

**CERTIFICATE OF FINDINGS****Section 94, Coroners Act 2006****IN THE MATTER of Natasha Aimee BRAY**

**The Secretary, Ministry of Justice, Wellington**

As the Coroner conducting the inquiry into the death of the deceased, after considering all the evidence admitted to date for its purposes, and in the light of the purposes stated in section 57 of the Coroners Act 2006, I make the following findings:

Full Name of deceased:	<b>Natasha Aimee BRAY</b>
Late of:	<b>71B Millen Ave Pakuranga Auckland</b>
Occupation:	<b>Student</b>
Sex:	<b>Female</b>
Date of Birth:	<b>01 September 1991</b>
Place of Death:	<b>Mangatepopo Gorge Tongariro New Zealand</b>
Date of Death:	<b>15 April 2008</b>
Cause(s) of Death	
(a). Direct cause:	<b>Drowning</b>
(b). Antecedent cause (if known):	<b>Nil</b>
(c). Underlying condition (if known):	<b>Nil</b>
(d). Other significant conditions contributing to death, but not related to disease or condition causing it (if known):	<b>Nil</b>

**Circumstances of death:**

Natasha Aimee Bray of Auckland died by drowning in the Mangatepopo gorge, Tongariro on 15 April 2008 while undertaking an adventure challenge exercise conducted by the Sir Edmund Hillary Outdoor Pursuit Centre.

Those findings, and my reasons for making them, are also set out in my written findings dated 30 March 2010

In those findings I make, under section 57(3) of the Coroners Act 2006, specified recommendations or comments that in my opinion may, if drawn to the public attention, reduce the chances of the occurrence of other deaths in circumstances similar to those in which the death occurred.

Signed at Hastings on 30 March 2010.



**Coroner CJ Devonport**

**IN THE CORONER'S COURT  
HELD AT AUCKLAND**

**IN THE MATTER** of the Coroners Act 2006

**AND**

**IN THE MATTER** of an Inquiry into the deaths of  
Antony McCLEAN  
Natasha Aimee BRAY  
Portia Caitlin McPHAIL  
Huan (Tom) HSU  
Anthony Walter MULDER  
Floyd Mariano FERNANDES  
Tara Rochelle GREGORY

**Before:** Coroner CJ Devonport

**Registrar:** Mr Leith Joseph

**Date of Hearing:** 15 February 2010 to 19 February 2010

**Court Room:** Environment 8.2  
Auckland District Court

**Appearances:** Crown Solicitor Mr Ben Vanderkolk  
Inspector David White for Police  
Mr William McCartney for Jodie Sullivan  
Mr Paul White for Sir Edmund Hillary Outdoor  
Pursuits Centre (OPC)  
Mr Hayden Wilson for MetService

**Date and time of  
Certificate of Finding:** 30 March 2010 at 11:00 a.m.

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WRITTEN FINDINGS OF CORONER

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## **1. Introduction**

The unexpected deaths of young people are distressing, especially when those deaths are shown to be preventable. These are my findings in relation to the deaths of teacher Antony McClean, and students Natasha Aimee Bray, Portia Caitlin McPhail, Huan (Tom) Hsu, Anthony Walter Mulder, Floyd Mariano Fernandes and Tara Rochelle Gregory, all from Auckland who died at the Mangatepopo Stream, Tongariro on 15 April 2008 while participating in an outdoor programme conducted by The Sir Edmund Hillary Outdoor Pursuit Centre. These findings explain how the deaths occurred and recommend changes to policies or practices at The Sir Edmund Hillary Outdoor Pursuit Centre with a view to reducing the likelihood of deaths occurring in similar circumstances in the future.

The focus of my inquiry is on discovering what happened, not on attributing blame or apportioning liability. However, in determining the circumstances of the death and making recommendations or comments that may reduce the chances of occurrence of other deaths in similar circumstances to which the death of the six students and their teacher occurred, I have made comments or findings of fact that are adverse to a person or persons. An opportunity has been given to those persons about whom adverse comments have been made to make submissions on those comments or findings, and relevant submissions received have been considered by me.

## **2. The Evidence**

### **2.1 Overview**

After a dry period, rain commenced falling in the Mangatepopo Stream catchment at Tongariro at noon on 14 April 2008. The rain continued falling with various degrees of intensity in the morning of 15 April 2008. After noon on that date an instructor employed by The Sir Edmund Hillary Outdoor Pursuits Centre of New Zealand led a group of 10 students and one teacher from the Elim Christian College at Auckland on a trip up a lower gorge of the Mangatepopo Stream. When they commenced the trip the stream flow was low. By the time they attempted to exit the gorge at approximately 4pm the stream was a raging torrent. The teacher and 6 students died. The instructor and three students survived.

### **2.2 OPC**

The Sir Edmund Hillary Outdoor Pursuit Centre of New Zealand ("OPC") is a Charitable Trust under the Charitable Trusts Act 1957. It has centres at Tongariro and Great Barrier Island. At Hydro Access Road 3, State Highway 47, Tongariro, OPC operates an outdoor pursuit centre from which it conducts outdoor education and training programmes, especially for secondary schools, with programmes tailored to the experience of groups. OPC's Mission Statement, set out in its Quality Management System, includes

"Developing people's potential through:

- Challenging outdoor adventures
- Environmental awareness
- Fun and support"



## 2.3 The Gorge Trips

OPC Tongariro base is situated above the lower reaches of the Mangatepopo Stream. The catchment for the Mangatepopo Stream includes the valley in which the OPC centre is situated in the stream's lower reaches, and part of the slopes of Mount Tongariro in its upper reaches. The Mangatepopo Stream narrows into a high sided gorge in an area close to the OPC centre. OPC conducts two gorge trips; an Upstream gorge trip and a Downstream gorge trip. Participants in the gorge trips are usually equipped with wetsuits, helmets, boots and personal flotation devices.

The Downstream gorge trip is approximately 500 metres and is regarded as the more demanding of the two trips, as it involves participants being lowered into the upper part of the gorge and exiting at or near a Genesis Energy intake structure. There is one other exit, at what is commonly known as the halfway ledge (situated on the left when looking downstream), which varies in height from between two and twenty metres above the stream bed. To exit from the halfway ledge requires abseiling equipment. A number of crossings are involved in (normal flow) moderately moving water, and at times involves swimming /floating to a point where the water is shallow enough to stand.

The Upstream gorge trip commences by entering the gorge at or near the Genesis intake structure and proceeding up the stream before turning back at a point considered appropriate by the instructor, often at a point past the halfway ledge at a place called "the plunge pool", and exiting the gorge where the trip commenced, at the Genesis intake structure. The Upstream gorge trip involves crossing the stream on several occasions in (normal flow) slow flowing waist to chest deep water. The distance travelled up the gorge from the Genesis intake structure to the halfway ledge is approximately 200 metres.

OPC has a gorge policy, which has general requirements for all gorge trips conducted by OPC (including at Tongariro and on Great Barrier Island), and specific requirements for particular gorges. General requirements for all gorge trips include:

- Minimum instructor qualifications
- Ratio of 1 instructor to 10 students + 2 accompanying adults
- Helmets to be worn
- Instructors to be familiar with escape routes prior to leading trips
- Gorges are not to be used after flood until cleared by the Field Manager
- River levels must be assessed as safe before entry and have no significant chance of the level rising above a safe level during the trip
- The following must be carried/worn on all gorge trips:
  - a) Instructor: Radio, first aid kit, throwbag, knife, whistle, watch.

The minimum instructor qualification for a Downstream gorge trip is "Gorge competency". This is a specific competency which includes performance criteria for group management in the gorge, lowering or abseiling students, trip preparation, and extracting students from the halfway ledge or abseil point.

The minimum instructor qualifications specific to the Mangatepopo Upstream gorge trip (up to halfway ledge) is "RMT competency, at least a familiarisation trip, and Field Manager sign off". RMT means Risk Management Training.

The OPC policy (item 9 under "Policy- Mangatepopo") provides that every Mangatepopo gorge trip must be confirmed with the Field Manager prior to entry, and immediately when the group exits the gorge.

The policy under "Guidelines" states:

1. "Consider the use of PDF's, particularly for warmth and/or weak swimmers

Guidelines-Mangatepopo:

2. This is an activity that is cold and demanding for groups and instructors. It should only be done after careful consideration of group strength and river levels, and requires a directive style of leadership"

Under the Gorge policy, item 5 requires that "Instructors must be familiar with escape routes prior to leading trips"

The Policies under "General" includes:

- "6. Instructors must check the weather forecast at the start of every trip and ensure that clients have adequate clothing and equipment to be safe before setting out"

OPC's Risk Analysis & Management System ("RAM") under Section A identifies "Death/drowning" as a peril, and among the hazards (circumstances that make the peril of death/drowning more likely to occur) there is included reference to "Unconfident in water" "Swept away in flood" "cold water immersion" "Trip too committing" "Fear of environment/water" and "Pre-existing conditions". The strategies provided for managing the hazards includes "Avoid and manage natural hazards" and "Check weather and flow prior to trip"

Item 14 of the OPC policy under "General" states "The standard of care given on youth programmes (minors under 18 years of age) must be at least that which would be given by a prudent parent. For Youth Adventure Groups and other groups with no accompanying teachers, parents or caregivers, our duty of care applies from the moment they arrive until they leave; 24 hours a day (see QMS Chapter B-Safety & Crisis response)."

Under "Policy-Communication" item 19 requires "Daily intentions must be provided before activities are carried out and any changes to plans must be notified to FM. Intentions must be sufficiently clear to enable a rapid emergency response"

Under "Moving water (all streams and rivers)", the policies included:

- "3. River flows are to be checked each day before going on the river.
5. Instructors are to brief and identify known hazards to their students and put in place strategies to ensure their students safety (see *Safety Brief* under teaching points).
6. Instructors must be able to see, and be in a position to rescue, any student on the water.
7. Instructors must manage the group on the water in such a way that if a new hazard has appeared, the risk must be effectively managed.
8. Instructors must know how to walk out of any position on a river. This may require an instructor to take a map and a compass on certain rivers"



(I comment that while this policy is probably aimed at the use of craft, such as kayaks and tube rafts and rafts, as it relates to moving water it should be applicable to Gorge trips)

#### **2.4 Ms Jodie Sullivan**

Ms Sullivan was the instructor allotted 10 students from the Elim Christian College for activities commencing on Monday 14 April 2008. Ms Sullivan has a bachelor degree in Physical Education. She commenced as an employee at OPC on 29 January 2008. Prior to that her experience at OPC included two weeks as a volunteer in May 2007 (one week as an observer) and completion of a twelve week Outdoor Educators' course in December 2007. During that course Ms Sullivan was an observer for a week and a co-instructor for a week, and she completed the river rescue competency. Ms Sullivan commenced instructing at OPC on 21 February 2008. As at 15 April 2008 Ms Sullivan had been "signed off" for four of the 6 core competencies for a Downstream gorge trip (the four competencies involving Trip preparation, Lower or abseil of students, and group management in the gorge) but she had not been signed off for the competency for removing students from the halfway ledge or abseil point in the gorge. (It is noted that removing students at the half way ledge was not a requirement for competency for an Upstream gorge trip, despite the fact that removal from the halfway ledge was one of only two exits from the gorge on an Upstream gorge trip).

Ms Sullivan had been in the Mangatepopo gorge five times prior to taking the Elim group into the gorge on 15 April 2008. Her first experience was as a volunteer participant in a group on an upstream trip in April 2007. Her second occasion was during Ms Sullivan's 12 week induction period, when she completed a downstream trip with an instructor (Mike Brenton). This was part of a course for a certificate in outdoor education. The third, a downstream trip, was completed by Ms Sullivan in the company of instructors Matthew Bennett and Matthew Rowley. A fourth trip was undertaken by Ms Sullivan with Matthew Bennett observing. On her fifth trip, Ms Sullivan, as instructor, guided a group on an upstream trip on 7 April 2008. Ms Sullivan was unable to recall whether there were other accompanying adults on that fifth trip. Ms Sullivan had never exited from the half-way ledge, and accordingly she had not completed all competencies necessary to undertake a Downstream gorge trip.

Ms Sullivan in her evidence states that a sketch plan of the gorge was not given to her during her training, but she found a copy (she thinks in Field Manager Kerry Palmer's office) and she put another copy on the staff room wall, believing it may be useful for staff.

Ms Sullivan believed the reference on the sketch plan to "last high water escape" (situated on river right between the half way ledge and the ledge on river left where she and the Elim group waited for the river level to drop) was reference to a cave above the water level, but that she was never shown the cave.

Ms Sullivan also states that she was never allocated a mentor during her training period, in breach of OPC's Quality Management requirements.

As to radio communication, Ms Sullivan believed that radio communication was lost in the gorge approximately below the ledge where she and the Elim group waited for the water level to drop, and there is reference on the sketch map at a point on what appears to be the upstream of that ledge to "no radio comms from this area".



