



Transport Accident  
Investigation  
Commission

# Annual Report Ripoata Ā-tau

**2020/2021**

Prepared and published in accordance with the  
requirements of the Crown Entities Act 2004



Transport Accident Investigation Commission  
Te Kōmihana Tiro tiro Aituā Waka  
Annual Report 2021

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# Transport Accident Investigation Commission

25 January 2022

Hon Michael Wood  
Minister of Transport  
Executive Wing  
Parliament Buildings  
Wellington

Dear Minister

## ***Annual Report 2020/2021***

We present the Annual Report of the Transport Accident Investigation Commission for the 12 months ended 30 June 2021.

It has been prepared and is signed in accordance with the provisions of the Crown Entities Act 2004.

Jane Meares  
**Chief Commissioner**

Stephen Davies Howard  
**Deputy Chief Commissioner**



# **Our vision**

## **Tō mātou tirohanga**

No repeat accidents – ever! Whakakore aituā tukurua!

# **Our mission**

## **Tā mātou whāinga**

Safer transport through investigation, learning and influence

# **Our values**

## **Ā mātou uara**

Fairness  
Impartiality  
Independence  
Competence  
Integrity  
Timeliness  
Certainty

# Our purpose

## Tā tātou kaupapa

Ko te aronga a Te Kōmihana Tiro tiro Aituā Waka, ki te whakatau me te āta tiro tiro he aha te pūtake o ngā Aituā Waka. A me pēhea rā te karo, kia kore ai aua takanga e pa mai anō a tōna wā.

The purpose of the Transport Accident Investigation Commission is to determine the circumstances and causes of accidents and incidents with a view to avoiding similar occurrences in the future.

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## Chief Commissioner's overview

### Te tirohanga a te Kōmihana matua



Jane Meares  
**Chief Commissioner**

The year again proved to be a busy one for the Commission and staff. We were pleased to have received additional funding from 1 July 2020 to implement our Digital Transformation Strategy. The strategy aims to ensure we have the right people, systems, and processes to adapt to the increasingly technological and data-driven nature of the transport system. Much of the organisational focus for the year was on detailed analysis and planning to implement the strategy.

A project team has been helping us in this task. We are expecting to have a new case management system in place in by early 2022. The system will help us improve how we manage, integrate, and analyse investigation data and information – a major step in strengthening our ability to identify and analyse systemic safety risks.

The new funding has also enabled us to expand the range of expertise we can draw on internally. For the first time, a human factors specialist is part of the investigation team; and the development of a research strategy during the year will lead to recruitment of a research analyst in early 2022. These new roles bring further maturity to the organisation in undertaking our functions.

Our core work of accident and incident investigation and reporting continued with some significant achievements. Over the year, we closed an inquiry into two incidents of abnormalities in Rolls-Royce Trent 1000 engines. These engines are used in fleets across the world. In May 2018, we published an interim report, which identified two safety issues related to turbine blades. The report contributed to safety actions being taken, and at the time the Commission resolved to close the inquiries, 99 per cent of the international flying fleet had had the affected turbine blades replaced. The New Zealand incidents and the attention the Commission's inquiries brought to the identified safety issues had a global impact and have contributed to the improved safety of these engines. It is a good example of how complex some investigations can be and of the influence we can have. We have included this inquiry in our case studies for this year.



Our inquiry into a fatal accident in which a tandem pair experienced a double parachute failure demonstrated the benefits of the in-depth work we undertake. This investigation involved matters of a highly technical and specialised nature. We identified several safety issues and made recommendations for change at a systemic level. The industry welcomed our findings. We were gratified that the Chief Executive of the New Zealand Parachute Industry Association wrote to the Investigator-in-Charge to say: "I was impressed with how well the report described tandem parachuting – a highly specialised activity and probably unfamiliar territory for you. It's clear you've gone to some effort to understand the procedures and equipment, and the report does a good job of presenting this quite technical information in plain English." This is affirmation that we achieve influence by being credible in the work we do and making our findings accessible.

Overall, we dealt with 33 domestic inquiries over the year and assisted a further nine overseas inquiries. We published ten reports, fewer than our expected range of 15-25. However, we were pleased that in the maritime and rail modes, all inquiries were closed within the target two years. Five of the six aviation inquiries extended beyond two years. As we explain in this Annual Report, aviation inquiries can often take longer for several reasons. This year, investigators dealt with wreckage recovery challenges, highly specialised technical aspects to the investigations, and having to liaise with a range of international parties. Nevertheless, timeliness in the aviation mode made a modest improvement when compared with 2019/20 (nine per cent).

The year also included work to take us into the next period of development as an organisation. We presented a new Statement of Intent for the period 2021-2025. It has three strategic intentions, one of which is to maintain readiness for a large-scale event. In the document we noted that New Zealand has been fortunate in that it has not experienced a large-scale accident since the Erebus disaster in 1979; and the Commission, established in 1990, has therefore not had to respond to such an event. Over the next three years, we intend to enhance our capability to do so. We are working with the Ministry of Transport to begin engaging more fully with the community of emergency response agencies.

We also began looking in earnest at our role in strengthening the Māori-Crown relationship. We developed a three-year programme aimed at increasing the cultural awareness and competency of staff. As a Board we are working with management on identifying what being a good Treaty partner means for TAIC. We will monitor progress in this area.

Investigator training was given particular attention over the year. COVID-19 has had relatively little effect on our ability to operate; however, the international travel restrictions have affected training. Usually, all new investigators undertake general and mode-specific courses at Cranfield University in the UK. As an interim measure, local providers delivered substitute training here in New Zealand. In addition, investigation managers began developing a detailed competency framework and training plan. This was motivated in part by a relatively high rate of staff change over the year, mainly due to retirements (and in one case a resignation for reasons related to COVID-19). At 30 June 2021, we had a relatively low proportion of investigators who we would consider qualified to be an investigator-in-charge (that is, having completed core training and with two to three years' experience). The competency framework will provide a systematic development path for investigators.

Finally, I would like to acknowledge the significant contribution that Lois Hutchinson has made to TAIC. Ms Hutchinson retired as Chief Executive in June 2021 after 16 years in the role. Over

her tenure, she ably led TAIC, building it into an authoritative organisation with a respected voice on transport safety. Ms Hutchinson's contributions to transport safety have been recognised nationally and internationally, as well as her generous support and counsel to other public service chief executives. We thank her for her outstanding service and wish her well in her retirement.

To take up the chief executive role, we were pleased to welcome Martin Sawyers. Mr Sawyers comes to TAIC from being Chief Executive and Registrar of the Plumbers, Gasfitters and Drainlayers Board. He is a lawyer and brings many years of management and governance experience to TAIC. We look forward to working with Mr Sawyers as TAIC enters into an exciting new period in its development.

A handwritten signature in black ink, appearing to read 'J Meares', with a long horizontal flourish extending to the right.

Jane Meares  
**Chief Commissioner**

# Our organisation

## Tō mātou rōpū

### Our purpose

Our purpose is to determine the circumstances and causes of transport occurrences

The Commission's purpose is to determine the circumstances and causes of transport accidents and incidents with a view to avoiding similar occurrences in the future, rather than to ascribe blame to any person.<sup>1</sup> The Transport Accident Investigation Commission Act 1990 (the Act) enables the Commission to undertake its task.

Our legislation establishes us as a standing commission of inquiry

The Act establishes the Commission as a standing commission of inquiry. It requires the Commission to investigate certain transport occurrences; and then inform transport system participants – domestically and internationally – of what happened, the lessons identified, and what might need to change to help avoid a recurrence. To achieve our purpose, the Commission must:

- decide whether to investigate (the Commission must do so if we believe an accident or incident has significant implications for transport safety or that an inquiry would allow us to make recommendations that would improve transport safety)
- co-ordinate and direct the investigations we initiate and decide which other parties (if any) should be involved in our investigations
- consider evidence gathered by investigators, advice from experts, and the submissions of consulted people and organisations; and hold private or public hearings
- publish our findings and recommendations (the Commission has recommendatory powers only).

To support our functioning, the Commission has broad investigative powers under the Act, including the power of entry and inspection, and the power to seize, remove, and protect evidence. We also have wide powers under the Commissions of Inquiry Act 1908.

On occasions, coroners, the New Zealand Police, transport safety authorities (the regulators<sup>2</sup>) or WorkSafe New Zealand, may also investigate the same transport accidents and incidents as the Commission is investigating.

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<sup>1</sup> Section 4 of the Transport Accident Investigation Commission Act 1990

<sup>2</sup> Maritime NZ, the Civil Aviation Authority, and Waka Kotahi NZ Transport Agency

## Our ethos

Independence and impartiality underpin our ethos

The principles of independence and impartiality underpin the ethos of accident investigation the world over. Ensuring evidence is secured and accessible for critical examination without hindrance or undue influence from vested interests is the cornerstone of state-mandated accident investigation.

People can speak to us freely because we are independent and the evidence we gather is protected

International transport conventions put these principles into practice by obligating signatory States to conduct independent and impartial investigations.<sup>3</sup> New Zealand fulfils this obligation through the Act, which establishes the Commission as a commission of inquiry and expressly requires us to act independently in performing our statutory functions.

Under the Act, all the evidence gathered during an investigation has extensive legal protection from disclosure. Further, none of our published findings, recommendations, or reports can be used in legal proceedings.

The Commission's independence and protection of evidence mean people can speak to us freely about what happened in an accident without fear of prosecution.

## Our people

We are a small independent Crown entity, fully funded by the Crown

The Commission is a small independent Crown entity, fully funded by the Crown. Members have two roles: as Commissioners, to determine the circumstances and causes of the accidents and incidents before them; as the Board of the Transport Accident Investigation Commission, to fulfil the requirements of the Crown Entities Act 2004.

The Commission sits two days a month from February through to December each year. Usually at least 75 per cent of the Commission's time is devoted to hearing cases, with the remaining time for board matters.

The Commission had four members at 30 June 2021

The Governor-General appoints the members of the Commission. At 30 June 2021, there were four Commissioners:

- **Ms Jane Meares** Chief Commissioner (first appointed a Commissioner in February 2015, and Chief Commissioner in November 2016; term expires in November 2026).

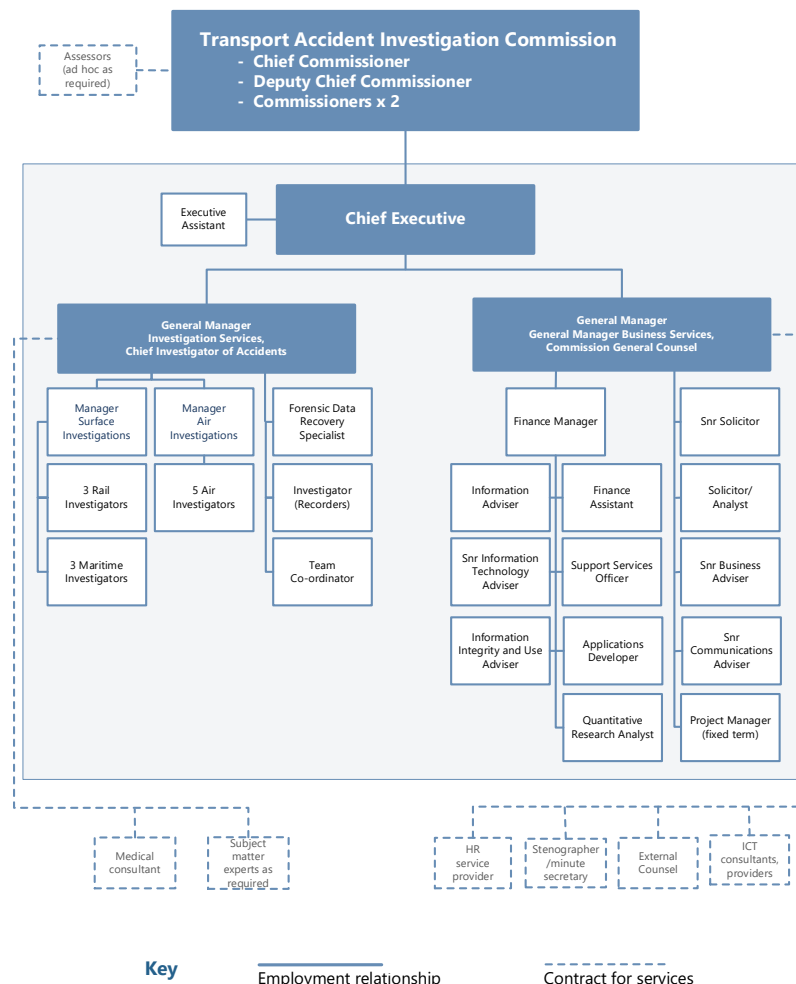
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<sup>3</sup> Paragraph 5.4, Annex 13 to the Convention on International Civil Aviation; Chapter 16 International Maritime Organization Casualty Investigation Code

- **Mr Stephen Davies Howard** Deputy Chief Commissioner (first appointed a Commissioner in August 2015, and appointed Deputy Chief Commissioner in November 2018; term expires in October 2023).
- **Mr Richard Marchant** Commissioner (appointed in November 2016; term expires in June 2022).
- **Ms Paula Rose QSO** Commissioner (appointed in May 2017; term expires in June 2024).

A Chief Executive and 31 staff support the Commissioners

A small organisation supports the Commissioners, who employ a Chief Executive. At 30 June 2021, the Chief Executive had an establishment of 31 staff. Six roles were vacant, although appointments had been made to three. Another two are new roles and requirements were being finalised as part of a wider organisational change programme (see section beginning page 28).



**Figure 1: Organisation chart at 30 June 2021**

## Our work

### Ā mātou mahi

#### ***Established procedures: investigation and inquiry***

A statutorily prescribed notification process initiates our work

A statutorily prescribed notification process initiates the Commission's work.

The Commission opens an inquiry when the notified occurrence meets certain thresholds and we believe the circumstances have – or are likely to have – significant implications for transport safety; or an inquiry could allow the Commission to make findings or recommendations to improve transport safety.

A range of considerations guides the decision to open an inquiry.

Once an inquiry is opened, the Commission's work follows an established procedure of formal fact-finding inquiry

Once the threshold to open an inquiry is met, the Commission follows an established procedure of formal fact-finding inquiry.

Key features of the inquiry process are:

- gathering facts through investigation and analysis
- forming preliminary findings as to circumstances and cause(s)
- consulting with those directly affected by the inquiry's initial findings
- considering submissions from affected persons (in the interests of natural justice)
- determining circumstances and cause(s) with findings, and making recommendations for remedial action where appropriate
- publishing findings and recommendations.

The general areas of our work are activation, investigation, inquiry, and communication. Each of these is covered in more detail below.

The Commission's capacity is an average of 30 open cases at any time, with tolerance for substantial cases of procedural or technical complexity.

## Notifications: activating an inquiry

Notifications come mainly from transport sector regulators

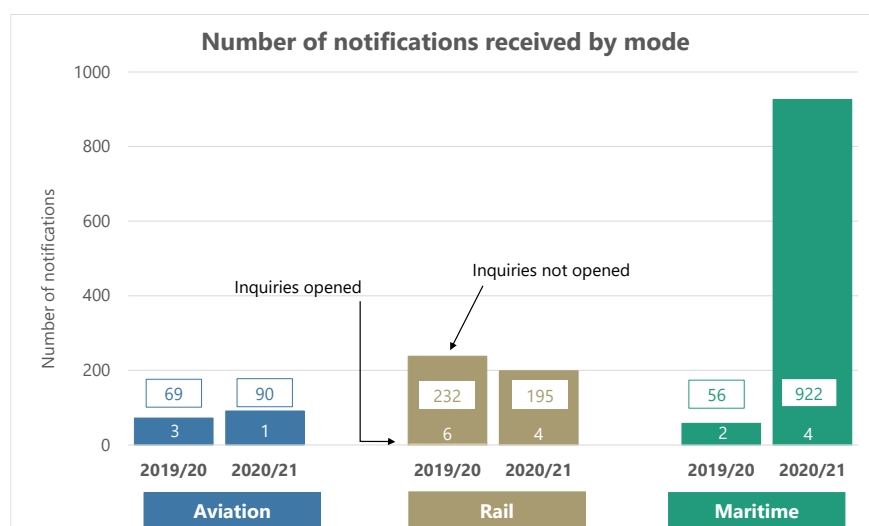
The Commission receives notifications of certain incidents and accidents in the aviation, rail, and maritime transport modes from various sources. Most notifications are from the modal regulators. We categorise each notification against one or more event types. The Commission monitors trends and considers them when deciding whether to open an inquiry into a particular occurrence. The modal reviews (beginning page 47) give data on the most frequent notifications, according to event type.

From the approximately 1,200 notifications we received, we opened nine inquiries

During 2020/21, we received 1,216 notifications of accidents and incidents, compared with 368 in 2019/20.<sup>4 5</sup> Two reasons make comparison between the two years invalid.

- The effect of COVID-19 resulted in the total number of notifications in 2019/20 being lower than usual.
- The reporting of maritime notifications changed, significantly increasing the number we received. The section on activity in the maritime mode, beginning on page 71, has more detail.

The Commission opened nine inquiries in 2020/21, less than one per cent of the notifications received. The graph below shows the number of notifications received and inquiries opened by mode, compared with 2019/20.



**Figure 2: Numbers of notifications received by mode**

<sup>4</sup> The terms 'incident' and 'accident' are defined in the legislation covering each of the modes. Here, a generalised definition is used. Accidents are events where injury, death, or serious damage occurred, or could have occurred. An incident is an occurrence other than an accident.

<sup>5</sup> The number of notifications may vary slightly from that reported previously. This is the result of periodic corrections to entries in the notifications database.

## Investigations: establishing facts and circumstances

Evidence is gathered and analysed; the Commission looks beyond immediate cause to wider systemic issues

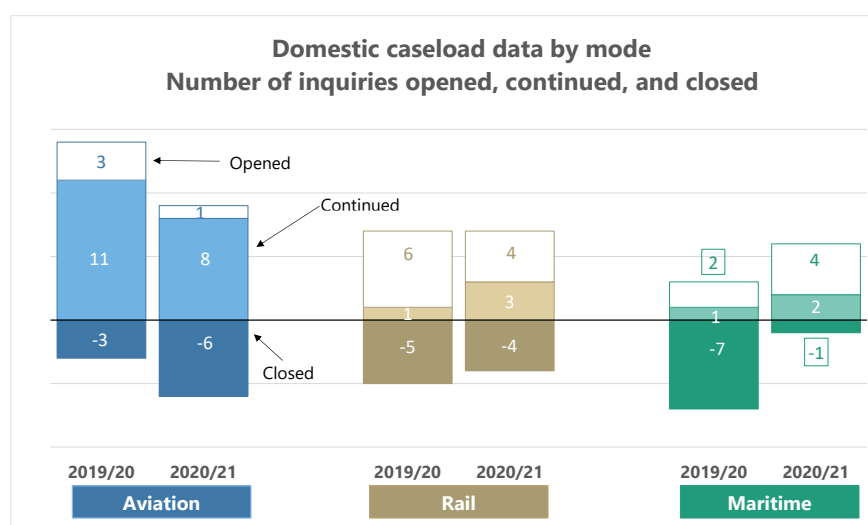
The Commission's investigators are authorised to use the Commission's legal powers to protect and gather evidence. Evidence collection is broad to support the many routes that an investigation could follow. Evidence falls into four broad categories: people, machine, environment, and mission.

