New Zealand Wildfire Summary

2023/24 Wildfire Season Update

Bioeconomy Science Institute™
Maiangi Taiao

WHAKARATONGA IWI
FIRE EMERGENCY
NEW ZEALAND

Contents

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Cover photo Port Hills, February 2024; courtesy of George Heard.

Summary

The 2023/2024 wildfire year was more significant in terms of both the number of fires and total area burnt compared to the previous year (2022/2023), but was less significant on both measures when compared with the 2021/2022 year.

- Districts that experienced an increase in both number of wildfires and area burnt compared to the previous year include: Waitematā, Counties Manukau, Bay of Plenty, Tairāwhiti, Taranaki, Hawke's Bay, Wellington, Canterbury, Mid-South Canterbury (A1).
- Districts that experienced an increase in number of wildfires and a decrease in area burnt compared to the previous year include: Northland, Waikato, Manawatū-Whanganui, Nelson Marlborough, Otago (A1).
- Districts that experienced a decrease in both number of wildfires and area burnt compared to the previous year include: West Coast, Southland (A1).
- Districts that experienced an increase in number of wildfires and no change in area burnt compared to the previous year include: Auckland (A1).
- Prevailing climatic conditions for the year were dominated by the transition to and subsequent weakening of an El Niño event. Several severe weather events brought damaging rainfall to parts of Canterbury, eastern parts of the North Island and the West Coast. (Figure 1).

Introduction

This report summarises wildfires in New Zealand for the 2023/2024 year. It includes an evaluation of climatic conditions and incident statistics over an annular timeframe from 1st of July 2023 to 30th of June 2024. The purpose of this document is to provide a summary of 2023/2024, and a comparison to the previous year (2022/2023), in terms of overall conditions and incidents notified. The intent of this report is to aid in discussions in each district around operational reduction and readiness measures, and to inform opportunities for continual improvement.

Methods

This report summarises wildfire and climatology trends which are presented nationally, by island (North versus South), and by Fire and Emergency New Zealand (FENZ) District. Updated FENZ District boundaries were brought into effect with the official stand-up of Tranche 2 of the Fire and Emergency Service Delivery structure on 27 September 2021. This resulted in several boundary and name changes for Districts around the country. At that time, 17 Districts[1] were created within five Regions to replace the previous 24 urban areas and 18 rural districts. Due to this update, differences in district names and values will be present for reports prior to the 2021/2022 report.

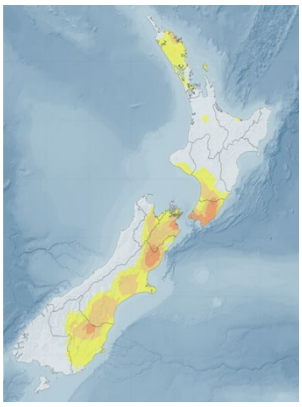

Figure 1. *NIWA's New Zealand Drought Index (NZDI) map for 2024-02-05, which highlights locations experiencing drought or dry conditions during the height of the wildfire season. Dark red indicates severe drought conditions; light red indicates drought; orange indicates extremely dry to very dry conditions; yellow indicates dry conditions.*

Trends in the number of wildfires, area burnt, and fire causes have been identified using data from two separate sources. Data from the former National Rural Fire Authority (NRFA) was used to cover the period from 1988/1989 through the 2016/2017 fire season. Data from the 2017/2018 fire season through this current report period have been collected from the FENZ fire incident reporting database. The NRFA data were obtained as summarised data, not as individual fire occurrence records. These summary data provide historical data from the 1988/1989 fire year for number of fires, area burnt, and broad causation categories. Data related to locations specific to the North Island versus South Island is available from the 1991/1992 fire year. Data related to district is not available as a summary prior to the 2017/2018 fire year, therefore district data are only presented from that point on. The period of record is noted in the respective graphics.

Manual adjustments were made to the 2023/2024 FENZ data following a validation process undertaken with all districts to identify 'significant fires', where a significant fire was deemed to be any fire with an area burnt of 10 hectares or more. Manual adjustments from previous annual report periods were carried forward from the past report.

The data were filtered to only include Vegetation Fires as identified in the incident type group. When duplicate records existed, these were filtered to only include the entry with the largest area. This dataset does not include vegetation fire non-responses or false alarms that required no action.

This report includes revised figures and data compared to the 2022/2023 wildfire summary report due to the completion of missing incident reports[2]. Therefore, there will be differences if comparing the 2022/2023 report to this 2023/2024 summary.

New Zealand's fire weather and climatology data have been summarised from the NIWA Fire Weather System as well as from general NIWA climate updates. In the case of the fire weather and climatology database, the list of stations is updated for every annual New Zealand wildfire summary. Due to this, differences in general values (e.g. within summary tables in District appendices - Appendix 5 onwards) between this report and the previous annual update are expected.

This summary is the most up-to-date and contains data within figures to compare both the 2022/2023 and 2023/2024 years. This comparison between the two years helps identify patterns that are emerging at the district level, as well as to help determine if risk reduction initiatives are having an impact in terms of reducing the impact of fires. The wildfire annual summary is also intended to provide additional information to support the Monthly Fire Danger Outlooks in terms of analogue seasons for comparison of prevailing conditions.

Note that a simple comparison of incident trends from one reporting period to the next is insufficient on its own to determine performance with regards to risk reduction initiatives. It is also important to consider prevailing climatic conditions and significant weather events for any given year, as these have a marked influence on wildfire potential.

[1] Chatham Islands is included in the Wellington District, Stewart Island is included in the Southland District.

[2] Gross, S., Aguilar-Arguello, S., Woods, D., & Clifford, V. 2024. 2022/2023 New Zealand Wildfire Summary. Fire and Emergency New Zealand Publication.

Wildfire statistics

National number of wildfires and area burnt

The 2019/2020 and 1998/1999 years remain the worst on record for number (5994) and area burnt (17,693 ha), respectively (Figure 2).

At a national scale, the total number of fires in 2023/2024 is above the 2022/2023 values, below the 5-year average, below the 10-year average, and above the historical (1988-2022) average (Figure 2).

The total area burnt in 2023/2024 is above the 2022/2023 total, below the 5-year average, below the 10-year average, and below the historical (1988-2022) average (Figure 2).

- There were 4211 fires and 4166 ha burnt between 1st of July 2023 and 30th of June 2024. This is compared to 2465 fires and 1928 ha burnt during the 2022/2023 fire year.
- The most significant fires based on fire size during the 2022/2023 wildfire season include: Pukaki Downs (Mid-South Canterbury), Mt Gerald Station (Mid-South Canterbury) and Port Hills (Canterbury).
- The last 5-year average for total number of wildfires was 4333 and the average area burnt was 6993 ha.
- The last 10-year average for total number of wildfires was 4255 and the average area burnt was 5768 ha.
- The historical average (1988-2022) for total number of wildfires was 3414 and the average area burnt was 5649 ha.

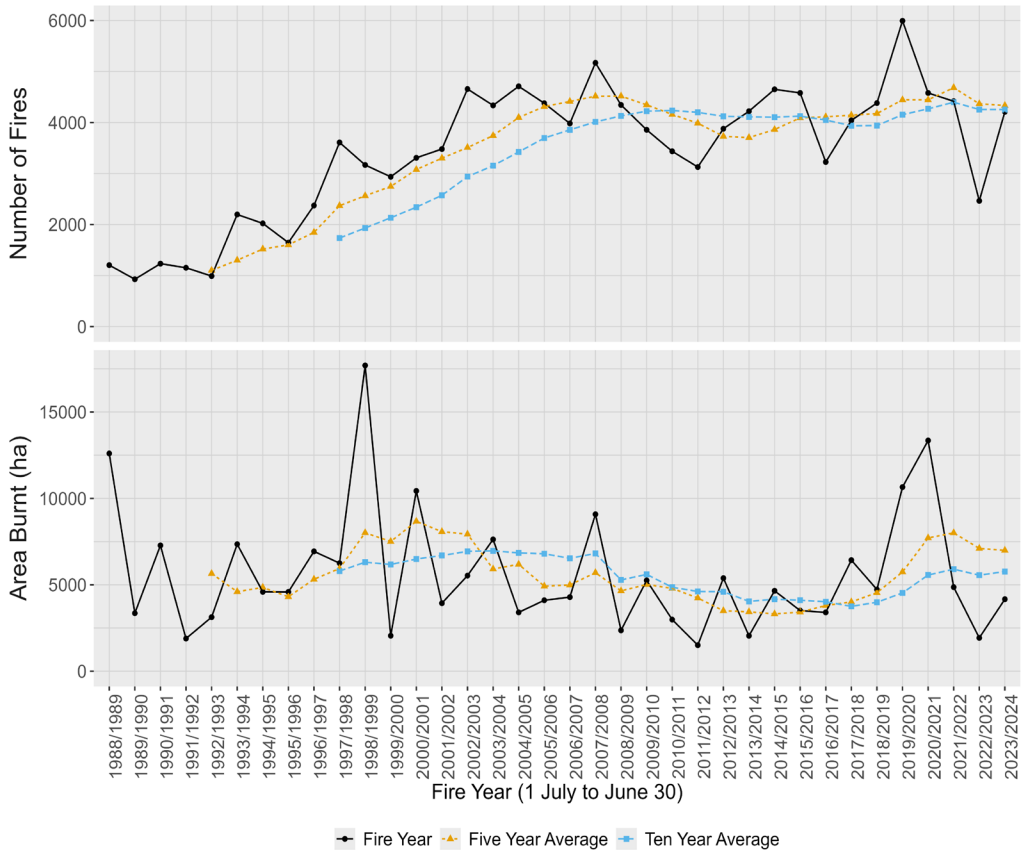

Figure 2. Total number of wildfires (top) and area burnt (bottom) for the last 36 years of wildfire records. Historical average for number of fires per year is 3414, and historical average for area burnt per year is 5649 ha. Note: this dataset does not include vegetation fire, non-responses or false alarms that required no action.

Number of wildfires and area burnt by District and Island

District breakdowns for the total number of wildfires and area burnt are detailed in the Appendices[3].

For the 2023/2024 year:

- The North Island accounted for most of the country's wildfires (62%) (Figure 3). This is consistent with the patterns seen across the 30-year historical record (Figure 5).
- The South Island accounted for most of the country's area burnt by wildfires (89%) (Figure 4). This is consistent with the patterns seen across the 30-year historical record (Figure 5).
- Northland (346) and Canterbury (670) had the highest number of wildfires on the North and South Island respectively (Figure 3).
- Northland (126 ha) and Mid-South Canterbury (2370 ha) Districts experienced the greatest area burnt on the North and South Island respectively (Figure 4).
- Districts that experienced an increase in both number of wildfires and area burnt compared to the previous year include: Waitematā, Counties Manukau, Bay of Plenty, Tairāwhiti, Taranaki, Hawke's Bay, Wellington, Canterbury, and Mid-South Canterbury.
- Districts that experienced an increase in number of wildfires and a decrease in area burnt compared to the previous year include: Northland, Waikato, Manawatū-Whanganui, Nelson Marlborough, and Otago.
- Districts that experienced a decrease in both number of wildfires and area burnt compared to the previous year include: West Coast and Southland.
- Districts that experienced an increase in number of wildfires with no change in the area burnt compared to the previous year include: Auckland (A1).
- Fifteen districts experienced an increase and 2 experienced a decrease in the total number of wildfires compared to the previous year (A1).
- Nine districts experienced an increase, 7 experienced a decrease and 1 experienced no change in area burnt compared to the previous year (A1).

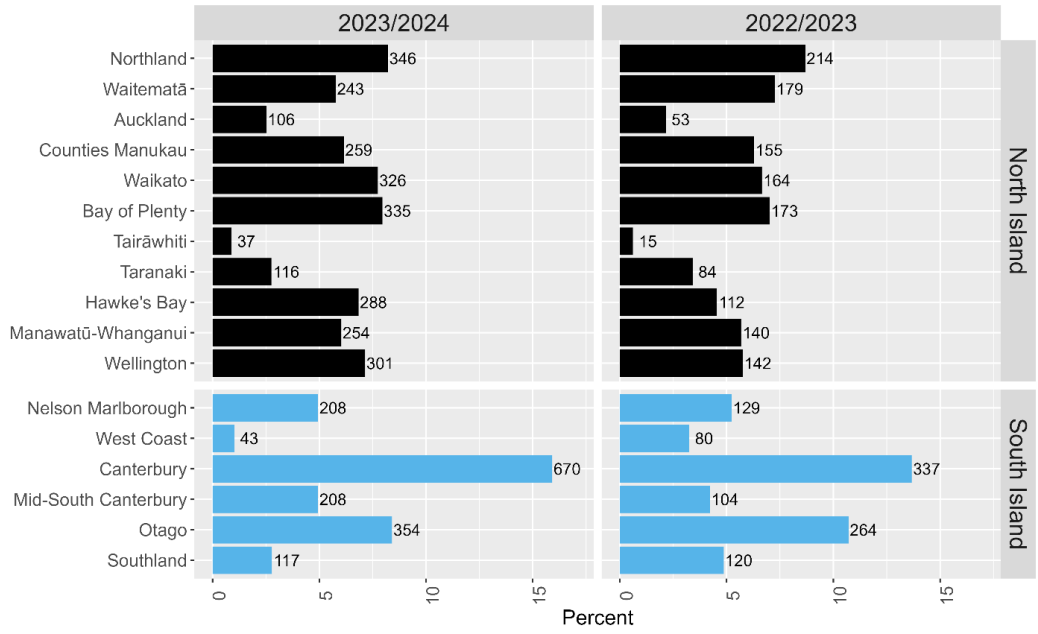

Figure 3. Percent of the total number of wildfires by District for North Island (black bars) and South Island (blue bars). Data is presented for 2023/2024 (left) and 2022/2023 (right). The number of wildfires is noted to the right of the bar.

[3] Area burnt is considered to have increased/decreased when the change is +/- 1 ha. This buffer was added due to the quality of data.