## 2.5 Elim College arrival at OPC

During the afternoon of 13 April 2008 40 students and 2 teachers from Elim Christian College, Greenmount, Auckland, arrived at OPC Tongariro base to commence a 5 day outdoor education programme conducted by OPC. The students were divided into 5 groups and allocated an instructor. Ms Sullivan was the OPC instructor allocated to instruct one group of Elim students comprising Anthony Mulder, Floyd Fernandes, Natasha Bray, Portia McPhail, Tara Gregory, Tom Hsu, Sarah Brooks, Kish Proctor, Ashley Smith and Peter Shih/Hao-Che, all aged 16.

Ms Sullivan met her group for the first time on 14 April 2008, and discussed with them the planned activities, which included an exercise on the High Ropes in the morning and an "Upstream Gorge Trip" in the afternoon of 15 April 2008.

## 2.6 Morning Briefing on 15 April 2008

A morning briefing for OPC staff was held at the OPC Tongariro base at approximately 8am on Tuesday 15 April 2008. It was conducted by Beverley Smith, OPC Operations Manager. The weather report was read out by Kerry Palmer, the Field Manager, Mr Palmer having taken the report from the fax machine at 7.45am. The weather forecast received by OPC was that issued by MetService at 6.15am on 15 April 2008 for the Tongariro Alpine area. The forecast for that day stated "*Today Rain with isolated and poor visibility at times. Rain easing to showers tonight. Wind at 1500metres: Northerly 70 km/h easing to northwest 30 km/h tonight. Wind at 3000metres: Northwest 80 km/h, easing to 50 km/h this afternoon. Freezing level: Above 3000 metres.*"

Mr Palmer states that he added comments to the effect that rain was scheduled for the day with isolated patches of poor visibility, and that the rain should be clearing towards the evening. Mr Palmer says he missed seeing the weather on the television the night before, but based on the faxed weather report he had in mind that any Downstream gorge activity would be called off (as with the gorge being steep sided and exit not possible from the point of entry it was possible to become trapped if water levels rose) but he did not express this at the morning briefing meeting as no Downstream gorge activity was planned for that day.

Mr Palmer says that on 15 April 2008 one instructor planned taking a group single tube rafting in the morning, and as Field Manager he had no concern as it was a short trip and above the gorge where there are no steep sides to the stream, and there were limited rapids.

Instructors of three groups planned Upstream gorge trips in the afternoon. Mr Palmer states that based on the weather forecast he read out at the morning briefing, he was comfortable with those decisions. Mr Palmer acknowledges that he did not read or interpret the weather maps that accompanied the MetService forecast received at OPC on 15 April 2008.

## 2.7 Weather affecting Mangatepopo Stream on 15 April 2008

It started raining at OPC at about noon on 14 April 2008.

Kish Proctor, one of the students in the Elim group instructed by Ms Sullivan, described the rain on Monday 14 April 2008 as initial drizzle and later on rain "*but not alarmingly heavy*". He described it raining "*really heavily*" just after OPC staff finished their morning meeting on 15 April 2008 and at the time Ms Sullivan gathered



the group together to inform them of the activities proposed for the day (namely, high ropes followed by Upstream gorge trip). Kish Proctor then described the track he walked on down to the Mangatepopo Stream to commence the gorge trip as wet, *"literally like a waterfall"* and that *"it was heavy, heavy rain. It wasn't like normal, it wasn't easing up, it was heavy rain"*.

Sarah Brooks, another student in Ms Sullivan's group, described the weather on 15 April 2008 as raining constantly for the whole day.

Student Ashley Smith described the weather on 15 April 2008 as *"raining quite hard"* while she was changing into the wetsuit and other protective gear for the gorge trip, and that it rained most of the time she was at OPC.

John Maxted, Centre Manager at OPC recalls it raining when he arrived at the office just before 7am on 15 April 2008, and also recalls it raining (but not heavily) during the 8am morning meeting. He recalls it raining *"quite hard"* at 11am when he went for morning coffee, and recalls it raining heavily in the early afternoon (possibly 1pm) to the extent he could hear it on the roof of his office.

On 15 April 2008 Robert Griffiths, an Instructor at OPC was scheduled to take a group up the Mangatepopo Valley to the top of Pukekaikiore (situated within the Mangatepopo stream catchment). He states *"while at the end of the road getting ourselves sorted there was a loud clap of thunder. At that point I radioed to OPC saying that there was a loud clap of thunder and that if the thunder and lightening continued I would radio back to say we had changed our plans and we would not go to the top of the mountain during the storm."* He continued up the mountain and recalls *"Between 1.00 pm and 2.30pm while traversing the side of Pukekaikiore heading off to the northwestern side the wind and rain made conditions uncomfortable"* and *"There was sign of water in streams that normally were low to non-existent"*.

Rosalind Hughes, an Instructor at OPC, was also taking a school group over Mt Tihia (an area outside the Mangatepopo stream catchment, and approximately 15 minutes drive from the OPC centre) on 15 April 2008. She states *"I didn't look at the Mangatepopo river as I drove over it. I probably left at about 9.30-10.00am to head up to Mt Tihia. It was pouring with rain on the way driving there and very poor visibility"* and later *"At the summit I changed my leadership style due to the weather conditions and the conditions of the students. It went from a coaching role to a directive role. I made all the group follow me down the Mountain. I briefly thought of the water groups back at OPC and thought of the amount of water running off because of the drought. On the track down the water was sometimes up to my knees and thighs. This isn't normal. On the way down the track you normally follow is very easy to see but on this day I could hardly follow the track because there was so much water running off the track. I found it really hard to navigate. I was looking for broken trees or signs of people walking in the direction we were supposed to be going. I was also looking at my compass and map. It was really poor visibility. When we got to the stream at the bottom of the track it is normally 30cm across and stand in it and not get your feet wet or step across it. I got up there and it was up to my thighs and moving really fast. It was muddy as well."* Ms Hughes then returned to OPC headquarters, arriving at approximately 2.30pm and states that *"as we drove over the Mangatepopo Bridge on SH 47, I noticed that the stream was a brown raging torrent."*

The evidence from NIWA showed that while rain recorded at Te Porere commenced at about noon on 14 April 2008, it was relatively light (apart from heavier periods



overnight) and was relatively clear around early daylight until the rain increased in intensity mid morning before falling heavily commencing approximately 12.30pm, when Ms Sullivan was preparing for entering the gorge. Ms Sullivan estimates she arrived at the dam at approximately 1pm.

Ms Sullivan stated that she was not able to determine what rainfall occurred while she was in the gorge, because of the overhang and narrow opening, and continuous dripping of water from above.

## 2.8 Field Manager

Kerry Palmer was the Field Manager at OPC Tongariro on 15 April 2008. He described his duties as including allocating instructors for student intakes and planning staffing levels; organising safety checks for activities, and day-to-day logistics for field activities; training and observing instructors in the field, and attending management meetings.

Dr Grant Davidson, CEO of OPC at the relevant time, said in evidence that the Field Manager's job description included the purpose of the role: organising and being responsible for the instructional staff, their standards of operation and performance; ensuring a high quality of programmes through monitoring and maintenance of standards in the field; and responsibility for the safety systems of all areas of the OPC operation. The job description also required the Field Manager to "Programme staff to ensure the programming is in line with staff competencies in client stated outcomes" and "Co-ordinate safety efforts of OPC ensuring risks are identified and appropriately managed and any incidents reported and acted upon". Performance measures included "ensure systems are in place allowing knowledge of the whereabouts of each group of students each day", "arrange radio schedules where necessary on overnights or otherwise" and "ensure each group is checked back at the end of each day's activities".

Mr Palmer said that if the forecast he read at the morning meeting on 15 April had been for heavier rain he would have had some concerns about the Upstream gorge activities because he was aware that the water level could rise quickly. Mr Palmer says he would not have prevented the activity but he would have "*put a watch*" on the activity and warned staff to watch out for rising river levels.

Mr Palmer stated "*Based on the forecast that there was rain forecast for the day, I had in mind that the downstream gorge activity was closed. The downstream gorge trip is very committing. Once you are in the gorge on the downstream trip you cannot exit the way you entered. That means if the river levels rise you could end up trapped.*"

Mr Palmer checked the stream in the Mangatepopo stream both at the ford and at the road bridge. When checking the stream from the road, Mr Palmer states he was able to see the summits of both Ngauruhoe and Pukekaikio.

After returning to the OPC Tongariro base Mr Palmer spoke with Ms Sullivan about her intended gorge trip. Mr Palmer estimates he spoke to Ms Sullivan approximately between 11.30am and 12 noon. He was unable to recall the exact words of his conversation with Ms Sullivan but he recalls asking her whether she was still intending to go into the gorge, and advising her that the water level might rise quickly as a result of the rain (however he had just checked the level and it was normal). Mr Palmer recalled Ms Sullivan saying that she would check the stream when she reached the dam, and that she might not go too far in and that they could play some



games around the dam. He acknowledged that he did not tell Ms Sullivan that she could not go into the gorge. Ms Sullivan appeared confident to him, and that she had a clear strategy for the activity.

Following the conversation with Ms Sullivan Mr Palmer returned to the office and gave his radio to another staff member, before going for a run. Following returning from his run, Mr Palmer met with Mr Maxted.

Mr Palmer was advised by radio at approximately 1.30pm that 2 instructors (Peter Zimmer and Matthew Rowley) had called off their planned gorge trips.

At a time estimated by Mr Palmer to be approximately 2–2.30pm following a heavy shower of rain Mr Palmer went down to the intake structure on the Mangatepopo stream to check the water level. He noticed it had risen to a level *“where it would have been difficult to travel in the river bed”* and *“it didn’t look dangerous at that stage, it just seemed to be to me that she (Ms Sullivan) would have sat tight somewhere, like she would not be able to travel safely in the river”*

At approximately 3.30pm Mr Palmer’s *“thoughts were that they (Jodie Sullivan and the Elim group) were holed up on a ledge somewhere and actually where I thought they possibly could be was where they were. That’s just very difficult to access from the top and we’ve never done it before so I didn’t really know how to do it”*.

Mr Palmer was aware of several avenues for weather forecasts, including metvuw.com and Fencepost.com, and he usually referred daily to these sites. He described the MetService forecasts as *“notoriously unreliable”*, and stated that he did not usually use the MetService website as he found it a difficult site to navigate.

## **2.9 The Upstream Gorge trip on 15 April 2008**

Following completion of the High Ropes in the morning, instructor Ms Sullivan kitted the Elim group out with safety gear, including wetsuits, helmets, boots and personal flotation devices, observed by Jillian Dalton, an auditor contracted by Outdoors New Zealand. Ms Sullivan continued her briefing of her group while they had lunch. Ms Sullivan states that this briefing included instruction in a technique known as *“throwbagging”*, in which a bag containing a 20 metre floating rope is thrown by the instructor to a person in the water. The person in the water holds the rope and is belayed by the instructor to the riverbank. That instruction included the students accessing the rope by lying on their backs with feet up, directing their heads in the direction they wished to move, and using a *“big arms”* technique to move in the required direction.

Ms Sullivan states:

*“While I was continuing to get ready Kerry (Palmer) came over and discussed my intentions regarding the gorge. He told me to be aware that the river may have risen. I said something like “Yip, I wouldn’t take them where I would not go”. I also told Kerry that they were a competent group, and that I had already decided that I would not do the full trip. I had made this decision because I wanted to get the group out of the gorge before it got too dark. Some of the group wore glasses and they decided they would not have these on in the gorge. I wanted to get out of the gorge before this became an issue. The trip usually takes about two hours. I was aiming to complete the gorge by 3 o’clock at the latest.”* (Students Tom Hsu and Ashley Smith usually wore glasses, which they did not wear during the gorge trip.)



Ms Sullivan states that after bidding farewell to the auditor, Jillian Dalton who had observed her briefing of the students and teacher Anthony McClean, she accompanied the group down steps from the OPC centre to the dam near the Genesis intake. Ms Sullivan estimated the time was then about 1pm. (My comment: Mr Peter Zimmer states that he attended at the intake structure on the stream at approximately 1pm but did not see Ms Sullivan and her group. Either Ms Sullivan entered the gorge before 1pm and was out of sight by the time Mr Zimmer attended at the intake structure, or Ms Sullivan had not by then reached the intake structure to commence the trip upstream. In her evidence, Ms Jillian Dalton notes that Ms Sullivan and her group left the OPC Tongariro base resource centre at 12.30pm) Ms Sullivan acknowledged that *"when we actually started the river trip the water had risen a tiny bit, but it was still clear."*

Elim student Ashley Smith states that she was scared at times during the gorge trip, but she was encouraged by her peers and teacher and wanted to keep going. Her fears arose while she was in the middle of the stream and near the point where the group turned back. She states that *"I didn't reach the end because I was getting really scared and it was quite dark the further we were going and I couldn't see very well and I had to rely on my hands and my feet"* and *"I think Floyd (Fernandes) and I were probably of the same mindset because he wasn't too confident in the water cause he doesn't know how to swim, and so...we both wanted to head back so Jodie decided to turn around"*.

The group turned back at the half way ledge, and did not proceed further to the plunge pool.

The surviving students noticed that on the way back down the water crossings were deeper and the current was stronger than on the way up. All but the last of the stream crossings were achieved by jumping in the water and being assisted by hand (in particular by student Anthony Mulder).

