Operational Review

Level 3 Vegetation Incident
F3914792
Port Hills
Canterbury District
14 February 2024

Mā te mōhio ka anga whakamua
Through knowledge we improve

Created by:
Operational Assurance

Purpose

The Fire and Emergency New Zealand (Fire and Emergency) Operational Assurance Team (Operational Assurance) may undertake an Operational Review (Review) following a substantial, significant, or unusual incident in New Zealand.

A Review examines Fire and Emergency's response to an incident to enable continuous improvement and is completed by a Review Team (us/we/our). Whilst a Review considers the application of Fire and Emergency policy, procedures, and relevant operational instructions, the primary focus is to share knowledge, learning and experiences with Officers and Firefighters.

Operational Reviews focus on the facts of an incident, to identify critical findings to inform senior managers where improvements are needed or where corrective actions are required. Reviews will identify general findings related to strategy, tactics, leadership, agency and community engagement and activities that worked well to support learning within Fire and Emergency. A review does not provide conjecture or an alternative opinion.

Reviews also enable us to identify lessons for the future. Therefore, the comments and observations outlined in this Review should be read in the spirit that they are intended to support the continual improvement of its service delivery to the people of New Zealand.

Document control

Version	Date released	Author	Notes
V1.0 Final	23 January 2025	Operational Assurance team	

Authorisation statement

This review has been authorised by Operational Assurance. Every statement in this Review is true and correct to the best of my knowledge and belief, and I made such statements knowing that they might be admitted as evidence for the purposes of a judicial proceeding.

Authorised by:

Trevor Brown
Assistant National Commander
National Manager, Operational Assurance

Table of contents

Executive Summary	4
Background	4
Introduction	5
The Event	6
Chronology and response	12
The Review	15
Conclusion	28
Appendix A: List of abbreviations	29

Executive Summary

At approximately 14:13 hrs on 14 February 2024, a 111 call was received to a vegetation fire in the vicinity of Worsleys Road, Christchurch. This fire was one of several wildfires experienced in Canterbury over the same period during a heightened fire risk in the 2023/2024 wildfire season.

The Port Hills had been the location of a major wildfire in 2017 that destroyed several properties and damaged many others.

Due to the fast and well-resourced initial response, along with considering key lessons from the fire in 2017, the Incident Controller (IC) was confident they had the fire under control within 48 hours. There had been a significant amount of risk reduction work done with the community leading into the wildfire season, and with clear communications for the community during the fire, there was good community and media support for Fire and Emergency New Zealand (Fire and Emergency).

Fire and Emergency completed their operational activity by 13 March 2024.

Key opportunities for improvement identified are:

- Establishing a well-resourced Incident Management Team (IMT) at a suitable location as early as possible once the initial strategy and tactics are implemented to support the Incident Controller (IC).
- Ensuring key roles such as safety officer and safety advisor are appointed who have the right experience and knowledge for the role.
- Building on the initiative to develop a Mobile Community Hub to ensure it can be well-resourced when required with a communications link to the IMT.
- Consider also establishing a noticeboard that can display key information even when the community hub isn't staffed.
- Resource air desk so it can activate at the earliest opportunity and ease the pressure on the Communications Centres.
- Understanding the pressures on the Communications Centres and their key role during a fast-evolving incident so only minimal contact is made, and they are not used as a default IMT member unless critical.
- Develop triggers for deploying Public Information Managers (PIM) immediately to incidents that meet predetermined criteria for public safety / public reassurance.

Background

Fire and Emergency, its partner agencies and communities had learnt lessons from the 2017 Port Hills fire, particularly in the areas of community preparedness, inter-agency planning and coordination, and communication with the public. These lessons were applied in the very early stages of the 2024 fire, noting this fire started while the Canterbury District was still active on another wildfire.

While residents were concerned this could be a repetition of the 2017 fire where many properties were lost, the Canterbury District was determined to ensure this was not a repeat of that fire. As 14 February was already recorded as a 'hot fire day' there was a helicopter on standby and there had been considerable advice given to the public. This was on top of much proactive work done in partnership with Fire and Emergency and the key agencies including Christchurch and Selwyn 5

Territorial Authorities (Parks and Reserves), Police, Civil Defence Emergency Management, local Iwi, and the community.

While there may be a temptation to compare this fire to the fire in 2017, they were different fires. While the location of the two fires was largely the same, there had been a significant change in the predominant fuel type between the two incidents, with mature conifer forest having been replaced by cutover and young pine and scrub, with accumulations of slash. The 2017 fire was also fueled by large areas of desiccated gorse, which were gone by 2024. The 2017 Port Hills fire was fuel driven while the fire in 2024 was wind driven and with less fuel available.

This did not minimise the risk and threat the fire presented that could have caused significant damage and property loss. It was a well-executed fire attack with a focus on keeping the community informed, all agencies working closely together and endeavouring to ensure the lessons of the past were applied.

Introduction

The purpose of Operational Assurance (OA) is to provide advice to the Deputy Chief Executive Service Delivery Operations (the National Commander) and the Deputy Chief Executive Service Delivery Design to ensure they achieve their responsibilities for the operational efficiency and operational readiness of Fire and Emergency.

Purpose of Review

An Operational Review examines how Fire and Emergency responded to a substantial, significant, or unusual incident to identify key lessons to enable continuous improvement. While the review considers the application of policies, procedures, and operational instructions (as they applied to the event), its primary focus is to assist officers' and firefighters' learning by sharing knowledge and experiences gained through real incidents.

These reviews focus on facts and do not provide conjecture or alternative opinions. They identify critical findings to inform Senior Managers where positive actions have been identified, improvements are needed, and where corrective actions are required. They also identify general findings related to strategy, tactics, leadership, agency, and community engagement and/or activities that worked well to support organisational learning.

One of the main reasons to carry out reviews of this nature, which are undertaken with the benefit of hindsight, is to identify lessons for the future. Therefore, our comments and observations should be read in the spirit they are intended, which is to support the continuous improvement of service delivery to the people of New Zealand.

Methodology

The review team use the Incident Cause Analysis Method (ICAM) as a guide to conduct operational reviews. The content within this report reflects the information provided to the team through debriefs, interviews, comprehensive after-action reviews (AAR's), and data collected through Fire and Emergency reporting systems.

Where we use language in this report such as 'we were told', we are setting the context for the conclusions that follow, these statements are made when there appears to be consensus of the issues discussed.

The fact that we were told something has its own relevance as it demonstrates the views and perspectives of people involved in the incident, regardless of whether everyone agrees on a particular issue. Where we use phrases such as 'we found' or 'in our view', these should be taken as conveying our professional opinion on the matter based on the best evidence available to us.