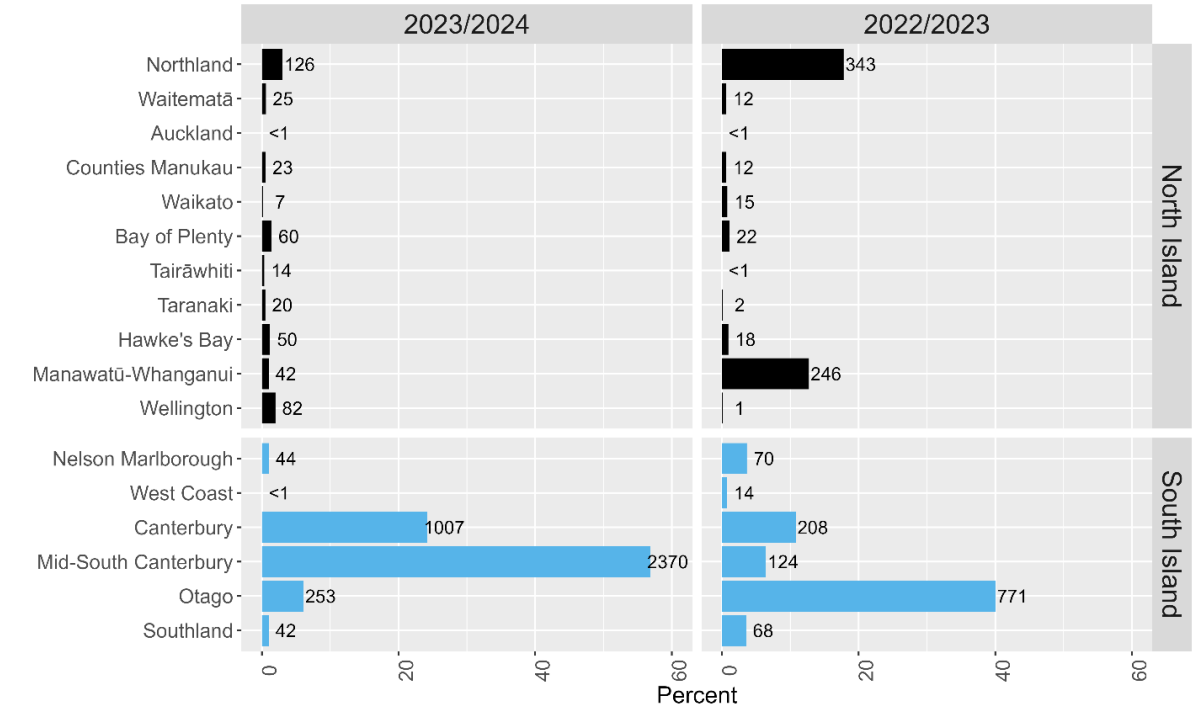

Figure 4. Percent of the total area burnt by District for North Island (black bars) and South Island (blue bars). Data is presented for 2023/2024 (left) and 2022/2023 (right). The total area burnt (ha) is noted to the right of the bar.

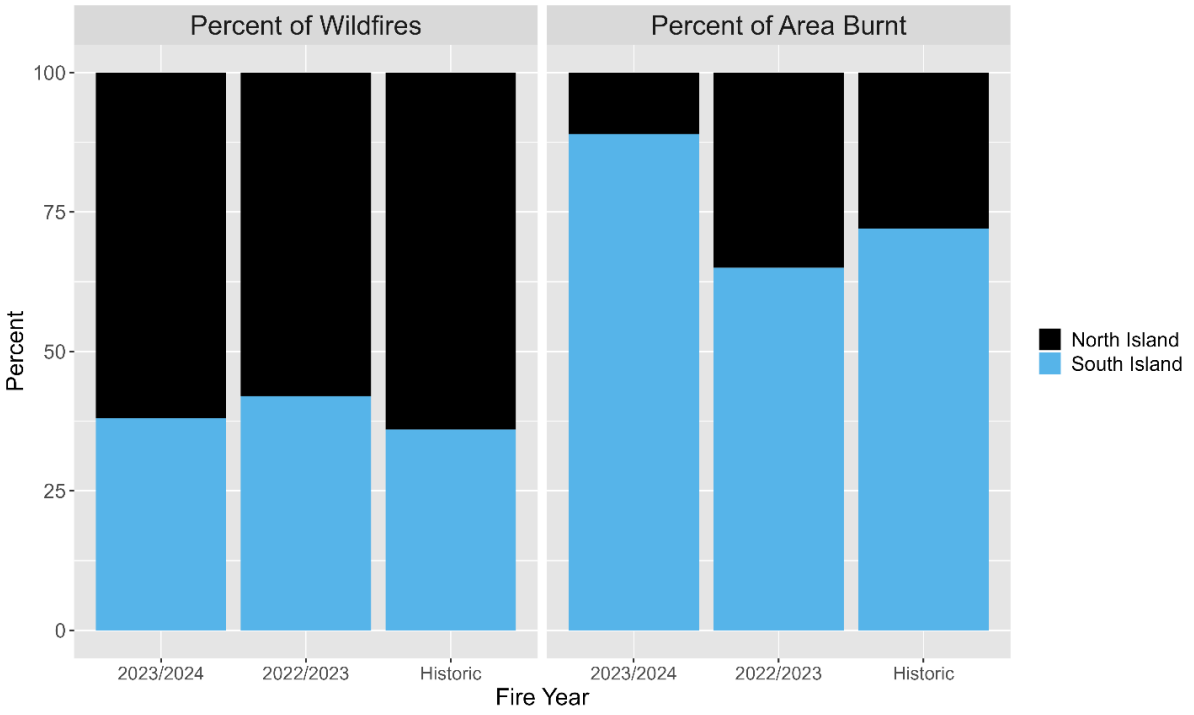

Figure 5. Overall percent of wildfires and percent of area burnt for North Island and South Island. Data is presented for the 2023/2024, 2022/2023, and 30-year historic record starting in 1991/1992 (not including 2023/2024 and 2022/2023).

Cause categories

There are 45 individual heat source categories used in the fire incident reporting database for the 2023/2024 annual wildfire analysis. These were merged and grouped into 12 broad cause categories to simplify illustration of the data (Appendix 2). Cause statistics by District are summarised in the Appendices.

- For 2023/2024, the top two broad causes contributing to the total number of wildfires were Pile Burn and Cigarettes, Matches, Candles, which is the same as in 2022/2023 (Figure 6).
- For 2023/2024, the top two broad causes contributing to the total area burnt were Industry and Equipment, compared to Pile Burn and Explosives, Fireworks in 2022/2023 (Figure 7).

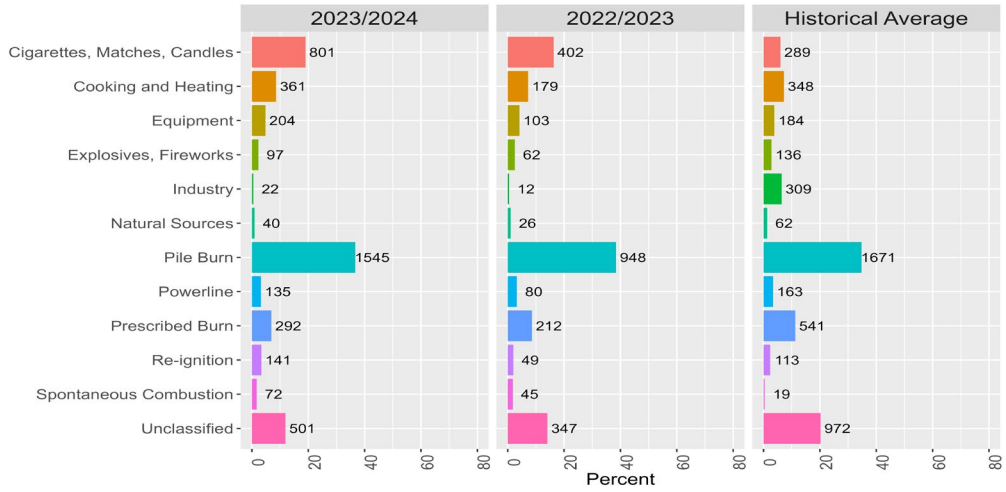

Figure 6. Percent of wildfires by cause for the 2023/2024 (left), 2022/2023 (middle), and 34-year historical average (right) from 1988/1989 (not including 2023/2024 and 2022/2023). The total number of wildfires is noted to the right of the bar. Note that powerlines were included as a new category in 2021/2022 report. Data related to powerlines has been included starting from the 2019/2020 fire year, therefore the powerline average is limited to the years that this category was considered.

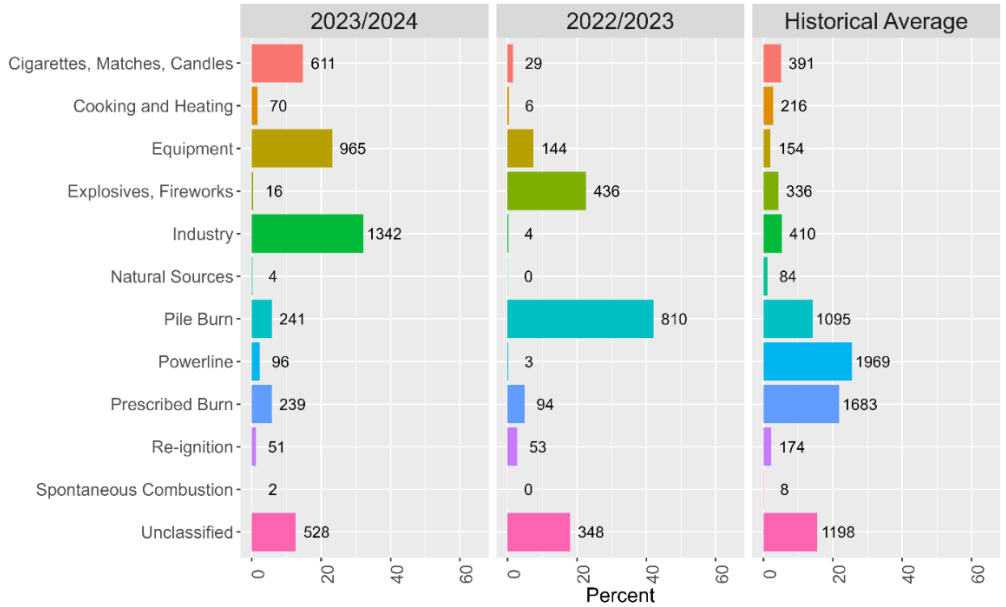

Figure 7. Percent of area burnt by cause for the 2023/2024 (left), 2022/2023 (middle), and 34-year historical average (right) from 1988/1989 (not including 2023/2024 and 2022/2023). The total area burnt (ha) is noted to the right of the bar. Note that powerlines were included as a new category in the 2021/2022 report. Data related to powerlines has been included starting from the 2019/2020 fire year, therefore the powerline average is limited to the years that this category was considered.

Review of climate and weather for 2023/2024

Summaries for the period July 2023 through June 2024 are presented, therefore two winter summaries are included in this report. There was a myriad of climate drivers that contributed to the unusual warmth and wetness in the 2022/2023 season.

One major climate driver of this fire season was characterised by the transition from a La Niña to an El Niño. El Niño tends to be associated with lower-than-normal air pressure to the south and southeast of the country and higher-than-normal air pressure to the north. This can lead to an increased north-to-south pressure gradient, intensifying spring-time westerly winds and fronts as they move across the country. One atypical element of the building El Niño was a persistent blocking high pressure system to the south-east of New Zealand, a holdover from La Niña, contributing to additional heavy rainfall events in the north and east of the North Island. In early 2024, a weakening El Niño event in the equatorial Pacific delivered more westerly (summer 2023-24) and southwesterly (autumn) winds than normal over New Zealand.

December and January were the country's warmest months compared to normal, at 1.5°C and 1.3°C above the 1991-2020 monthly average, respectively. Meanwhile, May and March were relatively cool.

Winter 2023

Winter 2023 began on a warm note, with Aotearoa New Zealand observing its 5th-warmest June on record. The unusual warmth continued into the middle part of the season, with the country registering its 4th-warmest July on record. The nationwide average temperature for winter was 9.2°C, 0.6°C above the 1991-2020 average. Although winter was dry for many, several exceptional rainfall events occurred during June and July. Most notable was the 22-24 July rainfall event that primarily impacted Canterbury. During this event, Christchurch, Akaroa, Leeston and Woodend each observed their wettest winter day on record. Above normal soil moisture was observed in isolated areas inland of Dunedin, with below normal soil moisture observed for southern parts of the Mackenzie Basin.

Spring 2023

Spring 2023 was characterised by a large area of higher-than-normal mean sea level pressure (MSLP) over and surrounding Aotearoa New Zealand. Resulting in more northeasterly winds than normal for eastern and northern parts of the North Island, with westerly winds prevailing for the lower South Island. Temperatures were relatively warm for the season overall, with above average temperatures (+0.51°C to +1.20°C of average) observed in parts of every region of the country. The nationwide average temperature for spring was 12.8°C, ranking as New Zealand's 10th-warmest spring on record. Rainfall was well above normal (>149% of normal) in Gisborne, northern Hawke's Bay, and central Northland. Above normal (120-149% of normal) rainfall was observed in Bay of Plenty, southern Waikato, coastal parts of southern Hawke's Bay and Wairarapa, and inland parts of Otago. In contrast, rainfall was below normal (50-79% of normal) in parts of the Greater Wellington region, the northern South Island, and Banks Peninsula. Elsewhere, rainfall was generally near normal (80-119% of normal). At the end of spring, soil moisture levels were well above normal for eastern and inland parts of the North Island from western Bay of Plenty to Wairarapa, as well as the Far North. Below normal soil moisture levels were observed in western Waikato, Kāpiti Coast, Wellington, southern Canterbury, South Otago, and southern Southland.

Summer 2023/2024

Summer 2023-24 was characterised by higher-than-normal air pressure over and east of the North Island, and lower-than-normal air pressure to the south of the country. It was a warm summer overall for most of Aotearoa New Zealand, with an average temperature of 17.6°C. Temperatures were above average (0.51-1.20°C above average) or well above average (>1.20°C above average) throughout the North Island, as well as for northern, eastern, and inland parts of the South Island. Rainfall was below normal (50-79% of normal) or well below normal (<50% of normal) for northern, eastern, and inland

parts of the South Island, as well as for southern and western parts of the North Island, eastern Bay of Plenty, and much of Northland. Rainfall was above normal (120-149% of normal) or well above normal (>149% of normal) across central parts of the North Island from Waitomo east to parts of Hawke's Bay and Gisborne, as well as for western and southern parts of the South Island. Soil moisture levels were lower than normal in Northland, Auckland, Coromandel Peninsula, eastern Bay of Plenty, Gisborne, southern Hawke's Bay, eastern Taranaki, Manawatū-Whanganui, Wellington-Wairarapa, eastern Tasman, Nelson, Marlborough, Canterbury, and eastern Otago.

Autumn 2024

The season was characterised by a weakening El Niño, which drove the southwesterly air flow anomaly from the Southern Ocean. In addition, New Zealand coastal water temperatures were slightly below average during autumn, which contributed to cooler air temperatures. The nationwide average temperature for autumn 2024 was 12.8°C, making this the coolest autumn since 2012, and the 4th coolest autumn since 2000. However, the season did feature monthly variations in temperature. The prevailing southwesterlies during autumn resulted in occasional fronts impacting the lower South Island, West Coast, and western North Island, especially during March and April. An exception to the overall autumn rainfall pattern occurred in the eastern North Island in May, when a heavy rain event affected areas from Gisborne to Wairarapa from 20-21 May. One of the most significant events during the season was an atmospheric river[4] that brought high-impact weather to the country from 9-12 April. Very heavy rain affected the West Coast, where high-elevation stations including Tuke Tuke and Cropp Waterfall received around 1,000 mm of rain, or about 10% of their annual normal rainfall, in just three days. However, soils were drier than normal for northern, eastern, and inland parts of the South Island, and western and southern parts of the North Island from southern Taranaki to the Greater Wellington region (excluding Wellington city). Soils were wetter than normal about Mahia Peninsula.

