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27 June 2019



Information Request – Tapu te Ranga Marae, 44 Rhine Street, Island Bay, Wellington

I refer to your official information request dated 21 June 2019 asking for a copy of the Fire Investigation Report for 44 Rhine Street, Island Bay, Wellington.

In accordance with the provisions of the Official Information Act 1982, I *enclose* the information you requested. Some information has been redacted to protect the privacy of individuals identified in the report.

You have the right to seek an investigation and review by the Ombudsman of this decision. Information about how to make a complaint is available at www.ombudsman.parliament.nz or freephone 0800 802 602.

Note also that this response (with your personal details removed) may be published on the Fire and Emergency website.

Yours sincerely

A handwritten signature in black ink, appearing to read 'Raewyn'.

Raewyn Bleakley
Deputy Chief Executive, Office of the Chief Executive

encl



FIRE INVESTIGATION REPORT

44 Rhine Street, Island Bay, Wellington City



Incident Information:

F2786311

OIC unable to Determine Cause

12:30 a.m. 9 June 2019

Report completed by:

Peter Fox, Specialist Fire Investigator

Fire and Emergency New Zealand, Region 3

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Authors' briefs

Peter Fox - lead fire investigator

My full name is Peter Fox. I am a Specialist Fire Investigator for Region 3, Fire and Emergency New Zealand.

I have been responsible for determining cause and origin of fires since January 2000

I have undertaken all relevant courses in fire investigation with Fire and Emergency.

I have previously given evidence in District, High and Coroners court.

I was appointed as a Fire and Emergency Inspector under Section 166 of the Fire and Emergency New Zealand Act 2017 in January 2019.

As a Specialist Fire Investigator in Fire and Emergency I am required to respond to significant fires in accordance with our National Commander's Instructions with the principal objectives being to co-ordinate, supervise or undertake investigations in major and serious fires, including fatal fires, by determining the point of origin of a fire and from this establishing the cause of a fire.

I have read the Code of Conduct for expert witnesses, Schedule 4 of the High Court Rules 2016 and agree to abide with them.

Philip Soal

My full name is Philip Graham Soal. I am a Specialist Fire Investigator for Fire and Emergency New Zealand (Fire and Emergency).

I have served with the New Zealand Fire Service, now Fire and Emergency, since 1996. I have been responsible for determining the origin and cause of fires since 2018.

I have completed the following training courses:

Fire Investigation 1 2017

Fire Investigation 2 2018

I was appointed as a Fire and Emergency Inspector under Section 166 of the Fire and Emergency New Zealand Act 2017 on 1 July 2017.

As a Specialist Fire Investigator for Fire and Emergency I am required to respond to significant fires in accordance with Operational Instructions with the principal objectives being to co-ordinate, supervise or undertake investigations into major and serious fires, including fatal fires, by determining the point of origin of a fire and from this establishing the cause of a fire.

I have read the Code of Conduct for expert witnesses, Schedule 4 of the High Court Rules 2016, and agree to abide with them.

Peter Wilding

My full name is Peter John Wilding. I am the National Manager of Fire Investigation and Arson Reduction for Fire and Emergency New Zealand (Fire and Emergency), being appointed to that role since 2008.

I have served with the New Zealand Fire Service, now Fire and Emergency, since 1987. I have been responsible for determining the origin and cause of fires since 1996.

I have completed the following training courses:

- Fire Investigation 1 NZ Fire Service
- Fire Investigation - Kent Fire and Rescue Service (UK) 2008

I have attained the following tertiary level qualification

- Advanced Diploma in Public Safety (Fire Investigation), Canberra Institute of Technology 2016

I have attained the following qualifications by examination:

- Graduate and Member Examination, Institution of Fire Engineers (UK)
- Graduate New Zealand Fire Brigades Institute

I have the following professional memberships:

- Membership of Fire Investigators Association of New Zealand
- Membership of the Institution of Fire Engineers

I was responsible for establishing the current Fire and Emergency Fire Investigation Training program and have frequently delivered training on many fire investigation and advanced fire investigation courses.

I am the Chair of the Australasian Fire Authorities Council Fire Investigation Network.

I was appointed as a Fire and Emergency Inspector under Section 166 of the Fire and Emergency New Zealand Act 2017 on 1 July 2017.