Analysis involves sorting, corroborating, and linking evidence and facts to prove, disprove and weigh competing theories. The chain of events leading to an incident or accident may appear to be clear, particularly those facts and factors closest to the occurrence. However, incidents and accidents rarely have a single cause; contributing factors are often complex and reach beyond the accident vehicle and its operation to wider systemic issues.

33 domestic inquiries were active over the year; and nine overseas inquiries assisted

As well as opening nine inquiries, the Commission maintained progress on 13 continuing inquiries and closed another eleven.

In addition to domestic inquiries, the Commission assisted nine investigations conducted by overseas investigation agencies. Refer to page 16 for our obligations to undertake this work.



**Figure 3: Domestic inquiries opened, continued, and closed by mode**



## ***Inquiries: testing evidence and identifying safety issues***

The inquiry process has three distinct elements: consideration of draft reports, consideration of submissions, and making recommendations

The Commission's inquiry process has three distinct elements. The first is consideration of the analysis of evidence and draft reports prepared by the Investigator-in-Charge. The Commissioners rigorously test the hypotheses and supporting evidence, and direct further investigation if necessary.

Sometimes draft reports state or imply that the conduct of a specified person has contributed to the accident or incident. In these cases, the Commission must<sup>6</sup> release the report to interested persons<sup>7</sup> and allow them to comment on, or refute, those findings. The Commission generally allows 21 days for submissions.

The second element is consideration of final draft reports along with written submissions from the interested persons. The Commission may hear oral submissions at this time.

The third element is determining recommendations. Recommendations highlight the most serious safety issues identified in an inquiry and ask for something to be done. The Commission may issue recommendations at any time during an inquiry, although usually they are issued along with the published report.

In 2020/21 the Commission sat 11 times

In 2020/21, the Commission sat for the scheduled number of meetings (11).

Over 2020/21, the Commission received 27 inquiry reports (compared with 37 in 2019/20), approved 11 (14) for consultation and 10 (14) for publication. In addition, the Commission issued 11 (11) recommendations and closed eight (26).

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<sup>6</sup> Transport Accident Investigation Commission Act 1990, Part 2, s14 (5)

<sup>7</sup> 'Interested persons' are persons likely to be affected by the report's findings and include the operator, manufacturer of the vehicle or vessel, engine manufacturer, involved state agencies and representatives of injured persons (Transport Accident Investigation Commission Act 1990, Part 2, s9)

Complex inquiries can result in an extended inquiry process

If an inquiry is technically complex, the inquiry process can be extended. The Commission may wish to call for further expert advice, receive additional submissions from interested persons, or extend lines of inquiry given the nature of the submissions received.

In 2020/21, the Commission closed five inquiries that extended beyond 440 working days (two years) – refer to the section on the aviation year in review beginning on page 53.

The Commission is mindful of its communications with families and next-of-kin

The Commission aims to keep survivors and families appropriately informed. We provide regular, planned updates about how the inquiry is progressing through its various stages; however, our legislation constrains us from describing lines of inquiry or findings and recommendations before we have published inquiry reports.

For those wanting to know what happened to their loved ones, the legal restrictions on what we can say is understandably frustrating. From the beginning of an inquiry, we try to clearly communicate the restrictions on what we can say.

If requested, and where possible, Commission members or staff meet with next-of-kin and/or other family members to inform them of progress of an inquiry. These meetings are also opportunities for us to learn how we can improve our Families Programme.

## Knowledge transfer: communicating core inquiry information

Identifying safety issues is the core work of the inquiry process

The core work of the inquiry process is to identify safety issues – factors that either have contributed to an accident or are unsafe conditions. Identifying safety issues helps establish common circumstances and causes in repeated types of occurrences.

Findings are the Commission's conclusions

Findings are the Commission's conclusions after examining the facts of an occurrence. The number of findings loosely equates to the complexity of both the occurrence and the inquiry.

Recommendations are issued when action is required to remedy safety issues

The Commission may recommend an operator, regulator, or other transport sector participant acts to remedy an identified safety issue.<sup>8</sup> Ideally, action would have been taken during the investigation, but sometimes safety issues remain unresolved at the end of an inquiry. All safety actions help avoid similar accidents and incidents from recurring.

The Commission releases interim reports when public interest in an event is high, or to communicate important information about the circumstances of an accident. We issue urgent recommendations for safety issues requiring immediate action.

**Table 1: Recommendations issued and closed<sup>9</sup>**

	2020/2021 Recommendations			2019/20 Recommendations		
	Open 30-Jun-21	Issued	Closed	Open 30-Jun-20	Issued	Closed
<b>Aviation</b>	76	5	0	71	3	7
<b>Rail</b>	26	1	3	28	1	4
<b>Maritime</b>	93	5	5	93	7	15
<b>Total</b>	<b>195</b>	<b>11</b>	<b>8</b>	<b>192</b>	<b>11</b>	<b>26</b>

Note: this is the number of recommendations issued during the year regardless of which year the associated inquiry report was published.

<sup>8</sup> See Annex 13, Convention on International Civil Aviation Aircraft Accident and Incident Investigation, (10<sup>th</sup> Ed.), p 1-2

<sup>9</sup> Note that figures in this table may vary slightly from those previously reported. Changes in data can occur because the status of recommendations as at 30 June may be retrospectively changed. For example, a recommendation that is 'draft' as at 30 June may later have its status changed to 'open'; or an 'open' recommendation may be withdrawn).

Reports  
communicate in  
detail the outcome of  
inquiries

The Commission’s investigation and inquiry processes culminate in a written report. The report gives a detailed account of the accident or incident, and the analysis to determine the circumstances and causes. It contains core messages about what happened, and about what action has been taken or is still needed to avoid a recurrence.

In 2020/21, we  
published 10 final  
reports for 11 closed  
inquiries

In 2020/21, we published 10 final reports for the 11 inquiries closed during the year (that is, one of the reports covered two inquiries). Four of these inquiries involved fatalities and/or serious injuries; in total, two people died in the accidents.

The number of inquiries closed for 2020/21 is lower than for the previous year. Table 2 shows the breakdown by mode.

**Table 2: Number of inquiries closed**

2020/21				2019/20			
Aviation	Rail	Maritime	Total	Aviation	Rail	Maritime	Total
6	4	1	11	3	5	7	15

The Commission issued no interim reports in 2020/21.

## ***The Watchlist: communicating high-priority safety issues***

The Watchlist communicates the highest-priority safety issues

The Watchlist presents the Commission's highest-priority safety issues. We consider the sector should be paying particular attention to these matters. The items on the Watchlist relate to:

- impairment from drugs or alcohol of people in safety-critical roles
- encouraging the use of technologies to track aircraft, ships and boats, and rail vehicles
- the need for recreational boat users to demonstrate they understand and practise safe boating behaviour before getting out on the water
- safety for pedestrians and vehicles crossing rail tracks
- New Zealand's rate of 'mast-bumping' accidents involving Robinson helicopters
- navigation in pilotage waters.

Each year, the Commission reviews and updates the Watchlist. In late 2020, we published to our website updates to five of the six Watchlist items, completing the 2019/20 review.

The 2020/21 review process began in April 2021 and we expect to have published updates for all six items by the end of 2021. A seventh item is being developed.

## International engagement

The Commission is part of a global network of transport accident investigation bodies

The Commission is part of a global network of transport accident investigation bodies prepared to meet their States' obligations to conduct investigations consistent with international requirements (the Convention on International Civil Aviation, or ICAO Convention; and the International Maritime Organization's code on safety investigation).

In accordance with these Conventions, the Commission participates in inquiries by international peer organisations into events in overseas jurisdictions. This occurs when events involve New Zealand registered or manufactured vehicles or components, or a significant number of New Zealanders have died as the result of an accident.

The Commission assisted nine overseas inquiries in 2020/21

During the year, the Commission assisted nine overseas inquiries under New Zealand's obligations as a signatory to the ICAO Convention.

Assistance usually takes the form of co-ordinating information flows, but we can also have more in-depth involvement.

We are involved with the investigation into the loss of the vessel *Gulf Livestock 1*

In September 2020, the vessel *Gulf Livestock 1* was lost *en route* to China. There were 43 crew members on board, including two New Zealand citizens. Three crew members were recovered; two survived and 40 remain unaccounted for.

Panama, as the Flag State, is investigating the loss of the vessel. It invited New Zealand to participate as a substantially Interested State after we notified them of our interest. Accordingly, we opened an overseas assist inquiry under Section 8 (e) of the Transport Accident Investigation Commission Act ("[t]o cooperate and coordinate with other accident investigation organisations overseas, including taking evidence on their behalf").

In October 2020, the Chief Commissioner and TAIC managers met online with the Australian Transport Safety Board's Chief Commissioner and management. The focus of discussion was our respective agency responses to the loss of the *Gulf Livestock 1*. Of common interest was the loss of nationals on board the vessel and the ensuing public interest from families' perspectives.

We participate in, and contribute to, the international community of investigation agencies in various ways

Under Annex 13 to the ICAO Convention, the Commission is obliged to assist another signatory in investigating an incident or accident if that other signatory does not have the expertise or resources. We may also assist outside ICAO Convention obligations.

For example, over the year we assisted the UK's Marine Accident Investigation Branch (MAIB) during the evidence-gathering phase of its investigation into an occupational accident that occurred in May 2021. MAIB's investigation was hampered by the ship's port schedule and COVID-19 travel restrictions. TAIC assistance enabled interview evidence to be obtained while the ship was in Auckland.

In addition, we actively participate in international forums such as the International Transportation Safety Association (ITSA) and the Marine Accident Investigators' International Forum (MAIIF).

International engagement is vital for building resilience

International engagement enables inter-agency collaboration and helps build resilience against the significant pressures we would face should a major accident happen in New Zealand. In such a situation, the Commission would have to draw on the assistance of international colleagues. Inter-operability with other nations would be critical to a rapid and effective response.

COVID-19 has curtailed some international engagement

The consequences of COVID-19 continue to affect some of our international engagement, for example, ITSA was again held online this year. Travel restrictions have been more disruptive for the training of our investigators. See section 'recruitment and training' on page 35.

# Our impact

## Ā mātou pānga

### ***Recommendations: communicating safety issues***

Recommendations are part of the Knowledge Transfer System, informing transport regulators, the industry, and users about safety issues

Recommendations are a vital part of the Commission's communication of inquiry findings. They are signals about safety issues in the transport system that could contribute to future accidents or incidents. These signals can be useful to others in the transport system too, not just the recipients of recommendations. Anyone can use the information to create conditions within the system that help avoid similar accidents in the future.

Recommendations do not prescribe solutions or when they should be implemented. Recipients assess how to respond by considering their competing priorities and resource constraints, and the balance they must strike between risk and cost. Regulators must also consider options for implementation within the context of their intervention logic, which can change over time.

The Commission directs most recommendations to regulators rather than operators. Regulators are better able to influence and act on the transport system, which is highly complex. Assessing and implementing a recommendation can take a long time, especially if it requires legislative change.

Although the Commission's recommendations are not mandatory, international treaty sets expectations about responding to them

Our recommendations are not mandatory. Nevertheless, there are international standards for responding to them.

The Transport Accident Investigation Act 1990 (the Act) is partly derived from international treaties, which anticipate prompt response. Paragraph 6.10 of Annex 13 to the Convention on International Civil Aviation<sup>10</sup> requires the State receiving a recommendation to respond to the issuing State within 90 days. It must inform the issuing State what preventative action it is taking or considering, or give reasons if it declines to act.

In addition, Annex 13 recommends that States issuing recommendations should record responses; and the States receiving a recommendation should monitor the progress of action taken in response to it.

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<sup>10</sup> See Annex 13 to the Convention on International Civil Aviation Aircraft Accident and Incident Investigation, (11<sup>th</sup> Ed.), chapter 6



Our legislation is silent on oversight of recommendations, but transport sector regulators report on progress in implementing them

The Act incorporates into New Zealand's domestic law most of the standards and recommended practices for both aviation and maritime accident investigation. It is, however, silent on the procedures for overseeing recommendations. As a matter of good practice, the Commission records the responses to the recommendations we issue,<sup>11</sup> but we have no powers to require recipients to report progress in implementation.

In practice, government agencies have actively submitted evidence to the Commission if they (the recipients) consider they have implemented a recommendation. The transport sector regulators (Civil Aviation Authority, Maritime NZ, and Waka Kotahi NZ Transport Agency) regularly report to the Minister of Transport on progress in implementing the Commission's recommendations.

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<sup>11</sup> Paragraph 6.11, Annex 13

## Case studies: demonstrating effectiveness

The Commission can influence the transport system, but we cannot improve transport safety on our own

The Government's transport priorities for 2020/21 were:<sup>12</sup>

- delivering a transport system that is safe and protects people from transport-related injuries
- improving the resilience and security of the transport system to be able to respond to unplanned events or threats
- transitioning to net carbon zero carbon emissions
- supporting economic activity via local, regional, and international connections
- investing in innovation and technology solutions to create a modern and responsive transport system that offers choice, alongside promoting safety, environmental, and resilience outcomes.

The Commission's vision is *No repeat accidents – ever!* Our principal goal is to protect people from transport-related injuries and death. Thus, our most significant support for the Government's expectations is contributing to a safe transport system. We also contribute to economic prosperity by strengthening trust in the safety of transport operations.

Direct measurement of the Commission's influence on sector outcomes is difficult. Our recommendations are not mandatory – we make information available to others so they can act.

In addition, there is often good reason for sector responses to be lengthy. The Commission investigates occurrences that involve large systems tightly coupled with other systems. So achieving change in behaviour or modifying processes often requires substantive change programmes, which takes time. Depending on the transport systems involved and what the Commission is recommending – for example, regulatory change – implementation could take years.

We gauge our effectiveness mainly through case studies

Given the complexities of the transport system, and the non-mandatory nature of our recommendations, we demonstrate our influence on safety outcomes mainly through case studies.

The case studies on the following pages show how the Commission's work in identifying safety issues, together with a responsive sector, can achieve a safer transport system.

**Note: The case studies contain short summaries of inquiries; the full reports are the official record of the Commission's findings and recommendations.**

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<sup>12</sup> Minister of Transport's Letter of Expectations for 2020/21

## **Aviation case study: Trent 1000 engines**

### **The occurrence: engine abnormalities in Trent engines**

On two concurrent days in December 2017, similar incidents occurred in international flights during their climb from Auckland Airport. The two Air New Zealand aeroplanes were fitted with twin Rolls-Royce Trent 1000 engines. Both flights returned to Auckland without further incident.

The Commission opened inquiries into both incidents.<sup>13</sup> We found that a turbine blade in the intermediate-pressure turbine (IPT) module had fractured and separated from the IPT disc. Corrosion fatigue cracking was indicated.

This was a known problem with the IPT in the Trent 1000 engines, which are used in fleets all around the world; but our inquiries were the first opened by a State. According to Rolls-Royce there had been six in-flight intermediate pressure turbine blade separations in Trent 1000 engines worldwide before the New Zealand incidents. All eight incidents occurred during the take-off or climb phases of flight when engines are subjected to the highest stress.

To correct the corrosion fatigue issue, the engine manufacturer published a service bulletin to replace all affected IPT blades with ones manufactured from a different material and fully coated for additional corrosion protection. The modifications could be carried out only at approved overhaul facilities. Due to the large number of engines that needed modification, the engine manufacturer instituted a risk mitigation programme called the Corrosion Fatigue Lifting (CFL) model. The model predicted the crack propagation in blades and the time (measured in engine cycles) when the relevant engines had to be removed from the aeroplane for modification. The model was also modified to take into account different operating environments.

In the New Zealand incidents, however, the problem occurred significantly earlier than predicted by the manufacturer's model.

### **The Commission's work: what we said**

As part of our inquiry, the investigation team collected and analysed numerous pieces of evidence, conducted interviews, obtained specialist examinations of engine components, analysed flight data, and reviewed maintenance records and other documentation. We had various meetings with the operator, airworthiness managers with the Civil Aviation Authority (CAA) and representatives of the engine manufacturer. In May 2018, we published an interim report, which identified two safety issues:

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<sup>13</sup> AO-2017-009: Boeing 787-9, Engine abnormality, Auckland, 5 December 2017; and AO-2017-010: Boeing 787-9, engine abnormality, Auckland, 6 December 2017

- without operator-specific offsets being applied (reductions in the number of cycles before the engine is modified), the Control Fatigue Lining model cannot reliably predict the point of blade failure, and thus cannot ensure that an engine with unmodified IPT blades will be removed from service well before a blade fails
- should an engine need to be shut down in flight, the remaining engine must be operated at a higher thrust level. If the remaining engine has unmodified IPT blades, there is an increased risk of that engine failing, which could mean an aircraft on an Extended Diversion Time Operations flight<sup>14</sup> cannot reach its designated alternative aerodrome.

### **The sector response: what happened**

The Commission's interim report contributed to safety actions being taken.

- The manufacturer introduced a CFL offset for the operator's fleet that provided an increased level of safety tolerance.
- The European Aviation Safety Agency (EASA) issued an emergency airworthiness directive requiring the 'de-pairing' of high-life engines, independently of the CFL model predictions. To de-pair is to ensure that two engines with similar cycle counts are not fitted to the same aeroplane. This action further reduced the risk of a double in-flight engine shutdown.
- The US Federal Aviation Authority (FAA) issued an airworthiness directive stating the single-engine diversion time must not exceed 140 minutes. The directive was primarily in response to an earlier issue arising from cracking in the compressor blades near the front of the engine; but, in effect, that action also addressed the safety issue the Commission raised – of a potential dual in-flight engine shut-down for an aeroplane equipped with engines that have unmodified IPT blades.

Although the Commission had consulted on draft recommendations, the safety actions met the intent of those recommendations. Therefore, no final recommendations were issued. The Commission continued several further lines of inquiry. In late 2020, we resolved to close the inquiries, being satisfied that the interim report had identified the salient safety issues in these occurrences.

### **Impact: what difference have we made**

At the time the Commission resolved to close the inquiries, 99 per cent of the world's flying fleet had had the affected turbine blades replaced.<sup>15</sup>

The New Zealand incidents and the attention the Commission's inquiries brought to the identified safety issues had a global impact. The safety actions that this inquiry contributed to have significantly improved the safety of these engines.

<sup>14</sup> A flight by a twin-engine aeroplane operating more than 60 minutes from a suitable alternative aerodrome.

