

The Whakaari/White Island disaster: An analysis informed by sociological theories of risk

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Abstract

On December 9, 2019, the volcano on Whakaari/White Island, a popular New Zealand (NZ) tourist destination, erupted. Twenty-two people died. Drawing on sociological theories of risk, most particularly on systems-thinking, this qualitative analysis describes the origins of the disaster, formulates questions for the authorities and suggests actions to reduce the chances of a repeat. It is concluded that the safety culture of NZ's adventure tourism (AT) industry requires attention. It is also concluded that bureaucratic devices such as the adventure tourism insurance cover provided by NZ's Accident Compensation Corporation (ACC) may have encouraged, through a risk-compensation dynamic, greater risk-taking. It is suggested that improved oversight will deliver a safer adventure tourism industry. It is recommended that the authorities investigate to what extent insurance cover influences business practices.

Keywords

Whakaari/White Island; Adventure tourism; Volcanic eruption; Sociological theories of risk; Systems-thinking; Organisational accident.

1 Introduction

Adventure tourism exposes participants to elevated levels of risk (Song, 2019). On December 9, 2019, the volcano on Whakaari/White Island erupted. Twenty-two people died and twenty-five people were left with serious life-long injuries.

The paper draws on sociological theories of risk, most particularly on systems-thinking, to:

- produce an inductive analysis of the disaster
- formulate questions for the authorities
- suggest actions to reduce the likelihood of a repeat.

2 Theory

The analysis draws on sociological theories of risk, most particularly on systems-thinking, to reveal the origins of the disaster, formulate questions for the authorities and suggest remediations. Systems-thinking holds that adverse events originate in the complex and often difficult-to-comprehend interactions between the elements of a system – both social and technological – and between that system and its social, economic and political environment (Davis, Challenger, Jayewardene and Clegg 2014; Bennett 2019). The risk inherent in the system is an emergent property of these interactions. Systems-thinking is holistic, inclusive and expansive, the antithesis of reductionism and particularism (Bennett, 2019).

In Davis, Challenger, Jayewardene and Clegg's (2014) conception, a socio-technical system consists of processes/procedures, goals, people, buildings/infrastructure, technology and culture. The socio-technical system acts on, and is acted upon, by an environment consisting of stakeholders, financial/economic circumstances and regulatory frameworks.

Reason's (1990, 2013) work on organisational accidents is pertinent. An organisational accident occurs when '... an unforeseen concatenation of latent conditions – human unsafe acts and local triggers – [defeats] the many [system] defences, creating a trajectory of accident opportunity, causing damage and loss' (Reason, 2013, p.74). Examples of organisational accidents include the 1986 Chernobyl disaster (Reason, 2013), the 1988 Piper Alpha disaster (Cullen, 1990), the 1989 Hillsborough disaster (Bennett, 2014) and the 2020 Beirut ammonium nitrate disaster: 'The evidence ... indicates that multiple Lebanese authorities were, at a minimum, criminally negligent under Lebanese law in their handling of the *Rhosus's* cargo [of ammonium nitrate]. The actions and omissions of Lebanese authorities created an unreasonable risk to life' (Human Rights Watch, 2021, p.2).

Other sociological theories of risk useful in identifying the origins of the Whakaari/White Island disaster include: Safety culture; Passive and active learning; Normalisation of deviance; Latent and active error; Risk compensation; Risk Society.

Safety culture consists of organisational values, beliefs and practices pertaining to safety (Turner and Pidgeon, 1997; Dekker, 2007, 2014; Rankin and Johnson, 2018). Safety culture evolves (Turner and Pidgeon, 1997). Safe organisations are *aware*. As Reason (2000, p.3) puts it, they always know ‘where the “edge” is, without necessarily having to fall over it’. Safe organisations encourage employees to report incidents, accidents and near-misses, enabling active/organisational learning (Toft and Reynolds, 2005; Dekker, 2007, 2014; Rankin and Johnson, 2018). Safety culture is *produced* and *specific*. It is ‘the way we do things *here*’ (Helmreich and Merritt, 2001, p.1). Normative influences include:

- the assiduousness with which incidents, accidents and near-misses are reported
- managers’ attitudes towards safety
- the host society’s culture (Helmreich and Merritt, 2001; Pidgeon, 2001; Noort *et al.*, 2016; Bennett, 2019).

Sociologist Diane Vaughan (1996, p.75), while discussing, in relation to the Challenger disaster, the NASA’s tolerance of risk, coined the terms ‘normalisation of deviance’ and ‘social organisation of mistake’. Vaughan described how the NASA’s internalisation of production pressures increased the likelihood of mishap. Production pressures can provoke in employees potentially unsafe behaviours, such as satisficing and rule-breaking (Bennett and Shaw, 2003). The Deepwater Horizon disaster (Bennett 2019) and Pike River Coal Mine disaster (Zanini, 2019) are cases in point.

Psychologist James Reason (1990, 2000, 2013) developed the concept of latent and active error. A latent error is a dormant weakness. An active error is a dormant weakness realised.

Geographer John Adams (1985) hypothesised that safety devices (Adams chose seat belts) may encourage risk-taking. A safety device, whether artefact or regulation, may, by inducing a behavioural response, serve to increase rather than reduce an individual’s risk exposure. Examples include cyclists’ and bikers’ responses to mandatory helmet-wearing.

Sociologist Ulrich Beck (1992) coined the term Risk Society to describe the elevated risk-consciousness of developed societies.

Finally, there is a body of literature that focuses on risk-management in the AT industry, for example, Bentley and Page (2001), Callander and Page (2003), Page, Bentley and Walker (2005), Bentley, Page and Edwards (2008), Department of Labour (2010), Davis *et al.* (2013), Erfurt-Cooper *et al.* (2015), Løseth (2018) and Song (2019).

These, and other AT-specific discourses complement the risk literature (above) and inform the analysis presented below.

3 Methodology

The methodology is that of case studies (Stake, 1994; de Vaus, 2001). The paper uses Stake’s (1994) intrinsic case study methodology, knowledge being produced inductively from a theory-informed analysis of a single event. The case study of the Whakaari/White Island disaster uses secondary data.

3.1 A critical reflection on the methodology

Finnegan (1996) suggests researchers ask questions of secondary sources:

- Are the sources relevant to the research question(s)?
- Are the sources reliable?
- Has the researcher taken account of any bias in the sources?
- If describing a specific incident, how accurately does the source reflect the general situation?
- Has the researcher been selective in her use of available sources?
- Has the researcher reflexively identified her biases to the reader?