Within the report, we have made comments or suggestions that we have not elevated to the status of opportunities for improvement but which we consider need to be taken into consideration for continuous improvement.

The Event

Environment Description

The **Port Hills** (Te Poho-o-Tamatea) in Christchurch are of special significance for their environmental, geological, and scenic values. They are a range of hills in Canterbury, New Zealand, so named because they lie between the city of Christchurch and its port at Lyttelton. The range includes a number of summits between 300 and 500 metres above sea level. The range is of significant geological, environmental, and scenic importance. Considered an outstanding natural feature and landscape of national importance, there are several internationally significant geological features within them, including prominent rock outcrops and several volcanic dykes.

- Most of the Port Hills consists of a **rocky open tussock landscape**.
- This landscape has a high proportion of **indigenous plant species** and provides an almost “wilderness experience” near the major urban area.
- Native forest covers parts of the hills, ranging from small remnant patches of ancient podocarp forest to large areas of regenerating second-growth forest.
- The Port Hills are also home to native birds, invertebrates, and at least three species of native lizards, including the attractive jewelled gecko.

In summary, the Port Hills offer a diverse and captivating environment, combining geological history, native flora and fauna, and stunning vistas for residents and visitors alike. As the economic fortunes of sheep and cattle farming have declined, so has the viability of pastoral farming on the Port Hills. For some, farming is simply uneconomic, and farmers have sought other ways to maintain economic viability on their land, including planting of exotic forest which can be highly flammable. Much of the exotic grasslands also had an elevated fire danger due to lack of grazing, lack of maintenance or a change in land use, due in part to the Christchurch Earthquake of 2011.

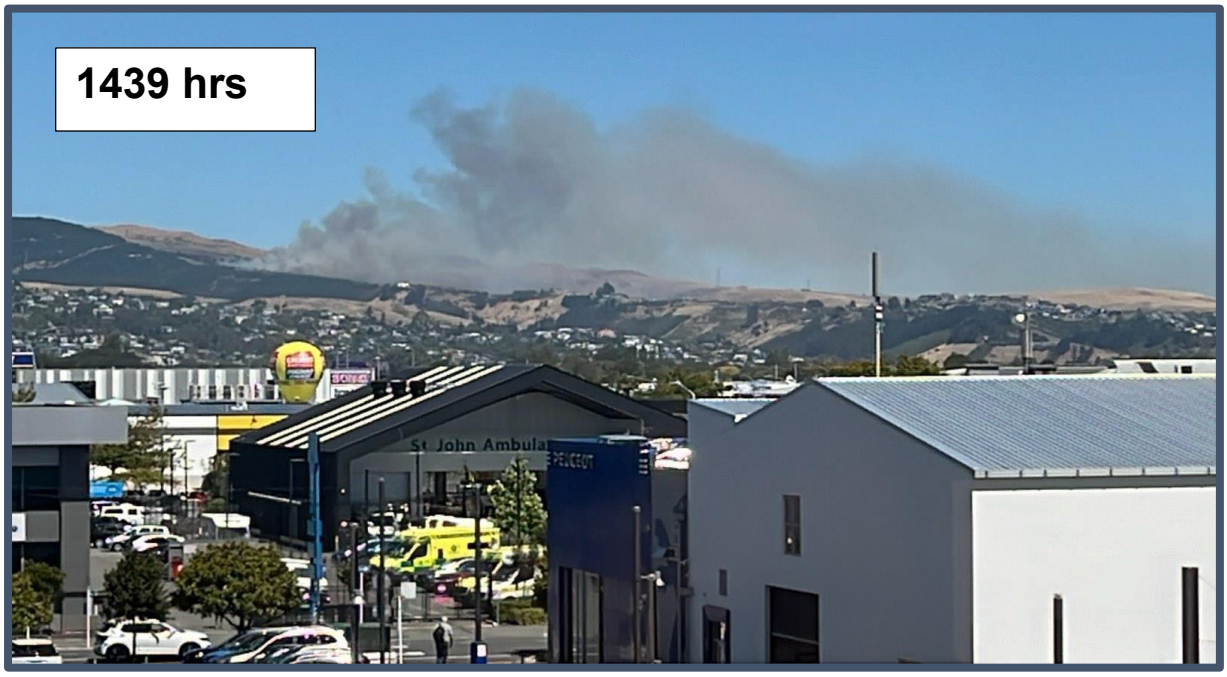
Much of the north-facing grasslands had a grass curing of 80% to 100%. The south-facing aspects were considerably greener and as low as 30% in some of the wet gullies, as was evident from the fire progression. According to the Land Cover Database v4.1 2015, the vegetation types burnt by the Port Hills fires were, for the greater part, a mix of exotic forest (35.7%), exotic grassland (29.9%), gorse/broom (22.8%) and broadleaved hardwood scrub (10.7%). The exotic forest was predominantly Pinus radiata 20 years old or greater, with some small stands of Douglas fir, Pinus nigra (Corsican) and Eucalyptus. Although the Port Hills contains pockets of indigenous forest, the fire conditions were such that areas like Kennedys Bush did not burn. Large areas of the gorse/broom and some of the

finer fuels and grass on the Port Hills had been sprayed or were 100% cured. This would have made an already flammable species even easier to ignite.

Figure 1: Location of fire on Port Hills, extent of fire perimeter and a photo of some of the damage caused by the fire showing some of the terrain involved

Fire Behaviour

As the following sequence of photos show the fire developed very rapidly:




1509 hrs


1518 hrs


1523 hrs

Fire Environment

The fire environment is a combination of the weather, topography and fuels (flammable vegetation) that combine to influence fire behaviour. An understanding of how each of these factors come together and influence fire behaviour is essential across most roles in an IMT and on the fire ground.

Weather

The Early Valley Remote Automated Weather Station (RAWS) can give us an indication of the weather on 14 February 2024, with the table below showing the readings at 1300 hours.

STATION NAME	FOREST	SCRUB	GRASS	FFMC	DMC	DC	ISI	BUI	FWI	TEMP	RH	DIR	WSP	RN24	GC%
Godley Head (HV)	M	E	M	79.8	34	479.6	2.8	57.7	9	18.6	81	78	18.4	0	80
Burnham (HV)	H	E	V	88.8	21.2	331.1	11.1	36.5	20.4	25.8	44	30	22.1	0	80
Early Valley (HV)	V	E	E	88.9	18.7	387.5	21.3	33.4	30.9	24.2	40	87	34.9	0	80

The above table tells us that the *ignition potential* (Fine Fuel Moisture Code - FFMC) is ***easy*** bordering on *very easy,* that *mop-up needs (*Drought Code - DC) are ***difficult and extensive****,* that the *rate of spread* will be ***extremely fast****,* that the *difficulty of control* will be ***difficult*** and that the ***fire intensity*** will be ***extreme.***

Observations from first arriving appliances confirmed this level of fire behaviour and the campaign demonstrated these extinguishment factors.