<sup>15</sup> <https://www.rolls-royce.com/products-and-services/civil-aerospace/airlines/trent-1000-updates-hub.aspx#section-copy-of-modules3>

## **Maritime case study:**

### **Improved safety for large passenger vessels in New Zealand**

#### **Occurrence 1: passenger ship contact with rock, Tory Channel**

In early 2016, a passenger ship was *en route* to Picton, with 652 passengers and 394 crew on board.<sup>16</sup> A harbour pilot boarded the ship outside the entrance to Tory Channel. The master and pilot discussed the passage plan through to Picton, in particular the strong currents in the tight turn required on entry to Tory Channel. The master and pilot miscommunicated and had different understandings of how the turn would be conducted.

As a result, the turn was initiated late, and the ship contacted Wheki Rock close to the northern shore. The incident caused minor damage to the hull and damage to one propeller. Nobody was injured.

#### **The Commission's work: what we said**

One of the safety issues we identified was about pilots maintaining currency with Port Marlborough New Zealand's Limited Pilot Training and Proficiency Plan. The Commission considered pilots were at risk of not being sufficiently current to pilot large ships through Tory Channel.

The port company had allowed transits of Tory Channel on a small pilot launch to count towards the requirements of the plan; but using the pilot launch did not meet the intent of the plan.

In 2016, the Commission recommended that the Director of Maritime NZ review Port Marlborough New Zealand Limited's Port Safety Management System and ensure that its procedures meet the requirements of its Pilot Training and Proficiency Plan; and that the plan meets the intent of Maritime Rules Part 90: Pilotage.

#### **The sector response: what happened**

Maritime NZ accepted the recommendation and worked with the Marlborough District Council to implement it. The Council amended its Pilot Training and Proficiency Plan to clarify 'qualifying transits' for the purpose of pilot currency, so that it meets the intent of the Maritime Rules.

In addition, Maritime NZ, through the Port and Harbour Marine Safety Code (Code) Steering Group, circulated the recommendation to other regional councils. The Marlborough District Council harbour master presented on lessons learned from this incident to the 2018 Code Forum.

#### **Occurrence 2: grounding of a passenger vessel in Milford Sound**

In 2017, a passenger cruise ship with 102 passengers and crew on board, along with a pilot, grounded as it was entering Milford Sound.<sup>17</sup> It was dark, and the bridge team was using the ship's electronic navigation systems to

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<sup>16</sup> MO-2016-202: Passenger ship, *Azamara Quest*, contact with Wheki Rock, Tory Channel, 27 January 2016

<sup>17</sup> MO-2017-202: Passenger vessel *L'Austral*, grounding, Milford Sound, Fiordland, 9 February 2017

conduct the pilotage. The pilot lost awareness of exactly where the ship was; the ship deviated from the planned track and struck a stony bank. The vessel suffered damage on one side, but the hull was not breached and nobody on board was injured.

#### **The Commission's work: what we said**

The Commission found that the bridge team were not making full use of the ship's electronic navigation systems.

We considered there were measures the regional council could take to better manage the risks to navigation safety within Fiordland. These included: the provision of more navigation aids, better training and currency for pilots in blind pilotage techniques and prohibiting night navigation of certain passages if necessary.

We recommended that the Chief Executive of Environment Southland (which manages navigational safety within the Fiordland region) review the risk assessment for safe navigation within Fiordland and mitigate the risks of large cruise ships operating in similar circumstances to this accident.

#### **The sector response: what happened**

In response to the recommendation, Environment Southland took the following safety actions:

- Improved training for local pilots, including cruise ship simulator training for pilots, and introduced a more rigorous pre-entry checklist.
- Restricted cruise ship access to Fiordland between the hours of sunset and sunrise.
- Limited the number of cruise ships that can enter any waterway, passage, fiord, bay or inlet to two per day.

#### **Impact: what difference have we made**

Passenger ships carry large numbers of passengers and crew into remote, and often cold, waters. Neither of these incidents resulted in major damage or loss of life. But the consequences of similar occurrences are potentially catastrophic. Actions taken as a result of these inquiries have reduced the likelihood of a major accident.

## **Rail case study:**

### **Improved safety for passengers on trains**

#### **The occurrence: derailment of a passenger train**

A passenger train derailed as it was entering Wellington Station.<sup>18</sup> Four of the 315 passengers on board the train received minor injuries.

Part of the train's braking system had fallen onto the track and jammed against the underslung machinery with enough force that the train derailed.

#### **The Commission's work: what we said**

The Commission found that the component fell because, during maintenance procedures, staff had omitted to fit retaining split pins to bolts that held the component in place. Staff had no specific instructions to follow and against which to record progress. When a shift change interrupted the task of fitting the brake component, the omission of fitting the retaining split pins was easily missed.

We made an urgent recommendation to the Chief Executive of KiwiRail to address safety issues with the way maintenance was conducted in its Wellington maintenance depot, and other maintenance depots under its control. The Commission also recommended that the Chief Executive of the NZ Transport Agency monitor the progress of KiwiRail's response.

#### **The sector response: what happened**

KiwiRail accepted the recommendation and has now:

- amended maintenance practices so that they are in accordance with ISO 9001 certified management system
- put in place a stringent engineering change process
- reviewed instructions for scheduled inspections
- made systemic changes with regards to identifying safety-critical components
- amended maintenance processes so that work on safety-critical components is approved by someone other than the person who carried out the work
- improved recording of maintenance work.

#### **Impact: what difference have we made**

The improved processes means omissions and errors when maintenance work is carried out are less likely. Accidents are less likely to happen, and passengers and rail workers are safer.

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<sup>18</sup> RO-2013-104: Derailment of metro passenger Train 8219 Wellington, 20 May 2013

# Non-financial reporting

## Ripoata pūtea kore

### Context: our operating environment

To remain credible, we must be able to respond to the challenges of a rapidly changing digital environment

The Commission's strategic focus for the period covered by the *Statement of Intent 2018-2022* is our capacity and capability to meet the challenge of an operating environment that is undergoing rapid technological change.

We must have all the relevant evidence to make credible determinations. More and more, the data and information we use in an investigation is digital, held in large data sets, and might not be part of the physical evidence found at the site of an occurrence. An example is cloud-based software and data used in navigation systems, or the technology used in unmanned transport systems.

Building resilience is key to achieving our strategic objectives

The objectives set out in the *Statement of Intent 2018-2022* are designed to strengthen resilience. Resilience means the Commission maintains effectiveness in the face of technological change, or in responding to shocks such as a major accident or a natural disaster.



## Our strategic objectives

We aim to improve transport safety through credible investigations, and transferring to others the knowledge we gain from inquiries

The Commission's overarching aspirational goal – our vision – is for **No repeat accidents – ever!** We aim to improve transport safety through credible investigations and transferring our acquired knowledge to others.

We have two strategic objectives:

<i>Occurrences are independently investigated and the facts uncovered</i>	This objective relates to our primary statutory function: investigation of accidents and incidents. It is about making sure our output – accident investigation and reporting – is of high quality: thorough, rigorous and credible.
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<i>Participants in the transport sector know about safety issues</i>	This objective is about transferring to others the knowledge we gain from our inquiries, so they have the information they need to understand and manage system risks.
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Our strategy for achieving our objectives has three strands: organisational performance (what we do), impact (how we make a difference), and organisational capability (how we sustain ourselves into the future).

<i>Organisational performance</i>	We generate information and insight about transport safety through rigorous, evidence-based, and properly focused investigations.
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<i>Making a difference</i>	We use information and insight to add to bodies of knowledge about transport safety and influence others in the transport system to improve safety, nationally and internationally.
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<i>Organisational health and capability</i>	We build and maintain resilience to environmental disruptions and external shocks.
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Our strategy and objectives contribute to the Transport Outcomes Framework, specifically healthy and safe people, and resilience and security. The Commission works for systemic improvements in transport safety where users *are* safe, and *feel* safe, supporting community wellbeing now and into the future.

The tables beginning on page 30 describe progress in achieving strategic objectives.

## Achievements in 2020/21

### We have a new Chief Executive...

A significant milestone occurred in June 2021 when TAIC's Chief Executive, Lois Hutchinson retired after 16 years in the role. Ms Hutchinson made a significant contribution to the organisation, building it into an authoritative organisation with a respected voice on transport safety.

TAIC's new Chief Executive, Martin Sawyers, took over the role in June 2021. Mr Sawyers comes to TAIC from being Chief Executive and Registrar of the Plumbers, Gasfitters and Drainlayers Board. He is a lawyer and brings many years of management and governance experience to TAIC.

The Board's succession planning resulted in a smooth transition and a well-planned transfer of institutional knowledge to Mr Sawyers.

### ...and a new Chief Investigator of Accidents

In late 2020, Harald Hendel was appointed to the key role of Chief Investigator of Accidents. Mr Hendel has a Masters Degree (Honours) of Industrial Technology, and has had nearly 30 years working with Airbus in Germany and France, including senior roles covering risk management, flight operations and safety analysis. He also brings to TAIC strong connections to international aviation networks.

### Funding is being applied to strengthening IT and human capital

The Commission received additional baseline funding from 1 July 2020, increasing from \$5.52 million in 2019/20 to \$7.30 million in 2020/21. The purpose of the funding bid is to support our strategic direction with its focus on knowledge transfer and organisational resilience, and to relieve cost pressures.

Knowledge transfer is about capturing and organising data and information, and creating and distributing information and knowledge to improve the safety of the transport system. Physical assets, people, and processes work together to enable knowledge transfer.

The Commission's focus is on the digital aspects of our knowledge transfer. But this is more than IT assets – it includes the people who provide supporting capability and those who can leverage the opportunities for improved organisational performance.

A project board, which includes external expertise, is overseeing application of the funding

The overall objective of the funding is digital transformation of the organisation via a Knowledge Transfer System (KTS). Specific objectives are:

- Data and information systems support our work, including data scaling demands.
- We can manage and interrogate technology and digital data used in aircraft, trains, vessels, and transport infrastructure.
- We can undertake system risk trends analysis to target our case selection to the highest safety risks.
- We have the capability to respond to legal challenges to evidence and access to technology and data held by third parties.

To deliver the KTS, a formal project management structure was set up as soon as the extra funding became available (1 July 2020). A project board, which includes external expertise, oversees the project team so the objectives are achieved on time and to budget.

At June 2021, the project was progressing well, although there were some timing delays. None is expected to have a serious effect on the project. The project board meets monthly to ensure progress is maintained and any problems resolved.

## Progress towards strategic objectives

### Occurrences are independently investigated and the facts uncovered

Indicator	The Commission complies with international standards of safety investigation
<b>Description</b>	<p>The Commission internally audits aspects of 7 investigations each year and remedies any deficiencies found.</p> <p>This measure represents the Commission's internal continuous improvement process. It involves investigation managers assessing aspects of sampled investigations against a standard.</p>
<b>Progress</b>	<p>No formal audits were undertaken over 2020/21. During this period, efforts have been directed to advancing the KTS.</p> <p>In addition, we have been putting resource into ensuring investigation processes are documented and, although based on international standards, tailored for our circumstances. This task is one of the steps being taken to manage the situation at 30 June 2021 of a relatively low proportion of investigators who we would consider qualified to be an Investigator-in-Charge (refer section beginning page 33). Day-to-day management and supervision mean all investigations are overseen.</p> <p>An International Maritime Organization (IMO) audit is scheduled for 2022. It is a comprehensive and objective assessment of how effectively New Zealand administers and implements mandatory IMO instruments, including accident investigation. COVID-19 travel restrictions mean it might be a virtual audit.</p>

Indicator	All Commission inquiries follow proper process
<b>Description</b>	<p>There are no:</p> <ul style="list-style-type: none"> <li>judicial reviews of Commission inquiries that identify process issues*, or</li> <li>successful challenges to an Ombudsman, the Privacy Commissioner or the Human Rights Commission of an administrative decision or action.</li> </ul>
<b>Progress</b>	<p>There were no judicial reviews of Commission inquiries that identify process issues or successful challenges to an Ombudsman, the Privacy Commissioner or the Human Rights Commission of an administrative decision or action.</p>
<b>*Performance measure for the appropriation for this output class.</b>	

## Participants in the transport system know about safety issues

Indicator	The Commission disseminates information about its most pressing concerns
Description	<p>The Watchlist is reviewed and published/updated as required by 30 June 2021.</p> <p>The Watchlist draws the attention of transport sector participants (regulators, operators, the Government and users) to transport-related concerns of high social, economic or environmental risk; and systemic transport safety risks. The Watchlist is based on trends and insights the Commission identifies from its unique role in the transport sector.</p>
Progress	The process for the 2020/21 review began in April 2021. We expect to have published updates for all six existing items by the end of 2021. A seventh item is being developed.

Indicator	The Commission's inquiries contribute to improvements in transport safety
Description	In our annual report we will include case studies of changes to the transport system made in response to our inquiries to show they have contributed to improved safety.
Progress	See page 20.

## Organisational health and capability

Indicator	Workforce Plan implemented
<b>Description</b>	<p>The workforce plan will be implemented over the two remaining years of the current <i>Statement of Intent 2018-2022</i>.</p> <p>In 2020/21 we will acquire the expertise to complete planning processes, and then begin implementing the Knowledge Transfer System. We expect in the short term that consultants or contractors may be required for a fixed period followed by permanent employees to provide the ongoing skills needed.</p>
<b>Progress</b>	<p>The workforce plan is now part of ongoing business. Findings from an independent review in 2017/18 form the basis of the plan. The review assessed the skills needed to meet the demands of a data-driven and technologically changing environment. It considered how we could most effectively procure resources to fill gaps in capability (whether by employment or contract services, for example).</p> <p>We could action the review's recommendations only when resources were available. As soon as new funding was secured (that is, from 1 July 2020), we began building a project team to implement the Knowledge Transfer System (KTS). At 30 June 2021, the team comprised a project manager, business analyst, research consultant, and change manager</p> <p>The funding for the KTS allows for five new roles, three of which are filled. Part of the scope of the KTS project team is to specify the skill requirements for the remaining two KTS-funded roles to be filled, a quantitative analyst and an applications developer.</p>

Indicator	Complete development of integrated strategies and plans for data, communications, and research
<b>Description</b>	<p>Three individual but integrated strategies, with associated plans, are developed.</p> <p>The three strategies are the data strategy/IMCT (information management and communications technology) plan, the communications strategy, and the research strategy. We finalised the communications strategy in May 2020.</p> <p>In 2020/21, we will complete the development of a data strategy/IMCT plan.</p>
<b>Progress</b>	<p>With the success of the budget bid for increased funding for 2020/21, we contracted a Business Analyst from 1 July 2020 to write the data strategy. The data strategy/IMCT plan was approved in December 2020.</p> <p>Work over the reporting year has centred on more detailed specification of business requirements. At the end of June 2021, options for replacing the case management system had been narrowed to a shortlist for further investigation.</p> <p>Terms of reference for the Research Strategy were approved in early 2021. A consultant was commissioned to undertake this work, which was approved in August 2021.</p>

## Organisational health and capability: corporate organisation

Our workforce profile is similar to last year's

Table 3 shows the demographic profile of Commission staff. The Commission is a committed Equal Employment Opportunities employer.

**Table 3: Employee workforce composition**

		As at 30 June				As at 30 June	
		2021	2020			2021	2020
Total staff		27	26	Total staff		27	26
Gender	Male	16	16	Disability	Yes	0	0
	Female	11	10		No	27	26
Ethnicity	European	25	23	Age	<41	5	5
	Māori	0	0		41-50	6	8
	Asian	2	2		51-55	6	1
	Pacific	0	0		56-60	5	6
	Other	0	1		>60	4	6
	Unstated	0	0		Unstated	1	0

We have a strong professional culture

The Commission's employees come from specialised disciplines, giving rise to a strong professional culture. The Commission actively encourages investigative and other staff to work together in multi-disciplinary teams on accident cases or projects.

Staff turnover was unusually high this year

Over 2020/21, we saw the retirement of the Chief Executive and three Investigation Services staff; and a further three resignations from Investigation Services, one of them for reasons related to COVID-19. The staff turnover was 26 per cent. In the previous three financial years it was between 11 and 15 per cent.

The retirements were expected. As we have previously signalled, we have had a cohort of investigators at or nearing retirement age – we require many years of industry knowledge in our investigators, so a relatively older workforce will continue to be the norm.

At 30 June 2021, we had a relatively low proportion of the investigation team who are qualified to be an investigator-in-charge

The staff changes over the year mean that at 30 June 2021, we had a relatively low proportion of investigators who we would consider qualified to be an investigator-in-charge (that is, having completed core training and with two to three years' experience as an investigator).

TAIC's establishment for investigation staff is 14 (excluding the two modal managers and the Chief Investigator of Accidents). At 30 June 2021, four roles were vacant. Appointments have been made for three of them. Of the remaining 10 investigation staff, five are considered qualified to be an investigator-in-charge; the other five have completed core training and, if required, could deploy supported by one of the modal managers.

We are managing the situation in various ways:

- Where possible, hiring experienced people into the vacant roles. Of the newly recruited staff, one has several years overseas investigation experience, and the other is a highly experienced human factors specialist.
- Contracting external expertise as support when needed. We are fortunate that several previous investigation staff have made themselves available to assist when required.
- Completing documentation of investigation processes (a measure in the Statement of Performance Expectations for 2021/22).
- Developing a new competency-based training package – see below. This is a measure in the Statement of Performance Expectations for 2021/22.
- Where possible, deploy investigators across modes to assist at the early stage of an investigation (for example, securing an accident site, interviewing witnesses).



## ***Organisational health and capability: diversity and inclusion***

We are working to improve cultural competency

Over the year we developed a three-year programme aimed at increasing the cultural awareness and competency of staff. The programme draws on advice and guidance from Te Arawhiti, Te Taura Whiri i te Reo Māori and Te Kawa Mataaho Public Services Commission. The aim is for staff to achieve at least a 'comfortable' level of competency.

We surveyed staff late in 2020/21 to assess levels of cultural competency. The survey will be repeated over time to evaluate progress. The next steps are a Board and management workshop on what being a good Treaty partner means for TAIC. It is expected that the outcomes of that discussion will guide many of the core activities of the programme.

Gender pay gaps were reviewed

Over the year, gender pay gaps were taken into consideration and some adjustments made in the 2020/21 remuneration round.

## **Organisational health and capability: recruitment and training**

Recruitment processes are sensitive to diversity

The Commission widely advertises available positions and conducts a comprehensive recruitment process. That process includes a diverse recruitment panel, practical and psychometric assessments, and thorough curriculum vitae and reference checks so we can make the best appointments possible.

All new employees and other workers, for example contract staff, are subject to an individualised induction process to help them assimilate into the organisation. Our expectations include those set out in the Public Service Code of Conduct as well the Commission's ethical foundations based on its values.

Our training programme ensures all staff have the knowledge and skills essential to their specialist work

Factual investigation is the base skill pivotal to the Commission's successful performance. Credible factual investigation depends, in part and as a starting point, on transport sector experience and expertise. Strong investigative and analytical experience and expertise support this base skill. It takes at least two years for a new investigator with a strong transport background to become trained and experienced enough to be regarded as fully effective.