I am the manager of the Fire and Emergency Fire Research and Investigation Unit and have responded to many significant fires throughout New Zealand in the Pacific Islands in accordance with Fire and Emergency Operational Instructions with the principal objectives being to co-ordinate, supervise or undertake investigations into major and serious fires, including fatal fires, by determining the point of origin of a fire and from this establishing the cause of a fire.

I have previously given testimony in District Court, the High Court and Royal Commission of Inquiry.

I have read the Code of Conduct for expert witnesses, Schedule 4 of the High Court Rules 2016, and agree to abide with them

Executive summary

A fire occurred at the Tapu Te Ranga Marae, 44 Rhine Street, Island Bay in Wellington at 12.30 a.m. on the morning of 9 June 2019. The building involved in fire (referred to as the main house) was a multi-story complex measuring approximately 32 metres by 20 metres that had been added onto on multiple occasions.

On the evening of 8 June a group of 28 Cubs and Venturers with accompanying adults were staying on the Marae and sleeping in the 'main house' building. The weather that evening had been fine but with a gusting south westerly wind. The group had been using a brazier supplied by the Marae but extinguished the fire about 8.00 p.m. due to concerns about embers being carried by the wind from the fire towards the building.

At about 12.30 a.m. several adults became aware of a developing fire in the southern end of the building and the group was able to evacuate from the building without injury.

The building was fitted with a type 4f fire alarm system (non-brigade connected smoke and thermal alarms and manual call points) however this alarm failed to operate to provide early warning of the fire. Investigations indicated a false alarm had occurred a week earlier. The alarm system had been isolated at that time and appears to have not been recommissioned. Marae residents confirmed the process of isolating false alarms themselves and not have the alarm monitored was in response to the concern of being charged for false alarms.

The fire has been classified as an accidental fire with the probable cause recorded as hot embers transported by wind from the brazier igniting combustible items in and around the base of the south-western wall of the storeroom of the 'main house'.

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Terms of reference

Sponsor

David Key – Area Manager, Wellington.

Incident background

The Officer in Charge (OIC) of this incident considered the circumstances of the fire met the criteria requiring the attendance of a Specialist Fire Investigator (SFI) as per National Commander's Instruction P3. The OIC made this request through the Fire and Emergency Communications Centre who summoned the author of this report to attend the incident as a SFI.

The reason for the attendance of a SFI was: OIC unable to Determine Cause.

Objectives

Determine the origin and cause of the fire through best practice analysis and investigative processes.

Scope

- Focus on this incident specifically, but consider historical data and information from this site and other similar incidents, and other incident information that may have a bearing or contributed to the outcome.
- Analysis of the circumstances and factors, including the occupant(s) actions, building fire loading and design, fire protection/suppression systems performance, circumstances of the fire, and result of the fire.
- Where evidence or suspicion of a deliberate fire start is discovered, the matter is to be referred to the Police who will then have the responsibility for further investigation. The Police may request that the Fire and Emergency SFI assist with the origin and cause determination.
- Produce a completed report for the report sponsor outlining all relevant findings.

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Description and use of building

The fire occurred at the Tapu Te Ranga Marae, 44 Rhine Street, Island Bay in Wellington. The building involved in fire was a multi-level Marae complex measuring approximately 32 metres by 20 metres.

Construction commenced in 1975 and it has had many additions over the following years. The Marae complex was on a section that sloped at the rear of residential dwellings in Rhine Street, Island Bay.

The structure was constructed on both pile and concrete foundations. The exterior cladding was a mixture of timber and cement board, timber and aluminium joinery with a roof cladding of corrugated iron. The interior walls were a mixture of plaster and chipboard.

The complex had a fire alarm system covering many of the buildings consisting of heat and smoke detection and manual call points.

Pre-incident events

The Marae often hosted large numbers of people, in this instance a group of 28 Cubs and Venturers, with their accompanying adults were spending the night in the 'main house'. Prior to the fire they had asked permission to have a camp fire. A member of the Marae supplied them with a brazier in which they placed kindling, paper and firewood and lit it early in the evening extinguishing the fire at approximately 8 p.m.

