

Created by: Operational Efficiency & Readiness

OPERATIONAL REVIEW

F3138746
Matakana Island, Tauranga
13 December 2020 – 26 January 2021
Mā te mōhio ka anga whakamua
Through knowledge we improve



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Executive Summary

On 13 December 2020, a fire was reported at 5 Hume Highway South, Matakana Island. The local Matakana Island Brigade deemed the fire too risky for a ground attack and requested helicopters for an aerial attack. The fire appeared to have been successfully suppressed using three helicopters, ground crews and heavy machinery overhauling and mopping up the next day.

A change in weather conditions and the incomplete overhaul resulted in the fire rekindling a week later. This resulted in a campaign fire lasting for an additional ten days requiring significant resources, including helicopters, firefighters from forestry companies and Fire and Emergency personnel from throughout the Region and beyond.

Access to the island was by a Forestry vessel running between Sulphur Point Mount Manganui and the Southern tip of Matakana Island. All personnel, appliances and equipment were transported via this route. After the fire was extinguished, patrols continued throughout January 2021, with no formal declaration of the fire being out.

An IMT suited to this incident was not formed, and when one was established, it was adhoc and very lean. This resulted in several key factors being overlooked, such as an Incident Action Plan, resource rotation, welfare facilities, communication plan and expense tracking, to name a few.

Concern was expressed to the review team regarding incompatibility between natural and built incident management systems and procedures. There was also concern about those managing the initial incident, in particular, the lack of understanding of the risk posed by buried smouldering organic material in a sandy environment. This requires specialist machinery and thermal imaging capability to detect deep-seated hotspots. Furthermore, the creation of firebreaks is a specialist skill that, in this case, wasn't employed, thereby allowing fire spread. The review team also found there was an unwillingness from the IC to engage with and accept offers of support and advice. This contributed significantly to the delay in establishing a properly formed IMT, getting expert advice, and utilising the support from the Region Coordinating Centre.

It wasn't until a Service Delivery Advisor with expert knowledge of these events arrived at the island that things started to improve. He introduced a more robust IMT and reviewed the current tactics and adjusted where needed.

This event took place over approximately 45 days over the Christmas and New Year period. There was very little documention captured for use by the review team. This included no Incident Action Plans and no formal Situation Reports being developed during

the first few days of the fire. There was also a minimal amount of information shared with the Communication Centre. They were struggling to understand the extent of the fire and resources being called for as often requests for resources were done outside normal processes through the ComCen. But more importantly this contributed to a lack of communication and cohesive tactics confusing both firefighters and contractors utilised.

Findings

The review team found;

- A lack of Leadership and Command & Control was evident at this event. Most personnel interviewed, whether Fire and Emergency personnel, contractors, Matakana Island brigade members, or other stakeholders involved mentioned that a lack of structure led to several critical functions being overlooked and poor tactics being implemented. These functions and tactics include and are not restricted to; creating an Incident Action Plan, managing assets and personnel, staff welfare and employing the correct tactics to extinguish the fire including the efficient use of aircraft, making promises and commitments to personnel outside of FENZ policy, and financial delegations.
- The lack of a suitably skilled IMT contributed to the re-ignition after the IC believing the fire was out. This was through a lack of an effective IAP with commensurate strategy and tactics, limited expertise in understanding the behaviour of the fuels in the sandy soil conditions, and not realising how to properly mop up after the fire was thought to be out. This resulted in a prolonged campaign, at considerable expense to FENZ.
- Many Fire and Emergency Natural Environment brigades are presumed to have knowledge and experience in firefighting a forestry plantation type incident. The skills required to manage such an incident are very specialised and require specialist intervention very early. This is not to say our brigades shouldn't be attending these events to gain the skills and experience, they need to be mentored and work alongside those with the skills. In this instance the forest contractors who attended this fire brought that knowledge and skill to the incident, but this was not initially understood nor fully appreciated by the IC.
- Most of those who attended the incident, including Senior officers, were not familiar with the island. The forestry company managing the forest on the island established the Matakana Volunteer Brigade and it is only partially supported by Fire and Emergency. The review team found no evidence of the Senior FENZ Officer who had responsibility on behalf of FENZ either visiting the island or being engaged with key stakeholders. Fire and Emergency do provide good VSO support and this person visits regularly, and is

- appreciated by the Matakana brigade team. Being an island, it has its idiosyncrasies, so it deserves a specific section in the fire plan tailored to their needs.
- A person who is not authorised as per the Fire and Emergency New Zealand Act 2017 was appointed as the Incident Controller during an operational phase of the incident.
- The Ngaruawahia Operational Support Unit Canteen and Hamilton Operational Support
 Unit Welfare Facility were well received by those in attendance. But they were left to fend
 for themselves initially, with no accommodation or sleeping arrnagements considered.
 This would have been avoided if a functional IMT had been established, supported by the
 RCC.

Recommendations

The review team is very aware that the Fire and Emergency (September 2021) Tranche 2 stand-up will rectify some of these recommendations that result from the lack of unification of leadership teams within the Bay of Plenty at the time. However, at the time the review was completed the recommendations were;

- Ngā Tai ki te Puku Region and Bay of Plenty District Managers ensure all Senior officers in a response role attend SIMEX training at least annually and role play in the roles they are expected to perform at an actual event. The IMT must include functions such as finance that introduces a process to track expenses.
- Brigades that are not specialists in campaign fires or mop-up after a wildfire work alongside or are mentored by those who have the skills.
- The Bay of Plenty Group Managers, Community Readiness, and Recovery person responsible for the island are to make themselves familiar with the Brigade, form relationships with key stakeholders and the Community and refine the Wildfire Response Pan to the needs of the island.

Operational Efficiency and Readiness

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

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.

Purpose of Review

An Operational Review examines how Fire and Emergency responded to substantial, significant or unusual incidents to enable continuous improvement. While it 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.

A review focuses on the facts and does not provide conjecture or alternative opinions. The review identifies critical findings to inform senior managers where improvements are needed or there is a need to develop corrective actions. It identifies general findings related to strategy, tactics, leadership, agency and community engagement and/or activities that worked well to support organisational learning.

All incidents should have a hot debrief, and significant incidents will get a formal debrief facilitated by a suitably qualified person. This debrief is required to be written down in the form of an After-Action Review (AAR) and will be used as evidence by the review team.

Few reviews of emergencies, undertaken with the benefit of hindsight, would not identify lessons for the future, and this is one of the main reasons to carry out reviews of this nature. Therefore, our comments and observations should be read in the spirit that they are intended, which is to support continuous improvement of service delivery to the people of New Zealand.