Winter 2024

Winter 2024 mean sea level air pressure was higher than normal over east and south of Aotearoa New Zealand. This was associated with more easterly and northeasterly winds than normal, particularly over the South Island, with relatively few cold southerly outbreaks. This resulted in warmer than average temperatures throughout the season. Overall, the nationwide average temperature for winter was 9.6°C. June and July were dry months for many parts of the country, although eastern and central areas of Otago were relatively wet during these months. At the end of winter, soil moisture levels were near normal for most of the country.

[4] An atmospheric river is a narrow corridor of concentrated moisture in the atmosphere, capable of carrying large amounts of water vapour.

Fuel moisture status and Fire Danger

Weather is the most powerful factor driving vegetation fire behaviour. Weather factors (temperature, relative humidity, windspeed and rainfall) directly affect vegetation fuel conditions and whether a fire will start and spread. Areas that experience below normal soil and fuel moisture dryness are at an increased risk of having a higher number of fires and larger area burnt. The Drought Code (DC) and Buildup Index (BUI) as derived from the New Zealand Fire Weather Index (FWI) System are useful indicators of seasonal drought effects and the amount of fuel available for combustion.

The higher the rating for DC and BUI, the drier the subsurface, medium, and heavy fuels are, and therefore, the more difficult and extended fire control will be. District summaries on how dry conditions were during this fire season are highlighted in the Appendices.

Graphs are also available on the Scion website for those who are interested in comparing how individual weather stations are tracking for BUI and DC, as well as Cumulative Daily Severity Ratings (CDSR), over the current and previous fire season and against historical averages: https://www.scionresearch.com/rural-fire-research/tools/trends

North Island

Across the North Island, average fuel moisture (DC and BUI) values were typically on trend with the historical average, although DC peaked later (March) and slightly higher, remaining elevated through autumn and early winter. Conversely, BUI trended slightly lower from October to March, although the February peak was similar to the historical average. Peak drought (NZDI) conditions ranged from Dry to Extremely Dry, with only Tairāwhiti and Taranaki not registering any dryness signature during 2023/2024.

- 2023/2024 mean DC values for the North Island tended to follow the historical trend, although were slightly lower from October to February before exceeding the historic mean values from March through to June. While historically February has the highest DC values, March 2024 had the highest DC for the reporting year, well above the historical average. When averaged over the entire year and compared to 2022/2023, all districts were well above trend (Appendix 1). No new maximum DC values were observed (Appendices 6-16).
- DC trends observed at individual representative weather stations on the North Island during 2023/2024 were similarly above average, particularly during the autumn months, with DC values remaining elevated much later in the season compared to the historical trend. The exception was Bay of Plenty (Athol Raws) which was below the historical average for all but brief periods in December, February and May (Figure 9).
- 2023/2024 mean BUI values for the North Island tended to follow the historical trend although were below average from October to March. Peak dryness was observed in February only compared to the usual period extending across January and February. Despite this, when averaged over the entire year and compared to 2022/2023, all districts were above trend (Appendix 1). New maximum BUI's were observed in Tairāwhiti in May (92), Hawke's Bay in July (57) and Wellington in February (192) (Appendices 6-16).

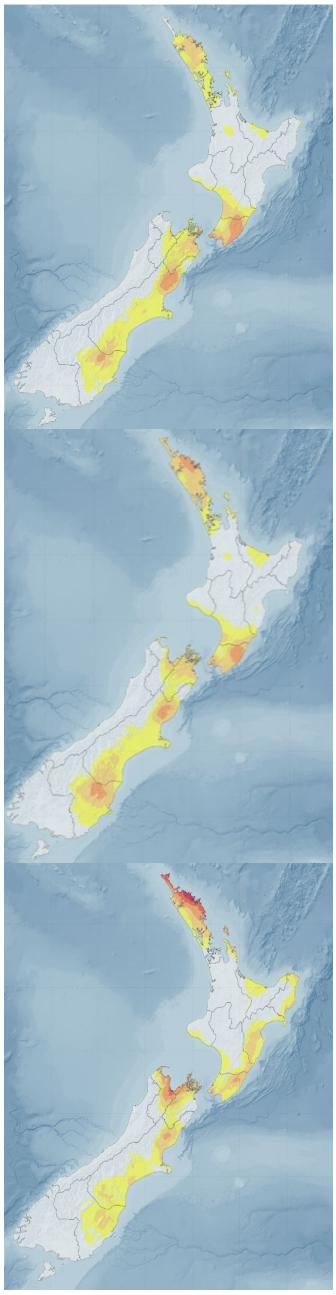

Figure 8. NIWA's New Zealand Drought Index (NZDI) maps, which highlights locations experiencing drought or dry conditions throughout the wildfire season (top: 2024-02-19, middle: 2024-03-04, bottom: 2024-04-10). Dark red indicates severe drought conditions; light red indicates drought; orange indicates extremely dry to very dry conditions; yellow indicates dry conditions.

- Based on the NZDI, most North Island districts experienced some seasonal dryness during 2023/2024. The highest category reached was Extremely Dry in three districts (Northland, Hawke's Bay and Wellington), with Very Dry in one district (Manawatū-Whanganui), and Dry in five districts (Waitematā, Auckland, Counties Manukau, Waikato and Bay of Plenty). (Figure 8, Appendix 1).

South Island

Across the South Island, average fuel moisture (DC and BUI) values were typically on or above trend with the historical average. Both monitored values exceeded the historical average from December and remained notably higher through to the end of the reporting year. Peak drought (NZDI) conditions ranged from Dry to Extremely Dry, with only the West Coast not registering any dryness signature during 2023/2024.

- 2023/2024 mean DC values for the South Island tended to follow the historical trend, although were slightly lower from July to November before exceeding the historic mean values from December through to June. March 2024 aligned with the historical trend as the month with the highest DC for the reporting year, but the value was significantly higher than the average. When averaged over the entire year and compared to 2022/2023, four districts were either above or well above trend (Nelson Marlborough, Canterbury, Mid-South Canterbury and Otago) while two districts were below (West Coast and Southland) (Appendix 1). A new maximum DC value was observed in Canterbury in June (719) (Appendices 17-22).
- DC trends observed at individual representative weather stations on the South Island during 2023/2024 were predominantly above average, particularly during the six months of 2024 when DC values remained significantly elevated compared to the historical trend. The exceptions were West Coast (Hokitika Aws) and Southland (Wreys Bush Raws) which were both below the historical average, although the West Coast station did periodically briefly spike above average, and the Southland station was above average for a period during November and December (Figure 10).
- 2023/2024 mean BUI values for the South Island followed the historical trend although were above average for all but July, October and November. Peak dryness was observed over an extended period from January to March. When averaged over the entire year and compared to 2022/2023, four districts were either above or well above trend (Nelson Marlborough, Canterbury, Mid-South Canterbury and Otago) while two districts were similar (West Coast and Southland) (Appendix 1). New maximum BUI's were observed in Nelson Marlborough in June (81), Mid-South Canterbury in December (138), January (189) and March (170), and Otago in June (81), while Southland matched its historical maximum in June (21) (Appendices 17-22).
- Based on the NZDI, the West Coast was the only South Island district to record no seasonal dryness. The highest category reached during 2023/2024 was Extremely Dry in one district (Nelson Marlborough), with Very Dry in four districts (Canterbury, Mid-South Canterbury, Otago and Southland). (Figure 8, Appendix 1).

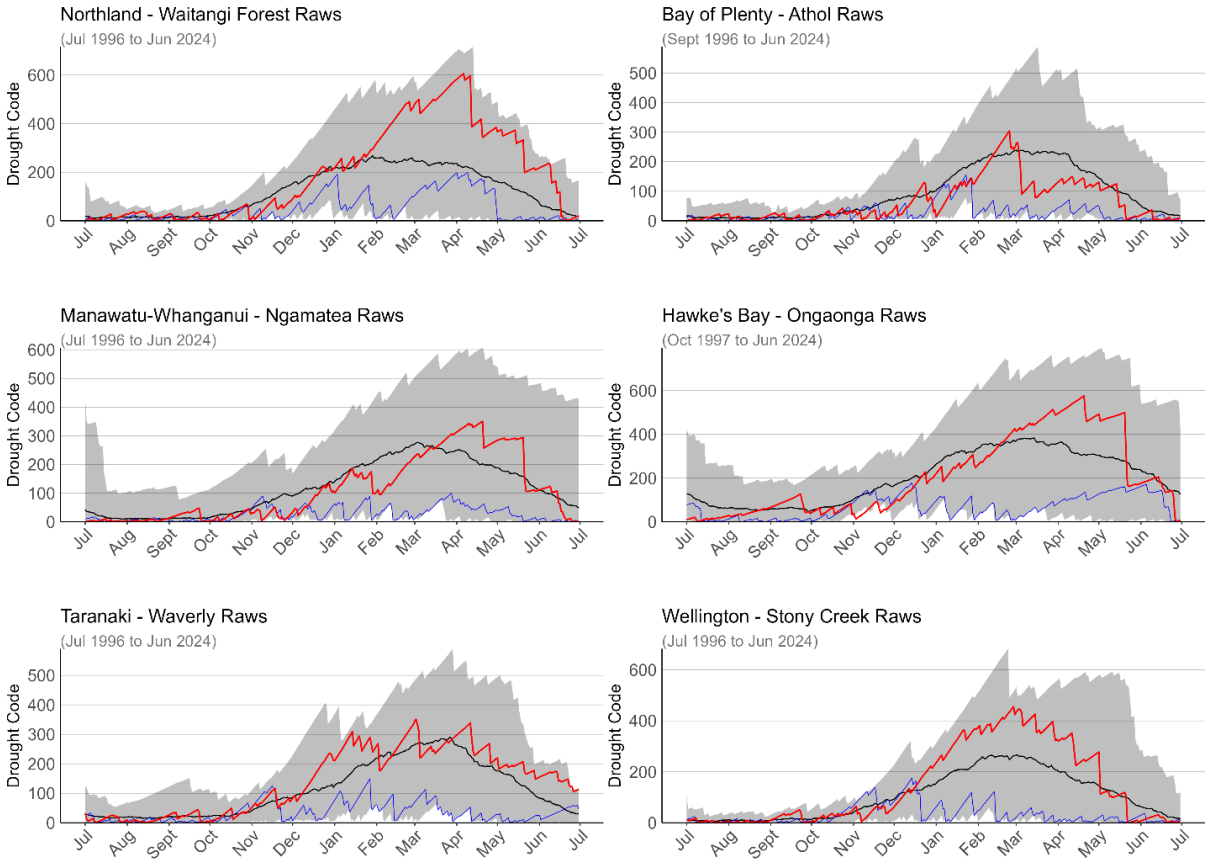

Figure 9. Daily Drought Code (DC) trends for a selection of representative stations across the North Island. 2023/2024 is represented by the red line, 2022/2023 is represented by the blue line, the historical average is represented by the black line and the grey shaded area represents the historical minimum/maximum values over the length of the entire weather station record as noted below the station name. Note the y-axis scale varies between stations.

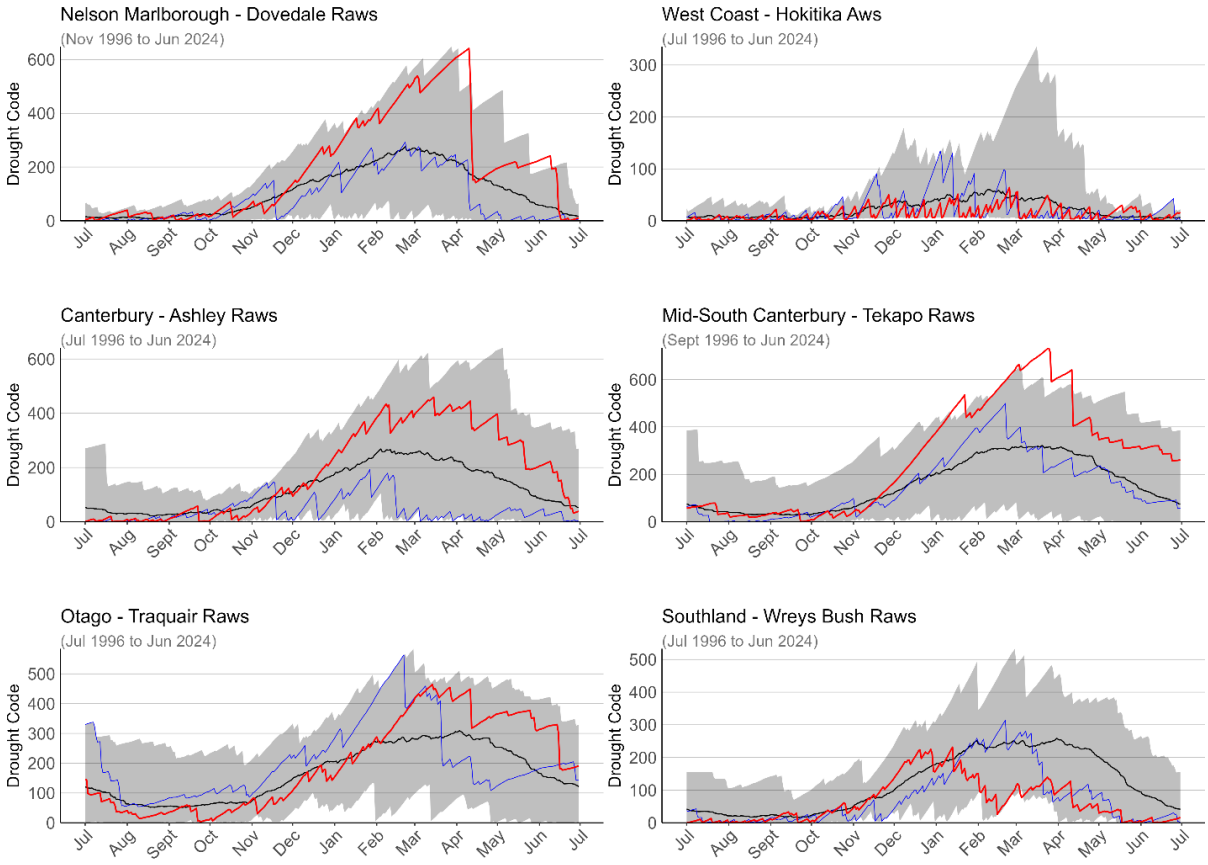

Figure 10. Daily Drought Code (DC) trends for a selection of representative stations across the South Island. 2023/2024 is represented by the red line, 2022/2023 is represented by the blue line, the historical average is represented by the black line and the grey shaded area represents the historical minimum/maximum values over the length of the entire weather station record as noted below the station name. Note the y-axis scale varies between stations.

