Operational Review

Tangoio & Tikokino

Level 2 Vegetation fire

F2919712 & F2938699

Hawkes Bay

Contents

Executive Summary

At 11:43hours, January 6th, 2020, the Central Communications Centre (ComCen)received a 111 call from a forest management member who reported a fire in the Tangoio forest, Hawkes Bay. Subsequently, while still involved in the mop-up of this fire, on February 3rd ComCen received a 111 call to a vegetation fire in Tikokino, Hawke Bay. This fire escalated to a 4th alarm incident. As the resources for this fire were also involved in Tangoio, this report covers the operational review for both incidents.

Hawke's Bay District had already been very busy with various incidents at the time of these fires, and personnel were becoming fatigued. The deployment of a task force to Hawkes Bay when the Tikokino fire broke out was timely and well-appreciated by local brigades.

Due to the Covid-19 lockdown, the Principle Rural Fire Officer (PRFO) could not facilitate the debriefs for these incidents until late July 2020. The second Covid-19 lockdown hampered the review further. Although there was a significant delay in completing the review, there are worthwhile lessons for Fire and Emergency New Zealand to consider in long-duration future incidents.

Findings

Tangoio

- The working relationship between the forestry companies and Fire and Emergency was strained during the incident. The forestry company expressed frustration that they wished to commence operations at first light, whereas Fire and Emergency New Zealand teams were not ready before 8:00 am.

- The Fire and Emergency New Zealand Command Units technology is unsuitable for some of the tools used during wildfire incidents. They don't have any wildfire facilities such as fire mapper or Microsoft TEAMS.

- The Command Units (ICP) initial location was sited to establish a suitable communications link; however, there was the need to evacuate hastily due to the fire's potential for the site to be impacted by the fire. Furthermore, repeater locations weren't identified to enhance fireground communications. The forestry company could have assisted with this.

- Forestry workers requested the initial arriving appliances to protect some vulnerable machinery at risk of being caught in the fire. This was done but they neglected to think of the possible escalation as they focussed on protecting the machinery. Subsequent arriving officers did and started implementing an IMT.

- On the third day of the fire, poor incident ground communication and the lack of a well-structured Incident Action Plan (IAP) and Incident management Team (IMT) led to fire retardant being dropped by a helicopter onto a contractor and his vehicle. The review team identified that there was a general lack of control of access to the fireground. This allowed some contractor crews to freelance rather than be tasked through operations therefore negatively impacting fireground accountability .

- The review team found that many of the contractors' that were called in to assist the forestry workers Personal Protective Equipment (PPE) was non-compliant to Fire and Emergency standards. There was also no system in place to ascertain whether these contractors had sufficient knowledge, skills or qualifications to be on the fireground. Again, the free access to the incident meant there were no controls on who was fighting the fire and what equipment they were using. Fire and Emergency standards require equipment to be tested and maintained but this had not been ascertained. Initially, forestry management was concerned about their crews being deployed into a dangerous situation.

- The Fire and Emergency New Zealand and forestry company radios were incompatible and unable to talk to each other, so communication initially was difficult.

- There were difficulties with staffing the incident ground, IMT and RCC due to the fire occurring in the festive season.

- The Incident Management Team (IMT) was established in Hastings, at the Civil Defence Emergency Operations Centre (EOC), approximately 50 kilometres or one hour's drive from the incident. This made visits to the fireground difficult and delayed the crews' firefighting activities due to the morning briefings held there before travelling to the fireground.

- Hawkes Bay Civil Defence initially handled the Public Information Management (PIM) function in the IMT. The community were desperate for accurate information. However, Fire and Emergency New Zealand didn't appoint their own PIM in a timely fashion to coordinate with the Hawkes Bay Civil Defence PIM to provide updated information from the incident.

<u>The above findings should be considered to develop lessons learned to improve future operations at similar incidents, and when the incident involves several agencies.</u>

Tikokino

- This fire was reported early, and resources were dispatched quickly. This included a helicopter that tracked the path of the fire as it jumped the road. This assisted the ability of crews to minimise the potential spread of the fire and being able to control and contain the fire as quickly as possible. A task force was deployed from Wellington by the Region Manager. The task force

was not deployed to the fire but was tasked to relieve local fire brigades who were desperate for a break. The task force initiative was well received by brigades and crews who were feeling the effects of fatigue. This action gave well-earned rest and recovering for both paid and volunteer crews who had been involved in a number of incidents over several weeks.

- The review team could not be provided with a region process to trigger a task force response. Furthermore, there did not appear to be a system to notify the task force of new incidents occurring, so these were directed to an Assistant Area Managers (AAM's) pager who then managed a response.

- As mentioned above, the PIM function handled by Hawkes Bay Civil Defence was not deployed promptly, leaving some residents and landowners frustrated and desperate for accurate information about the fire and the potential need to evacuate.

- Hawkes Bay has limited air attack supervisors available to manage aerial resources safely, and the one utilised was not on the preferred contractors register which is a perquisite with the rural fire standards at the time.

These findings should also be considered when developing lessons learned as mentioned previously. The early response of resources and deployment of the task force are very positive lessons for Fire and Emergency.

Recommendations

The review team is very aware that the implementation of Tranche 2, due in September 2021, will address several findings identified within this document; therefore, the team has only made six key recommendations.

1. We recommend Fire and Emergency New Zealand and the Hawkes Bay forestry industry agreeing how they will facilitate more timely intervention at future forestry fires. This would ensure crews from the forestry industry and Fire and Emergency are ready to commence operations together., We recommend that Fire and Emergency work with the forestry industry to identify any fireground communication issues that can be addressed within future fire plans.
2. We recommend a Region 3 Task Force Policy and Plan be developed for future deployments. These must identify and include deployment triggers for all types of responses and task force make-up.
3. We recommend Fire and Emergency Command Units obtain appropriate wildfire technology and applications available, such as Fire mapper and MS TEAMS forms that will enable information sharing. Command Unit operators will also need training in how to utilise the additional technology.

