F.7.ANN

Transport Accident
Investigation Commission

Te Komihana Tirotiro Aitua Waka

Annual Report 2018-2019

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

Transport Accident Investigation Commission
Annual Report 2019

14 November 2019

Hon Phil Twyford
Minister of Transport
Executive Wing
Parliament Buildings
Wellington

Dear Minister

We have the honour to present to you this Annual Report of the Transport Accident Investigation Commission for the 12 months ended 30 June 2019.

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

No repeat accidents ever!

Safer transport through investigation, learning and influence

Our Mission

Our Values

Fairness
Impartiality
Independence
Competence
Integrity
Accessibility
Timeliness
Certainty

Our Purpose

Ko te aronga a Te Komihana Tirotiro Aitua Waka, ki te whakatau me te āta tirotiro he aha te pūtake o ngā Aitua 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.

Contents

1. Chief Commissioner's overview

The year in summary

The 2018/19 year has been a busy and challenging one for the Commission. We are managing a critical phase in the life of the organisation as we look to replace major IT assets. This has taken much of our management focus over the year, because our decisions at this point will set the basis for the effectiveness of the Commission into the future.

Investigation staff have also been busy. In March 2019, we opened five inquiries in a period of just over two weeks (two aviation, two rail, and one maritime). In total, 42 inquiries were active over the year, 19 in the aviation mode. In addition, the Commission assisted a record number of inquiries conducted by our international peers. Assistance to these agencies is provided under international treaty, and were all investigations in the aviation mode.

The Commission is planning to implement a 'fit-for-purpose' Knowledge Transfer System

The Commission is at an important phase in its life as an effective investigation body as our critical IT assets, including the investigation management system, rapidly approach the end of their life. Much organisational focus in the first part of the year was given to preparing a funding bid for the replacement of these assets.

We have worked with the Government Chief Digital Officer and other agencies similar to ourselves during our planning. Our vision is broader than just replacement of assets. We want tools that will help us achieve a modern and 'fit-for-purpose' Knowledge Transfer System — the people, assets, and processes that allow us to organise, create, capture or distribute knowledge, and make it available for later use. So strategic work on our communications and research programmes will be tightly woven into the planning for the replacement of assets.

The budget bid was unsuccessful so we have modified and re-set the timing of our upgrade programme. The Commission has not changed strategic direction and we remain focused on the objectives set out in the *Statement of Intent 2018-2022*. However, achieving our desired future state will take longer than first planned. We intend to re-submit the bid for funding in the 2019/20 budget. In the meantime, we are moving existing data and systems to the cloud, and have re-scheduled work on the communications and research strategies.

The Watchlist continues to be an effective means of influencing change

In October 2018, we published a new Watchlist item *Navigation in pilotage waters*. The maritime sector has responded positively to the issues raised. The item, and the inquiries on which it is based, have been discussed at national and international forums, with Commission staff contributing to the discussions. The Commission is pleased at the acceptance of the call for action, and the level of commitment the industry is showing to resolving the safety issues.

The rail sector is also making good progress in implementing recommendations related to safety at level crossings, another Watchlist topic (*Safety for pedestrians and vehicles using level crossings*). Over the year, two recommendations were closed from the inquiry into the fatal collision between a passenger train and a heavy road vehicle at Te Onetea Road level crossing in 2014.[1] One of the recommendations was specific to improving safety at the Te Onetea Road level crossing. The other was more systemic, and called for assessments for all level crossing assessments to include measures that would avoid a

[1] Rail inquiry RO-2014-101: Collision between heavy road vehicle and the Northern Explorer passenger train, Te Onetea Road level crossing, Rangiriri, 27 February 2014, recommendations 012/16 and 013/16

similar accident to the one that took place in 2014. A new assessment system for level crossings is now in use.

The Commission continues to collaborate with, and contribute to, the international community

The Commission has obligations as signatory to international treaties: the International Civil Aviation Organization (ICAO) Convention and the International Maritime Organization (IMO) code on safety investigation. As well as assisting peers with inquiries under these obligations, the Commission and Commission staff have continued to build and develop relationships across the international community of accident investigation bodies. We have shared our knowledge and expertise with the Pacific community to help develop standards of accident investigation, and provided information to the South African Civil Aviation Authority who are setting up an independent air accident investigation agency.

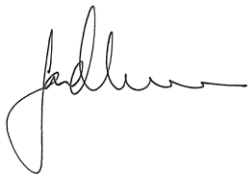
Planned amendments to the ICAO Convention are likely to mean that we, together with our Australian counterpart the Australian Transport Safety Board (ATSB), will be increasingly called on to provide assistance to developing nations in the Pacific region.

The Commission also continues to build international relationships in other ways. Attendance at international forums such as the International Transportation Safety Association (ITSA) and the Marine Accident Investigators' International Forum (MAIIF) are vital for small organisations such as ourselves. International engagement provides opportunity for inter-agency collaboration, and helps build resilience against the significant pressures that we would experience should New Zealand experience a major accident. 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.

Acknowledgement

In October 2018, the Deputy Chief Commissioner, Peter McKenzie, QC CNZM, retired from his role. He was first appointed in August 2015, and I would like to acknowledge the contribution he made to the Commission over his time with us. He provided insightful and wise counsel to the Commission's deliberations and I and my fellow Commissioners thank him for his dedication.

I would also like to acknowledge the contribution of Captain Tim Burfoot who resigned as Chief Investigator of Accidents in August 2019, after nearly 20 years as a staff member, 15 of them in the Chief Investigator role. The Commission is appreciative of the high level of expertise and commitment that Captain Burfoot brought to his work.



Jane Meares
Chief Commissioner

Organisational overview

"Our role is to help avoid transport accidents"

1 output class:

ACCIDENT OR INCIDENT INVESTIGATION AND REPORTING

2. Organisational overview

2.1. Our role is to help avoid transport accidents

The Transport Accident Investigation Commission Act 1990 establishes us as a standing commission of inquiry

The Commission's role 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.[2] The Transport Accident Investigation Commission Act 1990 (the Act) enables the Commission to undertake its task.

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

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

To support its 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. It also has wide powers under the Commissions of Inquiry Act 1908.

On occasions, coroners, the New Zealand Police, transport safety authorities (the regulators[3]) or WorkSafe New Zealand, may also investigate the same transport accidents and incidents as the Commission is investigating.

[2] Section 4 of the Transport Accident Investigation Commission Act 1990
[3] Maritime NZ, the Civil Aviation Authority, and the NZ Transport Agency

2.2. Independence and impartiality underpin the Commission's ethos

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

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.

International transport conventions manifest these principles by obligating signatory States to conduct independent and impartial investigations.[4] New Zealand fulfils this obligation through the Act, which establishes the Commission as a commission of inquiry and expressly requires the Commission to act independently in performing its statutory functions.

Under the Act, all the evidence gathered during an investigation has extensive legal protection from disclosure. Further, no finding, recommendation, or report published by the Commission is admissible in legal proceedings.

The independent functioning of the Commission and protection of evidence mean people can speak to us freely about what happened in an accident without fear of prosecution, and we can better understand what happened.

2.3. Our organisation consists of Commissioners and their supporting staff

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. Commissioners have two roles: as Commissioners they determine the circumstances and causes of the accidents and incidents before them; as members of the Board of the Transport Accident Investigation Commission they fulfil the requirements of the Crown Entities Act 2004.

The Commission sits two days a month from February through to December each year. It is usual for the Commission to devote at least 75% of its time to hearing the cases before it, with the remaining time for board matters.

The Commission had four members at 30 June 2019

The Governor-General appoints the members of the Commission. At 30 June 2019, 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 October 2021).
- **Mr Stephen Davies Howard** Deputy 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).

[4] Paragraph 5.4, Annex 13 to the Convention on International Civil Aviation; Chapter 16 International Maritime Organization Casualty Investigation Code

Peter McKenzie QC CNZM also served during the year as Deputy Chief Commissioner until his retirement at the end of October 2018. Mr McKenzie had been appointed to the Commission in August 2015.

A Chief Executive and 26 staff support the Commissioners

A small organisation supports the Commissioners, who employ a Chief Executive. As at 30 June 2019, the Chief Executive had 26 staff, including four Business Services staff who were part time.

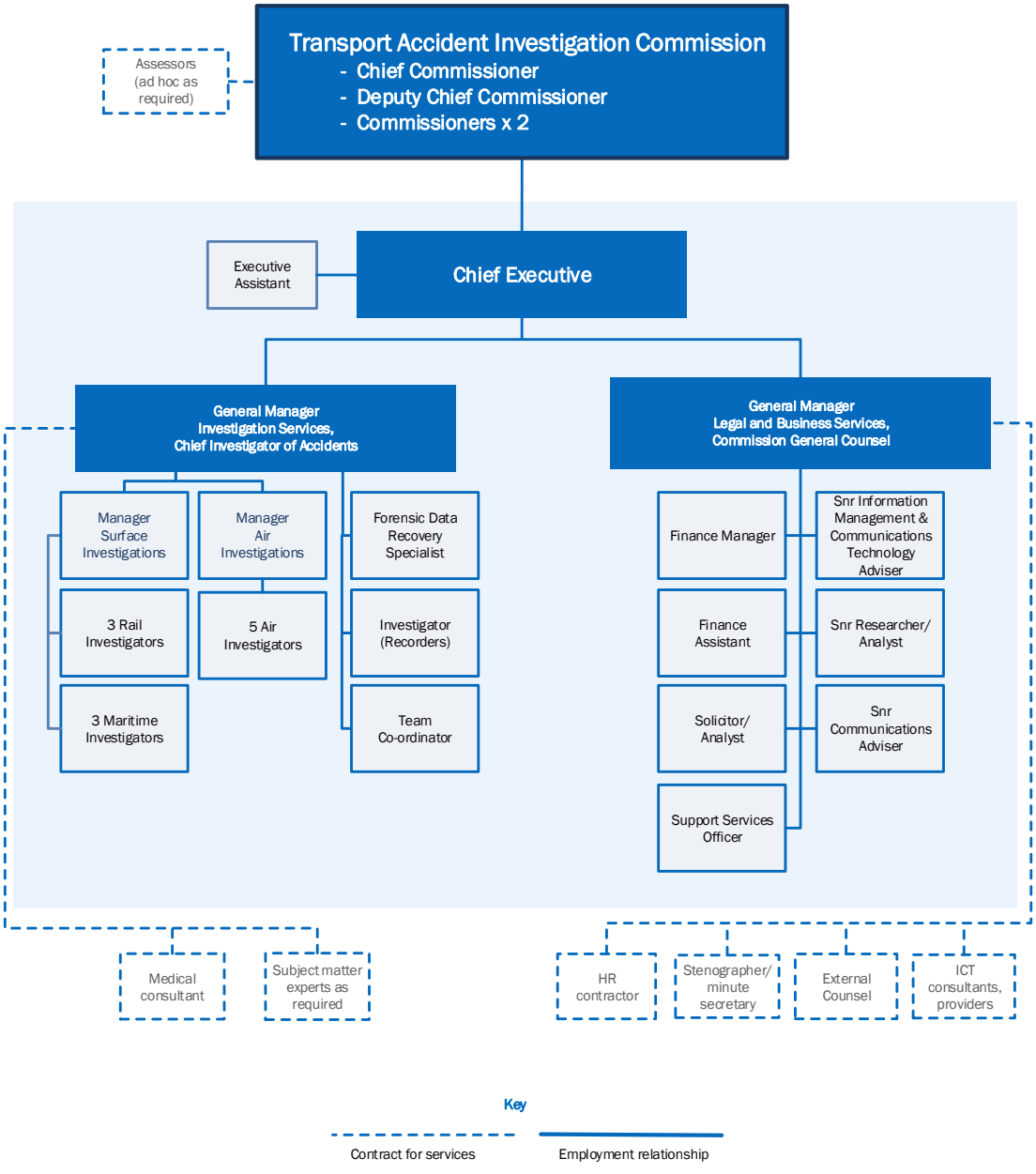


Figure 1: Organisational chart as at 30 June 2019

Our work: the year in review

"The core work of the inquiry process is to identify safety issues"

42

DOMESTIC INQUIRIES HANDLED

3. Our work: the investigation and inquiry processes

3.1. The Commission's work follows established procedures

A statutorily notification process initiates our work

A statutorily prescribed notification process initiates the Commission's work. It requires certain thresholds to be met for the Commission to open an inquiry and activate an investigation into an accident or serious incident.

The Commission opens an inquiry to determine circumstance and cause

The Commission opens an inquiry when it believes the circumstances of an accident or incident have — or are likely to have — significant implications for transport safety, or when the inquiry may allow the Commission to make findings or recommendations to improve transport safety. A range of considerations guides this decision. These are set out in a Logic Guide, available on our website.[5]

Through the investigation and inquiry process the Commission identifies safety issues relevant to the circumstances and, where possible, ascertains causes.

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 Commission's inquiry process is encapsulated in a work programme covering the general areas of activation, investigation, information, and communication.

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

[5] https://taic.org.nz/how-we-work/why-and-what-we-investigate

3.2. We receive notifications of accidents and incidents mainly from regulators

Notifications come mainly from transport sector regulators

The Commission receives notifications of certain incidents and accidents in air, rail, and maritime transport from various sources, but mainly from the modal regulators.

Over the year, we received an average of about 40 notifications per month

During 2018/19, we received 457 notifications of accidents and incidents, compared with 809 in 2017/18.[6] [7] Most of the reduction is due to process changes at Maritime NZ causing a significant decrease in notifications received from Maritime NZ since the end of October 2017 (that is, for the last eight months of 2017/18). Refer to the maritime review beginning on page 61 for more detail.

Each notification is categorised against one or more event types. The Commission monitors trends in event types, and takes them into account when deciding whether to open an inquiry into any particular occurrence. The modal reviews in section 7 give data on the most frequent notifications, according to event type, for each transport mode.

From the notifications we received, we opened 18 inquiries

The Commission opened 18 inquiries in 2018/19, 3.9 percent of the notifications received. The graph below shows the number of notifications received and inquiries opened by mode, compared with the 2017/18 year.

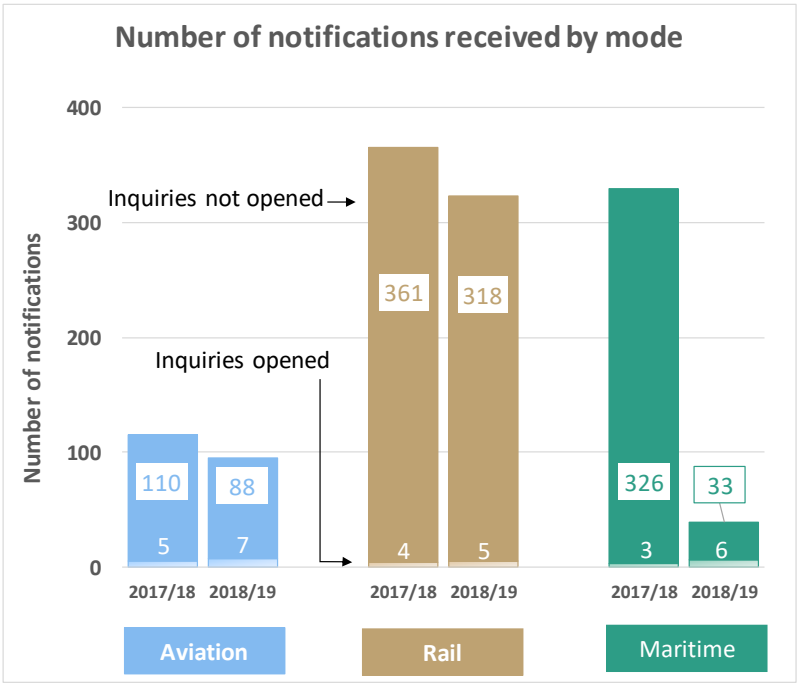


Figure 2: Numbers of notifications received by mode

[6] 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.
[7] Note the number of notifications may vary slightly (less than 1%) from that reported previously. This is the result of periodic corrections to entries in the notifications database.

