame tip heights (m)  Flame length(m)  Flame angle(deg)	0.46 Poa tenera 0.42 1.29 4.92 0.54 0.69 Pteridium esculentum 0.54 0 0 0	Poa tenera 0.42  1.29 4.92 0.54 0.69 Pteridium esculentum 0.54 0 0 0	n/a  0 0 0 0 0 n/a  0 0 0
Elevated	Flame orginal heig  Species flame tip heig  Flame angle(de Flame tip height d  Species flame tip heig  Flame orginal heig  Species flame tip heig  Flame angle(de Flame angle(de Flame tip height)  Flame tip height  Flame orginal heig	(m) ht(m) n) g) g) (m) ht(m) ht(m) ht(m) ht(m) hth(m) hth(m) hth(m)	n/a  n/a  1.6 63.5 1.44 0.91 Pteridium esculentum 1.44 n/a n/a n/a	n/a n/a 3.71 28.9 1.7 0.78 Pteridium esculentum 1.70 n/a n/a n/a n/a	n/a  n/a  2.11  -34.6 0.26 -0.13  n/a  n/a  n/a n/a n/a	Elevated	Flame orginal height(m)  Species flame tip heights (m)  Flame length(m)  Flame angle(deg)  Flame tip height(m)  Flame orginal height(m)  Species flame tip heights (m)  Flame angle(deg)  Flame tip height(m)  Flame orginal height(m)	0.46 Poa tenera 0.42 1.29 4.92 0.54 0.69 Pteridium esculentum 0.54 0 0 0 Eucalyptus	0.42  1.29 4.92 0.54 0.69 Pteridium esculentum 0.54 0 0 0 Eucalyptus	n/a  0 0 0 0 0 n/a
Elevated	Flame orginal heig  Species flame tip heig  Flame length(n Flame angle(de Flame tip height d  Species flame tip heig  Flame length(n Flame angle(de Flame tip height	(m) ht(m) n) g) g) (m) ht(m) ht(m) ht(m) ht(m) hth(m) hth(m) hth(m)	n/a  1.6 63.5 1.44 0.91 Pteridium esculentum 1.44 n/a n/a n/a	n/a n/a 3.71 28.9 1.7 0.78 Pteridium esculentum 1.70 n/a n/a n/a	n/a  n/a  2.11  -34.6 0.26 -0.13  n/a  n/a  n/a n/a	Elevated	Flame orginal height(m)  Species flame tip heights (m)  Flame length(m)  Flame angle(deg)  Flame tip height(m)  Flame orginal height(m)  Species flame tip heights (m)  Flame length(m)  Flame angle(deg)  Flame tip height(m)	0.46 Poa tenera 0.42 1.29 4.92 0.54 0.69 Pteridium esculentum 0.54 0 0 0	Poa tenera 0.42  1.29 4.92 0.54 0.69 Pteridium esculentum 0.54 0 0 0	n/a  0 0 0 0 n/a  n/a
Elevated	Flame orginal heig  Species flame tip heig  Flame angle(de Flame tip height d  Species flame tip heig  Flame orginal heig  Species flame tip heig  Flame angle(de Flame angle(de Flame tip height)  Flame tip height  Flame orginal heig	(m) ht(m) n) g) g) (m) ht(m) ht(m) ht(m) ht(m) hth(m) hth(m) hth(m)	n/a  n/a  1.6 63.5 1.44 0.91 Pteridium esculentum 1.44 n/a n/a n/a	n/a n/a 3.71 28.9 1.7 0.78 Pteridium esculentum 1.70 n/a n/a n/a n/a	n/a  n/a  2.11  -34.6 0.26 -0.13  n/a  n/a  n/a n/a n/a	Elevated	Flame orginal height(m)  Species flame tip heights (m)  Flame length(m)  Flame angle(deg)  Flame tip height(m)  Flame orginal height(m)  Species flame tip heights (m)  Flame angle(deg)  Flame tip height(m)  Flame orginal height(m)	0.46 Poa tenera 0.42 1.29 4.92 0.54 0.69 Pteridium esculentum 0.54 0 0 0 Eucalyptus	0.42  1.29 4.92 0.54 0.69 Pteridium esculentum 0.54 0 0 0 Eucalyptus	n/a  0 0 0 0 0 n/a
Elevated	Species flame tip heig  Flame length(n Flame angle(de Flame tip height d Flame orginal heig Species flame tip heig Flame angle(de Flame tip heig Flame angle(de Flame tip height ey Flame tip height flame orginal heig Species flame tip height	(m) ht(m) n) g) (m) ht(m) ht(m) ht(m) ht(m) ht(m) ht(m) ht(m) ht(m) ht(m)	n/a  1.6 63.5 1.44 0.91 Pteridium esculentum 1.44 n/a n/a n/a n/a	n/a n/a 3.71 28.9 1.7 0.78 Pteridium esculentum 1.70 n/a n/a n/a n/a	n/a  2.11 -34.6 0.26 -0.13  n/a  n/a n/a n/a n/a	Elevated	Flame orginal height(m)  Species flame tip heights (m)  Flame length(m)  Flame angle(deg)  Flame tip height(m)  Flame orginal height(m)  Species flame tip heights (m)  Flame angle(deg)  Flame tip height(m)  Flame orginal height(m)	0.46 Poa tenera 0.42 1.29 4.92 0.54 0.69 Pteridium esculentum 0.54 0 0 0 Eucalyptus obliqua	Poa tenera 0.42  1.29 4.92 0.54 0.69 Pteridium esculentum 0.54 0 0 0 Eucalyptus obliqua	n/a  0 0 0 0 0 n/a
Elevated	Flame orginal heig  Species flame tip heig  Flame length(n Flame angle(de Flame tip height d Species flame tip heig  Flame length(n Flame angle(de Flame tip height Flame tip height Flame tip height Flame tip height Flame orginal heig  Species flame tip heig  Flame length(n	(m) ht(m) n) g) (m) ht(m) ht(m) ht(m) ht(m) ht(m) ht(m) ht(m) ht(m) ht(m)	n/a  1.6 63.5 1.44 0.91 Pteridium esculentum 1.44 n/a n/a n/a n/a n/a 0	n/a  n/a  3.71  28.9  1.7  0.78  Pteridium esculentum  1.70  n/a  n/a  n/a  n/a  0	n/a  n/a  2.11  -34.6 0.26 -0.13  n/a  n/a  n/a  n/a  n/a  n/a  0	Elevated	Flame orginal height(m)  Species flame tip heights (m)  Flame length(m)  Flame angle(deg)  Flame tip height(m)  Flame orginal height(m)  Flame length(m)  Flame angle(deg)  Flame tip height(m)  Flame orginal height(m)  Flame orginal height(m)  Flame tip height(m)  Flame orginal height(m)  Species flame tip heights (m)	0.46 Poa tenera 0.42 1.29 4.92 0.54 0.69 Pteridium esculentum 0.54 0 0 0 Eucalyptus obliqua 0.00	Poa tenera	n/a  0 0 0 0 0 n/a  0 0 n/a  0 0 0 0
Elevated	Flame orginal heig  Species flame tip heig  Flame length(n Flame angle(de Flame tip height d Flame orginal heig  Species flame tip height Flame angle(de Flame tip height Flame orginal heig  Species flame tip height Flame orginal heig  Flame length(n Flame angle(de Flame tip height Flame length(n Flame angle(de)	(m) ht(m) n) g) (m) ht(m) ht(m) ethts (m) n) g) (m) ht(m) ht(m) ethts (m) n) g) (m) ht(m)	n/a  1.6 63.5 1.44 0.91 Pteridium esculentum 1.44 n/a n/a n/a n/a n/a 0 0	n/a  n/a  3.71  28.9  1.7  0.78  Pteridium  esculentum  1.70  n/a  n/a  n/a  n/a  n/a  0  0	n/a  n/a  2.11  -34.6 0.26 -0.13  n/a  n/a  n/a  n/a  n/a  n/a  0 0	Elevated	Flame orginal height(m)  Species flame tip heights (m)  Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m)  Species flame tip heights (m)  Flame angle(deg) Flame tip height(m) Flame orginal height(m) Flame orginal height(m)  Species flame tip heights (m)  Flame length(m) Flame angle(deg)	0.46 Poa tenera 0.42 1.29 4.92 0.54 0.69 Pteridium esculentum 0.54 0 0 0 Eucalyptus obliqua 0.00 0	Poa tenera	n/a  0 0 0 0 0 n/a  0 0 n/a 0 0 0 0 0
Elevated Mid-Store	Flame orginal heig  Species flame tip heig  Flame length(n Flame angle(de Flame tip height d Flame orginal heig  Species flame tip height Flame angle(de Flame tip height Flame orginal heig  Species flame tip height Flame orginal heig  Flame length(n Flame angle(de Flame angle(de Flame tip height Flame tip height Flame tip height Flame tip height	(m) ht(m) n) g) (m) ht(m) ht(m) ht(m) ht(m) ht(m)  g) (m) ht(m) ht(m) ht(m) ht(m) ht(m)	n/a  n/a  1.6 63.5 1.44 0.91 Pteridium esculentum 1.44 n/a n/a n/a n/a 0 0	n/a n/a 3.71 28.9 1.7 0.78 Pteridium esculentum 1.70 n/a n/a n/a n/a 0 0	n/a  n/a  2.11  -34.6 0.26 -0.13  n/a  n/a  n/a  n/a  n/a  n/a  0 0 0	Elevated Mid-Storey	Flame orginal height(m)  Species flame tip heights (m)  Flame length(m)  Flame angle(deg)  Flame tip height(m)  Flame orginal height(m)  Species flame tip heights (m)  Flame angle(deg)  Flame tip height(m)  Flame orginal height(m)  Flame orginal height(m)  Flame angle(deg)  Flame tip heights (m)  Flame angle(deg)  Flame tip height(m)  Flame angle(deg)  Flame tip height(m)	0.46 Poa tenera 0.42 1.29 4.92 0.54 0.69 Pteridium esculentum 0.54 0 0 0 Eucalyptus obliqua 0.00 0 0	Poa tenera	n/a  0 0 0 0 0 n/a  0 0 n/a  0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Elevated	Flame orginal heig  Species flame tip heig  Flame length(n Flame angle(de Flame tip height d Flame orginal heig  Species flame tip height Flame angle(de Flame tip height Flame orginal heig  Species flame tip height Flame orginal heig  Flame length(n Flame angle(de Flame angle(de Flame tip height Flame tip height Flame tip height Flame tip height	(m) ht(m) n) g) (m) ht(m) ht(m) ht(m) ht(m) ht(m)  g) (m) ht(m) ht(m) ht(m) ht(m) ht(m)	n/a  1.6 63.5 1.44 0.91 Pteridium esculentum 1.44 n/a n/a n/a n/a n/a 0 0	n/a  n/a  3.71  28.9  1.7  0.78  Pteridium  esculentum  1.70  n/a  n/a  n/a  n/a  n/a  0  0	n/a  n/a  2.11  -34.6 0.26 -0.13  n/a  n/a  n/a  n/a  n/a  n/a  0 0	Elevated	Flame orginal height(m)  Species flame tip heights (m)  Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m)  Species flame tip heights (m)  Flame angle(deg) Flame tip height(m) Flame orginal height(m) Flame orginal height(m)  Species flame tip heights (m)  Flame length(m) Flame angle(deg)	0.46 Poa tenera 0.42 1.29 4.92 0.54 0.69 Pteridium esculentum 0.54 0 0 0 Eucalyptus obliqua 0.00 0	Poa tenera	n/a  0 0 0 0 0 n/a  0 0 n/a 0 0 0 0 0
Elevated Mid-Store	Flame orginal heig  Species flame tip heig  Flame length(n Flame angle(de Flame tip height d Flame orginal heig  Species flame tip height Flame angle(de Flame tip height Flame orginal heig  Species flame tip height Flame orginal heig  Flame length(n Flame angle(de Flame angle(de Flame tip height Flame tip height Flame tip height Flame tip height	(m) ht(m) n) g) (m) ht(m) ht(m) ht(m) ht(m) ht(m)  g) (m) ht(m) ht(m) ht(m) ht(m) ht(m)	n/a  n/a  1.6 63.5 1.44 0.91 Pteridium esculentum 1.44 n/a n/a n/a n/a 0 0 0	n/a  n/a  3.71  28.9  1.7  0.78  Pteridium esculentum  1.70  n/a n/a n/a n/a 0 0 0 0	n/a  n/a  2.11  -34.6 0.26 -0.13  n/a  n/a  n/a  n/a  n/a  n/a  0 0 0	Elevated Mid-Storey	Flame orginal height(m)  Species flame tip heights (m)  Flame length(m)  Flame angle(deg)  Flame tip height(m)  Flame orginal height(m)  Species flame tip heights (m)  Flame angle(deg)  Flame tip height(m)  Flame orginal height(m)  Flame orginal height(m)  Flame angle(deg)  Flame tip heights (m)  Flame angle(deg)  Flame tip height(m)  Flame angle(deg)  Flame tip height(m)	0.46 Poa tenera 0.42 1.29 4.92 0.54 0.69 Pteridium esculentum 0.54 0 0 0 Eucalyptus obliqua 0.00 0 0	Poa tenera	n/a  0 0 0 0 0 n/a  0 0 n/a  0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Elevated Mid-Store	Flame orginal heig  Species flame tip heig  Flame length(n Flame angle(de Flame tip height  Grame tip height Flame orginal heig  Species flame tip height Flame angle(de Flame tip height Flame orginal heig  Species flame tip height Flame orginal heig  Flame length(n Flame angle(de Flame tip height Flame orginal height) Flame orginal height Flame orginal height Flame orginal height	(m) ht(m) n) g) (m) ht(m) ht(m) ht(m) ht(m) n) g) (m) ht(m) ht(m) ht(m) ht(m) ht(m)	n/a  1.6 