The Commission's training programme ensures investigation and corporate staff develop and maintain the knowledge and skills essential to their specialist work.

COVID-19 has affected the usual investigator training; alternatives have been found

The travel restrictions imposed as a result of the COVID-19 pandemic have affected investigator training. Usually, all new investigators undertake general and mode-specific training at Cranfield University in the UK. Staff who would normally have attended these courses have been unable to do so.

To maintain TAIC's investigator capability, we have explored alternative training. The Cranfield course is made up of various modules: evidence-gathering, interviewing skills, and analysis. As an interim measure, we have found local providers for each of these modules.

At 30 June 2021 all investigators had attended the training (bar one as a result of illness) and achieved certification in each of them.

## **Organisational health and capability: good employer initiatives**

Operational needs require a flexible workforce

As a smaller organisation, the Commission requires a flexible workforce to quickly respond to operational needs. Investigators especially are required to work outside normal office hours at times. To balance these demands, the Commission allows flexible working hours and time in lieu (that is, additional to alternative holidays) to employees who are required to work in the weekends.

With an ageing workforce, the Commission is open to considering options for managed retirement. This practice supports operational capability and succession planning, and maximises the institutional knowledge of experienced employees.

Our remuneration system is designed to attract and retain high-performing employees

The Commission offers a pay-for-performance remuneration system designed to attract and retain high-performing employees. The remuneration system incorporates options for providing rewards and recognition, as well as leave entitlements.

We are committed to promoting a safe and healthy working environment

The Commission remains committed to promoting a safe and healthy working environment for employees. Our health and safety focus is risk-based. For the Commission this means the focus is on ensuring the health and safety management system is in place and followed at accident sites, our wreckage facility, and other in-the-field investigation management activities.

Each month the Commission receives a health and safety report from the Chief Investigator on any issues or incidents related to deployment. In addition, the Chief Executive also reports on general matters of health and safety.

As part of our health and safety system, the Commission provides training, protective and corporate clothing appropriate to roles, and medical examinations for investigators. Health-related benefits, such as contributions to gym memberships, are available.

The Commission is mindful of the health and safety of others with whom we have contact during an investigation. For example, when we finish our work at an accident site, or release wreckage back to its owner, we ensure chemicals or other hazards have been minimised and, where possible, removed.

Plans for managing operations under COVID-19 constraints have been updated

Over the reporting year, there were two periods of raised alert levels for COVID-19 response, one in Auckland and one in Wellington. The raising of alert levels provided opportunities to re-test and improve our COVID-19 action plan, protocols, and guidance. Guidance to staff about transitioning between areas with different levels was clarified and updated in February 2021.

At level 2, at-risk staff are encouraged to work from home or to have other working arrangements to reduce any exposure risks. With our cloud and conferencing systems, we can transition smoothly between office-based and remote working as circumstances require.

We are in contact with Ministry of Health about getting all our investigators vaccinated for COVID-19 in the next tranche of frontline workers, given their potential attendance at ports and on vessels from overseas. TAIC staff are on the Border Workforce Testing Register.

#### Harassment and bullying are not tolerated

The Commission has a zero-tolerance approach to harassment and bullying. This is clearly set out in a suite of policies, guidelines and procedures related to professional conduct and behaviour. This includes the Code of Conduct, which is based on the Public Service Commission's guidelines.

The monthly health and safety report includes any incidents of bullying, unfair discrimination, harassment, or privacy breaches.

#### TAIC received unfavourable press coverage in terms of staff turnover and workplace culture

In early May 2021, a media story questioned the rate of staff turnover at TAIC and raised concerns of poor workplace culture. We are confident that TAIC does not have a 'toxic' culture as was alleged. Should staff see or experience unacceptable behaviour, there are sound processes for them to speak up; and resolution processes are fair and equitable.

Nevertheless, since the story appeared we have taken steps to ensure staff have opportunities to raise any issues they might have. Some of these activities were already programmed as a matter of good practice under 'business as usual', but were brought forward.

- All staff attended an externally run 'respect and inclusion' workshop (March 2021).
- The Chief Executive made a written statement to staff re-iterating TAIC's commitment to providing a work environment free from any form of harassment, unfairness or bullying; and of the options available to staff for raising issues. (May 2021.)
- All staff attended a meeting with the Chief Commissioner and Chief Executive to discuss any matters of concern.
- Managers have been meeting more regularly with staff one-on-one and in their teams.
- TAIC commissioned an independent company to run a staff feedback survey in late May/early June and contracted an independent researcher to analyse the results and present a report to management.

The response rate to the survey was high (all but one staff member participated). Results showed no evidence of a bullying or toxic workplace culture at TAIC. The top ten scoring items included:

- "I am proud of the beneficial impact our organisation has" (average score 86%)
- "I enjoy working for TAIC" (79%)
- "TAIC is a great place to work" (86%)
- "Our policies and procedures for intimidating behaviour and bullying are easily understood" (75%)

None of the 10 lowest scoring items related to bullying or workplace culture.

Overall results are comparable with other public sector organisations that have been surveyed.

The staff survey will be repeated at regular intervals over the next three years. Results are used to identify where the organisation could do better and to develop action plans.

## Looking forward

We presented a new Statement of Intent (SOI)

In May 2021, the Commission presented a new Statement of Intent for the period 2021/22 to 2024/25.

The Statement of Intent maintains our previously stated strategic direction, maturing and adapting to the increasingly technological and data-driven nature of the transport system. We must be able to respond effectively if we are to continue to meet our statutory purpose. Our three strategic intentions are:

- Be accessible: maintain an accessible body of knowledge
- Be credible: maintain the highest standards in investigation processes
- Be ready: maintain readiness for a large-scale event

Our priority for organisational health and capability continues to be strengthening the organisation's human and IT capital.

The SOI includes an objective to build capacity to respond effectively to a major accident

In relation to the strategic intention to 'be ready', we noted in the Statement of Intent that New Zealand has been fortunate in that it has not experienced a large-scale accident since the Erebus disaster in 1979; and the Commission, established in 1990, has therefore not had to respond to such an event. Over the next three years, we intend to enhance capability to do so.

The principles guiding the KTS are that systems are modular and scalable. This helps to manage a sudden influx of data and information that would occur after a major event.

In addition, we are working with the Ministry of Transport to begin engaging more fully with the community of emergency response agencies. One of our aims is to improve others' understanding of our role and functions so we can integrate with them more effectively when responding to a major accident.

## Statement of responsibility

### Te tauākī kawenga

We are responsible for the preparation of the Transport Accident Investigation Commission's financial statements and statement of performance, and for the judgements made in them.

We are responsible for any end-of-year performance information provided by the Transport Accident Investigation Commission under section 19A of the Public Finance Act 1989.

We have the responsibility for establishing and maintaining a system of internal control designed to provide reasonable assurance as to the integrity and reliability of financial reporting.

In our opinion, these financial statements and statement of performance fairly reflect the financial position and operations of the Transport Accident Investigation Commission for the year ended 30 June 2021.



Jane Meares  
**Chief Commissioner**



Stephen Davies Howard  
**Deputy Chief Commissioner**

21 December 2021

# Statement of performance

## Ngā pūrongo whakatutukinga

The Commission has one output class: accident or incident investigation and reporting

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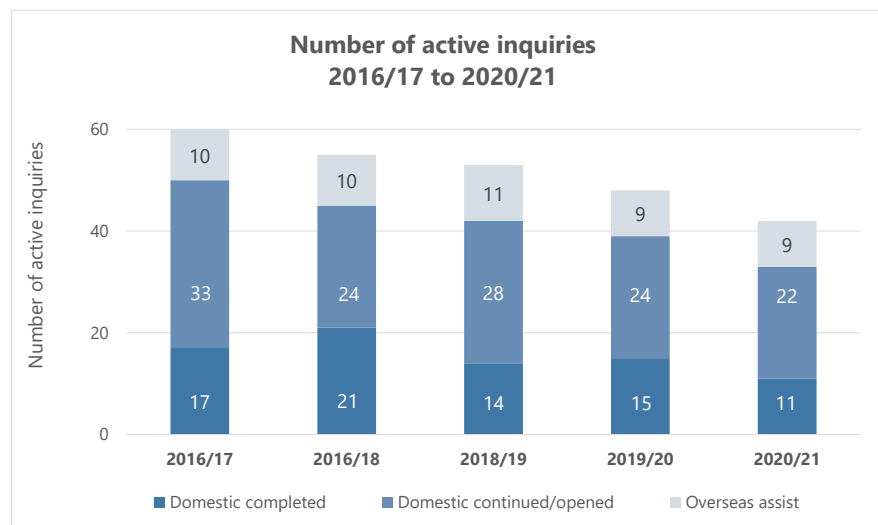
The appropriation for this output class intends to achieve the conduct and completion of independent inquiries into selected aviation, rail, and maritime accidents and incidents with a view to avoiding recurrences.

This section provides an overview of the Commission's performance results for the 2020/21 financial year.

Table 5 on page 46 reports outcomes against the targets and expectations set out on page 2 of the *Statement of Performance Expectations 2020-2021*. Table 6 on page 47 summarises the costs of this output class.

The number of inquiries active over the year is similar to last year

The graph below shows the number of active inquiries over each of the last five years. The graph includes international assist inquiries.



**Figure 4: Number of active inquiries  
2016/17 to 2020/21**

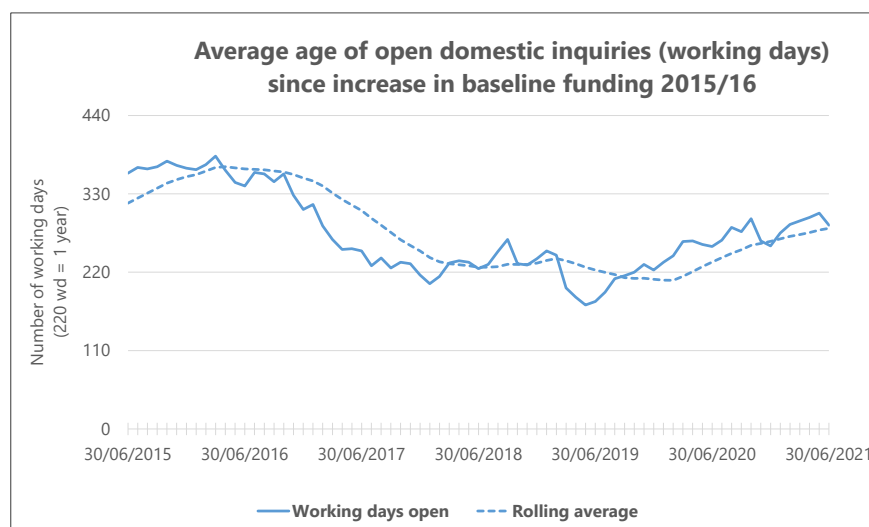
Our casebook is older than at the same time as last year

Last year we reported that timeliness as measured by the 12-month rolling average in the age of open inquiries had achieved a 'steady state' since we received additional funding in 2015/16.

Over the last year, however, time to closure has started to rise again.



As shown in Figure 5, the 12-month rolling average of the age of open inquiries at 30 June 2021 was 282 working days. This is a 21 per cent increase from the same time last year (234), but remains lower than 317 working days at 30 June 2015.

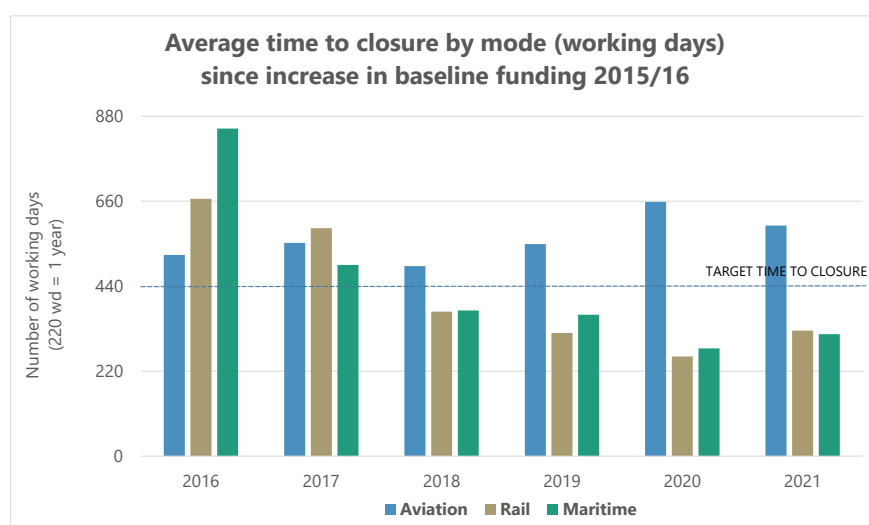


**Figure 5: Average age of open inquiries**

Aviation inquiries are longer and more costly

The timeliness target for closed inquiries is 70 per cent completed within 440 working days (two years). Despite the increase in the average age of open inquiries, we are meeting the target for closed inquiries in the rail and maritime modes. All inquiries closed in these two modes were closed within 440 working days, with most closed within 330 working days (18 months); none was older than 360 working days.

Overall, the average time to closure has improved by 30 per cent since 2015/16, from 664 working days to 465 in 2020/21. A marked difference between the modes is apparent, however, as shown in the graph below.



**Figure 6: Average age of closed inquiries**

Aviation inquiries take longer to close compared with rail and maritime, and the average time closure has not reduced over time, as it has with the other two modes as shown in Figure 6.

The table below shows the average age of closed inquiries over 2020/21 by mode.

**Table 4: Average age of closed inquiries by mode for 2020/21**

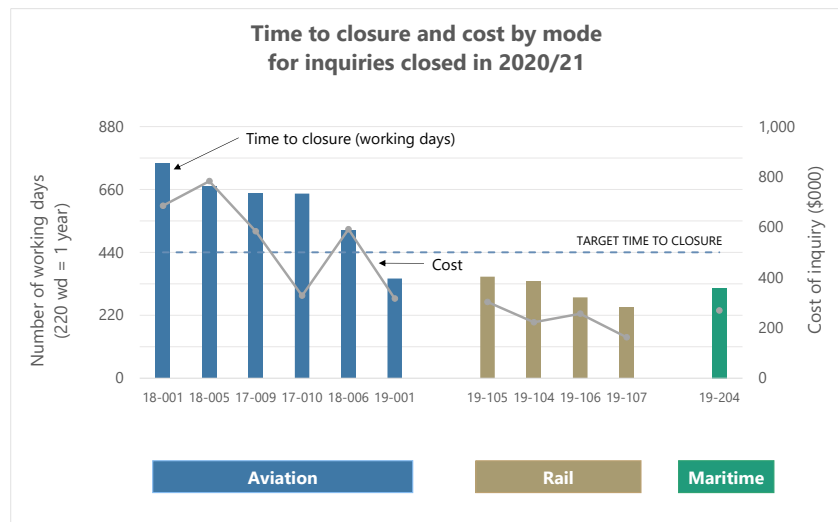
2020/21	Aviation	Rail	Maritime
<b>Number closed</b>	6	4	1
<b>Closed within 440 working days</b>	1	4	1
<b>Average age of closed inquiries (working days)</b>	597	306	316

There are several reasons why the inquiries that go beyond 440 working days (two years) tend to be in the aviation mode:

- accident sites are more likely to be challenging for evidence gathering, for example, remote mountain sites
- wreckage is more likely to be badly damaged or even totally destroyed, making the technical analysis difficult and the determination of cause challenging and sometimes impossible
- aviation accidents are more likely to have multiple fatalities or injuries, and – especially if a tourism operator is involved – more likely to have witnesses and next-of-kin from multiple nationalities, requiring contact with several international agencies
- aircraft components often come from a range of international manufacturers, also requiring contact with several international agencies.

Aviation inquiries are more costly in general. This is partly because of the longer time to complete on average, and partly because salvage and evidence-gathering costs tend to be greater for the reasons outlined above. The graph below shows the timeliness and cost of each inquiry closed in 2020/21.

For more detail on each of the aviation inquiries closed over 2020/21, refer to the section on aviation activities for the year, beginning on page 53.



**Figure 7: Time to closure and cost**

Nevertheless, the volume and time to publication for aviation inquiries improved this year

Despite the longer time to publication for aviation reports, more inquiries were closed in this mode than in rail or maritime (as shown in Table 4) and within a shorter time, on average, than last year.

**Table 5: Output measures against Statement of Performance Expectations 2020/21 targets and expectations**

Financial	Instrument	Actual 2020/21	Target 2020/21	Actual 2019/20
<b>Average cost of domestic inquiries closed*</b>	Timesheet and financial data analysis	\$409K	\$300–350K	\$329K
<p>The average cost of inquiries is calculated by allocating all costs (including general overheads) to inquiries. A proportion of overheads is allocated to all open inquiries, plus a further proportion is allocated according to time spent on each inquiry. The cost of an inquiry is taken over the whole of its life.</p> <p>The target is expressed as a range because it accommodates variation in the modal mix of inquiries published through the year. Generally, aviation inquiries are more expensive than rail or maritime inquiries.</p>				
Volume	Instrument	Actual 2020/21	Expected 2020/21	Actual 2019/20
<b>Number of reports published for domestic inquiries:</b>				
<b>Final reports*</b>	Casebook analysis, manual count	10	15–25	15
<b>Interim reports</b>		0		0
<b>Number of inquiries by overseas jurisdictions assisted*</b>	Casebook data analysis	9	4–8	9
<b>Number of domestic inquiries in progress at each month's end (12 month rolling average, as at 30 June)</b>	Casebook data analysis	24	30	29
Volume of outputs is demand driven. Inquiries open at 30 June 2021 was 22 compared with 24 at 30 June 2020.				
Timeliness	Instrument	Actual 2020/21	Target 2020/21	Actual 2019/20
<b>Proportion of closed domestic inquiries completed within 440 working days*</b>	Casebook data analysis	55%	70%	80%
<p>A year is 220 working days. The Commission aims to close in inquiries within 440 working days; however, more complex inquiries may take longer. Complexity can arise because of, for example, technical aspects of the occurrence being investigated, or the number and/or substance of submissions received on draft reports.</p> <p>The 10 reports published during 2020/21 covered 11 inquiries closed. Of the 11 inquiries:</p> <ul style="list-style-type: none"> <li>• 3 were closed in 18 months (330 working days) or less</li> <li>• 3 were closed between 18 months and two years (331–440 working days)</li> <li>• 5 took longer than two years (440 working days).</li> </ul>				
<b>* Performance measure for the appropriation for this output class.</b>				

**Table 6: Cost of service statement and reporting against appropriations**

<b>Output class summary</b>	<b>Actual 2020/21 \$000</b>	<b>Budget 2020/21 \$000</b>	<b>Actual 2019/20 \$000</b>
<b>Accident or incident investigation and reporting</b>			
Revenue – Crown	6,070	7,270	5,520
Revenue – other	50	79	86
Costs	(5,986)	(7,379)	(5,193)
Surplus/deficit	134	(30)	413
<b>Non-departmental output expenses</b>			
Accident or incident investigation and reporting – operating	6,071	7,270	5,520
<b>Non-departmental capital expenditure – equipment and furniture</b>			
This appropriation is limited to capital expenditure to accommodate new staff			
Capital contribution from the Crown	18	30	-
Expenditure on equipment and furniture	18	30	-
<b>Assessment of performance</b>	<b>Actual standard of performance 2020/21</b>	<b>Budget standard of performance 2020/21</b>	<b>Actual 2019/20 \$000</b>
TAIC's premises at 80 The Terrace are equipped to accommodate expanded staff by 30 September 2020	100%	100%	-

## Activity by mode

### Te mahi ā-aratau

This final section summarises data and information about our work over the year. It starts with caseload information:

- the inquiries that were open at 30 June 2021
- a table of volume and timeliness data for the last three financial years.