The building had been fitted with a type 4f¹ fire alarm system about 5 years previously. The fire alarm had been recently inspected and issued with a code of compliance on 7 May 2019. According to Witnesses ■ and ■, the Marae had adopted the following process to avoid false alarm charges. Following an accidental activation the alarm would be silenced by occupants after inspecting the area indicated and Marae policy was to contact the agent immediately to reset the alarm. It appeared that an activation had occurred on 3 June, 6 days prior to the fire and the alarms had been silenced by a resident. Witness ■ reported the defect light on the fire alarm panel had been flashing for several days prior to the fire [a flashing defect light on a fire alarm panel usually indicates an inoperative alarm system – Investigator note]. At the time of the investigation it was unclear whether or not the agent had been contacted to reset the system. The fire alarm system did not operate at the time of the fire.

Discovery of fire

Witness ■ stated he was alerted by his wife who had smelt smoke while in their house ■■■■■. He went outside and saw flames in the South-western corner of the building. He then used a local fire hose reel to attack the fire. He noted other adults located another hose reel at that time and also tried to fight the fire. Neither efforts were able to suppress the developing fire.

Witness ■ stated one of his adult team members woke to see a glow. The Scouts were evacuated and the adult and Witness ■ sought to suppress the fire. The Fire and Emergency communications centre received the call at 00:30a.m.

¹ **Type 4f fire alarm:** – A fire detection and alarm system with manual call points, smoke detectors and heat detectors but not connected to the fire brigade.

Fire and Emergency New Zealand response

Information sourced from Fire and Emergency Computer Aided Despatch Incident Report.

Incident Number	F2786311		
Call Type	Property Fire		
Method call received	Ambulance Call		
Incident date	9 Jun 2019		
Incident time	12:30:53 a.m.		
1st Arrival	WELL211	12:41:06 a.m.	
2nd Arrival	NEWT221	12:41:13 a.m.	

The incident was escalated to a fourth alarm fire with 19 fire appliances and about 70 firefighters, regional executive officers and Fire and Emergency National Headquarters staff attending at its height.

The on-call Specialist Fire Investigator (SFI) was attending another fire that had occurred in Wellington that night and requested additional investigation support from the Fire Research and Investigation Unit to assist with investigating the fire at the Marae.

SFI Peter Fox arrived at 10:44 a.m. on 9 June and was joined by SFI Phil Soal and the National Manager of Fire Investigation at 1.45 p.m. Fire suppression activities were still being conducted and the scene was controlled by Fire and Emergency personnel. These three fire investigators undertook the fire investigation of this incident with SFI Fox as the lead fire investigator. The scene examination and investigation continued until approximately 5.00 p.m. when the scene was left under control of operational crews.

The investigation team returned to the site at 8.30 a.m. on Monday 10 June to continue with the scene examination which was concluded at 2.00 p.m. that day.

Process of investigation

Interviews

- Witness [REDACTED]
- Witness [REDACTED]
- Witness 3 [REDACTED]
- Witness [REDACTED]
- Witness [REDACTED]
- Witness [REDACTED]

Information received from these witnesses informed this investigation.

Scene Examination

The fire affected the area of the Marae referred to on the main fire alarm panel (situated at 44 Rhine Street) as the "Main House".