63.5 1.44 0.91 Pteridium esculentum 1.44 n/a n/a n/a n/a 0 0 0 0 Blue Gum	n/a  n/a  3.71  28.9  1.7  0.78  Pteridium esculentum  1.70  n/a  n/a  n/a  n/a  0  0  0  0  Blue gum	n/a  n/a  2.11  -34.6 0.26 -0.13  n/a  n/a  n/a  n/a  n/a  0 0 0	Elevated Mid-Storey	Flame orginal height(m)  Species flame tip heights (m)  Flame length(m)  Flame angle(deg)  Flame tip height(m)  Flame orginal height(m)  Species flame tip heights (m)  Flame angle(deg)  Flame tip height(m)  Flame orginal height(m)  Flame orginal height(m)  Flame tip heights (m)  Flame tip heights (m)  Flame tip heights (m)  Flame tip heights (m)  Flame tip height(m)  Flame orginal height(m)  Flame orginal height(m)	0.46 Poa tenera 0.42 1.29 4.92 0.54 0.69 Pteridium esculentum 0.54 0 0 0 Eucalyptus obliqua 0.00 0 Eucalyptus 0.00 Eucalyptus	Poa tenera 0.42  1.29 4.92 0.54 0.69 Pteridium esculentum 0.54 0 0 0 Eucalyptus obliqua 0.00 0 Eucalyptus	n/a  0 0 0 0 0 n/a  0 0 0 n/a 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Elevated Mid-Store	Flame orginal heig  Species flame tip heig  Flame length(n Flame angle(de Flame tip height d Flame orginal heig  Species flame tip height Flame angle(de Flame tip height Flame orginal heig  Species flame tip height Flame orginal heig  Flame length(n Flame angle(de Flame angle(de Flame tip height Flame tip height Flame tip height Flame tip height	(m) ht(m) n) g) (m) ht(m) ht(m) ht(m) ht(m) n) g) (m) ht(m) ht(m) ht(m) ht(m) ht(m)	n/a  n/a  1.6 63.5 1.44 0.91 Pteridium esculentum 1.44 n/a n/a n/a n/a 0 0 0	n/a  n/a  3.71  28.9  1.7  0.78  Pteridium esculentum  1.70  n/a n/a n/a n/a 0 0 0 0	n/a  n/a  2.11  -34.6 0.26 -0.13  n/a  n/a  n/a  n/a  n/a  n/a  0 0 0	Elevated Mid-Storey	Flame orginal height(m)  Species flame tip heights (m)  Flame length(m)  Flame angle(deg)  Flame tip height(m)  Flame orginal height(m)  Species flame tip heights (m)  Flame angle(deg)  Flame tip height(m)  Flame orginal height(m)  Flame orginal height(m)  Flame angle(deg)  Flame tip heights (m)  Flame angle(deg)  Flame tip height(m)  Flame angle(deg)  Flame tip height(m)	0.46 Poa tenera 0.42 1.29 4.92 0.54 0.69 Pteridium esculentum 0.54 0 0 0 Eucalyptus obliqua 0.00 0 Eucalyptus obliqua oo	Poa tenera 0.42  1.29 4.92 0.54 0.69 Pteridium esculentum 0.54 0 0 0 Eucalyptus obliqua 0.00 0 Eucalyptus obliqua coulontum 0	n/a  0 0 0 0 0 n/a  0 0 n/a  0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Elevated Mid-Store	Flame orginal heig  Species flame tip heig  Flame length(n Flame angle(de Flame tip height d  Species flame tip heig  Flame length(n Flame angle(de Flame tip height Flame orginal heig  Species flame tip height Flame length(n Flame angle(de Flame tip height Flame length(n Flame orginal heig  Species flame tip height Flame orginal heig  Species flame tip height Flame orginal heig	(m) ht(m) n) g) (m) ht(m) ht(m) g) (m) ht(m) ht(m) g) (m) ht(m) ht(m) ht(m) ht(m) ht(m) ht(m)	n/a  n/a  1.6 63.5 1.44 0.91 Pteridium esculentum 1.44 n/a n/a n/a 0 0 0 0 Blue Gum 0.00	n/a n/a 3.71 28.9 1.7 0.78 Pteridium esculentum 1.70 n/a n/a n/a n/a 0 0 0 Blue gum 0.00	n/a  n/a  2.11  -34.6 0.26 -0.13  n/a  n/a  n/a  n/a  n/a  n/a  n/a  n/	Elevated Mid-Storey	Flame orginal height(m)  Species flame tip heights (m)  Flame length(m)  Flame angle(deg)  Flame tip height(m)  Flame orginal height(m)  Species flame tip heights (m)  Flame angle(deg)  Flame tip height(m)  Flame orginal height(m)  Species flame tip heights (m)  Flame angle(deg)  Flame tip heights (m)  Flame angle(deg)  Flame tip heights (m)  Flame orginal height(m)  Flame orginal height(m)  Flame orginal height(m)  Flame orginal height(m)	0.46 Poa tenera 0.42 1.29 4.92 0.54 0.69 Pteridium esculentum 0.54 0 0 0 Eucalyptus obliqua 0.00 0 Eucalyptus obliqua 0.00	Poa tenera 0.42  1.29 4.92 0.54 0.69 Pteridium esculentum 0.54 0 0 0 Eucalyptus obliqua 0.00 0 Eucalyptus obliqua 0.00 0 Eucalyptus	n/a  0 0 0 0 0 n/a  0 0 0 n/a  0 0 n/a
Elevated Mid-Store	Flame orginal heig  Species flame tip heig  Flame length(n Flame angle(de Flame tip height  Grame tip height Flame orginal heig  Species flame tip height Flame angle(de Flame tip height Flame orginal heig  Species flame tip height Flame orginal heig  Flame length(n Flame angle(de Flame tip height Flame orginal height) Flame orginal height Flame orginal height Flame orginal height	(m) ht(m) n) g) (m) ht(m) ht(m) g) (m) ht(m) ht(m) g) (m) ht(m) ht(m) ht(m) ht(m) ht(m) ht(m)	n/a  1.6 63.5 1.44 0.91 Pteridium esculentum 1.44 n/a n/a n/a n/a 0 0 0 0 Blue Gum	n/a  n/a  3.71  28.9  1.7  0.78  Pteridium esculentum  1.70  n/a  n/a  n/a  n/a  0  0  0  0  Blue gum	n/a  n/a  2.11  -34.6 0.26 -0.13  n/a  n/a  n/a  n/a  n/a  0 0 0	Elevated Mid-Storey	Flame orginal height(m)  Flame length(m)  Flame length(m)  Flame angle(deg)  Flame tip height(m)  Flame orginal height(m)  Flame length(m)  Flame angle(deg)  Flame tip height(m)  Flame orginal height(m)  Flame orginal height(m)  Flame tip height(m)  Flame angle(deg)  Flame tip height(m)  Flame angle(deg)  Flame tip height(m)  Flame orginal height(m)  Flame orginal height(m)  Flame tip height(m)  Flame tip height(m)  Flame orginal height(m)  Species flame tip height(m)	0.46 Poa tenera 0.42 1.29 4.92 0.54 0.69 Pteridium esculentum 0.54 0 0 0 Eucalyptus obliqua 0.00 0 Eucalyptus obliqua oo	Poa tenera	n/a  0 0 0 0 0 n/a  0 0 0 n/a  0 0 n/a  0 0 n/a
Elevated Mid-Stord	Flame orginal heig  Species flame tip heig  Flame length(n Flame angle(de Flame tip height d  Flame orginal heig  Species flame tip height Flame angle(de Flame tip height Flame orginal heig  Species flame tip height Flame orginal heig  Species flame tip height Flame angle(de Flame tip height Flame tip height Flame orginal heig  Species flame tip height Flame orginal heig  Flame angle(de Flame angle(de Flame angle(de Flame angle(de) Flame angle(de)	(m) ht(m) n) g) (m) ht(m) ht(m) g) (m) ht(m) ht(m) g) (m) ht(m) ht(m) ht(m) ht(m) ht(m) n) g) (m) ht(m)	n/a  1.6 63.5 1.44 0.91 Pteridium esculentum 1.44 n/a n/a n/a n/a 0 0 0 Blue Gum 0.00	n/a  n/a  3.71  28.9  1.7  0.78  Pteridium  esculentum  1.70  n/a  n/a  n/a  n/a  0  0  0  Blue gum  0.00  3.71	n/a  n/a  2.11  -34.6 0.26 -0.13  n/a  n/a  n/a  n/a  n/a  n/a  n/a  n/	Elevated Mid-Storey Canopy	Flame orginal height(m)  Species flame tip heights (m)  Flame length(m)  Flame angle(deg)  Flame tip height(m)  Flame orginal height(m)  Species flame tip heights (m)  Flame angle(deg)  Flame tip height(m)  Flame orginal height(m)  Species flame tip heights (m)  Flame angle(deg)  Flame tip heights (m)  Flame angle(deg)  Flame tip heights (m)  Flame orginal height(m)  Flame orginal height(m)  Flame orginal height(m)  Flame orginal height(m)	0.46 Poa tenera 0.42 1.29 4.92 0.54 0.69 Pteridium esculentum 0.54 0 0 0 Eucalyptus obliqua 0.00 0 Eucalyptus obliqua 0.00	Poa tenera 0.42  1.29 4.92 0.54 0.69 Pteridium esculentum 0.54 0 0 0 Eucalyptus obliqua 0.00 0 Eucalyptus obliqua 0.00 0 Eucalyptus	n/a  0 0 0 0 0 n/a  0 0 0 n/a  0 0 n/a
Elevated Mid-Store	Flame orginal heig  Species flame tip heig  Flame length(n Flame angle(de Flame tip height d Flame orginal heig  Species flame tip height Flame angle(de Flame tip height Flame orginal heig  Species flame tip height Flame orginal heig  Species flame tip height Flame angle(de Flame tip height Flame orginal heig  Species flame tip height Flame orginal heig  Species flame tip height Flame orginal height Flame orginal height Flame orginal height Flame length(n Flame angle(de Flame length(n Flame angle(de)	(m) ht(m) n) g) (m) ht(m) ht(m) elsts (m) n) g) (m) ht(m) ht(m) ht(m) elsts (m) n) g) (m) ht(m) ht(m) elsts (m) n) g) (m) ht(m) ht(m) ht(m)	n/a  1.6 63.5 1.44 0.91 Pteridium esculentum 1.44 n/a n/a n/a n/a 0 0 0 Blue Gum 0.00  1.6 59.62	n/a  n/a  3.71  28.9  1.7  0.78  Pteridium esculentum  1.70  n/a n/a n/a n/a  0  0  0  0  Blue gum 0.00  3.71  28.78	n/a  n/a  2.11  -34.6  0.26  -0.13  n/a  n/a  n/a  n/a  n/a  n/a  n/a  n/	Elevated Mid-Storey	Flame orginal height(m)  Flame length(m)  Flame length(m)  Flame angle(deg)  Flame tip heights (m)  Flame orginal height(m)  Flame length(m)  Flame angle(deg)  Flame tip heights (m)  Flame orginal height(m)  Flame orginal height(m)  Flame angle(deg)  Flame tip heights (m)  Flame angle(deg)  Flame tip heights (m)  Flame angle(deg)  Flame tip height(m)  Flame orginal height(m)  Flame orginal height(m)  Flame tip heights (m)  Flame angle(deg)	0.46 Poa tenera 0.42 1.29 4.92 0.54 0.69 Pteridium esculentum 0.54 0 0 0 Eucalyptus obliqua 0.00 0 Eucalyptus obliqua 0.00 2.23 8.36	Poa tenera	n/a  0 0 0 0 0 n/a  0 0 0 n/a  0 0 0 n/a  0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Elevated Mid-Stord	Flame orginal heig  Species flame tip heig  Flame length(n Flame angle(de Flame tip height d  Flame orginal heig  Species flame tip height Flame angle(de Flame tip height Flame orginal heig  Species flame tip height Flame orginal heig  Species flame tip height Flame angle(de Flame tip height Flame tip height Flame orginal heig  Species flame tip height Flame orginal heig  Flame angle(de Flame angle(de Flame angle(de Flame angle(de) Flame angle(de)	m) ht(m) ht(m) n) g) (m) ht(m) ht(m) n) g) (m) ht(m) ht(m) ht(m) g) (m) ht(m) ht(m) n) g) (m) ht(m) ht(m)	n/a  1.6 63.5 1.44 0.91 Pteridium esculentum 1.44 n/a n/a n/a n/a 0 0 0 Blue Gum 0.00	n/a  n/a  3.71  28.9  1.7  0.78  Pteridium  esculentum  1.70  n/a  n/a  n/a  n/a  0  0  0  Blue gum  0.00  3.71	n/a  n/a  2.11  -34.6 0.26 -0.13  n/a  n/a  n/a  n/a  n/a  n/a  n/a  n/	Elevated Mid-Storey Canopy	Flame orginal height(m)  Flame length(m)  Flame length(m)  Flame angle(deg)  Flame tip height(m)  Flame orginal height(m)  Flame length(m)  Flame angle(deg)  Flame tip height(m)  Flame orginal height(m)  Flame orginal height(m)  Flame tip height(m)  Flame angle(deg)  Flame tip height(m)  Flame angle(deg)  Flame tip height(m)  Flame orginal height(m)  Flame orginal height(m)  Flame tip height(m)  Flame tip height(m)  Flame orginal height(m)  Species flame tip height(m)	0.46 Poa tenera 0.42 1.29 4.92 0.54 0.69 Pteridium esculentum 0.54 0 0 0 Eucalyptus obliqua 0.00 0 Eucalyptus obliqua 0.00 2.223	Poa tenera	n/a  0 0 0 0 0 n/a  0 0 0 n/a  0 0 n/a  0 0 n/a