3.3. Investigations establish the facts and circumstances of accidents and incidents

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.

42 domestic inquiries were active over the year; and 11 overseas inquiries assisted

As well as opening 18 inquiries, the Commission maintained progress on 10 continuing inquiries and closed a further 14 inquiries.

In addition to domestic inquiries, the Commission assisted 11 investigations conducted by overseas investigation agencies. Refer to section 3.7 for our obligations to undertake this work.

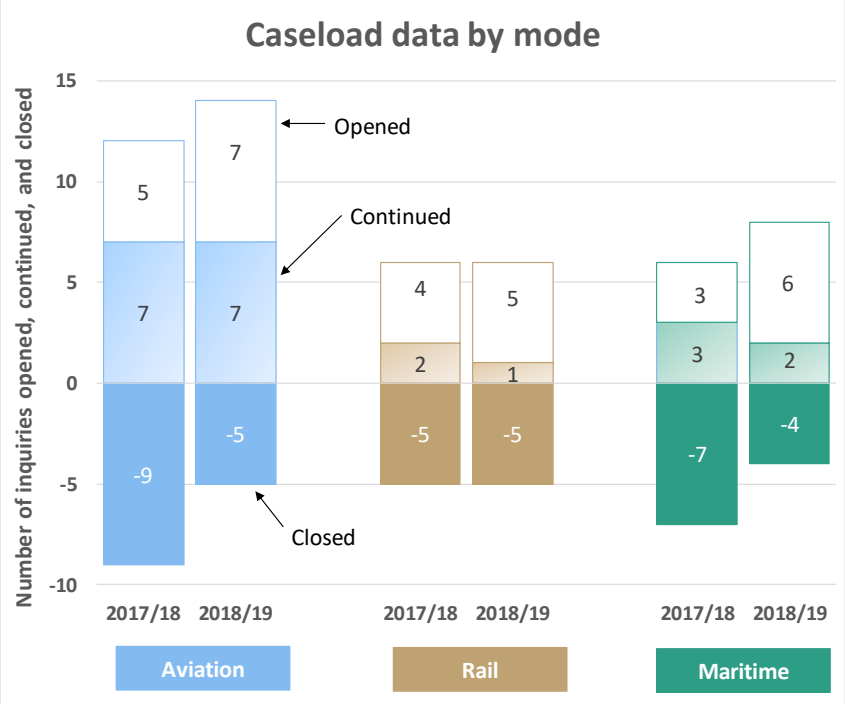


Figure 3: Inquiries opened and closed by mode

3.4. The inquiry process tests the evidence and identifies 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 draft reports prepared by the investigator in charge. 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[8] release the report to interested persons[9] and allow them to comment on, or refute, those findings. The Commission generally allows 21 days for interested persons to make submissions or request further work.

The second element is marked by final draft reports being submitted to the Commission for consideration along with written submissions received from the interested persons. The Commission may hear oral submissions.

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 2018/19 the Commission sat 11 times

In 2018/19 (2017/18) the Commission sat 11 (11) times receiving 41 (48) inquiry reports, approving 16 (18) for consultation and 16 (20) for publication, including 2 (2) interim reports (the rest were draft reports). In addition, the Commission issued 22 (29) recommendations and closed 15 (35).

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. The Commission closed one inquiry over the year that was extended for various reasons — refer to the section on the aviation year in review beginning on page 45.

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

The Commission aims to keep survivors and families appropriately informed with consistent messaging across all inquiries. 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 ensure our restrictions are communicated clearly. 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.

---

[8] Transport Accident Investigation Commission Act 1990, Part 2, s14 (5)

[9] '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)

3.5. Core information is expressed as findings, safety issues and recommendations

Identifying safety issues is the core work of the inquiry process

Safety issues are factors that either contribute to an accident or are unsafe conditions. They are the factors and conditions about which safety actions are taken or recommendations made. Identifying the safety issues is the core work of the inquiry process, and is crucial in establishing common circumstance and causes in repeated types of occurrences.

Findings are the Commission's conclusions

Findings are the Commission's conclusions having examined the underlying facts of the occurrence they are inquiring into. The number of findings loosely equates to the complexity of both the occurrence and the inquiry.

Recommendations communicate the required action to remedy safety issues

Recommendations communicate the required action to remedy the identified safety issues and so avoid similar accidents and incidents from recurring.[10] Not every inquiry generates recommendations: some highlight recommendations previously made; and sometimes (ideally) relevant parties will have already acted, so a recommendation is not needed. Most recommendations are directed to regulators, and some to operators.

The Commission releases interim reports when there is high public interest in an event, or when we want to communicate important information about the circumstances of an accident. The Commission issues urgent recommendations where necessary to deal with urgent safety issues.

Table 1: Recommendations issued and closed[11]

	2018/19 Recommendations			2017/18 Recommendations		
	Open 30-Jun-19	Issued	Closed	Open 30-Jun-18	Issued	Closed
Aviation	75	5	2	72	8	23
Rail	31	7	3	27	7	8
Maritime	101	10	10	101	14*	4
Total	**207**	**22**	**15**	**200**	**29**	**35**

Note on number of recommendations issued. This number includes:

- recommendations contained in reports published in 2018/19 (25) minus any that had been issued in previous interim reports (4); and any issued in late June 2018, which were counted in the 2017/18 financial year (1* — this was incorrectly excluded from last year's report)
- recommendations contained in interim reports published during the year (none fell into this category in 2018/19)
- recommendations issued in late June 2019 but which were included in reports published in July 2019, therefore falling into the 2019/20 financial year (2 recommendations fell into this category).

[10] See Annex 13, Convention on International Civil Aviation Aircraft Accident and Incident Investigation, (10th Ed.), p 1-2
[11] Note that figures in this table vary slightly from those previously reported. Changes in data 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).

3.6. Inquiry reports and the Watchlist communicate core messages

Reports communicate in detail the outcome of inquiries

The Commission's investigation and inquiry processes culminate in a written report. An inquiry report gives a detailed account of the accident or incident, and the analysis to determine the circumstances and causes. It contains the core messages from the outcome of an inquiry — what happened and what needs to be done. The report sets out findings and identified safety issues, safety actions taken, and the recommendations arising from safety issues. It also draws broader lessons for the transport sector.

In 2018/19, we published final reports for 14 closed inquiries, and two interim reports

In 2018/19, we published final reports for the 14 inquiries closed during the year. Four of these inquiries involved fatalities and/or serious injuries; in total, 11 people died in the accidents. The number of inquiries closed for 2018/19 is lower than for the previous year, reflecting a 'younger' casebook. Table 2 shows the breakdown by mode.

Table 2: Number of inquiries closed

2018/19				2017/18			
Aviation	Rail	Maritime	Total	Aviation	Rail	Maritime	Total
5	5	4	**14**	9	5	7	**21**

In 2018/19, the Commission issued two interim reports. These are discussed in the review of the aviation mode for the year (beginning page 45).

The Watchlist communicates the highest-priority safety issues

The Watchlist presents the Commission's highest-priority safety issues. It is our mechanism for conveying key messages about where we consider the sector should be paying attention. 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, we review and update the Watchlist

Each year, the Commission reviews and updates the Watchlist. From the 2017/18 review, we added the item on navigation in pilotage waters, which was published in October 2018. The sector has responded positively to this item. See the case study in the section beginning on page 21.

Updates of the existing items were published to our website in August 2019.

3.7. We work with international agencies in various ways

The Commission assisted 11 overseas inquiries in 2018/19

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 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 the 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.

During the year, the Commission assisted 11 overseas inquiries under New Zealand's obligations as a signatory to the ICAO Convention.

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

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 provide assistance outside ICAO Convention obligations.

In addition, we actively participate in international forums such as the International Transportation Safety Association (ITSA) and the Marine Accident Investigators' International Forum (MAIIF). Commission investigators train at Cranfield University in the United Kingdom giving them a sound grounding in international practice.

The Commission and the ATSB met for the first of regular bilateral meetings

In October 2018, Commissioners and senior managers from the Australian Transport Safety Bureau (ATSB) met with us formally for the first time in Wellington. The intent of the meeting was to establish annual meetings to strengthen collaborative engagement for the benefit of both organisations. The Chief Executive now has regular telephone calls with her ATSB counterpart.

The forensics team is building international relationships

International engagement happens at all levels of the organisation. Over the year, the Commission's forensics team has been building collaborative relationships with international peers. Connections have been made with colleagues in Singapore's Transport Safety Investigation Bureau and the Australian Defence Force.

International engagement is vital for building resilience

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

See the case study in the section beginning on page 21 for examples of our contributions to the international community this year.

Our impact on the transport sector

"Recommendations are signals about safety issues"

22

RECOMMENDATIONS ISSUED

4. Our impact on the transport sector

4.1. Recommendations are signals to recipients about 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 Knowledge Transfer System. They are signals about conditions 'in play' in the system that are creating safety issues. They do not prescribe a solution, and are not mandatory. Information in the recommendation helps recipients assess what safety actions they might take to avoid similar accidents in the future. They make these decisions in the context of 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, because regulators are better able to influence and act on the transport system, which is highly complex.

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

Although our recommendations are not mandatory, 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. Annex 13 to the Convention on International Civil Aviation (Annex 13) is specific on this point.[12] Paragraph 6.10 requires the State receiving a safety recommendation to respond to the issuing State within 90 days. It must inform the issuing State what preventative action is being taken or considered; or give reasons if it declines to take action.

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

Our legislation is silent on oversight of recommendations, but transport sector regulators report on recommendations that have been issued to 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 managing oversight of recommendations. As a matter of good practice, the Commission records the responses to the recommendations we issue,[13] but we have no powers to require recipients to report progress in implementation.

In practice, government agencies are active in submitting evidence to the Commission if they (the recipients) consider they have implemented a recommendation. The transport sector regulators (Civil Aviation Authority, Maritime NZ, and NZ Transport Agency) report every six months on progress in implementing recommendations that the Commission has issued to them. The reports are published on the Commission's website.

The average age of all open recommendations has increased from 1,452 working days at 30 June 2018 to 1,595 at 30 June 2019 (a 10% rise).

[12] See Annex 13 to the Convention on International Civil Aviation Aircraft Accident and Incident Investigation, (11th Ed.), chapter 6
[13] Paragraph 6.11, Annex 13

4.2. We gauge our effectiveness mainly through case studies

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

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 through our contribution to a safe transport system that keeps people increasingly free of death and serious injuries. 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 contribute to improved safety by making information available to others in the transport system so they can act.

In addition, in many instances there is good reason for sector responses to be lengthy. The occurrences the Commission investigates involve large systems that are tightly coupled with other systems. This means that achieving change in behaviour or modifying processes often requires substantive change programmes, which takes time. Depending on the transport systems involved and what is being asked to remedy identified transport safety risks — for example, regulatory change — implementation of a recommendation could take years.

We gauge our effectiveness mainly through case studies

Given the complexities of the transport system, and our lack of control over others' actions, we measure our influence on safety outcomes mainly through case studies. Case studies can tell a more comprehensive story of how our recommendations have effect. Case studies follow at section 4.3.

Results of our stakeholder survey provide another measure of our effectiveness.....

In 2018/19 the Commission undertook an online stakeholder survey, which in part, acts as a proxy measure for the Commission's effect on transport sector outcomes. The survey included three questions in particular that relate to our effectiveness: the questions asked respondents to what extent they agree with the statements:

- *People take notice when TAIC speaks publicly on transport safety.*
- *TAIC has a positive influence on transport safety.*
- *TAIC generally fulfils its role of improving transport safety.*

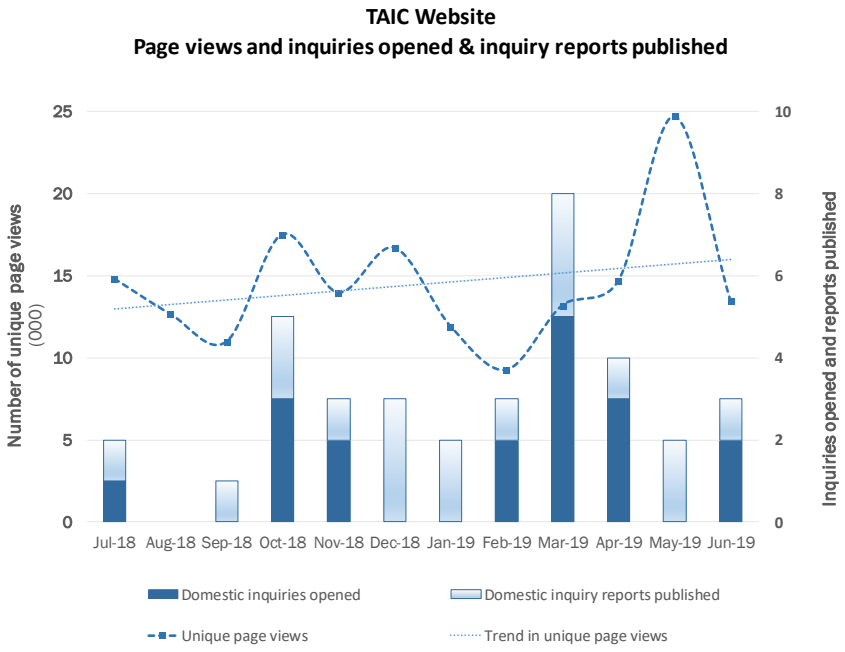
The survey is small, so the results are not statistically meaningful. However the overall pattern is consistent with previous years. The independent research company who conducted the survey concluded:

- *Stakeholders are positive in most areas in relation to the way [Commission staff] conduct investigations and their professionalism*.
- *Stakeholders are positive about the values that [Commission staff] demonstrate, but continue to have concerns about the timeliness of investigations and the time it takes for findings to come out*.
- *There is an opportunity for [Commission staff] to do more in relation to communicating with stakeholders during investigations*. [Refer to section 3.4 for a discussion on our Families Programme.]

- *The improved responses to the 2016/2017 survey in relation to 'TAIC investigations are conducted well' and 'TAIC generally fulfils its role of improving transport safety' have held for 2018/2019.*

...as do the number of visitors to our website

Since refreshing our website in November 2017, we have been tracking visitor numbers (unique page views). Overall, the trend is upward, with an increase in page views of about 25% over the 2018/19 year (see Figure 4). However, the data show that the number of unique page views is closely related to activity — that is, the launching of an inquiry or the publication of a report. The data suggest that the audience for the Commission's work tends to have specific interests, rather than being a generalised readership.



Note: the spike in number of unique page views in May 2019 relates to the publication of the report into a helicopter accident on Fox Glacier in 2015[14]

Figure 4: Trend in number of website visitors 2018/19

We plan to review how transport sector participants access and use our information

The Commission plans to refresh its Research Strategy, which forms part of a broader Digital Transformation Strategy, the enabler of our Knowledge Transfer System (refer section 5.2). The refresh is yet to be scoped, but we expect it to include a review of methods to better understand how participants in the transport system — such as those who subscribe to our website — learn about safety issues, and access the information and knowledge we produce.

The aim is to more formally capture how the information and knowledge we produce and communicate through our inquiry reports is used. For example, Commission staff have received (unsolicited) feedback about a report in the rail sector being used for training of drivers on the Wellington rail network.

[14] AO-2015-007: Airbus Helicopters AS350BA, ZK-HKU, collision with terrain, Fox Glacier, 21 November 2015

4.3. Case studies

The case studies on the following pages demonstrate how the Commission's work on identifying safety issues and making recommendations where action needs to be taken, together with a responsive sector agency, can achieve a safer transport system.

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

Case study: Working with our international peers in various ways

As noted in section 3.7, the Commission has obligations and rights under Annex 13 to the ICAO Convention to the international community of transport accident investigation bodies. We work with our peers in other ways too. Some examples are given below.