Ms Sullivan says that after turning back and arriving at the first downstream crossing (which is a short distance downstream from the half way ledge), the water level was 3 to 4 inches above a small ledge, whereas it had been level with the ledge on the way up the gorge. From the sketch map of the gorge, this ledge contains the "Cave of slippery rocks" and "last high water escape"

The water level had risen by the second/final crossing (just downstream after leaving that ledge) at which crossing the water colour was described by Ms Sullivan as brown and the light was significantly darker. Rather than swim at the final crossing Ms Sullivan decided to throwbag, which took longer than she anticipated. After crossing the stream the group were on a ledge measured by Police to be 135 metres from the exit point at the dam/Genesis intake structure. Ms Sullivan states *"At this stage it was about 2.30 and I was thinking that the water was rising, and I considered that we should push to try to get out. We did not have far to go, and we were on a ledge on the left hand side as you look down the river. We had got to a point where we could stay where we were and wait it out, or jump in the river. I did not want to jump in as I knew that around the corner where you could normally stand up the water was going to be too high to do so. The river had risen substantially by this time."* Ms Sullivan decided to wait for the water level to drop.

Ashley Smith described the ledge at which the group stopped as rocks initially just above water level, under a rock shelf that required sitting at an angle, or if standing straight, standing further out into the water. What was initially above the water level over a period became ankle deep then knee deep, with the group having to stand



and hold onto the rock face to prevent being swept downstream. Ms Sullivan positioned herself at the bottom edge of the ledge to catch any that lost their footing. Teacher Antony McClean was positioned at the upstream end in increasingly strong current.

Ms Sullivan states that prior to 15 April 2008 she had never seen the Mangatepopo gorge in flood, and that she had no knowledge to what height the water level could rise, and therefore she had no way of judging whether the water level she experienced in the gorge may become higher.

Ms Sullivan reviewed her options. She decided there was no way to exit the ledge upwards or sideways as the ledge was under an overhang. She tried the radio, but there was no reception. *"I started to think that it would be better to go down the river and then throw-bag people individually. The entire group knew the white water position which they had all demonstrated earlier, and we had crossed the river already using a throw bag so they knew how this would work"*

Ms Sullivan stated they waited on the ledge until about 3.30pm when she made the decision to go down the stream. She assessed each person's confidence in the water. Ms Sullivan stated *"Tom was not confident in the water and I knew that he would not get out by himself so I matched him with Tony the teacher. Tony also came up with this idea. I also matched Floyd with Anthony. I paired with Ashleigh because she was the least happy at that time and the most vision impaired without her glasses. All the other students were to go individually."*

*The river was extremely noisy, and so I could only talk to the first half of people along the ledge. I told them that the idea was to direct your head left, and use big arm movements to get to the left hand side of the river just as they had previously demonstrated and practised. I then tried to listen and lip read Tony as he told the other four students what we were going to do. Those students had also seen my movements as I explained them.*

*Some of the students had watches. Tony did not. I told him to count, and to send people every five minutes so that I had time to get people out of the river.*

*I had learnt through my training that you do not attach people together if they do not have a release, but I knew that Anthony, Floyd and Ashleigh would not make it out if they were not attached to others who were more confident. I therefore clipped the students on with a looped sling and a carabena but did not do them up. I put the weaker person on the front, and by clipping them on this way both people could use their arms to direct themselves left to get out. If the back person had to hold onto the front person's life vest and not physically together, they would not have been able to paddle to the side of the river or catch the throw bag and therefore probably would not survive.*

*I attached Ashleigh to my cow's tail, which can be released. But I consciously made the decision when I attached Ashleigh that under no circumstances would I release her even if this would endanger my life"*

Ms Sullivan and student Ashley Smith, linked together with a carabena, went first, successfully making it to the bank before the dam above the Genesis Intake structure. On the bank Ms Sullivan prepared to commence throwbagging. In describing the prior event of entering the water and accessing the bank Ashley says *"I put myself in the right position, we were talking about going up on my back and then I was just taken off downstream and I kept going under the water and when my*



*feet hit a rock and then my body turned to that, I ended up going head first and then my feet went in between two rocks and my boots, I remember my boots going, coming off and my right foot smacking into another rock and then as Jodie stopped I think the rope may have turned me around like I say I was going feet first again and she was yelling at me to stand up but I couldn't because it was too fast and she couldn't hold on much longer I think and she had to let go and then she grabbed onto another rock as I was reaching the dam and I was able to grab onto some rocks and just pulled myself up."*

Ms Sullivan states that she and Ashley reached the shore approximately 5 metres from the dam. Ms Sullivan then moved approximately 10 metres upstream from the dam and positioned herself to "throwbag" to her group.

Kish Proctor followed, sooner than expected according to Ms Sullivan, but on the far side of the stream and out of reach of Ms Sullivan's throwbag. Kish Proctor states that he was underwater much of the time and didn't see Ms Sullivan until he had passed her and Ashley Smith. Kish tried unsuccessfully to hold onto a wire stretched above the dam (the wire was approximately 1 metre above the dam on normal flows but by now just below water level), and was swept over the spillway and downstream, hitting a log and rocks, losing his helmet, both boots and one sock in the process. He successfully made his way to the bank and looked at his watch. It was 4pm.

At this time Ms Sullivan instructed Ashley to remove the radio from the bag and affix the aerial.

Peter Shihh was the next to come around the bend. He was able to grab the rope thrown to him by Ms Sullivan and was successfully assisted by her from the water.

At this stage, Ms Sullivan came from the position from which she was throwbagging for the radio, and then returned to her position. Ms Sullivan was able to make radio contact with staff at OPC and informed them that she urgently needed help, and that people were in the water. That call was logged as being received at OPC at 4.05pm.

Portia McPhail followed. She initially missed the rope thrown to her by Ms Sullivan but as the current took the rope alongside her, Portia managed to grab the rope but by that time she was going over the dam and lost her hold on the rope. Portia's body was later recovered downstream.

Natasha Bray followed. She managed to grab the rope but went over the dam and lost her hold on the rope. Natasha's body was later recovered downstream.

Next were Floyd Fernandes and Anthony Mulder (who were attached to each other). They were unable to reach the rope thrown by Ms Sullivan. Ashley Smith states *"Jodie threw the rope but, I don't know what happened, but it didn't reach them-they were too far on the other side. And then I was standing there and then Floyd and Anthony looked at me and Floyd started calling out for help... and Anthony lifted up his hand for me to grab but I couldn't reach it. I watched as they were thrown over the dam."* Both Floyd and Anthony's bodies were recovered downstream.

Tara Gregory followed. Her body was later recovered downstream.

Sarah Brooks followed. Ms Sullivan threw the rope-bag to her but it fell short as, according to Sarah, she was in the middle of the stream. Sarah managed to grab onto the wire rope across the gorge, but she lost her grip with the force of the water and went over the dam, but survived.



Finally Tom Hsu, attached to teacher Antony McClean went over the dam, unable to continue to hold onto the rope which Mr McClean was initially able to catch. Their bodies were later recovered further downstream.

At this stage OPC staff that had come down to the stream were unable to cross but they did so later using a tyrolean located near a ford further downstream.

## 2.10 Changes to plans by Instructors

Matthew Rowley was an Instructor at OPC. He states *"On Tuesday 15 April we had the morning briefing as usual which included a weather report which said it was going to rain. I had nothing to say as IC. There were no concerns raised by the teachers so the instructors then went on to give their intentions for the day. I announced I was going to do the high ropes course in the morning and the upstream gorge trip in the afternoon... There were no comments by the field manager or anyone else about the weather conditions and the planned gorge trips."* Mr Rowley states *"We left the ropes course about quarter to two, roughly an hour and a half after Jodi had left there. We went to the Resource Centre to have lunch and I met Pete Zimmer who had just returned from a float trip on the Mangatepopo. Because of the weather I had reservations about doing the upstream gorge trip which was more of a gut feeling than anything I can readily explain. Pete, who is a senior instructor, explained that he had noticed a rise of the water level on the Mangatepopo and the water at the dam 10-15 cm higher than normal and that he wasn't going to do the gorge trip because of the weather. This was a bit of a relief to me as Pete had made the decision for me. After I spoke to Pete I went up to the office and spoke with Kerry and Matt about possible alternatives for my afternoon activities. Together we decided that caving would be a better option for my afternoon.... Jill Dalton from Qual Mark was observing my group when I explained to them the change of plan and briefing for the cave trip."* Mr Rowley had been at OPC from January 2008 and states *"Since I have been at OPC I have only seen the Mangatepopo flowing at a low level and not had to process information regarding its level and flow in any other situation."*

On 15 April 2008 Peter Zimmer, an independent contractor to OPC, was an instructor with one group of Elim College students. On that day he was accompanied by a co-instructor and a teacher from Elim College. Having completed a single tube float on the upper Mangatepopo stream in the morning and intending to undertake an Upstream gorge trip in the afternoon, Mr Zimmer drove down to the Mangatepopo Genesis intake, arriving there at (by his estimation) approximately 1pm. He climbed down the ladder to be level with the head of the dam, pointing out to his co-instructor that the gauge needed calibrating before it could be of any use, and noting that the water level at that time was not on the gauge. He noted that the water flowing over the dam was more than what the flow had been over the summer, but was still at a safe level for an Upstream gorge trip. However, Mr Zimmer noted a slight discolouration change starting to happen in the water and when he reached the point of looking up stream *"it was darker than normal. It was raining. The water had a slight tint to it. The whole place and atmosphere had an eerie (spooky) feel / atmosphere to it. It just did not feel right to be there today. That is what my gut feeling told me. At this stage I made my final decision not to go ahead with the upstream gorge trip planned for the afternoon."*

Mr Zimmer says he and his co-instructor drove back to OPC Tongariro base and advised Jill Dalton (OutdoorsMark auditor) and OPC instructor Matthew Rowley of his decision. He was informed that Jodie Sullivan and her group had commenced their Upstream gorge trip approximately one hour previously, and he states *"Instantly I felt*



a concern!" Mr Zimmer instructed his co-instructor to radio to the Field Manager Kerry Palmer of their change of plans. As a result, Mr Palmer arrived at the Resource Centre 5 minutes later (according to Mr Zimmer at approximately 1.30pm-1.40pm), and then proceeded to drive down to the dam. Mr Zimmer stated that he still had his wetsuit on from the earlier tube rafting trip and asked Mr Palmer if he required assistance. Although Mr Zimmer's offer of assistance was not taken up by Mr Palmer, Mr Zimmer felt he had an obligation to remain to supervise his group, rather than accompany Mr Palmer to the dam. Mr Zimmer next saw Mr Palmer shortly after 4pm (estimated by Mr Zimmer at 4.06pm) when the Field Manager and Centre Manager (John Maxted) ran into the OPC Tongariro base and instructed Mr Zimmer to put his wetsuit on and go down to the dam. By the time Mr Zimmer arrived at the dam, all of the group had left the ledge and either gone over the dam or were on the bank immediately prior to the dam.

Mr Zimmer stated that he based his decision to not enter the gorge on the weather forecast, the rain that had fallen during the day and previous day, the rain that was falling at the time of his inspection of the water level, and his "gut instinct".

When asked whether it would have been possible for Ms Sullivan to return to the halfway ledge when she noticed the water level rising and water discolouring on the first crossing downstream below the ledge, Mr Zimmer was of the opinion that returning to the halfway ledge "*would have been a feasible proposition*".

## 2.11 NIWA

National Institute of Water and Atmospheric Research Limited (NIWA) completed a report on climate, rainfall, soil moisture and stream flows in the months and days leading up to 15 April 2008, using records of rain (28 sites), soil moisture (2 sites) and river flows (18 sites).