Table 7: Comparable Fire behavior in Control-severity sites under the conditions of both mild and Severe weather

	Control-severity Site		C(3)		(	Control-s	severity Site	l		C(4)			
	Weather condition	PB		Increment			r condition		PB	BS	Increment		
	Flame length(m)	2	2	0			Flame length(m)		.91	2	1.09		
	Flame angle(deg)	28.98	11	-17.98			Flame angle(deg)		9.38	12.11	-27.27		
Surface	Flame tip height(m)	0.66	0.04	-0.62	Surface	F	lame tip height(m)	0	.49	0.18	-0.31		
	Flame orginal height(m)	0	0	0			me orginal height(m)		0	0	0		
	Species flame tip heights (m)	n/a	n/a	n/a			es flame tip heights (m)	ı	n/a	n/a	n/a		
	Flame length(m)	1.21	1.11	-0.1			Flame length(m)		.93	2.77	1.84		
	Flame angle(deg)	17.76	11	-6.76			Flame angle(deg)	40	0.25	17.01	-23.24		
	Flame tip height(m)	0.21	0.06	-0.15		F	lame tip height(m)	Ιo	.68	0.68	0		
Near-Surface	Flores control batchetos	0.27	0.1	-0.17	Near-Surface		me orginal height(m)		.49	0.97	0.48		
ivear-surface		Lomandra	Lomandra		ivear-surface		,	ı	ridium	Pteridium			
	Species flame tip heights (m)	filiformis	filiformis	n/2		Cnoci	os flamo tin hoights (m)			esculentum	2/2		
	species name up neights (m)			n/a		Speci	es flame tip heights (m)	(m) esculentun 0.68			n/a		
		0.21	0.06							0.68			
	Flame length(m)	n/a	n/a	n/a			Flame length(m)		n/a	1.96	n/a		
	Flame angle(deg)	n/a	n/a	n/a			Flame angle(deg)	ı	n/a	8	n/a		
	Flame tip height(m)	n/a	n/a	n/a		F	lame tip height(m)	ı	n/a	2.22	n/a		
Elevated	Flame orginal height(m)	n/a	n/a	n/a	Elevated	Fla	me orginal height(m)	ı	n/a	2.51	n/a		
							,			Acacia			
	Species flame tip heights (m)	n/a	n/a	n/a		Speci	es flame tip heights (m)	1	n/a	dealbata	n/a		
	' ' ' '					.,				2.22			
	Flame length(m)	n/a	n/a	n/a			Flame length(m)		0	n/a	n/a		
	Flame angle(deg)	n/a	n/a	n/a					0	n/a	n/a		
						Ι,	Flame angle(deg)						
Mid Channe	Flame tip height(m)	n/a	n/a	n/a	Maid Channe		Flame tip height(m)		0	n/a	n/a		
Mid-Storey	Flame orginal height(m)	n/a	n/a	n/a	Mid-Storey	l Ha	me orginal height(m)	١.	0	n/a	n/a		
	Canada dana da bataba ( )	- 1-	-1-	-1-		١	fl tl- b - 1 - 1 - 1	ı	acia	-1			
	Species flame tip heights (m)	n/a	n/a	n/a		Speci	es flame tip heights (m)	ı	albata	n/a	n/a		
	#1 1 -11.1.1								0.00				
	Flame length(m)	0	0	0			Flame length(m)		0	0	0		
	Flame angle(deg)	0	0	0			Flame angle(deg)		0	0	0		
	Flame tip height(m)	0	0	0			Flame tip height(m)		0	0	0		
Canopy	Flame orginal height(m)	0	0	0	Canopy	Fla	me orginal height(m)		0	0	0		
		Eucalyptus	Eucalyptus						acia	Eucalyptus			
	Species flame tip heights (m)	obliqua	obliqua	n/a		Speci	Species flame tip heights (m)		es flame tip heights (m)		albata	obliqua	n/a
		0.00	0.00				species name up neights (m)		0.00	0.00			
	Flame length(m)	2.05	2	-0.05			Flame length(m)		.94	2.89	1.95		
. "	Flame angle(deg)	24.76	11	-13.76			Flame angle(deg)	39	9.82	12.93	-26.89		
Overall	Flame tip height(m)	0.66	0.06	-0.6	Overall	l f	lame tip height(m)		.68	2.22	1.54		
	Flame orginal height(m)	0.27	0.1	-0.17			me orginal height(m)	ı	.49	2.51	2.02		
		1							I				
(	Control-severity Site		C(1)			Coi	ntrol-severity Site			C(2)			
	Weather condition	PB	BS	Increme	ent		eather condition		PB	BS	Increment		
$\equiv$	Weather condition Flame length(m)	PB 0.92	BS 2	Increme 1.08	ent				PB 2	BS 2	Increment 0		
							eather condition						
Surface	Flame length(m) Flame angle(deg)	0.92 43.25	2 9	1.08 -34.25	5	W	reather condition Flame length(m) Flame angle(deg)	)	2 37.15	2 12	0 -25.15		
Surface	Flame length(m) Flame angle(deg) Flame tip height(m)	0.92 43.25 0.53	2 9 0.04	1.08 -34.25 -0.49		W	eather condition Flame length(m) Flame angle(deg) Flame tip height(m)		2 37.15 0.63	2 12 0.04	0 -25.15 -0.59		
Surface	Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m)	0.92 43.25 0.53 0	2 9 0.04 0	1.08 -34.25 -0.49 0	5	W	eather condition Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(	m)	2 37.15 0.63 0	2 12 0.04 0	0 -25.15 -0.59 0		
Surface	Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Species flame tip heights (m)	0.92 43.25 0.53 0 n/a	2 9 0.04 0 n/a	1.08 -34.29 -0.49 0 n/a	5	W	eather condition Flame length(m) Flame angle(deg) Flame tip height(m Flame tip height(m) Flame orginal height( Species flame tip height	m)	2 37.15 0.63 0 n/a	2 12 0.04 0 n/a	0 -25.15 -0.59 0 n/a		
Surface	Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Species flame tip heights (m) Flame length(m)	0.92 43.25 0.53 0 n/a 1.14	2 9 0.04 0 n/a 0.93	1.08 -34.29 -0.49 0 n/a -0.21	Surf	W	eather condition Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height( Species flame tip height Flame length(m)	m)	2 37.15 0.63 0 n/a 1.81	2 12 0.04 0 n/a 1.25	0 -25.15 -0.59 0 n/a -0.56		
Surface	Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Species flame tip heights (m) Flame length(m) Flame angle(deg)	0.92 43.25 0.53 0 n/a 1.14 49.85	2 9 0.04 0 n/a 0.93 9	1.08 -34.25 -0.49 0 n/a -0.21 -40.85	Surf	W	eather condition Flame length(m) Flame angle(deg) Flame tip height(m Flame orginal height( Species flame tip height( Flame length(m) Flame angle(deg)	m) s (m)	2 37.15 0.63 0 n/a 1.81 34.16	2 12 0.04 0 n/a 1.25 12	0 -25.15 -0.59 0 n/a -0.56 -22.16		
Surface	Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Species flame tip heights (m) Flame length(m) Flame angle(deg) Flame tip height(m)	0.92 43.25 0.53 0 n/a 1.14 49.85 0.8	2 9 0.04 0 n/a 0.93 9 0.05	1.08 -34.25 -0.49 0 n/a -0.21 -40.85	Surf	W	eather condition  Flame length(m) Flame angle(deg) Flame tip height(m Flame orginal height( Species flame tip height Flame length(m) Flame angle(deg) Flame tip height(m)	m) s (m) )	2 37.15 0.63 0 n/a 1.81 34.16 0.62	2 12 0.04 0 n/a 1.25 12 0.06	0 -25.15 -0.59 0 n/a -0.56 -22.16 -0.56		
Surface	Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Species flame tip heights (m) Flame length(m) Flame angle(deg)	0.92 43.25 0.53 0 n/a 1.14 49.85	2 9 0.04 0 n/a 0.93 9	1.08 -34.25 -0.49 0 n/a -0.21 -40.85	Surf	W	eather condition Flame length(m) Flame angle(deg) Flame tip height(m Flame orginal height( Species flame tip height( Flame length(m) Flame angle(deg)	m) s (m) )	2 37.15 0.63 0 n/a 1.81 34.16	2 12 0.04 0 n/a 1.25 12	0 -25.15 -0.59 0 n/a -0.56 -22.16		
	Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Species flame tip heights (m) Flame length(m) Flame angle(deg) Flame tip height(m)	0.92 43.25 0.53 0 n/a 1.14 49.85 0.8 0.58	2 9 0.04 0 n/a 0.93 9 0.05 0.12	1.08 -34.29 -0.49 0 n/a -0.21 -40.89 -0.75	Surf	W	eather condition  Flame length(m) Flame angle(deg) Flame tip height(m Flame orginal height( Species flame tip height Flame length(m) Flame angle(deg) Flame tip height(m)	m) s (m) )	2 37.15 0.63 0 n/a 1.81 34.16 0.62 0.94	2 12 0.04 0 n/a 1.25 12 0.06 0.13	0 -25.15 -0.59 0 n/a -0.56 -22.16 -0.56		
	Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Species flame tip heights (m) Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m)	0.92 43.25 0.53 0 n/a 1.14 49.85 0.8 0.58 Lomandra	2 9 0.04 0 n/a 0.93 9 0.05 0.12 Lomandra	1.08 -34.25 -0.49 0 n/a -0.21 -40.85 -0.75 -0.46	Surf	W	eather condition Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height( Species flame tip height Flame length(m) Flame angle(deg) Flame orginal height(	m) s (m) ) m)	2 37.15 0.63 0 n/a 1.81 34.16 0.62 0.94	2 12 0.04 0 n/a 1.25 12 0.06 0.13	0 -25.15 -0.59 0 n/a -0.56 -22.16 -0.56 -0.81		
	Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Species flame tip heights (m) Flame length(m) Flame angle(deg) Flame tip height(m)	0.92 43.25 0.53 0 n/a 1.14 49.85 0.8 0.58 Lomandra filiformis	2 9 0.04 0 n/a 0.93 9 0.05 0.12 Lomandra filiformis	1.08 -34.29 -0.49 0 n/a -0.21 -40.89 -0.75	Surf	W	eather condition  Flame length(m) Flame angle(deg) Flame tip height(m Flame orginal height( Species flame tip height Flame length(m) Flame angle(deg) Flame tip height(m)	m) s (m) ) m)	2 37.15 0.63 0 n/a 1.81 34.16 0.62 0.94	2 12 0.04 0 n/a 1.25 12 0.06 0.13	0 -25.15 -0.59 0 n/a -0.56 -22.16 -0.56		
	Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Species flame tip heights (m) Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Species flame tip heights (m)	0.92 43.25 0.53 0 n/a 1.14 49.85 0.8 0.58 Lomandra filiformis 0.66	2 9 0.04 0 n/a 0.93 9 0.05 0.12 Lomandra filiformis 0.05	1.08 -34.29 -0.49 0 n/a -0.21 -40.89 -0.75 -0.46	Surf	W	eather condition  Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height( Species flame tip height Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height( Species flame tip height	m) s (m) ) m)	2 37.15 0.63 0 n/a 1.81 34.16 0.62 0.94 Poa 0.54	2 12 0.04 0 n/a 1.25 12 0.06 0.13 Bracken 0.06	0 -25.15 -0.59 0 n/a -0.56 -22.16 -0.56 -0.81 n/a		
	Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Species flame tip heights (m) Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Species flame tip heights (m)	0.92 43.25 0.53 0 n/a 1.14 49.85 0.8 0.58 Lomandra filiformis 0.66 n/a	2 9 0.04 0 n/a 0.93 9 0.05 0.12 Lomandra filiformis 0.05 n/a	1.08 -34.2! -0.49 0 n/a -0.21 -40.8! -0.75 -0.46 n/a	Surf	W	eather condition Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height( Species flame tip height Flame length(m) Flame angle(deg) Flame orginal height(	m) s (m) ) m)	2 37.15 0.63 0 n/a 1.81 34.16 0.62 0.94 Poa 0.54	2 12 0.04 0 n/a 1.25 12 0.06 0.13 Bracken 0.06 n/a	0 -25.15 -0.59 0 n/a -0.56 -22.16 -0.56 -0.81		
	Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Species flame tip heights (m) Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Species flame tip heights (m)	0.92 43.25 0.53 0 n/a 1.14 49.85 0.8 0.58 Lomandra filiformis 0.66	2 9 0.04 0 n/a 0.93 9 0.05 0.12 Lomandra filiformis 0.05	1.08 -34.29 -0.49 0 n/a -0.21 -40.89 -0.75 -0.46	Surf	W	eather condition  Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height( Species flame tip height Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height( Species flame tip height	m) s (m) ) m)	2 37.15 0.63 0 n/a 1.81 34.16 0.62 0.94 Poa 0.54	2 12 0.04 0 n/a 1.25 12 0.06 0.13 Bracken 0.06	0 -25.15 -0.59 0 n/a -0.56 -22.16 -0.56 -0.81 n/a		
	Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Species flame tip heights (m) Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Species flame tip heights (m)	0.92 43.25 0.53 0 n/a 1.14 49.85 0.8 0.58 Lomandra filiformis 0.66 n/a	2 9 0.04 0 n/a 0.93 9 0.05 0.12 Lomandra filiformis 0.05 n/a	1.08 -34.2! -0.49 0 n/a -0.21 -40.8! -0.75 -0.46 n/a	Surf	W	Flame length(m) Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(species flame tip height Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(species flame tip height(m) Flame orginal height(flame) Species flame tip height(flame) Flame length(m)	m) s (m) ) m) s (m)	2 37.15 0.63 0 n/a 1.81 34.16 0.62 0.94 Poa 0.54	2 12 0.04 0 n/a 1.25 12 0.06 0.13 Bracken 0.06 n/a	0 -25.15 -0.59 0 n/a -0.56 -22.16 -0.56 -0.81 n/a		
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lear-Surfac  Elevated  Mid-Storey	Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Flame length (m) Flame length (m) Flame length (m) Flame angle(deg) Flame tip heights (m) Flame orginal height(m) Flame orginal height(m) Flame length (m) Flame length (m) Flame length (m) Flame orginal height (m) Flame angle (deg) Flame tip heights (m)  Species flame tip heights (m)  Flame length (m) Flame length (m) Flame length (m) Flame length (m) Flame length (m) Flame orginal height (m)  Species flame tip heights (m)  Flame length (m) Flame angle (deg) Flame tip height (m) Flame angle (deg) Flame tip height (m) Flame orginal height (m) Flame orginal height (m) Species flame tip heights (m)	0.92 43.25 0.53 0 n/a 1.14 49.85 0.8 0.58 Lomandra filliformis 0.66 n/a n/a n/a n/a n/a n/a n/a 0 0 0 Eucalyptus	2 9 0.04 0 n/a 0.93 9 0.05 0.12 Lomandra filiformis 0.05 n/a n/a n/a n/a n/a n/a n/a n/a n/a on/a	1.08 -34.2! -0.49 0 n/a -0.21 -40.8! -0.75 -0.46 n/a	Surf Near-Si Eleva	W acce	eather condition Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Flame orginal height(m) Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(flame) Flame tip height(m) Flame angle(deg) Flame tip height(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Flame orginal height(m) Flame angle(deg) Flame tip height(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Flame orginal height(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Flame tip height(m) Flame orginal height(m) Flame tip height(m) Flame tip height(m) Flame orginal height(m) Flame tip height(m) Flame t	m) s (m) ) m)	2 37.15 0.63 0 n/a 1.81 34.16 0.62 0.94 Poa 0.54 n/a n/a n/a n/a n/a n/a n/a o o o o o o o o o o o o o o o o o o o	2 12 0.04 0 n/a 1.25 12 0.06 0.13 Bracken 0.06 n/a n/a n/a n/a n/a n/a n/a n/a n/a n/a	0 -25.15 -0.59 0 n/a -0.56 -22.16 -0.56 -0.81 n/a		
lear-Surfac  Elevated  Mid-Storey	Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Flame length(m) Flame length(m) Flame length(m) Flame length(m) Flame angle(deg) Flame tip heights (m)  Species flame tip heights (m)  Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m)  Species flame tip heights (m)  Flame length(m) Flame orginal height(m)  Flame length(m) Flame angle(deg) Flame tip height(m)  Flame length(m) Flame orginal height(m)  Species flame tip heights (m)  Flame length(m) Flame angle(deg) Flame tip heights (m)  Flame length(m) Flame length(m) Flame length(m) Flame length(m) Flame length(m) Flame orginal height(m) Flame orginal height(m)	0.92 43.25 0.53 0 n/a 1.14 49.85 0.8 0.58 Lomandra filliformis 0.66 n/a n/a n/a n/a n/a n/a n/a 0 0 0 Eucalyptus obliqua	2 9 0.04 0 n/a 0.93 9 0.05 0.12 Lomandra filiformis 0.05 n/a n/a n/a n/a n/a n/a n/a n/a n/a o 0 0 Eucalyptu- obliqua	1.08 -34.2! -0.49 0 n/a -0.21 -40.8! -0.75 -0.46 n/a	Surf Near-Si Eleva	W acce	eather condition Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Flame length(m) Flame length(m) Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(flame) Flame tip height(m) Flame angle(deg) Flame tip height(m) Flame angle(deg) Flame tip height(m) Flame orginal height(flame) Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(flame) Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(flame) Flame orginal height(flame) Flame orginal height(flame)	m) s (m) ) m)	2 37.15 0.63 0 n/a 1.81 34.16 0.62 0.94 Poa 0.54 n/a n/a n/a n/a n/a n/a n/a o o o o o o o o o o o o o o o o o o o	2 12 0.04 0 n/a 1.25 12 0.06 0.13 Bracken 0.06 n/a n/a n/a n/a n/a n/a n/a n/a n/a n/a	0 -25.15 -0.59 0 n/a -0.56 -22.16 -0.56 -0.81 n/a		
lear-Surfac  Elevated  Mid-Storey  Canopy	Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Flame length (m) Flame length (m) Flame length (m) Flame angle(deg) Flame tip heights (m) Flame orginal height(m) Flame orginal height(m) Flame length (m) Flame length (m) Flame length (m) Flame orginal height (m) Flame angle (deg) Flame tip heights (m)  Species flame tip heights (m)  Flame length (m) Flame length (m) Flame length (m) Flame length (m) Flame length (m) Flame orginal height (m)  Species flame tip heights (m)  Flame length (m) Flame angle (deg) Flame tip height (m) Flame angle (deg) Flame tip height (m) Flame orginal height (m) Flame orginal height (m) Species flame tip heights (m)	0.92 43.25 0.53 0 n/a 1.14 49.85 0.8 0.58 Lomandra filiformis 0.66 n/a n/a n/a n/a n/a n/a n/a 0 0 0 Eucalyptus obliqua 0.00	2 9 0.04 0 n/a 0.93 9 0.05 0.12 Lomandra filiformis 0.05 n/a n/a n/a n/a n/a n/a n/a n/a o.05	1.08 -34.2! -0.49 0 n/a -0.21 -40.8! -0.75 -0.46 n/a	Surf Near-Si Eleva Mid-Si	W was acce	eather condition Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Flame orginal height(m) Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(flame) Flame tip height(m) Flame angle(deg) Flame tip height(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Flame orginal height(m) Flame angle(deg) Flame tip height(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Flame orginal height(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Flame tip height(m) Flame orginal height(m) Flame tip height(m) Flame tip height(m) Flame orginal height(m) Flame tip height(m) Flame t	m) s (m) ) m)	2 37.15 0.63 0 n/a 1.81 34.16 0.62 0.94 Poa 0.54 n/a n/a n/a n/a n/a n/a n/a o o o o o o o o o o o o o o o o o o o	2 12 0.04 0 n/a 1.25 12 0.06 0.13 Bracken 0.06 n/a n/a n/a n/a n/a n/a n/a n/a n/a n/a	0 -25.15 -0.59 0 n/a -0.56 -22.16 -0.56 -0.81 n/a		
lear-Surfac  Elevated  Mid-Storey	Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Flame length (m) Flame length (m) Flame length (m) Flame length (m) Flame orginal height (m) Flame orginal height (m) Flame angle(deg) Flame tip heights (m) Flame length (m) Flame length (m) Flame orginal height (m) Flame orginal height (m) Flame orginal height (m) Flame length (m) Flame length (m) Flame length (m) Flame length (m) Flame orginal height (m) Flame orginal height (m) Flame length (m) Flame length (m) Flame length (m) Flame length (m) Flame orginal height (m) Flame orginal height (m) Flame length (m)	0.92 43.25 0.53 0 n/a 1.14 49.85 0.8 0.58 Lomandra filiformis 0.66 n/a n/a n/a n/a n/a n/a n/a 0 0 0 Eucalyptus obliqua 0.00 1.14 46.9	2 9 0.04 0 n/a 0.93 9 0.05 0.12 Lomandra filiformis 0.05 n/a n/a n/a n/a n/a n/a n/a n/a n/a o.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05	1.08 -34.2! -0.49 0 n/a -0.21 -40.8! -0.75 -0.46 n/a	Near-Si Near-Si Eleva	W was acce	eather condition Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Flame orginal height(m) Flame length(m) Flame angle(deg) Flame tip height(m) Flame tip height(m) Flame orginal height(flame) Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(flame) Flame orginal height(flame) Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(flame) Flame orginal height(flame) Flame orginal height(flame) Flame length(m) Flame angle(deg) Flame tip height(flame) Flame length(m) Flame orginal height(flame) Flame tip height(flame) Flame length(m) Flame orginal height(flame) Flame length(m) Flame angle(deg)	m) s (m) ) m) ) m) ) m) ) m) ) m) ) m) s (m) ) m) s (m)	2 37.15 0.63 0 n/a 1.81 34.16 0.62 0.94 Poa 0.54 n/a n/a n/a n/a n/a n/a o 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	2 12 0.04 0 n/a 1.25 12 0.06 0.13 Bracken 0.06 n/a n/a n/a n/a n/a n/a n/a n/a n/a n/a	0		
Elevated  Mid-Storey	Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Flame length (m) Flame length (m) Flame length (m) Flame length (m) Flame orginal height (m) Flame angle(deg) Flame tip heights (m)  Flame length (m) Flame length (m) Flame length (m) Flame orginal height (m) Flame orginal height (m) Flame orginal height (m) Flame length (m) Flame angle (deg) Flame tip heights (m)  Species flame tip heights (m)  Flame length (m) Flame orginal height (m) Flame angle (deg) Flame tip height (m) Flame orginal height (m) Flame orginal height (m) Flame orginal height (m) Flame length (m) Flame length (m) Flame length (m) Flame length (m)	0.92 43.25 0.53 0 n/a 1.14 49.85 0.8 0.58 Lomandra filiformis 0.66 n/a n/a n/a n/a n/a n/a n/a 0 0 0 Eucalyptus obliqua 0.00 1.14	2 9 0.04 0 n/a 0.93 9 0.05 0.12 Lomandra filiformis 0.05 n/a n/a n/a n/a n/a n/a n/a n/a n/a o.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05	1.08 -34.2! -0.49 0 n/a -0.21 -40.8! -0.75 -0.46 n/a	Surf Near-Si Eleva  Mid-Si	W was acce	eather condition Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Flame orginal height(m) Flame length(m) Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(flame) Flame length(m) Flame angle(deg) Flame tip height(m) Flame angle(deg) Flame tip height(m) Flame orginal height(flame) Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(flame) Flame length(m) Flame angle(deg) Flame tip height(m) Flame length(m) Flame angle(deg) Flame tip height(flame) Flame orginal height(flame) Flame orginal height(flame) Flame orginal height(flame) Flame length(m) Flame length(m)	m) s (m) ) m) ) m) ) m) ) m) ) m) ) m) s (m) ) ) m) ) ) ) ) ) ) ) ) )	2 37.15 0.63 0 n/a 1.81 34.16 0.62 0.94 Poa 0.54 n/a n/a n/a n/a n/a n/a n/a 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	2 12 0.04 0 n/a 1.25 12 0.06 0.13 Bracken 0.06 n/a n/a n/a n/a n/a n/a n/a n/a n/a n/a	0		