While it may be unwise to generalise the findings from a single case study (Punch, 1998), Denzin (1983) argues it would be unwise to judge the epistemological merits of a case study against just a *single* criteria – such as generalisability.

4 Whakaari

Whakaari, which lies in the Bay of Plenty, is NZ's most active cone volcano. Tourists have visited Whakaari since the 1860s, when 'locals or day-trippers from passing Northern Star Company cruise ships occasionally visited the island' (Roscoe 2010, p.325). A sulphur mine operated on the island between 1885 and 1914, it was abandoned when part of the crater collapsed, and a landslide killed twelve people (GeoNet, 2019).

Whakaari, privately owned since 1936, became a scenic reserve in 1953. Access was restricted to a small number of tour companies (Anthony, 2019). One of the companies, White Island Tours (WIT), operated two daily boat tours. In 2018, the main boat operator delivered 17,500 visitors to the island (Gibson, 2019b). Annual tourist numbers totalled around 20,000 (McConnell 2019). In April 2019, WIT launched a new vessel with a capacity of forty-nine. The authorities hoped to grow visitor numbers to 30,000 per year (Ōpōtiki District Council, 2018; Scoop Info Pages, 2019).

Volcano observatories often use graded volcanic alert level (VAL) systems (Erfurt, 2022). New Zealand's VALs range from 0-5, with 0 representing no volcanic activity, and 5 representing a major volcanic eruption (Figure 1). Values may leapfrog. An eruption event may commence at any one of the five VALs.

Figure 1: New Zealand VALs (Geonet, 2023)

	Volcanic Alert Level	Volcanic Activity	Most Likely Hazards
Eruption >	5	Major volcanic eruption	Eruption hazards on and beyond volcano*
Eruption >	4	Moderate volcanic eruption	Eruption hazards on and near volcano*
Eruption >	3	Minor volcanic eruption	Eruption hazards near vent*
Unrest >	2	Moderate to heightened volcanic unrest	Volcanic unrest hazards, potential for eruption hazards
Unrest >	1	Minor volcanic unrest	Volcanic unrest hazards
>	0	No volcanic unrest	Volcanic environment hazards

Decisions on whether to access the private island were left to the discretion of the tour operators. On April 27, 2016, there was an eruption that saw the alert level raised from Level 1 to Level 3 – 'Minor Volcanic Eruption' (GeoNet, 2016). Despite this, White Island Tours continued operations.

On November 18, 2019, the alert level for Whakaari was raised to Level 2, hazards on the island being 'greater than during the past few weeks' (GeoNet, 2019). A Level 2 alert signifies 'moderate to heightened volcanic unrest [with] the potential for eruption hazards to occur' (Gibson, 2019b). Despite the alert level remaining at Level 2, tours continued until the December 9 eruption.

5 Adventure tourism

Adventure tourism is a dynamic industry that generates profit for entrepreneurs and taxable income for governments. There are strong economic incentives to ensure the sector prospers. 'Adventure tourism is becoming increasingly commercialised' note Hansen, Fyall and Spyriadis (2020, p.423).

The NZ economy benefits greatly from tourism (Tourism New Zealand, 2013; OECD, 2019; Song, 2019). Before the COVID-19 pandemic, in 2019, international tourism contributed \$17.2 billion to the Exchequer – 20% of export earnings (MBIE, 2021a).

In 2008, 38% of all international tourists participated in at least one adventure activity (Department of Labour, 2010). By 2013, the percentage had increased to 50%, with 33% participating in extreme activities. Adventure tourists spend well (Tourism New Zealand, 2013).

According to Davis *et al.* (2013), AT destinations must be risky enough to attract tourists, but not so risky that tourists don't feel safe. Song (2019, pp.15-16) observes of adventure tourists' motivations and risk-tolerance: 'Adventure tourists seek thrills The adrenaline rush of a close call or a "risky" activity is desirable, yet actual physical danger is not'. Erfurt (2002) notes that to avoid discouraging tourism and hurting the local economy the potential dangers of volcano tourism are never mentioned in adverts.

Adventure tourism incidents and accidents are under-reported (Bentley and Page, 2001; Bentley, Page and Edwards, 2008; Department of Labour, 2010). The under-reporting of latent and active errors inhibits organisational/active learning (Dekker 2007, 2014).

The seasonality of some adventure activities means there are limited opportunities to expand the knowledge-base: 'The development of high-quality adventure tourism products requires continuous knowledge development. This development is challenged by the short seasons ... of the adventure tourism industry' (Løseth 2018, p.575). Knowledge-gaps inhibit organisational/active learning (Dekker, 2007, 2014).

There is no standardisation of VAL systems which:

- use different criteria
- make different recommendations for similar levels of volcanic activity.

Bird and Gísladóttir (2020) claim that providing risk information to adventure tourists is more challenging than providing risk information to non-tourists. In addition, adventure tourists display risk-seeking behaviours, which can make risk communication more challenging. Despite these challenges, it is important that tourists are able to make risk-informed decisions about outdoor activities.

5.1 Review and Regulation

Injuries and deaths in New Zealand's adventure tourism industry have been attributed to lax safety culture (Bentley, Page and Edwards, 2008). After 29 deaths over five years (NZ Herald, 2010) and expressions of concern at the highest levels of government (Department of Labour, 2010), in 2010 the Department of Labour (DoL) audited the AT industry's safety management systems. The audit reviewed in forty-four adventure activities, from abseiling (Activity 1) to tandem parachuting (Activity 44). The final report concluded: '[T]here is insufficient assurance that all activities involving heightened inherent risk are being managed safely' (DoL, 2010, p.6). The report observed: '[T]he problem is ... one of unidentified gaps where ... businesses can start up and operate at a different standard than what is accepted across the sector as safe practice' (DoL, 2010, p.7). The report attributed industry growth partly to 'low barriers to entry' (DoL, 2010, p.13).

