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Transport Accident Investigation Commission
Te Komihana Tirotiro Aitua Waka

Annual Report 2016 – 2017

Year ended 30 June 2017

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

Transport Accident Investigation Commission
Annual Report 2017

20 November 2017

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 2017.

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

Jane Meares
Chief Commissioner

Peter McKenzie QC
Deputy Chief Commissioner

Our vision

No repeat accidents — ever!

Our mission

Safer transport through investigation, learning and influence

Our values

Fairness
Impartiality
Independence
Competence
Integrity
Accessibility
Timeliness
Certainty

Contents

1. Chief Commissioner's overview

Keeping focused on making a difference: key achievements in improving transport safety

1.1.1. **No Repeat Accidents – Ever!** This is the Commission's aspirational vision for safer transport in New Zealand. It focuses us on our mandated task of determining the circumstances and causes of air, rail, and maritime accidents and incidents. We do this with a view to avoiding similar occurrences in the future, rather than ascribing blame to any person.[1]

1.1.2. Highlights from the Commission's work over the year shows that we are making a positive difference to transport safety, domestically and internationally. (Section 4.1 has more information about these highlights.)

- In the aviation mode, the Commission's placement on its Watchlist of Robinson helicopter mast-bumping accidents in New Zealand has spotlighted this topic. The manufacturer and the Civil Aviation Authority have been active in finding solutions to the problem.

- In rail, the Commission closed a recommendation about a factor contributing to freight train derailments. This was one of several recommendations relating to derailments, all of which are now closed. From the time of the first recommendation, derailments have reduced significantly — from 60 in 2005 to seven in 2017. Also in the rail sector, the Commission closed an urgent recommendation calling for improved pedestrian safety at Morningside Drive in West Auckland. The recommendation was the result of an inquiry into a pedestrian fatality at the station.[2]

- In the maritime mode, two of the Commission's inquiries have resulted in action being taken globally to improve safety — both inquiries related to problems with corrosion.

    - Early in 2017, we issued an interim report and four urgent recommendations in relation to a crew fatality on a cruise ship, which was the result of a burst high-pressure nitrogen cylinder. Recipients responded positively to these recommendations, committing to prompt action.[3]

    - The Commission closed a recommendation to Maritime New Zealand (MNZ), when MNZ made a submission to the International Maritime Organisation raising the implications that plastic-sheathed wire ropes have for maritime safety.

The Commission's work is about identifying safety issues and making a call for action

1.1.3. Each year the Commission receives about 1000 notifications of accidents and incidents (occurrences), and opens inquiries into approximately 1-2% of those occurrences. Legislation guides us in our decision to open an inquiry: we must do so where we believe the circumstances of the occurrence have, or are likely to have, significant implications for transport safety; or might allow us to make findings or recommendations to increase transport safety.[4] Our inquiries look at risk within the transport system, identifying safety issues and the conditions under which accidents and incidents happen. We establish findings as to circumstance and cause, and make recommendations for managing the safety issues identified.

[1] See s4 Transport Accident Investigation Commission Act 1990.
[2] Inquiry 15-101: *Pedestrian fatality, Morningside Drive level crossing, West Auckland, 29 January 2015*.
[3] Interim report to maritime inquiry 17-203: *Passenger vessel* Emerald Princess*, explosion resulting in crew fatality, Port Chalmers, Dunedin, 9 February 2017.*
[4] See s13(1)(b) Transport Accident Investigation Commission Act 1990.

1.1.4. The types of occurrences we are notified of display some consistency over time, either specific to a mode (such as derailments), or common to all modes (such as collisions). Although occurrences might be similar in type, their likely causes, given the circumstances, differ enough to warrant the Commission opening an inquiry. Each inquiry — the safety issues identified, findings and recommendations — adds value to the national and international body of knowledge about particular sets of occurrences. In this respect we are part of a global community of similar organisations also investigating such occurrences.

1.1.5. The Commission is sometimes unable to unequivocally determine the causes of occurrences similar in type and circumstances. Examples are the mast bumping accidents involving Robinson Helicopters, of which two were the subject of reports published by the Commission in 2016/17. Complex safety issues, with many contributing factors, can underlie these recurring occurrences. In such cases the Commission pays close attention to each notified occurrence to decide whether further inquiries would contribute to improved transport safety.