Table 8: Comparable Fire behavior in High-severity sites under the conditions of both mild and Severe weather

	High-severity Site		H(1)			High-severity Site		H(2)	
	Weather condition Flame length(m)	PB	BS	Increment		Weather condition	PB	BS	Increment
$\overline{}$		0.6	2	1.4		Flame length(m)	0.35	0.47	0.12
	Flame angle(deg)	34.69	15.77	-18.92		Flame angle(deg)	80.6	42.48	-38.12
Surface	Flame tip height(m)	0.32	0.44	0.12	Surface	Flame tip height(m)	0.34	0.29	-0.05
Juliace	Flame orginal height(m)	0.32	0	0		Flame orginal height(m)		0	0
	Species flame tip heights (m)	n/a	n/a	n/a		Species flame tip heights (		n/a	n/a
-	Flame length(m)	1.47	3.94	2.47		Flame length(m)	0.66	0.8	0.14
		61.18	30.54	-30.64		Flame angle(deg)	85.22	58.45	-26.77
	Flame angle(deg)	1.48	2	0.52		Flame tip height(m)	0.66	0.66	0
Cf	Flame tip height(m)				Near-Surface			0.3	0
lear-Surfac	Flame orginal height(m)	0.91	0.91	0	ivear-surraci	Flame Orginal height(in	0.3		O
		Pteridium	Pteridium			Sanaias flamas tia haiabta (	Poa tenera	Poa	- /-
	Species flame tip heights (m)	esculentum	esculentum	n/a		Species flame tip heights (	0.66	tenera	n/a
$\rightarrow$		1.48	2.00			= = = = = = = = = = = = = = = = = = = =		0.66	
	Flame length(m)	7.53	9.53	2		Flame length(m)	0.77	0.5	-0.27
	Flame angle(deg)	82.84	48.73	-34.11		Flame angle(deg)	62.89	7.75	-55.14
	Flame tip height(m)	8.68	8.18	-0.5		Flame tip height(m)	1.32	0.66	-0.66
Elevated	Flame orginal height(m)	3.6	3.6	0	Elevated	Flame orginal height(m)	1.03	0.8	-0.23
		Eucalyptus	Eucalyptus				Acacia	Acacia	
	Species flame tip heights (m)	obliqua	obliqua	n/a		Species flame tip heights (	m) dealbata	dealbata	n/a
		8.68	8.18				1.32	0.66	
	Flame length(m)	11.33	12.57	1.24		Flame length(m)	0	0	0
	Flame angle(deg)	83.05	45.5	-37.55		Flame angle(deg)	0	0	0
	Flame tip height(m)	15.39	12.71	-2.68		Flame tip height(m)	0	0	0
								0	0
Mid-Storey	Flame orginal height(m)	9.01	9.01	0	Mid-Storey	Flame orginal height(m)		U	U
1		Eucalyptus	Eucalyptus				Eucalyptus	S Function	
	Species flame tip heights (m)	obliqua	obliqua	n/a		Species flame tip heights (	m) obliqua	Eucalyptu	n/a
		15.39	12.71	, u			0.00	s obliqua	
								0.00	
	Flame length(m)	23.6	27.3	3.7		Flame length(m)	0	0	0
	Flame angle(deg)	81.59	41.28	-40.31		Flame angle(deg)	0	0	0
	Flame tip height(m)	39.79	33.56	-6.23		Flame tip height(m)	0	0	0
	Flame orginal height(m)	27.09	25.87	-1.22	C	Flame orginal height(m	0	0	0
Canopy	, , , , , , , , , , , , , , , , , , , ,				Canopy				
		Eucalyptus	Eucalyptus				Eucalyptus	Eucalyptu	
	Species flame tip heights (m)	obliqua	obliqua	n/a		Species flame tip heights (	,	s obliqua	n/a
		39.79	33.56				0.00		
-	Flame length(m)	35.81	44.03	8.22		Flame length(m)	0.77	0.00	0.03
						Flame angle(deg)	74.7	39.92	-34.78
Overall	Flame angle(deg)	80.87	41.84	-39.03	Overall	4 . 4.			
	Flame tip height(m)	39.79	33.56	-6.23		Flame tip height(m)	1.32	0.66	-0.66
	Flame orginal height(m)	27.09	25.87	-1.22		Flame orginal height(m	1.03	8.0	-0.23
	High-severity Site	1							
	night-severity site		H(3)			High-severity Site		H(4)	
	Weather condition	PB	<b>H(3)</b> BS	Increment		High-severity Site Weather condition	PB	H(4) BS	Increment
		PB 1.77		Increment 0.23		Weather condition	PB 0.65	BS	Increment 1.35
	Weather condition		BS			Weather condition Flame length(m)	0.65	BS 2	1.35
Surface	Weather condition Flame length(m)	1.77	BS 2	0.23		Weather condition Flame length(m) Flame angle(deg)	0.65 33.62	BS 2 14.01	1.35 -19.61
Surface	Weather condition  Flame length(m)  Flame angle(deg)	1.77 54.25	2 11	0.23 -43.25		Weather condition Flame length(m) Flame angle(deg) Flame tip height(m)	0.65 33.62 0.33	BS 2 14.01 0.48	1.35 -19.61 0.15
Surface	Weather condition  Flame length(m)  Flame angle(deg)  Flame tip height(m)	1.77 54.25 1.25	BS 2 11 0.04	0.23 -43.25 -1.21		Weather condition Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m)	0.65 33.62 0.33 0	BS 2 14.01 0.48 0	1.35 -19.61 0.15 0
Surface	Weather condition  Flame length(m)  Flame angle(deg)  Flame tip height(m)  Flame orginal height(m)	1.77 54.25 1.25 0	BS 2 11 0.04 0	0.23 -43.25 -1.21 0		Weather condition  Flame length(m)  Flame angle(deg)  Flame tip height(m)  Flame orginal height(m)  Species flame tip heights (m)	0.65 33.62 0.33 0 n/a	BS 2 14.01 0.48 0 n/a	1.35 -19.61 0.15 0 n/a
Surface	Weather condition  Flame length(m)  Flame angle(deg)  Flame tip height(m)  Flame orginal height(m)  Species flame tip heights (m)	1.77 54.25 1.25 0 n/a	8S 2 11 0.04 0 n/a	0.23 -43.25 -1.21 0 n/a		Weather condition Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Species flame tip heights (m) Flame length(m)	0.65 33.62 0.33 0 n/a	BS 2 14.01 0.48 0 n/a n/a	1.35 -19.61 0.15 0 n/a n/a
Surface	Weather condition  Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Species flame tip heights (m) Flame length(m) Flame angle(deg)	1.77 54.25 1.25 0 n/a 0.91	BS 2 11 0.04 0 n/a 0.8	0.23 -43.25 -1.21 0 n/a -0.11		Weather condition Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Species flame tip heights (m) Flame length(m) Flame angle(deg)	0.65 33.62 0.33 0 n/a n/a	BS 2 14.01 0.48 0 n/a n/a n/a	1.35 -19.61 0.15 0 n/a n/a n/a
Surface  Near-Surface	Weather condition  Flame length(m)  Flame angle(deg)  Flame tip height(m)  Flame orginal height(m)  Species flame tip heights (m)  Flame length(m)  Flame angle(deg)  Flame tip height(m)	1.77 54.25 1.25 0 n/a 0.91 33.94	BS 2 11 0.04 0 n/a 0.8 11	0.23 -43.25 -1.21 0 n/a -0.11 -22.94	Surface	Weather condition Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Species flame tip heights (m) Flame length(m) Flame angle(deg) Flame tip height(m)	0.65 33.62 0.33 0 n/a n/a n/a n/a	BS 2 14.01 0.48 0 n/a n/a n/a	1.35 -19.61 0.15 0 n/a n/a n/a
	Weather condition  Flame length(m)  Flame angle(deg)  Flame tip height(m)  Flame orginal height(m)  Species flame tip heights (m)  Flame length(m)  Flame angle(deg)  Flame tip height(m)	1.77 54.25 1.25 0 n/a 0.91 33.94 0.4 0.3	BS 2 11 0.04 0 n/a 0.8 11 0.04 0.06	0.23 -43.25 -1.21 0 n/a -0.11 -22.94 -0.36		Weather condition Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Species flame tip heights (m) Flame length(m) Flame angle(deg)	0.65 33.62 0.33 0 n/a n/a	BS 2 14.01 0.48 0 n/a n/a n/a	1.35 -19.61 0.15 0 n/a n/a n/a
	Weather condition  Flame length(m)  Flame angle(deg)  Flame tip height(m)  Flame orginal height(m)  Species flame tip heights (m)  Flame length(m)  Flame angle(deg)  Flame tip height(m)  Flame orginal height(m)	1.77 54.25 1.25 0 n/a 0.91 33.94 0.4 0.3 Lomandra	BS 2 11 0.04 0 n/a 0.8 11 0.04 0.06 Lomandra	0.23 -43.25 -1.21 0 n/a -0.11 -22.94 -0.36 -0.24	Surface	Weather condition  Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Species flame tip heights (m) Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m)	0.65 33.62 0.33 0 n/a n/a n/a n/a	BS 2 14.01 0.48 0 n/a n/a n/a n/a	1.35 -19.61 0.15 0 n/a n/a n/a n/a
	Weather condition  Flame length(m)  Flame angle(deg)  Flame tip height(m)  Flame orginal height(m)  Species flame tip heights (m)  Flame length(m)  Flame angle(deg)  Flame tip height(m)	1.77 54.25 1.25 0 n/a 0.91 33.94 0.4 0.3 Lomandra filiformis	8S 2 11 0.04 0 n/a 0.8 11 0.04 0.06 Lomandra filiformis	0.23 -43.25 -1.21 0 n/a -0.11 -22.94 -0.36	Surface	Weather condition Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Species flame tip heights (m) Flame length(m) Flame angle(deg) Flame tip height(m)	0.65 33.62 0.33 0 n/a n/a n/a n/a	BS 2 14.01 0.48 0 n/a n/a n/a	1.35 -19.61 0.15 0 n/a n/a n/a
	Weather condition  Flame length(m)  Flame angle(deg)  Flame tip height(m)  Flame orginal height(m)  Species flame tip heights (m)  Flame length(m)  Flame angle(deg)  Flame tip height(m)  Flame orginal height(m)	1.77 54.25 1.25 0 n/a 0.91 33.94 0.4 0.3 Lomandra filiformis 0.40	BS 2 11 0.04 0 n/a 0.8 11 0.04 0.06 Lomandra	0.23 -43.25 -1.21 0 n/a -0.11 -22.94 -0.36 -0.24	Surface	Weather condition Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Species flame tip heights (m) Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Species flame tip heights (m)	0.65 33.62 0.33 0 n/a n/a n/a n/a n/a	BS 2 14.01 0.48 0 n/a n/a n/a n/a n/a	1.35 -19.61 0.15 0 n/a n/a n/a n/a n/a
	Weather condition  Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Species flame tip heights (m) Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Species flame tip heights (m)	1.77 54.25 1.25 0 n/a 0.91 33.94 0.4 0.3 Lomandra filiformis 0.40 n/a	8S 2 11 0.04 0 n/a 0.8 11 0.04 0.06 Lomandra filiformis 0.04	0.23 -43.25 -1.21 0 n/a -0.11 -22.94 -0.36 -0.24 n/a	Surface	Weather condition  Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Species flame tip heights (m) Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Species flame tip heights (m) Flame tip heights (m) Flame length(m)	0.65 33.62 0.33 0 n/a n/a n/a n/a n/a	BS 2 14.01 0.48 0 n/a n/a n/a n/a n/a	1.35 -19.61 0.15 0 n/a n/a n/a n/a n/a
	Weather condition  Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Species flame tip heights (m) Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m)  Species flame tip heights (m)  Flame length(m)	1.77 54.25 1.25 0 n/a 0.91 33.94 0.4 0.3 Lomandra filiformis 0.40 n/a n/a	BS 2 11 0.04 0 n/a 0.8 11 0.04 0.06 Lomandra filiformis 0.04 n/a	0.23 -43.25 -1.21 0 n/a -0.11 -22.94 -0.36 -0.24 n/a	Surface	Weather condition  Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Species flame tip heights (m) Flame length(m) Flame length(m) Flame orginal height(m) Flame orginal height(m) Flame tip height(m) Flame length(m) Flame angle(deg) Flame tip heights (m) Flame length(m) Flame length(m) Flame angle(deg)	0.65 33.62 0.33 0 n/a n/a n/a n/a n/a n/a n/a 25.92	BS 2 14.01 0.48 0 n/a n/a n/a n/a n/a n/a 2 0.47 2.72	1.35 -19.61 0.15 0 n/a n/a n/a n/a n/a n/a
Near-Surface	Weather condition  Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Species flame tip heights (m) Flame length(m) Flame angle(deg) Flame tip height(m)  Species flame tip heights (m)  Flame angle(deg) Flame angle(deg) Flame tip heights (m)  Flame length(m) Flame length(m) Flame angle(deg) Flame tip height(m)	1.77 54.25 1.25 0 n/a 0.91 33.94 0.4 0.3 Lomandra filiformis 0.40 n/a n/a	8S 2 11 0.04 0 n/a 0.8 11 0.04 0.06 Lomandra filiformis 0.04 n/a n/a	0.23 -43.25 -1.21 0 n/a -0.11 -22.94 -0.36 -0.24 n/a n/a	Surface Near-Surface	Weather condition  Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Species flame tip heights (m) Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Species flame tip heights (m)  Flame length(m) Flame angle(deg) Flame tip heights (m)  Flame length(m) Flame angle(deg) Flame tip height(m)	0.65 33.62 0.33 0 n/a n/a n/a n/a n/a 25.92 0.21	BS 2 14.01 0.48 0 n/a n/a n/a n/a n/a 0.47 2.72 0.02	1.35 -19.61 0.15 0 n/a n/a n/a n/a n/a -0.06 -23.2
	Weather condition  Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Species flame tip height(m) Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Species flame tip heights (m) Flame angle(deg) Flame orginal heights (m) Flame length(m) Flame length(m) Flame length(m) Flame angle(deg)	1.77 54.25 1.25 0 n/a 0.91 33.94 0.4 0.3 Lomandra filiformis 0.40 n/a n/a	BS 2 111 0.04 0 n/a 0.8 11 0.04 0.06 Lomandra filiformis 0.04 n/a	0.23 -43.25 -1.21 0 n/a -0.11 -22.94 -0.36 -0.24 n/a	Surface	Weather condition  Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Species flame tip heights (m) Flame length(m) Flame length(m) Flame orginal height(m) Flame orginal height(m) Flame tip height(m) Flame length(m) Flame angle(deg) Flame tip heights (m) Flame length(m) Flame length(m) Flame angle(deg)	0.65 33.62 0.33 0 n/a n/a n/a n/a n/a n/a 0.53 25.92 0.21 0.15	BS 2 14.01 0.48 0 n/a n/a n/a n/a n/a n/a 0.47 2.72 0.02 0.06	1.35 -19.61 0.15 0 n/a n/a n/a n/a n/a n/a
Near-Surface	Weather condition  Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Species flame tip heights (m) Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Species flame tip heights (m)  Flame length(m) Flame length(m) Flame length(m) Flame tip height(m) Flame tip height(m) Flame orginal height(m) Flame orginal height(m)	1.77 54.25 1.25 0 n/a 0.91 33.94 0.4 0.3 Lomandra filiformis 0.40 n/a n/a n/a	8S 2 11 0.04 0 n/a 0.8 11 0.04 0.06 Lomandra filiformis 0.04 n/a n/a	0.23 -43.25 -1.21 0 n/a -0.11 -22.94 -0.36 -0.24 n/a n/a n/a	Surface Near-Surface	Weather condition  Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Species flame tip heights (m) Flame length(m) Flame length(m) Flame tip height(m) Flame orginal height(m) Flame orginal height(m) Flame length(m) Flame tip heights (m) Flame length(m) Flame length(m) Flame length(m) Flame orginal height(m) Flame tip height(m) Flame tip height(m) Flame orginal height(m)	0.65 33.62 0.33 0 n/a n/a n/a n/a n/a n/a 25.92 0.21 0.15 Pteridium	BS 2 14.01 0.48 0 n/a n/a n/a n/a n/a 0.47 2.72 0.02 0.06 Pteridium	1.35 -19.61 0.15 0 n/a n/a n/a n/a n/a n/a -0.06 -23.2 -0.19
Near-Surface	Weather condition  Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Species flame tip heights (m) Flame length(m) Flame angle(deg) Flame tip height(m)  Species flame tip heights (m)  Flame angle(deg) Flame angle(deg) Flame tip heights (m)  Flame length(m) Flame length(m) Flame angle(deg) Flame tip height(m)	1.77 54.25 1.25 0 n/a 0.91 33.94 0.4 0.3 Lomandra filiformis 0.40 n/a n/a	8S 2 11 0.04 0 n/a 0.8 11 0.04 0.06 Lomandra filiformis 0.04 n/a n/a	0.23 -43.25 -1.21 0 n/a -0.11 -22.94 -0.36 -0.24 n/a n/a	Surface Near-Surface	Weather condition  Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Species flame tip heights (m) Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Species flame tip heights (m)  Flame length(m) Flame angle(deg) Flame tip heights (m)  Flame length(m) Flame angle(deg) Flame tip height(m)	0.65 33.62 0.33 0 n/a n/a n/a n/a n/a n/a 25.92 0.21 0.15 Pteridium esculentum	BS 2 14.01 0.48 0 n/a n/a n/a n/a n/a 0.47 2.72 0.02 0.06 Pteridium esculentum	1.35 -19.61 0.15 0 n/a n/a n/a n/a n/a -0.06 -23.2
Near-Surface	Weather condition  Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Species flame tip heights (m) Flame angle(deg) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Species flame tip heights (m)  Flame angle(deg) Flame tip height (m) Flame orginal height(m) Flame orginal height(m) Flame tip height(m) Flame tip height(m) Flame tip height(m) Flame orginal height(m)	1.77 54.25 1.25 0 n/a 0.91 33.94 0.4 0.3 Lomandra filiformis 0.40 n/a n/a n/a	BS 2 11 0.04 0 n/a 0.8 11 0.04 0.06 Lomandra filiformis 0.04 n/a n/a n/a	0.23 -43.25 -1.21 0 n/a -0.11 -22.94 -0.36 -0.24 n/a n/a n/a	Surface Near-Surface	Weather condition Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Species flame tip heights (m) Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Species flame tip heights (m) Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Flame orginal height(m) Flame orginal height(m) Flame orginal height(m)	0.65 33.62 0.33 0 n/a n/a n/a n/a n/a n/a 25.92 0.21 0.15 Peteridium esculentum 0.21	BS 2 14.01 0.48 0 n/a n/a n/a n/a n/a n/a n/a esculentum esculentum 0.02	1.35 -19.61 0.15 0 n/a n/a n/a n/a n/a n/a -0.06 -23.2 -0.19 -0.09