The provision of adventure activities is regulated by the Health and Safety at Work (Adventure Activities) Regulations 2016. The regulations require all operators to register and subject themselves to safety audit. Under the regulations it is an offence for unregistered operators to offer adventure activities to participants (WorkSafe NZ 2023). Between 2010 and 2015, the following fatalities were recorded in adventure tourism activities:

- 2010: nine died when a skydivers' aircraft crashed (Sherwood, 2015)
- 2012: a hot-air balloon hit power lines, claiming eleven lives (Harris, 2015)
- 2015: seven tourists died when a helicopter crashed (Carroll, 2015)
- 2015: a commercial jet-boat struck a rock, injuring six (Taylor, 2015)
- 2015: a helicopter operated by an AT company crashed during a training flight, killing the pilots (RNZ, 2022a)
- 2015: a tourist on a heli-skiing excursion was killed in an avalanche (Song, 2019).

The AT regulatory space is evolving. A 2021 MBIE independent review on the adequacy and appropriateness of WorkSafe's actions regarding activities on Whakaari found that 'WorkSafe fell short of good practice in its' regulation of activities on Whakaari White Island over the 2014-19 period', and made several recommendations to improve WorkSafe's management of the AT sector (MBIE, 2021c). MBIE signalled future work on the AT regulatory regime, including a first-principles review (initially planned to begin in 2023, later delayed to 2026) and further evaluation and research (MBIE, 2021a,b).

The Whakaari eruption triggered a review of the regulatory regime. October 2022 changes aimed at raising safety standards included: '[I]ntroducing specific requirements for how adventure activity operators must assess and manage natural hazard risks; strengthening requirements for operators to communicate risks to activity participants; stronger operator registration and notification requirements; reviewing and updating adventure activity safety guidance' (Wood, 2022).

Further amendments to the NZ AT rules were made in 2023 (Higgins-Desbiolles and Higham, 2023), taking effect from April 2024. The amendments introduced new obligations around informing customers about serious risks they may face, expanding the regulator's powers to decline, suspend, cancel and add conditions to AT operator registrations based on safety grounds, and introduce the concept of notifiable incidents and the requirement to report near-misses to the regulator (WorkSafe NZ, 2023).

Court proceedings started in November 2020, when WorkSafe filed charges against ten organisations and three individuals (National Emergency Management Agency (NEMA); GNS Science; Whakaari Management

Limited and its directors, and owners of the island, Andrew, James and Peter Buttle; White Island Tours Limited; Volcanic Air Safaris Limited; Aerius Limited; Kahu NZ Limited; Inflight Charters Limited; ID Tours New Zealand Limited; and Tauranga Tourism Services Limited) for breaching the Health and Safety at Work Act (WorkSafe NZ, 2020). I

In March 2022, Inflight Charters, who promoted and sold tour packages to Whakaari, but did not have any customers on Whakaari when it erupted, pleaded guilty to the charges due to: not having a safety management system or any safe operating procedures for conducting guided tours on Whakaari, not providing adequate safety information to tourists, not providing tourists with adequate PPE (Tebbut, 2022). The operator was fined \$267,500 for failing to ensure the health and safety of tourists (Lane, 2023).

In May 2022, charges against the National Emergency Management Agency (NEMA) were dismissed (RNZ, 2022b). Between May and July 2023 five more organisations (GNS, White Island Tours, Volcanic Air Safaris Limited, Aerius Limited and Kahu New Zealand Limited) pleaded guilty to the charges and are awaiting sentencing (Lane, 2023).

The Trial against the remaining six defendants opened in July 2023. In September 2023 the charges against the three owners of the island, Tauranga Tourism Services, and ID Tours were dropped leaving Whakaari Management Limited (WML) as the sole remaining defendant.

Following the trial WML was found guilty of breaching section 37 of the Health and Safety at Work Act, which explains the duty of a person conducting a business or undertaking who manages or controls workplace (Thomas, 2023). Judge Thomas reasoned that WML was not merely a passive owner of the land, instead it exercised active control or management (including the fact that WML entered into licence agreements with the operators, had termination rights on the licence agreements and it maintained a direct and continuing relationship with tour operators; that it engaged with several parties involved in increasing the tourist number to Whakaari and that it had occasional direct engagements with WorkSafe and GNS). Judge Thomas concluded that WML's failure to comply with its section 37 duty exposed people to a risk of death or serious injury and that 'Had WML complied with its duty and obtained the necessary expert advice on risk and health and safety, it would have fully understood the risk. It would have had two options: ... stop tours entirely ... [or] ...implement effective controls if that were possible' (Thomas, 2023 p.29).

6 Analysis

6.1 Was the safety culture of the Whakaari AT operation robust?

Business continued as normal when alerts were issued (Stock, 2019), possibly because operators had normalised the risks associated with volcanic activity. Lack of loss of life during previous alerts, may have led operators to believe that volcanic activity posed little or no threat. The question of whether the past is a reliable guide to the future merits consideration.

It was received wisdom that the best time to visit Whakaari was when the volcano was active (Erfurt-Cooper *et al.*, 2015). Tours were advertised enthusiastically. Two local high schools (that hosted international students) considered the Whakaari tour a legitimate outdoor activity. Educational visits and school holiday specials, where pupils (from age eight) could, with an accompanying adult, visit the island free, were advertised regularly. The schools system had normalised the Whakaari tour, with its attendant risks.

While tourists were issued personal protective equipment (PPE), after the disaster doubts were expressed as to its effectiveness: '[E]xperts ... have said [half-face masks and hard hats] would have been little more than props when confronted with natural hazards on the island including: corrosive sulphur dioxide (SO₂), deadly hydrogen sulphide (H₂S) and superheated steam' (Shand, 2019). Lawyer Bridget Smith observed: 'People look at these hard hats and gas masks and think if something goes wrong, they will be safe But if it is not fit-for-purpose, a hard hat may as well be a sun hat It's clearly extremely risky taking people to an active volcano' (Smith cited in Shand 2019). Court documents stated that gas masks 'did not provide adequate protection against the high concentrations of hydrogen sulphide and sulphur dioxide on Whakaari. The masks were also 'one size fits all', yet did not fit all face shapes, people with small faces or those with beards' (Tebbut, 2022).

6.2 Was there an adequate communication of risk?

The risk of eruption was little discussed. While tourists were asked to sign waivers, the focus of most risk communication was on risks other than eruption. For example, the need to wear trainers to guard against

slips, and warm clothing to protect against the cold (Gibson, 2019a). While tourists wore half-face masks and hard hats when at the volcano, some experts cast doubt on the efficacy of this PPE (see above).