4. We recommend Fire and Emergency ensure a PIM is allocated to any significant events where Fire and Emergency are the lead agency and appoint at the earliest possible time to support the Incident Controller (IC).
5. We recommend Fire and Emergency ensure they monitor predicted weather conditions and prepare in advance of “fire seasons”, especially in the historically high-risk areas of the country.

Operational Efficiency and Readiness

The purpose of Operational Efficiency and Readiness (OER) is to provide operational assurance advice to the Chief Executive and Executive Leadership Team to ensure they achieve their responsibilities for the operational efficiency and operational readiness of Fire and Emergency New Zealand.

OER is independent, objective and provides quality operational assurance advice to support continuous improvement regarding the operational efficiency and readiness of Fire and Emergency New Zealand. OER is required to report quarterly to the Fire and Emergency Audit and Risk Committee and is a function of the Office of the Chief Executive.

Purpose of Review

An Operational Review examines how Fire and Emergency New Zealand responded to large, significant orunusual incidents to provide continuous improvement. While it considers the application of policies, procedures and operational instructions (as they applied to the incident), its primary focus is to assist Officers and firefighters in learning by sharing knowledge and experiences gained through reflecting on incidents.

A review focuses on the facts and does not provide conjecture or alternative opinions. The review identifies key findings to inform Senior Managers to develop corrective actions. It also identifies general findings related to equipment, tactics, and actions that worked well to support organisational learning.

In this instance, the review also considers aspects of this incident that should have included a level 2 accident investigation. This is related to the near miss recorded in the Fire and Emergency Safe@Work system regarding the dropping of retardant on a forestry worker and his vehicle.

Once completed and approved by the sponsor, all reports are published on the Operational Efficiency webpage for all to read, learn and share.

Methodology

The review team use the Incident Cause Analysis Method (ICAM) as a guide to conduct operational reviews. This is the same methodology used by Level 2 accident investigators.

The review team interviewed a number of personnel who played key roles during the incident and had two members of the OER team attend the debriefs and take notes. They also used the ICAD reports, initial 111 call logs, media reports and notes and observations from attending personnel.

The content contained within this report is a true and accurate reflection of the information provided to the team through debriefs, interviews and data collected by Fire and Emergency New Zealand reporting systems.

Note, a Fire and Emergency New Zealand login will be required to access the Fire and Emergency links within this document.

Review requested by

Fire and Emergency Operational Efficiency and Readiness

Review Team

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Links

ICAD Report	F2919712 (Tangoio)	F2938699 (Tikokino)
Media Articles	Stuff (Tangoio)	Stuff (Tikokino)

Environment Descriptions

Tangoio

Tangoio is a coastal farming locality and popular beach location 23 kilometres north of Napier and seven kilometres north of Whirinaki in the Hawkes Bay region. It has extensive forestry in the hills above the coast managed by three forestry companies. There is also farming, and a small coastal community, Waipatiki, nearby.

Hawkes Bay regularly becomes very dry during the summer, so the fire risk typically also becomes very high. At the time this fire started, a restricted fire season was in place. Over several days of hot dry weather Hawkes Bay had experienced several fires. The PRFO released fire danger warnings on the 4th and 5th of January. Based on the warnings, the forestry company at Tongoio had decided that on the day in question, they were going to stop operations at mid-day due to the predicted high temperatures.

When the fire at Tongoio started, there was a 30km/hr wind gusting to 60km/hr. The temperature was 22°C and increased to 34°C later in the day. Relative humidity was low, and fire fuels were extremely dry. The fire fuels comprised un-grazed dry grass, harvesting slash, young pine trees and mature forest.

Tikokino

Tikokino is a small town in Central Hawkes Bay District located 55 kilomtetres southwest of Hastings and located on state highway 50. It was established in 1860 and began as the sawmilling centre for local forests then becoming a service town for the farms that took their place.

Today it is predominantly easy farming terrain and horticulture but is surrounded by forests in the hills. Though a small town it also has eight buildings registered by Heritage New Zealand.

When the fire started conditions were the same as described above for Tikokino and it experiences the same hot dry weather in summer.

The Event

Tangoio

Weather conditions in Hawkes Bay were extremely dry over the Christmas/New Year period, leading to 2020 and creating an extreme fire danger. On January 4th, the Principal Rural Fire Officer (PRFO) published a public weather warning urging people not to light fires in the open. He repeated the warning on the 5th and 6th of January. January 6th was the first day back at work for many after the Xmas/New Year holiday break. Although it was the first day back, the forest manager intended to cease operations midday due to the hot temperatures and extreme fire

danger. Several emergency incidents in Hawkes Bay and the lower North Island in December, leading into January, kept the ComCen very busy over the holiday period.

At 11:43 on January 6th, 2020, the Central ComCen received a 111 call from a member of a forest management team. They reported a fire in the Tangoio forest, Hawkes Bay, and while speaking to the operator, they mentioned it had grown quickly, doubling in size while on the phone. Tangoio is approximately 27 km north of Napier, but at the time of the call, both appliances from Napier fire station were involved in another incident. ComCen dispatched appliances from Hastings (HAST561), Bayview (BAYV541), and a water tanker also from Bayview. At 11:48, the Senior Station Officer (SSO) from Hastings attached an additional tanker to the response due to the dry weather conditions. A message was passed from ComCen indicating the caller would really like a helicopter due to the 'fine fuel measure' being very high at Christmas. At about the time of the third alarm being transmitted, the PRFO, who had been alerted to the fire, responded two helicopters with an Air Attack Supervisor (AAS) and two Deputy Principle Rural Fire Officers (DPRFOs). The availability of aircraft was limited due to the high winds preventing some helicopters from taking off. At 11:48, the first DPRFO (RFOHAWKES2) contacted responded.