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

Methodology

The review team use the Incident Cause Analysis Method (ICAM) as a guide to conduct operational reviews.

The content contained within this report reflects the information provided to the team through debriefs, interviews, and data collected through Fire and Emergency reporting systems.

Note, a Fire and Emergency New Zealand login is required to access most links within this document.

Review Requested by

Region Manager Ngā Tai ki te Puku, David Guard

Review Team

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Links

ICad Report	F3138746		Mall
Media Articles	Sunlive	NZ Herald	Stuff

Environment Description

Matakana Island is in the western Bay of Plenty. A long, flat barrier island it is 20 kilometres in length but barely more than 3 kilometres wide. The Island has been continuously populated for centuries by Māori mostly associated with Ngāi Te Rangi.

The Island has two distinct parts: 5,000 acres (2,023 ha) of farm and orchard land on the inner harbour, (where most of the population lives) and 10,000 acres (4,047 ha) of forest-covered coastal land exposed to the Pacific Ocean. In addition, a smaller island, Rangiwaea Island, is located just offshore from Matakana's southern coast. It has a population of approximately 200 people, and there are around 90 homes.

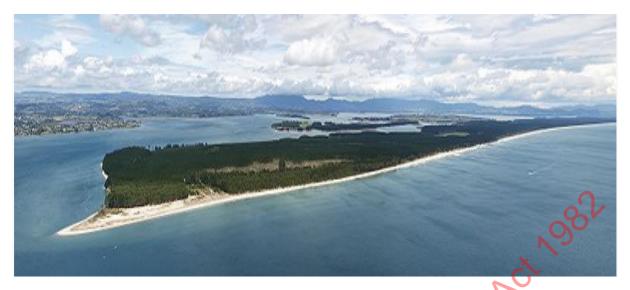


Figure-1, Matakana Island viewed form Mt Maunganui (Mauao)

The Island has three marae and protects the entrance to Tauranga. It is primarily covered with pine trees, although some land is cleared for the residents and has farmland and orchards. The Island's long, white sandy beach is popular with surfers and recreational boats who may BBQ on the shore. Public access to the island is via a ferry service out of Omokoroa on the western side of the Island. In addition, the forestry company operates its own ferry service between Sulphur Point, Port of Tauranga and a private wharf located on the southern end of the island. Fire and Emergency used this wharf and the forestry vessel to transfer assets to and from the Island.

The fire occurred in first and second rotation forestry blocks, the second rotation block containing four to five year old seedlings.

The Event

Matakana Island. Day 1 (Sunday, 13 December 2020)

At 15:20 on Sunday 13 December 2020, a 111 call was received at the Northern Communications Centre (Comcen) reporting a fire at the beachfront near Panepane point on Matakana Island. Additional 111 calls were received from people aboard boats and the mainland.



Figure-2, Southern end of Matakana Island showing vegetation fire approximately 1 km north of Panepane point

Comcen despatched the predetermined attendance (PDA) to a first alarm vegetation fire on Matakana Island. Matakana Volunteer Rural Fire Force (MVRFF) and one Rural Fire Officer (RFO) responded. Around the same time, a Fire and Emergency contractor (DPRF), who saw smoke coming from the island, placed a helicopter on standby. The Regional Manager's Advisor (REGION) was attached to the incident, and a neighbouring Area Manager advised.

On arrival, the of MVRFF located the fire in a slash pile approximately 100m from the beach. There were members of the public on the beach and recreational boats nearby. His risk assessment determined the fire was beyond the capabilities of his Brigade, requiring an air attack to suppress it before he could safely commit ground crews. As of the Incident Controller (IC), he provided a SitRep stating the fire was on the coastal margin and,

although the wind was SW, fire was spreading fast toward the forest. He advised that he would not be committing his crew until an air attack had reduced the risk.

At about 15:45, the Greerton pump (GREE751), water tanker (GREE7511) and command unit (GREE7518) were despatched and proceeded to Omokoroa to access the Island via the commercial ferry service. RFO received a call from the MVRFF to fire on the island and had Comcen commit him to the incident. Responding from Whakatane, he instructed Comcen to stand down the Fire and Emergency appliances as he thought they would have no access to the island.

The local procedure for responses to Matakana Island (pre-Fire and Emergency) requires the SSO at Tauranga Station to contact the Deputy Principal RFO Pumicelands, to ensure both organisations are aware of the response and processes to be followed. The SSO Tauranga was not notified of the Greerton appliances' responding, thereby no contact was made. The Interim Fire and Emergency, Bay of Plenty Fire Plan - Part B Response -1 October 2020 section 6 specifies the following PDA during High Fire Danger.

High Fire Danger - Crew arrival 30 minutes. Initial fire attack objective = 40 minutes

Zone:	To Fire:	On Standby:	To Athol / Rotorua or Incident Control:	Notifications:
All	1 x First Response Officer	1 x Helicopter	1 x Duty Officer	Duty Officer
All	1 x Crew Leader	2 x Crew Leader	1 x Radio Operator	Zone Manager
All	1 x Crew (4 people)	2 x Crews (8 people)	1 x Telephone Operator	PRFO
All	1 Fire Engine	1 x Fire Service		

arranged for an Oceanea Air helicopter to standby and proceeded to Sulphur Point to set up initial Air Ops. Seeing the smoke, he deployed three helicopters, Oceanea Air, Volcanic Air, and Heli Resources Murupara. They began firefighting operations, dipping from the ocean as RFO performed the role of Air Attack Supervisor (AAS). He was only communicating with the Lead Pilot as he could not establish communication with the IC using Incident Ground Radio Communication (IGC). The IC was amongst the forest on the Island, across the harbour, some distance away. RFO also contacted Tauranga Airport Air Traffic control to advise them of the aerial firefighting operation. The third helicopter was requested as one helicopter pilot was having difficulties with his firefighting bucket.

Coastguard took RFO and REGION to the island. They met with the IC, and after receiving a briefing, RFO assumed the role of IC. He provided a Sitrep updating the fire size, progress and tactics. He planned to contain the fire using only air attacks. Ground crews and heavy machinery would be brought in the next day to mop up. A forestry company on the island, offered to provide some heavy machinery, so one of their "Skidders"

was used to create firebreaks. Embers from the fire in the slash pile spread fire to scrub and stumps over a two-hectare area in multiple locations. These were suppressed using the three-helicopters, which were stood down at dusk (21:00hrs). RFO and REGION left the island at approximately 19:30, transferring command to the local . MVRFF patrolled the area, monitoring the fire during the night.