Tourism NZ's regional and national information sites emphasised the uniqueness of the Whakaari experience without addressing potential risks directly. Page *et al.* (2005) and the DoL (2010) argue that operators should be transparent about risk, especially when communicating it to tourists who possess no local knowledge and rely on the internet, local publications and operators' publicity. According to Song (2019, p.1), 'The perception that risk is well-managed is important to tourists'. Visitor numbers may fall after an accident (Davis *et al.*, 2013).

The local boat operator, who used social media to communicate with the public, reassured customers that tours would continue even if alert levels were raised. In 2016, when the alert level was raised to Level 3 (GeoNet, 2016), the operator continued to offer tours on the basis that it had a safety plan (WIT, 2016). On June 26, 2019, the alert level was raised to Level 2 (Longley, 2019). The following day the operator, still running tours, made only limited mention of the heightened alert level (WIT, 2019). Alert level 2 obtained from November 18, 2019. This was not mentioned by WIT, which continued to advertise.

A tourist interviewed after the disaster observed of WIT's risk communication: 'We were ... told to wear the masks if the gas [for example, sulphur dioxide or hydrogen sulphide] was troubling you I think if I was told explicitly that there could be dangerous gasses on the island, and the lack of a quick escape plan before hand, I would not have gone' (anonymous, cited in Shand, 2019). The Judge who passed sentence on Inflight Charters stated that the operator 'failed to ensure there was adequate risk information available to its customers, so that its customers could make an informed decision, whether or not to go on the island' (Tebbutt, 2022).

Risk communication remains inadequate. While there are currently no foot tours of the island, flight tours are available. While the risks of flying over an active volcano may be lower compared to disembarking near it, the operator's website does not mention volcanic eruption-related risk (White Island Flights n.d.).

6.3 Why was the decision to visit left to tour operators – parties with an economic interest?

In the five years to December 9, 2019, there were 40 days when alert levels stood at 2 or higher. Tours continued throughout this period. The cost to an operator of losing a tour was *circa* \$11,000 – a significant sum.

It could be argued – albeit with the benefit of hindsight – that, given the potential risks, tourism activities should have been proactively managed by the authorities. For example, by halting excursions when the alert level was raised to 2 (moderate to heightened activity). There is a precedent: NZ's volcanic attractions include the Tongariro crossing, a 19km walk in active volcano country. The crossing is monitored by the Department of Conservation (DoC), which closes the track at times of heightened volcanic activity (O'Dwyer, 2019). The proactive management argument (above) is mentioned in emails from DoC employees to the NZ Department of Internal Affairs. Employees' e-mails claim that had the DoC's approach (above) been adopted, at Alert Level 2 there would have been no tourists on the island (Olley, 2020).

6.4 Could better regulation, resourcing and monitoring have prevented the disaster?

Adventure tourism operators are subject to safety audit, which includes a review of the operator's safety management system (SMS). The WorkSafe register of AT operators in February 2024 listed 298 active operators (WorkSafe NZ, 2024). The majority are audited by two agencies. Following the disaster, it was found that while two safety audit providers had audited WIT, neither 'had a technical expert with appropriate experience or qualifications to carry out a safety audit of an activity that involved walking tours on a live volcano' (MBIE, 2021d, p. 2) and 'the audits did not include WIT processes for assessing the risk of an eruption while tourists were on the island. This (...) made the audits worthless' (Thomas, 2023, p.23). Additionally, the three helicopter operators flying to White Island were unregistered (Cropp, 2019). Despite a requirement to carry child-friendly gas-masks, WIT did not carry them. Yet WIT passed its safety audits. Further, WorkSafe had, since 2014, known about the possibility of there being unregistered operators, but did not refer the matter to its inspectorate (MBIE, 2020). This suggests laxity on the part of the regulator.

Because the AT sector is regulated by a variety of agencies, including WorkSafe, Maritime NZ and the Civil Aviation Authority, there may be gaps and inconsistencies in monitoring, assessment and regulation. As there is no unified register of incidents, accidents and near-misses (Jamieson, 2019), it is difficult to identify safety

trends for the purpose of active learning (see: Toft and Reynolds, 2005, Dekker, 2007, 2014, Rankin and Johnson, 2018). North America's Aviation Safety Reporting System (ASRS) is a model risk-register. The all-encompassing ASRS holds thousands of reports on incidents, accidents and near-misses. Analyses take in every type of aviation operation, maximising opportunities for active learning (Bennett, 2020).

6.5 Did economic and social pressures contribute to the disaster?

Whakaari is a tourism draw. The Eastern Bay of Plenty Regional Development Project (EBPRDP) (Ōpōtiki District Council, 2018, p.42) describes White Island as 'the hook that will bring visitors' and lists initiatives to increase tourist numbers. For example:

- The Whakaari Visitor and Education Centre
- The White Island Glass-Bottom Boat
- The White Island Wharf.

White Island Tours was investing. The company had purchased one new vessel and intended purchasing another. Visitor numbers would have nearly doubled. The EBPRDP envisioned tourism-fuelled economic growth. There was no mention of the risk to life of running tours to an island with an active volcano. Whakaari was consistently framed or constructed as an economic opportunity (Ōpōtiki District Council, 2018).

6.6 Can it be said with confidence that attitudes towards safety in NZ are commensurate to the task of safeguarding adventure tourists?

An organisation's safety culture is influenced by the culture of the society in which it operates (Helmreich and Merritt, 2001; Noort *et al.*, 2016; Bennett, 2019). Data pertaining to NZ's aviation and mining sectors suggest occasional safety failures and ill-advised risk-taking (Maurino *et al.*, 1998; Gill and Shergill, 2004; Ministry of Business, Innovation and Employment, 2013; Zanini, 2019).

In his Commission of Inquiry report into the 1979 Mount Erebus crash, Judge Peter Mahon (1981) attributed the disaster to Air New Zealand's lax safety culture and company standing orders that were unfit for purpose. The Ministry of Business, Innovation and Employment (2013, p.2) notes: 'Between 50 and 100 people die in workplace accidents in New Zealand every year. Another 500 to 800 people die as a result of illness caused by their work environment. *This isn't good enough*, and signals a pressing need to break with the way things have been done in the past and build a strong workplace culture that puts people first [my emphasis]'. In its 2010 review of safety in the AT industry, the DoL (2010, p.76) observed: 'Some operators said that the main challenge they face is changing the safety culture of a few ... businesses who operate less professionally and "under the radar". They said that the current operating environment has allowed some businesses to ... operate for a length of time (sometimes years) without any entry requirements, standard operating procedures ... health and safety policies for staff or external audits and reviews of safety'.