Topography

The initial ignition point was mid-slope on a north-facing, steep spur. The fire burnt predominately uphill, driven by the slope and to the south driven by northerly winds. The slope and wind influenced the speed of the fire spread and the intensity of the head fire.

Fuels/flammable vegetation

The 2024 Port Hills fire, burnt through some areas that were previously burnt during the 2017 Port Hills Fire. The 2024 fire burnt through the following fuel types: gorse and broom, immature pines, mature and old man pine, grazed pasture, tussock grasses and broadleaved hardwood scrub.

Each of these fuels demonstrated different fire behaviours as would be expected.

Fire Behaviour

The weather, topography and fuels combined to create a fast-moving, intense fire that at times created fire behaviour that required indirect and aerial fire suppression, control and containment took most of the following 2 days, and mop and complete extinguishment went on for many days afterwards.

A comparison – Port Hills Fire 2017

Readers of this review may be interested in comparing the 2017 Port Hills Fire. The following table shows the fire weather conditions on 13 February 2017.

Fine Fuel Moisture Code (FFMC)	87	Duff Moisture Code (DMC)	65
Drought Code (DC)	555	Build Up Index (BUI)	100

The above indices/codes show that a fire would ignite **easily**, be **extremely difficult** to control and that mop-up would be **difficult and extensive**. An important point to take from these figures is that with such high DMC, DC and BUI figures (all into extreme) on a day with such high average temperatures and low humidity, whenever the wind speed was predicted to be above 30 km/hr, all three Fire Danger Classes (forest, scrub and grass) would be extreme.

Readers can make their own assessment; however, the point is made that the two Ports Hills fires (2017 and 2024) started and were managed in different fire weather conditions. The fire in 2017 was fuel-driven, the fire in 2024 was wind driven, assisting its fast development as indicated by the sequence of time-stamped photos above.

Chronology and response

This section outlines the key decisions and actions for the incident for the first two days. It does not detail all firefighting operations that occurred, rather, it is intended to give a high-level picture of the incident as it developed. Discussion under the headings of Reduction, Readiness, Response, and Recovery will provide specific detail to explain the key findings and opportunities for improvement of the review team.

The following is a chronological record of the event with information sourced from ICAD data, After Action Review notes, Incident Action Plans (IAPs) and SitReps, a comprehensive debrief, and interviews.

14 February 2024 – Day 1

At approximately 14:13 hours on 14 February 2024, the Southern Communications Centre (SouthCom) received a 111 call to a vegetation fire in the vicinity of Worsleys Road on the Port Hills, Christchurch. A pump appliance, Wigram 257 (WIGR257), and a tanker, Christchurch 2111 (CHRI2111), were dispatched. Almost immediately after the initial dispatch, a notification was sent from SouthCom to the Canterbury District team notifying them that it is a 'hot fire day' and they have a vegetation incident.

Shortly after the notification to the Canterbury District SouthCom began receiving multiple 111 calls to this fire. Based on the facts that it was a hot fire day, they were getting multiple calls, and it was in the vicinity of the previous destructive Port Hills fire in 2017, the Shift Manager transmitted a 2nd alarm. Another pump appliance, Spreydon 221 (SPRE221) and another tanker, Governors Bay 3311 (GOVE3311) were dispatched.

Following discussion with the Shift Manager in SouthCom the on-call Commander (Group Manager) requests a helicopter to be dispatched. As the Air desk team acknowledge the request, they are advised by the Shift Manager that WIGR257 has requested 2 helicopters. The on-call Commander is advised and prepared to respond, along with another Commander who is closer to the incident. Shortly after this WIGR257 requests a 3rd tanker and Lincoln 4111 (LINC4111) is dispatched. This all occurred within eight (8) minutes of the first appliances being alerted to respond to the incident.

As it had been recognised as a 'hot fire' day a helicopter had been put on standby. Once the first arriving Commander had done his initial size-up, he transmitted a 3rd alarm and requested 4 helicopters. Christchurch 214 (CHRI214) and another tanker, Rolleston 4211 (ROLL4211) were responded. Shortly after this, Police were requested to support evacuations south of the fire and South Com were also advised that the Adventure Park was also evacuating. When a 2nd commander arrived, he was designated to the operations role and requested a commander to manage heavy machinery to create firebreaks.

Following a request from the Incident Commander (IC) a 3rd alarm was dispatched at 14:40 hours. First responding appliances worked hard to establish good water supplies and commenced fire attack using ground crews, waiting for helicopters to arrive. There were also requests for additional tankers to supplement available water. At this time the fire had jumped across the Worsleys Track. The two Commanders discussed and agreed to tactics and initial priorities. Two sectors were established, Worsleys and Summit, as this was the direction in which the fire appeared to be moving. But a change of wind direction started spot fires, and a 4th alarm was transmitted.

Around 15:35 hours, a 5th alarm was transmitted and a request to 'make helicopters 10. At the same time another (EMA) was issued to ensure all aircraft stay clear of the airspace above the fire. The 5th alarm appliances were requested to go to the Hoon Hay area for structure protection. At this stage, the IC did a reconnaissance flight over the fire to gain better situational awareness but could not use the fire mapper tool as too much smoke covered the incident. At 15:40 hours an emergency message alert (EMA) was issued stating that there was a wildfire on the Port Hills in the vicinity of Worsleys Spur and residents were to evacuate the area immediately.

The District Commander arrived at 16:04 hours and received a briefing with the IC. He was aware of the concern residents of the Port Hills would have and was determined to apply lessons learned from the review into the destructive fire in 2017. An assistance message requested four more helicopters, now totalling 14. At around 16:30 hours it was decided to prepare to evacuate properties in Early Valley Road.

Figure 2 showing extent of the fire at 1620 hrs on 14 February 2024 (image courtesy of Paho)

The fire has intensified significantly, and efforts were made to ensure public access was restricted, and all possible places where people may have been within the area were now clear. Tactics at this stage were to utilise helicopter water drops to contain the fire, have ground crews in position to restrict possible breakout from the perimeter of the fire, use retardant drops to stop fire spread, and create some new fire breaks to minimise the chance of the fire reaching at risk properties.