Released under the Official Information Act. 1982

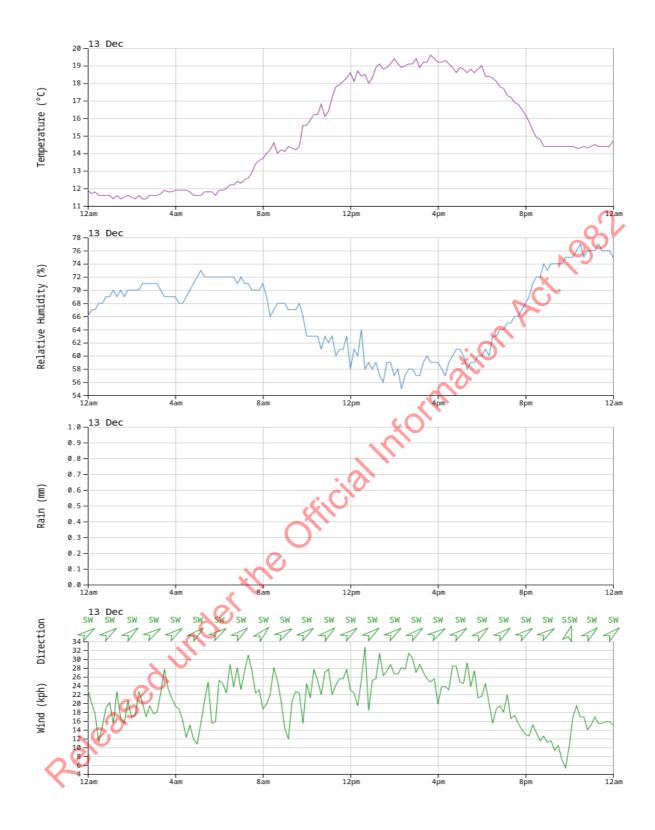


Figure-3, Fire weather data on the day of the fire, there had been no rainfall, the relative humidity was low and the temperature high. These conditions combined with light fuel and moderate breeze led to rapid fire spread and ember transfer.



Figure-4, change to an on-shore breeze driving the fire towards the forest and ash towards the

Day 2 (Monday 14 December)

Early the following day, the MRVFF reported the fire had flared up and jumped the containment lines. At about 06:30, the RFO put two helicopters on standby. RFO reported a wind change to SE direction and reconnaissance would be conducted after 07:00 before firefighting recommenced. He requested the Eastern Bays tanker from Whakatane (EAST6071). Comcen also responded GREE7518 and GREE7511. REGION returned with RFO to advise on the availability of urban resources including the RCC. The use of the RCC was declined at this time. REGION then queried whether the PRFO was going to attend, however RFO stated he had been in contact with the PRFO and they wont be attending. REGION then contacted the Area Commander to requesting some Senior officers to attend as he was concerned there was a lack of senior personnel on the incident ground.

RFO deployed to the island as the Planning/Intel Officer using Fire Mapper to track fire progress and fire lines. He also wanted to make contact and work with Machinery Operators and Forestry Crews.

The Area Commander directed two other Senior officers to respond with GREE7518 to the island to fulfil the Safety Officer (ISO) and Logistics (LOGS) functions. Upon arriving, they

could not locate the IC to obtain a briefing, so they conducted their incident reconnaissance before updating the GREE7518 (ICP) hazard board. They established Matakana Command on Hume Highway. The ICP could not establish IGC contact with the IC so they resorted to cell phone communication. They also began the electronic Incident Action Plan (eIAP).

At about 11:00, they located RFO and REGION who were not wearing jerkins, so they were initially unsure of who was IC. The Senior officers at the ICP were surprised there was no IAP, hazard list or command structure documented anywhere. The ISO briefed them on the hazards and requested the IC initial the hazard board. The IC asked, "how often do I have to do this?" and was told he needed to review it approximately every hour.

The LOGS Officer was surprised to find lots of rural people turning up in vehicles. He struggled to record and account for the large number of rural volunteer personnel arriving. He took photographs of licence plates as no system of personnel accounting had been established.

LOGS asked IC what resources he wanted and got no answer. It transpired that IC had sourced resources by phone. No records of what was coming was provided to LOGS or the ICP staff. It appeared that requests for additional resources were ad-hoc and did not use the greater alarm system or refer to the fire plan.

The IC requested an additional helicopter and a higher qualified AAS who arrived just after midday.

RFO and REGION did a recce by helicopter. Incident ground mapping was done during this flight, however the information was not shared with the ICP staff on return, resulting in nothing being documented.

The ICP staff had difficulty displaying the incident ground layout and crew deployment on a map as RFO's appeared to be using a mixture of Avenza and Firemapper. Firemapper was not functioning within the ICP.

The IC's Sitrep stated; the fire involved four hectares of mixed vegetation and was being fought by three helicopters and two ground crews with heavy machinery cutting firebreaks.

RFO as AAS was stood down at noon and replaced by another air attack supervisor who had higher qualifications as there would soon be four helicopters in the circuit.

The Ngaruawahia tanker NGAR3311, GREER7511 and other pumping appliances were used for water shuttles. The crews said they were frustrated by the lack of CIMS structure, frequent command changes, and varying priorities. The entire scene was very disorganised.

LOGS called the Waikato Area Commander to request the Canteen from Ngaruawahia. At about 16:00, people began leaving the island. LOGS and ISO were not aware of any plan for

the night. At about 17:30, the command changed from RFO back to the CFO of MVRFF. P&I left at 18:00. At about this time, the Ngaruawahia Canteen unit arrived to provide meals for the 28 firefighters and support staff until 0200m. At about 19:00, ground operations ceased.

Helicopters continued their aerial attack and were stood down at the end of the day at approximately 21:00. On hearing this, RF recommended that air operations continue for two to three hours each day at dawn to prevent re-ignition. The IC ignored this.

At 20:20 command changed to an authorised contractor, with a Timberland crew remaining overnight. This was not recorded in the IC log.

There was concern that no Welfare Sector was established for an incident of this size. The ICP remained staffed by two firefighters who stayed overnight within the vehicle, and the Ngaruawahia crew slept under their vehicle. They did this for four nights until their CFO purchased a tent and stretchers.