According to Page and Meyer (1996) and Callander and Page (2003), the NZ Accident Compensation Corporation (ACC), which compensates those injured while adventuring, may have influenced the *modus operandi* of the country's AT operators. As Page and Meyer (1996, p.688) explain: '[I]t may be the ... provision of ACC cover which currently prevents a greater concern for safety issues Anything which may inhibit the thrill, excitement or the danger and risk of adventure tourism pursuits is currently viewed as unnecessarily burdensome ... '. Operator risk-tolerance fostered by the ACC scheme may reasonably be described as risk-compensatory behaviour (see Adams (1985) for a definition). MBIE's (2020) review of the adventure activities regulatory regime notes that the ACC scheme's limiting of liabilities for personal injury disincentivises safety work.

7 Conclusions

New Zealand has created a successful and profitable AT sector (Tourism New Zealand, 2013) in the context of a hazard-scape that includes volcanic activity and earthquakes. The 2011 Christchurch earthquake killed 185 people. Events such as the Whakaari disaster should be considered against this broader hazard-scape.

Adventure tourists must be in a position to make informed decisions about risk. To do this they require more information and greater transparency from tour operators, tourism bodies, agencies responsible for public safety and legislatures (Page *et al.*, 2005; DoL, 2010). In its 2010 review, the DoL (2010, p.68) observed: 'Families said that there could be improvements to the safety culture of some [AT] companies Companies should clearly communicate the risks involved with an activity to clients in advance of undertaking the activity'.

Monteiro (2012, p.75) asserts: 'You go about your business not in a total vacuum, but rather under the influence of a wide range of ... factors'. Business practices and policymaking are influenced by economic circumstance (Bennett, 2019). The lax regulation, cost-cutting and design compromises that contributed to the Piper Alpha disaster resulted in part from politicians' desire to expeditiously exploit an economic opportunity (Bennett, 2019). The 2019 Whakaari disaster occurred against a backdrop of sluggish growth, falling business confidence and weak investment in the NZ economy (OECD, 2019). In 2019, per capita GDP growth was the slowest in eight years. It is likely that tour operators' practices were influenced in some degree by their desire to maximise returns in a sluggish economy. The question of whether the economic context influenced regulators' behaviour merits examination.

The regulatory regime created to manage NZ's AT industry left much to be desired. The regime's fragmented structure and failure to create a unified risk register created latent errors – accidents waiting to happen (see Reason's (1990, 2013) definition). The degree to which regulators' behaviour was influenced by the political agenda, specifically local and national politicians' determination to develop the industry, merits scrutiny. Successful industries bring employment, taxable income and political kudos. Policy success improves a politician's chances of being re-elected.

Following the Whakaari/White Island eruption, the NZ Government has the opportunity to create a safer environment, with initial AT regulatory changes scheduled for late 2023. WorkSafe has filed court papers, with a trial scheduled for mid-2023. With tourists returning to NZ following the lifting of COVID-19 restrictions, it is vital that companies in the AT sector communicate risks more effectively. This will enable tourists to make informed decisions about risk.

In a press release announcing changes to the AT regulations, the Minister for Workplace Relations and Safety recognised the importance of AT to New Zealand (Wood, 2022). With tourists returning it is essential that they are fully informed about activity-related risks and that profit is not prioritised over safety.

Finally, with reference to Adams's (1985) theory of risk-compensation, it is possible that industry *praxis* was shaped by the insurance safety-net provided by the ACC scheme. The nexus between insurance cover and corporate behaviour merits investigation. Beck's (1992) characterisation of insurers as the arbiters of risk is apposite.

8 Bibliography

- Adams, J.G.U. (1985). Smeed's Law, seat belts and the emperor's new clothes, *Human Behaviour and Traffic Safety*, edited by L. Evans and R.C. Schwing(pp. 193-248). New York: Plenum Press.
- Anthony, J. (2019, December 10). Whakaari/White Island eruption: Owners say tragic event leaves them heartbroken. *Stuff*. <https://www.stuff.co.nz/business/industries/118071975/whakaariwhite-island-owner-the-buttle-family-declines-to-comment-after-deadly-eruption/>
- Beck, U. (1992). *Risk Society*. London: Sage.
- Bennett, S.A. (2014). A conspiracy of bastards? *Networks and Network Analysis for Defence and Security*, edited by A.J. Masys, (pp. 217-245). Cham: Springer International Publishing.
- Bennett, S.A. (2019). *Systems-thinking for Safety. A short introduction to the theory and practice of systems-thinking*. Oxford: Peter Lang International Academic Publishers.
- Bennett, S.A. (2020). Avoidable deaths in Britain's National Health Service – a systems-thinking informed analysis using data garnered from government agencies, representative bodies, private canvassing and public inquiries. *International Journal of Healthcare Technology and Management* 18(1/2): 95-110.
- Bennett, S.A. and Shaw, A.P. (2003). Incidents and accidents on the ramp: does 'risk communication' provide a solution? *Human Factors and Aerospace Safety* 3(4): 333-352.
- Bentley, T.A. and Page, S.J. (2001). Scoping the extent of adventure tourism accidents. *Annals of Tourism Research* 28(3): 705-726.
- Bentley, T.A., Page, S. and Edwards, J. (2008). Monitoring injury in the New Zealand adventure tourism sector: an operator survey. *Journal of travel medicine* 15(6): 395-403.