We have assisted the Japan Transport Agency Board in one of its inquiries

Over the year, the Commission assisted the Japan Transport Safety Board (JTSB) in its investigation into a serious incident in March 2019 involving an Australian-registered Boeing 787-7 aeroplane.[15] The incident — abnormal performance on both engines — happened on approach to Kansai International Airport in Japan. The aeroplane had flown to Auckland where maintenance activities were undertaken that were related to the incident. At the request of the JTSB, and in accordance with Annex 13 to the ICAO Convention, we appointed an Accredited Representative to the investigation. Commission investigators assisted JTSB staff follow their lines of inquiry by facilitating visits and technical assessments of facilities. To date, the assistance provided has totalled over six weeks of staff time.

Commission staff provided training in the Pacific

In the latter half of 2018, the Commission provided a trainer for three weeks to assist in the Secretariat for the Pacific Community (SPC) deliver a model investigation course in Fiji. The SPC is the principal scientific and technical organisation in the Pacific region. They are an international development organisation owned and governed by 26 country and territory members.

The course, sponsored by the International Maritime Organization (IMO), assists developing nations improve the standard of maritime accident investigations so they meet the requirements of the IMO casualty investigation code.

Commission staff provided advice to the South African Civil Aviation Authority

During the year, the South African Civil Aviation Authority sent two officers to Australia and New Zealand to gather information with the aim of setting up an independent air accident investigation agency. They spent some time with the Australian Transport Safety Bureau, the New Zealand Civil Aviation Authority and with Commission staff.

We were able to provide them with a broad range of information and documentation ranging from our governing legislation down to the investigator training and the safety equipment that we provide.

What difference does it make?

The activities described above are all part of fulfilling New Zealand's obligations as an active signatory to international treaties. We contribute to the global body of knowledge by assisting other agencies in their investigation task, and sharing our expertise to help others build capability. In the process, we gain experience and new perspectives from working with our international colleagues, and build crucial networks and relationships to build our expertise, as well organisational resilience.

[15] AO-2019-004: Australian-registered Boeing 787-7, abnormal engine performance, Kansai, Japan, 29 March 2019

Rail case study: Improved safety assessments for level crossings

The Commission's work: what we said

In February 2014, the Northern Explorer passenger train collided with a truck and long low-loader on the Te Onetea Road level crossing near Rangiriri, killing the driver of the truck.[16] As a result of the Commission's inquiry into this accident, we identified two safety issues and issued recommendations:

- *Safety issue*: The view lines from the stop limit line on the road, along the rail tracks in both directions, did not allow sufficient time for long vehicles to drive safely over the level crossing without being struck by a train.
  Recommendation: The NZTA, KiwiRail, and the Waikato District Council work together to resolve the safety issue.[17]

- *Safety issue*: Level crossing assessments do not require the road profile and the alignment of roads on the approach to and passing over level crossings to be routinely measured. Therefore, there are no checks made to ensure that all road-legal vehicles can pass over level crossings without becoming stuck, as happened in this case.
  Recommendation: NZTA work with KiwiRail and all road controlling authorities to ensure that rail level crossing assessments include a measure of the road profile and compatibility with the allowable dimensions for long and low road vehicles.[18]

The sector response: what happened

In August 2018 both recommendations were closed. At the Te Onetea Road level crossing, the road approach crossing has been re-aligned and the steep gradient onto and over the level crossing has been removed. The available sighting distances are now compliant with standards.

On the broader safety issue covered by the second recommendation, the NZTA has collaborated with the wider rail industry and other groups to resolve the issues surrounding level crossing safety. A new Level Crossing Safety Impact Assessment Guide is now in use. A key component of the new guide is a revised scoring system called the Level Crossing Safety Score (LCSS) that supplements the traditional Australian Level Crossing Assessment Model (ALCAM). The LCSS considers:

- historical crash and incident data
- train driver observations
- observations made by road controlling authority engineers
- impact on cyclists and pedestrians.

Part of the site-specific safety score allocation takes into account both horizontal and vertical road alignment at every level crossing.

Impact: what difference have we made

The new level crossing assessment adds an additional safety factor for heavy vehicles using level crossings. The Commission continues to make recommendations to improve safety for all users of level crossings. We have recently made further recommendations about clarifying the responsibilities for aspects of safety at level crossings (see the rail year in review beginning on page 53).

[16] Rail inquiry RO-2014-101: Collision between heavy road vehicle and the Northern Explorer passenger train, Te Onetea Road level crossing, Rangiriri, 27 February 2014
[17] Recommendation 012/16
[18] Recommendation 013/16

Maritime case study: Positive industry response to Watchlist

The Commission's work: what we said

In October 2018, the Commission added a new item to its Watchlist: *Navigation in pilotage waters*. It arose from a series of incidents featuring errors in navigation in pilotage waters resulting in groundings or contact with objects. Deficiencies in bridge resource management, an international standard for ensuring safe navigation of a ship, were common to these incidents. Errors in navigation in pilotage waters can have serious consequences for people, the environment, and commerce.

The sector response: what happened

The sector responded positively, with the safety issues raised in the Watchlist discussed in national and international forums. Various national bodies have acted to close or progress recommendations.

The 2018 annual conference of the New Zealand Maritime Pilots Association (NZMPA) had the Watchlist topic as its main theme. The conference focused on enhancing pilot training and pilotage standards throughout New Zealand, and used recent Commission reports on accidents involving ships under pilotage as starting points for discussion. The Commission's Chief Investigator of Accidents presented to the conference, and participated in a question and answer panel.

Established by Maritime NZ, the New Zealand Port and Harbour Marine Safety Code (the Code) provides national best practice guidance to port operators and councils for managing safety in ports and harbours. The Code Steering Group shares the concerns raised in the Watchlist. It raised the matter in its November 2018 newsletter to Code members, and included a link to the item on our website. One of the recommendations referred to in the Watchlist was to Maritime NZ to provide a common official website where shipping companies and vessel masters could access harbour authorities' passage plans before planning their voyages. Maritime NZ, through the mechanism of the Code, implemented the recommendation, which was closed in March 2019.[19]

In November 2018, investigation staff attended the annual Marine Accident Investigator's International Forum (MAIIF), an international forum attended by representatives from most States that are actively involved in accident investigation. One of the themes of the forum was accidents under pilotage. A senior investigator from the Commission presented on this topic, using recently published inquiries and the Commission's Watchlist.

In April 2019, the Commission's maritime team was invited to attend a meeting hosted by Maritime NZ but run by a core group of industry stakeholders who have been tasked with developing a standardized 'best practice' passage plan for ships navigating in pilotage waters. A similar task group has been formed to develop a 'best practice' training regime for maritime pilots.

Impact: what difference have we made

The Commission is pleased at the level of commitment the industry is showing to resolving the safety issues raised in the Watchlist. Improvements in passage planning and bridge resource management will help avoid errors in navigation and protect people, the environment, and commerce.

[19] Safety recommendation 031/17 from maritime inquiry MO-2016-204: Bulk carrier, *Molly Manx*, grounding, Otago Harbour, 19 August 2016

Non-financial reporting: delivering effective investigations

"Our inquiries offer information and insight"

64%

OF INQUIRIES CLOSED WITHIN 2 YEARS (TARGET 70%)

5. Non-financial reporting: delivering effective investigations

5.1. Building resilience has driven our strategic focus

Building resilience is key to achieving our strategic objectives

The Commission's overarching aspirational goal — our vision — is for No repeat accidents — ever! The Commission seeks to pursue this goal by working to ensure safety issues are properly identified and resolved.

The strategic focus for the period covered by the *Statement of Intent 2018-2022* is the Commission's capacity and capability to meet the challenge of an operating environment that is undergoing rapid technological change. How we respond to this challenge is critical to our continuing effectiveness in achieving our statutory purpose.

The objectives set out in the *Statement of Intent 2018-2022* are designed to make the Commission a resilient organisation, able to respond to disruptions in our external operating environment and to shocks such as a major accident or a natural disaster that disrupts our ability to operate. Resilience includes being able to continue the knowledge transfer process throughout the life of the inquiry, from the gathering and analysis of evidence to the publication of the inquiry report. The *Statement of Intent 2018-2022* sets out our strategic objectives to ensure we contribute to a safer transport system and meet our statutory obligations.

The strategic objectives are:

- Occurrences are independently investigated and the facts uncovered.
- Participants in the transport system know about safety issues.

Our strategy to achieve these goals has three strands:

- Organisational performance: We generate information and insight about transport safety through rigorous, evidence-based, and properly focused investigations.
- Making a difference: 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.
- Organisational health and capability: We build and maintain resilience to environmental disruptions and external shocks.

The remainder of this section reports activity during the year contributing to the Commission's strategic objectives.

5.2. Strengthening human and information capital is a key part of our strategy

Our strategic direction remains centred on strengthening our Knowledge Transfer System

Over the year, the Commission has achieved stability in organisational performance, a result of increased funding from 2015/16. At the same time, we have been investigating options for our next challenge — responding to the upcoming end of life of critical IT assets, including the investigation management system. As set out in our *Statement of Intent 2018-2022*, our aim is to update our end-to-end Knowledge Transfer System to enable us to operate in a contemporary way.

We are likely to use cloud-based services and standard applications

Working with the Government Chief Digital Officer (GCDO) and external consultant the Commission undertook a strategic analysis of IT systems.

The review identified our best approach is to use cloud-based services and interface tools that are added to our existing 'as a service' IT, with support provided by in-house IT staff. The cloud-based services and interface tools would be from the all-of-government standard services. This frees us from the constraints of in-house infrastructure and bespoke applications, and means we can be more flexible as our needs develop.

The skill mix of staff is also likely to evolve over time

In parallel to the IT analysis, the workforce plan was reviewed to determine the people resource required to support achieving the full benefit from IT assets: to do applications development, help investigators and other staff to use IT to best effect, manage information assets, and to hold IT suppliers to account.

With about 30% of our investigators reaching retirement age over the next five years, we are able to change the investigator skill mix to meet the emerging demands of investigations involving intelligent systems and artificial intelligence.

The major planning work for 2018/19 was the preparation of a budget bid

The review of the workforce plan and the strategic analysis of our IT systems culminated in a funding bid submitted in late 2018. This was a significant area of activity for the year.

The funding bid was unsuccessful. As stated in our *Statement of Performance Expectations 2019-2020*, we will continue progress towards an enhanced Knowledge Transfer System, although the speed of implementation may be restricted. The direction set by the work we have undertaken this year will lead to the development over 2019/20 of three individual but integrated strategies: a Data Strategy/Information Management and Communications Technology Plan, and a Communications Strategy followed by a Research Strategy. All three strategies fall within an overarching Digital Transformation Strategy.

The bid will be resubmitted in 2019. Our planning is based on ensuring 'scalability': the first stages of each plan will put fundamental requirements in place; and later stages are modular. The aim is to build a sound base on which we can layer additional systems as resources become available, while also retaining flexibility to respond to changing needs.

5.3. We continue to achieve progress towards our strategic objectives

Table 3: Indicators for strategic objective 'Occurrences are independently investigated and the facts are uncovered'

Indicator	Description	Commentary
The Commission complies with international standards of safety investigation.	The Commission internally audits seven investigations each year and remedies any deficiencies found.	Investigation Services Managers undertook seven process reviews during the year, assessing various aspects of sampled investigations against the Commission's quality assurance framework (which reflects ICAO Convention standards). The reviews this year included on-site management and next-of-kin briefing. They enabled managers to give feedback to individual investigators. No major deficiencies were identified, and no material changes were made to the quality assurance framework a result of the reviews. We have otherwise identified or made enhancements to the quality assurance framework during the year. These included improvement or additions to evidence-handling procedures and procedures for engaging translators when interviewing witnesses.
Stakeholders consider our investigations fair and independent.	Most respondents to the Commission's stakeholder surveys believe the Commission's investigations are fair, impartial, and independent.	Most respondents to the stakeholder survey for 2018/19 believe the Commission's investigations are fair, impartial, and independent. See section 4.2.
All Commission inquiries follow proper process.	There are 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.	There have been 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.
*Performance measure for the appropriation for this output class.		

Table 4: Indicators for strategic objective 'Participants in the transport system know about safety issues'

Indicator	Description	Commentary
The Commission disseminates information about its most pressing concerns.	The Watchlist is reviewed and published/updated as required by 30 June 2019.	The Watchlist was reviewed and updated over the year. Publication to the website was in August 2019. See section 3.6.
Our information is sought after.	Website statistics show an increase in the number of visitors between 30 June 2018 and 30 June 2019.	The trend in the number of unique page views increased between 30 June 2018 and 30 June 2019. See section 4.2
Users find the information they are looking for from our website and reports.	Survey of subscribers to be piloted in 2018/19.	The survey of subscribers has been deferred until the refresh of the Research Strategy. See section 4.2. Note: Subscribers are people whom the Commission notifies when it has published a major update to its website — usually the release of an inquiry report. They are the stakeholders who regularly access, for example, the content of inquiry reports. The Commission currently has about 700 national and international subscribers from all parts of the state sector, private organisations, academic institutions, and other investigation bodies.
The Commission's recommendations contribute to improvements in transport safety.	In our annual report we will include case studies of changes to the transport system made in response to our recommendations to show they have contributed to improved safety.	See section 4.3.
Stakeholders believe the Commission is having a positive impact.	Most respondents to the Commission's stakeholder surveys believe the Commission is having a positive impact.	Most respondents to the stakeholder survey for 2018/19 believe the Commission is having a positive impact. See section 4.2.

5.4. Organisational health and capability

Table 5: Indicators for organisational health and capability

Indicator	Description	Commentary
Priority areas identified for skill development of workforce.	Tasks arising from the 2017/18 review of the workforce plan to be completed by 30 June 2019.	See section 5.2 and section 5.6.
IT systems requirements identified.	Tasks arising from the 2017/18 strategic analysis of our IT systems to be completed by 30 June 2019.	See section 5.2.

5.5. Corporate organisation

Workforce profile

The demographic profile of the Commission's staff is shown in Table 6. The Commission is a committed Equal Employment Opportunities employer.

Table 6: Employee workforce composition

		As at 30 June 2019	As at 30 June 2018			As at 30 June 2019	As at 30 June 2018
Total staff		27	28	Total staff		27	28
Gender	Male	17	18	Disability	Yes	0	0
	Female	10	10		No	27	28
Ethnicity	European	23	25	Age	<41	7	7
	Maori	0	0		41-50	7	7
	Asian	2	2		51-55	2	4
	Pacific	0	0		56-60	5	5
	Other	2	1		>60	6	5

Organisational 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.

5.6. Developing and maintaining staff

Our Workforce Plan reduces disruption from staff changes

The organisation's Workforce Plan anticipates a cohort of senior staff retiring over the next few years. Three senior staff resigned over the reporting period, one to retirement. A combination of succession planning and identification of future skill requirements means that resignations are managed without unnecessary risk or disruption to the functioning of the Commission.

Recruitment

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 quickly 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. The organisation's zero tolerance towards harassment and bullying and its obligations regarding health and safety are also part of induction.

Training and development

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

The Commission's training programme ensures staff members develop and maintain the knowledge and skills essential to their specialist work. The Commission funds investigators to complete (multi-modal) fundamental and (mode-specific) advanced training courses at Cranfield University in the United Kingdom. Investigators may also undertake modal specific training and professional education opportunities beyond the maintenance of professional credentials that might be required for a role. The Commission also supports professional corporate staff to maintain currency in their professional disciplines.

The Commission has in place an organisation-wide approach to development opportunities. The purpose is to enable a consolidated performance and career development opportunity for all employees.

5.7. Good employer initiatives

Work design

As a smaller organisation the Commission requires flexibility in the workforce to quickly respond to operational needs. Investigators in particular are required at times to work outside normal office hours. 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.

Remuneration and recognition

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.

During the year, the Commission agreed a collective agreement with the Public Service Association.

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 in relation to investigations at accident sites, our wreckage facility, and other in-the-field investigation management activities. As part of our health and safety system, the Commission provides training and protective and corporate clothing appropriate to roles, as well as medical examinations for investigators. Health-related benefits, such as contributions to gym memberships, are available.

The Commission is mindful also of the health and safety of others with whom we have contact in the course of 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.