The District Commander assumed formal command at 17:15 hours and operated key members of his Incident Management Team (IMT) out of the Christchurch command unit, while the region coordination centre was activated to support the IMT and was the location of other personnel performing IMT roles. At 19:25 hours, a message was relayed to SouthCom, stating that they had 12 helicopters working and 130 personnel on the ground with a total of 23 appliances and support vehicles, but the fire was not yet contained. The District Commander instructed his team to have a significant number of appliances and crews on the ground overnight to ensure gains made during the day were not lost. It would also give the public assurance, and a safety plan would be developed to ensure ground crews worked from safe zones.

The first public meeting was held around 2100 hours.

15 February 2024 – Day 2

By 0700 hrs on 15 February, it was clear the overnight efforts had been very effective, ensuring that the fire did not grow significantly and no properties were lost or required evacuation overnight. The plan for today was to continue aggressive fire attack using helicopters and two fixed wing aircraft for retardant lines, supported by ground crews to secure the perimeter and protect both properties and at any at risk infrastructure and other values at risk.

The IC made a public statement that no properties were lost, however one structure that was built from containers was lost. It had been presumed during a fly over for situational awareness in the early stages of the fire to be just containers and not a home. The IC apologised to the owners for this error, but by the time the property had been identified as at risk, it was too late to protect it as it was surrounded by volatile and flammable vegetation.

Firefighting continued overnight, with a high number of ground crews remaining on the scene until they were relieved in the morning. This ensured there was adequate resource available if weather conditions changed and impacted the work already achieved to contain the fire. Crews were briefed to be aware of the extra risks involved in firefighting overnight very restricted vision. The hard work that continued overnight allowed the IC to continue the strategy and tactics adopted and get a good start with aircraft during the day shift.

The strategy and tactics for the day were to continue the air and ground attack, secure the perimeter, and ensure no other properties or infrastructure were at risk. There were also plans in place to allow, when safe to do so, property owners to visit their homes, with support from Fire and Emergency personnel, to ensure pets were safe and offer an opportunity to grab essential items they may not have grabbed when they were evacuated.

The aggressive fire attack continued throughout the 2nd day, with 25 ground crews, 14 helicopters, and two fixed-wing aircraft all used to contain the fire. The following morning the IC was confident the fire was contained and requested an Urban Search and Rescue (USAR) drone team to prepare for the likely change of tactics necessary to move toward full containment and have a secure blackout area around the perimeter. Fire and Emergency finally completed the mop-up and finished their involvement on 13 March.

The Review

This section outlines key findings from the operational review based on the terms of reference. Generally, the findings are grouped chronologically under the "4Rs" headings, Reduction, Readiness, Response and Recovery.

Reduction

Our findings

Following the fire that destroyed several properties on the Port Hills in February 2017, the Canterbury District and the Selwyn and Christchurch Territorial Authorities were committed to learning the lessons from that incident. The Christchurch City Council and Selwyn District Councils had installed live cameras together in key locations around the hills, particularly where people were using the many tracks on the hills for recreation purposes. This enabled them to get a live feed to monitor conditions and people's locations on the tracks when an emergency occurred.

There had also been a significant amount of work done by the Fire and Emergency Canterbury Community Readiness and Risk Reduction teams under the leadership of the Community Risk Manager to mitigate the risk of another fire. This included:

- Regular monitoring of weather and fuel conditions each fire season
- Monitoring fire hazards
- Liaising with local Park ranger
- Managing fire breaks
- Holding public meetings to discuss risk mitigations for residents of the Port Hills, as well as community board, Police, local brigades, and CDEM
- A trial of fire-resistant planting sponsored by the local Iwi, Nga Whiti

Fire prevention messaging commenced early in the fire season, focusing on defendable spaces, and thinking about types of planting on people's properties. There were also several public meetings as well so residents could ask their questions face to face.

Readiness

Pre-incident Planning and Intelligence

Our findings

Weather conditions in January and February were extremely hot with little rain. Therefore, fire conditions were extreme. Before this fire there had already been several wildfires in Canterbury, and one was still active when this latest fire ignited.

The weather conditions had ensured that Canterbury was in extreme fire danger leading up to the recent fire. Before the fire there had already been several wildfires in Canterbury, and one was still active when this latest fire ignited. Therefore, when this fire began, the district team were operationally ready and confident they had enough resource within the Region to respond.

The district had developed a large trailer as a mobile community hub to assist with risk reduction messaging in Canterbury, and this was put to good effect during the fire. The trailer contains a small

kitchen area so people can get a hot drink, a breakout area so children can be entertained with toys and activities while parents and caregivers meet with the Fire and Emergency team, and a private area for confidential briefings if required.

Figure 3 – Community hub trailer located at the Christchurch City fire station

Figure 4 – the Community hub ready to use

The community hub trailer is frequently utilised by members of the Community Readiness and Recovery and Risk Reduction teams at public promotions. The community hub became a very visible location for residents to go to get information about the fire and their properties. However, some information residents wanted was not readily available at the hub. This appears to be because there was not a close enough communication link between the IMT, and the hub. It would also have been strengthened by having one of the PIM's located there as well to ensure all information going out was consistent from all agencies.

Despite the comments above, it was clear that the hub was a welcoming place and played a key role in keeping residents informed and allowing fire and emergency personnel to give assurance to concerned residents. It also provided a very visible focal point when people were seeking information.

Response

Communications Centre

Our findings

The Fire and Emergency SouthCom received their first 111 call from a person walking on a track on the Port Hills at approximately 1412 hrs and the first appliances, a pump, and a tanker, were quickly dispatched. Due to the extreme fire conditions, several fires were already in Canterbury, and the day was classified as a 'hot fire' day, so the shift manager upgraded the event to a 2nd alarm. This resulted in another pump and tanker being dispatch within 5 minutes of the initial 111 call.

They then began receiving many more 111 calls as people noticed the fire. When this was advised to the OIC, they had already transmitted a 3rd alarm at the incident. This was dispatched at 1435 hrs and added another pump and another tanker to the fire.

Due to the large number of helicopters requested and the Airdesk being overloaded, the SouthCom call taker spent a lot of time answering 111 calls and working as the defacto' Airdesk Liaison'. Fortunately, the call taker had experience working on the Airdesk. Once the Airdesk was established, a significant amount of liaising and intelligence was requested through SouthCom. Examples such as organising someone to uplift retardant, liaising multiple times between the Command Unit and Airdesk, especially to organise the no-fly zone requested to CAA, Airdesk wanting messages passed to command unit etc.