- Bird, D.K., Gísladóttir, G. (2022). Enhancing tourists' safety in volcanic areas: An investigation of risk communication initiatives in Iceland. *International Journal of Disaster Risk Reduction*. Volume 50, <https://doi.org/10.1016/j.ijdrr.2020.101896>
- Callander, M. and Page, S. J. (2003). Managing risk in adventure tourism operations in New Zealand: a review of the legal case history and potential for litigation. *Tourism Management* 24: 13-23.
- Carroll, J. (2015, November 23) . Fox Glacier crash: Killed tourists' parents express anger, sorrow.. Stuff. <https://www.stuff.co.nz/travel/news/74299941/fox-glacier-crash-killed-tourists-parents-express-anger-sorrow/>
- Cropp, A. (2019, December 13). "Whakaari/ White Island: Three helicopter companies all unregistered for adventure activities." Stuff. <https://www.stuff.co.nz/business/118098320/whakaari-white-island-three-helicopter-companies-all-unregistered-for-adventure-activities/>
- Cullen, D. (1990). *The Public Inquiry into the Piper Alpha Disaster, Cm 1310*. London: Her Majesty's Stationery Office.
- Davis, M.C., Challenger, R., Jayewardene, D.N.W. and Clegg, C.W. (2014). Advancing socio-technical systems thinking: A call for bravery. *Applied Ergonomics* 45(2A): 171-180.
- Davis, S., Anshuka, Aoki, K., Cook, M., Duley, S., Huff, M. and Logan, C. (2013). Managing Risk and Allure at Volcanoes in Hawaii: how close is too close? *GeoJournal of Tourism and Geosites* 2(12): 85-93.
- Dekker, S. (2007). *Just Culture*. Farnham: Ashgate.
- Dekker, S. (2014). *The Field Guide to Understanding 'Human Error'. Third Edition*. Farnham: Ashgate.
- Denzin, N.K. (1983). Interpretative Interactionism. In *Beyond Method: Strategies for Social Research*, edited by G. Morgan, 129-146. Beverly Hills CA: Sage.
- Department of Labour. (2010). *Review of risk management and safety in the adventure and outdoor commercial sectors in New Zealand 2009/10 FINAL REPORT*. Wellington: New Zealand Government.
- de Vaus, D. (2001). *Research Design in Social Research*. London: Sage.
- Erfurt, P. (2022). Volcano Tourism and Visitor Safety: Still Playing with Fire? A 10-Year Update. *Geoheritage* 14, 56. <https://doi.org/10.1007/s12371-022-00691-y>
- Erfurt-Cooper, P., Sigurdsson, H. and Lopes, R.M.C. (2015). Volcanoes and Tourism. *The Encyclopaedia of Volcanoes*, edited by H. Sigurdsson, B. Houghton, S. McNutt, H. Rymer, and J. Stix, (pp. 1295-1311). London: Elsevier.
- Finnegan, R. (1996). Using Documents. *Data Collection and Analysis*, edited by R. Sapsford and V. Jupp, (pp. 138-152). London: Sage.
- GeoNet. (2016, April 27). Minor White Island Eruption. <https://www.geonet.org.nz/vabs/2T1tBP7JfGEMGEyakYleMa>
- GeoNet. (2019, n.d.). Whakaari/White Island – Updates. <https://www.geonet.org.nz/about/volcano/whiteisland>
- GeoNet. (2023, n.d.). Volcanic Alert Levels. <https://www.geonet.org.nz/about/volcano/val>
- Gibson, A. (2019a, December 20). The business of White Island: 17,500 visitors each year. Newstalk ZB. <https://www.newstalkzb.co.nz/on-air/mike-hosking-breakfast/audio/tony-bonne-white-island-eruption-the-business-of-tours-with-17-500-visitors-annually/>
- Gibson, A. (2019b, December 10). White Island eruption: The business of tours, with 17,500 visitors annually. NZ Herald. https://www.nzherald.co.nz/business/news/article.cfm?c_id=3&objectid=12292390/
- Gill, G.K. and Shergill, G.S. (2004). Perceptions of safety management and safety culture in the aviation industry in New Zealand. *Journal of Air Transport Management* 10(4): 231-237.
- Hansen, M., Fyall, A. and Spyriadis, T. (2020). Adventure or amusement? Image and identity challenges for the aerial adventure industry and implications for positioning and policy. *Anatolia* 31(3): 423-435.

- Harris, C. (2015, April 23). Carterton balloon death's 'entirely preventable' – coroner Stuff. <https://www.stuff.co.nz/national/67997417/carterton-balloon-deaths-entirely-preventable---coroner/>
- Helmreich, R.L. and Merritt, A.C. (2001). *Culture at Work in Aviation and Medicine*. Aldershot: Ashgate Publishing Ltd.
- Higgins-Desbiolles, F. and Higham, J. (2023, November 4). Whakaari/ White Island court case will change the level of accepted risk in NZ's tourism industry. RNZ and The Conversation. <https://www.rnz.co.nz/news/on-the-inside/501710/whakaari-white-island-court-case-will-change-the-level-of-accepted-risk-in-nz-s-tourism-industry>
- Human Rights Watch. (2021). *They Killed Us from the Inside. An Investigation into the August 4 Beirut Blast*. New York NY: Human Rights Watch.
- Jamieson, D. (2019, December 26). "British dad cannot move past his daughter's death adventuring in NZ." Stuff. <https://www.stuff.co.nz/national/118180090/british-dad-cannot-move-past-his-daughters-death-adventuring-in-nz/>
- Lane, J. (2023, November 5). Timeline: Whakaari case wraps up after long wait for closure. 1News. <https://www.1news.co.nz/2023/11/05/timeline-whakaari-case-wraps-up-after-long-wait-for-closure/>
- Longley, M. (2019, June 26). Volcanic alert raised at White Island. NewsHub. <https://www.newshub.co.nz/home/new-zealand/2019/06/volcanic-alert-raised-at-white-island.html/>
- Løseth, K. (2018). Knowledge development in adventure tourism businesses – the influence of serious leisure. *Annals of Leisure Research* 21(5): 575-591.
- Mahon, P. (1981). *Report of the Royal Commission to Inquire Into the Crash on Mount Erebus, Antarctica, of a DC10 Aircraft Operated by Air New Zealand Limited*. Wellington: P.D. Hasselberg, Government Printer.
- Maurino, D.E., Reason, J.T., Johnston, N. and Lee, R. (1998). *Beyond Aviation Human Factors*. Aldershot: Ashgate Publishing Ltd.
- McConnell, G. (2019, December 13). Whakaari/White Island tours: The future for volcano tourism in New Zealand. Stuff. <https://www.stuff.co.nz/travel/news/118105438/whakaariwhite-island-tours-the-future-for-volcano-tourism-in-new-zealand/>
- Ministry of Business, Innovation and Employment. (2013). *People Come First*. Wellington: Ministry of Business, Innovation and Employment.
- Ministry of Business, Innovation and Employment. (2020, December). Targeted review of the adventure activities regulatory regime. <https://www.mbie.govt.nz/assets/targeted-review-of-the-adventure-activities-regulatory-regime-report.pdf>
- Ministry of Business, Innovation and Employment. (2021a, August 11). *MBIE Adventure Activities Consultation Document*. <https://www.mbie.govt.nz/dmsdocument/17718-cabinet-paper-adventure-activities-release-of-consultation-document>
- Ministry of Business, Innovation and Employment. (2021b). *Analysis of the adventure activities regime*. <https://www.mbie.govt.nz/business-and-employment/employment-and-skills/health-and-safety/targeted-review-of-adventure-activities/>
- Ministry of Business, Innovation and Employment. (2021c). *Independent review of WorkSafe in relation to Whakaari/White Island*. <https://www.mbie.govt.nz/business-and-employment/employment-and-skills/health-and-safety/independent-reviews-of-worksafe/>
- Ministry of Business, Innovation and Employment. (2021d). *Summary – Independent review of WorkSafe New Zealand's performance regarding adventure activities on Whakaari/White Island*. <https://www.mbie.govt.nz/dmsdocument/17568-summary-of-findings-whakaari-white-island-worksafe-report>