On arrival at about midday, BAYV541 could see vast amounts of smoke and requested helicopters to be placed on standby, and at 12:06, it transmitted a 3rd alarm. HAST561 arrived at 12:08, was briefed and assumed command on request of the OIC.

The forestry crew leader identified himself and requested the Officer of HAST561, located close to where the fire started, to protect a large machine (Feller Buncher) critical to their ongoing work. The Officer set up on the skid site and began a fire attack using a tanker for water supply. The fire was in cutover pine that was well cured and a strong wind was driving the fire toward standing pine. At 12:14, a SitRep from BAYV541 indicated the total area of the fire was now more than 4 ha, mainly in cutover material extending into standing forest. They were using an high pressure delivery (HPD) to protect forestry assets. At 12:18, crews were informed that the helicopter's estimated time of arrival (ETA) was about one hour. A safe arrival point (SAP) was communicated at 12:20 hours.

At 12:20, the National Rural Support Team was paged.

When the first DPRFO arrived at 12:26 he waited at the gate for a contractor whom he knew was responding to this incident and had an intimate knowledge of the forest. Two appliances were visible, and he could see the fire becoming very intense. He couldn't tell where the head of the fire was; however, he identified "spotting" 100m in front of what could be seen. He had a conversation with the Officer of HAST561, noting that urban crews were working along the base and flanks of the fire and made an initial plan to try hold the fire at the road. He then drove around the fire to Settlement Road to gauge the situation's full extent.

Napier 512 (NAPI512) arrived at 12:32 and waited at the SAP. After being briefed, the NAPI512 crew was tasked to perform a cut-off at the road with assistance from a forestry tanker and crew. The OIC used the tablet from NAPI512 to view the fire index software. There were discussions about the conditions and speed of fire development and it was decided to focus urban resources on structures and property. A DPRFO began to organise the response of heavy machinery and, on the arrival of the helicopters, intended to conduct an aerial survey of the fire.

Hastings 562 (HAST562) arrived at 12:42. The SSO did not consider there was a suitable command structure in place and could not see the fire behaviour due to heavy smoke. Following a discussion with the officer from HAST561, he met with the DPRFO and was appointed Operations Commander (Ops). He was unable to gain any situational awareness of the terrain and scale of the fire from his position, due to the large amount of smoke encompassing the area. He didn't have a suitable vehicle to survey the extent of the fire, and he was also unaware of what appliances were responding because Rural Fire used a different process to resource their incidents. He therefore sectorised the base of the fire area using the built environment geographical sectorisation with a station officer (SO) in charge of each sector.

Therefore, at this early stage of the incident, the HAST562 Officer was Ops, the first arriving DPRFO and the AAS took control of the aircraft sector and the Officer of HAST561 was in charge of Sector Alpha (fire ignition location). Sector Alpha was also established as the Forward Control Point (FCP) when the Incident Command Unit (ICU) arrived.

Communications were difficult in the undulating terrain; handheld radios didn't work well and there was no cell phone coverage. However, the Land Mobile Radio (LMR) did allow for some communication. Ops eventually went for a drive with the first arriving DPRFO to gain first-hand knowledge of the fire.

The on-call Senior Officer (HAWKSBAY2) was notified on the second alarm and responded when the third alarm was transmitted. On arrival, he saw appliances at the SAP, the start of a long track leading up to the fire. No SitRep had been transmitted, so he went forward to Napier 514 (NAPI514) crew for more information. To help with communication difficulties, rural personnel requested that the ICU be positioned to the base of the fire. He recognised this would be a long-duration incident, so he arranged for the Salvation Army catering facility. The DPRFO, the contractor and the AAS briefed the Senior Officer. It was the Senior Officer's understood that the DPRFO would become Ops due to his technical knowledge of wildfires and the senior officer would assume the role as Incident Controller.

To prevent congestion, Operational Support cordoned the narrow forestry roads.

The FCP was established on an upwind skid site at the base area. A rapid withdrawal was required as a wind change and a lack of resource to contain the subsequent fire spread resulted in

appliances and the ICU being compromised. Some Fire and Emergency New Zealand firefighting equipment was left on the ground where it was being used as there was no time to retrieve it.

Although on leave, the Area Manager who lived nearby drove to the incident as he could see this was a significant fire and seemed to be advancing toward the nearby beach community. He contacted the PRFO to give him some situaltional awareness of the fire from a another forest entrance. He suggested the ICU relocate from its present position near the pump appliances to this new location. He felt the new location would provide better radio communications and line of sight to the fire. After withdrawing from the site at the base of the fire, the FCP was established in the location suggested by the Area Manager. But despite efforts incident ground radio communications (IGC) were an issue throughout the fire, even following attempts *to locate radio repeaters on high ground.

The first aircraft arrived around 12:15 and by 13:00 there were five helicopters and two fixed-wing aircraft on site, with the extent of burn area estimated at 10 hectares.