Appendices

Appendix 1 2023/2024 and 2022/2023 incident wildfire statistics and fire weather indices/codes

District	Number	% (#)	Comparison (#)	Top causes (#)	Ha	% (Ha)	Comparison (Ha)	Top causes (Ha)	BUI	DC	CDSR	Drought (NZDI)
Northland	346	8	Increase	Pile Burn	126	3	Decrease	Unclassified	Above	Well Above	Well Above	Extremely Dry
Waitematā	243	6	Increase	Pile Burn	25	1	Increase	Pile Burn	Above	Well Above	Above	Dry
Auckland	106	3	Increase	Cigarettes, Matches, Candles	< 1	< 1	No Change	Cigarettes, Matches, Candles				Dry
Counties Manukau	259	6	Increase	Pile Burn	23	1	Increase	Pile Burn	Above	Well Above	Well Above	Dry
Waikato	326	8	Increase	Pile Burn	7	< 1	Decrease	Cigarettes, Matches, Candles	Slightly Above	Well Above	Above	Dry
Bay of Plenty	335	8	Increase	Pile Burn	60	1	Increase	Cigarettes, Matches, Candles	Above	Well Above	Above	Dry
Tairāwhiti	37	1	Increase	Unclassified	14	< 1	Increase	Pile Burn	Well Above	Well Above	Well Above	None
Taranaki	116	3	Increase	Pile Burn	20	< 1	Increase	Prescribed Burn	Above	Well Above	Above	None
Hawke's Bay	288	7	Increase	Pile Burn	50	1	Increase	Pile Burn	Well Above	Well Above	Well Above	Dry to Extremely Dry
Manawatū-Whanganui	254	6	Increase	Pile Burn	42	1	Decrease	Prescribed Burn	Similar and Well Above	Well Above	Well Above	Dry to Very Dry

District	Number	% (#)	Comparison (#)	Top causes (#)	Ha	% (Ha)	Comparison (Ha)	Top causes (Ha)	BUI	DC	CDSR	Drought (NZDI)
Wellington	301	7	Increase	Pile Burn	82	2	Increase	Equipment	Well Above	Well Above	Well Above	Dry to Extremely Dry
Nelson Marlborough	208	5	Increase	Pile Burn	44	1	Decrease	Re-ignition	Well Above	Well Above	Well Above	Very Dry to Extremely Dry
West Coast	43	1	Decrease	Pile Burn	< 1	< 1	Decrease	Cigarettes, Matches, Candles	Similar	Below and Similar	Below	None
Canterbury	670	16	Increase	Pile Burn	1007	24	Increase	Cigarettes, Matches, Candles	Well Above	Well Above	Well Above	Dry to Very Dry
Mid-South Canterbury	208	5	Increase	Pile Burn	2370	57	Increase	Industry	Above and Well Above	Above	Well Above	Very Dry
Otago	354	8	Increase	Pile Burn	253	6	Decrease	Powerline	Above	Above	Above	Very Dry
Southland	117	3	Decrease	Pile Burn	42	1	Decrease	Pile Burn	Similar	Below	Below	Dry to Very Dry

BUI, DC and CDSR comparisons are based on current year percentage of deviation compared to the deviation of the previous year average. ‘Well Above’ >= 95%, ‘Above’ is between 35% and 95%, ‘Slightly Above’ between 15% and 35%, ‘Similar’ between 15% and -15%, ‘Slightly Below’ between -15% and -35%, ‘Below’ between -35% and -95%, ‘Well Below’ < -95%. Comparisons were done per day and month, to identify the most frequent result per month and subsequently the most common result among the 12 months. More than one result is displayed in the table when more than one result had the same frequency.

The change in FENZ districts has resulted in only one station representing the Auckland District (Auckland MOTAT Ews) from NIWA data. This station was setup in February 2022, therefore there is only data from February 2022 to June 2024).

Appendix 2 Broad wildfire cause categories and the underlying individual heat source categories used for analysis of the 2023/2024 and 2022/2023 incident statistics

Cause Group	Heat Source
Cigarettes, Matches, Candles	Candle
	Cigarette, Cigar or Smoking materials
	Matches or Lighters (Suspicious)
Cooking and Heating	BBQ
	Embers, Ashes
	Outside fire for warmth / Campfire
	Umu / Hangi
Equipment	Birds nest
	Chainsaws
	Exhaust heat / Spark
	Farm machinery
	Malfunction
	Motorbike, Truck or Car
	Mowers and slashers
	Welding, grinding, cutting
Explosives, Fireworks	Explosives, fuses, and associated equipment
	Fireworks / Pyrotechnics
	Flare: Warning, Safety, Boat
	Incendiary devices, Molotov cocktail
	Sky / Chinese lanterns
	Tracer ammunition
Industry	Bee-Keeping smoking tool
	Earthwork or forestry machinery
	Electrical Fence
	Maintenance crews
	Ropes / binding
Natural Sources	Animals
	Geothermal Activity
	Lightning discharge
	Solar heat: Sun (magnified through glass etc)
Pile Burn	Debris burning
	Outside bonfire
	Refuse burning
	Windrow / slash pile
Powerline	Clashing / Arcing power lines
	Trees
Prescribed Burn	Broadcast slash burn
	Crop burn
	Scrub and tussock burn
Re-ignition	Re-ignition, Rekindle from previous fire
Spontaneous Combustion	Bark or sawdust spontaneous ignition
	Hay/silage spontaneous ignition
	Skid site spontaneous ignition
Unclassified	Exposure Fire – unable to classify
	Information not recorded/Unknown

Appendix 3 Average Monthly Fire Season Severity Ratings (MSR) for the 2023/2024 and 2022/2023 wildfire season (October through April)

Monthly Severity Rating (MSR) is the monthly average of the Daily Severity Rating (DSR) values from the Fire Weather Index System. DSR is a function of the FWI value, developed for use in comparing different years and weather stations. DSR and MSR capture the effects of both wind and fuel dryness on potential fire intensity, and therefore control difficulty and the amount of work required to suppress a fire. It allows the comparison of fire weather severity between years.

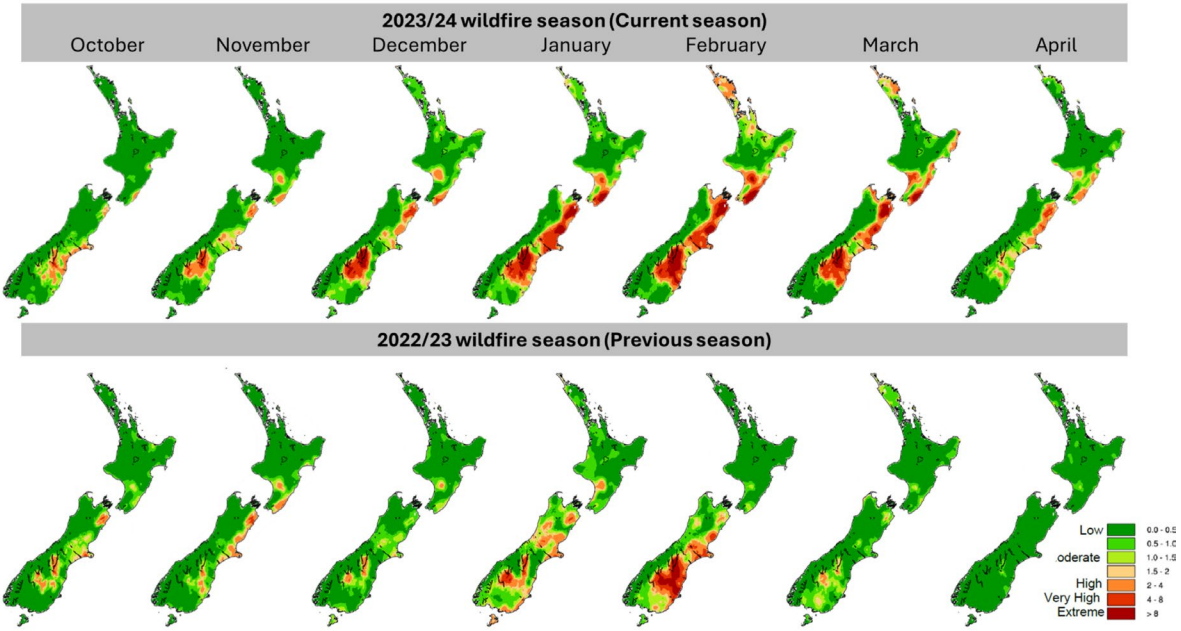

Figure A3. Monthly Severity Rating (MSR) across the country for 2023/2024 (top) and 2022/2023 (bottom).

Appendix 4 Average Monthly Drought Code (DC) values for the 2023/2024 and 2022/2023 wildfire seasons (October through April)

The DC is a rating of the average moisture content of deep, compact, organic soil layers. It is a useful indicator of the dryness of large woody material, seasonal drought effects on forest fuels and the amount of smouldering in deep duff layers and large logs. Little mop-up needs to happen with low values (white), whereas mop-up will be difficult and extensive with values over 300 points (dark brown colouration).

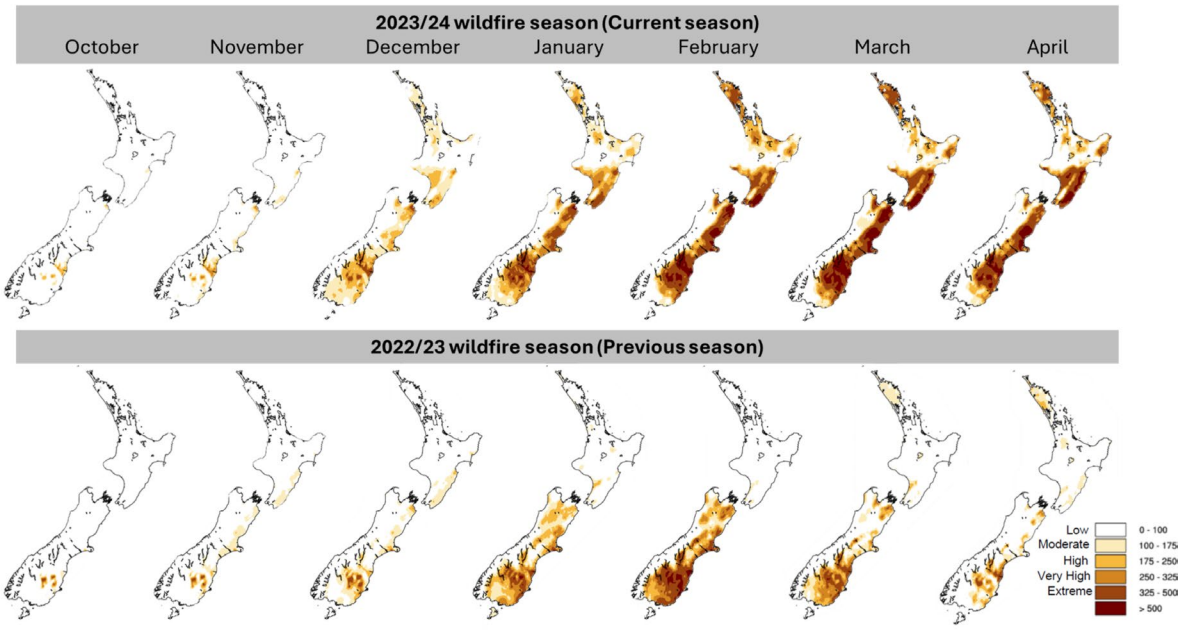

Figure A4. Monthly Drought Code (DC) across the country for 2023/2024 (top) and 2022/2023 (bottom).

Appendix 5 District Appendices

The following appendices contain District specific summaries. For each District, information is provided on:

1. Number of wildfires and area burnt (ha) by district and by broad cause categories,
2. Drought Code (DC) values (maximum and mean), and
3. Buildup Index (BUI) values (maximum and mean).

To view individual fuel moisture station trends, visit: https://www.scionresearch.com/rural-fire-research/tools/trends

Key considerations when reviewing the District Summaries:

- The Drought Code (DC) is a rating of the average moisture content of deep, compact, organic soil layers. A colour scale is used as a visual indicator of high (red, orange, and yellow) and low (blue) DC values (A5.1).
- The Buildup Index (BUI) combines the Duff Moisture Code (DMC) and Drought Code (DC) to represent the total amount of fuel available for combustion. A colour scale is used as a visual indicator of high (red, orange, and yellow) and low (blue) BUI values (A5.1).
- The number of weather stations and years of station record for Drought Code and Buildup Index and data varies by District. A true comparison between historic and current cannot be made because information presented is based on all available data at the time of the report. Over the length of the record stations are both added and discontinued.
- The reported total area burnt per broad cause category in the individual District Summaries may differ to that displayed in Figure 4 and Appendix 1. This is due to the rounding that occurs within the individual category totals to generate the District Summaries compared to the combined total used for the overall summary graphics.
- New maximum values recorded in either the 2023/2024 year or the previous 2022/2023 year are identified in bold within the DC and BUI tables for each district.

Table A5.1 Colour scale used as a visual indicator of high and low DC and BUI values.

DC	Mop-up Needs		BUI	Level of difficulty for controlling a fire		Fire Danger
0-99	Little mop-up needs		0-15	Easy Control		Low
100-175	Moderate		16-30	Not Difficult		Moderate
176-249	Difficult		31-45	Difficult		High
250-299	Difficult & Extended		46-59	Very Difficult		Very High
300+	Extreme & Extensive		60+	Extremely Difficult		Extreme

Appendix 6 Northland

Wildfire Statistics

- During the 2023/2024 wildfire season, Northland accounted for 8% of the total number of wildfires in the country and 3% of the area burnt (Figure 3 & 4, Appendix 1, Table A6.1).
- There has been an Increase in the number of wildfires and a Decrease in the total area burnt during 2023/2024 compared to 2022/2023.
- The dominant cause of wildfires was Pile Burn.
- The primary cause that contributed to the total area burnt was Unclassified.

Fuel Moisture Status

- In 2023/2024 Drought Code (DC) mean values typically followed the historical trend until realising sustained higher values from February, peaking in March, and not reducing to the historical range until June. Maximum DC was in the “Extreme” category from January to June, peaking in April, with the autumn months typically drier than summer. No new maximum values were observed. (Table A6.2)
- Buildup Index (BUI) mean values typically followed the historical trend but were below the historical average in January before peaking above average in February, then returning to trend in March. Maximum BUI was in the “Extreme” category from January to April, peaking in February. No new maximum values were observed. (Table A6.3)

Table A6.1 Number of wildfires and area burnt (ha) in Northland for 2023/2024 and 2022/2023 fire years by broad cause categories.