The rest of the section is divided by mode. For each mode, we summarise data and information about:

- notifications received
- themes in open inquiries
- volume and timeliness of reports published
- recommendations made
- the impact information (as represented by the key lessons, safety actions and recommendations) for the inquiries completed in 2020/21.

Please note the carefully worded contents of inquiry reports have been extensively précised in the impact summaries. The purpose is to give a quick impression of the inquiries' complexity and impact. **The published inquiry reports are the definitive record**, which must be referred to for any other purpose.

Recipients' responses to the Commission's recommendations, at the time of issue, are included in the information. Some of these are précised; again, the published inquiry reports, which contain the recommendations, are the definitive record.

All published reports can be found here on our website:

[Investigations | TAIC](#)

## **Caseload data**

### **Raraunga kawenga take**

***Te Ara Haumarū – the safe and risk-free path***



## Inquiries open at the end of the year

Table 7 lists all inquiries open at the end of the financial year (domestic and overseas assist), ordered by date launched. The review sections for each mode contain information on the inquiries closed during the year.

**Table 7: Inquiries open at 30 June 2021**

Inquiry #	Mode	Description	Launched	Type
AO-2018-003	Aviation	PAC 750 XL Aeroplane, engine abnormality requiring engine shut-down and glide landing, Sentani Airport, Jayapura, Papua, Indonesia	25/05/2018	Overseas assist
AO-2018-007	Aviation	New Zealand-manufactured Pacific Aerospace Ltd 750XL aeroplane, landing gear failure, near Dubendorf, Switzerland	18/08/2018	Overseas assist
AO-2018-009	Aviation	Hughes 369D, ZK-HOJ, impact with terrain, Wanaka	18/10/2018	Domestic
MO-2018-206	Maritime	Bulk carrier <i>Alam Seri</i> , loss of control and contact with seabed, Port of Bluff	29/11/2018	Domestic
AO-2019-002	Aviation	Two Q300 aircraft, loss of separation, Wellington Airport	12/03/2019	Domestic
AO-2019-003	Aviation	Diamond DA42 aeroplane, impact with terrain, 22 nautical miles south-southeast of Taupo, Kaimanawa Ranges	24/03/2019	Domestic
AO-2019-005	Aviation	BK-117 helicopter, impact with water, vicinity of Auckland Island	23/04/2019	Domestic
AO-2019-006	Aviation	Cessna 185 and a Tecnam P2002 light aeroplane, mid-air collision, near Hood Aerodrome, Masterton	16/06/2019	Domestic
AO-2019-007	Aviation	Airways, outage, Christchurch	2/10/2019	Domestic
RO-2019-108	Rail	Freight train, level crossing collision with road vehicle, Piako Road	9/12/2019	Domestic
MO-2020-201	Maritime	Fishing vessel <i>Leila Jo</i> and bulk carrier <i>Rose Harmony</i> , collision, four miles from Lyttelton	13/01/2020	Domestic
RO-2020-101	Rail	Passenger train and road vehicle, collision, Mulcocks Road level crossing	10/02/2020	Domestic



Inquiry #	Mode	Description	Launched	Type
RO-2020-102	Rail	Freight train and hi-Rail vehicle, collision, Limeworks Road level crossing	24/04/2020	Domestic
AO-2020-001	Aviation	Pacific Aerospace Cresco 08-600 aircraft, Impact with terrain, Wairarapa	24/04/2020	Domestic
AO-2020-002	Aviation	Schleicher ASK 21 glider, impact with terrain, near Taupo	31/05/2020	Domestic
MO-2020-202	Maritime	Bulk carrier <i>Funing</i> , loss of power, near Tauranga harbour	6/07/2020	Domestic
RO-2020-103	Rail	Locomotive and bus, Clevely Line level crossing, between Bunnythorpe and Palmerston North	16/09/2020	Domestic
MO-2020-203	Maritime	<i>Gulf Livestock 1</i> , loss of vessel, en route to China	16/09/2020	Overseas assist
RO-2020-104	Rail	Hi-Rail vehicle, track occupancy incident, Ruakura	23/09/2020	Domestic
MO-2020-204	Maritime	Containership <i>Rio De La Plata</i> , mooring operations injury, PrimePort, Timaru	16/11/2020	Domestic
AO-2020-003	Aviation	Airbus Helicopter EC120, impact with terrain, Kekerengu River mouth	15/12/2020	Domestic
MO-2020-205	Maritime	<i>Kota Bahagia</i> , cargo ship, fire, Port of Napier	18/12/2020	Domestic
MO-2021-201	Maritime	Jetboat accident, Shotover River, Queenstown, 21 March 2021	21/03/2021	Domestic
RO-2021-101	Rail	Shunting operations on board ferry <i>Aratere</i> , Wellington	10/04/2021	Domestic
RO-2021-102	Rail	Freight train and utility vehicle fatal collision, Marton	13/05/2021	Domestic

## Caseload data

**Table 8: Caseload data 2018/19 to 2020/21**

		Air			Rail			Maritime			Total		
		Jun-19	Jun-20	Jun-21	Jun-19	Jun-20	Jun-21	Jun-19	Jun-20	Jun-21	Jun-19	Jun-20	Jun-21
<b>Caseload at year end</b>													
Inquiries	Opened	7	3	1	5	6	4	6	2	4	18	11	9
	Continued	7	11	8	1	1	3	2	1	2	10	13	13
	Inquiries open at year end	14	14	9	6	7	7	8	3	6	28	24	22
Elapsed WD	Opened	615	222	119	342	790	420	604	277	530	1,561	1,289	1,069
	Continued	2,703	4,282	3,414	251	235	908	500	349	891	3,454	4,866	5,213
	Total	3,318	4,504	3,533	593	1,025	1,328	1,104	626	1,421	5,015	6,155	6,282
Average WD	Opened	88	74	119	68	132	105	101	139	133	87	117	119
	Continued	386	389	427	251	235	303	250	349	446	345	374	401
	Average age open inquiries (WD)	237	322	393	99	146	190	138	209	237	179	256	286
<b>Completed by year end</b>													
	Inquiries closed	5	3	6	5	5	4	4	7	1	14	15	11
	Elapsed WD	2,745	1,975	3,579	1,593	1,291	1,222	1,464	1,953	316	5,802	5,219	5,117
	Average age closed inquiries (WD)	549	658	597	319	258	306	366	279	316	414	348	465
<b>Total active inquiries during year</b>													
	Active inquiries	19	17	15	11	12	11	12	10	7	42	39	33
	FTE investigation staff (establishment)	5.7	5.7	6.0	3.7	3.7	4.0	3.7	3.7	4.0	13.0	13.0	14.0

### Notes:

- Opened = opened in that year and remaining open at the end of the year, Continued = remained open throughout that year, Completed by year end = closed in that year.
- WD = working days (220 WD is one calendar year).
- Inquiry numbers exclude assistance to overseas inquiries, which also consumes investigator time.
- The establishment for investigation staff is 14.0 full time equivalents (FTE), excluding the Chief Investigator of Accidents and the two modal managers. In previous Annual Reports, we had reported numbers of investigators employed at 30 June. The numbers now show (for each year) the establishment for investigation staff; that is, modal investigators and specialist staff who work across all modes, such as the Forensic Data Recovery Specialist and the Human Factors Specialist, a new position for 2020/21.

## **The aviation year in review** **Te arotake rererangi ā-tau**

***Ngā hau e whā – the four winds***

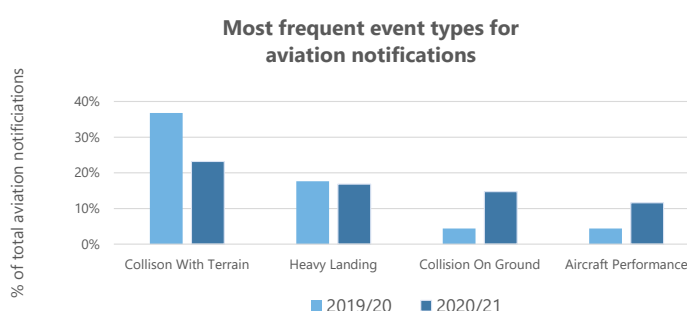


## Notifications

Over the year, the aviation mode received 91 notifications, compared with 72 in 2019/20. The graph below shows the most frequent notifications by event type. These event types comprise more than 10 per cent of the total aviation notifications.

The information is indicative only. There may be more than one notification for an occurrence, the reporting categories are broad, and from time-to-time classifications are reviewed. The numbers of notifications are too small for changes to have statistical significance, but the Commission considers notifications when deciding whether to open an inquiry.

	2020/21	2019/20
<b>Accidents</b>	65	44
<b>Incidents</b>	26	28
<b>Total</b>	91	72
<b>Inquiries launched</b>	1	3
<b>Launch rate</b>	1%	4%



## Themes

Nine of the 22 inquiries open at 30 June 2021 were in the aviation mode. Of these nine, six were of a similar event type (impact with terrain or water), but otherwise the circumstances varied widely. Common factors might emerge as the inquiries progress.

Helicopters are a lesser proportion of the casebook than they have been. Of the nine open aviation inquiries, three involved helicopters. Two of these are older inquiries, but the third was opened more recently, in December 2020. It was a high-profile event, involving the crash of a helicopter at the Kekerengu River mouth, which killed two people and seriously injured another three. Our inquiries are continuing into the circumstances and causes of this accident.

## Published inquiry reports

The Commission published five aviation reports over the year.

	Number of published reports			Timeliness of closed inquiries	
	Total	Final	Interim	Average age (working days)	No. completed within 440 working days
<b>2020/21</b>	5*	3	0	597	1
<b>2019/20</b>	3	3	0	658	0

\* One published report covered two inquiries

The aviation mode continues to experience a heavy workload relative to the other modes. Of the 33 inquiries active over the period, nearly half (15) were in the aviation mode, and eight of the nine international assist inquiries were aviation. In addition, one investigator role had been vacant for over three months as at 30 June 2021. (An experienced investigator has since been appointed.)

Nevertheless, more aviation inquiries were closed in 2020/21 than in 2019/20, and in a shorter average time – albeit most (five out of six) still beyond 440 working days (two years). At the end of 2020/21, the workload had eased. Nine of the 22 domestic open inquiries open at 30 June 2021 were in aviation; but of those nine, five had already extended beyond 440 working days.

Of the aviation inquiries closed during the year, three involved helicopters.

- One of the three was a forced landing.<sup>19</sup> This inquiry closed within the 440 working day target.
- The second was a loss of control resulting in a fatality.<sup>20</sup> This inquiry extended beyond the timeliness target because wreckage recovery was challenging (including an extensive underwater search), it required detailed technical consultation with the manufacturer (this was a 'mast-bumping' accident<sup>21</sup>), and we published an interim in December 2018.
- The third was an engine control malfunction and forced landing, which resulted in two people receiving serious injuries.<sup>22</sup> A change in the Investigator-in-Charge over the course of the investigation resulted in a delayed process for this inquiry, and it extended beyond 440 working days.

One of the aviation inquiries closed was into a fatal accident that involved the double malfunction of a parachute.<sup>23</sup> This investigation also extended 440 working days. The inquiry involved highly specialised technical matters. Adding to the complexity was liaison with

<sup>19</sup> AO-2019-001: Airbus Helicopters AS350, ZK HEX, Forced landing, Wakefield, Nelson, 17 February 2019

<sup>20</sup> AO-2018-006: Robinson R44, ZK-HTB Loss of control Stevensons Arm, Lake Wanaka 21 July 2018

<sup>21</sup> Refer to our Watchlist item *Robinson helicopters: mast bumping accidents in NZ* on our website: <https://www.taic.org.nz/watchlist/robinson-helicopters-mast-bumping-accidents-nz>

<sup>22</sup> AO-2018-005: MD Helicopters 600N, ZK-ILD Engine control malfunction and forced landing, Ngamatea Station, 14 June 201

<sup>23</sup> AO-2018-001: Tandem parachute UPT Micro Sigma, registration 31Z Double malfunction, Queenstown, 10 January 2018

international interested persons (see footnote on page 11 for definition), including the manufacturer; and an extended consultation process so that submissions could be properly dealt with.

One of the aviation published reports covered two inquiries opened into similar events occurring on consecutive days in December 2017. This was another technically complex investigation involving several international organisations, and it also took longer to complete than the target 440 workings. The Commission issued an interim report in May 2018, which identified two safety issues concerning a component of Trent 1000 engines. See the case study on page 21 for more information.

## Recommendations

Seven recommendations were included in the aviation reports published over the year.

- The forced landing of the helicopter resulted in two recommendations to the manufacturer of monsoon buckets used in firefighting. They related to improving the design of fasteners and enhancing operation manuals for the buckets.
- Three recommendations related to parachute operations.
  - Two were to the Secretary of Transport to review and revise Civil Aviation Rules: to improve procedures and standards to reduce adverse consequences of unintended water landing; and to define flotation devices suitable for parachutists.
  - One was to the Director of Civil Aviation to improve the reporting of parachute occurrences to help manage the sector's safety.
- The helicopter engine malfunction resulted in two recommendations to the Director of Civil Aviation to raise awareness of:
  - the importance of pilot type training being comprehensive enough to mitigate any risks from particular helicopter characteristics
  - the benefit of aircraft pilots and occupants wearing helmets when practicable.

The findings, identified safety issues, and recommendations from the closed inquiries are summarised in the following pages.

## Aviation inquiry AO-2019-001: Airbus Helicopters AS350, ZK-HEX, Forced landing, Wakefield, Nelson, 17 February 2019

### Event type

Forced landing

### Safety issues

*“What contributed to the occurrence, or might contribute to another occurrence?”*

2 safety issues were identified:

- The hook-and-loop fasteners used on Cloudburst buckets, used for firefighting operations, have the potential to come undone during operations.
- The manufacturer of the Cloudburst buckets had not updated the Operation Manual to include all the information it had about the safe operation of the buckets.

### Findings (number)

*Greater ≈ more complex*

8

### Key lessons (number & précis)

*“What did we identify that others should take heed of to avoid it happening to them?”*

1 key lesson was identified:

- The notification and reporting of all safety-related occurrences by aircraft operators, both internally and externally, presents an opportunity for the sharing of safety lessons, therefore preventing reoccurrences.

### Safety actions (number & précis)

*“What has been done while the inquiry's been underway that's removed the need for a relevant recommendation?”*

3 safety actions have been taken by the manufacturer, who:

- continue to update the manuals of operation and safety of the Cloudburst Fire Buckets as the product develops
- sent out a Safety Information Notice to all the operators for which it has email addresses
- included in the manual an owners' register to aid the tracking of the ownership Cloudburst Fire Buckets.

### Safety recommendations (number & précis)

*“What needs to change to reduce the likelihood of a recurrence?”*

2 recommendations were made to IMS New Zealand Ltd to:

- review and enhance the Operation Manuals for all Cloudburst buckets to include any recommended operational and maintenance procedures, guidelines and limitations, and develop a current register of users and actively disseminate this information to them
- ensure that all Cloudburst monsoon buckets with hook-and-loop fasteners are modified to incorporate improvements in the fastener design.

### Response

The recommendations were accepted.

## **Aviation inquiries AO-2017-009 and AO-2017-010: Boeing 787, near Auckland, New Zealand, 5 and 6 December 2017**

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### **Event type**

Engine abnormality

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The Commission resolved to close these inquiries because:

- our inquiries and interim report published in May 2018 identified the salient safety issues in these occurrences
  - the manufacturer has taken safety actions through its programme of blade replacement that have addressed the safety issues
  - further lines of inquiry are unlikely to identify any further circumstances that have significant implications for transport safety
  - further lines of inquiry are unlikely to allow the Commission to establish any further findings or make further recommendations that may increase transport safety
  - further lines of inquiry are unlikely to contribute to the Commission's purpose of avoiding similar occurrences in the future.
-



## Aviation inquiry AO-2018-006: Robinson R44, ZK-HTB, Loss of control, Stevensons Arm, Lake Wanaka, 21 July 2018

### Event type

Loss of control

### Safety issues

*“What contributed to the occurrence, or might contribute to another occurrence?”*

1 new safety issue was identified:

- The R44 Pilot Operating Handbook did not define the term ‘significant’ used in describing turbulence. This had the potential to create further ambiguity in assessing the severity of turbulence.

1 previously identified safety issue was re-stated:

- A lack of data continues to hamper the investigation of loss-of-control or mast bumping accidents involving Robinson Helicopter Company (RHC) helicopters. Allied with this is a lack of understanding of how the main rotor performs in adverse conditions.

### Findings (number)

*Greater ≈ more complex*

5

### Key lessons (number & précis)

*“What did we identify that others should take heed of to avoid it happening to them?”*

2 key lessons were identified:

- Pilots need to exercise caution when planning and conducting flights into areas of potential turbulence. Pilots should seek to avoid these situations. If pilots encounter turbulence of any strength, they need to take immediate action to minimise its effects.
- Pilots of RHC helicopters need to be familiar with Safety Notice 32 and the associated video, and avoid flying in high winds and turbulent conditions.

### Safety actions (number & précis)

*“What has been done while the inquiry’s been underway that’s removed the need for a relevant recommendation?”*

1 safety action was taken by the manufacturer, who:

- amended Safety Notice 32 to explain the term ‘significant’ turbulence; this aligns with the commentary provided in an educational video produced by RHC in 2017.

### Safety recommendations (number & précis)

*“What needs to change to reduce the likelihood of a recurrence?”*

No new recommendations were issued.

### Response

N/A

## Aviation inquiry AO-2018-001: Tandem parachute UPT Micro Sigma, registration 31Z, Double malfunction, Queenstown, 10 January 2018

### Event type

Tandem parachute double malfunction

### Safety issues

*“What contributed to the occurrence, or might contribute to another occurrence?”*

6 safety issues were identified:

- The operator had no programme for the maintenance and inspection of lifejackets.
- The operator did not require tandem masters to wear lifejackets, increasing safety risk if they unintentionally landed in water landing.
- The Civil Aviation Rules for parachuting near a significant body of water are not well defined in Part 105, which is the basis of safety across the parachute sector.
- The CAA-referenced standards for lifejackets were generic and not specific to skydiving operations.
- Emergency response plans need to consider the likely environments in which emergencies could occur, including immersion in cold water.
- Occurrence reporting data needs to be more effective helping to manage risk across the parachute sector.