The activation by Southcom of an early make-up of resources due to the location and nature of incident, fire weather data indicating high risk conditions (hot fire day), and more 111 calls being received was a positive action. They had good lines of communication with the on-call Commander and the command unit when it was established, and they engaged with the national media team so they could provide early media updates. However, with all the workload suddenly required, they were fortunate to have additional ComCen Managers on the floor. This helped manage the Port Hills event, send the EMA, answer competing phone calls, and monitor a 2nd alarm wildfire in Otago.

Once the RCC was activated, the SouthCom still had to act as an intermediary for a clear flow of requests as the IMT was not yet fully established. They were trying to get situational awareness and manage resources arriving quickly at the incident. They were also required to deal with a number of logistic tasks once the RCC closed for the night. Without access to RCC logs, there was an unnecessary double-up and wasted effort in sorting basic requests such as accommodation, food, 18

and security. But the on-duty SSO at City station was very proactive and communicated well with regards to his expectations of crew rotations on night shifts.

Overall SouthCom made a very positive contribution to the success of this incident, while dealing with two other 2nd alarm happening simultaneously in Dunedin and Cust.

Lessons identified

- ComCens can be dealing with multiple requests from the incident ground in the early stages of an incident, while simultaneously managing other emergencies elsewhere. Consideration of their capacity needs to be remembered.
- It is not ComCens role to be an agent passing messages. Establishing an early operational communications plan would avoid this.
- During the evening once RCC shutdown SouthCom were required to fulfil a logistics role.
- ComCen become very busy fielding media enquiries until the national comms team are established.

Safety, Health, and Wellbeing

Our findings

There were no significant injuries or accidents reported from this incident, but 26 entries were made in the Fire and Emergency safety@work kiosk. These have all been investigated by the Safety, Health and Wellbeing team and have been resolved.

A safety officer was appointed early in the incident as part of the IMT. We were told that the person appointed did a good job but may not have necessarily had the operational knowledge and experience to fulfil all aspects of this key role.

We could not find evidence that a safety officer was appointed in each sector to support each sector commander.

The review believes that for a fire of this size each sector should have a safety officer appointed, reporting to the incident safety officer embedded in the IMT.

Lessons identified

- Personnel appointed to the safety officer role(s) should also have the knowledge and experience for the type of incident, so all risks and hazards are identified.
- Each sector should have safety officer when the incident is geographically spread and would be beyond one person's ability to manage all sectors effectively.

Welfare of all personnel contributing to the incident

Very early in the incident the Canterbury based 'Rapid Relief Team' (Fig 6) provided a food and drink station for emergency services until this could be replaced by a longer-term solution, New Zealand Defence Force (NZDF) being the preferred option.

There were no significant welfare issues identified by the review team, with personnel both fed and rested in reasonable time once the incident settled into an operational rhythm.

Figure 5 showing the food station established by the Rapid Relief team to support emergency services during the very early stages of the fire

Incident Ground Management

Command and Control procedures: Initial actions and size up

The first arriving officers at Worsleys Road focussed on establishing good water supplies, getting helicopters on the scene, and requested greater alarms. When the first commander arrived, he conducted a comprehensive size-up of the incident (including from the air), gathering appropriate information that allowed them to make sound initial tactical decisions, with accurate and detailed SitReps transmitted. The incident was quickly upgraded to a 5th alarm with 12 helicopters working until nightfall on the first day.

The initial IMT was established from the command unit on Worsley Road but the vehicle was quickly relocated to what he considered a better location at the bottom of Worsley Road. This remained the main operating space for the IMT throughout the event. Using this facility meant that several IMT roles could not be accommodated in the command unit so were established back at the District HQ.

An observation from the first arriving Commander was that the fire mapper application has evolved into a useful tool for gaining situational awareness and selecting tactics. It gives insight into the fire perimeter, expected fire growth, identifying water sources and areas of cultural significance, and locating structures. This is particularly helpful at incidents spread over a wide geographical area and/or on difficult terrain. But you need to use it regularly and keep up with any changes to use it effectively. In the early stages of a large vegetation fire, as the OIC, there is not always sufficient time to make full use of fire mapper as you often have competing priorities. A possible solution could be to have a deployable resource of proficient fire mapper operators within districts.

The Community Readiness and Recovery Manager organised a community meeting on the first evening to give residents information regarding the operation underway, establish communication, and answer residents' questions. The focus throughout the operation was to let residents access their properties to check on pets, gather more essential items and valuables, and, in particular, ensure the safety of stock. Stock monitoring was done with the local Ministry for Primary Industries representatives. A key of this plan was to let residents get access to check their properties under escort whenever it was safe to do so.

Incident management structure

Once the first Commander arrived, the initial IMT was positioned in the command unit, which arrived around 1500hrs after the 3rd alarm was transmitted. This became to focal point for the IMT throughout the incident, with some of the IMT located back at the District HQ. This arrangement did not make for clear role definition and some members of the IMT found it difficult to feel part of the IMT, especially when the RCC was activated.

It was also a very small space so some of the roles established did not feel there was enough space for them to participate in important meetings. While the IC acknowledged this was not an ideal facility, he felt that they had enough control of the fire after the first two days, so it was not worth trying to relocate. He was also cognisant of wanting to provide an obvious command presence for the reassurance of the community.

The review team believe establishing an effective IMT in a single location close to the incident would have improved communication between the IMT and the RCC. This was accepted by the IC.

Inter-agency and stakeholder relationships

There are strong inter-agency relationships in Canterbury, enhanced by the ability of emergency service agencies all working out of the Justice Precinct so easily able to meet both formally and informally in the canteen areas.

The multi-agency debrief prepared for the Canterbury Civil Defence Group commented:

> *Pre-existing relationships enabled quick responses and effective cooperation between responding agencies. There was a high level of attendance at the Justice and Emergency Service Precinct (JESP) from all agencies. Participants noted that this enabled the facilitation*

of timely discussions and decision-making, along with effective roundtable multi-agency meetings. Knowing who to talk to and having a shared space also assisted with shared situational awareness in the absence of an optimal technological solution.

Inter-agency relationships were well established prior to this incident and all agencies had learnt lessons from the fire in 2017 and were keen to ensure they were applied during this incident as the above quote describes.

Key stakeholders, the residents, were commenting positively in media interviews and articles written feeling they were getting timely information and felt well supported. It had been stated that all homes had been saved.