Near-Surface	Weather condition  Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Species flame tip heights (m) Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Species flame tip heights (m)  Flame length(m) Flame angle(deg) Flame tip heights (m)  Flame angle(deg) Flame tip height(m) Flame orginal height(m) Flame orginal height(m) Flame tip height(m) Flame tip height(m) Flame length(m) Flame length(m)	1.77 54.25 1.25 0 n/a 0.91 33.94 0.4 0.3 Lomandra filiformis 0.40 n/a n/a n/a n/a	8S 2 111 0.04 0 n/a 0.8 11 0.04 0.06 Lomandra filiformis 0.04 n/a n/a n/a	0.23 -43.25 -1.21 0 n/a -0.11 -22.94 -0.36 -0.24 n/a n/a n/a n/a	Surface Near-Surface	Weather condition  Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Species flame tip height(m) Flame length(m) Flame length(m) Flame tip height(m) Flame orginal height(m) Flame orginal height(m) Flame length(m) Flame length(m) Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Flame orginal height(m) Flame orginal height(m) Flame tip height(m) Flame orginal height(m) Species flame tip heights (m)	0.65 33.62 0.33 0 n/a n/a n/a n/a n/a n/a 0.53 25.92 0.21 0.15 Pteridium esculentum 0.21 n/a	BS 2 14.01 0.48 0 n/a	1.35 -19.61 0.15 0 n/a n/a n/a n/a n/a n/a -0.06 -23.2 -0.19 -0.09 n/a
Near-Surface	Weather condition  Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Flame orginal height(m) Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Species flame tip height(m) Flame orginal height(m) Flame length(m) Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Flame orginal height(m) Flame orginal height(m) Flame length(m) Flame length(m) Flame length(m) Flame length(m) Flame length(m) Flame length(m) Flame angle(deg)	1.77 54.25 1.25 0 n/a 0.91 33.94 0.4 0.3 Lomandra filiformis 0.40 n/a n/a n/a n/a n/a	8S 2 11 0.04 0 n/a 0.8 11 0.04 0.06 Lomandra filiformis 0.04 n/a n/a n/a	0.23 -43.25 -1.21 0 n/a -0.11 -22.94 -0.36 -0.24 n/a n/a n/a n/a n/a	Surface Near-Surface	Weather condition  Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Flame orginal height(m) Flame length(m) Flame length(m) Flame length(m) Flame orginal height(m) Flame orginal height(m) Flame length(m) Flame in height(m) Flame length(m) Flame length(m) Flame length(m) Flame orginal height(m) Flame tip height(m) Flame orginal height(m) Flame orginal height(m) Flame orginal height(m) Flame length(m) Flame length(m) Flame length(m) Flame length(m) Flame length(m) Flame angle(deg)	0.65 33.62 0.33 0 n/a n/a n/a n/a n/a n/a 25.92 0.21 0.15 Pteridium esculentum 0.21 n/a n/a	BS 2 14.01 0.48 0 n/a n/a n/a n/a n/a n/a 0.47 2.72 0.02 0.06 Pteridium esculentum 0.02 n/a n/a n/a	1.35 -19.61 0.15 0 n/a
Near-Surface	Weather condition  Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Flame tip height(m) Flame tip height(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m)  Species flame tip height(m) Flame orginal height(m)  Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Flame orginal height(m) Flame orginal height(m) Flame angle(deg) Flame tip height(m) Flame length(m) Flame length(m) Flame tip height(m) Flame tip height(m) Flame orginal height(m)	1.77 54.25 1.25 0 n/a 0.91 33.94 0.4 0.3 Lomandra filiformis 0.40 n/a n/a n/a n/a n/a	BS 2 11 0.04 0 n/a 0.8 11 0.05 Lomandra filiformis 0.04 n/a n/a n/a n/a n/a n/a	0.23 -43.25 -1.21 0 n/a -0.11 -22.94 -0.36 -0.24 n/a n/a n/a n/a n/a n/a n/a	Surface Near-Surface	Weather condition Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Species flame tip heights (m) Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Species flame tip heights (m) Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Flame orginal height(m) Flame tip height(m) Flame tip height(m) Flame orginal height(m) Flame orginal height(m) Flame orginal height(m) Flame angle(deg) Flame tip height(m) Flame length(m) Flame angle(deg) Flame tip height(m)	0.65 33.62 0.33 0 n/a n/a n/a n/a n/a n/a 25.92 0.21 0.15 Pterridium esculentum 0.21 n/a n/a n/a	BS 2 14.01 0.48 0 n/a n/a n/a n/a n/a 0.47 2.72 0.02 0.06 Pteridium esculentum 0.02 n/a n/a n/a n/a	1.35 -19.61 0.15 0 n/a n/a n/a n/a n/a n/a -0.06 -23.2 -0.19 -0.09 n/a n/a n/a
Near-Surface	Weather condition  Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Flame tip height(m) Flame tip height(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m)  Species flame tip height(m) Flame orginal height(m)  Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Flame orginal height(m) Flame orginal height(m) Flame angle(deg) Flame tip height(m) Flame length(m) Flame length(m) Flame tip height(m) Flame tip height(m) Flame orginal height(m)	1.77 54.25 1.25 0 n/a 0.91 33.94 0.4 0.3 Lomandra filiformis 0.40 n/a n/a n/a n/a n/a	8S 2 11 0.04 0 n/a 0.8 11 0.04 0.06 Lomandra filiformis 0.04 n/a n/a n/a	0.23 -43.25 -1.21 0 n/a -0.11 -22.94 -0.36 -0.24 n/a n/a n/a n/a n/a	Surface Near-Surface	Weather condition  Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Flame orginal height(m) Flame length(m) Flame length(m) Flame length(m) Flame orginal height(m) Flame orginal height(m) Flame length(m) Flame in height(m) Flame length(m) Flame length(m) Flame length(m) Flame orginal height(m) Flame tip height(m) Flame orginal height(m) Flame orginal height(m) Flame orginal height(m) Flame length(m) Flame length(m) Flame length(m) Flame length(m) Flame length(m) Flame angle(deg)	0.65 33.62 0.33 0 n/a n/a n/a n/a n/a n/a 25.92 0.21 0.15 Pteridium esculentum 0.21 n/a n/a	BS 2 14.01 0.48 0 n/a n/a n/a n/a n/a n/a 0.47 2.72 0.02 0.06 Pteridium esculentum 0.02 n/a n/a n/a	1.35 -19.61 0.15 0 n/a
Near-Surface	Weather condition  Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Flame tip height(m) Flame tip height(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m)  Species flame tip height(m) Flame orginal height(m)  Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Flame orginal height(m) Flame orginal height(m) Flame angle(deg) Flame tip height(m) Flame length(m) Flame length(m) Flame tip height(m) Flame tip height(m) Flame orginal height(m)	1.77 54.25 1.25 0 n/a 0.91 33.94 0.4 0.3 Lomandra filiformis 0.40 n/a n/a n/a n/a n/a	BS 2 11 0.04 0 n/a 0.8 11 0.05 Lomandra filiformis 0.04 n/a n/a n/a n/a n/a n/a	0.23 -43.25 -1.21 0 n/a -0.11 -22.94 -0.36 -0.24 n/a n/a n/a n/a n/a n/a n/a	Surface  Near-Surface  Elevated	Weather condition Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Species flame tip heights (m) Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Species flame tip heights (m) Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Flame orginal height(m) Flame tip height(m) Flame tip height(m) Flame orginal height(m) Flame orginal height(m) Flame orginal height(m) Flame angle(deg) Flame tip height(m) Flame length(m) Flame angle(deg) Flame tip height(m)	0.65 33.62 0.33 0 n/a n/a n/a n/a n/a n/a 25.92 0.21 0.15 Pterridium esculentum 0.21 n/a n/a n/a	BS 2 14.01 0.48 0 n/a n/a n/a n/a n/a 0.47 2.72 0.02 0.06 Pteridium esculentum 0.02 n/a n/a n/a n/a	1.35 -19.61 0.15 0 n/a n/a n/a n/a n/a n/a -0.06 -23.2 -0.19 -0.09 n/a n/a n/a
Near-Surface	Weather condition  Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Flame tip height(m) Flame tip height(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m)  Species flame tip height(m) Flame orginal height(m)  Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Flame orginal height(m) Flame orginal height(m) Flame angle(deg) Flame tip height(m) Flame length(m) Flame length(m) Flame tip height(m) Flame tip height(m) Flame orginal height(m)	1.77 54.25 1.25 0 n/a 0.91 33.94 0.4 0.3 Lomandra filiformis 0.40 n/a n/a n/a n/a n/a	BS 2 11 0.04 0 n/a 0.8 11 0.05 Lomandra filiformis 0.04 n/a n/a n/a n/a n/a n/a	0.23 -43.25 -1.21 0 n/a -0.11 -22.94 -0.36 -0.24 n/a n/a n/a n/a n/a n/a n/a	Surface  Near-Surface  Elevated	Weather condition Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Flame orginal heights (m) Flame length(m) Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Flame orginal height(m) Flame angle(deg) Flame tip heights (m) Flame orginal height(m) Flame orginal height(m) Flame orginal height(m) Flame length(m) Flame orginal height(m) Flame length(m) Flame length(m) Flame length(m) Flame length(m) Flame length(m) Flame orginal height(m) Flame orginal height(m) Flame orginal height(m) Flame orginal height(m)	0.65 33.62 0.33 0 n/a n/a n/a n/a n/a n/a 0.53 25.92 0.21 0.15 Pteridium esculentum 0.21 n/a n/a n/a	BS 2 14.01 0.48 0 n/a	1.35 -19.61 0.15 0 n/a n/a n/a n/a n/a n/a -0.06 -23.2 -0.19 -0.09 n/a n/a n/a
Near-Surface	Weather condition  Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Species flame tip heights (m) Flame angle(deg) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Species flame tip heights (m) Flame angle(deg) Flame tip height(m) Flame length(m) Flame length(m) Flame length(m) Flame length(m) Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m)	1.77 54.25 1.25 0 n/a 0.91 33.94 0.4 0.3 Lomandra filiformis 0.40 n/a n/a n/a n/a n/a n/a	BS 2 11 0.04 0 n/a 0.8 11 0.06 Lomandra filiformis 0.04 n/a n/a n/a n/a n/a n/a n/a	0.23 -43.25 -1.21 0 n/a -0.11 -22.94 -0.36 -0.24 n/a n/a n/a n/a n/a n/a n/a	Surface  Near-Surface  Elevated	Weather condition Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Species flame tip heights (m) Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Species flame tip heights (m) Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Flame orginal height(m) Flame tip height(m) Flame tip height(m) Flame orginal height(m) Flame orginal height(m) Flame orginal height(m) Flame angle(deg) Flame tip height(m) Flame length(m) Flame angle(deg) Flame tip height(m)	0.65 33.62 0.33 0 n/a n/a n/a n/a n/a n/a 25.92 0.21 0.15 Pterridium esculentum 0.21 n/a n/a n/a	BS 2 14.01 0.48 0 n/a n/a n/a n/a n/a 0.47 2.72 0.02 0.06 Pteridium esculentum 0.02 n/a n/a n/a n/a	1.35 -19.61 0.15 0 n/a n/a n/a n/a n/a n/a -0.06 -23.2 -0.19 -0.09 n/a n/a n/a
Near-Surface	Weather condition Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Flame tip height(m) Flame tip height(m) Flame length(m) Flame tip height(m) Flame orginal height(m) Flame orginal height(m) Species flame tip heights (m) Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Flame orginal height(m) Flame orginal height(m) Flame orginal height(m) Flame angle(deg) Flame tip height(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Flame orginal height(m) Flame orginal height(m) Flame orginal height(m)	1.77 54.25 1.25 0 n/a 0.91 33.94 0.4 0.3 Lomandra filiformis 0.40 n/a	8S 2 111 0.04 0 n/a 0.8 11 0.04 0.06 Lomandra filiformis 0.04 n/a n/a n/a n/a n/a n/a	0.23 -43.25 -1.21 0 n/a -0.11 -22.94 -0.36 -0.24 n/a n/a n/a n/a n/a n/a n/a	Surface  Near-Surface  Elevated	Weather condition Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Flame orginal height(m) Flame length(m) Flame length(m) Flame length(m) Flame orginal height(m) Flame orginal height(m) Flame orginal height(m) Flame orginal height(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Flame orginal height(m) Flame orginal height(m) Flame orginal height(m) Flame ip height(m) Flame ip height(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m)	0.65 33.62 0.33 0 n/a n/a n/a n/a n/a n/a n/a 0.53 25.92 0.21 0.15 Pteridium esculentum 0.21 n/a n/a n/a n/a n/a	BS 2 14.01 0.48 0 n/a n/a n/a n/a n/a 0.47 2.72 0.05 Pteridium esculentum 0.02 n/a n/a n/a n/a n/a n/a n/a n/a n/a	1.35 -19.61 0.15 0 n/a n/a n/a n/a n/a -0.06 -23.2 -0.19 -0.09 n/a n/a n/a n/a
Near-Surface	Weather condition Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Flame orginal height(m) Flame lame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Species flame tip height(m) Flame orginal height(m) Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Flame orginal height(m) Species flame tip heights (m) Flame angle(deg) Flame tip height(m) Flame angle(deg) Flame tip height(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Flame orginal height(m) Flame orginal height(m) Flame orginal height(m) Flame length(m) Flame length(m)	1.77 54.25 1.25 0 n/a 0.91 33.94 0.4 0.3 Lomandra filiformis 0.40 n/a	BS 2 11 0.04 0 n/a 0.8 11 0.04 0.06 Lomandra filiformis 0.04 n/a n/a n/a n/a n/a n/a n/a n/a n/a 0	0.23 -43.25 -1.21 0 n/a -0.11 -22.94 -0.36 -0.24 n/a n/a n/a n/a n/a n/a n/a n/a	Surface  Near-Surface  Elevated	Weather condition Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Flame orginal height(m) Flame length(m) Flame length(m) Flame length(m) Flame orginal height(m) Flame length(m) Flame length(m) Flame orginal height(m) Flame orginal height(m) Flame orginal height(m) Flame orginal height(m) Flame length(m) Flame length(m) Flame orginal height(m) Flame length(m) Flame length(m)	0.65 33.62 0.33 0 n/a n/a n/a n/a n/a n/a  0.53 25.92 0.21 0.15 Pteridium esculentum 0.21 n/a n/a n/a n/a n/a 0.7a	BS 2 14.01 0.48 0 n/a n/a n/a n/a n/a 0.47 2.72 0.02 Peridium esculentum 0.02 n/a n/a n/a n/a n/a 0.7 0.02 n/a	1.35 -19.61 0.15 0
Near-Surface	Weather condition Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Flame angle(deg) Flame tip height(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Species flame tip height(m) Flame orginal height(m) Flame length(m) Flame angle(deg) Flame tip height(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Flame orginal height(m) Species flame tip heights (m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Flame orginal height(m) Flame tip height(m) Flame orginal height(m) Flame orginal height(m) Flame orginal height(m) Flame orginal height(m) Flame length(m)	1.77 54.25 1.25 0 n/a 0.91 33.94 0.4 0.3 Lomandra filiformis 0.40 n/a	BS 2 11 0.04 0 n/a 0.8 11 0.04 0.06 Lomandra filiformis 0.04 n/a n/a n/a n/a n/a n/a n/a n/a n/a 0 0 0	0.23 -43.25 -1.21 0 n/a -0.11 -22.94 -0.36 -0.24 n/a	Surface  Near-Surface  Elevated	Weather condition Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Flame orginal height(m) Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Flame orginal height(m) Flame length(m) Flame length(m) Flame length(m) Flame orginal height(m) Flame orginal height(m) Flame length(m) Flame orginal height(m) Flame orginal height(m) Flame orginal height(m) Flame orginal height(m) Flame length(m) Flame length(m) Flame orginal height(m) Flame length(m) Flame length(m) Flame length(m) Flame length(m) Flame length(m) Flame angle(deg)	0.65 33.62 0.33 0 n/a n/a n/a n/a n/a n/a n/a 0.53 25.92 0.21 0.15 Pteridium esculentum 0.21 n/a n/a n/a n/a 0.63	BS 2 14.01 0.48 0 n/a n/a n/a n/a n/a 0.47 2.72 0.02 0.06 Pteridium esculentum 0.02 n/a n/a n/a n/a 0.04 n/a 0.05 0 0.06 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	1.35 -19.61 0.15 0 n/a n/a n/a n/a n/a n/a -0.06 -23.2 -0.19 -0.09 n/a
Near-Surface	Weather condition Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Flame tip height(m) Flame tip height(m) Flame length(m) Flame tip height(m) Flame orginal height(m) Flame orginal height(m) Species flame tip heights (m) Flame length(m) Flame angle(deg) Flame tip height(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Species flame tip heights (m) Flame orginal height(m) Flame orginal height(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Flame orginal height(m) Flame orginal height(m) Flame length(m)	1.77 54.25 1.25 0 n/a 0.91 33.94 0.4 0.3 Lomandra filiformis 0.40 n/a n/a n/a n/a n/a n/a n/a 0 0 0	8S 2 11 0.04 0 n/a 0.8 11 0.04 0.06 Lomandra filiformis 0.04 n/a n/a n/a n/a n/a n/a n/a n/a 0 0 0 0	0.23 -43.25 -1.21 0 n/a -0.11 -22.94 -0.36 -0.24 n/a n/a n/a n/a n/a n/a n/a n/a n/a 0 0 0	Surface  Near-Surface  Elevated	Weather condition Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Flame orginal heights (m) Flame length(m) Flame length(m) Flame length(m) Flame orginal height(m) Flame length(m) Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Flame orginal height(m) Flame orginal height(m) Flame angle(deg) Flame tip height(m) Flame length(m)	0.65 33.62 0.33 0 n/a n/a n/a n/a n/a n/a n/a 0.53 25.92 0.21 0.15 Pteridium esculentum 0.21 n/a n/a n/a n/a 0.53	BS 2 14.01 0.48 0 n/a	1.35 -19.61 0.15 0 n/a n/a n/a n/a n/a n/a -0.06 -23.2 -0.19 -0.09 n/a n/a n/a n/a n/a n/a 0 0 0