### Findings (number)

*Greater ≈ more complex*

13

### Key lessons (number & précis)

*“What did we identify that others should take heed of to avoid it happening to them?”*

3 key lessons were identified:

- Parachute operators need to consider and mitigate the risks of a parachutist unintentionally landing in the water.
- All parachutists would benefit from gaining practical or simulated experiences of a water landing before being issued with their initial parachutists' certificates.
- All parachute-sector participants may benefit from continued engagement with each other to improve industry guidance and the safety of parachuting in New Zealand.

### Safety actions (number & précis)

*“What has been done while the inquiry’s been underway that’s removed the need for a relevant recommendation?”*

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4 safety actions were taken by the operator, who:

- has implemented a maintenance programme for lifejackets
- now requires all tandem masters to wear lifejackets
- has positioned a rescue boat at its operational base
- trained personnel in the use of the rescue boat.

2 safety actions were taken by the New Zealand Parachute Industry Association (NZPIA), who:

- improved its Documents, Standards and Procedures Manual
- published a new Water Landing Guideline for parachutists.

3 safety actions were taken by the CAA, who:

- updated its parachute online accident/incident reporting form
  - has collaborated with the NZPIA to improve the quality of data collected from the parachute sector
  - begun a review of Advisory Circular AC12-1.
- 

### Safety recommendations (number & précis)

*“What needs to change to reduce the likelihood of a recurrence?”*

2 recommendations were made to the Secretary for Transport to review and revise Civil Aviation Rule Parts 105, 115 and 149 for parachuting operations, in conjunction with the Part 149 organisations’ operating procedures and standards to:

- reduce the potentially adverse consequences of an unintended water landing
- define flotation devices that are suitable for use by parachutists.

1 recommendation was made the Director of Civil Aviation to:

- review the parachute accident and incident reporting system to provide a more effective national resource to manage the sector’s safety.
- 

### Response

The Ministry of Transport accepted the recommendations to review the rules, but noted that the review might not result in changes. The CAA accepted the recommendation issued to it.

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## Aviation inquiry AO-2018-005: MD Helicopters 600N, ZK-ILD Engine control malfunction and forced landing, Ngamatea Station, 14 June 2018

### Event type

Engine control malfunction

### Safety issues

*“What contributed to the occurrence, or might contribute to another occurrence?”*

2 safety issues were identified:

- Pilots, instructors and operators need increased awareness of the risks involved when training in certain helicopter types and the need to take steps to mitigate these risks.
- All aircraft operators would benefit from having policies on the wearing of helmets. This would provide confidence that the risks relating to head injury are being managed by the aviation industry.

### Findings (number)

*Greater ≈ more complex*

9

### Key lessons (number & précis)

*“What did we identify that others should take heed of to avoid it happening to them?”*

2 key lessons were identified:

- Attending an aircraft manufacturer’s endorsed flight training course gives pilots a more experience in understanding helicopter characteristics and their associated malfunctions.
- Civil Aviation Rules provide the minimum levels of safety. Operators must determine their safety requirements relative to their operations and consider the use of appropriate helmets for aircraft pilots and occupants, when practicable and operational conditions indicate potential benefits.

### Safety actions (number & précis)

*“What has been done while the inquiry’s been underway that’s removed the need for a relevant recommendation?”*

1 safety action was taken by the operator, who:

- implemented a formal policy for its pilots to wear helmets on all flights.

### Safety recommendations (number & précis)

*“What needs to change to reduce the likelihood of a recurrence?”*

2 recommendations were made to the Director of Civil Aviation to:

- publish an educational article raising awareness of the importance of pilot type training being sufficiently comprehensive to mitigate any risks presented by particular helicopter characteristics
- promote education awareness of the benefit of aircraft pilots and occupants wearing appropriate helmets when practicable and when operational conditions indicate a potential benefit.

**Response**

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The CAA accepted the first recommendation but believes that Civil Aviation Part 100 Safety Management and the Health and Safety at Work Act 2015 already sufficiently require operators to consider their risks and whether the use of personal protective equipment (including a flight helmet) is appropriate for use during operations

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## **The rail year in review**

### **Te arotake rerewhenua ā-tau**

***Rerewhenua – flowing across the land***

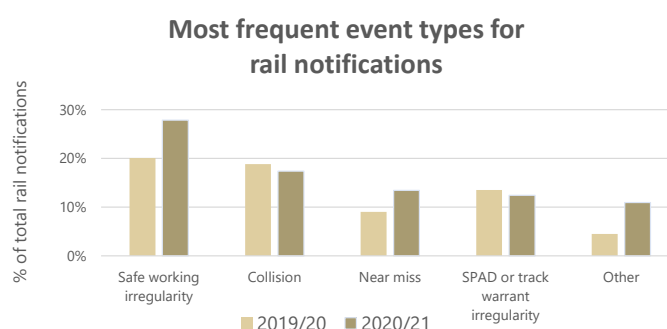


## Notifications

Over the year, the rail mode received 199 notifications, compared with 238 in the previous year. The diagram below shows the most frequent notifications by event type. These event types comprise more than 10 per cent of the total rail notifications.

The information is indicative only. There may be more than one notification for an occurrence, the reporting categories are broad, and from time-to-time classifications are reviewed. The numbers of notifications are too small for changes to have statistical significance, but the Commission considers notifications when deciding whether to open an inquiry.

	2020/21	2019/20
Accidents	35	23
Incidents	164	215
Total	199	238
Inquiries launched	4	6
Launch rate	2%	3%



## Themes

Over the reporting period, we opened an inquiry into accident in Marton, in which a person was killed while painting road markings near a level crossing.<sup>24</sup>

The accident prompted a review of findings and recommendations from recent inquiries concerning the safety of people working in the rail corridor. The Commission has opened eleven inquiries into these types of occurrences since 2014, four of them in the last two years. Inquiries are ongoing in three of them. We continue to receive notifications about incidents where workers lives have been, or were potentially, put at risk. There were over 30 such incidents in the year to 1 June 2021.

Level crossing safety continues to be another priority rail issue for the Commission. Three of the seven rail inquiries open at 30 June 2021 involved collisions at level crossings. This safety issue has been on the Watchlist since 2016.

We are monitoring shunting operations because of an upward trend in notifications involving these types of operations, indicating an issue to be further explored. In April 2021 we opened an inquiry into an accident that occurred on board the Interislander ferry the *Aratere* while it was berthed at Wellington Port.<sup>25</sup> One worker was struck by a moving wagon, requiring hospital treatment. The inquiry will enable us to examine this safety issue further.

<sup>24</sup> RO-2021-102: Freight train and utility vehicle collision, Marton, 13 May 2021

<sup>25</sup> RO-2021-101: Shunting operations on board ferry Aratere, Wellington, 10 April 2021

## Published inquiry reports

The Commission published four inquiry reports over the year in the rail mode. All inquiries were completed within 440 days.

	Number of published reports			Timeliness of closed inquiries	
	Total	Final	Interim	Average age (working days)	No. completed within 440 working days
<b>2020/21</b>	4	4	0	306	4
<b>2019/20</b>	5	5	0	258	5

The four inquiries covered varied topics. One resulted from an incursion into a worksite;<sup>26</sup> one related to an incident where passengers were disembarked such that they had to walk across a main line track without the knowledge of train control;<sup>27</sup> the third was a signal passed at danger, which resulted in a near collision;<sup>28</sup> and the fourth was a derailment.<sup>29</sup>

## Recommendations

The inquiry into the worksite incursion resulted in a recommendation to KiwiRail. The recommendation related to improving procedural guidance for those operating work trains.

The findings, identified safety issues, and recommendations from the closed inquiries are summarised in the following pages.

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<sup>26</sup> RO-2019-104: Unsafe entry into worksite, Taimate, 5 June 2019

<sup>27</sup> RO-2019-106: Passenger train 804, Irregular disembarkation of passengers, Rolleston, Canterbury, 3 September 2019

<sup>28</sup> RO-2019-107: Passenger service SPAD and near collision, Wellington, 6 November 2019

<sup>29</sup> RO-2019-105: Express freight Train 268, Derailment, Wellington, 2 July 2019



## **Rail inquiry RO-2019-106: Passenger train 804, Irregular disembarkation of passengers, Rolleston, Canterbury, 3 September 2019**

<b>Event type</b>	Irregular disembarkation of passengers
<b>Safety issues</b> <i>"What contributed to the occurrence, or might contribute to another occurrence?"</i>	1 safety issue was identified: <ul style="list-style-type: none"> <li>At the time of the incident there was no KiwiRail rule prescribing the travel of passenger trains via the East Main Line at Rolleston, nor were there any procedures prescribing the actions to take in the event of a passenger train berthing on the West Main Line.</li> </ul>
<b>Findings (number)</b> <i>Greater ≈ more complex</i>	3
<b>Key lessons (number &amp; précis)</b> <i>"What did we identify that others should take heed of to avoid it happening to them?"</i>	1 key lesson was identified: <ul style="list-style-type: none"> <li>All personnel involved in safety-critical operations should adhere to the principles of non-technical skills to ensure that all parties have a common understanding of what is required to complete tasks safely.</li> </ul>
<b>Safety actions (number &amp; précis)</b> <i>"What has been done while the inquiry's been underway that's removed the need for a relevant recommendation?"</i>	2 safety actions were taken: <ul style="list-style-type: none"> <li>KiwiRail issued new instructions for berthing passenger trains at Rolleston and specified the action to be taken if the West Main Line was the only berthing option</li> <li>KiwiRail drafted a response plan directing the actions of train crew when conducting controlled passenger disembarkations.</li> </ul>
<b>Safety recommendations (number &amp; précis)</b> <i>"What needs to change to reduce the likelihood of a recurrence?"</i>	No new recommendations were issued.
<b>Response</b>	N/A

## Rail inquiry RO-2019-104: Unsafe entry into worksite, Taimate, 5 June 2019

### Event type

Unsafe entry into worksite

### Safety issues

*"What contributed to the occurrence, or might contribute to another occurrence?"*

1 safety issue was identified:

- The New Zealand Rail Operating Rules and Procedures did not provide guidance on how to manage work trains within a worksite and did not differentiate between a train moving to a point where work needs to take place and a train carrying out its designated work as a work train.

### Findings (number)

*Greater ≈ more complex*

7

### Key lessons (number & précis)

*"What did we identify that others should take heed of to avoid it happening to them?"*

2 key lessons were identified:

- Established rules that form part of an operator's safety management system must be followed to help reduce the risk of harm to workers. Creating local workarounds, or modifications to established rules, can, if they are not properly reviewed and assessed, lead to unintended outcomes.
- Procedures are established to ensure that tasks are completed safely using standardised approaches that have been tested and proven to work. Following approved procedures helps to ensure a reliable, safe and structured process that keeps personnel clear of harm. Supporting these procedures with the proficient use of non-technical skills, such as communication, decision-making and challenge and response, helps to further reduce the likelihood of mistakes.

### Safety actions (number & précis)

*"What has been done while the inquiry's been underway that's removed the need for a relevant recommendation?"*

2 safety actions were taken:

- KiwiRail continues developing non-technical skills throughout its workforce
- The NZTA is monitoring progress of the implementation of the training programme.

### Safety recommendations (number & précis)

*"What needs to change to reduce the likelihood of a recurrence?"*

1 recommendation was made to KiwiRail to:

- review the New Zealand Rail Operating Rules and Procedures to provide guidance for those involved in the operation of work trains.

### Response

The recommendation was accepted.

## Rail inquiry RO-2019-107: Passenger service SPAD and near collision, Wellington, 6 November 2019

<b>Event type</b>	Passenger service SPAD and near collision
<b>Safety issues</b> <i>"What contributed to the occurrence, or might contribute to another occurrence?"</i>	1 safety issue was identified: <ul style="list-style-type: none"> <li>The measures minimising the risk of a SPAD occurrence (which could lead to a collision) within the Wellington approaches did not reduce the risk as far as reasonably practicable.</li> </ul>
<b>Findings (number)</b> <i>Greater ≈ more complex</i>	5
<b>Key lessons (number &amp; précis)</b> <i>"What did we identify that others should take heed of to avoid it happening to them?"</i>	2 key lessons were identified: <ul style="list-style-type: none"> <li>Drivers must prioritise their focus on the most important issues at any one time.</li> <li>Key areas of the Wellington rail network pose a higher risk than others and therefore require more caution and concentration from train drivers.</li> </ul>
<b>Safety actions (number &amp; précis)</b> <i>"What has been done while the inquiry's been underway that's removed the need for a relevant recommendation?"</i>	4 safety actions were taken by KiwiRail, which has: <ul style="list-style-type: none"> <li>completed or commissioned several studies to understand improvement options for the Wellington approaches area</li> <li>issued a Signal Box Instruction that aims to reduce the risk of a collision resulting from a SPAD</li> <li>progressed a business case for the provision of a European Train Control System (ETCS) in Wellington</li> <li>started a project to replace the A Box and the re-arrangement of the track in the Wellington Station approaches.</li> </ul>
<b>Safety recommendations (number &amp; précis)</b> <i>"What needs to change to reduce the likelihood of a recurrence?"</i>	No new recommendations were issued.
<b>Response</b>	N/A

## Rail inquiry R0-2019-105: Express freight Train 268, Derailment, Wellington, 2 July 2019

<b>Event type</b>	Derailment
<b>Safety issues</b> <i>"What contributed to the occurrence, or might contribute to another occurrence?"</i>	<p>3 safety issues were identified:</p> <ul style="list-style-type: none"> <li>• There was no track standard that specified the minimum permitted track radius.</li> <li>• The track faults identified by the track evaluation car were not closed out in accordance with the operator's standards.</li> <li>• Following a routine maintenance inspection, the wagon was authorised to return to service with wheel flange surface roughness outside specified limits.</li> </ul>
<b>Findings (number)</b> <i>Greater ≈ more complex</i>	4
<b>Key lessons (number &amp; précis)</b> <i>"What did we identify that others should take heed of to avoid it happening to them?"</i>	<p>2 key lessons were identified:</p> <ul style="list-style-type: none"> <li>• Standards and procedures are put in place to ensure consistent and safe outcomes.</li> <li>• Preventive rail-maintenance activities require careful planning and timely execution to maintain a safe operation.</li> </ul>
<b>Safety actions (number &amp; précis)</b> <i>"What has been done while the inquiry's been underway that's removed the need for a relevant recommendation?"</i>	<p>1 safety action was taken by the operator who:</p> <ul style="list-style-type: none"> <li>• updated its surface finish standards to reduce friction on the interface between the rail and the wheel.</li> </ul>
<b>Safety recommendations (number &amp; précis)</b> <i>"What needs to change to reduce the likelihood of a recurrence?"</i>	No new recommendations were issued.
<b>Response</b>	N/A

## **The maritime year in review**

### **Te arotake reremoana ā-tau**

#### ***Ara Wai – waterways***



## Notifications

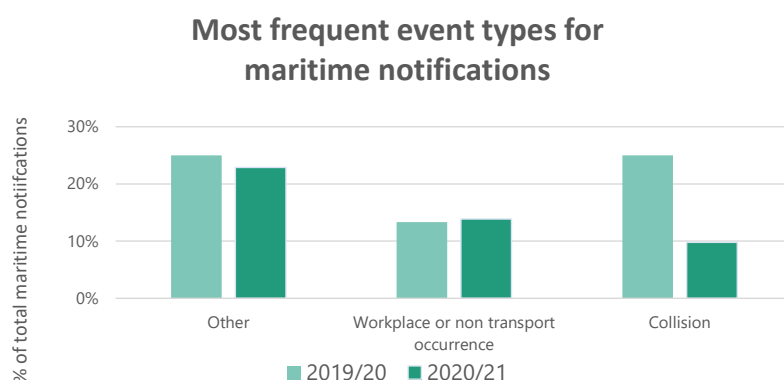
Over the year, the maritime mode received 926 notifications, compared with 58 in the previous year.

In 2017, Maritime NZ reviewed its internal arrangements for processing notifications and its legal obligations under Section 60 of the Maritime Transport Act 1994. (Section 60 sets out which notifications are to be passed to TAIC.) As a result, Maritime NZ reduced the number of notifications it sent to TAIC. However, the changes resulted in some notifications that met the Section 60 criteria not being passed on. After discussions with TAIC, Maritime NZ reverted to its previous process in mid-June 2020. TAIC is again receiving all Maritime NZ notifications, which accounts for the significant increase from 2019/20 to 2020/21.

The diagram below shows the most frequent notifications by event type. These event types comprise more than 10 per cent of the total maritime notifications.

The information is indicative only. There may be more than one notification for an occurrence, the reporting categories are broad, and from time-to-time classifications are reviewed. The numbers of notifications are too small for changes to have statistical significance, but the Commission considers notifications when deciding whether to open an inquiry.

	2020/21	2019/20
<b>Accidents</b>	86	7
<b>Incidents</b>	840	51
<b>Total</b>	926	58
<b>Inquiries launched</b>	4	2
<b>Launch rate</b>	<1%	3%



## Themes

Six maritime inquiries were open at 30 June 2021. At this stage in the investigations, we have yet to identify any trends in cause or circumstance.

## Inquiry reports published

One maritime inquiry report was published over the year.<sup>30</sup> The inquiry was into an accident in which a water taxi, carrying the skipper and six passengers, capsized. The passengers and the skipper suffered hypothermia and water ingestion to varying degrees. There were no fatalities, but four people were taken to hospital.

	Number of published reports			Timeliness of closed inquiries	
	Total	Final	Interim	Average age (working days)	No. completed within 440 working days
<b>2020/21</b>	1	1	0	316	1
<b>2019/20</b>	7	7	0	279	7

## Recommendations

The published inquiry included two recommendations. They related to buoyancy and stability issues for vessels.

- One of the recommendations was to an operator to help skippers make better decisions about assessing the risks of sailing in bad weather.
- The other was to the regulator to ensure future Maritime Rules require stability and buoyancy testing for all domestic commercial passenger vessels.

The findings, identified safety issues, and recommendations from the closed inquiries are summarised in the following pages.