In the Executive Summary in the NIWA report it states:

### ***"The event of 15<sup>th</sup> April 2008***

*An active trough affected the North Island and north of the South Island from 14<sup>th</sup> to 16<sup>th</sup> April. Rain was widespread and followed a similar pattern over a large area of the Central North Island. Rain began around 12 noon on the 14<sup>th</sup> and then reduced in intensity between 6 and 9pm. More rain followed overnight until a more-or-less general cessation between 4am and 10am on the 15<sup>th</sup>. After 10am the rain intensity increased again to rates similar to that experienced overnight. After 12 noon rain intensities increased to more than twice the previous values in some areas. Between 2pm and 4pm intensities reduced and rain had all but ceased by 6pm on the 15<sup>th</sup>.*

*The early rain caused a gradual increase in soil moisture on the 14<sup>th</sup> and early on the 15<sup>th</sup>. The rain that began at 10am on the 15<sup>th</sup> caused soil moistures to increase rapidly to field capacity at Turangi between 12 noon and 3pm. There was a more modest increase at Ohakune because the rain intensities and amount were less to the south. There was no reaction in stream flow at the Whanganui at Te Porere recorder until 2pm to 2.30pm and spill did not increase markedly at the Mangatepopo Weir until just after 3pm on the 15<sup>th</sup> April. Both stream flows increased very rapidly over the following half hour. This time delay in stream behaviour relative to the peak rain intensity is because of the pathways that water must take through vegetation and soil and rock to reach the river and the time that water in the headwater streams takes to reach points further downstream.*



### **Likelihood of the event of 15<sup>th</sup> April 2008**

*One hour and three hour rain depths during the rain event of 14<sup>th</sup> and 15<sup>th</sup> of April have an annual probability of exceedance of between 2% and 97% across the region, and at the Te Porere rain gauge the annual probability of exceedance was 31% and 20% respectively. One hour and three hour time intervals are used because the reaction time of the Whanganui and Mangatepopo catchments at the sites in question is in this range. To interpret these numbers in a different way, at the Te Porere rain gauge, there is a 20% chance of one or more rain events this intense or greater over three hours each year; alternatively we expect a rain fall of this intensity or greater over three hours once every five years on average. The phrase "on average" is important, as there can be more than one event this large in a year or even a month, or a number of years with no events this large.*

*The flood peak of 15<sup>th</sup> April 2008 has an annual probability of exceedance of between 21% and 96% in the region, and was 50% at the Mangatepopo Weir and 60% at Te Porere flow recorder. Thus there is a 50% chance of one or more floods this large in any year; alternatively we expect a flood of this size or greater once every two years on average. Many years have no events this large; but there were six in 1999 at Te Porere.*

### **Is the event of 14<sup>th</sup> and 15<sup>th</sup> April 2008 unusual?**

*Analysis of flow volumes and rain depths, and peak rain over three hours duration and peak flow, show the event of 14 and 15 April 2008 was not unusual by comparison with other events on the Whanganui catchment, and by extension, on the similar Mangatepopo catchment immediately to the south. Detailed consideration of rain, soil moisture and flow for this event and two other recent events, one larger and one smaller, show that both the amount of runoff and the peak flow observed, are consistent with the dryness of the catchment beforehand and the amount and intensity of rain experienced"*

The report also notes that early rain on 14 April 2008 had little effect on stream flow, because the catchments were very dry up until then, so this water simply replenished depleted soil moisture levels. NIWA in its report comments that it is likely that the dry soil moisture conditions, although wetted by earlier rainfalls on 14 April, still managed to reduce the severity of the flood peaks on 15 April. The renewed rain after midday on 15 April caused the soil moisture to rapidly approach field capacity, resulting in rapid increases in stream flow.

NIWA notes that since 1966 there have been 40 events recorded at Te Porere as large as, or larger, than the event on 15 April 2008. On 29 November 2006 there was a flood which had a flow rate which peaked at 45m<sup>3</sup>/s. The recorded flow rate for the 15 April 2008 event was 17m<sup>3</sup>/s. The rainfall was similar in both total and peak intensity in both events, but the soil on 29 November 2006 was at field capacity, resulting in a much larger peak flow at both Te Porere and Mangatepopo. (According to the NIWA report Te Porere on the Whanganui river is situated approximately 2.8 Kilometres from Mangatepopo, and the Mangatepopo spillway is 0.4 kilometres from Mangatepopo).

Data provided by NIWA showed historical evidence that the Mangatepopo stream could rise from low flow to in excess of 10 cumecs within half an hour, and drop to a low flow equally as quickly, with the event being over within a three hour period. Such an event occurred on 30 June 2007. The graph representing the water rise on the Mangatepopo stream on 15 April 2008 shows the water level rising quickly and



steadily from a low flow at approximately 2.45pm to a peak flow of approximately 17 cumecs at 4-4.15pm, to drop quickly and relatively steadily to a low flow at approximately 5.45pm (again, within a three hour period).

NIWA acknowledge that while the instrumentation at the Mangatepopo weir is standard equipment, the location of the sensor and the physical limitations of the weir configuration mean that the flows estimated are not to the normal standards of a flow monitoring station. NIWA notes that the weir is broad and hence height above it provides an insensitive measure of flow, and acknowledges that the staff gauge "can be out by 100%", but was confident that the staff gauge and the "bubbler are in agreement in the range of flows we are interested in (0 to 1000 l/s)".

## 2.12 MetService

MetService is a state-owned enterprise and is contracted by the Ministry of Transport as the body that carries out the services required by the Meteorological Services Act 1990, which includes the making and issuing of weather forecasts and the collection and recording of weather information. MetService is also the designated body for the provision of the authorised weather warning service. In addition it provides weather data and forecasting on a commercial basis.

Mr Ross Marsden, an employee at MetService gave evidence at the inquest on Monday 15 February 2010. Mr Marsden assisted in preparing a written report. In that report it is stated that MetService delivers forecasts and warning information in a variety of ways, including through its website ([www.metservice.com](http://www.metservice.com)). There is also an "on request" service to casual users and subscribers through fax, an 0900 telephone number, email and text/SMS services. MetService also provides information to subscribers through a data feed service (MetConnect), giving access to highly detailed weather information. Severe weather information is communicated to a variety of agencies, including the Ministry of Civil Defence and Emergency Management, the New Zealand Police and affected local and regional councils.

MetService issues a Severe Weather Outlook daily at approximately 2pm. A Severe Convection/Thunderstorm Outlook is issued daily at approximately 9am for the period up to midnight of the same day. Both outlooks are freely available on the MetService website and on request to both casual users and subscribers through the various delivery channels

OPC subscribed to the MetServices MetFax service to receive the Tongariro Alpine forecast on a one a day basis, requested by OPC to be sent at 6.45am each day.

As far as MetService was aware OPC did not subscribe to any Severe Weather Outlook, Severe Thunderstorm Outlook, Severe Weather Watch, or Severe Weather Warning services, which MetService often sent at no charge by email to subscribers.

Mr Marsden says that the Tongariro Alpine forecast transmitted to OPC on the morning of Tuesday 15 April 2008 contained text that was updated and filed at 1.18am that morning by the night shift media meteorologist. The word "thunderstorms" was apparently accidentally omitted after the word "isolated" so that the text read "*Rain with isolated and poor visibility at times. Rain easing to showers tonight*". It was put to Mr Marsden that possibly the words "and heavy falls" were also omitted. That was acknowledged as possible, but Mr Marsden stated that heavy falls invariably accompany thunderstorms, and when OPC staff heard the thunder on the morning of 15 April, "*somebody not far away would have got heavy falls, if not the person making the observation*".



The MetService Tongariro Alpine forecast was updated and filed at 6.36am on Tuesday 15 April 2008 to read *"Periods of rain, with isolated thunderstorms and heavy falls. Poor visibility at times"*. This updated forecast was not included in the fax sent to OPC at 6.45am because the MetFax system is updated hourly at 15 minutes past the hour. Mr Marsden says the updated information was available on the MetService website and to subscribers on MetFax receiving faxes after 7.15am.

Mr Marsden stated that no-one who received the fax with the words omitted contacted MetService for clarification. This included OPC.

Mr Marsden recalled MetService staff being surprised at criticism received after 15 April 2008 from persons involved in the outdoors industry that the MetService website was not "user-friendly." Mr Marsden stated *"Our internal reaction to that was surprise and if there was such difficulty why did no one contact us about it?"*

*Mr Marsden stated that a severe weather warning was issued at 8.29am on 15 April for areas including the Taumaranui, Waitomo and Taupo areas, and that OPC was included in or bordered these areas. At 9.49 am and 11.37 am a severe thunderstorm watch was issued for the same areas valid noon 15 April 2008 to Midnight 15 April 2008, and that a watch is the highest level of alert given for thunderstorms.*

*Mr Marsden was also asked to interpret the weather maps provided by MetService to OPC by fax at 6.45 am on 15 April 2008. He stated that "looking at that I would certainly suggest that central northern and central part of the North Island was due for some heavy rain".*

*The Alpine/ Regional Tongariro report issued 11.40 Monday 14 April 2008 provided a weather forecast for the following day Tuesday as "Rain about the northern slopes, with some heavy and possibly thundery falls during the afternoon and evening. Cloudy elsewhere, with scattered rain"*

### **2.13 John Maxted**

John Maxted was employed as the Tongariro Centre Manager at OPC in July 2007 and he held that position until resigning in January 2009. He had responsibility for all aspects of the OPC Tongariro centre, directly reporting to CEO Dr Grant Davidson. Mr Maxted was present at the Tongariro centre on 15 April 2008 and in his role as Centre Manager he acknowledged that he was responsible for all staff and clients at the centre that day.

Mr Maxted states that when he applied for the Centre Manager role he was aware of the existence of middle-management conflict and instructor dissatisfaction that was contributing to staff turnover. It was his belief that significant pressures upon managers and instructors to deliver quality programmes with very limited resources contributed to the incident on 15 April 2008. Mr Maxted noted that through 2007 OPC Tongariro seemed to be regularly losing its more experienced instructors, and his exit interviews with instructors *"frequently highlighted feelings of being overworked, not feeling well supported in terms of professional growth opportunities, anger at some mean-spirited management decisions, and general disillusionment with the centre not adapting to the times"*. (Evidence from Dr Grant Davidson was that this information was not passed on to him by Mr Maxted nor, to Dr Davidson's knowledge, by Mr Maxted to the OPC Board of Trustees)



Mr Maxted believed that instructors were required to operate more independently and with less active supervision than was ideal, which in his opinion contributed to the events on 15 April 2008. Further, *“the complexities and administrative demands of coordinating the instructional team meant the Field Manager was not well positioned to role model the leadership of activities and/or observe instructors in the field.”*

According to Mr Maxted last minute staff roster changes were common with late client bookings and Mr Maxted also believed there was *“pressure to get new instructors into productive work mode as soon as possible, with staffing rosters incorporating little flexibility and new staff scheduled to lead courses immediately after their induction.”*

While a mentorship system for new instructors was documented in OPC’s Quality Management systems, Mr Maxted acknowledged that this was not working effectively in the latter half of 2007 (and Ms Sullivan states that she was not mentored as intended).

Contributing factors to the pressures at OPC on 15 April 2008 in Mr Maxted’s opinion included:

- The death of Sir Edmund Hillary in early 2008 saw a “Summits for ED” tour quickly organised by OPC Head Office, creating *“enormous internal pressures across the organisation”* and one instructor from Tongariro OPC being away for one month, a second instructor involved in logistical work in the south island for two weeks, and the Operations Manager away for extended periods on logistical matters.
- Mr Palmer, Field Manager, was given one month’s leave, returning to OPC Tongariro from that leave on Monday 14 April 2008
- A public “open day” was held on 12 April 2008
- The presence of the Outdoors Mark auditor Jillian Dalton coincided with the return of Mr Palmer from annual leave and was a distraction and he was not able to undertake many of the roles he would normally undertake day-to-day.

## **2.14 Grant Davidson**

Dr Grant Davidson was the Chief Executive Officer at OPC on 15 April 2008, having first joined OPC as an employee in 1985. His CEO role was to provide overall management and direction for OPC. The quality management role included safety systems. Dr Davidson has in excess of 25 years experience in the outdoors industry in New Zealand, the United Kingdom and the United States.

Dr Davidson says that OPC’s policies and procedures had undergone a major review by the Field Management Team in the 18 months prior to April 2008, and that policies and procedures for the Mangatepopo gorge were included in the review and given special attention because the gorge contained many high risk criteria.

Dr Davidson says that as CEO he approved a set of general policies applying to all activities and specific policies relating to the gorge. He states that the importance of following the policies was highlighted in the first paragraph in the front of the OPC Instructors Handbook, which stated *“POLICY- The operational rules MUST be adhered to. There is no discretion or choice with Policy.”*

In his evidence, Dr Davidson acknowledges that OPC had slippage in its systems and on 15 April 2008 poor decisions were made by staff and others that were not identified and corrected. He believed that the incident showed that OPC lacked a



system or tool that clearly points out the potential of an activity to result in serious harm, the factors that might lead to those serious harm events and a consistent approach for clear decision making for managing the risk in those activities. As Dr Davidson had not come across such a tool during his work in the outdoors sector, following the 15 April 2008 incident, he set about devising such a tool which he calls the FLASH process (Factors Likely to Accentuate Serious Harm).

## 2.15 OutdoorsMark Safety Audit

On 15 April 2008 Jillian Margaret Dalton, contracted by Outdoors New Zealand, was in the process of undertaking a field audit at OPC, as part of a three yearly re-audit of the OutdoorsMark Standard held by OPC.

Ms Dalton observed Ms Sullivan and her group on the High Ropes course in the morning and in the morning of 15 April 2008 while observing groups on the ropes course "*...it started to rain really heavily so I went back to the centre to get an umbrella. I just wanted a bit of protection. I had a coffee with Kerry and John Maxted while I was there. Then I went back to the site and it was raining quite heavily during this time*". While Ms Dalton was walking from the ropes course to the centre and returning to the ropes course she observed "*...an increasing amount of ground water. Every time I came through it was more lake like...*" Ms Dalton recalls thunder and lightning when she went back to the centre for coffee, and that it was very dark as "*we had to put lights on in the centre to have coffee*".

After observing at the ropes course Ms Dalton went to the Resource Centre (at which stage she recalls it was "*raining quite heavily*") to observe Ms Sullivan kitting out and briefing her group for the gorge trip. Ms Dalton recalls Ms Sullivan leaving from the Resource Centre for the gorge at approximately 12.30pm. Following lunch Ms Dalton returned to the Resource Centre to observe instructor Matthew Rowley briefing his group for the gorge trip, during which Peter Zimmer "*arrived back with his group and he asked Matt what he was doing and Matt said he was going to do the gorge trip and Pete said 'I've just been down to have a look at the river and I wouldn't do that trip if I was you. He said the river was brown and rising*".