- Monteiro, E. 2000. Actor-network theory and information infrastructure. C. Ciborra (ed.) *From control to drift. The dynamics of corporate information infrastructure*. Oxford University Press, 2000, (pp.71 – 83) <https://folk.idi.ntnu.no/ericm/ant.FINAL.htm>
- New Zealand Herald. (2010, February 19). 29 deaths in 5 years revealed in adventure tourism report. NZ Herald. https://www.nzherald.co.nz/nz/news/article.cfm?c_id=1&objectid=10627127/
- Noort, M.C., Reader, T.W., Shorrocks, S. and Kirwan, B. (2016). The relationship between national culture and safety culture: Implications for international safety culture assessments. *Journal of Occupational and Organisational Psychology* 89(3): 515-538.
- Olley, S. (2020, October 3)). No one would have been permitted. NZ Herald Weekend Edition.
- O'Dwyer, E. (2019, December 10). Ruapehu mayor says safety systems may be reviewed after Whakaari/White Island eruption. Stuff. <https://www.stuff.co.nz/national/118081378/ruapehu-mayor-says-safety-systems-may-be-reviewed-after-whakaariwhite-island-eruption/>
- Ōpōtiki District Council. (2018, September 6). Eastern Bay of Plenty: Regional Development Project. Ōpōtiki District Council <https://www.odc.govt.nz/repository/libraries/id:2bpcqtp1b1cxby3k9b0b/hierarchy/sitecollectiondocuments/our-council/Reports%20%26%20Studies/Reports/Eastern%20Bay%20of%20Plenty%20Regional%20Development%20Report%20-%20October%202018.pdf>
- Organisation for Economic Cooperation and Development (2019). *OECD Economic Surveys. New Zealand. Executive Summary*. Paris: OECD.
- Page, S.J., Bentley, T. and Walker, L. (2005). Tourist safety in New Zealand and Scotland. *Annals of Tourism Research* 32(1): 150-166.
- Page, S.J. and Meyer, D. (1996). Tourist accidents an exploratory analysis. *Annals of Tourism Research* 23(3): 666-690.
- Pidgeon, N. (2001). Safety culture: Transferring theory and evidence from the major hazards industries.: *Behavioural Research in Road Safety. Proceedings of the 10th Seminar on Behavioural Research in Road Safety*, 3-5 April, 2000.
- Punch, M. (1986). *The Politics and Ethics of Fieldwork – Muddy Boots and Grubby Hands*. London: Sage.
- RNZ. (2022a, August 8). Warning over Robinson helicopter's safety for NZ conditions after pilots' deaths. RNZ. <https://www.rnz.co.nz/news/national/472467/warning-over-robinson-helicopter-s-safety-for-nz-conditions-after-pilots-deaths#:~:text=The%20coroner%20advised%20that%20until,to%20severe%20turbulence%20was%20likely..>
- RNZ. (2022b, (May 4). Whakaari eruption: Charge against National Emergency Management Agency dismissed. RNZ. <https://www.rnz.co.nz/news/national/466405/whakaari-eruption-charge-against-national-emergency-management-agency-dismissed>
- Rankin, W.L. and Johnson, W. (2018). Maintenance. *Handbook of Human Factors in Air Transportation Systems*, edited by S.J. Landry, (pp. 51-106). Boca Raton FLA: CRC Press.
- Reason, J.T. (1990). *Human Error*. Cambridge: Cambridge University Press.
- Reason, J.T. (2000). Safety paradoxes and safety culture. *Injury Control and Safety Promotion* 7(1): 3-14.
- Reason, J.T. (2013). *A Life in Error. From Little Slips to Big Disasters*. Farnham: Ashgate Publishing Ltd.
- Roscoe, R. (2010). Case Study 18. Geothermal Parks in New Zealand. *Volcano and Geothermal Tourism: Sustainable Geo-Resources for Leisure and Recreation*, edited by P. Erfurt-Cooper and M. Cooper, (pp. 324-328). London: Routledge.
- Scoop Info Pages. (2019., April 4) White Island Tours welcome new vessel. Scoop Independent News. https://info.scoop.co.nz/White_Island_Tours/