Value	Fire Year	Cigarettes, Matches, Candles	Cooking and Heating	Equipment	Explosives, Fireworks	Industry	Natural Sources	Pile Burn	Powerline	Prescribed Burn	Re-ignition	Spontaneous Combustion	Unclassified	Total
Number of Wildfires	2023/2024	43	17	10	3	4	4	191	6	36	7	3	22	346
	2022/2023	18	7	8	2	1	2	114	10	25	0	0	27	214
Area Burnt (ha)	2023/2024	4	1	22	0	0	0	32	0	14	1	1	52	127
	2022/2023	1	0	3	0	0	0	50	0	2	0	0	287	343

Table A6.2 Drought Code (DC) values (maximum and mean) for 2023/2024, 2022/2023 and the historical average, based on values averaged across all Northland District weather stations. The colour scale is a visual indicator of high (red, orange, and yellow) and low (blue) DC values. Fuel moisture data covers the last 27 years of data. The historic period is from 1996 through June 2022.

Statistic	Period	Stations	July	August	September	October	November	December	January	February	March	April	May	June
Max	2023/2024	24	39	67	63	86	157	280	402	555	636	683	497	438
	2022/2023	27	136	73	40	94	94	189	328	220	272	321	215	28
	Historic	24	320	335	355	400	511	617	630	718	798	791	708	484
Mean	2023/2024	24	8	18	15	29	59	132	197	348	405	344	225	75
	2022/2023	27	17	14	12	32	24	61	79	50	143	151	13	8
	Historic	24	14	13	17	37	82	157	232	261	251	198	119	41

Table A6.3 Buildup Index (BUI) values (maximum and mean) for 2023/2024, 2022/2023 and the historical average, based on values averaged across all Northland District weather stations. The colour scale is a visual indicator of high (red, orange, and yellow) and low (blue) BUI values. Fuel moisture data covers the last 27 years of data. The historic period is from 1996 through June 2022.

Statistic	Period	Stations	July	August	September	October	November	December	January	February	March	April	May	June
Max	2023/2024	24	9	10	15	19	29	49	62	110	102	90	34	18
	2022/2023	27	22	24	13	23	24	46	46	31	53	53	9	8
	Historic	24	30	32	59	75	95	140	167	213	223	147	132	38
Mean	2023/2024	24	2	3	5	6	12	19	22	49	35	23	9	3
	2022/2023	27	4	4	4	8	6	12	13	10	23	12	2	2
	Historic	24	2	3	5	10	17	27	40	38	31	17	7	2

Appendix 7 Waitematā

Wildfire Statistics

- During the 2023/2024 wildfire season, Waitematā accounted for 6% of the total number of wildfires in the country and 1% of the area burnt (Figure 3 & 4, Appendix 1, Table A7.1).
- There has been an Increase in both the number of wildfires and the total area burnt during 2023/2024 compared to 2022/2023.
- The dominant cause of wildfires was Pile Burn.
- The primary cause that contributed to the total area burnt was Pile Burn.

Fuel Moisture Status

- In 2023/2024 Drought Code (DC) mean values typically followed the historical trend, peaking in February. Maximum DC was in the “Extreme” category from February to May, peaking in April, with the autumn months significantly drier than summer. No new maximum values were observed. (Table A7.2)
- Buildup Index (BUI) mean values typically followed the historical trend, peaking in February. Maximum BUI peaked in the “Extreme” category in February. No new maximum values were observed. (Table A7.3)

Table A7.1 Number of wildfires and area burnt (ha) in Waitematā for 2023/2024 and 2022/2023 fire years by broad cause categories.

Value	Fire Year	Cigarettes, Matches, Candles	Cooking and Heating	Equipment	Explosives, Fireworks	Industry	Natural Sources	Pile Burn	Powerline	Prescribed Burn	Re-ignition	Spontaneous Combustion	Unclassified	Total
Number of Wildfires	2023/2024	55	16	7	9	1	0	112	12	10	1	4	16	243
	2022/2023	28	10	8	10	0	0	70	13	9	0	2	29	179
Area Burnt (ha)	2023/2024	0	1	0	2	0	0	20	0	0	0	0	2	25
	2022/2023	0	1	0	0	0	0	3	0	8	0	0	0	12

Table A7.2 Drought Code (DC) values (maximum and mean) for 2023/2024, 2022/2023 and the historical average, based on values averaged across all Waitematā District weather stations. The colour scale is a visual indicator of high (red, orange, and yellow) and low (blue) DC values. Fuel moisture data covers the last 27 years of data. The historic period is from 1996 through June 2022.

Statistic	Period	Stations	July	August	September	October	November	December	January	February	March	April	May	June
Max	2023/2024		31	36	34	104	155	295	279	412	414	455	311	64
	2022/2023		82	28	34	96	94	145	179	74	211	215	197	30
	Historic		555	601	550	307	310	410	599	648	720	688	655	707
Mean	2023/2024		7	10	12	44	69	149	155	267	238	209	108	15
	2022/2023		8	9	10	32	25	51	86	29	84	108	19	9
	Historic		23	21	20	33	75	130	201	252	249	206	112	40

Table A7.3 Buildup Index (BUI) values (maximum and mean) for 2023/2024, 2022/2023 and the historical average, based on values averaged across all Waitematā District weather stations. The colour scale is a visual indicator of high (red, orange, and yellow) and low (blue) BUI values. Fuel moisture data covers the last 27 years of data. The historic period is from 1996 through June 2022.

Statistic	Period	Stations	July	August	September	October	November	December	January	February	March	April	May	June
Max	2023/2024		7	9	13	30	37	55	50	86	59	41	30	9
	2022/2023		6	8	11	26	24	40	46	20	44	45	7	8
	Historic		44	62	61	51	92	112	114	155	137	157	180	154
Mean	2023/2024		2	3	4	10	13	22	23	42	20	13	7	3
	2022/2023		1	2	5	9	7	12	16	7	16	12	2	2
	Historic		3	3	5	8	15	21	32	36	30	16	7	3

Appendix 8 Auckland

Wildfire Statistics

- During the 2023/2024 wildfire season, Auckland accounted for 3% of the total number of wildfires in the country and < 1% of the area burnt (Figure 3 & 4, Appendix 1, Table A8.1)
- There has been an Increase in the number of wildfires and No Change in the total area burnt during 2023/2024 compared to 2022/2023.
- The dominant cause of wildfires was Cigarettes, Matches, Candles.
- The primary cause that contributed to the total area burnt was Cigarettes, Matches, Candles, although the area was very small (<1 ha).

Fuel Moisture Status

- There is only one weather station included in NIWA's Fire Weather System representing the current Auckland District. This station was setup in February 2022; therefore, we currently have limited data available. Drought Code (DC) mean values were generally low across the year, with values in the "High" category recorded for February and March. Maximum DC was in the "Extreme" category from February to May, peaking in February, with the autumn months drier than summer. (Table A8.2)
- Buildup Index (BUI) mean values were low throughout the year except for February which was in the "High" category. Maximum BUI peaked in the "Extreme" category in February. (Table A8.3)

Table A8.1 Number of wildfires and area burnt (ha) in Auckland for 2023/2024 and 2022/2023 fire years by broad cause categories.

Value	Fire Year	Cigarettes, Matches, Candles	Cooking and Heating	Equipment	Explosives, Fireworks	Industry	Natural Sources	Pile Burn	Powerline	Prescribed Burn	Re-ignition	Spontaneous Combustion	Unclassified	Total
Number of Wildfires	2023/2024	57	8	3	5	0	1	15	1	1	1	2	12	106
	2022/2023	15	2	1	2	0	0	6	1	2	2	6	16	53
Area Burnt (ha)	2023/2024	0	0	0	0	0	0	0	0	0	0	0	0	0
	2022/2023	0	0	0	0	0	0	0	0	0	0	0	0	0

Table A8.2 Drought Code (DC) values (maximum and mean) for 2023/2024, 2022/2023 and the historical average, based on values averaged across all Auckland District weather stations. The colour scale is a visual indicator of high (red, orange, and yellow) and low (blue) DC values. Fuel moisture data covers the last 2 years of data.

Statistic	Period	Stations	July	August	September	October	November	December	January	February	March	April	May	June
Max	2023/2024	1	22	23	34	79	140	273	288	459	435	442	301	159
	2022/2023	3	14	16	23	111	53	114	144	59	144	209	129	41
	Historic	1												
Mean	2023/2024	1	7	13	12	42	71	134	116	204	181	166	102	29
	2022/2023	3	5	8	12	51	22	49	72	25	91	177	28	17
	Historic	1												

Table A8.3 Buildup Index (BUI) values (maximum and mean) for 2023/2024, 2022/2023 and the historical average, based on values averaged across all Auckland District weather stations. The colour scale is a visual indicator of high (red, orange, and yellow) and low (blue) BUI values. Fuel moisture data covers the last 2 years of data.

Statistic	Period	Stations	July	August	September	October	November	December	January	February	March	April	May	June
Max	2023/2024	1	6	8	13	19	28	53	55	87	49	41	26	12
	2022/2023	1	4	6	10	36	19	35	42	19	34	31	11	11
	Historic	1												
Mean	2023/2024	1	2	4	5	10	20	21	21	36	13	12	7	3
	2022/2023	1	2	2	6	17	8	14	15	7	22	21	3	4
	Historic	1												

Appendix 9 Counties Manukau

Wildfire Statistics

- During the 2023/2024 wildfire season, Counties Manukau accounted for 6% of the total number of wildfires in the country and 1% of the area burnt (Figure 3 & 4, Appendix 1, Table A9.1).
- There has been an Increase in both the number of wildfires and the total area burnt during 2023/2024 compared to 2022/2023.
- The dominant cause of wildfires was Pile Burn.
- The primary cause that contributed to the total area burnt was Pile Burn.

Fuel Moisture Status

- In 2023/2024 Drought Code (DC) mean values typically followed the historical trend, except that they were lower in January and higher in April, peaking in February. Maximum DC was in the “Extreme” category from January to May, peaking in February, with the autumn months generally drier than summer. No new maximum values were observed. (Table A9.2)
- Buildup Index (BUI) mean values typically followed the historical trend but with a narrower peak in February compared to the usual January to March period. Maximum BUI was in the “Extreme” category for January and February, peaking in February. No new maximum values were observed. (Table A9.3)

Table A9.1 Number of wildfires and area burnt (ha) in Counties Manukau for 2023/2024 and 2022/2023 fire years by broad cause categories.

Value	Fire Year	Cigarettes, Matches, Candles	Cooking and Heating	Equipment	Explosives, Fireworks	Industry	Natural Sources	Pile Burn	Powerline	Prescribed Burn	Re-ignition	Spontaneous Combustion	Unclassified	Total
Number of Wildfires	2023/2024	85	10	6	10	1	0	95	5	11	4	4	28	259
	2022/2023	45	4	5	5	1	1	55	5	8	1	0	25	155
Area Burnt (ha)	2023/2024	1	7	0	0	0	0	14	0	0	0	0	0	22
	2022/2023	0	0	0	0	0	0	11	0	0	0	0	0	11

Table A9.2 Drought Code (DC) values (maximum and mean) for 2023/2024, 2022/2023 and the historical average, based on values averaged across all Counties Manukau District weather stations. The colour scale is a visual indicator of high (red, orange, and yellow) and low (blue) DC values. Fuel moisture data covers the last 27 years of data. The historic period is from 1996 through June 2022.

Statistic	Period	Stations	July	August	September	October	November	December	January	February	March	April	May	June
Max	2023/2024	5	34	39	34	91	139	276	334	475	420	406	367	152
	2022/2023	5	18	31	38	104	68	122	223	73	155	174	107	47
	Historic	5	524	540	181	179	257	367	565	752	796	812	773	523
Mean	2023/2024	5	8	12	11	44	75	150	163	278	275	263	155	30
	2022/2023	5	5	9	12	39	25	44	83	28	82	103	17	13
	Historic	5	27	17	19	35	80	138	218	277	270	229	141	62

Table A9.3 Buildup Index (BUI) values (maximum and mean) for 2023/2024, 2022/2023 and the historical average, based on values averaged across all Counties Manukau District weather stations. The colour scale is a visual indicator of high (red, orange, and yellow) and low (blue) BUI values. Fuel moisture data covers the last 27 years of data. The historic period is from 1996 through June 2022.

Statistic	Period	Stations	July	August	September	October	November	December	January	February	March	April	May	June
Max	2023/2024	5	9	12	13	28	32	58	65	94	42	44	25	11
	2022/2023	5	4	9	12	32	19	39	46	21	31	32	9	13
	Historic	5	40	32	33	41	61	90	137	198	168	146	72	80
Mean	2023/2024	5	2	4	5	12	13	23	27	42	19	15	10	4
	2022/2023	5	1	3	5	11	7	12	16	8	17	13	2	3
	Historic	5	3	3	5	10	17	23	37	43	35	21	9	4

Appendix 10 Waikato

Wildfire Statistics

- During the 2023/2024 wildfire season, Waikato accounted for 8% of the total number of wildfires in the country and < 1% of the area burnt (Figure 3 & 4, Appendix 1, Table A10.1).
- There has been an Increase in the number of wildfires and a Decrease in the total area burnt during 2023/2024 compared to 2022/2023.
- The dominant cause of wildfires was Pile Burn.
- The primary cause that contributed to the total area burnt was Cigarettes, Matches, Candles.

Fuel Moisture Status

- In 2023/2024 Drought Code (DC) mean values typically followed the historical trend, except that they were lower in January and April, peaking earlier in February. Maximum DC was in the “Extreme” category from January to May, peaking in April, with the autumn months significantly drier than summer. No new maximum values were observed. (Table A10.2)
- Buildup Index (BUI) mean values typically followed the historical trend but were below the historical average from January to March, with a below average peak in February. Maximum BUI was in the “Extreme” category from December to April, peaking in April before a significant reduction. No new maximum values were observed. (Table A10.3)

Table A10.1 Number of wildfires and area burnt (ha) in Waikato for 2023/2024 and 2022/2023 fire years by broad cause categories.

Value	Fire Year	Cigarettes, Matches, Candles	Cooking and Heating	Equipment	Explosives, Fireworks	Industry	Natural Sources	Pile Burn	Powerline	Prescribed Burn	Re-ignition	Spontaneous Combustion	Unclassified	Total
Number of Wildfires	2023/2024	89	7	11	9	0	4	129	3	31	0	9	34	326
	2022/2023	29	6	1	2	0	1	77	1	20	2	0	25	164
Area Burnt (ha)	2023/2024	2	0	0	1	0	0	2	0	1	0	0	1	7
	2022/2023	1	0	0	0	0	0	2	0	8	0	0	4	15

Table A10.2 Drought Code (DC) values (maximum and mean) for 2023/2024, 2022/2023 and the historical average, based on values averaged across all Waikato District weather stations. The colour scale is a visual indicator of high (red, orange, and yellow) and low (blue) DC values. Fuel moisture data covers the last 27 years of data. The historic period is from 1996 through June 2022.