Ms Dalton at interview said she later (approximately 2.15pm) met with Field Manager Kerry Palmer "*to have a bit of a debrief about how things had gone. At that point, he was sitting down and he was a bit distracted because Jodie hadn't come back and it had been raining quite a lot and I could see he was getting increasingly nervous so in the end I said to him 'look your mind's not on this and neither is mine' so because we both knew things weren't feeling right and so I said I'll write up my report and we'll just leave it there. At that point Kerry dispatched Matt Bennett, the training officer and Belinda just down to check the halfway ledge*". Although unsure of the time, Ms Dalton estimated the time then to be about 2.45pm.

Dr Davidson stated in evidence that he was a safety auditor and was instrumental in setting up the audit process undertaken by Ms Dalton on behalf of OutdoorsMark at OPC in April 2008. When questioned at the inquest Dr Davidson stated "*Unfortunately the audit, I would have hoped, would have prompted any defects to be addressed to me because that is how I would become aware of it, and in the past if we had an audit with a series of defects they were listed, actions put beside them and corrections put in place, and we can give demonstrable details of corrections put in place post-audits in the past.*"

In her audit report following the field audit (and after the incident on 15 April 2008) Ms Dalton did not raise issues that resulted in the tragedy. Dr Davidson stated at the

inquest *“Quite frankly I was shocked and disappointed at the standard of audit that was carried out. I have never personally carried out a field audit without going into the field and understanding the activity and going in a systematic way through the policies and procedures that the organisation has documented in checking off each one”*

## **2.16 Radio Communication in the Gorge**

The radios used at OPC were, according to Dr Davidson, identical to those used by the Department of Conservation. They were built to military specifications and were supposed to be waterproof to 1 metre. As OPC did not find the radios were as waterproof as specified, OPC instructors carried the radios in dry bags, with the aerial not connected.

The Police arranged for testing of the radios in the Mangatepopo gorge following 15 April 2008. The report showed that reliable two way communications from within the gorge was established using the ESB SAR simplex frequency, between a person in the gorge and a person situated at or near the dam/weir. Communication with OPC Tongariro base using the ASB57 Duplex frequency was established but lost if the operator was hugging the wall of the area that Ms Sullivan and her group waited for the water level to fall. Reliable two way communication between OPC centre and the Mangatepopo gorge would be obtained using an additional repeater positioned within line of sight to the gorge entrance.

The Police reported that the effects of ambient noise due to water movement would be greatly reduced by the use of an earpiece connected to the radio. Waterproofing of radios using such earpieces was not possible.

Dr Davidson stated that new high gain aerials (not available in 2008) would provide effective communication anywhere in the gorge, (but I note that in the absence of using waterproof radios, still with the limitation of one way communication from the instructor).

## **2.17 Post Mortems**

Post mortem examinations conducted on Anthony Mulder, Floyd Fernandes, Natasha Bray, Portia McPhail, Tara Gregory, Tom Hsu, and Antony McClean confirmed their deaths occurred by drowning.

## **3. Comment**

### **3.1 Overview**

The Sir Edmund Hillary Outdoor Pursuit Centre mission is to develop people's potential through:

- Challenging outdoor adventures
- Environmental awareness
- Fun and support

Such challenging outdoor adventures included two gorge trips on the Mangatepopo Stream: an upstream trip and a downstream trip. My inquiry is focused on the Upstream gorge trip which Ms Sullivan and the Elim group undertook.



With a view to considering if it is appropriate to make recommendations or comments with a view to preventing deaths occurring in similar circumstances in future, it is necessary to review what risk management plan and procedures OPC had in place for an Upstream gorge trip, and in particular what procedures were in place to recognise when a flood event was likely to occur, and what procedures OPC had in place when such an event occurred.

### 3.2 Risk Analysis

OPC's Risk Analysis & Management System ("RAM") under Section A identifies "Death/drowning" as a peril, and among the hazards (circumstances that make the peril of death/drowning more likely to occur) there is included reference to "Unconfident in water" "Swept away in flood" "cold water immersion" "Trip too committing" "Fear of environment/water" and "Pre-existing conditions". The strategies provided for managing the hazards includes "Avoid and manage natural hazards" and "Check weather and flow prior to trip"

While drowning as a result of a flood was recognised at OPC as a hazard, the only relevant strategies provided in the OPC policy for managing the hazard were "Avoid and manage the hazard" and "Check weather and flow prior to trip".

### 3.3 Required Assessments

OPC policy for a gorge trip required that river levels must be assessed as safe before entry into the gorge and have no significant chance of the level rising above a safe level during the trip.

While an assessment was made of the water level of the stream in the gorge prior to and at the commencement of the ill fated trip (at which stage the level was regarded as safe), no appropriate assessment appears to have been undertaken as to whether there was a significant chance of the water level rising above a safe level during the trip. Such an assessment differs from "keeping an eye out" for the water level rising during a gorge trip.

To make an appropriate assessment as to the chance of the water level rising in the gorge requires knowledge of the catchment for the gorge, and the quantum and intensity of rainfall falling in the catchment during a relevant period.

According to NIWA rainfall and rainfall intensity creates a flood. All catchments have a parameter known as a time of concentration- the time it takes for the water that's flowing in from various areas to meet and form a flood peak. In small mountain streams like the Mangatepopo that concentration time can be less than two hours or up to 24 hours

In OPC's Generic Policy Statements Including Safety And Crisis Response reference is made to Environmental Hazards. These include:

*"Flooding-At any time in local streams, but especially during heavy rain, can result in floods. The rain can be occurring in the upper catchments and not be falling where you are at all."*

*"Weather-All areas of operation, but especially the mountains or at sea, can have dramatic, sudden and non forecasted changes to the weather that can produce conditions that increase the level of real risk to students and staff"*



Those two factors are relevant to the event on 15 April 2008. The entries in the Policy are intended to alert OPC staff to changes that occur in the environment. Evidence from NIWA showed the rainfall recorded at Te Porere showed steady rain just before midnight on 14 April 2008 until about 4.30am on 15 April 2008, then little or no rain at that site until just after 10am when there was steady rain until noon when heavy rainfall began. That rainfall after 12 noon resulted in a sharp spike in the water flow on the Whanganui river at Te Porere from approximately 2 cumecs at 2pm to approximately 29 cumecs by 3.30pm

Evidence from NIWA shows that the water flow at the Mangatepopo spillway increased from 4.6 cumecs at 2.30pm (the approximate time the group arrived at the ledge on which they waited) to 17 cumecs between 3.05pm and 4pm. According to NIWA records the water level peaked at 4.10pm. Kish Proctor, the first student to enter the water solo, had gone over the dam and was sitting on a log having made it to the bank at 4pm. Accordingly the group effectively left the ledge as the water level peaked.

The graph of the stream flow at the Mangatepopo spillway on 15 April 2008 shows the water flow increasing sharply from very low flow at 2.30pm, peaking at 17 cumecs at approximately 4pm, and dropping sharply to low flow by 5.45 pm. This means that the stream rose from safe to dangerous levels, returning to a safe level within 3½ hours. The stream rise in the Mangatepopo follows a similar (but more severe) rise on the nearby Whanganui river, and it is likely that the rainfall in the Whanganui followed a similar (but possibly less severe) rainfall in the Mangatepopo catchment. This increase in intensity in rainfall after noon on 15 April is supported by observations from witnesses at OPC.

While I acknowledge the caveat that the location of the sensor and the physical limitations of the weir configuration mean that the flows estimated are not to the normal standards of a flow monitoring station and that the weir is broad and hence height above it provides an insensitive measure of flow, and that the staff gauge "can be out by 100%", NIWA was confident that the staff gauge and the "bubbler are in agreement in the range of flows we are interested in (0 to 1000 l/s), and accordingly I am satisfied the cumecs figures are sufficiently accurate.

Ms Sullivan stated she was unable to determine how much rain was falling while she was in the gorge, because of the overhang. No one at OPC outside the gorge appears to have turned their minds to this. However evidence received also shows that heavy rain fell at OPC before Ms Sullivan entered the gorge (and students noted the heavy rain while in the Resource Centre and the waterfall-like effect of that rain on the steps while descending from the OPC Tongariro base to the stream).

To avoid the hazard required an informed assessment of the likelihood of the water level rising to an unsafe level during the gorge trip. No such informed assessment was reasonably made, either by Ms Sullivan or Mr Palmer, prior to the gorge being entered. That the water level was noted as being safe at the commencement of the trip does not equate with an assessment being made whether there is a likelihood of the water level rising to an unsafe level during a gorge trip. There did not appear to be any specific competency required for assessment of rising water levels, yet this was an essential and necessary skill.

Peter Zimmer, an instructor with another Elim group, who made an assessment that it may be unsafe to proceed with his planned Upstream gorge trip, made that assessment based on his experience, his observation of the rain falling, and a sense that when he examined the stream when making his assessment (and believed that



the water level at that time was safe), to him the place had an “*eerie (spooky)*” feel, and he made the decision based on his “*gut*” instinct. He had not been provided by OPC with any data as to rising water levels in the Mangatepopo gorge. He was not a party to any OPC provided rescue training exercise to meet the event that Ms Sullivan and her group found themselves in.

NIWA has reported that the flood peak on 15 April 2008 had an annual probability of exceedance of between 21% and 96% in the region, and was 50% at the Mangatepopo Weir. In other words there is a 50% chance of one or more floods as large as that which occurred on 15 April 2008.

As recorded in the Risk Management Plan, the strategy to avoid the hazard was to avoid going into the gorge in circumstances where the stream might flood. The circumstances which would cause the stream in the gorge to flood are restricted to rain falling in the stream’s catchment. The intensity and volume of rainfall will dictate the likelihood and extent of the stream level rising. However, to make an assessment of the likelihood of the stream level rising, relevant information must be available, current and reliable. In the absence of having such information, then it is inappropriate for inexperienced persons to be taken into the gorge within a set period of rain falling in the catchment. (I note that NIWA state that the relevant period for rain falling in the catchment to precipitate rising water levels may be between 2 hours and 24 hours). If rain commences to fall in the catchment while persons are in the gorge, then in the absence of current and reliable information on which an appropriate assessment can be made, persons in the gorge should be immediately removed from the gorge.

In addition to assessing before a gorge trip whether the water level is likely to rise to an unsafe level, it is also vital to observe, during a gorge trip, whether the water level is rising. It seems generally accepted from the evidence that key indicators of a stream or river rising is fine particles/leaves/debris flowing past and the water starting to discolour. The rising of the water level does not appear to have been noticed by Ms Sullivan until after leaving the turn-around point in the trip. That may well be because the water level did not commence arising appreciably until that point. In the event, Ms Sullivan believed that the water level had risen to an unsafe level when she reached the ledge on which she and her group waited in the expectation that the water level would recede.

The assumption also appears to have been made that if the water level was safe at the commencement of the gorge trip any rise in the level would be able to be noticed and the group would be able to exit before the level rose to an unsafe level. Little, if any, regard was had to the historical evidence that the water level could rise quickly (within half an hour) to an unsafe level and fall to initial levels within a period of 3 hours.

While less assessment of rising water levels may be appropriate when there is ready exit available from a river or stream when it is noticed that the water level is rising, far more extensive assessment is required (both prior to entry and while in a river or stream) when there is limited exit, as was the case with the Mangatepopo gorge (from which there were only two exit points available, neither of which in the event were safely utilised).

### **3.4 Instructor qualifications for a Gorge trip**

When an instructor or guide is provided on a fee-paying basis (even if the provider is a not for profit organisation), it is reasonable to assume that appropriate skills and



judgement will be exercised by the provider of the service to avoid serious injury or death. OPC requires the standard of care at least that provided by a prudent parent.

The OPC gorge policy stipulates minimum qualifications for an instructor to undertake a Downstream gorge trip and an Upstream gorge trip. While "Gorge Competency" is a minimum instructor requirement for a Downstream Gorge trip, that competency (which includes the ability to exit from the halfway ledge) is not required for an Upstream Gorge trip. For an Upstream gorge trip the instructor must have "RMT (risk management training) competency, at least a familiarisation trip and FM sign off."

MS Sullivan had RMT competency, and she had completed a familiarisation trip, however Ms Sullivan states that during the familiarisation trip she does not believe the "last high water escape" point referred to on the gorge sketch map was pointed out to her.

Field Manager "sign off" for the trip was also a necessary requirement. Dr Davidson believed that the Field Manager sign off was a requirement before each Upstream gorge trip was undertaken, and that the conversation between Ms Sullivan and Mr Palmer at the OPC Centre before Ms Sullivan descended the steps to the gorge was that authorisation or "sign off". While there was apparent cross communication between Mr Palmer and Ms Sullivan as to what extent Ms Sullivan may enter the gorge, there was no definitive direction by Mr Palmer that Ms Sullivan may not enter the gorge, and hence the discussion relating to entry into the gorge was impliedly the required "sign off".