- Shand, M. (2019, December 15). Gas masks given to Whakaari/White Island tourists 'little more than props', says expert. Stuff. <https://www.stuff.co.nz/business/118136081/gas-masks-given-to-whakaariwhite-island-tourists-little-more-than-props-says-expert/>
- Sherwood, S. (2015, October 29). Fox Glacier plane crash victim's son backs critical report findings. Stuff. <https://www.stuff.co.nz/national/73477548/fox-glacier-plane-crash-victims-son-backs-critical-report-findings/>
- Song, E. (2019). *Adventure tourism accidents and the New Zealand media: An analysis and discussion on implications for future research and the tourism sector*. [Unpublished Masters Dissertation]. Christchurch: Lincoln University.
- Stake, R.E. (1994). Case Studies. *Handbook of Qualitative Research*, edited by N.K. Denzin and Y.S. Lincoln, (pp. 236-247). Thousand Oaks CA: Sage.
- Stock, R. (2019, December 13). Whakaari/White Island eruption: tourists went to White Island even when government scientists were banned. Stuff. <https://www.stuff.co.nz/business/118180215/whakaariwhite-island-eruption-tourists-went-to-white-island-even-when-government-scientists-were-banned/>
- Taylor, P. (2015, January 12). Shotover Jet: 'We want to know' what caused crash. A NZ Herald. <https://www.nzherald.co.nz/nz/shotover-jet-we-want-to-know-what-caused-crash/OY6FEDA4OANZAQYIIB2YAWSBCY/>
- Tebbutt, L. (2022, March 22). *Whakaari eruption: Flight operator pleads guilty to health and safety charges*. RNZ. <https://www.rnz.co.nz/news/national/464362/whakaari-eruption-flight-operator-pleads-guilty-to-health-and-safety-charges>
- Thomas, E. M. (2023). *WorkSafe New Zealand (Prosecutor) v Whakaari Management Limited (Defendant)* Auckland District Court. Trial Judgement of Judge E M Thomas, Trial 11 July – 21 September 2023.
- Toft, B. and Reynolds, S. (2005). *Learning from disasters: a management approach*. Basingstoke: Palgrave Macmillan.
- Tourism New Zealand. (2013). *Adventure Tourism – May 2013*. Wellington: Tourism New Zealand.
- Turner, B.A. and Pidgeon, N.F. (1997). *Man-made disasters. Second Edition*. Oxford: Butterworth-Heinemann.
- Vaughan, D. (1996). *The Challenger Launch Decision. Risky Technology, Culture, and Deviance at NASA*. Chicago Ill: The University of Chicago Press.
- White Island Flights. (n.d.). White Island scenic flights. <http://www.whiteislandflights.co.nz/volcanic-tours.html>
- White Island Tours. (2016). White Island Tours – Volcano Adventure Tours, New Zealand.. <https://www.facebook.com/whiteislandtours/>
- White Island Tours. (2019). White Island Tours – Volcano Adventure Tours, New Zealand. <https://www.facebook.com/whiteislandtours/>
- Wood, M. (2022, October 1). *Government provides confidence to those seeking an adventure..* <https://www.beehive.govt.nz/release/government-provides-confidence-those-seeking-adventure>
- WorkSafe NZ. (2023, August 31). Adventure activities Documents and resources. WorkSafe NZ. <https://www.worksafe.govt.nz/topic-and-industry/adventure-activities/documents-and-resources/>
- WorkSafe NZ (2020, November 30). 13 parties charged by WorkSafe New Zealand over Whakaari/White Island tragedy. WorkSafe NZ. <https://www.worksafe.govt.nz/about-us/news-and-media/13-parties-charged-by-worksafe-new-zealand-over-whakaariwhite-island-tragedy/>
- WorkSafe NZ. (2024). Register of adventure activity operators. WorkSafe NZ. <https://register.worksafe.govt.nz/>
- Zanini, S. 2019. *How the safety culture of Pike River Coal Limited contributed to the Pike River Coal mine disaster*. [Unpublished Masters Dissertation]. Leicester: University of Leicester.

Appendix 1: Systems relevant to the safety of Whakaari visitors (business owners, employees and tourists)

NZ legislative H&S framework. New Zealand's regulatory system for health and safety at work, which came into effect on 4 April 2016, established duties for persons conducting a business or undertaking (companies or self-employed people), officers (directors of a company), workers and other persons at workplaces (visitors or customers), aimed at securing the health and safety of workers and others affected by work. The system covers all businesses and organisations, all types of modern working arrangements, all work-related risks and nearly all work in New Zealand (MBIE, n.d.)

Adventure Activities regime. The Adventure Activities regime is a mechanism for reducing the risk of harm to workers and others from adventure activities, and for raising safety standards in the adventure activities sector. The Adventure Activities regime is the regulatory system established through the Health and Safety at Work (Adventure Activities) Regulations 2016, and the Health and Safety at Work Act 2015 (HSWA). The main agents in the regime are: adventure activity operators; safety auditors; WorkSafe New Zealand; the Joint Accreditation System of Australia and New Zealand who help deliver the Scheme by certifying safety auditors; the Ministry of Business, Innovation and Employment (MBIE), responsible for administering, monitoring and evaluating HSWA, and monitoring the performance of the regulator (WorkSafe NZ, 2023 b).

The Regulators. WorkSafe is both the primary Regulator and the Registrar for adventure activities operators. WorkSafe also recognises safety auditors to authorise them to conduct safety audits on the adventure activities operators and it develops and reviews the safety audit standards, which set the requirements that must be met to pass a safety audit (WorkSafe NZ 2023a). Other Regulators involved in the Adventure Tourism system are the CAA and Maritime NZ.

Requirement for audit and auditors. The regulations introduced a requirement for adventure activity operators, before providing or offering to provide adventure activities, to pass a safety audit. The regulations required auditors (with appropriate experience and qualifications) to audit the operators for compliance with the safety audit standards that applied to the activities – this included the need to have a safety management system (SMS) and to carry out a risk assessment (WorkSafe NZ 2023a).

Person Conducting a Business or Undertaking (PCBUs). Under the HSWA, the PCBU is the primary duty holder and is accountable for the impact of the business on any worker (regardless of how they are engaged, including volunteers) and on others over whom the business exerts influence and control. PCBUs have a duty to conduct risk assessments. Whakaari Management Ltd (WML), and the four tour operators, were all PCBUs, with related duties under the HSWA (WorkSafe NZ, 2019).

Other system elements. Volcanic Alert Bulletins were regularly issued by GNS Science (GNS), who monitored the island's volcanic activity. GNS had equipment on the island and had a relationship with WML to enable it to access the island. GNS was a PCBU in relation to their workers and the helicopter pilots GNS engaged for transport to the island (those pilots also ferried tourists). GNS gave presentations about risk to all operators and the White Island User Group. However, none entered into a contract with GNS for volcanic activity advice/risk assessment (MBIE 2021c).

The National Emergency Management Agency (NEMA). NEMA, the government agency responsible for civil defence and emergency management, was charged with breaching the HSWA section 36(2), which states that a PCBU must ensure, so far as is reasonably practicable, that the health and safety of 'other persons' (that is, people who are not workers) is not put at risk from work carried out as part of the conduct of the business or undertaking. The charges were dismissed as the Court deemed that HSWA's primary focus is on workers and workplaces, not duties to the general public (Auckland District Court, 2022).

GNS. The Institute of Geological and Nuclear Sciences, is a New Zealand Crown Research Institute which focuses on geology, geophysics and nuclear science. In relation to the Whakaari disaster, GNS was both a PCBU and a party providing information on volcanic activity at Whakaari. GNS, like NEMA, was charged with breaching the HSWA section 36(2), with charges also dismissed by the Court. WorkSafe also charged GNS with breaching the HSWA section 36(1) for failing to ensure the health and safety of its workers. GNS was found guilty and fined \$54,000 (Auckland District Court, 2024b).