But we were told that for all the agencies involved a common operating picture would be a significant improvement to ensure all agencies are working with the correct and most up to date intelligence.

Public Information Management (PIM)

Due to the previous fire in 2017, there was immediate public anxiety and interest when this fire started. It was visible across Christchurch City, the public had already been advised of the high fire danger, it was close to homes, and developed very quickly. This in turn created immediate and sustained high media interest and demand for information. Residents who may have needed to evacuate required clear information and instructions, there were two local authority areas involved, and multiple stakeholders. Additionally, there was high political interest and Fire and Emergency reputational risk with the 2017 fire still uppermost in the minds of stakeholders, public and media.

An intensive PIM operation began almost immediately and lasted for over a fortnight. Information was provided to the community and stakeholders through a variety of mediums including mainstream media, Fire and Emergency and stakeholder social media channels, face-to-face meetings with evacuees at the community hub, and letterbox drops of information. Overall sentiment from the community and stakeholders was positive. But the PIM team's own debrief. as part of this review identified the following lessons:

1. There is no clear trigger to activate the PIM team at the earliest opportunity and it relies on, in this case, a trained persons initiative to activate or otherwise the IC requesting PIM support and they are often too busy to consider this in the initial stages of the incident.
2. Not all Districts have a PIM available for an immediate response.
3. Sometimes there is confusion between the role of the communications team and the role performed by PIM - particularly an assumption that by alerting the national media team, a complete PIM response is underway.
4. As part of the PIM teams AAR the lead manager interviewed five reporters from local media agencies for their feedback on how Fire and Emergency had managed the PIM function and media liaison role in terms of what went well, what didn't go well, and suggestions for future incidents.

Key feedback stated:

a. It was a much-improved response compared to the 2017 fire with good updates and timely information after Day 1. The regular media stand-ups were well informed and with multi agencies representatives at them most questions media had could be answered.

b. They appreciated getting escorted access to the fireground to get footage and conduct interviews. They also appreciated the WhatsApp group setup.

c. The issue media had was that in the very early stages of the fire on the first day information was hard to get as both the IC and SouthCom were too busy to provide the information the media needed. The media agencies themselves were being bombarded with requests for information and did not have it. The initial briefings were too infrequent and not keeping up with the pace the fire was developing, with a huge demand for information from Fire and Emergency. The pace of PIM activity did not keep up with public and media needs, despite the first social media post being made within 15 minutes of the 111 calls, the initial media update being issued in 45 minutes and two more at hourly intervals before a media stand-up at about 5.45pm.

The suggestions for improvement from their perspective and lessons for Fire and Emergency to consider at similar events were:

a. Release an initial update more quickly.
b. Quickly provide a consistent point of contact on the fire ground.
c. Be consistent about whether media can or can't attend community meetings.
d. Talk to Police about cordon access for media.
e. Recognise that Radio NZ is the official lifelines broadcaster and has an emergency management responsibility separate from its newsgathering activities.
f. Set up a WhatsApp group for Christchurch-based media in advance, with admin access for the Bureau Chiefs / Chief Reporters for each outlet to add/remove their own staff.
g. Provide consistent guidance about what PPE media need for access to an incident ground, possibly associated with some fireground safety training.

Community and stakeholder sentiment remained very positive, attributed in large part to the determined and sustained effort to provide timely, relevant information, acknowledge anxiety and address issues as quickly as possible. Visible leadership, good communication and a combined effort from al the emergency service agencies contributed to the support the firefighting effort received.

The Canterbury district PIM acted quickly to release a holding line on social media within 15 minutes of the first 111 call. Shortly afterwards she deployed to the scene, using her initiative to follow her training rather than waiting to see if she would be requested. PIM was activated in the RCC from day one and the first PIM from the national pool was deployed from Wellington on the evening of day one to support the incident.

Lessons identified

- Develop triggers for deploying PIM immediately to incidents that meet pre-determined criteria for public safety / public reassurance
- Revise the triggers for ComCen paging the on-call media advisor for incidents that meet predetermined thresholds for public safety / public reassurance
- Equip the community hub trailer with a noticeboard that can display key information even when the hub isn't staffed
- Develop an emergency strategic communications capability within FENZ to provide the interface between PIM and NHQ when NCC isn't activated or there is no NCC PIM. (Note that this is already underway)

Community Hub

During the Port Hills fire, the trailer was positioned at the bottom of Worsleys Road around 0800 hrs on Thursday 15 February. Members of the public were encouraged to seek information about the fire, evacuations etc from there.

The trailer proved to be very effective and a great focal point for residents to try to gain the information they needed. But the review team found a lot of the information held by the IMT was not readily available to the personnel at the hub, and this was information residents were desperate to find out.

There was a good response from the community about this resource, but the role was not well enough connected to the IMT so often information requested from residents was not readily available. There was also not a tight enough connection to the PIM community liaison role. Information such as maps to show where the cordons were and their status as people were wanting to know when they could get back into their homes. No information on cordons / maps etc meant we could never confirm who was or wasn't allowed back into their homes, and sometimes delays in advising this.

There was also a need for more resource to be available to support the community to assist them to have managed access to retrieve essentials (medication, pets etc). Sometimes residents had to wait in the heat for hours because they didn't want to miss out on the chance to gain access to their homes. This was mainly attributed to fire and emergency, which did not have enough people on the ground or vehicles available to support managed access. We were also told that community emotions naturally were high, and residents needed time and care to engage with them. This was difficult because of this lack of resource so conversations always seemed rushed.

We were told information related to the cordon was not readily available so all personnel managing the cordons, so they were telling residents to "check into Fire and Emergency community hub for info".

Lessons identified

- The community hub needs to be resourced as soon as possible to ensure there is a tight link between the IMT and PIM so the information the community are likely to want is readily available and the most current information.
- It also needs to be either staffed during the evening and a contact phone number visible for people to call if not staffed.

Firefighting Operations

Firefighting operations were quickly established as soon as the potential of the fire was realised. First arriving officers quickly made up greater alarms, requested helicopter support, and established good water supplies. At the height of operations on day 1 there were 12 helicopters working on the fire, and the following day 2 fixed-wing aircraft were brought in the provide fire retardant support.

There was extensive use made of heavy machinery from day 1 to create new fire breaks and strengthen existing fire breaks. This was requested early and allowed the IC to get good protection around the perimeter of the fire, with a focus on areas where property might be at risk.