Harassment and bullying prevention

The Commission has a zero tolerance approach to harassment and bullying, which is set out in its Code of Conduct. The Code is based on State Service Commission's guidelines. The Commission's position on harassment, including sexual harassment and bullying, are made known to new employees and other onsite workers during inductions. This ensures a strong and clear message about unacceptable behaviour is delivered early in an employee's working life with the Commission.

Statement of performance for output targets

"Reports contain the key messages from an inquiry"

16

REPORTS PUBLISHED (TARGET 20-25)

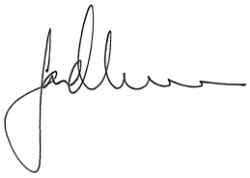
Statement of responsibility

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 2019.



Jane Meares
Chief Commissioner

Stephen Davies Howard
Deputy Chief Commissioner

24 October 2019

6. Statement of performance for output targets

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

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

The appropriation for this output class is intended to achieve the conduct and completion of independent inquiries into selected aviation, rail, and maritime safety accidents and incidents with the intent of helping to avoid recurrences.

This section provides an overview of the Commission's performance results for this financial year. Refer to the Statement of Comprehensive Revenue and Expense in section 8 for the revenue and expenditure of this output class. Table 7 reports against the targets set out on page 2 of the *Statement of Performance Expectations 2018-2019.*

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.

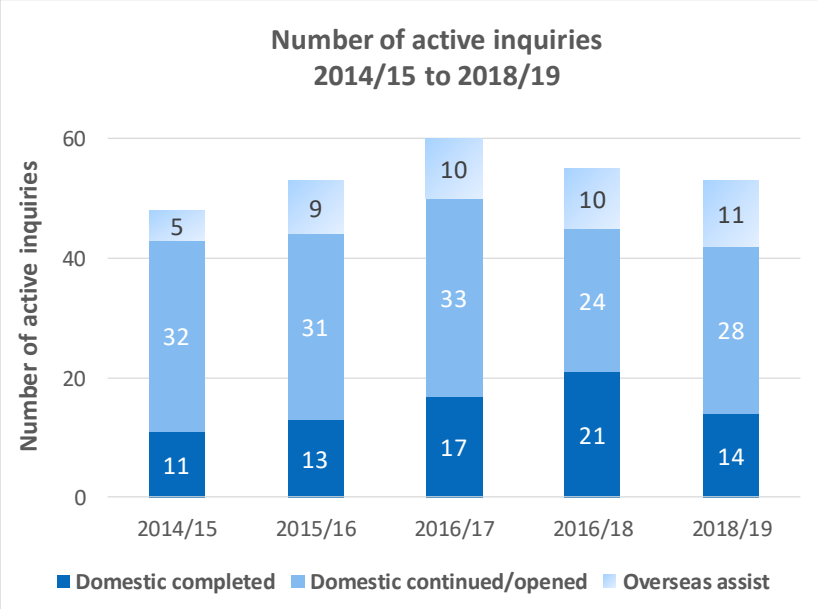


Figure 5: Number of active inquiries 2014/15 to 2018/19

Our casebook achieved a steady state over 2018/19, and we maintained improvements in timeliness

Timeliness indicators for the current financial year show significant improvement since the Commission received additional funding in 2015/16. The extra resourcing allowed for an increase in investigator numbers, leading to a gradual reduction in the backlog of cases that had built up.

As shown in Figure 6, the 12-month rolling average of the age of open inquiries fell from 317 working days at 30 June 2015 to 223 working days as 30 June 2019, a decrease of 30%.

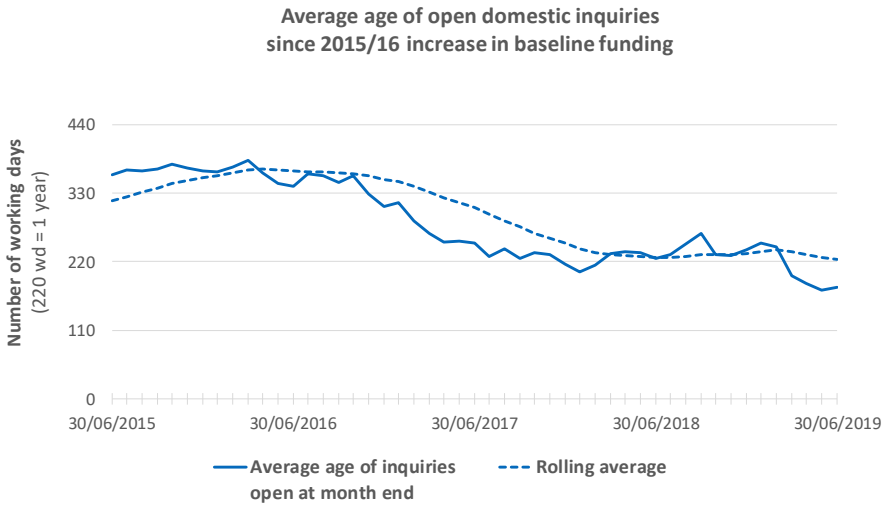


Figure 6: Age of open inquiries

Aviation inquiries are longer and more costly

For inquiries closed in 2018/19, the average age was 414 working days compared with 664 in 2015/16 (a decrease of 38%).

However, there are differences between modes, as shown in Figure 7 below. The inquiries that go beyond the target 440 working days tend to be in the aviation mode. This can be for one or more reasons:

- 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 inquiry into the fatal crash of helicopter onto Fox Glacier in November 2015[20] was one such inquiry — see the aviation year in review beginning on page 45.

[20] Aviation inquiry AO-2015-007: Airbus Helicopters AS350BA, ZK-HKU, collision with terrain, Fox Glacier, 21 November 2015

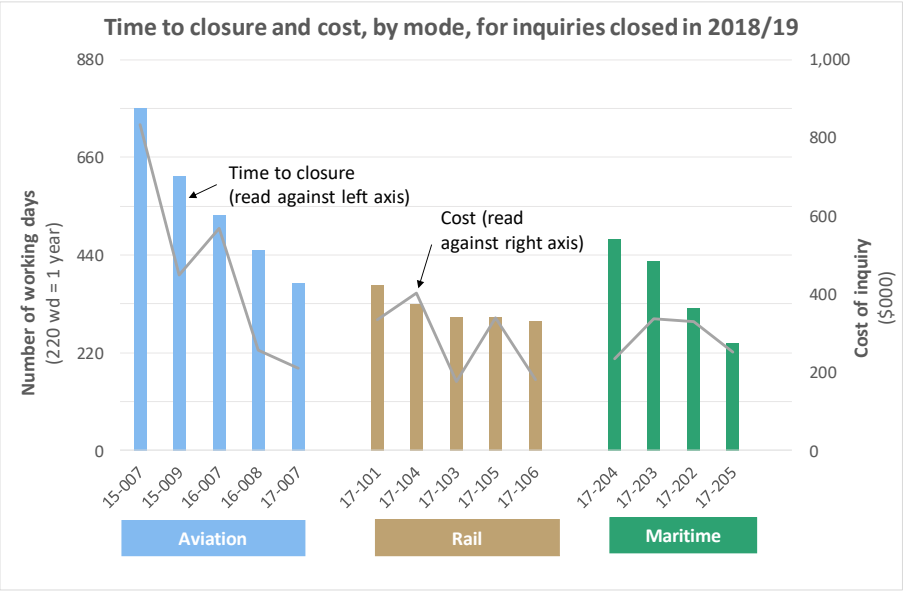


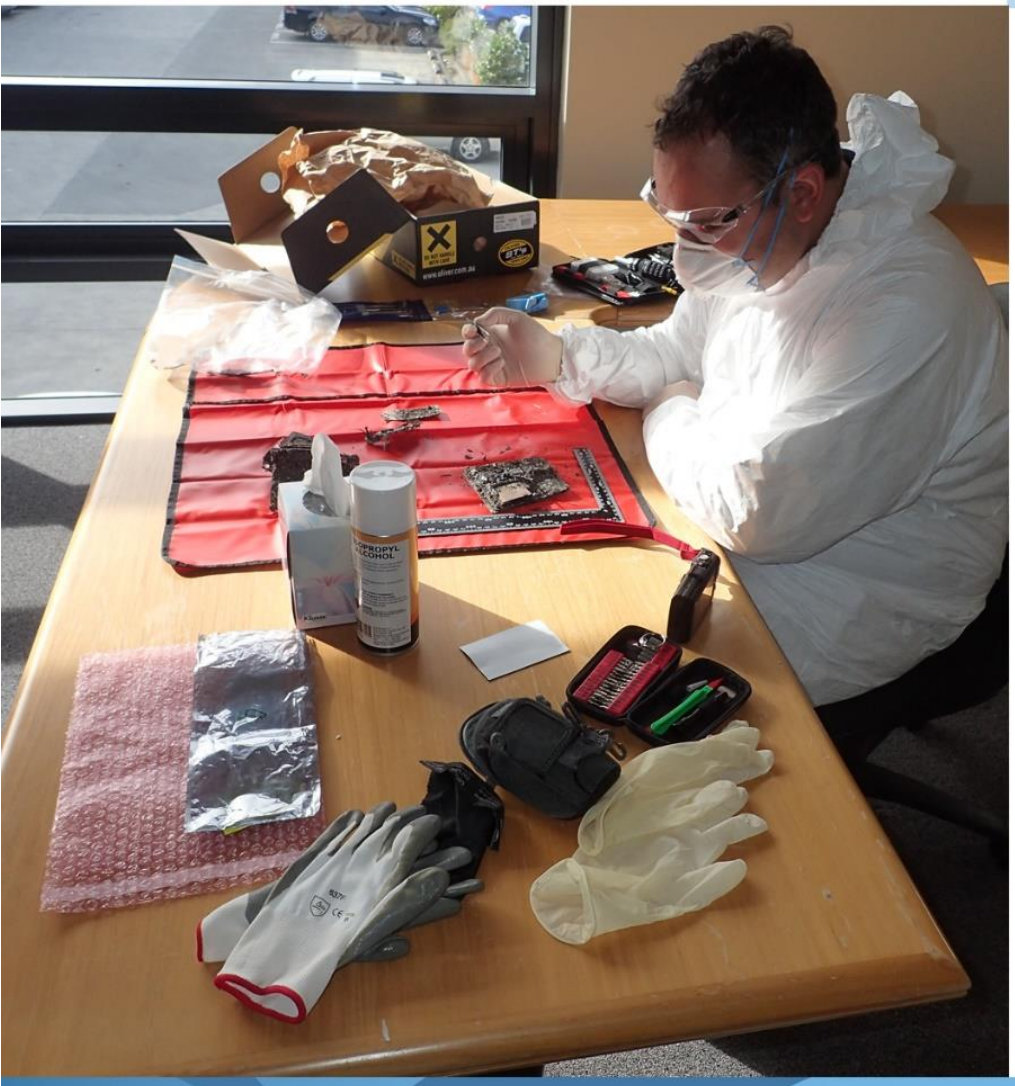
Figure 7: Time to closure and cost

Table 7: Output measures against *Statement of Performance Expectations 2018-2019* targets

Note	Measure	Instrument	Actual 2018/19	Target 2018/19	Actual 2017/18
Financial					
1	Average cost of domestic inquiries closed*	Timesheet and financial data analysis	$350K	$300K	$340K
Volume					
	Number of reports published for domestic inquiries • Final reports* • Interim reports	Casebook analysis, manual count	14 2	20–25	21 2
	Number of inquiries by overseas jurisdictions assisted*	Casebook data analysis	11	4–8	10
2	Number of domestic inquiries in progress at each month's end (12 month rolling average, as at 30 June)	Casebook data analysis	25	30	27
Timeliness					
3	Proportion of closed domestic inquiries completed within 440 working days*	Casebook data analysis	64%	70%	57%
Notes					
1	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.				
2	The number of inquiries open as at 30 June 2019 was 28 (compared with 24 as at 30 June 2018).				
3	Each year is calculated as 220 working days. The Commission aims to close 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. Of the 14 inquiries closed during 2018/19: • six were closed in 18 months (330 working days) or less, • three between 18 months and two years (331–440 working days) • five took longer than two years (440 working days. Of these last five, two were within 10% of 440 working days. One took over three years (see the section reviewing the aviation sector for a discussion on this extended inquiry).				
*	Performance measure for the appropriation for this output class.				

The year in review by mode

"We analyse system-wide safety issues"



457

NOTIFICATIONS RECEIVED

18

INQUIRIES OPENED

7. The year in review

Introduction

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

- the inquiries that were open as at 30 June 2019
- 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 2018/19.

Important note

Please note that the carefully worded contents of inquiry reports have been extensively précised in the impact summaries 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.

Year-end caseload data

Inquiries open at the end of the year

Table 8 is ordered by date launched for all inquiries (domestic and overseas assist) live at the end of the financial year. The review sections for each mode contain information on the inquiries closed during the year.

Table 8: Inquiries open as at 30 June 2019

Inquiry #	Mode	Description	Launched	Type
17-002	Aviation	Robinson R22, impact with terrain, Reefton	27/03/2017	Domestic
17-003	Aviation	ATR aircraft, landing gear, Nelson	10/04/2017	Domestic
17-004	Aviation	BK117 Helicopter, forced landing into Porirua Harbour (Pauatahanui)	2/05/2017	Domestic
17-005	Aviation	Australian-registered Fletcher aeroplane, impact with terrain, Bathurst, Australia	20/06/2017	Overseas assist
17-009	Aviation	Boeing 787-900, engine abnormality, Auckland	5/12/2017	Domestic
17-010	Aviation	Boeing 787-900, engine abnormality, Auckland	7/12/2017	Domestic
18-001	Aviation	Tandem skydiving operation, passenger fatality, Lake Wakitipu	10/01/2018	Domestic
18-202	Maritime	Dong Won 701, caught fire, Port of Timaru	10/04/2018	Domestic
18-101	Rail	Metropolitan passenger train, derailment, Britomart, Auckland	9/05/2018	Domestic
18-003	Aviation	PAC 750 XL Aeroplane, engine abnormality requiring engine shut-down and glide landing, Sentanui Airport, Jayapura, Papua, Indonesia	25/05/2018	Overseas assist
18-004	Aviation	Bob Frederick, Titan T-51, N51FB, engine failure on approach to landing, Goodyear, Arizona	28/05/2018	Overseas assist
18-203	Maritime	Container ship Leda Maersk, grounding, Port Chalmers	11/06/2018	Domestic
18-005	Aviation	Hughes MD600N Helicopter, impact with terrain, North East of Waiouru	14/06/2018	Domestic
18-006	Aviation	Robinson R44 Helicopter, ZK-HTB, collision with lake, Wanaka	23/07/2018	Domestic
18-007	Aviation	New Zealand-manufactured Pacific Aerospace Ltd 750XL aeroplane, landing gear failure, near Dubendorf, Switzerland	18/08/2018	Overseas assist
18-008	Aviation	PAC 750XL aeroplane, flight into terrain, Oksibil Airport, Papua Indonesia	5/09/2018	Overseas assist
18-102	Rail	Freight train, wrong-routed, Seddon	3/10/2018	Domestic