An initial Incident Management Team (IMT) was in place by 13:45, and a request was passed to activate the National Incident Management Team (NIMT). The IMT was initially set up at Hastings Fire Station as the PRFO's office was located there, but soon relocated to the Hastings District Council Emergency Management Centre (CDEM) to provide more space and better facilities. The PRFO then assumed the role of Incident Controller (IC). As it transpired the IC's team were the national NIMT duty team, and members were contacted and asked to respond to the Hastings CDEM facility. A full IMT was established by 21:30 and it worked until 23:00 to prepare the IAP for the next day. This facility served the IMT well throughout the incident, but its distance from the fire (approximately 50km away) delayed teams getting to the incident after their briefings. It was also a long drive for roles within the IMT who may have needed to attend the actual fireground.

High winds and an already extreme fire danger in Hawkes Bay ensured the fire was moving swiftly into the standing pine forest. Beyond the pine forest was open farmland where the IC believe the fire could be more easily contained. So, initial tactics were to protect the fire's flanks then contain and extinguish it once it burnt through the forest. The young pines and long grass within the fire ground created very dense smoke conditions that hampered the effectiveness of the heli-buckets to drop water effectively as they had difficulty getting line of sight of where to drop their water.

A forestry manager told the DPRFO of a house downwind that could be threatened by fire. After evacuating the initial base area, the OIC HAST512 was tasked to protect the house on Settlement Rd and ensure the occupants were evacuated. Using HAST562 (CAF appliance) and a tanker as firefighting resource if required they monitored the advancement of the fire with a thermal imaging camera (TIC) from Settlement Rd. Helicopter pilots believed the fire was tracking away from the house but as a precaution it was pre-treated with class A foam.

A plan was developed for forestry personnel to cut down some trees to facilitate a firebreak and the house was pre-treated with foam. The fire got within 80m of the dwelling. A retardant line was established between the house and the fire on day three. While laying this retardant line, forestry contractors working in the area were drenched with the product resulting from a lack of incident ground communications.

As more resources arrived, efforts were made to create more water sources to support firefighting operations, achieved by using water tankers. The third alarm and subsequent mobilisation of additional rural resources meant that Fire and Emergency had five urban appliances, ten tankers, five smoke-chaser units, ten rural appliances, Operational Support, and a Command Unit on scene to fight the fire. There were also seven excavators, two bulldozers, ten contract tankers, several forestry crews, seven helicopters and two fixed-wing aircraft.

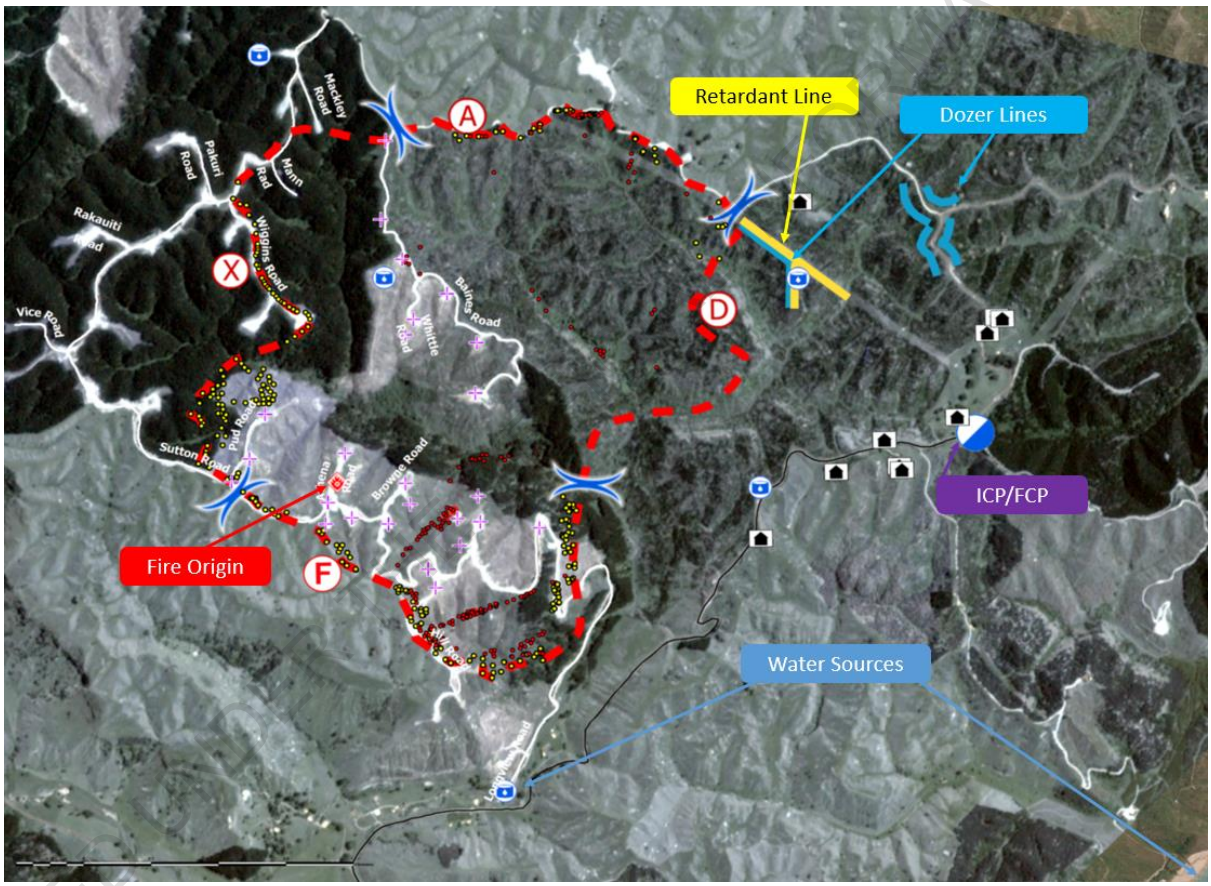

Figure 1, Tangoio Fire Map

There was only one source for heli-bucket dipping through a forestry dam, and some pilots resorted to dipping in the sea that was close by. However, the lead pilot identified that there would have been even bigger challenges controlling the fire without the dam. Portable dams and a mobile dipping truck were also used later on to establish more water supplies. Aircraft operations were completed before dusk, and Fire and Emergency New Zealand crews were stood down for the

evening. A small forestry team remained on standby overnight. The forestry crews who remained vigilant on this dwelling throughout the night to ensure it wasn't threatened by the fire.