Near-Surface  Elevated  Mid-Storey	Weather condition Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Flame angle(deg) Flame tip height(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Species flame tip height(m) Flame orginal height(m) Flame length(m) Flame angle(deg) Flame tip height(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Flame orginal height(m) Species flame tip heights (m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Flame orginal height(m) Flame tip height(m) Flame orginal height(m) Flame orginal height(m) Flame orginal height(m) Flame orginal height(m) Flame length(m)	1.77 54.25 1.25 0 n/a 0.91 33.94 0.4 0.3 Lomandra filiformis 0.40 n/a	BS 2 11 0.04 0 n/a 0.8 11 0.04 0.06 Lomandra filiformis 0.04 n/a n/a n/a n/a n/a n/a n/a n/a n/a 0 0 0	0.23 -43.25 -1.21 0 n/a -0.11 -22.94 -0.36 -0.24 n/a	Surface  Near-Surface  Elevated  Mid-Storey	Weather condition Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Flame orginal height(m) Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Flame orginal height(m) Flame length(m) Flame length(m) Flame length(m) Flame orginal height(m) Flame orginal height(m) Flame length(m) Flame orginal height(m) Flame orginal height(m) Flame orginal height(m) Flame orginal height(m) Flame length(m) Flame length(m) Flame orginal height(m) Flame length(m) Flame length(m) Flame length(m) Flame length(m) Flame length(m) Flame angle(deg)	0.65 33.62 0.33 0 n/a n/a n/a n/a n/a n/a n/a 0.53 25.92 0.21 0.15 Pteridium esculentum 0.21 n/a n/a n/a n/a 0.63	BS 2 14.01 0.48 0 n/a n/a n/a n/a n/a 0.47 2.72 0.02 0.06 Pteridium esculentum 0.02 n/a n/a n/a n/a 0.04 n/a 0.05 0 0.06 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	1.35 -19.61 0.15 0 n/a n/a n/a n/a n/a n/a -0.06 -23.2 -0.19 -0.09 n/a
Near-Surface	Weather condition Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Flame tip height(m) Flame tip height(m) Flame length(m) Flame tip height(m) Flame orginal height(m) Flame orginal height(m) Species flame tip heights (m) Flame length(m) Flame angle(deg) Flame tip height(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Species flame tip heights (m) Flame orginal height(m) Flame orginal height(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Flame orginal height(m) Flame orginal height(m) Flame length(m)	1.77 54.25 1.25 0 n/a 0.91 33.94 0.4 0.3 Lomandra filiformis 0.40 n/a n/a n/a n/a n/a n/a n/a 0 0 0 0	BS 2 111 0.04 0 n/a 0.8 111 0.04 0.06 Lomandra filiformis 0.04 n/a	0.23 -43.25 -1.21 0 n/a -0.11 -22.94 -0.36 -0.24 n/a n/a n/a n/a n/a n/a n/a n/a n/a 0 0 0	Surface  Near-Surface  Elevated	Weather condition Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Flame orginal heights (m) Flame length(m) Flame length(m) Flame length(m) Flame orginal height(m) Flame length(m) Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Flame orginal height(m) Flame orginal height(m) Flame angle(deg) Flame tip height(m) Flame length(m)	0.65 33.62 0.33 0 n/a n/a n/a n/a n/a n/a n/a 0.53 25.92 0.21 0.15 Pteridium esculentum 0.21 n/a n/a n/a n/a 0.53	BS 2 14.01 0.48 0 n/a	1.35 -19.61 0.15 0 n/a n/a n/a n/a n/a n/a -0.06 -23.2 -0.19 -0.09 n/a n/a n/a n/a n/a n/a 0 0 0
Near-Surface  Elevated  Mid-Storey	Weather condition Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Flame tip height(m) Flame tip height(m) Flame tip height(m) Flame tip height(m) Flame orginal height(m) Flame orginal height(m) Flame orginal height(m) Flame orginal height(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Flame orginal height(m) Flame orginal height(m) Flame in pheight(m) Flame orginal height(m) Flame in pheight(m) Flame tip height(m) Flame orginal height(m) Flame orginal height(m) Flame orginal height(m) Flame length(m) Flame orginal height(m)	1.77 54.25 1.25 0 n/a 0.91 33.94 0.4 0.3 Lomandra filiformis 0.40 n/a n/a n/a n/a n/a n/a n/a n/a 0 0 0 Eucalyptus	BS 2 11 0.04 0 n/a 0.8 11 0.04 0.06 Lomandra filiformis 0.04 n/a n/a n/a n/a n/a n/a n/a n/a n/a 0 0 0 Eucalyptus	0.23 -43.25 -1.21 0 n/a -0.11 -22.94 -0.36 -0.24 n/a	Surface  Near-Surface  Elevated  Mid-Storey	Weather condition Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Flame orginal height(m) Flame length(m) Flame length(m) Flame length(m) Flame orginal height(m) Flame tip height(m) Flame orginal height(m) Flame orginal height(m) Flame length(m) Flame length(m) Flame length(m) Flame orginal height(m) Flame orginal height(m) Flame orginal height(m) Flame length(m) Flame length(m) Flame length(m) Flame orginal height(m) Flame length(m) Flame length(m) Flame length(m) Flame length(m) Flame length(m) Flame length(m) Flame orginal height(m) Flame orginal height(m) Flame orginal height(m) Flame orginal height(m)	0.65 33.62 0.33 0 n/a n/a n/a n/a n/a n/a n/a 0.53 25.92 0.21 0.15 Pteridium esculentum 0.21 n/a n/a n/a n/a 0.53	BS 2 14.01 0.48 0 n/a	1.35 -19.61 0.15 0 n/a n/a n/a n/a n/a n/a -0.06 -23.2 -0.19 -0.09 n/a n/a n/a n/a n/a n/a 0 0 0 0
Near-Surface  Elevated  Mid-Storey	Weather condition Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Flame tip height(m) Flame tip height(m) Flame length(m) Flame tip height(m) Flame orginal height(m) Flame orginal height(m) Species flame tip heights (m) Flame length(m) Flame angle(deg) Flame tip height(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Species flame tip heights (m) Flame orginal height(m) Flame orginal height(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Flame orginal height(m) Flame orginal height(m) Flame length(m)	1.77 54.25 1.25 0 n/a 0.91 33.94 0.4 0.3 Lomandra filiformis 0.40 n/a n/a n/a n/a n/a n/a n/a 0 0 0 0 Eucalyptus obliqua	BS 2 11 0.04 0 n/a 0.8 11 0.04 0.06 Lomandra filiformis 0.04 n/a n/a n/a n/a n/a n/a n/a n/a 0 0 0 0 Eucalyptus obliqua	0.23 -43.25 -1.21 0 n/a -0.11 -22.94 -0.36 -0.24 n/a n/a n/a n/a n/a n/a n/a n/a n/a 0 0 0	Surface  Near-Surface  Elevated  Mid-Storey	Weather condition Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Flame orginal heights (m) Flame length(m) Flame length(m) Flame length(m) Flame orginal height(m) Flame length(m) Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Flame orginal height(m) Flame orginal height(m) Flame angle(deg) Flame tip height(m) Flame length(m)	0.65 33.62 0.33 0 n/a n/a n/a n/a n/a n/a n/a 0.53 25.92 0.21 0.15 Pteridium esculentum 0.21 n/a n/a n/a n/a 0 0 0 0	BS 2 14.01 0.48 0 n/a n/a n/a n/a n/a 0.47 2.72 0.02 Peridium esculentum 0.02 n/a n/a n/a n/a 0.47 0.00 n/a n/a n/a 0.47 0.00 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	1.35 -19.61 0.15 0 n/a n/a n/a n/a n/a n/a -0.06 -23.2 -0.19 -0.09 n/a n/a n/a n/a n/a n/a 0 0 0
Near-Surface  Elevated  Mid-Storey	Weather condition Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Flame angle(deg) Flame tip height(m) Flame angle(deg) Flame tip height(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Species flame tip heights (m) Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Species flame tip heights (m) Flame angle(deg) Flame tip height(m) Flame angle(deg) Flame tip height(m) Flame tip height(m) Flame orginal height(m) Flame orginal height(m) Flame orginal height(m) Flame angle(deg) Flame tip height(m) Flame angle(deg) Flame tip height(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Flame orginal height(m) Flame orginal height(m)	1.77 54.25 1.25 0 n/a 0.91 33.94 0.4 0.3 Lomandra filiformis 0.40 n/a n/a n/a n/a n/a n/a n/a 0 0 0 0 Eucalyptus obliqua 0.00	BS 2 11 0.04 0 n/a 0.8 11 0.04 0.06 Lomandra filiformis 0.04 n/a n/a n/a n/a n/a n/a n/a 0 0 0 0 Eucalyptus obliqua 0.00	0.23 -43.25 -1.21 0 n/a -0.11 -22.94 -0.36 -0.24 n/a	Surface  Near-Surface  Elevated  Mid-Storey	Weather condition Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Flame orginal height(m) Flame length(m) Flame length(m) Flame length(m) Flame orginal height(m) Flame tip height(m) Flame orginal height(m) Flame orginal height(m) Flame length(m) Flame length(m) Flame length(m) Flame orginal height(m) Flame orginal height(m) Flame orginal height(m) Flame length(m) Flame length(m) Flame length(m) Flame orginal height(m) Flame length(m) Flame length(m) Flame length(m) Flame length(m) Flame length(m) Flame length(m) Flame orginal height(m) Flame orginal height(m) Flame orginal height(m) Flame orginal height(m)	0.65 33.62 0.33 0 n/a n/a n/a n/a n/a n/a  0.53 25.92 0.21 0.15 Pteridium esculentum 0.21 n/a n/a n/a 0 0 0 0 0 Ribbon Gum	85 2 14.01 0.48 0 n/a n/a n/a n/a n/a n/a n/a 0.47 2.72 0.02 0.06 Pteridium esculetum 0.02 n/a n/a n/a n/a n/a n/a Ribbon gum	1.35 -19.61 0.15 0 n/a
Near-Surface  Elevated  Mid-Storey	Weather condition Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Flame tip height(m) Flame tip height(m) Flame tip height(m) Flame tip height(m) Flame orginal height(m) Flame orginal height(m) Flame orginal height(m) Flame orginal height(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Flame orginal height(m) Flame orginal height(m) Flame in pheight(m) Flame orginal height(m) Flame in pheight(m) Flame tip height(m) Flame orginal height(m) Flame orginal height(m) Flame orginal height(m) Flame length(m) Flame orginal height(m)	1.77 54.25 1.25 0 n/a 0.91 33.94 0.4 0.3 Lomandra filiformis 0.40 n/a n/a n/a n/a n/a n/a n/a 0 0 0 0 Eucalyptus obliqua	BS 2 11 0.04 0 n/a 0.8 11 0.04 0.06 Lomandra filiformis 0.04 n/a n/a n/a n/a n/a n/a n/a n/a 0 0 0 0 Eucalyptus obliqua	0.23 -43.25 -1.21 0 n/a -0.11 -22.94 -0.36 -0.24 n/a	Surface  Near-Surface  Elevated  Mid-Storey	Weather condition Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Flame orginal height(m) Flame length(m) Flame length(m) Flame length(m) Flame orginal height(m) Flame tip height(m) Flame orginal height(m) Flame orginal height(m) Flame length(m) Flame length(m) Flame length(m) Flame orginal height(m) Flame orginal height(m) Flame orginal height(m) Flame length(m) Flame length(m) Flame length(m) Flame orginal height(m) Flame length(m) Flame length(m) Flame length(m) Flame length(m) Flame length(m) Flame length(m) Flame orginal height(m) Flame orginal height(m) Flame orginal height(m) Flame orginal height(m)	0.65 33.62 0.33 0 n/a n/a n/a n/a n/a n/a  0.53 25.92 0.21 0.15 Pteridium esculentum 0.21 n/a n/a n/a 0 0 0 0 0 Ribbon Gum	85 2 14.01 0.48 0 n/a n/a n/a n/a n/a n/a n/a 0.47 2.72 0.02 0.06 Pteridium esculetum 0.02 n/a n/a n/a n/a n/a n/a Ribbon gum	1.35 -19.61 0.15 0 n/a
Near-Surface  Elevated  Mid-Storey  Canopy	Weather condition Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Flame angle(deg) Flame tip height(m) Flame angle(deg) Flame tip height(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Species flame tip heights (m) Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Species flame tip heights (m) Flame angle(deg) Flame tip height(m) Flame angle(deg) Flame tip height(m) Flame tip height(m) Flame orginal height(m) Flame orginal height(m) Flame orginal height(m) Flame angle(deg) Flame tip height(m) Flame angle(deg) Flame tip height(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Flame orginal height(m) Flame orginal height(m)	1.77 54.25 1.25 0 n/a 0.91 33.94 0.4 0.3 Lomandra filiformis 0.40 n/a n/a n/a n/a n/a n/a n/a 0 0 0 0 Eucalyptus obliqua 0.00	BS 2 11 0.04 0 n/a 0.8 11 0.04 0.06 Lomandra filiformis 0.04 n/a n/a n/a n/a n/a n/a n/a 0 0 0 0 Eucalyptus obliqua 0.00	0.23 -43.25 -1.21 0 n/a -0.11 -22.94 -0.36 -0.24 n/a	Surface  Near-Surface  Elevated  Mid-Storey  Canopy	Weather condition Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Flame orginal height(m) Flame length(m) Flame length(m) Flame length(m) Flame orginal height(m) Flame length(m) Flame orginal height(m) Flame orginal height(m) Flame orginal height(m) Flame length(m) Flame length(m) Flame orginal height(m) Flame orginal height(m) Flame orginal height(m) Flame orginal height(m) Flame length(m) Flame length(m) Flame orginal height(m) Flame orginal height(m) Flame orginal height(m) Flame length(m) Flame length(m) Flame length(m) Flame orginal height(m)	0.65 33.62 0.33 0 n/a n/a n/a n/a n/a n/a n/a 0.53 25.92 0.21 0.15 Pteridium esculentum 0.21 n/a n/a n/a n/a 0 0 0 0 Ribbon Gum	BS 2 14.01 0.48 0 n/a n/a n/a n/a n/a n/a 0.47 2.72 0.02 Pteridium esculentum 0.02 n/a	1.35 -19.61 0.15 0
Near-Surface  Elevated  Mid-Storey	Weather condition Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Flame angle(deg) Flame tip heights (m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Flame orginal height(m) Species flame tip heights (m) Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Flame orginal height(m) Flame orginal height(m) Species flame tip heights (m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Flame orginal height(m) Flame orginal height(m) Flame orginal height(m) Flame angle(deg) Flame tip heights (m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Flame length(m)	1.77 54.25 1.25 0 n/a 0.91 33.94 0.4 0.3 Lomandra filiformis 0.40 n/a n/a n/a n/a n/a n/a n/a 0 0 0 0 Eucalyptus obliqua 0.00	BS 2 11 0.04 0 n/a 0.8 11 0.04 0.06 Lomandra filiformis 0.04 n/a n/a n/a n/a n/a n/a n/a 0 0 0 0 Eucalyptus obliqua 0.00 2	0.23 -43.25 -1.21 0 n/a -0.11 -22.94 -0.36 -0.24  n/a n/a n/a n/a n/a n/a n/a n/a n/a n/	Surface  Near-Surface  Elevated  Mid-Storey	Weather condition Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Flame length(m) Flame length(m) Flame length(m) Flame length(m) Flame length(m) Flame orginal height(m) Flame length(m) Flame orginal height(m) Flame orginal height(m) Flame length(m) Flame length(m) Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Flame orginal height(m) Flame orginal height(m) Flame length(m) Flame length(m) Flame orginal height(m) Flame orginal height(m) Flame orginal height(m) Flame orginal height(m) Flame length(m) Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Flame length(m)	0.65 33.62 0.33 0 n/a n/a n/a n/a n/a n/a n/a 0.53 25.92 0.21 0.15 Pteridium esculentum 0.21 n/a n/a n/a n/a 0 0 0 0 Ribbon Gum 0.00	BS 2 14.01 0.48 0 n/a	1.35 -19.61 0.15 0 n/a
Near-Surface  Elevated  Mid-Storey  Canopy	Weather condition Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Flame tip height(m) Flame tip height(m) Flame length(m) Flame tip height(m) Flame orginal height(m) Flame orginal height(m) Flame length(m) Flame angle(deg) Flame tip heights (m) Flame orginal height(m) Flame orginal height(m) Flame orginal height(m) Flame orginal height(m) Flame angle(deg) Flame tip height(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Flame orginal height(m) Flame orginal height(m) Flame orginal height(m) Flame tip height(m) Flame tip height(m) Flame tip height(m) Flame tip height(m) Flame orginal height(m) Flame orginal height(m) Flame orginal height(m) Flame tip height(m) Flame tip height(m) Flame orginal height(m) Flame length(m)	1.77 54.25 1.25 0 n/a 0.91 33.94 0.4 0.3 Lomandra filiformis 0.40 n/a n/a n/a n/a n/a n/a n/a 0 0 0 Eucalyptus obliqua 0.00 1.8 47.36	BS 2 11 0.04 0 n/a 0.8 11 0.04 0.06 Lomandra filiformis 0.04 n/a n/a n/a n/a n/a n/a n/a n/a 0 0 0 Eucalyptus obliqua 0.00 2 11	0.23 -43.25 -1.21 0 n/a -0.11 -22.94 -0.36 -0.24 n/a	Surface  Near-Surface  Elevated  Mid-Storey  Canopy	Weather condition Flame length(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Flame orginal heights (m) Flame length(m) Flame length(m) Flame length(m) Flame orginal height(m) Flame angle(deg) Flame tip height(m) Flame orginal height(m) Flame orginal height(m) Flame length(m) Flame length(m) Flame length(m) Flame orginal height(m) Flame length(m) Flame length(m) Flame length(m) Flame angle(deg)	0.65 33.62 0.33 0 n/a n/a n/a n/a n/a n/a n/a 0.53 25.92 0.21 0.15 Pteridium esculentum 0.21 n/a n/a n/a n/a n/a 0.63 Ribbon Gum 0.00 0.67 30.18	BS 2 14.01 0.48 0 n/a	1.35 -19.61 0.15 0 n/a n/a n/a n/a n/a n/a -0.06 -23.2 -0.19 -0.09 n/a