Inquiry #	Mode	Description	Launched	Type
18-009	Aviation	Hughes 369D, ZK-HOJ, impact with terrain, Wanaka,	18/10/2018	Domestic
18-010	Aviation	FBA-2C1 Bush Hawk XP floatplane, crashed into lake, Lake Muskoka, Ontario, Canada	19/10/2018	Overseas assist
18-204	Maritime	Dolphin Seeker, grounding, Brampton Reef, Oneroa	29/10/2018	Domestic
18-205	Maritime	San Granit, work place fatality, 55 miles East of Banks Peninsula	14/11/2018	Domestic
18-206	Maritime	Bulk carrier Alam Sari, loss of control and contact with seabed, Port of Bluff	29/11/2018	Domestic
19-001	Aviation	AS350 Helicopter, heavy landing, Pigeon Valley, Nelson	17/02/2019	Domestic
19-201	Maritime	Jet boat, collision with rock face, Skippers Canyon, Queenstown	23/02/2019	Domestic
19-002	Aviation	Two Q300 aircraft, loss of separation, Wellington Airport	12/03/2019	Domestic
19-202	Maritime	Recreational jet boat, collision with terrain, Hollyford River, Fiordland National Park	20/03/2019	Domestic
19-003	Aviation	Diamond DA42 aeroplane, Kaimanawa ranges	24/03/2019	Domestic
19-101	Rail	Signals staff, potential safe working incident, Westfield yard, Auckland	28/03/2019	Domestic
19-102	Rail	Freight train, derailment, Clinton	29/03/2019	Domestic
19-203	Maritime	Panama-registered bulk log carrier Coresky OL, cargo lashing fatality, Port of Gisborne	3/04/2019	Domestic
19-103	Rail	Freight train, derailment, junction between the Main North and Napier lines	5/04/2019	Domestic
19-004	Aviation	Boeing 787-8, Kansai International Airport	17/04/2019	Overseas assist
19-005	Aviation	BK117 Auckland Islands	23/04/2019	Domestic
19-104	Rail	Work train and hi-rail vehicle, potential collision, Taimate	6/06/2019	Domestic
19-006	Aviation	Cessna 185 and a Tecnam P2002 light aeroplane, mid-air collision, near Hood Aerodrome, Masterton	16/06/2019	Domestic

Caseload data

Table 9: Caseload data 2018/19

		Air			Rail			Maritime			Total		
		Jun-17	Jun-18	Jun-19	Jun-17	Jun-18	Jun-19	Jun-17	Jun-18	Jun-19	Jun-17	Jun-18	Jun-19
Caseload at year end													
Inquiries	Opened	8	5	7	4	4	5	7	3	6	19	12	18
	Continued	8	7	7	3	2	1	3	3	2	14	12	10
	Total	16	12	14	7	6	6	10	6	8	33	24	28
Elapsed WD	Opened	847	554	615	315	501	342	817	228	604	1,979	1,283	1,561
	Continued	3,903	2,656	2,703	1,213	553	251	1,153	913	500	6,269	4,122	3,454
	Total	4,750	3,210	3,318	1,528	1,054	593	1,970	1,141	1,104	8,248	5,405	5,015
Average WD	Opened	106	111	88	79	125	68	117	76	101	104	107	87
	Continued	488	379	386	404	277	251	384	304	250	448	344	345
	Total	297	268	237	218	176	99	197	190	138	250	225	179
Completed by year end													
	Inquiries completed	5	9	5	6	5	5	6	7	4	17	21	14
	Elapsed WD	2,762	4,431	2,745	3,543	1,872	1,593	2,972	2,642	1,464	9,277	8,945	5,802
	Average WD	552	492	549	591	374	319	495	377	366	546	426	414
Total active inquiries during yea													
	Active inquiries	21	21	19	13	11	11	16	13	12	50	45	42
	FTE investigators	5.3	5.3	5.3	4.3	3.3	3.3	4.3	3.3	3.3	14.0	12.0	12.0

Notes:

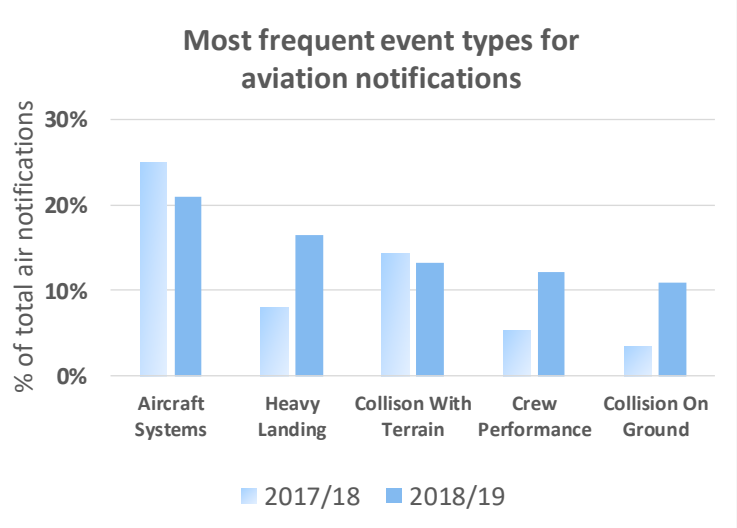
- Opened = opened in that year (and remaining open at the end of the year), Continued = remained open throughout that year, Completed by year end = closed in that year, WD = working days (220 WD/calendar year).
- Inquiry numbers exclude assistance to overseas inquiries, which also consumes investigator time.
- The investigator establishment is 13.0 full time equivalents (FTE), with one working across all modes. At 30 June 2018, a maritime investigator role was vacant. The numbers exclude the two modal managers.

The aviation year in review

Aviation highlights 2018/19

95 notifications received and 7 inquiries opened

Over the year, the aviation mode received 95 notifications, compared with 115 in the previous year. The diagram below shows the most frequent notifications by event type. These event types comprise more than 10% of the total aviation notifications.



	2018/19	2017/18
Accidents	72	69
Incidents	23	46
Total	95	115
Inquiries launched	7	5
Launch rate	7%	4%

The helicopter sector continues to dominate the aviation casebook

Occurrences involving helicopters continue to be of interest and concern to the Commission. Of the 19 aviation inquiries the Commission dealt with over the year — either opened, closed, or continuing — ten involved helicopters. The dominance of helicopter accidents in the casebook in part reflects the Commission's interest in accidents involving aircraft manufactured by the Robinson Helicopter Company, which were five of the ten inquiries. (For comparison, there are more than twice as many aeroplanes than helicopters on the aircraft register.) Circumstances vary across the ten occurrences, for example, they cover a range of activities: tourism, agricultural (2), hunting (2), private commercial flights (3), firefighting, and medical evacuation.

Seven helicopter occurrences remained open at 30 June 2019. As we complete these inquiries, we will look for similarities across them, and taking past findings and recommendations into account, identify any common features. Each accident is the result of a failure in the system, but factors in common across accidents can indicate systemic issues that might otherwise be hard to detect from an individual inquiry.

Seven aviation reports including two interim reports

In total, seven aviation reports were published over the year, including two interim reports.

	Number of published reports			Timeliness of closed inquiries	
	Total	Final	Interim	Average age (working days)	No. completed within 440 working days
2018/19	7	5	2	549	1
2017/18	11	9	2	492	4

The final reports published were for an air traffic control incident, a descent of an aircraft below clearance limit, and two fatal accidents involving helicopter crashes (a total of nine people died in these accidents).

The two accidents for which interim reports were published also involved fatal helicopter crashes. A total of four people died in these accidents.

One inquiry extended beyond 3 years

In May 2019, we published a report into a helicopter crash on Fox Glacier in November 2015, in which all seven people on board died.[21] Several factors contributed to a long inquiry. The terrain on the glacier made recovery of the wreckage challenging, and some items of evidence were not recovered for some months.

In accordance with the provisions of Annex 13 to the Convention on International Civil Aviation, representatives from France (as the State of aircraft manufacture) and the United States (as the State of engine manufacture) took part in the investigation. In addition, the Commission also notified the independent accident investigation authorities of Australia and the United Kingdom that citizens of their countries were among the victims.

Other factors that contributed to the long inquiry time were the technical complexities of the investigation, the need to manage various international relationships, change of investigation staff, and an extended response time for submissions following a request from an interested person.

Five recommendations were made concerning regulator surveillance, fuel contamination, and aerodrome control

In the inquiry into the Fox Glacier incident noted above, the Commission found the operator's system for training its pilots was ill-defined and did not comply fully with the Civil Aviation Rules. The Commission also found the Civil Aviation Authority had identified significant non-compliance issues with the operator's training system and managerial oversight, which had warranted intervention long before this accident occurred.

In its report, the Commission expressed concern that other operators in the civil aviation system during the same period could be operating with non-compliances that have either not been identified by the Civil Aviation Authority's surveillance system or not been resolved. The Commission recommended the Director of Civil Aviation initiate an independent review of past Civil Aviation Authority surveillance activities. The Civil Aviation Authority accepted the recommendation and at the time of writing, an independent review was underway.

Other aviation recommendations covered:

- improving industry awareness of the risks of fuel contamination during remote refuelling procedures (two recommendations)[22]
- matters related to air traffic control and congestion at Hamilton aerodrome (two recommendations).[23]

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

[21] Aviation inquiry AO-2015-007: Airbus Helicopters AS350BA, ZK-HKU, collision with terrain, Fox Glacier, 21 November 2015
[22] Aviation inquiry AO-2016-008: Robinson R66 helicopter, Partial power loss, forced landing, Hokonui Hills, Southland, 14 November 2016
[23] Aviation AO-2015-009: Air traffic control incidents, Hamilton aerodrome, 17 December 2015

Aviation inquiries closed 2018/19

Aviation inquiry AO-2015-009: Air traffic control incidents, Hamilton aerodrome, 17 December 2015

Event type	**Air traffic control incidents**
Safety issues *"What contributed to the occurrence, or might contribute to another occurrence?"*	3 safety issues were identified: • The standard of team resource management in the Hamilton ATC (air traffic control) tower did not match good industry practice. • Changes in the size and shape of the Hamilton zone have shifted some VFR (visual flight rules) traffic congestion to prominent points outside the zone, and likely increased the risk of collision in those areas. • Some aerodrome controllers are 'over-controlling' VFR traffic in and around the zone. This unnecessarily congests radio frequencies and risks difficulties for inexperienced pilots and those for whom English is their second language.
Findings (number) *Increases with complexity*	6
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: • Operational assessments in a team situation potentially alter normal team dynamics. Assessments must be properly managed and all team members must be clear on their responsibilities and their involvement in the assessment process. • Clear, succinct and short radio communication between ATC and aircraft is pivotal to safe operations.
Safety actions (number & précis) *"What has been done while the inquiry's been underway that's removed the need for a relevant recommendation?"*	6 safety actions have been taken by Airways: • The controller has returned to full operational duty and has passed at least two annual proficiency assessments since this series of incidents. • An aerodrome controller mentoring system has been introduced at Hamilton and is being considered for implementation nationwide. • All aerodrome controllers at Hamilton have attended an Airways-developed course to improve professional working standards and ethical conduct. • National management was restructured to separate business development and national training functions from the responsibility of unit managers. This allows them to focus on managing the team and maintaining operational standards. • A new method of conducting the circling procedure was agreed with relevant parties. It removes the low-level orbit and sequence congestion near the final leg of the circuit. • The CAA completed its revision of the Hamilton airspace after public consultation, and promulgated the new zone boundary in November 2016.
Safety recommendations (number & précis) *"What needs to change to reduce the likelihood of a recurrence?"*	1 recommendation was made to the Director of Civil Aviation: • To raise public awareness of the VFR traffic around the Hamilton area and work closely with aerodrome safety groups to resolve congestion hazards and traffic flow routes into and out of the zone. 1 recommendation was made to the Chief Executive Office of Airways: • To raise public awareness of the VFR traffic around the Hamilton area and work closely with aerodrome safety groups to resolve congestion hazards and traffic flow routes into and out of the zone; review current practices of aerodrome control at Hamilton to ensure the level of ATC service is consistent with CAA rules and the aerodrome safety system.
Response	The recommendations were accepted.

Aviation inquiry AO-2016-008: Robinson R66 helicopter, Partial power loss — forced landing, Hokonui Hills, Southland, 14 November 2016

Event type	**Forced landing**
Safety issues *"What contributed to the occurrence, or might contribute to another occurrence?"*	1 safety issue was identified: • More educational material is needed to alert operators to the risk of contaminated fuel when operating and refuelling in remote, dusty environments.
Findings (number) *Increases with complexity*	4
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: • Refuelling aircraft at remote locations increases the risk of fuel contamination. Operators should take all precautions to prevent any debris entering the fuel supply chain, from the initial fuel supplier to the aircraft fuel tank. • Aircraft fuel-filtering systems are an important defence against contaminated fuel causing an accident. Where available, operators should consider fitting additional airframe filters to aircraft being operated and refuelled at remote locations.
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 have been taken: • A defect report detailing the condition of the sprag clutch was submitted to the Civil Aviation Authority by the component overhaul facility conducting the inspection. • Prior to this accident the R66 sprag clutch had been redesigned and the manufacturing process improved to prevent oil seal failure.
Safety recommendations (number & précis) *"What needs to change to reduce the likelihood of a recurrence?"*	1 recommendation was made to the Director of Civil Aviation: • To review and enhance all CAA-published guidance information to better inform the industry on hazards associated with remote refuelling. 1 recommendation was made to the President of Aviation New Zealand: • To promulgate the lessons learned from this accident to its members with a view to increasing awareness of the risk of fuel contamination during remote refuelling procedures.
Response	Both recommendations were accepted.

Aviation inquiry AO-2016-007: Collision with terrain, Robinson R44, ZK-HTH, Glenbervie Forest, Northland, 31 October 2016

Event type	**Collision with terrain**
Safety issues *"What contributed to the occurrence, or might contribute to another occurrence?"*	None
Findings (number) *Increases with complexity*	3
Key lessons (number & précis) *"What did we identify that others should take heed of to avoid it happening to them?"*	None
Safety actions (number & précis) *"What has been done while the inquiry's been underway that's removed the need for a relevant recommendation?"*	None
Safety recommendations (number & précis) *"What needs to change to reduce the likelihood of a recurrence?"*	None (Note: the Commission found that the damage to the helicopter sustained in the accident sequence and subsequent fire, and the lack of any other incontrovertible evidence, meant that the cause or causes of the accident could not be determined. The Commission made reference to a previous recommendation that on-board recorders be fitted to certain classes of helicopter to aid accident investigation.)
Response	N/A

Aviation inquiry AO-2017-007: Airbus A320 VH-VGY, Descent below clearance limit, Christchurch, 6 August 2017

Event type	**Descent below clearance limit**
Safety issues *"What contributed to the occurrence, or might contribute to another occurrence?"*	None identified.
Findings (number) *Increases with complexity*	4
Key lessons (number & précis) *"What did we identify that others should take heed of to avoid it happening to them?"*	1 key lessons was identified: • Properly used automated flight navigation systems will reduce the crew workload and result in safer flight operations. If crew choose not to use them, they must maintain a heightened level of alertness and work harder to achieve an equivalent level of situational awareness.
Safety actions (number & précis) *"What has been done while the inquiry's been underway that's removed the need for a relevant recommendation?"*	4 safety actions have been taken by the operator, who: • Produced an internal report into this occurrence. • Issued a Flight Standing Order, which included a revised procedure for flight-path monitoring and discussed such topics as pilot duties, monitoring and communication. • Provided its training and check staff with further information and discussion. • Transitioned its flight crew training to evidence-based training. Evidence-based training recognises that most occurrences have an element of reduced situational awareness and can be effective in improving the defences against this human condition. Evidence-based training moves away from scripted simulator training programmes to unknown-scenario-based activities that focus on problem-solving, crew resource management, threat and error management and resilience.
Safety recommendations (number & précis) *"What needs to change to reduce the likelihood of a recurrence?"*	None
Response	N/A

Aviation inquiry AO-2015-007: Airbus Helicopters AS350BA, ZK-HKU, collision with terrain, Fox Glacier, 21 November 2015