The fire was contained along Settlement Road with crews positioned on the ridge able to contain and douse any fire which crossed the road before any significant fire spread.

Dampening down and containing flare-ups continued for 12 days, with the incident closed on January 18th at 14:57.

Tikokino

On February 3rd at 16:55, the Tikokino fire was reported burning alongside SH50. Crews were already involved in containing another fire close by at Wakarara. The DPRFO immediately diverted a helicopter fighting that fire and it arrived at Tikokino within 16 minutes.

Hastings 562 (HAST562) and Hastings 563 (HAST563) responded at 17:02 and were advised by the ComCen that this was a grass fire spreading into forestry. The fuel consisted of second-generation pine trees, broom, and tree stumps from previous cuts. Heretaunga (HERE5071) responded at 17:19.

A request to the ComCen from HAST563 for a second tanker was made, and a short time later another two helicopters were dispatched due to the fire now being in pine trees, having jumped SH50.

Shortly after this the DPRFO detached themselves from the Wakaraka fire and responded to Tikokino.

When the Hastings appliances arrived they reported a 5 Ha fire in a pine plantation, which had spotted across SH50 and was burning into grassland. A 3rd alarm was then transmitted. Conditions were very dry and windy. The SSO discussed with the aircraft pilot concerns about the threat the fire was posing to property so this was a feature of the initial strategy.

The Police were requested to close SH50. The ICU was diverted from another incident and arrived to establish the ICP and a SFP communicated a short time later.

A SitRep indicated that four helicopters were in use using heli-buckets and the fire appliances were using hose deliveries and there were about 10 ha of forestry plantation on fire. At about this time, incident control was passed to a DPRFO.

The Salvation Army was requested to attend to provide food for 50 personnel.

Once the fire burned through the forestry plantation and reached pasture it was quickly contained with structure protection put in place, and crews focused on dampening down. On the morning of February 4th, the PRFO took over the role of IC with three helicopters using heli-buckets and 20

ground crew using fire deliveries and hand tools. Late in the evening a significant flare-up was reported and shortly after this the fire crossed SH50 so structure protection was put in place to protect at risk properties.

In the early hours the following morning e crossed SH50 again, but was quickly contained again, with structure protection remaining in place.

The IC, supported by the Senior Officer, requested a Task force from the Region HQ to support crews who had been working long hours throughout January and were exhausted. A task force comprising urban and rural crews and with urban and rural fire management expertise was deployed. Their role was to relieve exhausted firefighters and officers, and as and when requested give crews a chance to fully stand down and re-charge their batteries. As mentioned, this was well received and the task force members were also appreciative of how welcomed they were and looked after.

Dampening down would continue for eight more days, and the incident was closed on the morning of February 12th.

Review

This section outlines the findings from the operational review investigation based on the investigation's terms of reference and expectations have been structured to reflect the ToR. Generally, the findings are grouped chronologically under the "4Rs" headings Reduction, Readiness, Response and Recovery.

The Operational Review team will measure compliance against Fire and Emergency Operational Instructions and Policy.

Inter-agency and Stakeholder Relationships

Our expectations

That Fire and Emergency engaged with key stakeholders (building owners, landowners, territorial authorities, forestry companies, and contractors) and key partners and stakeholders that support or are engaged with Fire and Emergency New Zealand to discuss and support reduction activities. This includes public education notifications to ensure the public is informed and aware of the fire risk in their communities.

Our findings

Local management had a good relationship with the forestry companies and had been very proactive in promulgating fire warnings.

Several public notices had been published to warn the public about the danger of fire on the days leading to the ignitions of both fires. The PRFO and his team had an extensive work history with the previous rural fire authority and were very well connected with key agencies in and around Napier and Hastings District Council boundaries.

Fire Cause and Determination

Our expectations

That a qualified investigator was assigned to investigate the cause of the fire. Furthermore, the investigator completed the report within the expected timeframes.

Our findings

A Senior Specialist Investigator and a local Specialist Investigator examined the cause and origin of the fire and concluded it was accidental. The point of origin was at the forestry skid site where the first crews responded. The fire report wasn't completed or available for sighting at the time of this review.

Fire Season Promotion

Our expectations

Public signs were maintained and kept current during the fire season, informing the community and members of the public passing through to be aware of the fire danger. Also, the Fire and Emergency New Zealand website "Check It's Alright" provided current information about the fire season conditions and permitting information.

Our findings

On the days the fires started, various indices indicated it would be an extremely dangerous period for fire. The PRFO had widely published the fire season danger status through print, social and radio media outlets. The Fire and Emergency New Zealand website "Check it's Alright" was also regularly updated and current.

Operational Skills Maintenance (OSM) compliance

Our expectations

All personnel complied with the requirements of the Operational Skills Maintenance (OSM) procedures, or an equivalent system (e.g. spreadsheet, D4H etc.) and also had the appropriate qualifications for the role they performed.

Our findings

The team found that the district's "urban" brigades were all OSM-compliant in their critical skills. The district's "rural" brigades use a different system to track the individual's training called D4H. The D4H database showed all the rural firefighters had received the appropriate training at some time however, the database does not capture evidence of maintenance training, nor does it record the currency of the skills that have been attained.