Statistic	Period	Stations	July	August	September	October	November	December	January	February	March	April	May	June
Max	2023/2024	25	45	48	46	87	171	299	362	505	524	592	522	209
	2022/2023	27	75	105	182	193	246	141	230	80	153	193	186	43
	Historic	25	347	141	182	259	319	359	579	747	809	812	667	421
Mean	2023/2024	25	10	12	12	29	64	131	139	200	176	172	107	35
	2022/2023	27	6	11	15	30	34	41	69	31	69	75	17	10
	Historic	25	13	10	14	30	61	108	186	232	237	186	123	40

Table A10.3 Buildup Index (BUI) values (maximum and mean) for 2023/2024, 2022/2023 and the historical average, based on values averaged across all Waikato District weather stations. The colour scale is a visual indicator of high (red, orange, and yellow) and low (blue) BUI values. Fuel moisture data covers the last 27 years of data. The historic period is from 1996 through June 2022.

Statistic	Period	Stations	July	August	September	October	November	December	January	February	March	April	May	June
Max	2023/2024	25	11	11	15	21	35	61	72	90	95	107	31	15
	2022/2023	27	8	32	59	62	63	34	45	23	35	32	20	9
	Historic	25	26	43	59	67	87	91	139	203	169	153	155	58
Mean	2023/2024	25	2	3	4	6	12	18	19	26	15	12	5	3
	2022/2023	27	1	3	5	9	8	9	14	7	11	9	2	2
	Historic	25	2	2	4	8	13	19	33	39	30	15	8	2

Appendix 11 Bay of Plenty

Wildfire Statistics

- During the 2023/2024 wildfire season, Bay of Plenty accounted for 8% of the total number of wildfires in the country and 1% of the area burnt (Figure 3 & 4, A1, Table A11.1).
- There has been an Increase in both the number of wildfires and the total area burnt during 2023/2024 compared to 2022/2023.
- The dominant cause of wildfires was Pile Burn.
- The primary cause that contributed to the total area burnt was Cigarettes, Matches, Candles.

Fuel Moisture Status

- In 2023/2024 Drought Code (DC) mean values typically followed the historical trend, except that they were lower from December to March, with a below average peak in March. Maximum DC was in the “Extreme” category from January to May, with dual peaks in February and April, with the autumn months typically drier than summer. No new maximum values were observed. (Table A11.2)
- Buildup Index (BUI) mean values typically followed the historical trend but were below the historical average for January and February, with a below average peak in February. Maximum BUI peaked in the “Extreme” category in February. No new maximum values were observed. (Table A11.)

Table A11.1 Number of wildfires and area burnt (ha) in Bay of Plenty for 2023/2024 and 2022/2023 fire years by broad cause categories.

Value	Fire Year	Cigarettes, Matches, Candles	Cooking and Heating	Equipment	Explosives, Fireworks	Industry	Natural Sources	Pile Burn	Powerline	Prescribed Burn	Re-ignition	Spontaneous Combustion	Unclassified	Total
Number of Wildfires	2023/2024	54	30	14	7	1	7	125	11	26	2	4	54	335
	2022/2023	30	12	2	8	1	3	61	3	17	1	3	32	173
Area Burnt (ha)	2023/2024	42	0	0	0	0	0	9	0	7	0	0	1	59
	2022/2023	10	0	0	0	0	0	5	0	5	0	0	1	21

Table A11.2 Drought Code (DC) values (maximum and mean) for 2023/2024, 2022/2023 and the historical average, based on values averaged across all Bay of Plenty District weather stations. The colour scale is a visual indicator of high (red, orange, and yellow) and low (blue) DC values. Fuel moisture data covers the last 27 years of data. The historic period is from 1996 through June 2022.

Statistic	Period	Stations	July	August	September	October	November	December	January	February	March	April	May	June
Max	2023/2024	36	51	86	63	107	135	276	309	434	390	434	401	260
	2022/2023	37	338	58	50	138	187	315	483	496	260	269	213	38
	Historic	36	412	168	165	207	299	476	573	734	758	762	644	538
Mean	2023/2024	36	14	23	16	39	35	97	110	168	172	166	108	32
	2022/2023	37	7	9	8	33	25	39	89	37	52	65	10	10
	Historic	36	13	11	15	33	71	119	186	223	213	169	102	39

Table A11.3 Buildup Index (BUI) values (maximum and mean) for 2023/2024, 2022/2023 and the historical average, based on values averaged across all Bay of Plenty District weather stations. The colour scale is a visual indicator of high (red, orange, and yellow) and low (blue) BUI values. Fuel moisture data covers the last 27 years of data. The historic period is from 1996 through June 2022.

Statistic	Period	Stations	July	August	September	October	November	December	January	February	March	April	May	June
Max	2023/2024	36	16	23	17	32	34	57	52	84	47	51	47	23
	2022/2023	37	**89**	23	17	49	64	62	68	70	69	69	17	10
	Historic	36	23	26	45	60	77	108	142	162	157	189	81	70
Mean	2023/2024	36	3	6	5	10	9	17	17	29	17	12	10	4
	2022/2023	37	2	2	3	10	6	9	16	7	10	10	2	2
	Historic	36	2	3	5	9	16	21	34	39	28	16	8	3

Appendix 12 Tairāwhiti

Wildfire Statistics

- During the 2023/2024 wildfire season, Tairāwhiti accounted for 1% of the total number of wildfires in the country and < 1% of the area burnt (Figure 3 & 4, A1, Table A12.1).
- There has been an Increase in both the number of wildfires and the total area burnt during 2023/2024 compared to 2022/2023.
- The dominant cause of wildfires was Unclassified.
- The primary cause that contributed to the total area burnt was Pile Burn.

Fuel Moisture Status

- In 2023/2024 Drought Code (DC) mean values typically were lower than the historical trend except for the period March to May, peaking in April. Maximum DC was in the “Extreme” category from January to May, peaking in April, with the autumn months significantly drier than summer. No new maximum values were observed. (Table A12.2)
- Buildup Index (BUI) mean values typically followed the historical trend but were below the historical average for January and February, with a below average peak in February. Maximum BUI was in the “Extreme” category from February to May, peaking in April. May had a new maximum BUI value of 92 compared to the historic maximum of 70 for that month. (Table A12.3)

Table A12.1 Number of wildfires and area burnt (ha) in Tairāwhiti for 2023/2024 and 2022/2023 fire years by broad cause categories.

Value	Fire Year	Cigarettes, Matches, Candles	Cooking and Heating	Equipment	Explosives, Fireworks	Industry	Natural Sources	Pile Burn	Powerline	Prescribed Burn	Re-ignition	Spontaneous Combustion	Unclassified	Total
Number of Wildfires	2023/2024	6	2	1	2	0	0	8	2	1	2	0	13	37
	2022/2023	3	1	0	3	0	1	2	0	2	0	0	3	15
Area Burnt (ha)	2023/2024	0	0	0	1	0	0	13	0	0	0	0	0	14
	2022/2023	0	0	0	0	0	0	0	0	0	0	0	0	0

Table A12.2 Drought Code (DC) values (maximum and mean) for 2023/2024, 2022/2023 and the historical average, based on values averaged across all Tairāwhiti District weather stations. The colour scale is a visual indicator of high (red, orange, and yellow) and low (blue) DC values. Fuel moisture data covers the last 27 years of data. The historic period is from 1996 through June 2022.

Statistic	Period	Stations	July	August	September	October	November	December	January	February	March	April	May	June
Max	2023/2024		40	67	112	121	225	219	302	451	623	708	489	215
	2022/2023		103	66	55	82	150	235	266	172	142	167	178	191
	Historic		357	363	407	213	385	610	866	910	769	831	695	614
Mean	2023/2024		10	23	35	31	35	81	141	162	227	251	151	42
	2022/2023		15	20	12	27	48	76	57	39	54	59	31	13
	Historic		20	18	20	43	76	132	206	235	191	138	95	41

Table A12.3 Buildup Index (BUI) values (maximum and mean) for 2023/2024, 2022/2023 and the historical average, based on values averaged across all Tairāwhiti District weather stations. The colour scale is a visual indicator of high (red, orange, and yellow) and low (blue) BUI values. Fuel moisture data covers the last 27 years of data. The historic period is from 1996 through June 2022.

Statistic	Period	Stations	July	August	September	October	November	December	January	February	March	April	May	June
Max	2023/2024		12	25	31	35	59	46	58	82	135	159	**92**	24
	2022/2023		13	19	14	29	43	39	29	46	28	33	48	52
	Historic		52	42	66	75	134	197	278	291	144	160	70	79
Mean	2023/2024		3	7	11	10	9	18	18	29	27	25	12	6
	2022/2023		3	5	4	8	10	10	7	8	11	9	6	2
	Historic		3	4	6	12	18	25	36	37	22	14	11	5

Appendix 13 Taranaki

Wildfire Statistics

- During the 2023/2024 wildfire season, Taranaki accounted for 3% of the total number of wildfires in the country and < 1% of the area burnt (Figure 3 & 4, A1, Table A13.1).
- There has been an Increase in both the number of wildfires and the total area burnt during 2023/2024 compared to 2022/2023.
- The dominant cause of wildfires was Pile Burn.
- The primary cause that contributed to the total area burnt was Prescribed Burn.

Fuel Moisture Status

- In 2023/2024 Drought Code (DC) mean values followed the historical trend although were higher than the average for March to June, peaking in March. Maximum DC was in the “Extreme” category from January to April, peaking in April, with the autumn months significantly drier than summer. No new maximum values were observed. (Table A13.2)
- Buildup Index (BUI) mean values typically followed the historical trend throughout, peaking in February. Maximum BUI was in the “Very High” category for the months of December, February and March, peaking in February. No new maximum values were observed. (Table A13.3)

Table A13.1 Number of wildfires and area burnt (ha) in Taranaki for 2023/2024 and 2022/2023 fire years by broad cause categories.

Value	Fire Year	Cigarettes, Matches, Candles	Cooking and Heating	Equipment	Explosives, Fireworks	Industry	Natural Sources	Pile Burn	Powerline	Prescribed Burn	Re-ignition	Spontaneous Combustion	Unclassified	Total
Number of Wildfires	2023/2024	16	9	2	2	1	0	54	2	17	2	0	11	116
	2022/2023	12	3	1	2	0	0	45	1	4	5	1	10	84
Area Burnt (ha)	2023/2024	7	0	0	0	0	0	2	2	8	2	0	0	21
	2022/2023	0	0	0	0	0	0	1	0	0	0	0	0	1

Table A13.2 Drought Code (DC) values (maximum and mean) for 2023/2024, 2022/2023 and the historical average, based on values averaged across all Taranaki District weather stations. The colour scale is a visual indicator of high (red, orange, and yellow) and low (blue) DC values. Fuel moisture data covers the last 27 years of data. The historic period is from 1996 through June 2022.

Statistic	Period	Stations	July	August	September	October	November	December	January	February	March	April	May	June
Max	2023/2024	12	49	49	45	54	125	236	332	361	376	389	297	228
	2022/2023	12	33	21	24	77	125	183	371	247	158	97	97	59
	Historic	12	125	134	152	107	222	425	536	589	689	692	527	269
Mean	2023/2024	12	15	9	14	20	50	109	175	203	230	186	101	64
	2022/2023	12	7	6	7	25	33	41	98	49	61	33	11	24
	Historic	12	10	10	12	22	55	91	158	212	210	144	79	26

Table A13.3 Buildup Index (BUI) values (maximum and mean) for 2023/2024, 2022/2023 and the historical average, based on values averaged across all Taranaki District weather stations. The colour scale is a visual indicator of high (red, orange, and yellow) and low (blue) BUI values. Fuel moisture data covers the last 27 years of data. The historic period is from 1996 through June 2022.

Statistic	Period	Stations	July	August	September	October	November	December	January	February	March	April	May	June
Max	2023/2024	12	8	8	14	15	31	47	45	52	50	29	23	11
	2022/2023	12	7	7	8	23	27	35	81	22	31	18	13	11
	Historic	12	22	35	45	33	54	108	112	101	123	118	66	23
Mean	2023/2024	12	2	2	5	5	8	13	17	24	14	10	5	3
	2022/2023	12	1	2	2	7	6	9	20	10	10	6	2	4
	Historic	12	2	2	4	6	11	14	24	28	23	12	7	2

Appendix 14 Hawke's Bay

Wildfire Statistics

- During the 2023/2024 wildfire season, Hawke's Bay accounted for 7% of the total number of wildfires in the country and 1% of the area burnt (Figure 3 & 4, A1, Table A14.1).
- There has been an Increase in both the number of wildfires and the total area burnt during 2023/2024 compared to 2022/2023.
- The dominant cause of wildfires was Pile Burn.
- The primary cause that contributed to the total area burnt was Pile Burn.

Fuel Moisture Status

- In 2023/2024 Drought Code (DC) mean values typically followed the historical trend but were well above the average for March to May, peaking in April. Maximum DC was in the "Extreme" category from December to June, peaking in April, with the autumn months significantly drier than summer. No new maximum values were observed. (Table A14.2)
- Buildup Index (BUI) mean values typically followed the historical trend, peaking later than normal in March. Maximum BUI was in the "Extreme" category from December to May, peaking in April. July had a new maximum BUI value of 57 compared to the historic maximum of 45 for that month. (Table A14.3)

Table A14.1 Number of wildfires and area burnt (ha) in Hawke's Bay for 2023/2024 and 2022/2023 fire years by broad cause categories.

Value	Fire Year	Cigarettes, Matches, Candles	Cooking and Heating	Equipment	Explosives, Fireworks	Industry	Natural Sources	Pile Burn	Powerline	Prescribed Burn	Re-ignition	Spontaneous Combustion	Unclassified	Total
Number of Wildfires	2023/2024	37	19	10	7	4	1	125	4	25	21	2	33	288
	2022/2023	14	15	4	2	0	1	54	2	11	1	1	7	112
Area Burnt (ha)	2023/2024	0	3	1	0	0	0	34	0	10	2	0	0	50
	2022/2023	0	0	1	1	0	0	15	0	1	0	0	1	19

Table A14.2 Drought Code (DC) values (maximum and mean) for 2023/2024, 2022/2023 and the historical average, based on values averaged across all Hawke's Bay District weather stations. The colour scale is a visual indicator of high (red, orange, and yellow) and low (blue) DC values. Fuel moisture data covers the last 27 years of data. The historic period is from 1996 through June 2022.

Statistic	Period	Stations	July	August	September	October	November	December	January	February	March	April	May	June
Max	2023/2024	38	229	177	201	169	225	405	537	528	609	670	576	470
	2022/2023	42	248	87	109	200	351	542	717	201	145	205	254	267
	Historic	38	668	422	429	379	424	559	760	896	1,005	892	900	813
Mean	2023/2024	38	15	27	52	34	51	115	216	233	309	321	238	104
	2022/2023	42	24	15	11	33	78	106	95	47	52	78	75	48
	Historic	38	38	32	31	48	99	155	224	262	247	198	163	92

Table A14.3 Buildup Index (BUI) values (maximum and mean) for 2023/2024, 2022/2023 and the historical average, based on values averaged across all Hawke's Bay District weather stations. The colour scale is a visual indicator of high (red, orange, and yellow) and low (blue) BUI values. Fuel moisture data covers the last 27 years of data. The historic period is from 1996 through June 2022.