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<sup>30</sup> MO-2019-204: Capsize of water taxi *Henerata*, Paterson Inlet, Stewart Island/Rakiura 12 September 2019

## Maritime inquiry MO-2019-204: Capsize of water taxi *Henerata*, Paterson Inlet, Stewart Island/Rakiura 12 September 2019

<b>Event type</b>	Capsize
<b>Safety issues</b> <i>"What contributed to the occurrence, or might contribute to another occurrence?"</i>	<p>2 safety issues were identified:</p> <ul style="list-style-type: none"> <li>The operator's safety management system was not supported by an effective assessment of the risk of vessel capsize, or criteria for the weather in which the vessel could be operated safely.</li> <li>New Zealand legislation does not require commercial passenger vessels under 15 metres in length to have stability data booklets. Without this information operators have difficulty assessing their vessels' capabilities accurately and defining safe operating limits.</li> </ul>
<b>Findings (number)</b> <i>Greater ≈ more complex</i>	8
<b>Key lessons (number &amp; précis)</b> <i>"What did we identify that others should take heed of to avoid it happening to them?"</i>	<p>3 key lessons were identified:</p> <ul style="list-style-type: none"> <li>The Maritime Rules set minimum standards for vessels to operate safely. Operators should strive to exceed the minimum standard and in doing so provide their crews and passengers with a better chance of survival in an emergency.</li> <li>Safety equipment should be fit for purpose and readily accessible.</li> <li>When a skipper identifies an increased risk due to unexpected conditions, they should take appropriate actions to ensure the vessel and passengers are prepared for an emergency.</li> </ul>
<b>Safety actions (number &amp; précis)</b> <i>"What has been done while the inquiry's been underway that's removed the need for a relevant recommendation?"</i>	<p>9 safety actions have been taken by the operator:</p> <ul style="list-style-type: none"> <li>fitting at the helm of each vessel a window-breaking hammer with attached lifejacket strap cutter</li> <li>relocating the emergency position indicating radio beacon (EPIRB) from beside the cabin door to the helm position</li> <li>mounting a float-free EPIRB on each vessel's rooftop</li> <li>adding manually inflatable lifejackets for the skipper and passengers seated in the cabin</li> <li>requiring passengers to wear lifejackets on any trips 20 minutes or longer</li> <li>adding restraint straps for luggage stowed on passenger seats</li> <li>revising the Maritime Transport Operator Plan for trip cancellation procedures and the use of other, larger vessels in rough weather.</li> <li>more frequent reporting on rough-weather trips via VHF radio</li> <li>advising customers at the time of booking that all trips depend on the weather and may be postponed or cancelled.</li> </ul>



**Safety  
recommendations  
(number & précis)**  
*"What needs to change  
to reduce the likelihood  
of a recurrence?"*

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1 recommendation was made to Maritime NZ to:

- ensure that future Maritime Rules require appropriate stability, buoyancy, and survivability assessments with respect to a vessel's area of operation, and that information is made available for all domestic commercial passenger vessels.

1 recommendation was made to the operator to:

- ensure its Maritime Transport Operator Plan assesses all risks associated with its operations and adequate guidance is available for skippers to decide when it is safe to sail.
- 

**Response**

MNZ accepted the recommendation and is incorporating it into a wider reform of Maritime Rules Part 40. Maritime NZ believes the new rules, if accepted by the Minister of Transport, would probably come into effect in 2023.

The operator accepted and implemented the recommendation.

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# Financial statements

## Ngā tauākī pūtea

### TRANSPORT ACCIDENT INVESTIGATION COMMISSION

STATEMENT OF COMPREHENSIVE REVENUE AND EXPENSE FOR THE YEAR ENDED 30 JUNE 2021

	Notes	Actual 2021 \$000	Budget 2021 \$000	Actual 2020 \$000
<b>Revenue</b>				
Funding from the Crown		6,070	7,300	5,520
Interest revenue		5	21	16
Other revenue	2	45	58	70
<b>Total Revenue</b>		<b>6,120</b>	<b>7,379</b>	<b>5,606</b>
<b>Expenditure</b>				
Audit Fees		21	22	21
Commissioners' fees	3	258	245	235
Depreciation and amortisation expense	6&7	151	216	157
Lease, rentals and outgoings		740	685	594
Personnel costs	3	3,536	4,036	3,321
Other expenses		1,280	2,175	865
<b>Total Expenditure</b>		<b>5,986</b>	<b>7,379</b>	<b>5,193</b>
<b>Net Surplus/(Deficit)</b>		<b>134</b>	<b>-</b>	<b>413</b>
<b>Other Comprehensive revenue and expense</b>		<b>-</b>	<b>-</b>	<b>-</b>
<b>Total Comprehensive revenue and expense</b>		<b>134</b>	<b>-</b>	<b>413</b>

Explanations of major variances against budget are provided in note 15.

*The accompanying notes form part of these financial statements.*

**TRANSPORT ACCIDENT INVESTIGATION COMMISSION**  
STATEMENT OF FINANCIAL POSITION AS AT 30 JUNE 2021

Assets	Notes	Actual 2021 \$000	Budget 2021 \$000	Actual 2020 \$000
<b>Current assets</b>				
Cash and cash equivalents	4	2,180	1,964	1,997
Receivables	5	83	2	7
Prepayments		28	20	32
Total current assets		2,291	1,986	2,036
<b>Non-current assets</b>				
Property, plant and equipment	6	191	212	180
Intangible assets	7	89	89	183
Total non-current assets		280	301	363
Total assets		2,571	2,287	2,399
<b>Liabilities and taxpayers' funds</b>				
<b>Current liabilities</b>				
Payables	8	283	220	225
Employee entitlements	9	282	285	327
Total current liabilities		565	505	552
<b>Non-current liabilities</b>				
Employee entitlements	9	35	20	28
Total non-current liabilities		35	20	28
Total liabilities		600	525	580
Net assets		1,971	1,762	1,819
<b>Equity</b>				
General funds		1,953	1,762	1,819
Capital Contribution		18	-	-
Total equity		1,971	1,762	1,819

Explanations of major variances against budget are provided in note 15.

*The accompanying notes form part of these financial statements.*

**TRANSPORT ACCIDENT INVESTIGATION COMMISSION**  
STATEMENT OF CHANGES IN EQUITY FOR THE YEAR ENDED 30 JUNE 2021

	Note	Actual 2021 \$000	Budget 2021 \$000	Actual 2020 \$000
Balance at 1 July		<b>1,819</b>	1,762	1,406
Total comprehensive revenue and expense for the year		<b>134</b>	-	413
Total Capital Contributions		<b>18</b>	-	-
Balance at 30 June		<b>1,971</b>	1,762	1,819

Explanations of major variances against budget are provided in note 15.

*The accompanying notes form part of these financial statements.*

**TRANSPORT ACCIDENT INVESTIGATION COMMISSION**  
**STATEMENT OF CASH FLOWS FOR THE YEAR ENDED 30 JUNE 2021**

	Notes	Actual 2021 \$'000	Budget 2021 \$'000	Actual 2020 \$'000
<b>Cash flows from operating activities</b>				
Receipts from the Crown		<b>5,987</b>	7,300	5,520
Interest received		<b>6</b>	21	17
Receipts from other revenue		<b>51</b>	58	68
Payments to suppliers		<b>(2,234)</b>	(3,127)	(1,779)
Payments to employees		<b>(3,574)</b>	(4,006)	(3,249)
GST (net)		<b>(3)</b>	-	21
Net cash flows from operating activities		<b>233</b>	246	598
<b>Cash flows from investing activities</b>				
Purchase of property, plant and equipment		<b>(68)</b>	(161)	(10)
Purchase of intangible assets		-	-	-
Sale of property, plant and equipment		-	-	-
Net cash flows from investing activities		<b>(68)</b>	(161)	(10)
<b>Cash flows from financing activities</b>				
Capital Contribution from the Crown		18	-	-
Net cash flows from financing activities		<b>18</b>	-	-
Net (decrease)/increase in cash and cash equivalents		<b>183</b>	85	588
Cash and cash equivalents at the beginning of the year		<b>1,997</b>	1,879	1,409
Cash and cash equivalents at the end of the year	4	<b>2,180</b>	1,964	1,997

Explanations of major variances against budget are provided in note 15.

The GST (net) component of cash flows from operating activities reflects the net GST paid to and received from the Inland Revenue Department. The GST (net) component has been presented on a net basis, as the gross amounts do not provide meaningful information for financial purposes and to be consistent with the presentation basis of other primary financial statements.

*The accompanying notes form part of these financial statements.*

## **TRANSPORT ACCIDENT INVESTIGATION COMMISSION**

### **NOTES TO THE FINANCIAL STATEMENTS**

#### **1. Statement of accounting policies**

##### **Reporting Entity**

The Transport Accident Investigation Commission (TAIC) is an independent Crown entity established under the Transport Accident Investigation Commission Act 1990. Its main purpose is to inquire into maritime, aviation and rail occurrences within New Zealand with a view to determining their causes and circumstances rather than ascribe blame, and to assist overseas agencies.

TAIC's ultimate parent is the New Zealand Crown.

TAIC may also co-ordinate and co-operate with overseas accident investigation authorities or represent New Zealand during accident investigations conducted by overseas authorities in which New Zealand has a specific interest.

TAIC's investigation capability is occasionally extended, on either a pro bono public or a cost recovery basis to Pacific Island States.

TAIC has designated itself as a public benefit entity (PBE) for financial reporting purposes.

The financial statements for TAIC are for the year ended 30 June 2021 and were approved by the Board on 21 December 2021.

##### **Basis of preparation**

The financial statements have been prepared on a going concern basis, and the accounting policies have been applied consistently throughout the period.

##### **Statement of compliance**

The financial statements of TAIC have been prepared in accordance with the requirements of the Crown Entities Act 2004, which includes the requirement to comply with generally accepted accounting practice in New Zealand (NZ GAAP).

The financial statements have been prepared in accordance with Tier 2 PBE accounting standards. The Commission has elected to report in accordance with Tier 2 due to having expenditure of less than \$30m.

These financial statements comply with PBE Reduced Disclosure Regime.

##### **Presentation currency and rounding**

The financial statements are presented in New Zealand dollars and all values are rounded to the nearest thousand dollars (\$000).

##### **Summary of significant accounting policies**

Significant accounting policies are included in the notes to which they relate.

Significant accounting policies that do not relate to a specific note are outlined below.

##### **Foreign currency transactions**

Foreign currency transactions are translated into NZ\$ (the functional currency) using the spot exchange rates at the dates of the transactions. Foreign exchange gains and losses resulting from the settlement of such transactions and from the translation at year end exchange rates of monetary assets and liabilities denominated in foreign currencies are recognised in the surplus or deficit.

##### **Goods and services tax**

All items in the financial statements are stated exclusive of GST except for receivables and payables, which are stated on a GST inclusive basis. Where GST is not recoverable as input tax then it is recognised as part of the related asset or expense.

The net amount of GST recoverable from, or payable to, the Inland Revenue Department (IRD) is included as part of receivables or payables in the statement of financial position.

The net GST paid to, or received from, the IRD, including the GST relating to investing and financing activities, is classified as an operating cash flow in the statement of cash flows.

Commitments and contingencies are disclosed exclusive of GST.

### **Income tax**

TAIC is a public authority and consequently is exempt from the payment of income tax. Accordingly, no provision has been made for income tax.

### **Budget figures**

The budget figures are derived from the statement of performance expectations as approved by the Board at the beginning of the financial year. The budget figures have been prepared in accordance with NZ GAAP, using accounting policies that are consistent with those adopted by the Board in preparing these financial statements.

### **Critical accounting estimates and assumptions**

In preparing these financial statements, TAIC has made estimates and assumptions concerning the future. These estimates and assumptions may differ from the subsequent actual results. Estimates and assumptions are continually evaluated and are based on historical experience and other factors, including expectation of future events that are believed to be reasonable under the circumstances.

The estimates and assumptions that have a significant risk of causing a material adjustment to the carrying amounts of assets and liabilities within the next financial year are:

- useful lives and residual values of property, plant, and equipment – refer to note 6
- useful lives of acquired software assets – refer note 7.

### **Critical judgements in applying the Commission's accounting policies**

Management has exercised the following critical judgements in applying accounting policies:

- leases classification – refer note 11.

## **2. Revenue**

### **Accounting policy**

The specific accounting policies for significant revenue items are explained below:

#### *Funding from the Crown*

TAIC is primarily funded from the Crown. This funding is restricted in its use for the purpose of TAIC meeting the objectives specified in its founding legislation and the scope of the relevant appropriations of the funder.

TAIC considers there are no conditions attached to the funding and it is recognised as revenue at the point of entitlement.

The fair value of revenue from the Crown has been determined to be equivalent to the amounts due in the funding arrangements.

#### *Donated assets*

Where a physical asset is gifted to or acquired by TAIC for nil consideration or at a subsidised cost, the asset is recognised at fair value and the difference between the consideration provided and fair value of the asset is recognised as revenue. The fair value of donated assets is determined as follows:

- For new assets, fair value is usually determined by reference to the retail price of the same or similar assets at the time the asset was received.
- For used assets, fair value is usually determined by reference to market information for assets of a similar type, condition, and age.

#### *Interest*

Interest revenue is recognised by accruing on a time proportion basis the interest due for the investment.

#### *Rental revenue*

Lease receipts under an operating sublease are recognised as revenue on a straight-line basis over the lease term.

#### **Breakdown of other revenue and further information**

	<b>Actual 2021 \$000</b>	<b>Actual 2020 \$000</b>
Rental revenue from property subleases	41	41
Other revenue	4	29
Total revenue	45	70

### **3. Personnel Costs**

#### **Accounting policy**

##### ***Superannuation schemes***

##### *Defined contribution schemes*

Obligations for contributions to KiwiSaver are accounted for as a defined contribution superannuation scheme and are recognised as an expense in the surplus or deficit as incurred.

#### **Breakdown of personnel costs and further information**

	<b>Actual 2021 \$000</b>	<b>Actual 2020 \$000</b>
Salaries and wages	3,228	3,083
Defined contribution plan employer contributions	84	79
Increase/(decrease) in employee entitlements	(37)	66
Recruitment	209	54
Other staff costs	52	39
Total personnel costs	3,536	3,321



### Commissioner remuneration

The total value of remuneration paid or payable to each Commissioner during the year was:

Commissioner	Actual 2021 \$000	Actual 2020 \$000
Ms J Meares	89	85
Mr S Davies Howard (Deputy Chief Commissioner)	58	50
Mr R Marchant (Commissioner)	55	50
Ms P Rose QSO (Commissioner)	56	50
<b>Total Commissioner remuneration</b>	<b>258</b>	<b>235</b>

### Employee remuneration

	Actual 2021	Actual 2020
Total remuneration paid or payable:		
\$100,000-\$109,999	4	3
\$110,000-\$119,999	1	1
\$120,000-\$129,999	3	5
\$130,000-\$139,999	4	5
\$140,000-\$149,999	2	-
\$150,000-\$159,999	1	1
\$160,000-\$169,999	-	1
\$170,000-\$179,999	1	1
\$270,000-\$279,999	-	1
\$300,000-\$309,999	1	-
<b>Total employees</b>	<b>17</b>	<b>18</b>

During the year ended 30 June 2021, 1 employee received compensation and other benefits in relation to cessation totalling \$31,500 (2020: Nil).

## 4. Cash and cash equivalents

### Accounting policy

Cash and cash equivalents include cash on hand, deposits held on call with banks, and other short-term, highly liquid investments with original maturities of three months or less.

**Breakdown of cash and cash equivalents and further information**

	<b>Actual 2021 \$000</b>	<b>Actual 2020 \$000</b>
Cash at bank and on hand	1,427	1,248
Short-term deposits maturing in less than 3 months	753	749
Total cash and cash equivalents	2,180	1,997

**5. Receivables****Accounting policy**

Short-term receivables are recorded at the amount due, less an allowance for credit losses. TAIC applies the simplified expected credit loss model of recognising lifetime expected credit losses for receivables.

In measuring expected credit losses, short-term receivables have been assessed on a collective basis as they possess shared credit risk characteristics. They have been grouped based on the days past due.

Short-term receivables are written off when there is no reasonable expectation of recovery. Indicators that there is no reasonable expectation of recovery include the debtor being in liquidation.

**Breakdown of other revenue and further information**

	<b>Actual 2021 \$000</b>	<b>Actual 2020 \$000</b>
Receivables (gross)	83	7
Less: Allowance for credit losses	-	-
Receivables	83	7
Receivables comprise:		
Receivables from the sale of goods and services (exchange transactions)	83	7

There have been no changes during the reporting period in the estimation techniques or significant assumptions used in measuring the loss allowance.

**6. Property, plant and equipment****Accounting policy**

Property, plant and equipment consists of the following asset classes: buildings, furniture and office equipment and computer equipment.

All assets classes are measured at cost, less accumulated depreciation and impairment losses.

*Additions*

The cost of an item of property, plant and equipment is recognised as an asset if, and only if, it is probable that future economic benefits or service potential associated with the item will flow to TAIC and the cost of the item can be measured reliably.

Work in progress is recognised at cost less impairment and is not depreciated.

In most instances, an item of property, plant and equipment is initially recognised at its cost. Where an asset is acquired through a non-exchange transaction, it is recognised at its fair value as at the date of acquisition.

### *Disposals*

Gains and losses on disposals are determined by comparing the proceeds with the carrying amount of the asset. Gains and losses on disposals are reported net in the surplus or deficit.

### *Subsequent costs*

Costs incurred subsequent to initial acquisition are capitalised only when it is probable that future economic benefits or service potential associated with the item will flow to TAIC and the cost of the item can be measured reliably.

The costs of day-to-day servicing of property, plant and equipment are recognised in the surplus or deficit as they are incurred.

### *Depreciation*

Depreciation is provided on a straight-line basis on all property, plant and equipment at rates that will write-off the cost of the assets to their estimated residual values over their useful lives. The useful lives and associated depreciation rates of major classes of property, plant and equipment have been estimated as follows:

Fixed asset type	Useful life (years)	Depreciation rate
Buildings (store)	5 – 50	2% to 20%
Computer equipment	2 – 10	10% to 50%
Furniture and office equipment	2.1 – 14	7% to 48%

The residual value and useful life of an asset is reviewed, and adjusted if applicable, at each financial year end.

### **Impairment of property, plant and equipment**

TAIC does not hold any cash-generating assets. Assets are considered cash-generating where their primary objective is to generate a commercial return.

#### *Non-cash-generating assets*

Property, plant and equipment and intangible assets that have a finite useful life are reviewed for impairment whenever events or changes in circumstances indicate that the carrying amount may not be recoverable. An impairment loss is recognised for the amount by which the asset's carrying amount exceeds its recoverable service amount. The recoverable service amount is the higher of an asset's fair value less costs to sell and value in use.

Value in use is determined using an approach based on either a depreciated replacement cost approach, restoration cost approach, or a service units approach. The most appropriate approach used to measure value in use depends on the nature of the impairment and availability of information.

If an asset's carrying amount exceeds its recoverable service amount, the asset is regarded as impaired and the carrying amount is written-down to the recoverable amount. The total impairment loss is recognised in the surplus or deficit.

The reversal of an impairment loss is recognised in the surplus or deficit.