Day 3 (Tuesday 15 December)

The ISO returned to the island in the morning. He and the ICP crew established an IGC repeater near the southern end of the Hume Highway to boost IGC communications which had been questionable. This seemed to be due to undulating terrain, very dense forest and large distances. It was also noted there was a lack of understanding about radio procedure and usage and the local Brigade was using forestry provided IGC's.

returned to the island and assumed the IC role. His log reports no fire activity overnight. The IC's log ceases at 08:30 and refers to eIAP for ongoing logging of information.

Ground operations continued with crews working alongside heavy machinery to extinguish hotspots and widen firebreaks. Helicopters were placed on standby, and the skidder returned to logging work.

Some IMT members were not wearing identification, confusing as to who was IC. At times both the RFO and REGION would give instructions to ICP staff. A Sitrep stated the RFO was IC and the REGION was OPS. The message also noted that the incident was a controlled burn. felt a lack of command unity as people in different roles changed frequently.

as LOGS/PLAN, organised forestry crews for the next day and requested the IC provide them with PPE. These crews did not have the same level of PPE as Fire and Emergency personnel and expected it to be provided. This has ramifications such as correct sizing and the number of items required.

Each evening IC responsibility would resort to the CFO of the MVRFF. His crews patrolled the area and monitored the fire overnight. The ICP would remain on the island each night; however, communications were redirected to the MVRFF fire station.

Day 4 (Wednesday 16 December)

RFO returned to the island and assumed the IC role for the morning briefing before passing command to RFO level. RFO left the island later that morning.

RFO tasked crews and appointed the ISO and sector supervisors. Ground operations resumed with forestry crews turning over hot spots, widening and blackening out fire breaks. A Sitrep from IC stated We have 30 personnel working out of two sectors, supported by two bulldozers, a command unit and a tanker. RFO reported appliances getting stuck in the sand and requiring the assistance of bulldozers.

Cellphone communication was patchy, making communication between the mainland and the resources on island very difficult. A VSO brought drinking water and hygiene supplies to the island. GREE7511 left the island that evening, returning the next day. Command again transferred to the CFO with MVRFF monitoring fire overnight.

Day 5 (Thursday 17 December)

RFO continued as the IC.

GREE7511 returned to island. Although there were no ICAD entries for this day as no messages were passed to Comcen, the eIAP states 13 firefighters were on site with one rural appliance and one bulldozer. In addition, the VSO delivered resources and the visited for a short time.

At approximately 17:10, the Remotely Piloted Aircraft System (RPAS or drone) team travelled to the island on the forestry barge from Sulphur Point. A drone was deployed to identify and locate hotspots. These operations ceased at 20:00, with no major issues encountered. The data the drones collected was shared with the IC and emailed to other interested parties.

GREER7511 left the island to return the following day.

Day 6 (Friday 18 December)

At about 09:33 command changed from CFO back to RFO . However, this wasn't recorded in the incident log.

The drones were re-deployed with the RPAS team report stated the following,

"The following day(18th) the task was conducted promptly as per RPAS SOPs for these tasks and data was shown to the local contact and "sent out" to all relevant persons. RTU conducted

with no issues of note". The drone team also mentioned the valuable assistance that the MVRFF provided.

The ICP was disestablished and returned to Greerton Station along with GREE7511.

The bulldozer operator, forestry crews, and EAST6071 continued overturning hotspots before transferring command to an RFO, a contractor. MRVFF continued with patrolling the site.

Day 7 (Saturday 19 December 2020)

At 13:06, calls were being received by Comcen suggesting the fire had flared up.

MVRFF reported they had a few hotspots they were dampening down, but about an hour later requested two helicopters as fire had jumped the firebreak. RFO noted that there was a two-hour delay in the arrival of the first helicopter.

At 16:48, RFO Each, EAST6701 and GREE7518 arrived back on the island, with the ICP being established on Hume highway at 18:00 with RFO as IC. However, with no AAS available and four helicopters now on site, only three were permitted to fly.

There were now three ground crews and bulldozers working in sectors A and C and helicopters dropping water. An RFO raised safety concerns about water bombing with crews working in the vicinity. Water drops alone (hundreds of kilograms in weight) can cause severe injury if it lands on someone or can cause trees to become unsafe by breaking branches that crews unbeknown to them are working beneath.

At 19:15, Comcen received reports from the public of smoke blowing over Tauranga and ash falling onto properties. Also, a small fire broke out near the estuary, probably due to ember transfer, and was extinguished spontaneously by a crew.

At 20:09 REGION rang RFO after	er having been notified from personnel on the island
that the incident had escalated. REGION	advised RFO that he had made contact with
the	, now Service Delivery Advisor
and vegetation SME and requested that	t the attend the Incident as REGION had
serious concerns regarding the escalation	n of the incident. The was somewhat reluctant
at first due to not wanting to "stand on any	yones toes" as there was already a structure and IC
in place.	

Air operations ceased at 21:00, but bulldozers and ground crews worked through the night.

Day 8 (Sunday 20 December)

RFO returned to the island and assumed the IC role.

A diesel tanker was requested due to several appliances running low on fuel.

At 11:00, a Sitrep was transmitted stating two helicopters were operating in sector Yankee, with three ground crews, two bulldozers, one excavator. A spot fire was reported 200m SW of Hume highway and was extinguished.

At 12:15, The along with REGION , arrived at the incident with becoming IC. Under his command the scene changed dramatically as he instigated the following:

- Reorganised the sectors to reflect the tactics and used natural boundaries as borders such as forestry roads
- Redirected ground crew tactics to focus on a direct attack
- Established a continuous water supply by positioning and using portable dams
- Had the VHF repeater moved from Hume road on the island and erected on Mt Maunganui itself. This allowed excellent radio communications across all the island and beyond back to Tauranga fire station. This will likely be adopted into the local procedure.
- Ordered a log processing machine and got it to work. This allowed for damaged trees to be felled and used as per normal, minimising wastage and allowing some costs to be recovered by the forestry company and at the same time removing a hazard.
- Stopped some of the pointless bulldozer work on roadside
- Populated an IAP and prepared basic mapping for the next day
- Organised a "short" IMT for the next few operational periods that consisted of an IC, ISO, LOGS, OPS and three Sector Commanders. Planning was done by ICP staff, with improved mapping done remotely by a specialist.

Senior Officer took on the LOGS role. He located the IC, engaged with ICP crew and ISO. He sent Sitreps to other Area Commanders outlining the resources likely to be requested from their stations.