Statistic	Period	Stations	July	August	September	October	November	December	January	February	March	April	May	June
Max	2023/2024	38	**57**	26	58	42	46	67	78	90	119	130	97	40
	2022/2023	42	29	28	31	55	95	134	152	48	33	34	37	41
	Historic	38	45	50	68	92	101	181	190	224	236	152	122	100
Mean	2023/2024	38	3	6	17	10	10	18	26	31	33	29	19	7
	2022/2023	42	5	5	4	10	18	16	13	9	11	10	7	4
	Historic	38	4	5	8	13	22	27	36	39	32	18	13	6

Appendix 15 Manawatū-Whanganui

Wildfire Statistics

- During the 2023/2024 wildfire season, Manawatū-Whanganui accounted for 6% of the total number of wildfires in the country and 1% of the area burnt (Figure 3 & 4, A1, Table A15.1).
- There has been an Increase in the number of wildfires and a Decrease in the total area burnt during 2023/2024 compared to 2022/2023.
- The dominant cause of wildfires was Pile Burn.
- The primary cause that contributed to the total area burnt was Prescribed Burn.

Fuel Moisture Status

- In 2023/2024 Drought Code (DC) mean values followed the historical trend although remained elevated from April compared to the average, peaking in March and April. Maximum DC was in the “Extreme” category from December to June, peaking in April, with the autumn months significantly drier than summer. No new maximum values were observed. (Table A13.2)
- Buildup Index (BUI) mean values typically followed the historical trend, peaking in February. Maximum BUI was in the “Extreme” category from January to April, peaking in February. No new maximum values were observed. (Table A15.3)

Table A15.1 Number of wildfires and area burnt (ha) in Manawatū-Whanganui for 2023/2024 and 2022/2023 fire years by broad cause categories.

Value	Fire Year	Cigarettes, Matches, Candles	Cooking and Heating	Equipment	Explosives, Fireworks	Industry	Natural Sources	Pile Burn	Powerline	Prescribed Burn	Re-ignition	Spontaneous Combustion	Unclassified	Total
Number of Wildfires	2023/2024	44	19	9	4	0	2	92	14	14	8	0	48	254
	2022/2023	12	11	2	3	0	1	57	9	10	3	4	28	140
Area Burnt (ha)	2023/2024	0	5	0	3	0	0	13	2	16	0	0	2	41
	2022/2023	0	0	0	241	0	0	1	0	3	0	0	0	245

Table A15.2 Drought Code (DC) values (maximum and mean) for 2023/2024, 2022/2023 and the historical average, based on values averaged across all Manawatū-Whanganui District weather stations. The colour scale is a visual indicator of high (red, orange, and yellow) and low (blue) DC values. Fuel moisture data covers the last 27 years of data. The historic period is from 1996 through June 2022.

Statistic	Period	Stations	July	August	September	October	November	December	January	February	March	April	May	June
Max	2023/2024		131	98	79	62	132	301	405	507	519	550	468	343
	2022/2023		74	42	57	157	254	179	300	250	259	278	176	158
	Historic		433	300	315	390	502	620	765	951	1,077	915	757	484
Mean	2023/2024		26	8	23	19	53	131	190	221	252	252	180	114
	2022/2023		10	7	8	25	50	45	97	54	82	78	35	33
	Historic		29	22	22	33	71	112	180	237	254	200	132	63

Table A15.3 Buildup Index (BUI) values (maximum and mean) for 2023/2024, 2022/2023 and the historical average, based on values averaged across all Manawatū-Whanganui District weather stations. The colour scale is a visual indicator of high (red, orange, and yellow) and low (blue) BUI values. Fuel moisture data covers the last 27 years of data. The historic period is from 1996 through June 2022.

Statistic	Period	Stations	July	August	September	October	November	December	January	February	March	April	May	June
Max	2023/2024		19	10	24	18	34	54	70	93	79	87	37	22
	2022/2023		12	9	15	36	57	29	66	36	38	28	16	23
	Historic		50	64	122	88	105	144	148	203	237	127	64	59
Mean	2023/2024		2	2	7	5	10	16	20	28	21	16	8	4
	2022/2023		2	2	3	7	10	9	18	8	10	8	3	6
	Historic		2	3	5	8	13	18	28	34	28	14	7	3

Appendix 16 Wellington

The Wellington District includes the Chatham Islands. In future iterations we are considering creating a sub-district specifically for the Chatham Islands because both fire occurrence and climate are different compared to the larger district.

Wildfire Statistics

- During the 2023/2024 wildfire season, Wellington accounted for 7% of the total number of wildfires in the country and 2% of the area burnt (Figure 3 & 4, A1, Table A16.1).
- There has been an Increase in both the number of wildfires and the total area burnt during 2023/2024 compared to 2022/2023.
- The dominant cause of wildfires was Pile Burn.
- The primary cause that contributed to the total area burnt was Equipment.

Fuel Moisture Status

- In 2023/2024 Drought Code (DC) mean values typically followed the historical trend up until November, after which they were all well above average, peaking in March. Maximum DC was in the “Extreme” category from December to June, peaking in March, with the autumn months significantly drier than summer. No new maximum values were observed. (Table A16.2)
- Buildup Index (BUI) mean values typically followed the historical trend although peaked higher in February. Maximum BUI was in the “Extreme” category from October to April, peaking in February. February had a new maximum BUI value of 192 compared to the historic maximum of 176 for that month. (Table A16.3)

Table A16.1 Number of wildfires and area burnt (ha) in Wellington for 2023/2024 and 2022/2023 fire years by broad cause categories.

Value	Fire Year	Cigarettes, Matches, Candles	Cooking and Heating	Equipment	Explosives, Fireworks	Industry	Natural Sources	Pile Burn	Powerline	Prescribed Burn	Re-ignition	Spontaneous Combustion	Unclassified	Total
Number of Wildfires	2023/2024	53	62	17	12	1	1	74	12	11	9	7	42	301
	2022/2023	19	28	4	3	0	1	46	6	15	4	1	15	142
Area Burnt (ha)	2023/2024	5	1	36	0	0	0	6	6	6	1	1	20	82
	2022/2023	0	0	1	0	0	0	0	0	0	0	0	0	1

Table A16.2 Drought Code (DC) values (maximum and mean) for 2023/2024, 2022/2023 and the historical average, based on values averaged across all Wellington District weather stations. The colour scale is a visual indicator of high (red, orange, and yellow) and low (blue) DC values. Fuel moisture data covers the last 27 years of data. The historic period is from 1996 through June 2022.

Statistic	Period	Stations	July	August	September	October	November	December	January	February	March	April	May	June
Max	2023/2024	28	259	201	144	190	234	399	556	720	765	758	643	461
	2022/2023	28	239	43	53	89	168	244	343	417	393	384	282	245
	Historic	28	554	592	622	434	475	636	657	766	805	862	867	648
Mean	2023/2024	28	30	13	37	40	89	170	304	413	461	391	260	180
	2022/2023	28	23	9	15	29	78	88	112	124	112	72	46	42
	Historic	28	39	28	27	40	90	147	229	284	282	207	154	79

Table A16.3 Buildup Index (BUI) values (maximum and mean) for 2023/2024, 2022/2023 and the historical average, based on values averaged across all Wellington District weather stations. The colour scale is a visual indicator of high (red, orange, and yellow) and low (blue) BUI values. Fuel moisture data covers the last 27 years of data. The historic period is from 1996 through June 2022.

Statistic	Period	Stations	July	August	September	October	November	December	January	February	March	April	May	June
Max	2023/2024	28	24	10	32	61	63	60	121	**192**	145	85	33	34
	2022/2023	28	14	14	15	29	48	52	60	64	33	19	21	23
	Historic	28	74	97	111	82	80	117	138	176	170	141	139	63
Mean	2023/2024	28	3	2	10	9	13	20	40	52	38	18	10	6
	2022/2023	28	2	2	4	8	15	13	17	13	10	5	3	4
	Historic	28	3	4	6	9	18	23	33	39	32	16	10	4

Appendix 17 Nelson/Marlborough

Wildfire Statistics

- During the 2023/2024 2023/2024 wildfire season, Nelson/Marlborough accounted for 5% of the total number of wildfires in the country and 1% of the area burnt (Figure 3 & 4, A1, Table A17.1).
- There has been an Increase in the number of wildfires and a Decrease in the total area burnt during 2023/2024 compared to 2022/2023.
- The dominant cause of wildfires was Pile Burn.
- The primary cause that contributed to the total area burnt was Re-ignition.

Fuel Moisture Status

- In 2023/2024 Drought Code (DC) mean values were above the historical trend, particularly from December onwards when they were well above, peaking in March. Maximum DC was in the “Extreme” category for all months of the year, peaking in March. No new maximum values were observed. (Table A17.2)
- Buildup Index (BUI) mean values typically followed the historical trend although were elevated a level from December to May, peaking significantly in February. Maximum BUI was in the “Extreme” category from November to June, peaking in March. June had a new maximum BUI value of 81 compared to the historic maximum of 73 for that month. (Table A17.3)

Table A17.1 Number of wildfires and area burnt (ha) in Nelson/Marlborough for 2023/2024 and 2022/2023 fire years by broad cause categories.

Value	Fire Year	Cigarettes, Matches, Candles	Cooking and Heating	Equipment	Explosives, Fireworks	Industry	Natural Sources	Pile Burn	Powerline	Prescribed Burn	Re-ignition	Spontaneous Combustion	Unclassified	Total
Number of Wildfires	2023/2024	22	34	17	3	0	2	69	0	13	11	9	28	208
	2022/2023	14	16	7	3	1	3	50	2	5	3	14	11	129
Area Burnt (ha)	2023/2024	2	3	7	0	0	0	6	0	0	24	0	2	44
	2022/2023	2	2	1	2	3	0	1	0	1	45	0	14	71

Table A17.2 Drought Code (DC) values (maximum and mean) for 2023/2024, 2022/2023 and the historical average, based on values averaged across all Nelson/Marlborough District weather stations. The colour scale is a visual indicator of high (red, orange, and yellow) and low (blue) DC values. Fuel moisture data covers the last 27 years of data. The historic period is from 1996 through June 2022.

Statistic	Period	Stations	July	August	September	October	November	December	January	February	March	April	May	June
Max	2023/2024	30	360	314	337	308	435	621	840	933	956	880	547	498
	2022/2023	30	256	57	86	178	224	368	412	496	488	520	497	383
	Historic	30	628	541	562	590	521	708	922	1,120	1,186	1,167	1,089	933
Mean	2023/2024	30	50	48	48	59	109	219	329	426	471	343	247	175
	2022/2023	30	19	7	20	50	82	120	192	229	193	147	78	63
	Historic	30	44	34	35	50	97	151	217	276	277	215	148	74

Table A17.3 Buildup Index (BUI) values (maximum and mean) for 2023/2024, 2022/2023 and the historical average, based on values averaged across all Nelson/Marlborough District weather stations. The colour scale is a visual indicator of high (red, orange, and yellow) and low (blue) BUI values. Fuel moisture data covers the last 27 years of data. The historic period is from 1996 through June 2022.

Statistic	Period	Stations	July	August	September	October	November	December	January	February	March	April	May	June
Max	2023/2024	30	27	34	47	51	76	115	173	176	185	129	72	**81**
	2022/2023	30	12	23	29	64	60	70	85	79	58	45	44	25
	Historic	30	37	47	65	97	150	168	213	264	268	191	161	73
Mean	2023/2024	30	5	8	10	12	20	36	50	66	54	33	23	12
	2022/2023	30	2	2	7	17	17	15	31	25	17	10	4	5
	Historic	30	4	5	8	13	21	27	39	48	38	21	12	5

Appendix 18 West Coast

Wildfire Statistics

- During the 2023/2024 wildfire season, West Coast accounted for 1% of the total number of wildfires in the country and < 1% of the area burnt (Figure 3 & 4, A1, Table A18.1).
- There has been a Decrease in both the number of wildfires and the total area burnt during 2023/2024 compared to 2022/2023.
- The dominant cause of wildfires was Pile Burn.
- The primary cause that contributed to the total area burnt was Cigarettes, Matches, Candles.

Fuel Moisture Status

- In 2023/2024 Drought Code (DC) mean values were typically below the historical trend, being only slightly up in May and peaking in March. Maximum DC was in the “Moderate” category from December to April, peaking in March. No new maximum values were observed. (Table A18.2)
- Buildup Index (BUI) mean values typically followed the historical trend. Maximum BUI was in the “High” category from January to March, peaking in January. No new maximum values were observed. (Table A18.3)

Table A18.1 Number of wildfires and area burnt (ha) in West Coast for 2023/2024 and 2022/2023 fire years by broad cause categories.

Value	Fire Year	Cigarettes, Matches, Candles	Cooking and Heating	Equipment	Explosives, Fireworks	Industry	Natural Sources	Pile Burn	Powerline	Prescribed Burn	Re-ignition	Spontaneous Combustion	Unclassified	Total
Number of Wildfires	2023/2024	9	8	1	0	0	0	19	0	2	0	0	4	43
	2022/2023	28	10	1	0	0	0	22	0	5	1	0	13	80
Area Burnt (ha)	2023/2024	0	0	0	0	0	0	0	0	0	0	0	0	0
	2022/2023	5	0	0	0	0	0	8	0	0	0	0	0	13

Table A18.2 Drought Code (DC) values (maximum and mean) for 2023/2024, 2022/2023 and the historical average, based on values averaged across all West Coast District weather stations. The colour scale is a visual indicator of high (red, orange, and yellow) and low (blue) DC values. Fuel moisture data covers the last 27 years of data. The historic period is from 1996 through June 2022.

Statistic	Period	Stations	July	August	September	October	November	December	January	February	March	April	May	June
Max	2023/2024	15	16	20	31	37	96	138	131	131	174	164	52	51
	2022/2023	15	30	19	23	57	91	140	352	362	356	57	24	48
	Historic	15	87	64	120	193	204	316	371	427	422	310	214	57
Mean	2023/2024	15	4	5	6	11	27	28	37	41	49	25	17	7
	2022/2023	15	4	5	7	13	28	44	133	124	62	10	5	11
	Historic	15	6	6	8	13	31	52	80	83	65	31	10	7

Table A18.3 Buildup Index (BUI) values (maximum and mean) for 2023/2024, 2022/2023 and the historical average, based on values averaged across all West Coast District weather stations. The colour scale is a visual indicator of high (red, orange, and yellow) and low (blue) BUI values. Fuel moisture data covers the last 27 years of data. The historic period is from 1996 through June 2022.