Pre-incident Planning and Intelligence

Our expectations

Personnel had applied the operational planning process to identify sites where significant fire or other risks may indicate the need for a site report or tactical plan. Furthermore, if in the natural environment, the Fire Plan is current.

We expected to see that Operational Planning contributed to the successful outcome of the fires through:

- a fire management plan that had been reviewed and updated prior to the fire season and any pre-planning undertaken regarding the fire season had been included,
- the fire plan had been widely promulgated and communicated to forestry and landowners,
- provision for multi-agency interoperability had been discussed and agreed with other agencies, including local territorial authority, civil defence and forest owners,
- both training and exercises had been conducted leading up to the fire season,
- resources and equipment had been regularly checked and maintained in preparation for the fire season.

Our findings

The PRFO had developed a comprehensive Interim rural fire plan for Hawkes Bay when Fire and Emergency was first formed in 2017, but it was focused on the changes and the impacts of the then-new legislation (Fire and Emergency New Zealand Act 2017). The plan was distributed internally within the Hawkes Bay, but not widely to external agencies such as local Civil Defence.

The review team found no evidence of training or exercises taking place leading up to the fire season, however, Regions do run an IMT SIMEX annually. Resources and equipment were being regularly checked and well maintained to ensure they were operationally ready.

Water Supplies

Our expectations

That crews had knowledge of, or access to electronic data or water maps documenting the location of water supplies either reticulated or static for the use of firefighting or decontamination as prescribed in the Schedule of Operational Readiness Standards.

Note, OER does consider the National Notice 034/2015, "Suspension of non-emergency work on roadways", which has halted hydrant testing.

Our findings

The area involved on fire was close to the coast as well as the forest having a large dam where tankers could refill from. Knowing this area had a limited water supply, tankers responded on the initial alarm with eventually a total of 20 being involved from both Fire and Emergency New Zealand and Contracting companies. There were numerous dams throughout the forest; however, only one was within the area close to operations and suitable for dipping a helicopter bucket. This dam was used, but with seven helicopters involved they opted to dip from the ocean to reduce wait times and congestion. The fixed-wing aircraft operated out of the Napier airport.

Initial Mobilisation and Assistance Requests

Our expectations

The Fire and Emergency ComCen and responding appliances meet the performance expectations stated in the Service Delivery Guidelines. Furthermore, all requests were processed promptly, as procedures state.

Our findings

Comcen processed the calls and responded to appliances promptly as and when requested, with all notifications actioned appropriately. As with most large vegetation fires the fire plan was enacted, resulting in deployment and resource movements being organised by the IMT. Although Comcen did respond some resources, this was mainly at the request of IMT logistics .Response driving and appliance positioning

Our expectations

Officers and drivers adhered to the principles of driving policy when responding to the incident. Furthermore, when positioning the appliance, firefighter safety is taken into consideration by ensuring they are parked away from exposure to fire, including consideration of fire development and possible direction of fire growth, building collapse, power lines, trees or other possible hazards. Also, as the incident progressed, vehicle positioning was re-evaluated.

Our findings

There were no recorded issues relating to driving to and from the incidents. The response times for the initial appliances met performance expectations.

For Tangoio the command unit was initially located close to the original skid site where the fire originated, however, this wasn't ideal as communication links were not good. Furthermore, it was established before full situational awareness had been attained, with the Officer not having time to

identify a more suitable location. A Senior Officer who arrived later via a different route suggested it be in a better position than he'd passed while responding. This new location had better radio and cellphone coverage plus the benefit of a more visual outlook of the incident unfolding in front of them.

There were no issues identified for the command unit location at Tikokino.

Size-up, Strategy and Tactics

Our expectations

The first arriving Officer undertook an initial size-up and risk assessment of the incident site in line with the principles outlined in the Command-and-Control Policy. The size-up would result in comprehensive situational awareness, including hazard identification and the potential for escalation. Furthermore, the information contributed to the formation of an action plan, sound strategy and supporting tactics.

Our findings

Tangoio

The first arriving crews focused on the fire near the skid site as the operator was concerned about the loss of machinery and equipment. This led to a lack of situational awareness of the greater scene where the fire was rapidly escalating. As more resources and senior managers arrived, a more suitable structure was implemented, and a simple plan was devised focusing on containment and extinguishment. Cut-off lines, such as roadways, were identified.

Once the IMT was established, the overall strategy didn't change. However, the tactics to support it did. This included air operations, laying retardant lines, and introducing more ground crews, including contractors. Forestry companies also provided resources.

Although the plan was sound, its implementation was slow to be implemented, causing forestry company frustration. This was due to the IMT established at the Civil Defence EOC in Hastings. This is approximately 50km away resulting in delays and time wasted in getting firefighting activities underway. Briefings and taskings were being done at the EOC location before departing to the fireground. It is understood that firefighting activities need to start at first light when temperatures are cooler and winds are generally of less strength therefore, fire spread is at a minimum.

These delays resulted in forestry workers and contractors making their own way to the scene early and commencing firefighting activities they thought needed to occur long before Fire and Emergency crews arrived and commenced operations.

The forestry company stated that in their opinion this daily in Fire and Emergency deployment caused more loss of plantation assets than they thought was necessary

Tikokino

Like Tangoio, the location of the incident was approximately 50 km away; however, it was in the opposite direction. The very early re-deployment of a helicopter from one incident to Tikokino was an excellent tactic and provided a very early fire attack capability. SH50 was deemed to be the cut-off boundary for the fire; however, the fire did cross it a couple of times due to a lack of resources onsite. Fortunately, there was a change in the direction of the wind, which caused a backburn, greatly assisting with extinguishment.