The LOGS Officer identified the following:

- Volunteers had been sleeping in their vehicles and there were no ablutions or canteen facilities available other than back at MVRFF some kilometres away, which was not viable.
- There was no tracking of the contractor's equipment being used, so no costs could be estimated or controlled.
- ICP staff reported being told by the previous IC to make Sitreps up
- Handovers were poor or non-existent and weren't documented

- There was no continuity in a plan as there were many changes of IC, nor was there a plan
- Apart from Daily Time Sheets (DTS) there was no system for tracking personnel or resources.
- There are two access points, the public ferry service out of Omokoroa and the forestry
 vessel via their own wharf, both many kms apart. Nobody was recording arrival or
 departures and no cordon was established to keep the public out. The public were still
 bringing their private craft to the island.
- There was no medical evacuation plan if the case of urgent medical treatment was
 required by those working on the island. One person stated they'd used one of the
 firefighting helicopters. This is not appropriate as commercial helicopters are not equipped
 for such an event, and furthermore, it was never discussed with the pilots.

At 13:30 LOGS requested the Hamilton Operational Support Welfare Facility. This trailer has hot showers, washing facilities and comes with two portable toilets.

At 18:20, command change from back to RFO

Air Operations ceased at 21:00, but ground crews continued to patrol the fireground.

Day 9 (Monday 21 December)

RFO returned to the island to fulfil the OPS role tasked with managing heavy machinery and Firemapper data.

RFO attended the incident for the first time and took command at 08:43. He immediately transmitted a Sitrep straing: the fireground is quiet, crews being tasked and dispatched, current hazards are generic rural firefighting, using ground crews, bulldozers and air attack with five helicopters. We have nil requirements, external direct on the hot spots. It then explained the current IMT structure, including OIC Fire, OPS, LOGS, ISO and Air Ops.

At 14:38, another team arrived on the island and at 18:54 command changed again.

A Sitrep was sent at 21:09, stating that ground crews were dampening down hotspots throughout the night.

Day 10 (Tuesday 22 December)

At 09:58, a Sitrep from the IC, stated that night crews made good progress. 75 firefighters are at the incident targeting hot spots identified by drone. They are assessing in preparation for Air Operations later in the morning. Have three tankers, multiple dams, six rural appliances, eight five-person ground crews and heavy machinery at work.

At 13:00, a portable pump was taken to the airport to be flown to the island at quite some expense.

Comcen requested a contact number for media enquiries and an update on fire size at 14:48.

At 15:42, a Sitrep from the fireground stated "40 hectares blacking out" with ground crews and helicopter support.

RFO took command as IC night shift managing night crews and activities.

Air Operations ceased at 20:45 that evening.

Day 11 (Wednesday 23 December)

08:29 RFO took command.

At 11:38, a Sitrep stated that there was a 40-hectare perimeter containing multiple hotspots and subterranean fuel. One helicopter and two diggers were working. 62 personnel on-site in three sectors, two helicopters and one digger on standby on the mainland. It then detailed the IMT structure, hazards and welfare situation.

This was followed by another one approximately one hour later stating that all aerial operations had ceased, three helicopters remained on standby at Tauranga Airport

At 16:55, crews were rotated, and all firefighting activities had ceased.

RFO took command 18:15 as IC night shift, with crews then patrolling and dampening hot spots until 07:00 the next day.

Day 12 (24 December)

The RPAS team started their operations at 00:50. During these flights' hotspot management ceased.

At 0700, incident command changed to a contractor who is not recorded as an "Authorised" person under the Fire and Emergency Act 2017. This issue was raised during review team interviews as being a point of concern.

RFO resumed command at 08:23.

By approximately 10:00, day crews and heavy machinery was operating in three sectors, and a first-aid area was established at the Matakana Island fire station.

At16:06 RFO took command for the nightshift.

Day 13 (25 December)

RFO took on the role of Deputy IC and was to manage the heavy machinery.

At 10:02 a message was sent by phone to Comcen stating: Change of IC at 18:00, K45 IC (RFO), a crew of nine on the island and will be patrolling, monitoring and extinguishing any hotspots. Will give further update mid-afternoon, will be staying on the island for 24 hours.

A Sitrep at 12:24 from RFO stated: wind forecast 45km/hr SW, RFO and RFO on-site, a crew of four hot spotting, three diggers and two forestry crews on standby.

Day 14 (26 December)

The activities focused on managing the hotspots from this point of the fire until its end date of 26 January 2021. Resources were slowly sent home, although several crews would still be rotated, consisting of Fire and Emergency staff and private contractors. There was also heavy machinery in use however, aircraft operations had ceased.

For the last two - three weeks, after all resources had left the island, the MRVFF maintained the monitoring of the fireground regularly.

There was minimal information passed onto Comcen during this period and no "Stop" message was transmitted.

Operations - use of Aircraft

On the first day of the incident a suitably qualified person performed the role of AAS. He was unable to establish radio or phone communication with the IC on the island so he received no briefing. He was unable to observe the incident ground, from his location at Sulphur Point, so his only reference was via his communication with the lead pilot (praised by RN). This raises the question of tactical coordination as the AAS may not know whether ground crews and heavy machinery were also deployed. (5.5 Operations Handbook)

and RFO expressed opinions that aerial operations should have continued longer for a few hours each day for the next five days with ground crews to ensure complete extinguishment. In addition, some RFOs had concerns regarding the effective use of helicopters as lines carrying monsoon buckets were too short. This made it difficult for pilots to gauge the effectiveness of their drops. There were also some safety concerns raised related to water-bombing trees causing "hang-ups" by damaging branches creating a danger for ground crews. It is also an inefficient use of water as it is disbursed by branches and may not reach the intended target.

Feedback also mentioned the inappropriate use of helicopters to transport a portable pump from Sulphur Point to the fireground and extinguish small fires beside the roadway. This was seen as an expensive way to transport equipment, primarily as the forestry vessel was still operating and was close. As for the roadside extinguishment, this could have been achieved with handlines. There was also concern about the number of helicopters placed on "standby" versus their practical use and its costs.