Statistic	Period	Stations	July	August	September	October	November	December	January	February	March	April	May	June
Max	2023/2024	15	5	7	12	12	27	26	43	41	39	14	15	15
	2022/2023	15	5	6	9	19	27	39	86	67	59	11	7	16
	Historic	15	24	25	33	53	63	90	86	84	101	53	23	18
Mean	2023/2024	15	1	1	2	3	7	6	8	9	7	3	4	1
	2022/2023	15	1	1	3	5	7	10	28	18	7	2	1	3
	Historic	15	2	2	3	4	8	10	15	14	11	5	2	2

Appendix 19 Canterbury

Wildfire Statistics

- During the 2023/2024 wildfire season, Canterbury accounted for 16% of the total number of wildfires in the country and 24% of the area burnt (Figure 3 & 4, A1, Table A19.1).
- There has been an Increase in both the number of wildfires and the total area burnt during 2023/2024 compared to 2022/2023.
- The dominant cause of wildfires was Pile Burn.
- The primary cause that contributed to the total area burnt was Cigarettes, Matches, Candles.

Fuel Moisture Status

- In 2023/2024 Drought Code (DC) mean values typically followed the historical trend until December, after which they were significantly above average for the remainder of the year, peaking in April. Maximum DC was in the “Extreme” category from December to June, peaking in April, with the autumn months significantly drier than summer. June had a new maximum DC value of 719 compared to the historic maximum of 704 for that month. (Table A19.2)
- Buildup Index (BUI) mean values typically followed the historical trend although were elevated by a category from January to April, peaking higher in February. Maximum BUI was in the “Extreme” category from November to June, peaking in February. No new maximum values were observed. (Table A19.3)

Table A19.1 Number of wildfires and area burnt (ha) in Canterbury for 2023/2024 and 2022/2023 fire years by broad cause categories.

Value	Fire Year	Cigarettes, Matches, Candles	Cooking and Heating	Equipment	Explosives, Fireworks	Industry	Natural Sources	Pile Burn	Powerline	Prescribed Burn	Re-ignition	Spontaneous Combustion	Unclassified	Total
Number of Wildfires	2023/2024	165	50	48	11	3	12	180	20	36	42	14	89	670
	2022/2023	77	22	13	14	3	4	118	9	14	12	7	44	337
Area Burnt (ha)	2023/2024	515	42	29	0	0	4	27	2	20	18	0	351	1,008
	2022/2023	2	2	0	189	0	0	7	1	1	3	0	3	208

Table A19.2 Drought Code (DC) values (maximum and mean) for 2023/2024, 2022/2023 and the historical average, based on values averaged across all Canterbury District weather stations. The colour scale is a visual indicator of high (red, orange, and yellow) and low (blue) DC values. Fuel moisture data covers the last 27 years of data. The historic period is from 1996 through June 2022.

Statistic	Period	Stations	July	August	September	October	November	December	January	February	March	April	May	June
Max	2023/2024	45	287	125	177	143	250	437	668	695	804	846	763	**719**
	2022/2023	44	576	233	261	345	427	424	611	720	660	641	603	483
	Historic	45	622	485	453	479	536	640	781	862	891	853	826	704
Mean	2023/2024	45	58	21	50	44	101	193	340	441	510	512	463	361
	2022/2023	44	76	21	40	78	133	129	244	288	177	149	139	118
	Historic	45	84	58	61	81	128	191	271	338	339	307	256	144

Table A19.3 Buildup Index (BUI) values (maximum and mean) for 2023/2024, 2022/2023 and the historical average, based on values averaged across all Canterbury District weather stations. The colour scale is a visual indicator of high (red, orange, and yellow) and low (blue) BUI values. Fuel moisture data covers the last 27 years of data. The historic period is from 1996 through June 2022.

Statistic	Period	Stations	July	August	September	October	November	December	January	February	March	April	May	June
Max	2023/2024	45	18	21	55	40	67	120	203	208	144	142	115	78
	2022/2023	44	31	29	35	68	95	75	112	141	114	47	42	40
	Historic	45	47	52	64	95	120	169	237	239	203	178	191	85
Mean	2023/2024	45	3	6	18	12	22	27	56	64	59	45	29	14
	2022/2023	44	4	5	12	20	29	20	39	37	15	9	9	7
	Historic	45	5	8	12	18	27	33	43	50	42	29	21	7

Appendix 20 Mid-South Canterbury

Wildfire Statistics

- During the 2023/2024 wildfire season, Mid-South Canterbury accounted for 5% of the total number of wildfires in the country and 57% of the area burnt (Figure 3 & 4, A1, Table A20.1).
- There has been an Increase in both the number of wildfires and the total area burnt during 2023/2024 compared to 2022/2023.
- The dominant cause of wildfires was Pile Burn.
- The primary cause that contributed to the total area burnt was Industry.

Fuel Moisture Status

- In 2023/2024 Drought Code (DC) mean values typically followed the historical trend until November, after which they were significantly above average for the remainder of the year, peaking in March. Maximum DC was in the “Extreme” category all year except for the month of August, peaking in March, with the autumn months significantly drier than summer. No new maximum values were observed. (Table A20.2)
- Buildup Index (BUI) mean values typically followed the historical trend although the period from January to March was well above average, peaking in February and March. Maximum BUI was in the “Extreme” category in September and from November to April, peaking in January. December, January and March all had new maximum BUI values of 138, 189 and 170 respectively compared to the historic maximums of 134, 163 and 163 for those months. (Table A20.3)

Table A20.1 Number of wildfires and area burnt (ha) in Mid-South Canterbury for 2023/2024 and 2022/2023 fire years by broad cause categories.

Value	Fire Year	Cigarettes, Matches, Candles	Cooking and Heating	Equipment	Explosives, Fireworks	Industry	Natural Sources	Pile Burn	Powerline	Prescribed Burn	Re-ignition	Spontaneous Combustion	Unclassified	Total
Number of Wildfires	2023/2024	17	18	17	2	2	2	82	15	19	12	3	19	208
	2022/2023	15	7	12	0	1	2	32	2	20	4	2	7	104
Area Burnt (ha)	2023/2024	1	7	837	0	1,341	0	3	1	82	1	0	97	2,370
	2022/2023	1	0	55	0	1	0	50	0	17	0	0	0	124

Table A20.2 Drought Code (DC) values (maximum and mean) for 2023/2024, 2022/2023 and the historical average, based on values averaged across all Mid-South Canterbury District weather stations. The colour scale is a visual indicator of high (red, orange, and yellow) and low (blue) DC values. Fuel moisture data covers the last 27 years of data. The historic period is from 1996 through June 2022.

Statistic	Period	Stations	July	August	September	October	November	December	January	February	March	April	May	June
Max	2023/2024	30	497	292	338	326	383	473	615	746	856	768	610	602
	2022/2023	31	372	76	79	131	214	279	464	590	503	539	563	563
	Historic	30	617	521	443	477	464	598	771	890	958	778	731	670
Mean	2023/2024	30	105	61	84	81	120	194	301	365	433	378	314	261
	2022/2023	31	65	7	25	48	82	104	201	292	225	194	175	150
	Historic	30	111	84	84	98	127	169	225	269	276	259	217	153

Table A20.3 Buildup Index (BUI) values (maximum and mean) for 2023/2024, 2022/2023 and the historical average, based on values averaged across all Mid-South Canterbury District weather stations. The colour scale is a visual indicator of high (red and yellow) and low (blue) BUI values. Fuel moisture data covers the last 27 years of data. The historic period is from 1996 through June 2022.

Statistic	Period	Stations	July	August	September	October	November	December	January	February	March	April	May	June
Max	2023/2024	30	24	41	64	57	74	**138**	**189**	157	**170**	99	48	40
	2022/2023	31	29	9	27	39	58	62	124	166	106	44	54	41
	Historic	30	54	65	93	107	122	134	163	171	163	157	95	73
Mean	2023/2024	30	6	9	21	15	20	30	47	50	50	27	15	9
	2022/2023	31	3	2	9	15	16	16	33	47	16	11	9	8
	Historic	30	7	8	13	17	21	25	33	37	30	22	16	10

Appendix 21 Otago

Wildfire Statistics

- During the 2023/2024 wildfire season, Otago accounted for 8% of the total number of wildfires in the country and 6% of the area burnt (Figure 3 & 4, A1, Table A21.1).
- There has been an Increase in the number of wildfires and a Decrease in the total area burnt during 2023/2024 compared to 2022/2023.
- The dominant cause of wildfires was Pile Burn.
- The primary cause that contributed to the total area burnt was Powerline.

Fuel Moisture Status

- In 2023/2024 Drought Code (DC) mean values were typically below the historic trend until November, after which they were well above average, peaking in March. Maximum DC was in the “Extreme” category for all months of the year, peaking in March. No new maximum values were observed. (A21.2)
- Buildup Index (BUI) mean values followed historical trend although were elevated a level for February and March, peaking higher in March. Maximum BUI was in the “Extreme” category in September and from November to June, peaking in March. June had a new maximum BUI value of 81 compared to the historic maximum of 79 for that month. (Table A21.3)

Table A21.1 Number of wildfires and area burnt (ha) in Otago by broad cause categories.

Value	Fire Year	Cigarettes, Matches, Candles	Cooking and Heating	Equipment	Explosives, Fireworks	Industry	Natural Sources	Pile Burn	Powerline	Prescribed Burn	Re-ignition	Spontaneous Combustion	Unclassified	Total
Number of Wildfires	2023/2024	32	39	29	10	4	4	126	16	33	15	9	37	354
	2022/2023	34	16	25	3	3	3	95	10	25	6	4	40	264
Area Burnt (ha)	2023/2024	31	1	32	4	1	0	25	83	75	1	0	1	254
	2022/2023	7	1	77	3	0	0	654	2	9	0	0	19	772

Table A21.2 Drought Code (DC) values (maximum and mean) for 2023/2024, 2022/2023 and the historical average, based on values averaged across all Otago District weather stations. The colour scale is a visual indicator of high (red, orange, and yellow) and low (blue) DC values. Fuel moisture data covers the last 27 years of data. The historic period is from 1996 through June 2022.

Statistic	Period	Stations	July	August	September	October	November	December	January	February	March	April	May	June
Max	2023/2024	36	389	336	361	301	408	573	698	848	871	837	676	653
	2022/2023	36	520	350	359	371	403	477	664	812	584	536	516	525
	Historic	36	573	576	591	621	665	810	1,017	922	891	865	855	692
Mean	2023/2024	36	130	103	112	102	148	260	350	423	493	425	386	317
	2022/2023	36	169	75	97	123	161	237	361	471	359	275	219	174
	Historic	36	157	125	126	138	175	240	297	334	352	349	282	208

Table A21.3 Buildup Index (BUI) values (maximum and mean) for 2023/2024, 2022/2023 and the historical average, based on values averaged across all Otago District weather stations. The colour scale is a visual indicator of high (red, orange, and yellow) and low (blue) BUI values. Fuel moisture data covers the last 27 years of data. The historic period is from 1996 through June 2022.

Statistic	Period	Stations	July	August	September	October	November	December	January	February	March	April	May	June
Max	2023/2024	36	32	47	72	53	83	161	147	164	175	109	72	**81**
	2022/2023	36	58	15	50	80	73	89	158	183	112	49	49	38
	Historic	36	71	73	80	133	139	171	205	217	202	178	137	79
Mean	2023/2024	36	6	8	19	20	22	42	45	53	54	29	20	10
	2022/2023	36	4	4	14	20	25	26	53	76	30	14	9	7
	Historic	36	6	8	16	20	27	34	41	42	39	30	16	9

Appendix 22 Southland

The Southland district includes Stewart Island.

Wildfire Statistics

- During the 2023/2024 wildfire season, Southland accounted for 3% of the total number of wildfires in the country and 1% of the area burnt (Figure 3 & 4, A1, Table A22.1).
- There has been a Decrease in both the number of wildfires and the total area burnt during 2023/2024 compared to 2022/2023.
- The dominant cause of wildfires was Pile Burn.
- The primary cause that contributed to the total area burnt was Pile Burn.

Fuel Moisture Status

- In 2023/2024 Drought Code (DC) mean values typically followed the historical trend although were significantly lower than average from February to April, with an early and much lower peak in January. Maximum DC was in the "Extreme" category from January to May, peaking in March, with the autumn months generally drier than summer. No new maximum values were observed. (Table A22.2)
- Buildup Index (BUI) mean values typically followed the historical trend, being either at or just below the average and peaking in December and January. Maximum BUI peaked in the "Very High" category in January. No new maximum values were observed, although June recorded the same as the historic maximum value of 21. (Table A22.3)

Table A22.1 Number of wildfires and area burnt (ha) in Southland by broad cause categories.

Value	Fire Year	Cigarettes, Matches, Candles	Cooking and Heating	Equipment	Explosives, Fireworks	Industry	Natural Sources	Pile Burn	Powerline	Prescribed Burn	Re-ignition	Spontaneous Combustion	Unclassified	Total
Number of Wildfires	2023/2024	17	13	2	1	0	0	49	12	6	4	2	11	117
	2022/2023	9	9	9	0	1	3	44	6	20	4	0	15	120
Area Burnt (ha)	2023/2024	1	0	0	5	0	0	34	0	1	0	0	0	41
	2022/2023	0	0	5	0	0	0	2	0	38	5	0	17	67

Table A22.2 Drought Code (DC) values (maximum and mean) for 2023/2024, 2022/2023 and the historical average, based on values averaged across all Southland District weather stations. The colour scale is a visual indicator of high (red, orange, and yellow) and low (blue) DC values. Fuel moisture data covers the last 27 years of data. The historic period is from 1996 through June 2022.

Statistic	Period	Stations	July	August	September	October	November	December	January	February	March	April	May	June
Max	2023/2024	27	29	26	47	61	131	255	348	433	475	460	326	234
	2022/2023	29	104	39	35	75	111	250	478	485	423	179	171	63
	Historic	27	261	195	179	191	251	334	502	533	514	488	444	310
Mean	2023/2024	27	4	4	9	17	49	103	116	76	90	69	44	22
	2022/2023	29	10	5	9	18	36	78	183	220	161	64	25	8
	Historic	27	13	11	13	22	52	103	157	179	182	153	81	30

Table A22.3 Buildup Index (BUI) values (maximum and mean) for 2023/2024, 2022/2023 and the historical average, based on values averaged across all Southland District weather stations. The colour scale is a visual indicator of high (red, orange, and yellow) and low (blue) BUI values. Fuel moisture data covers the last 27 years of data. The historic period is from 1996 through June 2022.

Statistic	Period	Stations	July	August	September	October	November	December	January	February	March	April	May	June
Max	2023/2024	27	5	6	14	16	26	41	49	36	45	21	21	21
	2022/2023	29	9	9	12	22	25	50	114	116	103	15	14	7
	Historic	27	22	24	38	49	78	89	114	123	103	92	56	21
Mean	2023/2024	27	1	1	3	4	9	12	12	8	7	4	2	2
	2022/2023	29	1	1	3	5	8	11	30	23	15	4	2	1
	Historic	27	1	2	4	6	11	16	21	20	17	9	3	1


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