Mr Palmer warned Ms Sullivan immediately before she entered the gorge to watch out for rising water levels. I interpret that to be the additional requirement I have referred to above. The first requirement was to view the water level immediately prior to entering the gorge. The second requirement was to make an assessment whether the water level may rise to an unsafe level during the trip. The third requirement is to "keep an eye out for water levels rising" during the trip.

Mr Palmer had already decided that a Downstream gorge trip would be too dangerous that day, but he did not communicate that to OPC staff as no one was contemplating a Downstream gorge trip that day. He did not make a similar assessment of danger for the Upstream trips, despite the fact that there would be the same water in the gorge for both a Downstream and an Upstream gorge trip, and despite the fact that the exit points for both trips were the same (at the half way ledge and at or near the dam). While Mr Palmer suggested Ms Sullivan watch out for the possibility of rising water level, Mr Palmer did not himself make an assessment of the likelihood of the water level rising to an unsafe level during the time Ms Sullivan and her group were in the gorge. That assessment was left to Ms Sullivan, who had limited experience in and knowledge of the environment. Ms Sullivan had not been told by Mr Palmer that she may not enter the gorge.

This was not a situation where the Elim students and staff member entered into the gorge when it was raging as an ungraded rapid. They would have entered the gorge in the implicit belief that the water level at the time they entered would not rise to an unsafe level. They relied on the expertise and judgment of OPC staff and Ms Sullivan in particular to ensure their safety. The decision whether there was the likelihood of the water level rising to an unsafe level appears to have been left to Ms Sullivan, who did not have the same level of historical knowledge of the Mangatepopo stream and catchment and as was possessed by the Field Manager, Kerry Palmer.



### 3.5 Historical knowledge

OPC had a considerable body of knowledge relating to past incidences in the gorge and other incidences in the field which could be applicable to the gorge. These incidents included fatalities and near misses. OPC had changed policies and procedures following such incidents, but the circumstances of the incidents were not being used as a learning tool for instructors. I recommend that they should be communicated to instructors as part of the instruction process.

The same applies to evidence which has now been (and in the future can be) obtained from NIWA, which should be used to show instructors the speed with which water levels in the gorge can rise, the extent of the rises, and the weather conditions in the gorge catchment that resulted in such events.

### 3.6 Swimming ability and connecting swimmers

One of the requirements Ms Sullivan had to undertake prior to entering the gorge with her group was the general policy that student swimming ability must be checked before commencing any water based activities. That checking appears to have been restricted to Ms Sullivan viewing information provided by parents/caregivers of members of her group. No physical testing was undertaken, other than viewing how students coped once the gorge trip commenced.

Confidence and an ability to swim in a pool environment does not equate with confidence and an ability to manoeuvre in and survive in swift flowing flood water. I am satisfied that none of the students nor Mr McClean, their teacher had any previous experience of the water situation they found themselves in.

Because some members of the group were not confident in water (and in one case distressed because of fear of water and in another case with slight physical impairment) Ms Sullivan determined it best that three members of the group team up with and be attached to other members of the group when exiting the ledge in flood conditions. Ashley Smith was paired up with and physically attached to Ms Sullivan. (They made it successfully to the bank before the dam). Tom Hsu was paired with and physically attached to teacher Antony McClean. (Ms Sullivan was unable to rescue them and they went over the dam to their deaths). Floyd Fernandes was paired with and physically attached to Anthony Mulder, a student. (Ms Sullivan was unable to rescue them and they went over the dam to their deaths).

While Ms Sullivan safely made it to the bank just before the dam, and assisted Ashley Smith, who was attached to her, to the bank, the two strongest swimmers in the group, who were each attached to another weaker student, drowned. Physically attaching two people possibly reduced both of their survival chances if they were not rescued before going over the dam.

At the inquest Ms Sullivan stated that she believed that while physically attaching a strong/confident swimmer to a lesser able/less confident swimmer may decrease the chances of survival of the stronger/more confident person, it would increase the chances of survival of the less able/less confident person.

While Dr Davidson said there was no policy or recommendation to attach swimmers, evidence was given by OPC instructor Rosalind Hughes that during her training at Christchurch Polytech one option when rescuing in a kayaking or river rafting situation was to link a person to the instructor using a releasable cow's tail.



I acknowledge the courage of Ms Sullivan in accepting that she resolved to not release herself from Ashley Smith, even if her own life was in danger. However, the courage of all other members of the group cannot be underestimated.

Although connecting of swimmers in a rescue situation is sometimes necessary (for example using a rescue tube in a surf-lifesaving situation), the connecting of persons untrained in such rescue situations is potentially dangerous in swift flowing water. I appreciate the predicament that Ms Sullivan found herself in. She had no method of communication with OPC Tongariro base. She had responsibility for a group, some of whom were unconfident in water and/or incapable of swimming. She had rising water and increasing darkness. As stated above, she linked weaker persons with stronger persons in the hope of saving lives. Unfortunately in the case of four of her group, that hope was not achieved, despite the fact that all were wearing personal floatation devices

### **3.7 Exits and refuges**

Knowledge of exits from the gorge and refuge places in the gorge was vital for an instructor. OPC gorge policy required "*Instructors must be familiar with escape routes prior to leading trips*"

Although there was a sketch map in existence of the gorge, and Ms Sullivan was aware of the sketch map's existence (and in fact Ms Sullivan made a copy and placed it on the staff room wall), Ms Sullivan did not know what the "last high water escape" reference on the sketch map referred to (she understood it was a cave) and she was never physically shown its location.

Dr Davidson confirmed it was not possible to exit the gorge from "the last high water escape" and he would never consider the ledge referred to as "the last high water escape" as an appropriate refuge (and in his opinion on an Upstream gorge trip the only two options were the two points of exit at the dam and the half way ledge). This in itself shows the inadequacies, if not the dangers, in the sketch map available for instructors, and it is important that an updated map is prepared and made available for instruction purposes.

While the halfway ledge was an acceptable point of exit, Ms Sullivan had never exited from that ledge, even in training. Competency at exiting from the ledge was a requirement for a Downstream trip, but not for an Upstream trip. There was only a requirement on an Upstream trip that the instructor be familiar with the exits. I understand the reason for the difference was because once in the gorge on the Downstream trip it was not possible to exit from the point of entry. By comparison, the point of entry on an Upstream gorge trip (the dam) was considered the main point of exit, with the halfway ledge being a lesser exit (and more likely a place of refuge.)

Mr Palmer believed it was possible to move from the halfway ledge to the dam in 5 minutes in normal flow and moving quickly. Dr Davidson stated that as soon as the water level starts to rise, it is appropriate to move quickly and exit the gorge.

In retrospect it would have been preferable had Ms Sullivan exited the gorge as quickly as possible when she first noticed the water levels rising. She made a decision to wait on a ledge for the water levels to drop. Had she chosen to seek refuge at the halfway ledge, there was good radio communication from that ledge. Had Ms Sullivan waited there, she would have been in a better position to communicate with OPC staff who were dispatched to that ledge to check her whereabouts. However I acknowledge Ms Sullivan's statement that she did not



appreciate the danger when she reached the halfway ledge, and did not appreciate the danger until on the return trip.

Sometime between 3.30pm and 4pm Ms Sullivan concluded that, rather than have any member of the group swept away in an uncontrolled situation without any assistance downstream, that she would herself float downstream, make it to the bank before the dam, and rescue members of her group by throwbagging a rope to them. This would involve her leaving her group with teacher Anthony McClean, to send members of the group at approximate 5 minute intervals. Anthony McClean does not appear to have worn a watch to monitor the timing of exits from the ledge. While the OPC gorge policy required that the instructor wear a watch, there was no such requirement for accompanying adults.

The tragedy of the situation was that had Ms Sullivan and her group stayed on the ledge on which they waited for water levels to recede for another half an hour to an hour they would all likely have survived. Although Ms Sullivan feared that members of the group may be swept away, the evidence was that this was unlikely to happen as the water level peaked at approximately the time the ledge was being evacuated (but was likely still rising when the decision to leave was made). However, Ms Sullivan could only make a decision based on the information she had. She had limited experience of the Mangatepopo stream environment. She had not been in the stream previously when there were rising water levels. Ms Sullivan did not know the history of rising water levels in the stream. She did not know what rainfall had fallen in the catchment. If the peakflow of water in the gorge on 15 April 2008 (17m<sup>3</sup>/s) had been the same flow as occurred in the gorge on 26 November 2006 (45m<sup>3</sup>/s) when the same quantum of rain fell in the catchment Ms Sullivan and her group would, I suggest, have been in an even more perilous situation.

While some OPC staff appeared to believe that the dry conditions that existed prior to 15 April 2008 contributed to the high flow of water in the stream on that day, the evidence from NIWA shows that the reverse was the case: while a similar amount of rain fell on both occasions the dry conditions meant that the peak flow on 15 April 2008 in the gorge was substantially less than the peak flow in the gorge on 26 November 2006 when the ground was already saturated.

One of the difficulties with exiting from the gorge is that the only available exits are at the half way ledge, and at or near the Genesis Intake structure near the dam at the entrance to the gorge. The dam/weir itself appears to have posed a considerable but unidentified hazard, as the evidence is that all members of the Elim group that went over the dam were alive before going over the dam. Only two (Kish Proctor and Sarah Brookes) of the nine who went over the dam survived the ordeal.

While I am aware of the issue that the design of the dam itself may have contributed to the deaths of persons going over the dam, the dam and intake were designed for Genesis Energy purposes. If OPC intend to continue using the gorge and the dam as part of its operations, it should consider discussing with Genesis or whoever else is responsible for the dam whether it is appropriate for changes to be made to reduce the likelihood of fatalities.

### **3.8 Radio Reception**

OPC's communication policy required that a radio and/or cell phone must be carried if more than 10 minutes from OPC base. The gorge was more than 10 minutes from OPC Tongariro base. A radio was carried by Ms Sullivan on the gorge trip.



Evidence was given that the radios provided to instructors at OPC to take out in the field were not waterproof, and were carried in a drybag, without the aerial connected and without the radio being on to receive calls. This effectively restricted radio contact to that instigated by the OPC instructor. This may be in order if there is agreed times for contact to be made, and in an emergency involving the instructor's group. However it did not enable immediate contact to the instructor by the Field Manager or OPC centre or other instructors, advising of impending danger (such as torrential rain in the upper catchment).

There was poor (and at times non-existent) radio communication capability with the OPC Tongariro base and Field Manager from the gorge. Ms Sullivan was not certain of what places in the gorge radio communication was possible. There does not appear to have been any formal instruction by OPC of Ms Sullivan in this matter. There did also not appear to be a requirement for Ms Sullivan to have a schedule to radio in at set times during the gorge trip (for example, to radio in from the half way ledge from where radio reception was available). One of the Field Manager's responsibilities was to "arrange radio schedules where necessary overnight or otherwise", and the potential danger of the gorge trip and in particular with the trip being undertaken with rain falling in the catchment warranted such scheduled contact.

While radio reception on 15 April 2008 with OPC base was inadequate, testing proved that radio communication on the simplex channel could be attained to a person situated at the dam. Had Mr Palmer directed such a person to attend and remain at the dam at 2pm (at approximately the same time as he instructed staff to check at the halfway ledge), then it is likely that Ms Sullivan would have been able to make radio contact at an earlier unsuccessful attempt, and thereby alerted the Field Manager as to her position and obtained guidance as to appropriate action. It would also have enabled a rescue team to attend and assist before any person entered the water.

The testing undertaken since 15 April 2008 also shows that the placement of a repeater (from statements in evidence at a cost of approximately \$15,000) will enable contact from the gorge to OPC, and I recommend that such a repeater be installed.

Evidence was also given that the provision of an earpiece would assist in overcoming the noise created by waterflow. While the disadvantage in the use of an earpiece is that the radios are not waterproof and neither is the earpiece, the earpiece would assist in communication while on ledges (such as the half way ledge).

### **3.9 Rescue plan**

Mr Zimmer's suggestion at approximately 1.30pm to Field Manager Kerry Palmer to accompany Mr Palmer to the dam at that time was not acted upon by Mr Palmer, and Mr Zimmer felt his duty was to stay with his allotted group, rather than go to the gorge to assist if required. As a result of those decisions, Mr Zimmer did not attend at the dam to assist until after 4pm, by which stage it was too late. The opportunity for the provision of valuable assistance that could have been provided earlier was therefore lost.

There were clear indications to the Field Manager that Ms Sullivan and her group were in potential danger from at least 1.30pm on 15 April 2008. Mr Palmer was aware of the cancellation of two other gorge trips. He was aware of the intensity of rain falling at the OPC centre. He was aware of the rising and discoloured water in the gorge. A rescue plan should have been put in place at that time and a response team dispatched. (I note evidence from Ms Rosalind Hughes that at approximately



2.30pm when she drove over the Mangatepopo bridge on SH 47 she noted the stream was a brown raging torrent. While that meant that there would have been potential dangers in any rescue efforts, that did not mean a rescue plan should not have been devised, and response team(s) dispatched as appropriate. Persons with radios at both the halfway ledge and the dam would have assisted in communication, giving advice, and rescue).

Of concern is that the Field Manager was not certain that Ms Sullivan and her group had entered the gorge. As a result, vital time was lost in initiating and implementing a rescue plan. Time and effort was spent trying to ascertain where Ms Sullivan and her group were.