Firefighting Mediums

Our expectations

That a high level of operational competence was demonstrated in the selection of firefighting medium to achieve the initial strategy and tactics deployed; also, those choices are based on a worst-case scenario or the recognition of fire behaviours. Once a comprehensive size up and assessment of potential hazards had been completed, further assessment was made of firefighting mediums (water, foam etc) and methods of application (handlines, monitors, aircraft etc).

Our findings

A high level of operational competence was demonstrated across the firefighting operations and Incident Control functions for both incidents. The Tangoio fire comprised of volatile fuels and access difficulties because of the terrain and rapid-fire spread, therefore the initial tactics were handlines to protect machinery assets while further assessments were completed. This was difficult as heavy smoke blanketed the forest and made size up very difficult and protracted.

Aircraft were requested early in the event, which allowed for early intervention in the rapid-fire spread. As time passed the use of heavy machinery was introduced to produce fire breaks, particularly as a defence tactic for structures that were in the line of fire spread. As well as bulldozer lines, property protection was achieved by means of ground crews with pumping appliances, tankers and BA, plus assistance from air attack dropping water and laying a retardant line between the fire and the property.

The Tikokino fire was easier to manage as the terrain was flat and there was good access due to its location next to SH50. The weather conditions were similar to Tangoio and fire behaviour was intense because of this, but the early intervention of aircraft supported crews ability to contain the fire.

Incident Management Team Structure (IMT)

Our expectations

We expected to find that as the incident escalated, an incident management team is established for an incident of this magnitude. It is also expected that the structure implemented would provide clear lines of communication and would be a major contributor to the event's successful conclusion.

Our findings

There was a lot of confusion from early arriving crews about who was in Control of the Tangoio incident. The review team found much conflicting information about the roles people performed and, at one stage, identified two people who thought they were Operations Commanders. Furthermore, when crews arrived, they couldn't locate the IC as he was either in a helicopter or roaming the site in his vehicle. This led to some freelancing, where crews performed what they thought needed to be done until some direction was provided.

Once the size and scale of the incident was realised, the PRFO formed an IMT located at the Hastings Emergency Management Centre where they have operated for the duration of the fire. Many in attendance felt this was located too far from the incidents (approximately 50 km to both Tangoio & and Tikokino) and that they didn't have good situational awareness. Feedback to the review team suggested the IMT needed to be located closer to the events to reduce the timeframe between briefings and finally getting to the ground. The earlier operations can commence soon after daylight the more can be gained before temperatures rise, fire conditions change and making the most of all available daylight.

When the IMT stood up, the Command Unit then r the Forward Control Point at Tangoio.

As the IMT was still operating at Tangoio they were also able to provide support for the Tikokino fire. This also had the command unit set up as the FCP.

Incident Ground Facilities and Cordons

Our expectations

That appropriate incident ground facilities, including cordons, were in place to suit the size and complexity of the event as prescribed in the Command-and-Control Technical Manual and/or the Coordinated Incident Management System (CIMS) manual.

Our findings

The initial location of the command unit has already been discussed. Roads surrounding the fire were set as the outer cordons, with all fire operations occurring within these boundaries.

Due to SH50 being a main highway it was necessary to request Police to close the road around the vicinity of the fire. This provided safe zones for all operations.

Incident Ground Communications

Our expectations

That the IC or his/her delegate implemented an effective communications plan as prescribed in the Command-and-Control Technical Manual and or Coordinated Incident Management System (CIMS) manual. The plan reflects the reporting lines of the IMT and contributed to the incident's overall safety and effective management.

Our findings

During the initial phases of the response and initial firefighting operations, communication was via both VHF and UHF IGC radios, i.e., urban areas used UHF radios for initial taskings and rural used VHF. Once a communication structure was implemented, VHF became the predominant channel. Due to the mountainous terrain and tall tree standings, communication between the operational zone and the original location of the ICP was not consistent. This improved when the ICP was moved to a better position, and all communications, including cellphone coverage, was enhanced considerably.

Communications between the FCP and ICP in Hastings were mainly done via cellphones and other technologies within the Command Unit.

A lack of compatibility with forestry radios made communications between Fire and Emergency New Zealand and the Forestry contractors challenging, particularly at the onset of the incident.

The review team didn't identify a form communication plan. The standard channels were used for tasking and sector management, with the VHF "air ops" channel used to communicate with aircraft.

There were no issues identified to the review team for Tikokino.

Contractor Management

Our expectations

The action plan identified all contractors who attended the incident, the contractors arrived with or received the appropriate PPE and a safety briefing. Furthermore, they are trained and qualified for the tasks expected of them.

Our findings

The main contractors used at the Tangoio incident were helicopter operators using heli-buckets, fixed-wing aircraft, excavator and bulldozer operators familiar with the forest. There were accountability issues on the fireground where, often, it was unknown which contractors were on site, where they were located and what they were tasked with. Moreover, there was no way of identifying which contractors were qualified to be on the fireground, for example, those who held unit standard 3285 (Demonstrate knowledge of protection of personal safety at vegetation fires).

Some of the forestry and contractor representatives suggested to the review team that they sometimes felt a lack of direction, resulting in their crews performing tasks they thought needed to be achieved, not as directed by the IMT.

There were no issues identified for the fire at Tikokino, with the IMT quickly able to support this fire.

Safety, Health and Wellbeing

Our expectations

All Fire and Emergency New Zealand personnel comply with the Health and Safety at Work Act 2015. Furthermore, a Safety Officer was appointed in compliance with the Operational Safety policy, ensuring the Safe Person Concept and LACES (lookouts, awareness, communications, escape routes, safety zones) were appropriately applied. A thorough risk analysis was conducted, monitored, and reviewed throughout the incident. All hazards and control measures will be recorded on the Incident Ground Hazard Assessment form and transferred to a Hazard Assessment Board to manage if available.