Movement for each class of property, plant and equipment are as follows:

	<b>Buildings</b>	<b>Computer equipment</b>	<b>Furniture and office equipment</b>	<b>Total</b>
	<b>\$000</b>	<b>\$000</b>	<b>\$000</b>	<b>\$000</b>
<b>Cost</b>				
Balance as at 1 July 2019	356	249	178	783
Balance at 30 June 2020	356	254	181	791
Balance at 1 July 2020	356	254	181	791
Additions	-	58	10	68
Disposals	-	-	-	-
Balance at 30 June 2021	356	312	191	859
<b>Accumulated depreciation</b>				
Balance as at 1 July 2019	183	215	151	549
Balance at 30 June 2020	212	240	159	611
Balance at 1 July 2020	212	240	159	611
Depreciation Expense	23	26	8	57
Elimination on disposal	-	-	-	-
Balance at 30 June 2021	235	266	167	668
<b>Carrying Amounts</b>				
At 1 July 2019	173	34	27	234
At 30 June 2020 and 1 July 2020	144	14	22	180
At 30 June 2021	121	46	24	191

As at year end there was no work in progress (2020: nil) or capital commitments.

## 7. Intangible Assets

### Accounting policy

#### *Software acquisition and development*

Acquired computer software licenses are capitalised on the basis of the costs incurred to acquire and bring to use the specific software.

Costs associated with maintaining computer software are recognised as an expense when incurred.

### Amortisation

The carrying value of an intangible asset with a finite life is amortised on a straight-line basis over its useful life. Amortisation begins when the asset is available for use and ceases at the date that the asset is derecognised. The amortisation charge for each financial year is recognised in the surplus or deficit.

The useful lives and associated amortisation rates of major classes of intangible assets have been estimated as follows:

Fixed asset type	Useful life (years)	Depreciation rate
Acquired Software	2.1 – 10	10% – 48%

### Impairment of intangible assets

Refer to the policy for impairment of property, plant and equipment in note 6. The same approach applies to the impairment of intangible assets.

### Breakdown of intangible assets and further information

Movement for each class of intangible assets are as follows:

	Acquired software \$000	Total \$000
<b>Cost</b>		
Balance at 1 July 2019	1,037	1,037
Balance at 30 June 2020 and 1 July 2020	1,037	1,037
Additions	-	-
Disposals	-	-
Balance at 30 June 2021	1,037	1,037
<b>Accumulated amortisation</b>		
Balance at 1 July 2019	760	760
Balance at 30 June 2020 and 1 July 2020	854	854
Amortisation expense	94	94
Disposals	-	-
Balance at 30 June 2021	948	948
<b>Carrying amounts</b>		
At 1 July 2019	277	277
At 30 June 2020 and 1 July 2020	183	183
At 30 June 2021	89	89

As at year end there was no work in progress or capital commitments (2020: nil)

## 8. Payables

### Accounting policy

Short-term payables are recorded at their face value.

### Breakdown of payables

	Actual 2021 \$000	Actual 2020 \$000
<b>Payables under exchange transactions</b>		
Creditors	116	76
Accrued expenses	70	49
Total payables under exchange transactions	186	125
<b>Payables under non-exchange transactions</b>		
Taxes payables (GST, PAYE, and rates)	97	100
Total payables under non-exchange transactions	97	100
<b>Total payables</b>	<b>283</b>	<b>225</b>

## 9. Employee entitlements

### Accounting policy

#### *Short-term employee entitlements*

Employee benefits that are due to be settled within 12 months after the end of the period in which the employee renders the related service are measured based on accrued entitlements at current rates of pay.

These include salaries and wages accrued up to balance date and annual leave earned, but not yet taken at balance date.

#### *Long-term employee entitlements*

Employee benefits that are due to be settled beyond 12 months after the end of the year in which an employee provides a related service, such as long service leave, have been calculated based on:

- likely future entitlements accruing to employees based on years of service, years to entitlement, the likelihood that employees will reach the point of entitlement, and contractual entitlement information
- the present value of the estimated future cash flows.

#### *Presentation of employee entitlements*

Annual leave and vested long service leave are classified as a current liability. Non-vested long service leave expected to be settled within 12 months of balance date is classified as a current liability. All other employee entitlements are classified as non-current liabilities.

### Breakdown of employee entitlements

	Actual 2021 \$000	Actual 2020 \$000
<b>Current portion</b>		
Accrued salaries and wages	92	80
Annual leave	177	219
Long service leave	13	28
<b>Total current portion</b>	<b>282</b>	<b>327</b>
<b>Non-current portion</b>		
Long service leave	35	28
<b>Total non-current portion</b>	<b>35</b>	<b>28</b>
<b>Total employee entitlements</b>	<b>317</b>	<b>355</b>

### 10. Related party transactions

TAIC is a wholly owned entity of the Crown.

Related party disclosures have not been made for transactions with related parties that are within a normal supplier or client/recipient relationship on terms and conditions no more or less favourable than those that it is reasonable to expect TAIC would have adopted in dealing with the party at arm's length in the same circumstances. Further, transactions with other government agencies (for example, Government departments and Crown entities) are not disclosed as related party transactions when they are consistent with the normal operating arrangements between government agencies and undertaken on the normal terms and conditions for such transactions.

### Key management personnel compensation

	Actual 2021 \$000	Actual 2020 \$000
<i>Commission Members</i>		
Remuneration	258	235
Full-time equivalent members	0.82	0.70
<i>Leadership Team</i>		
Remuneration	674	673
Full-time equivalent members	2.95	3.05
<b>Total key management personnel remuneration</b>	<b>932</b>	<b>908</b>
<b>Total full-time equivalent personnel</b>	<b>3.77</b>	<b>3.75</b>

The full-time equivalent for Board members has been determined based on the frequency and length of Board meetings and the estimated time for Board members to prepare for meetings.



## 11. Operating Leases

### Accounting policy

An operating lease is a lease that does not transfer substantially all the risks and rewards incidental to ownership of an asset to the lessee.

Lease incentives received are recognised in the surplus or deficit as a reduction of rental expense over the lease term.

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### Operating leases as lessee

The future aggregate minimum lease payments to be paid under non-cancellable operating leases are as follows:

	Actual 2021 \$000	Actual 2020 \$000
Not later than one year	503	506
Later than one year and not later than five years	573	1,027
Later than five years	-	-
<b>Total non-cancellable operating leases</b>	<b>1,076</b>	<b>1,533</b>

TAIC leases two properties and has operating leases for photocopier equipment, meeting room hardware and i-phones. A significant portion of the total non-cancellable operating lease expense relates to the lease of one and a half floors of an office building. The lease expires on August 2023. TAIC does not have the option to purchase the asset at the end of the lease term.

There are no restrictions placed on TAIC by any of its leasing arrangements.

## 12. Financial instruments

### Financial instruments categories

The carrying amounts of financial assets and liabilities in each of the financial instrument categories are as follows:

	Actual 2021 \$000	Actual 2020 \$000
<b>Financial assets measured at amortised cost</b>		
Cash and cash equivalents	2,180	1,997
Receivables	83	7
Total financial assets measured at amortised cost	2,263	2,004
<b>Financial liabilities measured at amortised cost</b>		
Payables (excluding taxes payable)	186	125
Total financial liabilities measured at amortised cost	186	125

TAIC has credit card facilities with the BNZ up to \$200k. A letter of credit up to \$80k is in place with the BNZ for iPayroll Limited, TAIC's payroll services provider.

### 13. Contingencies

#### Contingent liabilities

There were no contingent liabilities existing at balance date. (2020: Nil)

#### Contingent assets

At balance date reparations due to be paid to TAIC for money that was taken fraudulently were cancelled by the Courts. Reparations received at 30 June 2021 were Nil (2020: \$3,900). The contingent asset at balance date is nil (2020: \$263k).

### 14. Events after the balance date

There were no significant events after balance sheet date.

### 15. Guarantee

TAIC has a \$10 million guarantee from the Minister of Finance for use in the event of a major transport accident (air, rail or marine) where TAIC would have to hire specialist recovery equipment. This is expected to be a near permanent guarantee.

### 16. Explanation of major variances against budget

Explanations for significant variations from the TAIC's budgeted figures in the statement of performance expectations are as follows:

#### Statement of comprehensive revenue and expense

##### *Funding from the Crown*

Funding from the Crown is \$1,230k less than budgeted. This was due to only three of the five new budgeted FTE positions filled during the year. The remaining two positions will be filled in 2021/22 as the KTS project progresses. IT consultant and system implementation spend for the KTS has differed from and was less than budget due to the project being in the early planning phase when the budget was set. \$666k of this variance was expense transferred into 2022/2023 and a further \$190k was requested as an in-principle expense transfer.

##### *Interest revenue*

Interest revenue is \$16k less than budgeted due to the decreasing interest rates on term deposits.

##### *Other revenue*

Other revenue is \$13k lower than budgeted due to fraud reparations that were on hold not continuing as expected. This was due to the unemployed status of offender and exemptions sort through the courts.

##### *Other expenses*

Other expenses are \$895k less than budget due to timing of IT consultant and system implementation spend for the KTS project. The KTS project was in the early planning phase when the budget was set. As the project planning progressed it was determined that some of the budget for 2020/21 would be required in outyears of the project.

##### *Commissioner fees*

Commissioner fees are \$13k more than budget due to the additional time spent by Commissioners to recruit a new CEO.

##### *Lease, rentals and outgoings*

Lease, rental and outgoings is \$55k more than budget due to the budget not fully reflecting increases to operating costs for both the Bell Road and 80 The Terrace rented premises.

##### *Depreciation and amortisation expense*

Depreciation and amortisation expense is less than budgeted due to the price per unit of new computers and iPhones in the replacement programme being less than originally budgeted. Also, expenditure for new computers and iPhone and furniture for new FTE's was less than budgeted due to some repurposing of spare office furniture and iPhones. This had a flow on effect of reducing depreciation expense.

#### *Personnel costs*

Personnel costs are \$500k less than budget due to two of the five new budgeted FTE positions not filled during the year. These positions will be filled as the KTS project progresses.

#### **Statement of financial position**

##### *Cash and cash equivalents*

Cash and cash equivalents are higher than budgeted mainly due to vacancies and COVID-19 impacting on attendance of investigators at training courses held internationally.

##### *Receivables*

Receivables are higher than budgeted due to a \$83k Crown debtor amount receivable at year end.

##### *Payables*

Payables are higher than budgeted mainly due to timing of creditor payments.

##### *Employee entitlements – Non-current liabilities*

Employee entitlements – Non-current liabilities are higher than budget due to changes in assumptions for long service leave increasing this non-current liability.

#### **Statement of changes in cash flows**

Receipts from the Crown are \$1,313k less than budget partly due to \$666k transferred to 2022/23 via an expense transfer to better reflect planned expenditure for the KTS project. Also timing of recruitment to five new FTE positions resulted in less funding drawn down from the Ministry to fund these positions.

Payments to suppliers is \$893k less than budget due to timing of expenditure for the KTS project.

Payment to employees is \$432k less than budget due to vacancies and only three of the new Budget 2020 FTE positions recruited to this financial year.

The statement of changes in cash flows shows a net cash flow from investing activities \$93k less than budget due to the price per unit of new computers and iPhones budgeted in the replacement programme being less than originally budgeted. Also, expenditure for new computers and iPhone and furniture for new FTE's was less than budgeted due to some repurposing of spare office furniture and iPhones.

#### **17. COVID-19**

The effects of the ongoing pandemic on the financial statements are minimal.

# Independent auditor's report

## Ripoata motuhake a te kaiarotake

### Independent Auditor's Report

#### **To the readers of the Transport Accident Investigation Commission's financial statements and performance information for the year ended 30 June 2021**

The Auditor-General is the auditor of the Transport Accident Investigation Commission (the Commission). The Auditor-General has appointed me, Matthew Geddes, using the staff and resources of Audit New Zealand, to carry out the audit of the financial statements and the performance information, including the performance information for appropriations, of the Commission on his behalf.

### **Opinion**

We have audited:

- the financial statements of the Commission on pages 76 to 93, that comprise the statement of financial position as at 30 June 2021, the statement of comprehensive revenue and expenses, statement of changes in equity and statement of cash flows for the year ended on that date and the notes to the financial statements including a summary of significant accounting policies and other explanatory information; and
- the performance information of the Commission on pages 18 to 31 and 42 to 47.

In our opinion:

- the financial statements of the Commission on pages 76 to 93:
  - present fairly, in all material respects:
    - its financial position as at 30 June 2021; and
    - its financial performance and cash flows for the year then ended; and
  - comply with generally accepted accounting practice in New Zealand in accordance with the Public Benefit Entity Standards Reduced Disclosure Regime; and
- the performance information on pages 18 to 31 and 42 to 47:
  - presents fairly, in all material respects, the Commission's performance for the year ended 30 June 2021, including:

- Our audit was completed on 21 December 2021. This is the date at which our opinion is expressed.

## Basis for our opinion

We have fulfilled our responsibilities in accordance with the Auditor-General's Auditing Standards.

## Responsibilities of the Commissioners for the financial statements and the performance information

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In preparing the financial statements and the performance information, the Commissioners are responsible on behalf of the Commission for assessing the Commission's ability to continue as a going concern. The Commissioners are also responsible for disclosing, as applicable, matters related to going concern and using the going concern basis of accounting, unless there is an intention to merge or to terminate the activities of the Commission, or there is no realistic alternative but to do so.

The Commissioners' responsibilities arise from the Crown Entities Act 2004 and the Public Finance Act 1989.

### **Responsibilities of the auditor for the audit of the financial statements and the performance information**

Our objectives are to obtain reasonable assurance about whether the financial statements and the performance information, as a whole, are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion.

Reasonable assurance is a high level of assurance, but is not a guarantee that an audit carried out in accordance with the Auditor-General's Auditing Standards will always detect a material misstatement when it exists. Misstatements are differences or omissions of amounts or disclosures, and can arise from fraud or error. Misstatements are considered material if, individually or in the aggregate, they could reasonably be expected to influence the decisions of readers, taken on the basis of these financial statements and the performance information.

For the budget information reported in the financial statements and the performance information, our procedures were limited to checking that the information agreed to the Commission's statement of performance expectations.

We did not evaluate the security and controls over the electronic publication of the financial statements and the performance information.

As part of an audit in accordance with the Auditor-General's Auditing Standards, we exercise professional judgement and maintain professional scepticism throughout the audit. Also:

- We identify and assess the risks of material misstatement of the financial statements and the performance information, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.
- We obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Commission's internal control.
- We evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by the Commissioners.

- We evaluate the appropriateness of the reported performance information within the Commission's framework for reporting its performance.
- We conclude on the appropriateness of the use of the going concern basis of accounting by the Commissioners and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Commission's ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in our auditor's report to the related disclosures in the financial statements and the performance information or, if such disclosures are inadequate, to modify our opinion. Our conclusions are based on the audit evidence obtained up to the date of our auditor's report. However, future events or conditions may cause the Commission to cease to continue as a going concern.
- We evaluate the overall presentation, structure and content of the financial statements and the performance information, including the disclosures, and whether the financial statements and the performance information represent the underlying transactions and events in a manner that achieves fair presentation.

We communicate with the Commissioners regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that we identify during our audit.

Our responsibilities arise from the Public Audit Act 2001.

## **Other information**

The Commissioners are responsible for the other information. The other information comprises the information included on pages 1 to 93, but does not include the financial statements and the performance information, and our auditor's report thereon.

Our opinion on the financial statements and the performance information does not cover the other information and we do not express any form of audit opinion or assurance conclusion thereon.

In connection with our audit of the financial statements and the performance information, our responsibility is to read the other information. In doing so, we consider whether the other information is materially inconsistent with the financial statements and the performance information or our knowledge obtained in the audit, or otherwise appears to be materially misstated. If, based on our work, we conclude that there is a material misstatement of this other information, we are required to report that fact. We have nothing to report in this regard.

## **Independence**

We are independent of the Commission in accordance with the independence requirements of the Auditor-General's Auditing Standards, which incorporate the independence requirements of Professional and Ethical Standard 1: International Code of Ethics for Assurance Practitioners issued by the New Zealand Auditing and Assurance Standards Board.

Other than in our capacity as auditor, we have no relationship with, or interests, in the Commission.

Matthew Geddes

Matthew Geddes

Audit New Zealand

On behalf of the Auditor-General

Wellington, New Zealand



## Kōwhaiwhai – Māori scroll designs

TAIC commissioned its four kōwhaiwhai, Māori scroll designs, from artist Sandy Rodgers (Ngāti Raukawa, Tūwharetoa, MacDougal). Sandy began from thinking of the Commission as a vehicle or vessel for seeking knowledge to understand transport accident tragedies and how to avoid them. A 'waka whai mārama' (i te ara haumarū) is 'a vessel/vehicle in pursuit of understanding'. Waka is a metaphor for the Commission. Mārama (from 'te ao mārama' – the world of light) is for the separation of Rangitāne (Sky Father) and Papatūānuku (Earth Mother) by their son Tāne Māhuta (god of man, forests and everything dwelling within), which brought light and thus awareness to the world. 'Te ara' is 'the path' and 'haumarū' is 'safe' or 'risk free'.

### **Corporate: Te Ara Haumarū - the safe and risk free path**



The eye motif looks to the future, watching the path for obstructions. The encased double koru is the mother and child, symbolising protection, safety and guidance. The triple koru represents the three kete of knowledge that Tāne Māhuta collected from the highest of the heavens to pass their wisdom to humanity. The continual wave is the perpetual line of influence. The succession of humps represents the individual inquiries. Sandy acknowledges Tāne Māhuta in the creation of this Kōwhaiwhai.

### **Aviation: Ngā hau e whā - the four winds**



To Sandy, 'Ngā hau e whā' (the four winds), commonly used in Te Reo Māori to refer to people coming together from across Aotearoa, was also redolent of the aviation environment. The design represents the sky, cloud, and wind. There is a manu (bird) form representing the aircraft that move through Aotearoa's 'long white cloud'. The letter 'A' is present, standing for a 'Aviation'. Sandy acknowledges Ranginui (Sky father) and Tāwhirimātea (God of wind) in the creation of this Kōwhaiwhai.

### **Rail: rerewhenua - flowing across the land**



The design represents the fluid movement of trains across Aotearoa. 'Rere' is to flow or fly. 'Whenua' is the land. The koru forms represent the earth, land and flora that trains pass over and through. The letter 'R' is present, standing for 'Rail'. Sandy acknowledges Papatūānuku (Earth Mother) and Tāne Mahuta (God of man and forests and everything that dwells within) in the creation of this Kōwhaiwhai.

### **Maritime: Ara wai - waterways**



The sections of waves flowing across the design represent the many different 'ara wai' (waterways) that ships sail across. The 'V' shape is a ship's prow and its wake. The letter 'M' is present, standing for 'Maritime'. Sandy acknowledges Tangaroa (God of the sea) in the creation of this Kōwhaiwhai.

## Annual Report 2021

**Transport Accident Investigation Commission**  
**Te Kōmihana Tirotiro Aituā Waka**

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