While there was no written requirement in any policy for radio contact to be made, or even for that contact to be made immediately before entering the gorge, Dr Davidson said that it was common and accepted practice at OPC that the instructor radio in to OPC when entering the gorge. This provides information as to what time the gorge was entered, but also the fact that the gorge was being entered. Had radio contact at the time of entry to the gorge been made, and there been consistent adherence to the requirement that an instructor contact the Field Manager on immediately exiting the gorge, vital time would not have been lost in ascertaining whether Ms Sullivan and her team were in the gorge. Mr Palmer would have known that Ms Sullivan and her group had entered the gorge and not exited from it.

The Crisis Management Plan identified Flood as a threat. According to the plan, if an incident arose the Field Manager should be informed as soon as possible. The Field Manager would then appoint an Incident Controller. The Incident Controller would consider sending an immediate response team. The Crisis Management Plan is a plan to cover many emergencies (such as volcanic eruption and evacuation) but there does not appear to be any specific plan or strategies to cover the situation Ms Sullivan and the Elim group found themselves in.

There did not appear to be any written requirement to exit the gorge immediately water levels are rising (a strategy Dr Davidson agreed was appropriate.)

No strategies other than throwbagging were in place to rescue persons in the situation that the Elim group led by Ms Sullivan found themselves in. Mr Palmer acknowledged that it was not safe to put kayakers in the water (and that it was unlikely that a kayaker could have assisted) and that it was too dangerous to put OPC staff in the water. While this may have been correct at 4pm, it was likely appropriate for experienced rescue response teams to enter the gorge at the half way ledge and the dam at 2pm, when Mr Palmer noted that movement in the gorge was becoming difficult. That decision may not have been made by Mr Palmer as he was not certain as to Ms Sullivan's whereabouts (and in particular whether they were even in the gorge). The Crisis Management Plan was not effectively implemented.

Ms Sullivan ended up in a situation where she and her group were stranded in swift flowing water without reliable radio contact with OPC Tongariro base and without the knowledge of what assistance would be available to her from other OPC staff. Ms Sullivan did eventually (after 4pm) make radio contact with the OPC Tongariro base, advising she needed assistance and that persons were in the water, but by then it was too late.

### 3.10 Throwbagging

Considerable reliance was placed on throwbagging as a rescue technique. The situation that the Elim college students and teacher and instructor Jodie Sullivan found themselves in demonstrated that throwbagging as a successful rescue technique required the person in the water to be within throw range of the rescuer, to successfully grab the rope, and to be able to continue to hold onto the rope in circumstances of powerful cold water flow. No other rescue techniques (other than throwbagging) appear to have been contemplated to prevent the persons in the water going over the dam, most of them tragically to their deaths.

Had Jodie Sullivan not made it successfully to the bank to commence throwbagging, it is likely that all of the group would have gone over the dam. As it was only one of the group, Peter Shih, was successfully rescued by throwbagging.

Despite instruction given on dry land and an exercise in throwbagging in calmer water on the way up the gorge, and throwbagging as technique to cross at the second/final crossing on the way back down the stream was employed, the students who survived related the considerable difficulty they had after leaving the ledge and positioning themselves to float on their backs, let alone manoeuvre themselves by moving their arms and tilting their head (in the manner they had been instructed before entering the water) in the direction of the left bank on which Ms Sullivan was positioned.

Ms Sullivan believed that she had communicated as best she could under the circumstances that she would be using the throwbag, and that the students had already used that technique as a rescue exercise earlier on the gorge trip. A combination of factors including the noise of the water and the pressure of the situation probably contributed to missed communication.

None of the surviving students were aware that they had to use all endeavours to try to reach the bank before the dam. They appeared to have a belief that they would be rescued by Ms Sullivan.

Surviving student Kish Proctor said that he entered the water believing he would be plucked out of the water by Ms Sullivan, but that he didn't see her and went over the dam.

Surviving student Sarah Brooks stated that she saw Ms Sullivan but the throwbag fell short, as Sarah was closer to the middle of the stream than the bank Jodie Sullivan was on. Sarah managed to grab onto a wire that was strung across the stream at the dam, but lost her grip because of the force of the water. While Sarah believed Ms Sullivan would be around the corner to catch her she states that she did not realise Ms Sullivan was going to catch her by using the throwbag.

Regrettably, only two students were rescued by Ms Sullivan: one being attached to Ms Sullivan, and the other by the throwbagging, the method intended by Ms Sullivan to rescue all other members of the group.

Throwbagging proved unsuccessful because of inability to reach, or inability to hold on (likely as a result of cold/ force of the water over the dam). Because of this second factor, there was no guarantee of successful recovery even if there was adequate radio communication and more staff attended at (or if they could access it, above) the dam to throwbag.



### 3.11 Staff to student ratio

The OPC Gorge Policy referred to a ratio of 1:10 + 2 adults. This was interpreted by witnesses employed at OPC as meaning the ratio of one instructor to a maximum of 10 students plus two accompanying adults. Mr Palmer said at the inquest that the ability of the adults was relevant as some adults could be liabilities rather than assets, hence the requirement that there be no more than 2 adults accompanying a group of 10 students (to limit the total number of persons for whom the instructor had responsibility.)

On the fatal trip there was one instructor to 10 students plus one adult, teacher Antony McClean. Mr McClean had canvassed with his students on the morning of 15 April that he not accompany them, but instead accompany another group. Pressure from the students resulted in him going on the Upstream gorge trip with them. While Mr McClean accompanied the gorge trip, it is clear that responsibility for the gorge trip and the safety of the students rested with OPC, and in particular Ms Sullivan (who was required by OPC policy to lead in the gorge using a directional style) and Mr Palmer (as the Field Manager with responsibility for safety matters in the field). Mr McClean appears to have assisted Ms Sullivan and the students in whatever way he was able, and tragically lost his life assisting a less able student down the stream.

I am of the opinion that it is inappropriate for a sole instructor to lead a group of students on an activity that is acknowledged by OPC to be demanding for groups and instructors. If an instructor becomes incapacitated, or has to leave the group to seek assistance or assist a student that is swept away, the student group is effectively left unsupervised. Accordingly there should be at least one other competent adult accompanying an instructor on a trip, that adult preferably being another instructor.

### 3.12 Monitoring environment

In determining the likelihood of a flooding event occurring, OPC appears to have relied heavily on the weather forecast it received from MetService at 6.45am on 15 April 2008. That bulletin forecast rain. It is likely that it omitted the word "thunderstorms" (and possibly also the words "and heavy rain"), but the fact that thunder was present was apparent to some OPC staff, including Ms Sullivan and Mr Palmer at approximately 10am. The fact of the presence of thunder was also communicated by staff on Tihia mountain by radio to staff at the OPC Tongariro base. If thunderstorms indicated an increased possibility of flooding, that fact was known to OPC Tongariro staff at least mid morning on 15 April 2008.

That it was raining with varying degrees of intensity at OPC Tongariro base from approximately 10am on 15 April was also evident to those at the centre, which included Ms Sullivan, Mr Palmer and the auditor, Ms Dalton.

It is the responsibility of OPC to make inquiries as to the availability of information relating to the environment in which OPC conducts its activities. On 15 April 2008 OPC relied on one weather forecast from MetService, (unknown to them prepared at about 1am) and sent to OPC at about 6.45am. This was the weather forecast relied upon when Ms Sullivan and her group entered the gorge approximately 6 hours later. Mr Palmer stated that he would usually check other sources, but was unable to do so on 14 and 15 April 2008 as a result of pressures, including those arising from the presence of an auditor on the first two days of his return to work from leave.



Evidence was received of the wide ranging and detailed weather information available, much of it at no charge and through the internet. Mr Palmer, the Field Manager, had informed OPC CEO Dr Davidson in 2005 that he was aware of the internet website provided by MetService, Metvuw.com and Fencepost.com. OPC appeared to not use the readily available information on 15 April 2008. Mr Palmer stated that he did not see the weather forecast on the television on either the night of 14 April 2008 or the morning of 15 April 2008 because of circumstances, and he states that because of the pressures on him at OPC on 15 April 2008 (including catching up on return from leave and, to him, the unexpected presence of the Auditor conducting the OutdoorsMark safety audit), he did not avail himself of the information he would usually have obtained from internet websites. Not obtaining an updated forecast resulted in a failure to provide vital information on which decisions could be made by instructor Ms Sullivan and Mr Palmer to ensure the safety of the Elim school group.

Monitoring of rain in the gorge catchment is vital. Rain radar information is available, and should be monitored 3 hours before and during any gorge trip, so that the intensity of rainfall in the catchment is known. Before entering the gorge, an instructor should inquire as to the rain information, and discuss that with the Field Manager as part of the "sign off" or authorisation to proceed with a gorge trip.

NIWA has the tools to look at rainfall and water flows and make evaluations, and that information is available but was apparently not accessed by OPC. Historical information of the time taken for water levels to rise and fall, and the extent of those rises, and the circumstances in which those events occur, is useful information in making an assessment of the likelihood of water levels rising during a gorge trip. NIWA state that the peak flow which occurred on 15 April 2008 in the Mangatepopo Gorge was not unusual and was not unexpected. Further, according to NIWA the amount of runoff and the peak flow observed was consistent with the dryness of the catchment beforehand and the amount and intensity of rain experienced. OPC management does not appear to have availed itself of this historical information about the gorge catchment in which OPC conducted its operations.

One of OPCs aims, set out in its mission statement, is to teach participants in OPC courses environmental awareness. Environmental awareness was lacking when Ms Sullivan and her group of Elim College students and teacher entered and endeavoured to exit from the gorge in the Mangatepopo stream. (I note that Dr Davidson preferred this to be referred to as "situational" awareness rather than "environmental" awareness, with environmental awareness referring to matters such as the teaching of ecosystems. I am referring to another interpretation of the environment, to mean the weather prevailing and the effect of that weather on the ground and resulting effect on streams and rivers). Ms Sullivan and her group should never have entered the gorge bearing in mind the rain falling in the catchment prior to and at the time the group entered the gorge. Action should have been taken to prevent Ms Sullivan entering the gorge. That action should have been taken by the Field Manager, Kerry Palmer, whose role was to monitor health and safety aspects in the field. The initial problem was that no one was aware of the intensity of the rainfall in the catchment, because the rainfall in the catchment was not adequately monitored. The intensity of the rain at OPC Tongariro base was known, and the possibility of the water level rising acknowledged by both Ms Sullivan and Mr Palmer. Other OPC staff in the Mangatepopo gorge catchment on Pukekaikiore were aware of the intensity of rainfall, but no communication was made of that information to staff at OPC Tongariro base. I acknowledge that the rainfall at OPC Tongariro was probably not of such intensity to warrant alarm until after 10am on 15



April 2008, but was of sufficient intensity to warrant concern before Ms Sullivan and her group entered the gorge.

### **3.13 Non compliance with policies**

While on paper OPC policies identified risks and provided strategies to manage those risks, the gorge trip undertaken by Ms Sullivan on 15 April 2008 failed to comply with OPC policies or procedures including:

- Failure to check the weather forecast at the start of the trip
- Failure to assess before entry into the gorge whether there was a significant chance of water levels rising above a safe level during the gorge trip

While not specified in any policy, and while it should ideally be included in a Risk Assessment Management plan, there was failure by OPC to ensure that instructors and adults in the gorge carry a copy of an accurate sketch map of the gorge highlighting safe points and hazards and places where there was radio reception in the gorge and places where there were radio black spots. Dr Davidson acknowledged the sketch map available on 15 April 2008 was inadequate in referring to the “last high water escape”, which Dr Davidson acknowledged was neither an escape nor a refuge, and in Dr Davidson’s opinion was “a trap”.

While not specified specifically in gorge policy it was, according to Dr Davidson, common and accepted practice that an instructor makes radio contact with the Field Manager when entering and exiting the gorge. That was not done by Ms Sullivan, and created doubt in Mr Palmer’s mind as to whether she was in the gorge, and resulting in no rescue operation being implemented. (I record that Mr Palmer, when given an opportunity to make submissions on adverse comment, states that a rescue operation was implemented, and staff members were not sent into a flooded and rapidly rising river in torrential rain, but rescue procedures were commenced immediately. I comment that the rescue action taken was to send staff to the halfway ledge to endeavour to ascertain the whereabouts of Ms Sullivan and her group, but no effective rescue action was implemented).

### **3.14 Audit**

OPC holds an OutdoorsMark certificate. OutdoorsMark is a national outdoor safety and assurance programme designed specifically for organisations involved in outdoor education. The OutdoorsMark safety-focused audit is intended to provide an independent process for assessing the appropriateness of organisational safety policies, procedures and practices. The field audit undertaken by Ms Dalton on 14 and 15 April 2008 at OPC was intended to ensure that the safety policy, procedures and practices were being followed.