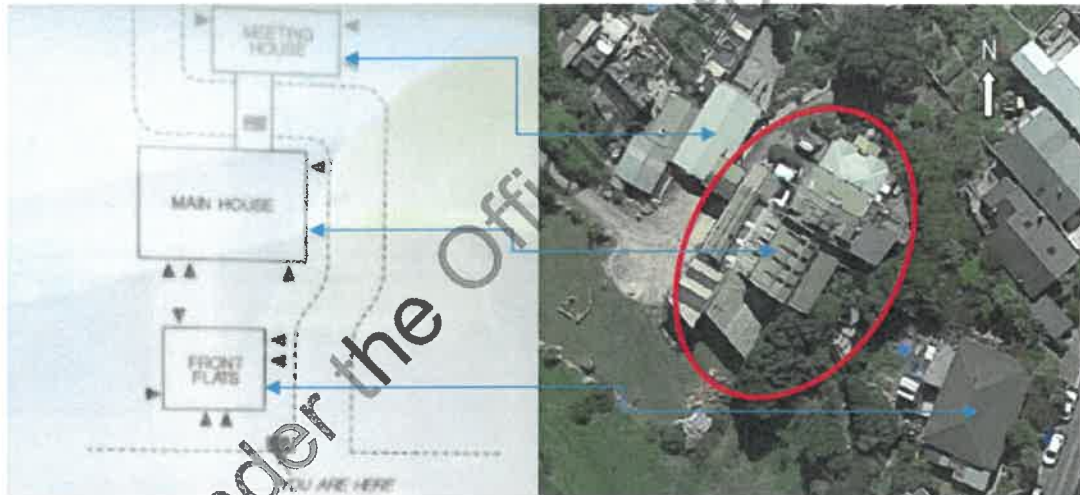


Photo1 showing diagram image from main fire panel.

Photo 2 showing corresponding aerial view alarm including main house (Google Maps)

The 'main house' consisted of multiple areas built at different stages and was up to five levels in some places. It ran in an approximate north – south alignment with various elements added onto the original build at later stages. The total structure of the 'main house' was destroyed by the fire. All the upper levels had collapsed onto the ground level during the fire.

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Photo 3 shows a pre-fire image of the main house.

Photo 4 shows the main house the morning after the fire.

An external examination was made walking in a clockwise direction starting from the southern end of the building. A distinctive vee pattern could be identified emanating from the southern corner of the building along the southern face to the eastern side of the building suggesting fire had travelled in north and easterly directions.



Photo 5. The arrow shows the directions of fire travel from southwest corner of building (location of a storeroom).

Viewing across the building from the western face, fire patterns could be identified on the eastern side showing greater damage and lower burning towards the southern end of the building, again suggesting the fire travelled from the southwest area of the building towards the east indicated by the arrow in photo 6 below.



Photo 6 looking across the main house site from the west to the east side of the building, burn patterns show fire travel from the right to left of the photo (southern side of the building towards the north).

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Photo 7 is a screen shot from the Incident Command Unit video camera showing the effects of wind on the flame and smoke. South is to the right of the image. At this point, the store room (indicated by arrow) has been completely consumed by the fire.

Examination of the northern end of the building showed damage was higher from the ground and consistent with a well-developed wind driven fire with very high fuel loading from multiple levels of combustible building materials but was not the area of origin of the fire. This was consistent with multiple witness statements and video evidence taken from the Incident Command Vehicle on its arrival.

The eastern faces of the 'main house' and nearby vegetation also suffered fire damage consistent with a well-developed fire but showed patterns of the fire travelling from south to north.

These findings were consistent with early reports from witnesses [REDACTED] who saw fire initially in the southwest corner of the building and from photos taken during the fire and supplied to the fire investigator team.



Photo 8 showing very low level burning in southwest corner (circled) before significant firefighting attack is made.

A narrow walkway ran between an adjacent bedroom on the ground floor and the storeroom on the southwest corner of the 'main house'. The bedroom wall had some remaining timbers that showed greater damage to the side of the timbers facing the storeroom. The wall cladding of both rooms (a cement type board) were examined and showed less damage on the bedroom wall than on the storeroom wall. This indicated fire travelled north from the storage room towards the bedroom.

The usual occupant of the bedroom [REDACTED] was working off-site that evening, having last been in the room about 10.30 pm. Witness [REDACTED] reported they were not a smoker and did not use candles or naked flames in the bedroom. The only electrical item in the room was a fan heater connected to the power outlet via an extension cord. This was routinely switched off and unplugged when they left the room. Fire patterns supported the witness' statement.



Photo 9 showing remaining wall (circled red) of adjacent bedroom. While the rest of the site had been cleared by an excavator, the area around the storeroom (circled yellow) had been preserved for further inspection.



Photo 10 showing storeroom during early excavation.

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Photo 11 showing storeroom during continuing excavation. The red arrow indicates the remains of the door showing it was in the open position at the time of the fire. Witnesses stated the door was always left open.

The timber base plates were intact around the storeroom except for the area immediately around the southwest corner of the room where a section of the timber base plate (refer photos 11 & 12 yellow circles) had been burnt away indicating very low intense burning. The damage was on the outside of the plate suggesting the heat source was external rather than from within the room.



Photo 12 showing deep level charring of base plate on the south western corner of the storeroom.