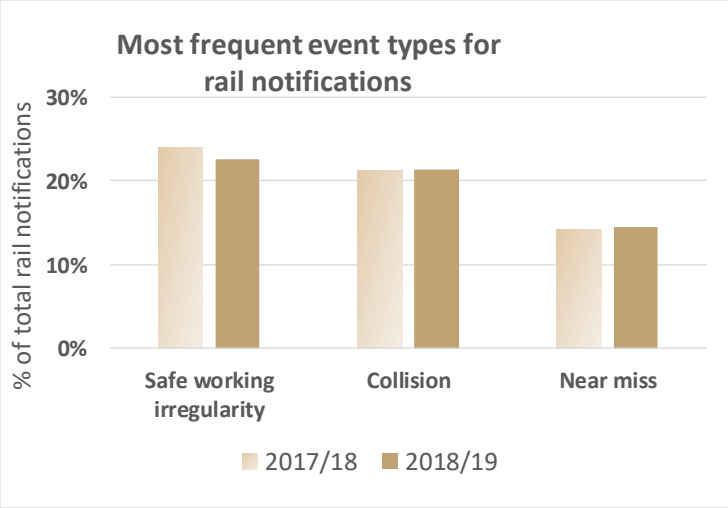
Event type	**Collision with terrain**
Safety issues *"What contributed to the occurrence, or might contribute to another occurrence?"*	2 safety issues were identified. • The operator's system for training its pilots did not comply fully with the Civil Aviation Rules or the operator's approved operations specifications, and did not adequately prepare the pilot for the role and responsibilities required for flight operations that day. • The operator had been allowed to continue providing helicopter air operations with little or no intervention from the CAA, in spite of the CAA having identified significant non-compliances with the operator's training system and managerial oversight.
Findings (number) *Increases with complexity*	10
Key lessons (number & précis) *"What did we identify that others should take heed of to avoid it happening to them?"*	5 key lessons were identified: • Aircraft operators' senior management have a regulatory duty to maintain proper and effective oversight of their operations. Doing otherwise will compromise the safety of the operations and increase the risk of repeat accidents. • Proper training of pilots is critical to the safety of air operations. Any training and competency system must ensure that pilots are trained and experienced to levels appropriate for their roles and responsibilities. • Every operator must provide adequate supervision of its pilots, appropriate to the pilots' experience and training and the nature of the operations. • Aircraft manufacturers set 'never exceed' limitations for good reasons. Pilots should not, under any circumstances, load or operate their aircraft outside the limitations. • With knowledge comes responsibility. If a senior person working for an air operator or an inspector working for the regulator identifies a serious safety issue with an operation, the issue should be formally raised and action taken to address it.
Safety actions (number & précis) *"What has been done while the inquiry's been underway that's removed the need for a relevant recommendation?"*	5 safety actions have been taken by the CAA, who: • Published an article, 'Heli[copter] weather decision making', in the March/April 2016 issue of its Vector aviation safety education magazine that sought to emphasise the correct use of meteorological minima. • Suspended the operator's air operator certificate, and revoked the certificate. The CAA later laid charges under the Health and Safety in Employment Act 1992 against some senior persons of the company. • Issued a letter to the chief executives of all Part 135 operators on the subject of pilot training programmes. • Issued revision 9 to advisory circular 61-18 to clarify the privileges and limitations of the Category D flight instructor rating. • Issued an air operator certificate to a new company that took over from the former operator. The operations specifications included training approvals appropriate to the new company's activities.
Safety recommendations (number & précis) *"What needs to change to reduce the likelihood of a recurrence?"*	1 recommendation was made to the Director of Civil Aviation: • To initiate an independent review of CAA surveillance reports and any findings raised for Part 135 operators since 2014 to measure the effectiveness of the surveillance policies and procedures that the CAA has put in place, including the effectiveness of their implementation. If the independent review finds unidentified or unresolved safety issues with specific operators, it is recommended that the Director of Civil Aviation take the appropriate urgent action to resolve those issues.
Response	The CAA has begun implementing the recommendation.

The rail year in review

Rail highlights 2018/19

323 notifications received and five inquiries opened

Over the year, the rail mode received 323 notifications, compared with 365 in the previous year. The diagram below shows the most frequent notifications by event type. These event types comprise more than 10% of the total rail notifications.



	2018/19	2017/18
Accidents	47	51
Incidents	276	314
Total	323	365
Inquiries launched	5	4
Launch rate	2%	1%

The rail mode saw an increase in reported derailments, and worksite occurrences

Over the year, we noted a reversal of a previously declining trend of reported mainline derailments, most of which have been minor in consequence. The Commission had previously identified safety issues that could cause derailments, and made recommendations. KiwiRail implemented the recommendations, which led to the decline in reported occurrences. The subsequent reversal in trend led us to open inquiries to test the system and identify the reasons for the increase. At the end of the financial year, six rail inquiries were open, three of which were derailments. The inquiries are ongoing and no findings have yet been made.

The other three rail inquiries open at 30 June 2019 related to worksite occurrences. This is the second upward trend we noted in the rail sector over the year. Again, we have opened inquiries into occurrences to identify the reasons.

Five rail reports published

Five reports were published over the year.

	Number of reports published			Timeliness of closed inquiries	
	Total	Final	Interim	Average age (working days)	No. completed within 440 working days
2018/19	5	5	0	319	5
2017/18	5	5	0	374	4

The final reports published were for occurrences involving collisions or potential collisions between trains or with vehicles (three), unauthorised entry to a worksite, and unauthorised immobilisation of a train while it was at a station. There was one fatality in these occurrences.

Seven recommendations covered responsibilities for maintaining sighting distances at level crossings, fatigue management, and quality of training

In October 2017, a fatal collision occurred between a freight train and a heavy motor vehicle at the Lambert Road level crossing near Kawerau.[24] As a result of its inquiries into the accident, the Commission found that the legislation needs to be clearer on the allocation of responsibility between licensed rail access providers and road controlling authorities for ensuring the safety of rail users and road users at public road level crossings.

The Commission made four recommendations to various industry participants (the regulator, local government, and an operator) concerning maintenance of sighting distances at level crossings. One recommendation was to the Chief Executive of the NZ Transport Agency to take the necessary action to clarify the allocation of responsibilities between licensed rail access providers and road controlling authorities for maintaining sighting distances at public road level crossings. The NZTA accepted the recommendation. In its response, it noted that in order to comply, and to enhance its regulatory oversight of the rail industry, it was recruiting more personnel, who will be dedicated to level crossing safety from a system perspective.

Other rail recommendations concerned:

- an operator's fatigue risk management and medical assessment systems[25]
- improving the quality of training for train crews so they are better prepared to respond to unusual situations.[26]

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

[24] Rail inquiry RO-2017-105: Collision between freight Train 353 and heavy motor vehicle, Lambert Road level crossing, near Kawerau, 6 October 2017
[25] Rail inquiry RO-2017-101: Signal Passed at Danger 'A' at compulsory stop boards protected worksite, Pongakawa, Bay of Plenty, 7 February 2017
[26] Rail inquiry RO-2019-104: Work train and hi-rail vehicle, potential collision, Taimate, 5 June 2019

Rail inquiries closed 2018/19

Rail inquiry RO-2017-103: Potential collision between passenger trains, Wellington Railway Station, 15 May 2017

Event type	**Potential collision**
Safety issues *"What contributed to the occurrence, or might contribute to another occurrence?"*	2 safety issues were identified: • There is a heightened risk of trains colliding within the approaches to Wellington Station because limited space makes the track layout congested. • A number of reasonable measures had not been taken to further reduce the risk of trains colliding in the approaches to Wellington Station.
Findings (number) *Increases with complexity*	4
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: • Trains should not be unnecessarily authorised to proceed up to red signals in congested areas, because the reduced safety margins in these areas increase the risk of a collision if a signal is passed at danger.
Safety actions (number & précis) *"What has been done while the inquiry's been underway that's removed the need for a relevant recommendation?"*	4 safety actions have been taken by the operator: • Partnered the driver with a tutor and provided remedial training. • Briefed all staff on the importance of safety-critical communication. • Implemented random radio audits to assess the practice of safety-critical communication between train drivers and KiwiRail signallers and controllers. • Held a meeting with KiwiRail and the NZ Transport Agency to discuss the management of risk in the Wellington Railway Station limits. 3 safety actions have been taken by KiwiRail: • Completed a review of similar track layouts in the Wellington metro area. • Implemented additional track circuit sequencing for two signals. • Relocated the axle counter head at a further signal to align it with the signal.
Safety recommendations (number & précis) *"What needs to change to reduce the likelihood of a recurrence?"*	No recommendations were made. Two previous recommendations to KiwiRail about the track and signalling infrastructure in the Wellington Station area were repeated (refer to rail inquiry 2016-101).
Response	N/A

Rail inquiry RO-2017-101: Signal Passed at Danger 'A' at compulsory stop boards protected worksite, Pongakawa, Bay of Plenty, 7 February 2017

Event type	**Signal Passed at Danger**
Safety issues *"What contributed to the occurrence, or might contribute to another occurrence?"*	3 safety issues were identified: • The KiwiRail medical assessment process did not ensure that the employee being assessed completed the online medical questionnaire themselves. There is some evidence that the system could potentially allow managers or others to complete the questionnaire on employees' behalf. • KiwiRail did not have a mature fatigue risk management system to ensure that relevant personnel performed at adequate levels of alertness. • The eProtect KMC module on this locomotive had been transmitting error messages for three weeks before the incident, but the activity database was not being monitored for this type of error.
Findings (number) *Increases with complexity*	7
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: • Train drivers and other shift workers need to ensure they are medically fit and make appropriate lifestyle choices that will enhance the amount and quality of their sleep, in order to avoid being fatigued or tired while at work. • Transport operators must ensure their staff are fully educated on the factors that can cause or contribute to their becoming tired or fatigued while performing safety-critical roles. • Technological systems need to be fully tested and have undergone full failure mode analysis if they are going to be relied on as a safety defence for preventing accidents and incidents.
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 have been taken: • In response to the incident KiwiRail has introduced a proactive 'polling' system that interrogates the event log on each locomotive every two hours and highlights any locomotives that have logged more than 10 error events in that two-hour period. An email is then generated for any such locomotives, which are then flagged as 'Not To Run' until the fault has been investigated and resolved at a maintenance facility. • Since 2016 KiwiRail has had a Fatigue Safety Action Group to establish and run a fatigue risk management system and its integration with the other parts of the organisation.
Safety recommendations (number & précis) *"What needs to change to reduce the likelihood of a recurrence?"*	2 recommendations were made to the Chief Executive of KiwiRail: • Improve the health assessment system to ensure the periodic medical check system captures data directly from the subject. • Ensure a comprehensive fatigue risk management system is fully developed and implemented within the organisation.
Response	The recommendations were accepted.

Rail inquiry RO-2017-105: Collision between freight Train 353 and heavy motor vehicle, Lambert Road level crossing, near Kawerau, 6 October 2017

Event type	**Collision**
Safety issues *"What contributed to the occurrence, or might contribute to another occurrence?"*	2 safety issues were identified: • Sighting distances for road users at level crossings are one of the factors used to determine the appropriate level of protection required, yet the growth in vegetation around railway level crossings can change sighting distances in a relatively short time and render the level crossings unsafe. • The legislation is not clear on the allocation of responsibility between licensed rail access providers and road controlling authorities for ensuring the safety of rail users and road users at public road level crossings.
Findings (number) *Increases with complexity*	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: • Road users must always approach railway level crossings with extreme care, particularly those level crossings that have passive protection only in the form of Give Way or Stop signage. • Wearing seatbelts increases the chances of people surviving accidents.
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 have been taken: • KiwiRail worked with the adjacent land owner to improve the sighting distance at the Lambert Road public road level crossing. • Whakatāne District Council surveyed all its level crossings for compliance with signage and sighting distance standards and found no issues to address.
Safety recommendations (number & précis) *"What needs to change to reduce the likelihood of a recurrence?"*	2 recommendation were made to the Chief Executive of the NZ Transport Agency: • To take the necessary action to clarify the allocation of responsibilities between licensed rail access providers and road controlling authorities for maintaining sighting distances at public road level crossings. • To work with licensed rail access providers and road controlling authorities to ensure that they meet their responsibilities for maintaining sighting distances at public road level crossings. 1 recommendation was made to the Chief Executive of KiwiRail: • That, until the NZ Transport Agency has clarified the responsibilities for maintaining sighting distances at public road level crossings, where KiwiRail becomes aware of vegetation affecting the sighting distances at level crossings for which it is the licensed access provider, it works with the relevant road controlling authority to remove or control the vegetation. 1 recommendation was made to the Chief Executive of Local Government NZ: • That until the NZ Transport Agency has clarified the responsibilities for maintaining sighting distances at public road level crossings, where road controlling authorities become aware of vegetation affecting the sighting distances at level crossings, they work with the relevant licensed access providers to remove or control the vegetation.
Response	The NZ Transport Agency and KiwiRail accepted the recommendations. The Chief Executive of Local Government made no comment, and would await discussions with NZTA.

Rail inquiry RO-2017-106: Mainline locomotives, Wrong-routing and collision with work vehicle, Invercargill, 16 November 2017

Event type	**Wrong-routing and collision**
Safety issues *"What contributed to the occurrence, or might contribute to another occurrence?"*	1 safety issue was identified: • The level of audit and compliance testing of the Invercargill Joint Operating Plan was not robust in detecting and addressing compliance issues in the Invercargill yard.
Findings (number) *Increases with complexity*	4
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: • It is important to ensure that documented rules, policies and procedures are compatible and consistent across all places of work in the rail network. • A culture of non-compliance can quickly develop if staff are not prompted to follow the proper procedures when undertaking their duties, and do not challenge their work colleagues if they observe them not following procedures.
Safety actions (number & précis) *"What has been done while the inquiry's been underway that's removed the need for a relevant recommendation?"*	5 safety actions have been taken by the operator: • Introduced a maximum speed limit of 15km/h for all movements within yards, terminals and sidings. • Held safety stop meetings at each facility to discuss ideas for preventing collisions and reinforce the New Zealand Rail Operating Code on shunting procedures and radio commands. • Changed the protection of the Invercargill maintenance depot building. • Undertook a review of the suitability of derailers for its current rolling stock. • Established a programme whereby the Joint Operating Plan and associated documents, policies and procedures will be reviewed on a formal rolling basis to ensure they are fit for purpose and being adhered to in practice.
Safety recommendations (number & précis) *"What needs to change to reduce the likelihood of a recurrence?"*	None.
Response	Nil.

Rail inquiry RO-2017-104: Unauthorised immobilisation of passenger train, at Baldwin Avenue Station, Avondale, 17 September 2017

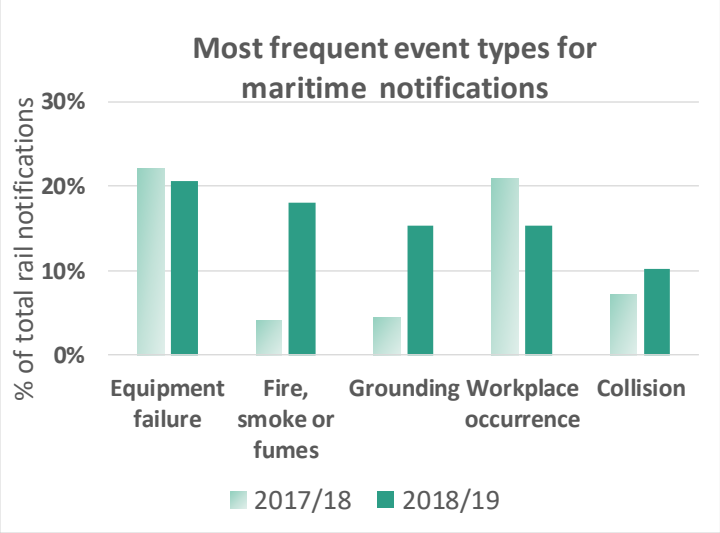
Event type	**Unauthorised immobilisation of train**
Safety issues *"What contributed to the occurrence, or might contribute to another occurrence?"*	1 safety issue was identified: • Transdev had no policies or procedures in place to guide its train crew in responding to unusual situations.
Findings (number) *Increases with complexity*	4
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: • In any emergency situation, it is important that clear, concise and timely information be given to first responders so that a fast and efficient response can be planned and executed.
Safety actions (number & précis) *"What has been done while the inquiry's been underway that's removed the need for a relevant recommendation?"*	None identified.
Safety recommendations (number & précis) *"What needs to change to reduce the likelihood of a recurrence?"*	1 recommendation was made to Transdev Auckland: • To improve the quality of training for train crews, including training on liaising with emergency services, so that they are better prepared to respond to unusual situations.
Response	The recommendation was accepted.