However, none of the breaches of OPC policy noted above appear to have been appreciated by the auditor at the relevant time. Dr Davidson stated that the review mechanism (the audit) commissioned to provide him as CEO with information to review how OPC was operating, in his words, “failed”. In contrast, Ms Dalton states (in response to an opportunity to make submissions on adverse comment) that sampling was used to gather evidence, and in her report she listed nine areas for improvement, including noting anomalies that existed in competence records and sign off. The sampling undertaken by Ms Dalton as part of her field audit unfortunately did not extend to Ms Dalton accompanying Ms Sullivan to the gorge, and therefore she did not observe what assessment was made by Ms Sullivan as to

the likelihood of water rising in the stream to an unsafe level during the intended gorge trip.

It appears appropriate in the light of this tragic event for Outdoors New Zealand to review its policies and procedures around OutdoorsMark safety audits to ensure that they are as comprehensive as required and at least meet the expectations of the organisation being audited.

### 3.15 Independent Review

The Trustees of OPC commissioned a review by Associate Professor Andrew Brookes, Mark Smith and Bruce Corkill QC. That report was made available to me by the Trustees and was received in evidence. The comprehensive analysis of the incident on 15 April 2008 led the review team to conclude that there were significant underlying and root cause factors which had implications beyond trips in the Mangatepopo gorge, and that lessons learned from the incident might well apply across the industry. The review team recommended that OPC Trustees instigate a major review of OPC's Adventure Challenge programme, and to incorporate a substantial margin of safety against the risk of death or serious injury. Recommendations were also made concerning parental disclosure, student swimming, hazard analysis and management, weather information, staffing policies for programmes, staff induction, training and turnover, incident analysis and emergency response. **I endorse those recommendations**, full particulars of which are contained in the review team's report. Dr Grant Davidson, now former CEO at OPC, has stated in evidence that steps have been or are being taken to implement those recommendations. Counsel for OPC advised that:

1. The Mangatepopo gorge has remained closed since 15 April 2008;
2. OPC subscribes to the MetService severe weather warning service;
3. OPC has increased its regularity of accessing weather reports;
4. OPC has appointed a permanent safety review team to monitor safety processes;
5. OPC has commissioned a review of the adventure challenge course that the Elim students undertook;
6. OPC has introduced a new safety programme to ensure a substantial margin of safety to reduce errors of human judgment;
7. OPC has introduced longer training and induction for new instructors;
8. OPC now requires two instructors to be present for a number of activities involving moving water and steep slopes;
9. OPC has expanded its safety process and documentation to ensure all instructors are aware of previous incidents, possible risks and the responses and learning from those events;
10. OPC commissioned the Review Team report, and OPC has responded to all points made by the Review Team.

### 3.16 CEO Review

Mr Davidson made the following comment in his evidence:

*"I reflect on what the outcome might have been had any one of a number of decisions or actions been different on that day. These include, but are not limited to the following, listed in chronological order:*

- a. *The MetService wording on the morning Metfax had included the words "Heavy Rain"*
- b. *The MetService email warning system had been promoted to outdoor users*



- c. *The few people in the outdoors who knew about the MetService email system had let the rest of the industry know about the service*
- d. *The field manager had thoroughly analysed the Metfax forecast and synoptic charts that morning, as was usually done, and discussed with staff*
- e. *There had been a clear understanding among the staff about the true potential risk with the upstream gorge trip*
- f. *More rigorous standards had been set for the instructor prerequisites to run the upstream gorge trip*
- g. *The field manager had closed the whole gorge at the morning meeting when he had realised the potential for rain, the effect this could have on the stream and, as reported in his statement, in his mind "the downstream gorge was closed"*
- h. *The field manager or training officer had sought an updated weather forecast via the internet as would usually have been done when the thunderstorm and heavy rain passed over OPC that morning*
- i. *Any other experienced instructor or member of the management team had raised a concern about the planned gorge trips in light of the forecast, prevailing and subsequent weather conditions*
- j. *The field manager had stopped the trip when he met the instructor after the first heavy rainfall and recognised the potential for the stream to rise*
- k. *Established policies were followed by all staff*
- l. *The safety auditor had questioned how such a trip could go ahead when policies and procedures about weather, potential rising water levels, and group strength were all significant issues on the day*
- m. *The instructor had radioed for confirmation of the trip before heading into the gorge (I comment that there was no requirement in OPC policy to use a radio for this purpose, although there is considerable logic in this being a requirement. It was not clear in OPC policy)*
- n. *The instructor had only gone a short way into the gorge as she had stated she would to the field manager (I comment that there was not clear communication between Mr Palmer and Ms Sullivan in this matter. Ms Sullivan stated that she understood "I was going to play some games and go in a little bit.. or not do the games and then go in" and that she had Mr Palmer's approval to enter the gorge. In contrast, Mr Palmer understood that Ms Sullivan would only play games around the dam and, if going into the gorge, would only go a short way into the gorge, as he had advised her to watch out for rapidly rising water levels )*
- o. *A team had immediately gone in search of the endangered group as soon as other instructors decided that conditions were not suitable".*

Those comments summarise Dr Davidson's view of many of the failures that resulted in, and steps that could have been taken to avoid, the tragic deaths that occurred. While Dr Davidson has developed the FLASH (Factors Likely to Accentuate Serious Harm) process to provide a rating for outdoor activities, it is regrettable that such process was not appreciated as being necessary as part of the extensive review of policies and processes undertaken leading up to the tragic events of 15 April 2008. (I note that Dr Davidson rates the Mangatepopo gorge trip under his FLASH process as requiring two instructors to provide a suitable level of supervision, and water and weather as critical in decision making. Using the process rating, even if an instructor had determined to proceed with the trip on 15 April 2008, appropriate peer review using the system would have resulted in a "NO GO" decision).

There could be added to Dr Davidson's list the following:

- p. *Had Ms Sullivan been provided with a waterproof radio that could remain on while she was in the gorge. (This would have enabled another OPC employee*



*to make radio contact with Ms Sullivan from the dam as early as when Mr Palmer attended at the dam at 2pm to check on water levels, which he then found to be such that moving in the gorge would have been difficult).*

- q. *Had there been proper instruction and competency in assessing the likelihood of water levels rising to an unsafe level.*
- r. *Had OPC staff been positioned at the dam from 2pm with a radio (until it was certain that Ms Sullivan and her group were not in the gorge and to facilitate communication with Ms Sullivan if in the gorge)*

#### **4. Recommendations**

From evidence received at the inquest it is clear there were certain things that could have been done to prevent the crisis arising on 15 April 2008, or to minimise delays in the provision of assistance once the crisis occurred. With a view to preventing deaths occurring in similar situations in future, I recommend:

- The catchment for the Mangatepopo stream be identified and all relevant staff at OPC (and in particular Field Manager and instructors) be made familiar with that catchment;
- A more accurate map of the Mangatepopo gorge be prepared by OPC for instructors including showing points of exit and places of refuge
- Instruction be given to OPC staff leading gorge trips (from historical records and observation) of what conditions in the catchment result in water levels rising in the Mangatepopo stream and the extent and duration of rising;
- There be more emphasis placed in instructor training on the skill in assessing the likelihood of water levels rising in all competencies where such skill is relevant;
- There be adequate monitoring of rainfall in the Mangatepopo stream's catchment (including visual and rain radar monitoring) during and 3 hours prior to entry into the Mangatepopo gorge;
- A conservative approach be taken to entry into the Mangatepopo gorge if there is heavy or steady rain in the catchment within 3 hours prior to a gorge trip (Any decision will depend on the adequacy of monitoring of rainfall in the catchment, and may extend to no entry into the gorge if any heavy or steady rain has fallen in the catchment within 3 hours prior to a gorge trip. Such a conservative approach is even more important if OPC is unable to devise any rescue plan that would be effective in the situation encountered by Ms Sullivan on 15 April 2008);
- There be a policy and culture for communication by OPC staff with the Field Manager of any event that may cause danger to OPC staff and students/participants in OPC led activities;
- The Field Manager be responsible for having the "overall picture" of environmental conditions from information obtained directly by the Field Manager and provided to the Field Manager by OPC staff;
- There be radio communication by OPC instructor to the Field Manager when entering and exiting the Mangatepopo gorge (so that the Field Manager is aware that an instructor is in the gorge and time of entry and time of exit);
- When entry into the Mangatepopo gorge is communicated to the Field Manager by an instructor, the Field Manager have the responsibility to review the decision by OPC staff to enter the gorge with a group, with the Field Manager having the authority to countermand an OPC instructor's decision to enter the gorge;
- There be 2 instructors on a Mangatepopo gorge trip;
- Both instructors on a gorge trip in the Mangatepopo gorge carry radios;
- There be adequate radio communication between OPC instructors in the Mangatepopo gorge and the Field Manager/OPC Tongariro base/other relevant



OPC staff (and if necessary a repeater be installed to ensure such communication);

- That radios used in the gorge be waterproof;
- Earpieces be provided for radios used in the Mangatepopo gorge to assist where conditions permit use in overcoming the difficulty in hearing because of ambient noise;
- That radios be audible and kept on by users in the Mangatepopo gorge throughout the gorge trip (or if not possible, that there be a schedule of radio communications during the trip agreed between the Field Manager and Instructors prior to entry into the gorge);
- That OPC further investigate a fall back method of communication of distress between a group in the gorge and the Field Manager/OPC Tongariro base if radio communication fails or is not available;
- That all adults accompanying a gorge trip be aware of exit points, safety positions and how to use the radio and fall back communication devices;
- Instructors leading gorge trips be fully trained and have competencies in all available exits from the gorge;
- That there be included in policies an instruction that all endeavours should be made to immediately exit the gorge when a rise in water level is observed;
- A time plan be given by an instructor to the Field Manager of a proposed trip, so that the Field Manager will know if a group is overdue;
- There be a written plan of action covering seeking assistance and performing a rescue if a group is overdue or encounters difficulty in the gorge and assistance is required;
- Rescue exercises be undertaken to cover the event of rescuing a group that is overdue or encounters difficulty in the gorge.

Although my inquiry is limited to the event that occurred in the Mangatepopo gorge on 15 April 2008, in adopting a wider role to prevent deaths occurring elsewhere in similar circumstances, I also recommend that:

- The Government consider the licensing of outdoor education/adventure operations which provide activities to persons under 18 years of age to ensure minimum standards are met.
- Emphasis be given to the public and in particular training institutions, including polytechnics, that the linking of individuals swimming or floating in moving water is potentially dangerous;
- MetService include severe weather warnings in applicable regional forecasts;
- MetService issue written forecasts with the time of the preparation of the forecast clearly displayed;
- MetService review its procedures around follow up communications to forecast recipients when there is an error in a forecast;
- Outdoors New Zealand review its policies and procedures around OutdoorsMark safety audits and training provided to its auditors.

## 5. Final Comment

Young people learn from new experiences. Some of those experiences involve risk. Many outdoor adventures have elements of risk. That does not necessarily mean that it is inappropriate that risks be taken.

Outdoor adventure is an important tool in youth development. Risk taking is developmentally normal, and safety in an outdoor adventure activity can never be guaranteed 100%, but for parents and family serious injury and death are not

acceptable for their children that they have nurtured from birth, and whose care they have entrusted to an organisation with apparently skilled managers and instructors.

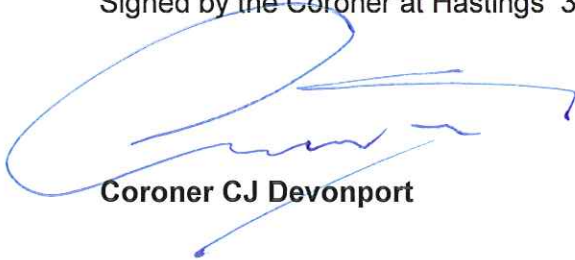
All reasonable steps must be taken to minimise the chances of serious injury. Proper risk identification and risk management is vital to avoid serious injury or death. In the Mangatepopo gorge, this requires an awareness of the environment, identification of hazards, proper assessment of the likelihood of adverse events occurring, and plans prepared if an adverse event occurs. Even if those risk management strategies are in place, complacency can defeat them. Continual awareness is required. For commercial/educational outdoor educational institutions regular emergency exercises are required.

Regrettably, lack of environmental awareness, lack of instructional use of historical information, instructor inexperience, lack of proper assessment before the gorge was entered to ensure there was no significant chance of water levels rising above a safe level during the trip, lack of or inadequate communication when in the gorge between the instructor and the Field Manager or OPC Tongariro base staff, failure to implement a crisis plan and dispatch response teams in a timely manner, under-estimation of risks, and complacency contributed to the tragic deaths of Antony McClean, Natasha Aimee Bray, Portia Caitlin McPhail, Huan (Tom) Hsu, Anthony Walter Mulder, Floyd Mariano Fernandes and Tara Rochelle Gregory in the Mangatepopo gorge on 15 April 2008.

## **6. Finding**

I find that Antony McClean, teacher, and students Natasha Aimee Bray, Portia Caitlin McPhail, Huan (Tom) Hsu, Anthony Walter Mulder, Floyd Mariano Fernandes and Tara Rochelle Gregory all of Auckland died by drowning in the Mangatepopo gorge, Tongariro on 15 April 2008 while undertaking an adventure challenge exercise conducted by the Sir Edmund Hillary Outdoor Pursuit Centre.

Signed by the Coroner at Hastings 30 March 2010



**Coroner CJ Devonport**