Area and point of origin

Area of Origin

Based on fire patterns, levels of burning, photographic evidence, video footage and information provided by multiple witnesses to the early stages of the fire, the area of origin was determined to be the southwest corner of the 'main house'. This area comprised a single level unoccupied storage room on the ground level approximately 2.4 metres by 5 metres. It had contained stacked chairs, bags and electrical appliances that were in storage and not connected to any power source. There were also rugs, crockery and other personal effects. The room was not being used for accommodation. A doorway was situated halfway along the southern wall. The door had been in the open position at the time of the fire. Witnesses ■ and ■ stated that the door was never closed.

Point of Origin

Investigations revealed the point of origin where the fire started in the building was in the region of the bottom plate of the wall framing on the southwest corner of the store room.

Examination of the immediate surrounding area identified a brazier located 14.8 metres southwest from the building. The brazier contained the remains of burnt wood and examination of the grass between the brazier and the 'main house' revealed a number of areas of scorched grass and remains of embers.



Photo 13 showing brazier location with embers spilled immediately on the northern side of the burner and orange markers showing location of further ember locations. The location of the storeroom wall believed to be point of origin of building fire is indicated by yellow arrow.



Photo 14 showing burnt grass from embers.



Photo 15 showing burnt grass from embers.



Photo 16 showing burnt grass from embers.

Multiple witnesses stated a local resident saw the brazier being used in the evening prior to the fire and observed embers from the brazier being carried by the wind towards the 'main house'. They reported there was a strong southerly wind at the time and that the resident had requested those using the brazier to extinguish the fire which was done about 8.00 p.m. Witness ■ confirmed the brazier had been

in use since about 6.30 p.m. and that the fire "got larger" as the wind increased requiring it to be damped down. It was later extinguished due to concern about the increasing wind. Witness ■ thought the time of extinguishment was between 7.30 p.m. and 8.00 p.m.

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Conclusions

Supposed Cause

Based on the evidence available at the time of this investigation, the classification of this incident has been recorded as accidental.

The probable cause of this fire² is believed to be the accidental ignition of combustibles in and around the southwest wall of the storage room. The source of heat is believed to have been embers that had travelled from the brazier and had been kindled by a gusting prevailing wind from the southwest until ignition occurred in or around the base of wall of the storage room.

This is consistent with reports from Witness ■ that he smelled a plastic type smoke about 12.00 a.m. A flaming fire involving the southwest corner of the storage room was first reported to Fire and Emergency by 111 at 12.30 a.m. about four hours after the brazier had been extinguished. This is an appropriate timeframe for slow smouldering embers to gradually heat nearby combustibles to flaming ignition

Elimination of Other Possible Causes

There were no competent ignition sources in the storage room and fire travel indicators, multiple witness reports and wind direction records demonstrated the fire proceeded away from the storage room rather than towards it.

A fireplace located in the upper level of the 'main house' was well clear of the area of origin. Regular occupants of the Marae reported no electrical events had been evident in recent months prior to the fire. There was no evidence of smoking materials or reports of smoking in the area of origin. Adults leaders overseeing a group of children staying overnight at the Marae were aware of the whereabouts of all children during the evening, making child fire play unlikely.

No information was received or identified throughout the investigation that the cause may have been suspicious, including the indicated length of smouldering time (at least 30 minutes) until flaming ignition was first reported.

There was no evidence that the cause may have been from a natural cause such as spontaneous combustion or lighting.

² NFPA 921:2017 4.5.1 4.5.1 Probable level of certainty corresponds to being more likely true than not. At this level of certainty, the likelihood of the hypothesis being true is greater than 50 percent.

Report approvals

Investigation and report completed by:

Investigator

Name: Peter Fox

Job Title: Specialist Fire Investigator

Date: 15 June 2019 02:24p.m.

I confirm the truth and accuracy of this statement. I make the statement with the knowledge that it is to be used in court proceedings. I am aware that it is an offence to make a statement that is known by me to be false or intended by me to mislead.

A technical review of this report has been completed by:

Name: Allan Bamber

Job Title: Peer Reviewer

Date: 20 June 2019 10:29a.m.

This report has been approved by:

Name: David Key

Job Title: Area Manager, Wellington

Date: 20th June 2019

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Appendix 1: Witness Details

Details removed to comply with the Privacy Act 1993 and the Official Information Act 1982.

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