Any injuries or near misses to firefighters, contractors or members of the public were recorded. The safety, health and wellbeing of firefighters and contractors was managed throughout the incident.

Our findings

A near-miss incident case report was entered in the Fire and Emergency safe@work system reporting a near-miss related to the dropping of fire retardant on a forestry contractor. This incident was the subject of a separate Level 2 accident investigation.

A Safety Officer was appointed at an early stage of the incident. However, due to the terrain and large amount of smoke on the incident ground, it was challenging to get good situational awareness. Commanders arriving at the incident were concerned about the potential fire behaviour and endeavoured to ensure they had crews, machinery, and appliances in safe locations.

There were no reported injuries or near misses for the Tikokino fire and a safety officer was appointed as soon as a suitable person arrived.

Task Force

A Task Force was deployed to Hawkes Bay from the greater Wellington area at the request of a Senior Officer. It comprised of volunteer (urban and rural) and career staff. Upon arrival, the task force was divided into two teams: urban and rural Volunteers and two Senior Officers relieving the Waipukarau and surrounding brigades. A career crew was also "roaming" the greater Central Hawkes Bay relieving stations as required. The other team, made up of career crews, relieved Hastings and Napier stations. Their role was to cover the station's everyday responses allowing staff plenty of rest.

The crews either stayed on the stations with stretchers or bedding provided or at the USAR base set up at the Waipukarau camping ground. The task force was warmly welcomed by all crews from all stations who had worked excessive hours and were exhausted. During their deployment, the task force crews attended many incidents.

There was an issue in responding appliances attached to the task force. The only issues were that when a task force appliance responded to an incident in Hawkes Bay, it also activated the pagers at its home station, in Wellington.

Personal Protective Equipment (PPE)

Our expectations

The appropriate level of PPE was worn by personnel for their tasks, as prescribed in the Uniform and PPE policy. Furthermore, the PPE performed to the expected level and, if not, was impounded and reported accordingly.

Our findings

All Fire and Emergency crews had the appropriate PPE for the tasks required, such as Level 2 for structure protection and wildfire gear for vegetation firefighting. However, there was an issue when the heavy machinery contractors arrived and none of them had any level of firefighting PPE. Fire and Emergency New Zealand sourced and provided the appropriate PPE to initiate work such as bulldozer lines.

Incident Debrief

Our expectations

The hot debrief facilitated at the end of the incident covered the main points relating to the incident. Furthermore, the formal debrief(s) (if completed) were structured enabling all those in key roles at the incident to provide input. All issues created a corrective action plan to be managed locally or via the appropriate process.

Our findings

Representatives of the Operational Efficiency team attended debriefs of both fires. Most personnel invited were rural crews, so there was little input from urban crews, who were first in attendance at the incident. Due to the Covid-19 issues the initial debrief had to be delayed.

Conclusion

This operational review of the Level 2 Vegetation Incidents in Tangoio and Tikikino, Hawkes Bay highlights several areas for improvement for Fire and Emergency New Zealand.

The start time for forestry companies and Fire and Emergency New Zealand when working together needs to be agreed, lack of suitable technology in the command units to manage wildfire incidents, lack of compatibility creating poor communication at the incidents, non-compliant PPE for contractors needed at large scale incidents, and the absence of a well-structured IAP's and

IMT's are some of the significant issues that need to be considered as part of continuous improvement. These need to be addressed by management.

Also capturing what is working well and what needs improvement is very important at the end of each operational cycle. This feeds into the next operational period IAP, but will also highlight any safety issues, or lack of resources etc

The report also highlights the importance of debriefing and reviewing incidents promptly to identify areas for improvement and implement changes once the incident is over. While there were delays in completing the review due to the Covid-19 lockdowns, the lessons learned from the incidents can help Fire and Emergency to improve for future long-duration incidents.

But despite the issues identified regarding the fires at Tangoio and Tikokino, crews and leaders worked hard to contain, control, extinguish, protect property, and mop up both fires.

It is also acknowledged that there has been a significant delay in finally publishing this report, but many of the issues identified for improvement discussed through this review were not lost or ignored and have been addressed since these two fires occurred.

Some examples of the improvement are:

- Improved PPE for firefighters involved in wildfires
- Improved technologies on the command units, including the ability to supplement weak radio signal areas
- The integration of New Zealand's 17 fire districts so there is clear leadership, skills, training, and resources for incidents in both the built and natural environments
- A project has been implemented to improve fireground accountability for all incidents
- Development of 16 'service level agreements' between Fire and Emergency, forestry companies and/or forest management companies
- Development of standards for the utilisation of key contactors and machinery operators
- Annual Simulated Exercises (SIMEX) for each Region prior to the wildfire season
- Bi-annual fire plans for every Fire and Emergency District
- National wildfire weather monitoring during the wildfire season and region weekly reporting on personnel capacity for both firefighters and key IMT positions
- Region Incident Management Teams (RIMT's) have been formed and over 40 personnel have attended the annual Planning Managers course
- Fire and Emergency have established an Air Desk function based on the AFAC model to deploy and manage aircraft safely during incidents including wildfires and adverse weather events
- New aircraft audit standards have been developed

Review Authorisation

This report has been authorised by Operational Assurance:

Everything in this statement is true to the best of my knowledge and belief, and I made the statement knowing that it might be admitted as evidence for the purposes of the standard committal or at a committal hearing and that I could be prosecuted for perjury if the statement is known by me to be false and is intended by me to mislead.

Trevor Brown
Assistant National Commander
National Manager Operational Assurance