Other feedback

The review team were told of several other issues from various people interviewed, they were:

- There was an Ineffective and uncoordinated use of resources. An example was the Murupara rural crews who were ready to respond but told to stand-down. They were then requested to be prepared for the next day. Meanwhile, Forestry crews worked for up to 23 hours due to poor resource coordination.
- Machinery and vehicles were unsuitable for tasks. For example, the review team was told
 the bulldozers were too large and skidders were used to create fire breaks. However they
 spread and buried burning material.
- Helicopter bucket lines were not set up correctly for the intended use resulting in ineffective water drops.
- Several Fire and Emergency vehicles lacked ground clearance or didn't have four-wheel drive capability.
- USAR has resources that could have been quickly deployed for habitat and welfare, however, these were not requested. A poor briefing to the Ngaruawahia Fire Brigade who provided the canteen made it very difficult for them to cater as they were not advised numbers they needed to cater for and for how long. In addition, there was difficulty locating a suitable vehicle to tow the ablutions and welfare trailer from Chartwell Station in Hamilton.
- Most of the feedback received was focused on the poor management of the incident. The CIMS format wasn't properly adopted and the incomplete IMT structure led to functions not being performed. There was also a lack of accountability. Gaps in the command structure (and lack of formally assigned roles) meant that briefings were poor or non-existent. There was confusion over who was in charge and when. Resources were not recorded or tasked effectively; therefore they were not catered for in terms of welfare and safety and their relief was poorly coordinated.
- There was no expense tracking system implemented, resulting in invoices being sent for payment that region staff had no idea what they were for.
- Communication was poor. Sitreps to Comcen and the ICP were irregular and incomplete.
 Resource requests did not use the appropriate methods and were therefore ad-hoc and uncoordinated.
- Several Fire and Emergency Volunteer personnel who attended for prolonged periods were promised payment for their work that was not within policy. Some of these people changed or cancelled holidays and work plans to assist at the event on the understanding they would be paid.
- Comcen Managers and Operators were frustrated with the lack of information provided to them. They didn't get regular Sitreps and had to try to contact Senior officers themselves

to get updates that had to be passed on to others that requested it. This also hampered the media being able to give accurate media releases. In this case, they had no idea what appliances (except those fitted with ALPS) and other resources were on the island. Nor did they know when the last appliances left or when the event had closed.

Review

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

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

Reduction

Inter-agency and Stakeholder Relationships

Our findings

Prior to the formation of Fire and Emergency, the rural fire authority managed relationships with landowners, forestry companies and service providers, including owners of heavy machinery and aircraft used for firefighting. Since then, there has been very little contact between Fire and Emergency and the island except for VSO support to the Brigade.

The local lwi were engaged through the Matakana brigade. However, the review team found no evidence of other agencies being involved or briefed despite concern about smoke drift from the island to the city of Tauranga. Also, some of the local Senior officers were not fully aware of the situation. Furthermore, the review team found an unwillingness by a number of the RFO's to share intelligence gathered during reconnaissance flights. This information should have gone to the ICP crew for documenting and populating a IAP. Further concerns emerged when the fire outbreak occurred, and the struck resistance from the rather than a willingness to engage.

Fire Cause and Determination

Our findings

A suitably qualified fire investigator was assigned, and an investigation carried out. The report was not completed at the time of the debrief. The interim findings agreed with statements from of the MVRFF, i.e.the fire had a single point of origin and started in a slash pile 100m

from the beach and close to where members of the public often land. The investigator mentioned there was no attempt made to protect the suspected area of origin.

Fire Season Promotion

Our findings

The review team found "Check it's alright before you light" website information was constantly updated for the entire zone. However, the information on the website differed from the private notices displayed on the island intended for the public. The private notices were erected by the Forestry Management Company and determined what activities could take place.

Nonetheless, it was a high fire danger and any ignition sources needed to be managed accordingly.

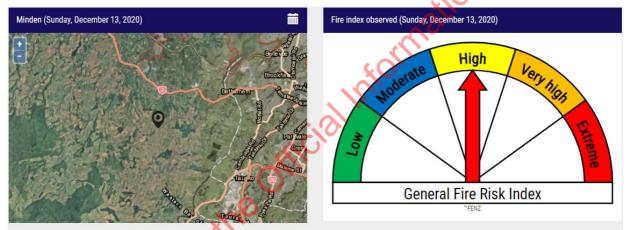


Figure-5. Fire conditions on the day of the fire starting

Community Preparedness

Our findings

A project had been undertaken to ensure all homes on the island had working smoke alarms. The MVRFF was established by the forestry company on the island and supported by the National Rural Fire Authority prior to the formation of Fire and Emergency. Since then, Fire and Emergency have established a relationship with the forestry company and provided support to the fire force with vehicles, PPE, some training and VSO support.

The main community isn't located within or close to the forest, but on adjacent orchards and farmland. However, there are a few occupied dwellings in and around the old timber mill site quite close to the plantation. There was concern during the incident regarding this small

community and its proximity to the fire if the wind changed direction; however, the IC didn't deem an evacuation necessary and kept them informed of any progress.

Readiness

Operational Skills Maintenance (OSM) compliance

Our findings

The team found that the local Brigade had only recently completed some unit standard training to respond to wildfire and other emergencies such as medical response. Although the CFO and DCFO are "Authorised" persons there was no evidence of training maintenance records.

It was assumed forestry crews had the appropriate training for the tasks they were performing; however, the review team didn't have access to these.

As for the Senior officers who performed IMT roles, there was no available evidence of the skills other than their participation (or not) in Region simulated exercises (SIMEX).

Those performing firefighting roles and other support positions performed their tasks to a high standard.

Pre-incident Planning and Intelligence

Our findings

Matakana Island had a tactical plan, "Tauranga Kawerau Fire District – Local Procedure No. 8 Matakana Island Response" for accessing the island, which has no date. The Interim Fire and Emergency Bay of Plenty District Fire Plan – Part B – Response – 1 October 2020 was known to at least one RFO and he consulted it regularly. Other Senior officers were unsure of its contents.

The Region ran a plantation fire SIMEX prior to the fire season, however, several Pumicelands staff opted not to participate fully and left after a short time on the first day. The management process, structure and learnings from this SIMEX could have been easily adopted for this incident.

Water Supplies

Our findings

The island has minimal freshwater supplies but is surrounded by the sea. There is no electronic record of the location of freshwater static water supplies. A water shuttle was established using a portable pump from the ocean adjacent to the forest company's wharf to fill and maintain static water supply points constructed by crews during the incident. These

were positioned depending on fire location and transport routes. It was reported to the review team that some vehicles became stuck in sand, requiring assistance from a bulldozer. It appears the driver of one tanker refused to enter a soft sandy track when instructed to by the IC, and when a replacement went instead, it got severely stuck. Due to the sandy nature of the terrain, four-wheel-drive vehicles were best suited for water shuttle duties.

The review team was also made aware of helicopters being tasked to fill dams with their buckets, which was inefficient. In addition, some believed it brought unnecessary risk to those working below.