The last column on each table illustrates Increments, which are calculated by 'BS minus PB'. This factor, however, is only available in items with quantified and comparable data. In this case, increments

can be referred to assess the extent of impact caused by severe weathers.

Table 9: Summarized Fire behavior in all severity sites under the prescribed burning weather condition

Stratum   Site   U(1)   U(2)   U(3)   U(4)   C(1)   C(2)   C(3)   C(4)   H(1)   H(2)   H(3)   H(4)   Low   Control   High	Prescribed Burning weather(PB) Stratum Site			Low	severity		I	Contro	ol severity		l	High s	everity	- 1		Average score	1
Surface   Flame to phelight m   0.95	Stratum	Site	L(1)	L(2)	L(3)	L(4)	C(1)	C(2)	C(3)	C(4)	H(1)	H(2)	H(3)	H(4)	Low	Control	High
Surface   Flame roginal height(m)   0.9\$   0.94   0.14   0.32   0.53   0.63   0.66   0.49   0.032   0.34   1.25   0.33   0.64   0.58   0.56		Flame length(m)	1.07	1.12	0.49	2	0.92	2	2	0.91	0.6	0.35	1.77	0.65	1.17	1.46	0.84
Flame enginth(m)   0		Flame angle(deg)	65.55	60.37	47.01	12.08	43.25	37.15	28.98	39.38	34.69	80.6	54.25	33.62	46.25	37.19	50.79
Species flame tip heights (m)	Surface	Flame tip height(m)	0.96	0.94	0.34	0.32	0.53	0.63	0.66	0.49	0.32	0.34	1.25	0.33	0.64	0.58	0.56
Flame length(m)		Flame orginal height(m)	0	0	0	0	0	0	0	0	0	0	0	0	0.00	0.00	0.00
Flame angle(deg)		Species flame tip heights (m)	n/a	Poa 1.50	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Flame tip height month   1.71   2.11   n/s   0.42   0.8   0.52   0.21   0.88   1.48   0.66   0.4   n/s   0.94   0.95   0.57   0.50		Flame length(m)	1.77	2.19	n/a	0.85	1.14	1.81	1.21	0.93	1.47	0.66	0.91	n/a	1.60	1.27	1.01
Plame length(m)   Plame orginal height(m)   Species flame tip heights (m)   Species flame ti		Flame angle(deg)	75.32	74.62	n/a	4.8	49.85	34.16	17.76	40.25	61.18	85.22	33.94	n/a	51.58	35.51	60.11
Perdium   Perd		Flame tip height(m)	1.71	2.11	n/a	0.42	0.8	0.62	0.21	0.68	1.48	0.66	0.4	n/a	1.41	0.58	0.85
Species flame tip heights (m)   Species flame suph (m)   S	Near-Surface	Flame orginal height(m)	1.07	1.34	n/a	0.46	0.58	0.94	0.27	0.49	0.91	0.3	0.3	n/a	0.96	0.57	0.50
Species flame tip heights (m)   esculentum   2.74   n/a   0.42   filliformis   0.54   filliformis   esculentum   esculentum   esculentum   esculentum   esculentum   esculentum   n/a			Pteridium	Bracken		Pos topors	Lomandra	Pos	Lomandra	Pteridium	Pteridium	Pos teners	Lomandra				
Flame length(m)   3.95   n/a   1.6   1.29   n/a   n/a   n/a   n/a   n/a   7.53   0.77   n/a   0.53   2.28   n/a   2.94		Species flame tip heights (m)	esculentum		n/a		filiformis		filiformis	esculentum	esculentum		filiformis	n/a	n/a	n/a	n/a
Flame angle(deg)   Flame tip height(m)   5.32				2.74			0.66	0.54	0.21	0.68			0.40				
Flame tip height(m)   5.32		Flame length(m)						n/a	n/a	n/a							
Elevated   Flame orginal height(m)   3.8    n/a   0.91   0.69			69.82	n/a	63.5	4.92	n/a	n/a	n/a	n/a	82.84	62.89	n/a	25.92	46.08	n/a	
Eucalyptus   Eucalyptus   Canopy   Eucalyptus   Eucalyptus   Canopy   Eucalyptus   Species flame tip heights (m)   Obliqua   n/a   esculentum   es			5.32	n/a	1.44	0.54	n/a	n/a	n/a	n/a	8.68		n/a	0.21	2.43	n/a	3.40
Species flame tip heights (m)	Elevated	Flame orginal height(m)	3.8	n/a	0.91	0.69	n/a	n/a	n/a	n/a	3.6	1.03	n/a	0.15	1.80	n/a	1.59
Flame length(m)			Eucalyptus		Pteridium	Pteridium					Eucalyptus	Acacia		Pteridium			
Flame length(m)		Species flame tip heights (m)	obliqua	n/a	esculentum	esculentum	n/a	n/a	n/a	n/a	obliqua	dealbata	n/a	esculentum	n/a	n/a	n/a
Flame angle(deg)   74.8			7.42		1.44	0.54					8.68	1.32		0.21			
Flame tip height(m)		Flame length(m)	8.33	n/a	n/a	0	n/a	n/a	n/a	0	11.33	0	n/a	n/a	4.17	n/a	5.67
Mid-Storey   Flame orginal height(m)   A 66   n/a   n/a   0   n/a   n/a   0   9.01   0   n/a   n/a   2.33   n/a   4.51		Flame angle(deg)	74.8	n/a	n/a	0	n/a	n/a	n/a	0	83.05	0	n/a	n/a	37.40	n/a	41.53
Species flame tip heights (m)   Species flame tip heights (m)   Obliqua   n/a   n/a   obliqua   n/a   n/a   obliqua   n/a   n/a   obliqua   obliqua   n/a   obliqua   obliqu		Flame tip height(m)	10.01	n/a	n/a	0	n/a	n/a	n/a	0	15.39	0	n/a	n/a	5.01	n/a	7.70
Species flame tip heights (m)	Mid-Storey	Flame orginal height(m)	4.66	n/a	n/a	0	n/a	n/a	n/a	0	9.01	0	n/a	n/a	2.33	n/a	4.51
Flame length(m)			Eucalyptus			Eucalyptus				Acacia	Eucalyptus	Eucalyptus					
Flame length(m)   15.01   0   0   0   0   0   0   0   23.5   0   0   0   3.75   0.00   5.90		Species flame tip heights (m)	obliqua	n/a	n/a	obliqua	n/a	n/a	n/a	dealbata	obliqua	obliqua	n/a	n/a	n/a	n/a	n/a
Flame angle(deg)   72.12   0   0   0   0   0   0   0   0   81.59   0   0   0   18.03   0.00   20.40			10.01			0.00				0.00	15.39	0.00					
Flame tip height(m)   22.14   0   0   0   0   0   0   0   0   0		Flame length(m)	15.01	0	0	0	0	0	0	0	23.6	0	0	0	3.75	0.00	5.90
Canopy   Flame orginal height(m)   14.13   0   0   0   0   0   0   0   0   0		Flame angle(deg)	72.12	0	0	0	0	0	0	0	81.59	0	0	0	18.03	0.00	20.40
Eucalyptus   Stringy   Blue Gum   Eucalyptus   Stringy   Blue Gum   Eucalyptus   Eucalyptus   Stringy   Blue Gum   Eucalyptus   Stringy   Eucalyptus   Stringy   Eucalyptus   Eucalyptus		Flame tip height(m)	22.14	0	0	0	0	0	0	0	39.79	0	0	0	5.54	0.00	9.95
Species flame tip heights (m)   Obliqua   Bark   Obliqua   Bark   Obliqua   Obliqua	Canopy	Flame orginal height(m)	14.13	0	0	0	0	0	0	0	27.09	0	0	0	3.53	0.00	6.77
Species frame tip heights (m)   obliqua   Bark   obliqua   obliqua   Bark   obliqua   obliqua			Eucalyptus	Stringy	Blue Gum	Eucalyptus	Eucalyptus	Stringy	Eucalyptus	Acacia	Eucalyptus	Eucalyptus	Eucalyptus	Ribbon			
		Species flame tip heights (m)	obliqua	Bark		obliqua	obliqua	Bark	obliqua	dealbata	obliqua	obliqua	obliqua	Gum	n/a	n/a	n/a
Flame angle(dex) 72.52 69.8 59.62 8.36 46.9 35.73 24.76 39.82 80.87 74.7 47.36 30.18 52.58 36.80 58.28			22.14		0.00	0.00	0.00	0.00	0.00	0.00	39.79	0.00	0.00	0.00			
Flame angle(deg) 72.52 69.8 59.62 8.36 46.9 35.73 24.76 39.82 80.87 74.7 47.36 30.18 52.58 36.80 58.28														0.67			
	Overall	Flame angle(deg)			59.62	8.36		35.73			80.87			30.18		36.80	
Flame tip height(m)   22.14   2.11   1.44   0.54   0.8   0.63   0.66   0.68   39.79   1.32   1.25   0.33   6.56   0.69   10.67	Overall	Flame tip height(m)	22.14								39.79		1.25	0.33		0.69	10.67
Flame orginal height(m) 14.13 1.34 0.91 0.69 0.58 0.94 0.27 0.49 27.09 1.03 0.3 0.15 4.27 0.57 7.14		Flame orginal height(m)	14.13	1.34	0.91	0.69	0.58	0.94	0.27	0.49	27.09	1.03	0.3	0.15	4.27	0.57	7.14