The maritime year in review

Maritime highlights 2018/19

323 notifications received and five inquiries opened

Over the year, the maritime mode received 39 notifications, compared with 329 in the previous year. The diagram below shows the most frequent notifications by event type. These event types comprise more than 10% of the total maritime notifications.



	2018/19	2017/18
Accidents	12	50
Incidents	27	279
Total	39	329
Inquiries launched	6	3
Launch rate	2%	<1%

The number of maritime notifications received has reduced from 50–80 per month to an average of less than five. At the Commission's request, Maritime NZ reviewed its arrangements for managing notifications, and is now sending only those that fall within statutory requirements (and not all notifications, as previously). Maritime NZ consulted the Commission as part of its review. The new arrangements are similar to those we have with the Civil Aviation Authority and the NZ Transport Agency.

Maritime inquiries show no obvious trends

There were no clear trends in the 12 maritime inquiries dealt with over the 2018/19 year. In early 2019, two jet accidents occurred in quick succession and the Commission decided to open inquiries into both, especially as the circumstances of one appeared to have aspects related to a Watchlist item; however, these inquiries are still in their early stages and findings have yet to be determined.

Four maritime reports were published

Four reports were published over the year.

	Number of reports published			Timeliness of closed inquiries	
	Total	Final	Interim	Average age (working days)	No. completed within 440 working days
2018/19	4	4	0	366	3
2017/18	7	7	0	377	4

Three of the inquiries for which final reports were published this year involved passenger vessels: one was a grounding, one involved contact with a cement carrier, and in the third, a crew fatality resulted from an explosion of a high-pressure gas cylinder. The fourth inquiry was into a fire in the hold of a container vessel.

Ten recommendations included safety of pressure vessels associated with stored energy systems, fires on board ships, and safety of port infrastructure

In February 2017, a high-pressure nitrogen-gas cylinder burst, killing a crew member on board a passenger cruise ship while it was berthed at Port Chalmers, Dunedin.[27] The Commission found that the nitrogen cylinder burst at below its normal working pressure because of severe external corrosion. The failed cylinder and several others were not fit for purpose despite having been recently surveyed.

The Commission also found an urgent need for consistent and proper standards to at a global level for maintaining, inspecting, testing and, where necessary, replacing high-pressure cylinders on board ships.

The Commission made urgent recommendations in April 2017, and issued two further recommendations in November 2018. One was to Maritime NZ to raise the matter at international level; and the other was issued to the manufacturer to improve its training processes. Both recommendations were accepted.

Other maritime recommendations included:

- reducing the risk of fire on board a ship caused by lights that radiate high levels of heat (including recommendations to international organisations), and reviewing Fire and Emergency NZ's procedures for firefighting on board ships[28]
- improving infrastructure at ports so that it can withstand the loads generated by vessels that may be berthed there.[29]

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

[27] Maritime inquiry MO-2017-203: Burst nitrogen cylinder causing fatality, passenger cruise ship *Emerald Princess*, 9 February 2017
[28] Maritime inquiry MO-2017-205: Multipurpose container vessel *Kokopo Chief*, cargo hold fire, 23 September 2017
[29] Maritime inquiry MO-2017-204: Passenger vessel *Seabourn Encore*, breakaway from wharf and collision with bulk cement carrier at Timaru, 12 February 2017

Maritime inquiries closed 2018/19

Maritime inquiry MO-2017-202: Passenger vessel L'Austral, grounding, Milford Sound, Fiordland, 9 February 2017

Event type	**Grounding**
Safety issues *"What contributed to the occurrence, or might contribute to another occurrence?"*	3 safety issues were identified: • The primary means for navigation on board the *L'Austral*, the electronic chart display and information system (ECDIS), was not being used to its full potential, and the crew were not fully conversant with it. • The standard of bridge resource management on board the *L'Austral* during the Milford Sound pilotage did not meet good industry practice. • Environment Southland, the regional authority that regulates maritime activity in the area, had not fully considered the risks of blind pilotage with large ships in confined waters.
Findings (number) *Increases with complexity*	8
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: • Every part of a ship's voyage must be planned, not just the planned track for the ship. All members of the bridge team be fully familiar with and agree to the plan. • Good bridge resource management relies on a culture where challenge is welcomed and responded to, regardless of rank, personality or nationality. • ECDIS is a valuable aid to navigation. However, mariners need to fully understand and be familiar with all aspects of the system, particularly when using it for blind pilotage.
Safety actions (number & précis) *"What has been done while the inquiry's been underway that's removed the need for a relevant recommendation?"*	6 safety actions have been taken: • Environment Southland required all Fiordland pilots to have had, within the past three years, refresher blind pilotage training as a prerequisite to any hours-of-darkness pilotage. • Environment Southland programmed a general navigation safety assessment of the increasing number of visiting cruise ships to Fiordland, to include hours-of-darkness pilotage and the provision of extra navigational aids. • Port Otago (the parent company of Fiordland Pilot Services) has sent all its Fiordland pilots on a three-day blind pilotage refresher training course, with two days focusing on Milford Sound and other passages in Fiordland and one day focusing on blind pilotage in Stewart Island. • Port Otago issued the pilots with their own portable pilotage units (which give easy access to relevant navigational information) loaded with charts for Fiordland and Stewart Island. • The ship operator emailed all masters informing them of the recommendations and lessons learnt from this incident. • The ship operator forwarded to masters a publication providing guidance on the relationship between the pilot and the bridge team.
Safety recommendations (number & précis) *"What needs to change to reduce the likelihood of a recurrence?"*	1 recommendation was made to the Chief Executive of Environment Southland: • To review the risk assessment for safe navigation within Fiordland and take the necessary action(s) to mitigate the risk of large cruise ships frequently transiting narrow passages with limited room for manoeuvring and with pilots on board during the hours of darkness or in other conditions of restricted visibility.
Response	Environment Southland accepted the recommendation to undertake a risk assessment. The outcome of the assessment will determine whether the Council can fully implement the recommendations.

Maritime inquiry MO-2017-205: Multipurpose container vessel Kokopo Chief, cargo hold fire, 23 September 2017

Event type	**Cargo hold fire**
Safety issues *"What contributed to the occurrence, or might contribute to another occurrence?"*	3 safety issues were identified: • The operator's safety management system had not fully mitigated the risk of fire caused by cargo hold lighting, despite an earlier, similar incident. • The responsibilities of the various authorities involved in responding to the fire were not clearly documented or understood by all parties. • The Fire and Emergency New Zealand training standards did not fully cover the special considerations for responding to shipboard fires.
Findings (number) *Increases with complexity*	5
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: • Safety procedures such as switching off cargo hold lights should be documented and include systems for checking they have been carried out. • Ship owners and operators should consider using lamps that do not generate high heat in locations where the risk of fire is present. • Ships' firefighting systems are unique to ships' design and construction. They should be used according to the operating instructions.
Safety actions (number & précis) *"What has been done while the inquiry's been underway that's removed the need for a relevant recommendation?"*	5 safety actions have been taken: • The operator undertook an internal investigation. Recommendations from the investigation led to the following actions. • The operator initiated a programme to change the cargo hold lights to LED lamps on all of the *Kokopo Chief*'s sister ships in the fleet. • All other ships in the company fleet were checked for high-temperature lamps. Cargo hold lights all now use LED lamps. • Safety management system procedures now require lights to be switched off and for this to be recorded the ships' log books. • Communication with ship managers have been improved to ensure that fleet safety alerts are used effectively to learn from near misses.
Safety recommendations (number & précis) *"What needs to change to reduce the likelihood of a recurrence?"*	2 recommendations were made to the Chief Executive of FENZ: • To review procedures for firefighting on board ships to ensure they accurately reflect the mandated responsibilities of the ship's master, the harbourmaster and any other person or organisation that could be involved. • To review the FENZ training standards to ensure they contain sufficient training in the unique aspects of fighting fires on board ships. 1 recommendation was made, through Lloyd's Register International: • That the International Association of Classification Societies alert members to the potential risk posed by lights that emit high heat, for them to consider when approving designs or auditing safe ship management systems on board ships. 1 recommendation was made to the Executive Officer of the International Group of P&I Clubs: • To disseminate the lessons learned from this accident to all of its members and advise them of the potential risk to ship safety posed by lights that radiate high levels of heat.
Response	All recommendations were accepted.

Maritime inquiry MO-2017-203: Burst nitrogen cylinder causing fatality, passenger cruise ship Emerald Princess, 9 February 2017

Event type	**Burst nitrogen cylinder**
Safety issues *"What contributed to the occurrence, or might contribute to another occurrence?"*	2 safety issues were identified: • There are currently no global minimum standards for the inspection, testing and rejection of pressure cylinders that make up part of stored energy systems on lifeboat launching installations, which has resulted in wide variations in, and in some case inadequate, standards applied by Flag State administrations, classification societies and authorised service providers. • Technicians who are authorised to conduct mandatory annual and five-yearly inspections of lifeboat-launching installations are not required to have specific training and certification for inspecting any stored energy-release systems and their associated pressure cylinders.
Findings (number) *Increases with complexity*	4
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: • Any sign of corrosion on high-pressure cylinders should be fully investigated by a person competent in examining high-pressure cylinders before any remedial work is undertaken and the cylinders are allowed back into service.
Safety actions (number & précis) *"What has been done while the inquiry's been underway that's removed the need for a relevant recommendation?"*	6 safety actions have been taken by the operator who: • On board the Emerald Princess, undertook a fleet-wide visual inspection of all nitrogen cylinders for corrosion, took an inventory, and replaced over 800 cylinders. • Revised policies and procedures to enhance crew safety, including a review of the planned maintenance systems. • Issued standardised guidance for nitrogen cylinder installations at Life Saving Appliance (LSA) launching stations. • Ensured a standard instruction for nitrogen bottles top up procedures for hydraulic piston accumulators. • Issued a safety bulletin with directions for risk assessments and ensuring proper equipment and procedures. • Issued work orders with improved processes for inspecting and replacing equipment (davits[small cranes for suspending, lowering, and raising lifeboats], LSA launching appliances, cylinders and piston-type accumulators). 3 safety actions have been taken by the davit manufacturer who: • Issued additional guidance for service technicians on the inspection of nitrogen cylinders. • Improved the documentation of the procedure for refilling cylinders. • If not otherwise required by the Flag State of the ship, recommended that any nitrogen cylinder deemed unfit due to corrosion should be removed for further assessment and, if more than 10 years have elapsed since initial pressure test at manufacture facility, the cylinder must be hydrostatic pressure tested.
Safety recommendations (number & précis) *"What needs to change to reduce the likelihood of a recurrence?"*	2 recommendations were made to the manufacturer: • That, as a matter of urgency, it contact all known ship owners that have the same or similar emergency launching and recovery systems installed on their vessels, informing them about the circumstances of this accident, and advising them to have the systems inspected immediately by a competent person to check whether the nitrogen cylinders and other pressure vessels associated with the systems are fit for purpose. Any nitrogen cylinders deemed unfit due to corrosion should be removed for further assessment. [Previously issued as an urgent recommendation.]

	• To carry out a review of its current training processes and ensure that inspections of stored energy systems are carried out by technicians who are trained and certified to inspect them. 1 recommendation was made to the International Association of Classification Societies: • That it inform all of its members about the circumstances of this accident and advise them to alert their surveyors to pay special attention to any corroded nitrogen cylinders or other pressure vessels when conducting their Class or Flag State surveys, particularly when inspecting pressure vessels stored in an open marine environment. [Previously issued as an urgent recommendation.] 1 recommendation was made to the Cruise Lines International Association: • That as a matter of urgency it contact members, informing them about the circumstances of this accident and warning them to have the systems inspected immediately by a competent person. Any corroded nitrogen cylinders or other associated pressure vessels should be removed for further assessment. [Previously issued as an urgent recommendation.] 2 recommendations were made to the Director of Maritime NZ: • That all New Zealand surveyors and Port State control officers be informed about the circumstances of this accident and advise them to pay special attention to any corroded nitrogen cylinders or other pressure vessels when conducting their Class or Flag State surveys, particularly when inspecting pressure vessels stored in an open marine environment. [Previously issued as an urgent recommendation.] • To raise through the appropriate International Maritime Organization safety committee for its consideration, the implications for maritime safety of not having adequate minimum standards for the inspection, testing and rejection of pressure vessels that are part of a stored energy system.
Response	The manufacturer promptly contacted all their customers with the same or similar equipment on board and followed up to support their customers with the inspection. The Director of Maritime NZ accepted the recommendation.

Maritime inquiry MO-2017-204: Passenger vessel Seabourn Encore, breakaway from wharf and collision with bulk cement carrier at Timaru, 12 February 2017

Event type	**Breakaway from wharf**
Safety issues *"What contributed to the occurrence, or might contribute to another occurrence?"*	2 safety issues were identified: • The safe working loads of the bollards on the wharf were unknown and therefore it was not possible to determine whether the mooring plan for any ship was safe. • The mooring procedures contained in the port's Safety Management System were not strictly adhered to and the procedure in the event of a high wind warning was ineffective.
Findings (number) *Increases with complexity*	8
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: • Port companies must be aware of the safe working loads of their mooring infrastructure in order to produce safe and effective ship mooring plans. • Procedures for monitoring and communicating weather conditions must be robust and strictly followed when harbouring ships that are prone to high winds.
Safety actions (number & précis) *"What has been done while the inquiry's been underway that's removed the need for a relevant recommendation?"*	9 safety actions have been taken by the port operator who: • Decided not to allow cruise liners to berth at Timaru in 2019. • Updated mooring plans for each class of vessel. • Completed additional training of moorings staff. • Investigated installation of remote wind sensors. • Are using a new weather prediction model and MetService remote weather stations are monitored when the model indicates strong winds. • Updated high wind procedures in the pilotage procedure guide and emergency cards. • Installed shore bollards to protect container ships from prevailing norwest winds. • Designed bollards for the wharf for use by cruise ships where there is threat of high winds. • Continued extensive bollard strengthening work around the port. 3 safety actions have been taken by the ship operator who: • Internally investigated the accident. • Introduced requirements for the ship's agent to obtain written confirmation from the port operator that the bollard capacity meets recognised industry standards and is suitable in all respects for a cruise ship of the size that is being booked. • Introduced requirements that the officer of the watch is to enter in the ship's log any wind or weather advisory when in port.
Safety recommendations (number & précis) *"What needs to change to reduce the likelihood of a recurrence?"*	1 recommendation was made to the Chief Executive of PrimePort Timaru: • That, until all the planned improvement work is completed, a ship-to-berth risk assessment be undertaken for all vessels intending to use the port. The assessment should identify whether a berth is safe for a vessel to remain alongside, define any operational limits or restrictions and identify any additional control measures that may be required. This information should be passed to the ship prior to arrival. 1 recommendation was made to the Director of Maritime NZ: • To promulgate, through the Secretariat of the Port and Harbour Marine Safety Code Steering Group, the findings of this report, in particular the potential dangers of securing vessels that can generate loads above those that the port infrastructure can withstand.
Response	Both recommendations were accepted.

Financial statements

"We are wholly funded by the Crown"

$5.5m

CROWN FUNDING

8. Financial statements

TRANSPORT ACCIDENT INVESTIGATION COMMISSION
STATEMENT OF COMPREHENSIVE REVENUE AND EXPENSE FOR THE YEAR ENDED 30 JUNE 2019

	Notes	Actual 2019 $000	Budget 2019 $000	Actual 2018 $000
Revenue				
Funding from the Crown		5,520	5,520	5,740
Interest revenue		21	22	21
Other revenue	2	158	55	190
Total Revenue		5,699	5,597	5,951
Expenditure				
Audit Fees		20	19	20
Commissioners' fees	9	271	316	306
Depreciation and amortisation expense	5&6	165	232	219
Lease, rentals and outgoings		677	655	774
Personnel costs	8	3,496	3,428	3,279
Other expenses		1,138	947	1,221
Total Expenditure		5,767	5,597	5,819
Net Surplus/(Deficit)		(68)	-	132
Other Comprehensive revenue and expense		-	-	-
Total Comprehensive revenue and expense		(68)	-	132

Explanations of major variances against budget are provided in note 18.