The IC ensured that the firefighting operation would continue overnight, so it was ensured that there were enough crews to relieve the day shift. This was a key decision as a wind change threatened to spread near the top of the hill. Crews did an outstanding job of containing the fire when it threatened to get further into the bike park and the property on Marleys Hill. The use of heavy machinery overnight for firebreaks was also supported by firefighting crews who established a water hose line to strengthen the break and create safety zones within the firebreak area. Throughout the night crews work hard to use the night conditions to contain the fire on all fronts in preparation for the re-commencement of fire operations the next day.

Hot spotting information from the remote piloted aircraft systems (RPAS - drones) flights overnight was overlaid on Fire Mapper and provided to the crews on Fire Mapper Tablets from the ICU. This proved crucial to the crews in identifying the hot spots on the ground and greatly assisted with achieving a timely mop-up.

Potential hazards were identified, and night crews were briefed on these to ensure crew safety during night operations. Overhead lines were one of the major hazards that were also a key consideration for the air attack supervisor throughout the operation.

Figure 6 showing extent of the fire at 0700 hrs on 15 February 2024 (image courtesy of Newsline)

Generally, the feedback was very positive with the three contractors used having good understanding of how Fire and Emergency operation work through discussions held in advance and experience from previous fires. They provided a good range of equipment to support operations, and the fire and emergency manager did a great job of organising and managing this aspect of the incident. Lessons learned were minor and will be managed locally as they are local contractors.

Aircraft Management

Air desk managed the acquisition and response of appropriate aircraft noting the district already had an aircraft on standby due to the extreme fire conditions. Once the number of aircraft escalated, a request was made to Air Control to create a no-fly zone around the area where the aircraft would be

working. But while the air desk was getting fully established, extra pressure was put on SouthCom to manage requests and communication between the IMT and Airdesk.

Having an experienced Air Attack Supervisor (AAS) in early stages of the fire to interpret fire environment and behaviour and make critical decisions around tactics to fight the fire worked well. We were told air operations received good support from the IMT regarding fatigue management from day 2 of the incident. Once fully established there was good communication between the AAS and operations. Knowledge of fire behaviour and local knowledge of Port Hills by AAS was key to successful and safe outcomes. It was also reported that there was good decision-making at the helibase that fully supported air operations

The air operations team felt they could have incorporated fixed wing aircraft on day one into circuits for water drops, and felt the early suggestion was not initially picked so this didn't occur until the second day. They also feel more can be done to ensure the public are informed about the use of retardant and the low risk its use has for the public. Security is also required for helibase.

Basic knowledge and understanding between what air operations need and how ground operations can support this would improve future operations. There was also at times a lack of adequate water and refreshments for Aviation personnel at both the helibase and the airport, including shelter. The logistics team needs to consider this during incidents.

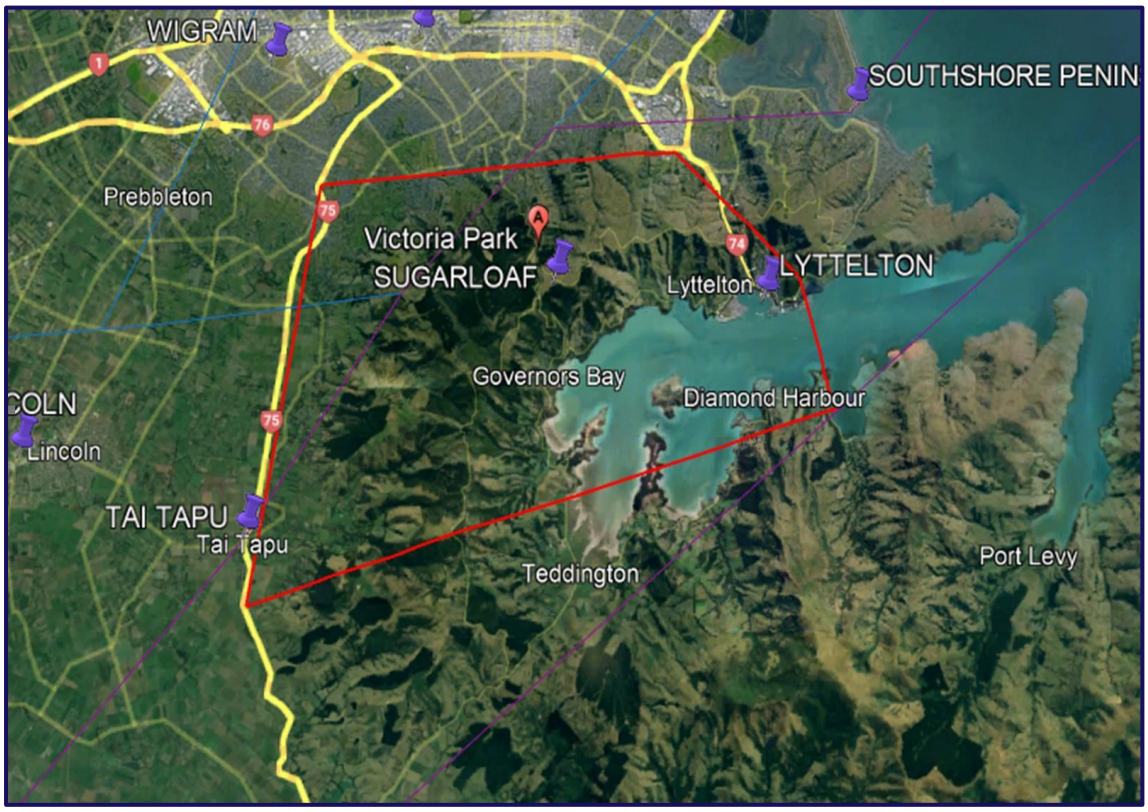


Figure 7 showing area of the 'no fly' zone established

Remotely Piloted Aircraft Systems - RPAS (Drones)

The Fire and Emergency RPAS (drones) was used extensively to support operations. They were deployed for the day once aircraft operations ceased to ensure there was no risk for aircraft operations.

The following key tasks were carried out:

- Aerial mapping of the fire perimeter,
- Aerial mapping of the entire contained fire area (fig 8 below),
- Investigation flights into areas of concern outside the fire perimeter,
- Identification of location of structures that were built after current Google Earth data,
- Identification and thermal mapping of hot spots for ground crews to extinguish,
- The use of thermal cameras to walk ground crews into hot spots that are difficult to find for extinguishment (Fig 9 below).

All RPAS missions were coordinated to be carried out after dark so helicopter and fixed-wing operations could continue during the day without the UAS machines conflicting the airspace.

The accurate and detailed data produced from the RPAS operations contributed to the total information relied on by the incident controller to assist in the update of their IAP, AAP, and to conclude operations and hand back authority to DOC ultimately.