Table 10: Summarized Fire behavior in all severity sites under the Black Saturday weather condition

Black	Saturday weather(BS)	I	Low :	severity		I	Contro	I severity			High s	everity			Average score	
Stratum	Site	L(1)	L(2)	L(3)	L(4)	C(1)	C(2)	C(3)	C(4)	H(1)	H(2)	H(3)	H(4)	Low	Control	High
	Flame length(m)	2	2	2	2	2	2	2	2	2	0.47	2	2	2.00	2.00	1.62
	Flame angle(deg)	11.04	20.09	28.54	12.08	9	12	11	12.11	15.77	42.48	11	14.01	17.94	11.03	20.82
Surface	Flame tip height(m)	0.35	0.59	0.86	0.32	0.04	0.04	0.04	0.18	0.44	0.29	0.04	0.48	0.53	0.08	0.31
	Flame orginal height(m)	0	0	0	0	0	0	0	0	0	0	0	0	0.00	0.00	0.00
	Species flame tip heights (m)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Flame length(m)	1.83	2.48	n/a	0.85	0.93	1.25	1.11	2.77	3.94	0.8	0.8	n/a	1.72	1.52	1.85
	Flame angle(deg)	10.02	24.81	n/a	4.8	9	12	11	17.01	30.54	58.45	11	n/a	13.21	12.25	33.33
	Flame tip height(m)	0.3	0.96	n/a	0.42	0.05	0.06	0.06	0.68	2	0.66	0.04	n/a	0.56	0.21	0.90
Near-Surface	Flame orginal height(m)	0.25	0.52	n/a	0.46	0.12	0.13	0.1	0.97	0.91	0.3	0.06	n/a	0.41	0.33	0.42
		Pteridium	Bracken		Poa tenera	Lomandra	Bracken	Lomandra	Pteridium	Pteridium	Poa tenera	Lomandra				
	Species flame tip heights (m)	esculentum	1.07	n/a	0.42	filiformis	0.06	filiformis	esculentum	esculentum	0.66	filiformis	n/a	n/a	n/a	n/a
		0.30				0.05	0.06	0.06	0.68	2.00		0.04				
	Flame length(m)	0	n/a	3.71	1.29	n/a	n/a	n/a	1.96	9.53	0.5	n/a	0.47	1.67	1.96	3.50
	Flame angle(deg)	0	n/a	28.9	4.92	n/a	n/a	n/a	8	48.73	7.75	n/a	2.72	11.27	8.00	19.73
	Flame tip height(m)	0	n/a	1.7	0.54	n/a	n/a	n/a	2.22	8.18	0.66	n/a	0.02	0.75	2.22	2.95
Elevated	Flame orginal height(m)	0	n/a	0.78	0.69	n/a	n/a	n/a	2.51	3.6	0.8	n/a	0.06	0.49	2.51	1.49
		Acacia		Pteridium	Pteridium					Eucalyptus	Acacia		Pteridium			
	Species flame tip heights (m)	dealbata	n/a	esculentum	esculentum	n/a	n/a	n/a	;ia dealbata2	obliqua	dealbata	n/a	esculentum	n/a	n/a	n/a
		0.00		1.70	0.54					8.18	0.66		0.02			
	Flame length(m)	0	n/a	n/a	0	n/a	n/a	n/a	n/a	12.57	0	n/a	n/a	0.00	n/a	6.29
	Flame angle(deg)	0	n/a	n/a	0	n/a	n/a	n/a	n/a	45.5	0	n/a	n/a	0.00	n/a	22.75
	Flame tip height(m)	0	n/a	n/a	0	n/a	n/a	n/a	n/a	12.71	0	n/a	n/a	0.00	n/a	6.36
Mid-Storey	Flame orginal height(m)	0	n/a	n/a	0	n/a	n/a	n/a	n/a	9.01	0	n/a	n/a	0.00	n/a	4.51
		Eucalyptus			Eucalyptus					Eucalyptus						
	Species flame tip heights (m)	obliqua	n/a	n/a	obliqua	n/a	n/a	n/a	n/a	obliqua	obliqua	n/a	n/a	n/a	n/a	n/a
		0.00			0.00					12.71	0.00					
	Flame length(m)	18.7	0	0	0	0	0	0	0	27.3	0	0	0	4.68	0.00	6.83
	Flame angle(deg)	15.49	0	0	0	0	0	0	0	41.28	0	0	0	3.87	0.00	10.32
	Flame tip height(m)	17.33	0	0	0	0	0	0	0	33.56	0	0	0	4.33	0.00	8.39
Canopy	Flame orginal height(m)	14.47	0	0	0	0	0	0	0	25.87	0	0	0	3.62	0.00	6.47
		Eucalyptus	Ribbon	Blue gum	Eucalyptus		Stringy	Eucalyptus				Eucalyptus	Ribbon			
	Species flame tip heights (m)	obliqua	Gum	0.00	obliqua	obliqua	Bark	obliqua	obliqua	obliqua	obliqua	obliqua	gum	n/a	n/a	n/a
		17.33	0.00		0.00	0.00	0.00	0.00	0.00	33.56	0.00	0.00	0.00			
	Flame length(m)	18.7	2.48	3.71	2.23	2	2	2	2.89	44.03	0.8	2	2.03	6.78	2.22	12.22
Overall	Flame angle(deg)	14.65	22.71	28.78	8.36	9	12	11	12.93	41.84	39.92	11	11.87	18.63	11.23	26.16
_ / 41411	Flame tip height(m)	17.33	0.96	1.7	0.54	0.05	0.06	0.06	2.22	33.56	0.66	0.04	0.48	5.13	0.60	8.69
	Flame orginal height(m)	14.47	0.52	0.78	0.69	0.12	0.13	0.1	2.51	25.87	0.8	0.06	0.06	4.12	0.72	6.70

Table 11: Overall Fire behavior summarized in all severity sites under both prescribed burning and Black Saturday weather condition

Low severity		L1			L2			L3			L4	
Overall	PB	BS	Increment									
Flame length(m)	21.32	18.7	-2.62	2.19	2.48	0.29	1.6	3.71	2.11	2.23	2.23	0
Flame angle(deg)	72.52	14.65	-57.87	69.8	22.71	-47.09	59.62	28.78	-30.84	8.36	8.36	0
Flame tip height(m)	22.14	17.33	-4.81	2.11	0.96	-1.15	1.44	1.7	0.26	0.54	0.54	0
Flame orginal height(m)	14.13	14.47	0.34	1.34	0.52	-0.82	0.91	0.78	-0.13	0.69	0.69	0
Control severity		C1			C2			C3			C4	
Overall	PB	BS	Increment									
Flame length(m)	1.14	2	0.86	2.02	2	-0.02	2.05	2	-0.05	0.94	2.89	1.95
Flame angle(deg)	46.9	9	-37.9	35.73	12	-23.73	24.76	11	-13.76	39.82	12.93	-26.89
Flame tip height(m)	8.0	0.05	-0.75	0.63	0.06	-0.57	0.66	0.06	-0.6	0.68	2.22	1.54
Flame orginal height(m)	0.58	0.12	-0.46	0.94	0.13	-0.81	0.27	0.1	-0.17	0.49	2.51	2.02
High severity		H1			H2			Н3			H4	
Overall	PB	BS	Increment									
Flame length(m)	35.81	44.03	8.22	0.77	0.8	0.03	1.8	2	0.2	0.67	2.03	1.36
Flame angle(deg)	80.87	41.84	-39.03	74.7	39.92	-34.78	47.36	11	-36.36	30.18	11.87	-18.31
Flame tip height(m)	39.79	33.56	-6.23	1.32	0.66	-0.66	1.25	0.04	-1.21	0.33	0.48	0.15
Flame orginal height(m)	27.09	25.87	-1.22	1.03	0.8	-0.23	0.3	0.06	-0.24	0.15	0.06	-0.09

Last, all data about fire behavior in all severity sites under both weather conditions are summarized below. In addition, average scores of flame height and flame degree in the same fire severity level are calculated to provide reference data to assess overall fire behaviors and these average figures can be compared among different fire severity.

#### 6. Discussion

Further research mainly focuses on overall fire behavior in each severity site. Comparisons of Flame height, flame length and flame degree between different fire severity are illustrated in two diagrams (fig 11 & 12), and the increment factor reflects the impact on fire from weather change. Obviously, the degree of flame is quite sensitive to environmental effect and is easier to change comparing with flame height and length. It may be because wind speed and direction may control the expansion of fire. As statistics below, increment correspond-dingly increases when flame tip height goes up. By comparing input and output, the analysis in this study can figure out how plant composition in different forest stratum can influence fire behavior. Most area in Buangor Forest does not show high flammability as flame height and length is not too high and flame does not reach canopy in most areas.

#### 7. Conclusion

Buangor Forest is a highly sensitive forest site in terms of humidity and temperature, severe weather can easily improve the risk of ignition. Extreme fire behavior is more likely to happen in low and high severity sites. For those sites with more fuel loads or fuel weights, flame height is high enough in mild weather condition and fire tends to intensify faster when weather is hotter and drier.

Forest Fire Model promotes to make overall evaluation of fire behavior but how fire expand with time and duration of different stage is unable to figure out. Simulation with time might be potential to develop FFM in the future. This model is mainly based on physical elements of environment, but individual species could make a difference in special biological reaction. Sometimes, not all data from input and output is effective or some of data is set default. Moreover, the results calculated by FFM could also be affected by extreme natural condition so analysis of fire behavior with FFM relies on a huge number of samples.

## Acknowledgements

All data in this study is collected from real site excursion. The dimension of species is measured manually and partly combined with 'Arboreal' app, some data may not be quite accurate, but data recording is a collaborative work of different groups in the whole class and the analysis is based on most effective data.

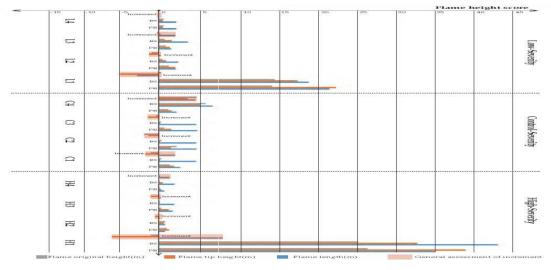


Figure 11: Diagrams to compare flame height & length in different severity sites under different weather condition. Increment varies in different scenarios

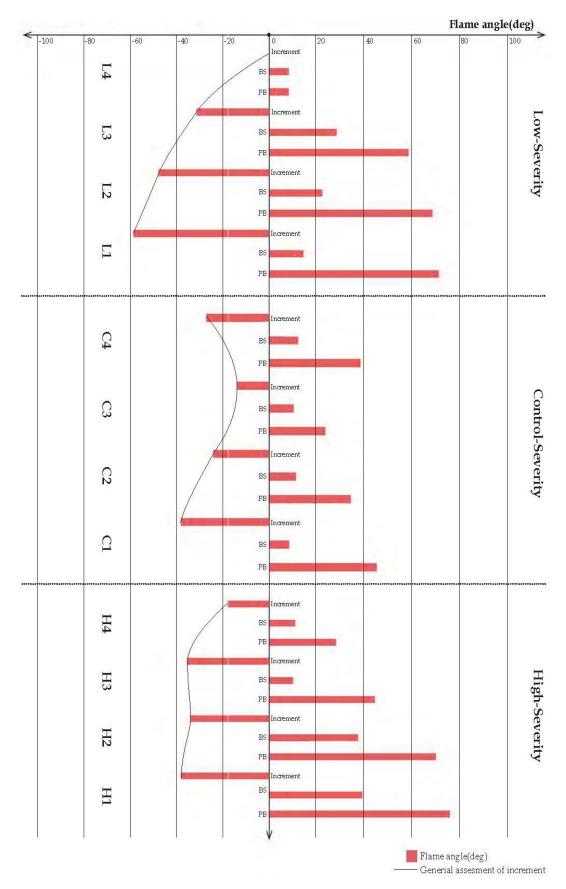


Figure 12: Diagrams to compare flame angle in different severity sites under different weather condition. Increment varies in different scenarios, Tendency line is to assess the overall impact on fire behaviour in terms of fire direction

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