A Water Supply Officer was never appointed to manage supplies, and it was all done ad-hoc.

Response

Initial Mobilisation and Comcen actions

Our findings

Comcen processed the call and responded appliances in a timely manner as and when requested. All notifications were actioned appropriately. The IC did not use the greater alarm system to request additional resources which is often the case in the natural environment. However, the various IC's didn't adhere to the BOP Response Plan and asked for any resources ad-hoc. There were times when some resources responded from greater distances when closer appliances and crews stayed on their stations. This resulted in gaps in resourcing, delays, and aspects of incident management being overlooked.

Sitreps to Comcen were irregular, and many were passed by phone or email rather than by LMR. There were some days when no messages were sent from the incident ground, so no one other than those present had any idea of progress being made or any activities taking place.

Safety, Health, and Wellbeing

Our findings

No injuries or near misses were recorded in the safe@work system, nor were the review team advised of any injuries or near misses

Although ISO's were appointed at various stages of the incident, they were not necessarily the right personnel for the task. The review team heard from several people who did the role that they were also given other duties to complete concurrently. In addition, the first ISO appointed had little engagement with the IC and did not feel that hazards identified were taken seriously.

Due to the lack of a formal structure being implemented, for the scale and duration of this incident, welfare was not managed effectively. The team received several examples of personnel not being able to access ablution facilities, no sleeping arrangements for personnel who had to stay on the island overnight, no monitoring of hours being worked and so on.

There was no evidence of a safety plan being developed nor consideration of first aid if an injury occurred. The review team were advised that the thought was, if something happened, they would use a helicopter to ferry the injured or unwell person to the mainland.

The review team could find no evidence of applying the "safe person concept" or LACES or any other risk analysis. At one stage, an expert in forest firefighting refused an instruction that would have put his team at risk within the plantation due to the IC not understanding the risks this fire involved.

Two-wheel drive vehicles were ferried to the island to support fire operations. Due to the nature of the roads, these vehicles were not suitable, and some got stuck in soft sand. When arriving on the island, drivers were not briefed, provided a comprehensive map of the location of the fire or warned of potential hazards. Two vehicle collisions were captured on ICP video, however, there is evidence these were reported.

The RPAS team mentioned the proximity of the unstaffed ICP to the fire on 17 & 18 December.

Incident Management and Team Structure (IMT)

Our findings

of the MVRFF was the first to arrive at the scene and very quickly determined his brigade and their resources were inadequate for the quickly spreading fire they confronted. Understanding their capability, the then rightly requested assistance.

From this stage onwards until many days later, the incident was managed on an ad-hoc basis with no proper management structure put in place that reflected the incident at hand. This led to confusion as other responders arrived on the island. They expected to find a management structure and that personnel would be appointed into IMT roles and be appropriately identified. They also expected to see an incident action plan and a personnel accounting system in place. Furthermore, arrivals expected to receive a briefing that included the strategy, record of the resources assigned to the incident, hazards and hazard mitigation steps, however, they weren't briefed at all.

In fact, they got a fireground with individuals working in their area with no strategy or plan to provide guidance, doing what they thought was best at the time.

There were Sector Commanders in place, but there wasn't any communication between them or the helicopters operating within the various sectors. Some noted that because the pilots weren't briefed or presented a plan, they dropped water where they assumed it was required.

The lack of a plan and management structure also confused replacement Senior officers. Having no plan or documentation of events resulted in many assumptions of things being done, crew location, resources on the island, and what was required going forward.



Figure-6, Aerial footage of the fire

The did not consider it necessary to support the probably an error as the did not have the knowledge and experience to make the right tactical decisions. There did not appear to be a strategy other than to extinguish the fire using firefighting buckets. Water drops alone will not extinguish a fire; it relies on skilled ground crews who have a good understanding of deep-seated fires to follow the drops and turnover the ground. However, the fast deployment crew with these skills from based in Murupara were stood down on day one. If they had attended, they could have commenced this work and supported the original suppression activities. The review team were told these actions alone could have had the fire fully extinguished in a couple of days saving considerable expense.

At one stage the on-call for Bay of Plenty Coast became so concerned due to the information from the island not aligning to what he could visually see and public reports of

ash falling on properties within the city of Tauranga. He elected to visit the island. It wasn't until the arrival of the that things started to change. Being an extremely experienced campaign fire person, the immediately established an IMT structure with the resources he had at hand. The first role he appointed was LOGS who immediately set about managing the crew rotation and habitat facilities for those staying on the island.

There appear to be minimal field notes, and very few Sitreps. This lack of information meant that Comcen did not escalate the incident above a first alarm level despite numerous appliances and approximately 100 firefighters on the ground at one stage of the event.

Normally at a large incident like this a finance person would be allocated a position within the IMT to allocate a subledger, manage billing, invoicing, and track expenses. No such person was given this task resulting in Region staff paying contractors, aircraft operators, heavy machinery providers and so on weeks and months after the event. There was no way to confirm the legitimacy of the claims. The total cost for this event was considerable.

Firefighting Mediums

Our findings

The initial choice to suppress the fire using an aerial attack was the correct option considering the dry conditions, isolated location, variable breezes and proximity to the pine forest. However, this tactic needs to be followed up by crews with handlines and proper tools who understand the mop up process, particularly in the island sandy soil terrain that allows for deep-seated fires to burn and maintain its high temperatures. It seems a lack of experience dealing with a subterranean fire in tree roots in windy conditions allowed fire to rekindle and spread days after it was considered extinguished. Some of the heavy machinery was not fit for the work intended for them and some of the operators had not been trained in firefighting or been adequately supervised. This resulted in the careless construction of firebreaks, where burning material was buried or moved to the wrong side of the breaks, allowing for fire spread.

Operational Competence

Our findings

Forestry firefighters were experienced and demonstrated a high level of competence. The Matakana Volunteer Rural Fire Force were among those that did not have the same level of experience or training.

made sound risk management decisions and called for appropriate assistance.

Generally built and natural environment Officers showed a lack of familiarity with each other and their respective incident management systems and procedures. They had difficulty communicating and tended to operate in isolation.

It also appears that at least one unauthorised person who is not part of Fire and Emergency was appointed as IC.

A Senior Officer accompanied the IC on the initial response. However, it is unclear what advice he gave the IC about structuring the incident and working with Fire and Emergency.