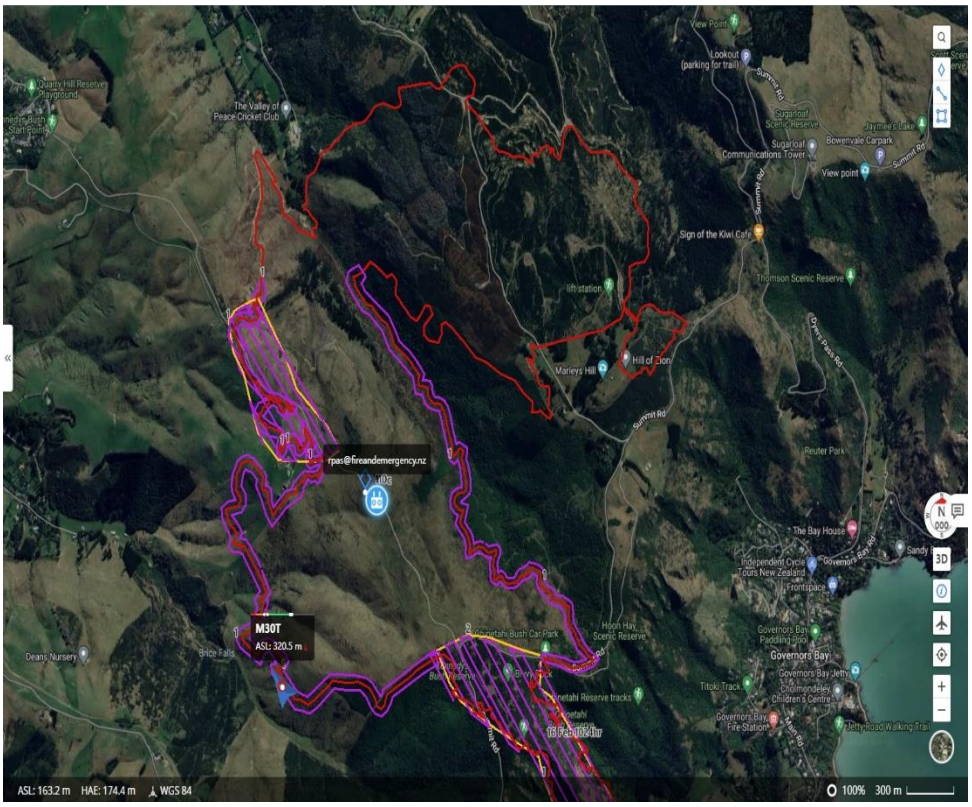


Fig 8 Aerial mapping of the entire contained fire area

Fig 9 - Use of thermal camera to walk ground crews into difficult to find hot spots for extinguishment

Finance

The finance function was managed by the Region Coordination Centre, and the total cost of fighting this fire was recorded at just over $3m. Two-thirds of the cost is attributed to aerial operations and machinery contractors who both played a crucial role in containing and controlling this fire.

Region and National Coordination Centres support to IMT

Once the IMT set up in the command unit there was a need for additional IMT functions to locate in the RCC at the Region HQ. Once the RCC was established, we were told that this created some confusion about the roles between IMT and RCC responsibilities.

The NCC began to monitor the fire, but no formal requests were made to the NCC. However, in preparation, the NCC contacted the other regions to ensure they had resources readily available if called for.

Recovery

There was good collaboration between Fire and Emergency, Police, the Territorial Authorities, and Civil Defence Emergency Management (CDEM) so recovery was an early part of the planning for this event. The regular communication to affected residents supported the transition to recovery once the Fire and Emergency operation finished.

Fire and Emergency personnel were in regular contact with residents who may be asked to evacuate to ensure they were kept informed and ready to leave if asked. The Community Hub trailer also became a key resource for residents who were looking for regular information.

Conclusion

Although this fire was in a similar location to the devastating fire in 2017 it cannot be directly compared to it. The fire in February 2024 was wind driven rather than fuel driven, the fuels burning were not all the same, and some of the vegetation in the path of the fire had not fully recovered from the 2017 fire.

The heavy resource deployed for fire operations in the very early stages of the fire contributed to making this operation successful. For the first two days the ground resource remained active overnight and air operations were further strengthened on day two. The earlier work carried out leading up to the wildfire season supported the fire operation. This constituted regular messaging and community meetings with residents on the Port Hills to ensure they were aware of the potential risk and to suggest some mitigation strategies. There was also some very proactive work from the Territorial Authorities and the Fire and Emergency Community Risk Managers team (Community Risk Reduction and Risk Reduction). This supported residents in being better prepared and fully aware of the risk as the temperatures in Canterbury, with little rain, increased the fire risk. Because all emergency services were located together in the Justice and Emergency Services (JESP) facility relationships and communication between them were also very strong.

The local Iwi were also part of this reduction work. An interesting joint experiment with planting native vegetation that is more resistant to fire on some parts of the hills appears to have been quite successful.

Finally, all agencies involved had been proactive in learning the lessons identified from the 2017 Port Hills fire. For Fire and Emergency, this was the case especially, and it resulted in strong support from the community, media, and politicians throughout the fire. This does not mean there are no lessons be identified to improve future operation. The key ones are listed as opportunities for improvement for management to consider.

Appendix A: List of abbreviations

AAR	After Action Report
ASS	Air Support Supervisor
BUI	Build up Index
CDEM	Civil Defence Emergency Management
CFFDRS	Canadian Forest Fire Danger Rating System
CIMS	Coordinated Incident Management System
ComCen	Communications Centre
CU	Command Unit
DOC	Department of Conservation
DC	Drought Code
E&L	Equipment and Logistics
FBAN	Fire Behaviour Prediction Worksheets
FNDC	Far North District Council
FWI	Fire Weather Index
GC%	Grass Curing Percentage
IAP	Incident Action Plan
IC	Incident Controller
ICP	Incident Control Point
ILO	Iwi Liaison Officer
IMT	Incident Management Team
ISI	Initial Spread Index
LACES	Lookouts, Awareness/Anchor Points, Communications, Escape Routes, Safety zone
NCC	National Coordination Centre
NIMT	National Incident Management Team
NZDST	New Zealand Daylight Saving Time
OER	Operational Efficiency and Readiness
OIC	Officer in Charge
PIM	Public Information Manager

PMC	Peatland Moisture Code
RAWS	Remote Automatic Weather Station
RCC	Regional Coordination Centre
SOP	Standard Operating Procedure
UAV	Unmanned Aerial Vehicle