The accompanying notes form part of these financial statements.

TRANSPORT ACCIDENT INVESTIGATION COMMISSION
STATEMENT OF FINANCIAL POSITION AS AT 30 JUNE 2019

Assets	Notes	Actual 2019 $000	Budget 2019 $000	Actual 2018 $000
Current assets				
Cash and cash equivalents	3	1,409	1,301	1,315
Receivables	4	6	2	9
Prepayments		18	24	22
Total current assets		1,433	1,327	1,346
Non-current assets				
Property, plant and equipment	5	234	270	278
Intangible assets	6	277	287	374
Total non-current assets		511	557	652
Total assets		1,944	1,884	1,998
Liabilities and taxpayers' funds				
Current liabilities				
Payables	13	255	145	239
Employee entitlements	7	265	250	254
Total current liabilities		520	395	493
Non-current liabilities				
Employee entitlements	7	18	35	31
Total non-current liabilities		18	35	31
Total liabilities		538	430	524
Net assets		1,406	1,454	1,474
Equity				
General funds	14	1,406	1,454	1,474
Total equity		1,406	1,454	1,474

Explanations of major variances against budget are provided in note 18.

The accompanying notes form part of these financial statements.

TRANSPORT ACCIDENT INVESTIGATION COMMISSION
STATEMENT OF CHANGES IN EQUITY FOR THE YEAR ENDED 30 JUNE 2019

	Note	Actual 2019 $000	Budget 2019 $000	Actual 2018 $000
Balance at 1 July		1,474	1,454	1,342
Total comprehensive revenue and expense for the year		(68)	-	132
Balance at 30 June	14	1,406	1,454	1,474

Explanations of major variances against budget are provided in note 18.

The accompanying notes form part of these financial statements.

TRANSPORT ACCIDENT INVESTIGATION COMMISSION
STATEMENT OF CASH FLOWS FOR THE YEAR ENDED 30 JUNE 2019

	Notes	Actual 2019 $000	Budget 2019 $000	Actual 2018 $000
Cash flows from operating activities				
Receipts from the Crown		5,520	5,520	5,740
Interest received		21	22	21
Receipts from other revenue		161	55	194
Payments to suppliers		(2,040)	(1,932)	(2,414)
Payments to employees		(3,498)	(3,428)	(3,302)
GST (net)		(46)	-	57
Net cash flows from operating activities		118	237	296
Cash flows from investing activities				
Purchase of property, plant and equipment		(24)	(114)	(52)
Purchase of intangible assets		-	(40)	-
Sale of property, plant and equipment		-	-	5
Net cash flows from investing activities		(24)	(154)	(47)
Cash flows from financing fctivities				
Net fash flows from financing fctivities		-	-	-
Net (decrease)/increase in cash and cash equivalents		94	83	249
Cash and cash equivalents at the beginning of the year		1,315	1,218	1,066
Cash and cash equivalents at the end of the year	3	1,409	1,301	1,315

Explanations of major variances against budget are provided in note 18.

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.

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 2019, and were approved by the Board on 24 October 2019.

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 accounting standards.

Presentation currency and rounding

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

Standard early adopted

In line with the Financial Statements of the Government, TAIC has elected to early adopt PBE IFRS 9 Financial Instruments. PBE IFRS 9 replaces PBE IPSAS 29 Financial Instruments: Recognition and Measurement. Information about the adoption of PBE IFRS 9 is provided in note 19.

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 5.
- Useful lives of acquired software assets — refer note 6.

Critical judgements in applying the Commission's accounting policies

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

- Leases classification — refer note 12.

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

	Actual 2019 $000	Actual 2018 $000
Rental revenue from property subleases	41	41
Other revenue	117	149
Total revenue	158	190

3. Cash and cash equivalents

Accounting policy

Cash and cash equivalents includes 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

	Actual 2019 $000	Actual 2018 $000
Cash at bank and on hand	674	597
Short-term deposits maturing in less than 3 months	735	718
Total cash and cash equivalents	1,409	1,315

4. 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.

Previous accounting policy for impairment of receivables

In the previous year, the allowance for credit losses was based on the incurred credit loss model. An allowance for credit losses was recognised only when there was objective evidence that the amount due would not be fully collected.

Breakdown of other revenue and further information

	Actual 2019 $000	Actual 2018 $000
Receivables (gross)	6	9
Less: Allowance for credit losses	-	-
Receivables	6	9
Receivables comprise:		
Receivables from the sale of goods and services (exchange transactions)	6	9

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

5. 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:

	Buildings $000	Computer equipment $000	Furniture and office equipment $000	Total $000
Cost				
Balance as at 1 July 2017	339	241	167	747
Balance at 30 June 2018	349	240	170	759
Balance at 1 July 2018	349	240	170	759
Additions	7	9	8	24
Disposals	-	-	-	-
Balance at 30 June 2019	356	249	178	783
Accumulated depreciation				
Balance as at 1 July 2017	125	163	131	419
Balance at 30 June 2018	154	185	142	481
Balance at 1 July 2018	154	185	142	481
Depreciation Expense	29	30	9	68
Elimination on disposal	-	-	-	-
Balance at 30 June 2019	183	215	151	549
Carrying Amounts				
At 1 July 2017	214	78	36	328
At 30 June 2018 and 1 July 2018	195	55	28	278
At 30 June 2019	173	34	27	234

As at year end there was no work in progress (2018: nil) or capital commitments.

6. 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 5. 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	Total
	$000	$000
Cost		
Balance at 1 July 2017	1,037	1,037
Balance at 30 June 2018 and 1 July 2018	1,037	1,037
Additions	-	-
Disposals	-	-
Balance at 30 June 2019	1,037	1,037
Accumulated amortisation		
Balance at 1 July 2017	542	542
Balance at 30 June 2018 and 1 July 2018	663	663
Amortisation expense	97	97
Disposals	-	-
Balance at 30 June 2019	760	760
Carrying amounts		
At 1 July 2017	495	495
At 30 June 2018 and 1 July 2018	374	374
At 30 June 2019	277	277

As at year end there was no work in progress or capital commitments (2018: nil)

7. 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 2019 $000	Actual 2018 $000
Current portion		
Accrued salaries and wages	58	64
Annual leave	174	169
Long service leave	33	21
Total current portion	265	254
Non-current portion		
Long service leave	18	31
Total non-current portion	18	31
Total employee entitlements	283	285

8. 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

	Actual 2019 $000	Actual 2018 $000
Salaries and wages	3,283	3,124
Defined contribution plan employer contributions	85	83
Increase/(decrease) in employee entitlements	(1)	(13)
Recruitment	69	23
Other staff costs	60	62
Total personnel costs	3,496	3,279

9. Commissioner remuneration

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

Commissioner	Actual 2019 $000	Actual 2018 $000
Ms J Meares	98	102
Mr P McKenzie, QC CNZM (Deputy Chief Commissioner, retired November 2018)	18	50
Mr S Davies Howard (Deputy Chief Commissioner from November 2018)	51	54
Mr R Marchant (Commissioner)	51	50
Ms Paula Rose QSO (Commissioner)	53	50
Total Commissioner remuneration	271	306

10. Employee remuneration

	Actual 2019	Actual 2018
Total remuneration paid or payable:		
$100,000-$109,999	2	2
$110,000-$119,999	3	5
$120,000-$129,999	4	1
$130,000-$139,999	3	2
$140,000-$149,999	1	3
$150,000-$159,999	1	-
$160,000-$169,999	1	1
$170,000-$179,999	-	-
$180,000-$189,999	-	-
$190,000-$199,999	1	1
$200,000-$209,999	-	-
$210,000-$219,999	-	-
$220,000-$229,999	-	-
$230,000-$239,999	-	-
$240,000-$249,999	-	1
$250,000-$259,999	-	-
$260,000-$269,999	-	-
$270,000-$279,999	-	-
$280,000-$289,999	1	-
Total employees	**17**	**16**

During the year ended 30 June 2019, 1 employee received compensation and other benefits in relation to cessation totalling $42,353 (2018: $32,533).

11. 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 2019 $000	Actual 2018 $000
Commission Members		
Remuneration	271	306
Full-time equivalent members	0.81	0.93
Leadership Team		
Remuneration	801	744
Full-time equivalent members	3.40	3.99
Total key management personnel remuneration	1,072	1,050
Total full time equivalent personnel	4.67	4.92

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.

12. 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.

Operating leases as lessee

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

	Actual 2019 $000	Actual 2018 $000
Not later than one year	531	535
Later than one year and not later than five years	1,533	2,006
Later than five years	-	58
Total non-cancellable operating leases	2,064	2,599

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.

13. Payables

Accounting policy

Short-term payables are recorded at their face value.

Breakdown of payables

	Actual 2019 $000	Actual 2018 $000
Payables under exchange transactions		
Creditors	141	32
Accrued expenses	35	82
Total payables under exchange transactions	176	114
Payables under non-exchange transactions		
Taxes payables (GST, PAYE, and rates)	79	125
Total payables under non-exchange transactions	79	125
Total payables	255	239

14. Equity

	Actual 2019 $000	Actual 2018 $000
Accumulated surplus/(deficit)		
Balance at 1 July	1,474	1,342
Surplus/(deficit) for the year	(68)	132
Balance at 30 June	1,406	1,474

15. Financial instruments categories

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

	Actual 2019 $000	Actual 2018 $000
Financial assets measured at amortised cost		
Cash and cash equivalents	1,409	1,315
Receivables	6	9
Total financial assets measured at amortised cost	1,415	1,324
Financial liabilities measured at amortised cost		
Payables (excluding taxes payable)	176	114
Total financial liabilities measured at amortised cost	176	114

16. Contingencies

Contingent liabilities

There were no contingent liabilities existing at balance date. (2018: Nil)

Contingent assets

At balance date TAIC was continuing to receive reparations for money that was taken fraudulently. Reparations received at 30 June 2019 were $5,000 (2018: $5,200). The contingent asset at balance date is $267k (2018: $272k).

17. Events after the balance date

There were no significant events after balance sheet date.

18. 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

Other revenue

Other revenue is $103k higher than budgeted due to final insurance monies received for earthquake disruption costs. This contingent asset from last year was not included in the budget due to uncertainty of amount and likely timing of payment because of disputes with insurers.

Other expenses

Other expenses are $191k higher than budgeted partly due to more consultants being engaged than anticipated to assist with the upgrade of the website platform and other IT projects. The urgency of this work identified after the budget was finalised. Investigation costs were also higher than budgeted due to contracting of specialist advice and more investigators attending initial investigation site work which is difficult to predict.

Statement of financial position

Cash and cash equivalents

Cash and cash equivalents are higher than budgeted due to timing of creditor payments and additional funding received for earthquake disruption costs.

Property, plant and equipment

Property, plant and equipment are less than budgeted due to the deferral of some computer replacements until after the Knowledge Transfer System project has progressed.

Payables

Payables are higher than budgeted mainly due to larger than usual June invoices for recruitment and information technology services and timing of other creditor payments.

Statement of changes in cash flows

The statement of changes in cash flows shows a net cash flow from investing activities $130k less than budget due to the deferral of computer and software replacement until the Knowledge Transfer System project is progressed. Net cash flows from operating activities are $119k less than budget due to other expenses being higher than budgeted.

19. Adoption of PBE IFRS 9 Financial Instruments

Accounting policies have been updated to comply with PBE IFRS 9. The main updates are:

- Note 4 Receivables: This policy has been updated to reflect that the impairment of short-term receivables is now determined by applying an expected credit loss model.

On the date of initial application of PBE IFRS 9, being 1 July 2018, the classification of financial instruments under PBE IPSAS 29 and PBE IFRS is as follows:

	Measurement category		Carrying amount		
	Original PBE IPSAS 29 category	New PBE IFRS 9 category	Closing balance 30 June 2018 (PBE IPSAS 29) $000	Adoption of PBE IFRS 9 adjustment $000	Opening balance 1 July 2018 (PBE IFRS 9) $000
Cash at bank and on hand	Loans and receivables	Amortised cost	1,318	0	1,318
Receivables	Loans and receivables	Amortised cost	9	0	9
Total financial assets			**1,417**	**0**	**1,417**

The measurement categories and carrying amounts for financial liabilities have not changed between the closing 30 June 2018 and opening 1 July 2018 dates as a result of the transition to PBE IFRS 9.

AUDIT NEW ZEALAND
Mana Arotake Aotearoa

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 2019

The Auditor-General is the auditor of the Transport Accident Investigation Commission (the Commission). The Auditor-General has appointed me, Clint Ramoo, 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 an appropriation, of the Commission on his behalf.

Opinion

We have audited:

- the financial statements of the Commission on pages 70 to 84, that comprise the statement of financial position as at 30 June 2019, the statement of comprehensive revenue and expense, 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 29 and 35 to 38.

In our opinion:

- the financial statements of the Commission on pages 70 to 84:
    - present fairly, in all material respects:
        - its financial position as at 30 June 2019; 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 Public Benefit Entity Reporting Standards Reduced Disclosure Regime; and

- the performance information on pages 18 to 29 and 35 to 38:
    - presents fairly, in all material respects, the Commission's performance for the year ended 30 June 2019, including:
        - for each class of reportable outputs:
            - its standards of delivery performance achieved as compared with forecasts included in the statement of performance expectations for the financial year; and
            - its actual revenue and output expenses as compared with the forecasts included in the statement of performance expectations for the financial year; and
        - what has been achieved with the appropriation; and
        - the actual expenses or capital expenditure incurred compared with the appropriated or forecast expenses or capital expenditure.
    - complies with generally accepted accounting practice in New Zealand.

Our audit was completed on 24 October 2019. This is the date at which our opinion is expressed.

The basis for our opinion is explained below. In addition, we outline the responsibilities of the Commissioners and our responsibilities relating to the financial statements and the performance information, we comment on other information, and we explain our independence.

Basis for our opinion

We carried out our audit in accordance with the Auditor-General's Auditing Standards, which incorporate the Professional and Ethical Standards and the International Standards on Auditing (New Zealand) issued by the New Zealand Auditing and Assurance Standards Board. Our responsibilities under those standards are further described in the Responsibilities of the auditor section of our report.

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

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

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

The Commissioners are responsible on behalf of the Commission for preparing financial statements and performance information that are fairly presented and comply with generally accepted accounting practice in New Zealand. The Commissioners are responsible for such

internal control as they determine is necessary to enable them to prepare financial statements and performance information that are free from material misstatement, whether due to fraud or error.

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 91, but does not include the financial statements and the performance information, and our auditor's report thereon.

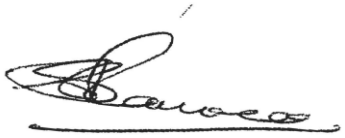
Our opinion on the financial statements and the performance information does not cover the other information and we do not express any form of audit opinion or assurance conclusion thereon.

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 (Revised): 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.



Clint Ramoo
Audit New Zealand
On behalf of the Auditor-General
Wellington, New Zealand

About our Kōwhaiwhai

TAIC commissioned its kōwhaiwhai, Māori scroll designs, from artist Sandy Rodgers (Ngati Raukawa, Tuwharetoa, MacDougal). Sandy began from thinking of the Commission as a vehicle or vessel for seeking knowledge to understand transport accident tragedies and how to prevent them. A 'waka whai mārama (i te ara haumaru) is 'a vessel/vehicle in pursuit of understanding'. Waka is 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 'haumaru' is 'safe or risk free'.

Corporate: Te Ara Haumaru — 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 represent 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 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.

Marine: 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 'Marine'. Sandy acknowledges Tangaroa (God of the sea) in the creation of this Kōwhaiwhai.

TAIC Annual Report 2019

Transport Accident Investigation Commission
www.taic.org.nz | inquiries@taic.org.nz
Phone +64 4 473 3112 or 0800 188 926
Level 16 | 80 The Terrace
PO Box 10 323 | Wellington 6143 | New Zealand