Incident Ground Facilities and Cordons

Our findings

The initial ICP was established on day two by Senior officers that travelled to the island with the HCU at the direction of their Area Commander. They received no direction from the IC as he could not be contacted. When the IC and OPS arrived at the ICP the Senior officers were surprised to hear there was no IAP, hazard list or organisational chart. One of the Senior officers had done a risk assessment and asked the IC to sign it. The IC was unfamiliar with this requirement.

Access to the island was by commercial ferry, yet no one was assigned to record resources coming and going or restrict access by the general public. In addition, welfare, including emergency medical, rehabilitation, ablutions and accommodation for responders, was inadequate for the duration of the initial incident.

Incident Ground Communications

Our findings

Communication with the island was mainly by cellphone as attempts to contact the IC by radio were unsuccessful. Radio communication on the island was hampered by either handhelds not being used correctly, i.e. being on the wrong channel, a mix of both Fire and Emergency and Forestry company radios being used simultaneously, and the high density of trees.

A repeater was set up near the initial ICP location close to the old timber mill site; however, the terrain meant it wasn't a suitable location for repeater coverage. Eventually, a VHF repeater was positioned on the summit of Mount Maunganui, which enabled effective radio communication throughout the incident ground and covered the whole island and beyond. During the testing phase of this site, Omokoroa (mainland from the western side of the island) and the Tauranga fire station communicated on handheld IG radios very clearly. However, the

investigation team found no evidence of a communication plan being formulated for the incident.

Senior Officer Notification and Response

Our findings

Appropriate notifications were made to the on-call Senior officers, and their response was timely. Senior officersSenior officers, REGION (although not on initial response) and RFO responded to the incident on day one. It appears RFO occupied the role of IC however, REGION was omitted from any command role. Furthermore, other responses by Senior officers were delayed as the extent of the incident was not apparent due to a lack of information being passed from the incident ground. It also appears the Senior Officer responses were mainly organised between themselves via phone calls.

Personal Protective Equipment (PPE)

Our findings

The PPE worn by Fire and Emergency staff performed as expected with no issues reported except for the weight of structural helmets being worn by some for prolonged periods.

There were two other concerns raised to the review team;

Non-Fire and Emergency personnel such as forestry teams not having the appropriate PPE and having Fire and Emergency provide it. Fire and Emergency don't have a cache of spare vegetation PPE available and have no way of knowing the sizes non-Fire and Emergency crews require. These teams should arrive with their own kit, including radios.

There were several reports of firefighters returning home wearing contaminated PPE. No decontamination or replacement PPE was available for crews who were leaving the fireground. They mostly returned wearing soiled clothing in their appliances and washing it at home.

Recovery Plan

Our findings

There was no written recovery plan for this event, nor was a Recovery Manager appointed within the IMT. In some way, recovery occurred at the forestry company's initiative when they

started harvesting the trees affected by fire while operations were still occurring. This is not uncommon as trees begin to deteriorate after a short time when affected by fire and become no longer useable or have no monetary value.

Incident Debrief

Our findings

The review team found no evidence of an appropriate debrief occurring involving representation from all of those involved in the event. It appears some individual teams were debriefed, but there was no invitation extended to the built environment crews who had made a significant contribution to this incident.

MVRFF and Fire and Emergency requested a debrief but nothing was arranged. MVRFF had their own in-house debrief and published document for each brigade member.

Conclusion

The fire occurred on Matakana Island, near a place the locals know is well used by those visiting on their private craft. The ignition point is considered to have been in a pile of slash approximately 100 meters from the beach on the north-eastern coast near Panepane Point.

On arrival at the scene, of the MVRFF considered the fire to be well beyond his brigades' capability and rightly ordered an aerial attack using helicopters with buckets. The success of the initial aerial attack gave the impression the fire would be easily extinguished, and the incident would remain small. However, the plan for ground crews to complete mop-up in one day was ambitious, and the risk of rekindling was underestimated.

The who took command did not establish an appropriate incident management structure or incident ground facilities due to a poor risk assessment and a lack of experience of fires of this type. Advice to extend the duration of aerial operations and use thermal imaging was ignored. A week later, the wind speed increased, the fire rekindled and grew rapidly, moving into the pine tree plantation. The review team heard from a number of officers interviewed that advice they tried to provide was ignored. This lead to frustration and further disconnect between teams – rural, urban, support and forestry teams.

The lack of a suitable IMT meant several key actions and tactics were overlooked, resulting in a prolonged event lasting some weeks that involved assets and personnel responding Regionwide and beyond. It also caused disgruntlement amongst crews who were lacking refreshments, welfare facilities and somewhere to sleep. Some of those attending opted to cancel or move holidays to ensure continuity of the service they provided and were promised

payment or employment subsidy to do so. This was later retracted; however, the Region Manager rectified the situation and settled all claims.

The impact of the subsequent fire was not limited to the island as there were complaints of smoke and ash affecting parts of Tauranga City.

The crews that attended worked extremely hard under challenging conditions when they should have been with their families. The review team believe from the evidence gathered and expert advice that had a suitable IMT been established this incident would have been resolved in a few days. This would have put an IAP in place, had the appropriately skilled people there in a timely manner, had the welfare, habitat and other resources needed to support the incident, and ensured teams were fully rested between operational periods. The personnel involved would have been home earlier as the fire would not have flared up a second time.

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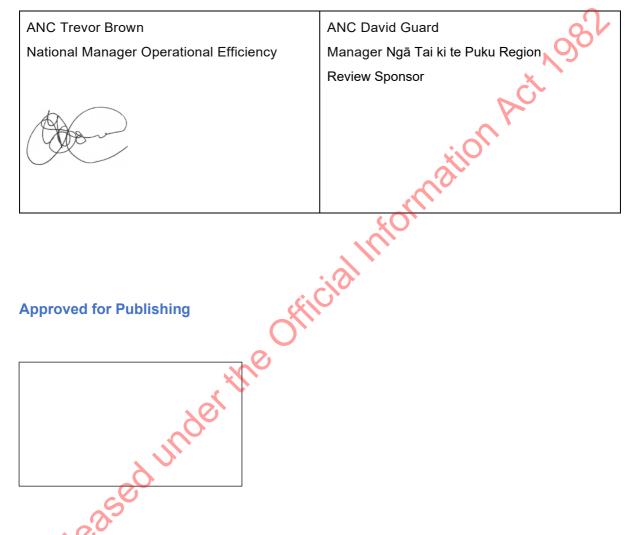
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Review Authorisation

This report has been authorised by Operational Efficiency and Readiness:

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.



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