1.1.6. An area of frustration for the Commission is delayed — or no — action in response to our recommendations, especially where these relate to safety issues identified in more than one inquiry. The Commission uses different approaches to this problem. One is the Watchlist, which helps us maintain visibility and vigilance with regard to persisting safety issues. An example is the use of performance-impairing substances by people in critical safety roles. Another has been to establish a cross-agency project to develop a consistent monitoring and reporting framework for managing safety recommendations across all modes.

Organisational achievements and events

1.1.7. In line with its stated operating intentions, the Commission's organisational focus has been to progress its programme of change. The programme started in 2015 with a funding injection and is now drawing to a close. Key elements of the change programme include improving the timeliness of inquiry reports, strengthening organisational resilience and better preparedness for responding to a major accident event. Particular attention has been on workforce capability, and improving systems and processes under an overarching quality management system.

1.1.8. We are starting to see the benefits of the Crown's increased investment in us with shorter inquiry durations, and a significant reduction in the backlog of aged cases. At 30 June 2015, the average age of open inquiries was 359 working days (a year is 220 working days). Two years later at 30 June 2017, this number has reduced by a third to 250 working days.

1.1.9. A governance milestone in the 27-year life of the Commission has been the appointment of two new members, bringing the Commission to its allowed full complement of five Commissioners. This has enabled a greater depth of inquiry, and brought greater resilience to the Commission. As Chief Commissioner I greatly value the skills, knowledge, and diversity of thinking each Commissioner brings.

Relocation following the November 2016 earthquake posed a challenge

1.1.10. The greatest challenge faced by the Commission this year has been, as for many other organisations in Wellington, maintaining operations after the November 2016 earthquake. Our business continuity processes served us well; but our premises were damaged, requiring us to temporarily relocate while the building is repaired and strengthened. It has been an expensive exercise for us, which is reflected in our year-end financial performance. However, the most important thing for us is that our people are safe.

Looking ahead, technology will have a major effect on our work

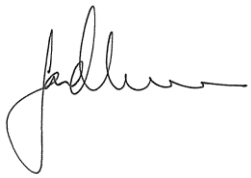
1.1.11. How technology affects our work is an emerging strategic focus for the Commission. The advent of driverless vehicles across all modes, and other emerging technologies, present challenges for our investigations. We also face the question of the best use of advancing technologies in the areas of data and information management and communications to improve organisational performance. These matters require foresight and thoughtful management.

1.1.12. Effective work-force planning, and information and communication management systems will help ensure the Commission is capable of meeting these challenges. Already we have established a new accident investigator role — Accident Investigator (Recorders). The role allows us to undertake forensic digital investigation including data recovery from damaged vehicle recorders, such as cockpit voice recorders and navigational tracking systems, rather than outsourcing this work. Establishing the role was a small step, but a loud signal for what is to come and where the Commission's attention will be drawn.

1.1.13. The Commission is mindful of the number of current inquiries that relate in some way to the growing tourism industry. Three helicopter accidents in the adventure tourism sector and five occurrences involving cruise ships fall into this category. Tourism operators are more likely to be carrying passengers, and taking them into remote or hazardous environments.

Thank you to managers and staff

1.1.14. The year's achievements would not have been possible without the dedication of the management and staff of the Commission, many of whom have had to work under trying circumstances this year. On behalf of my fellow Commissioners, thank you for your support for the work of the Commission.



Jane Meares
Chief Commissioner

2. Organisational overview

2.1. Our role is to help prevent transport accidents

2.1.1. 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.[5] The Transport Accident Investigation Commission Act 1990 (the Act) enables the Commission to undertake its task.

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

- decide whether to investigate (the Commission must do so if it believes that an accident or incident has significant implications for transport safety or 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.

2.1.3. 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.

2.1.4. On occasions, coroners, the New Zealand Police, and transport safety authorities (the regulators[6] or Worksafe New Zealand), may also investigate the same transport occurrences as the Commission is investigating.

2.2. Independence is our underlying ethos

2.2.1. The principle of independence underpins the ethos of accident investigation the world over. Ensuring evidence is readily secured, and accessible for critical examination without hindrance or undue influence or pressure from vested interests is the cornerstone of state mandated accident investigation. The principle of independence is manifest in the international transport Conventions where signatory states are obligated to conduct independent investigations.[7] New Zealand fulfils this obligation through the Act where it establishes the Commission as a commission of inquiry and expressly requires the Commission to act independently in performing its statutory functions. It is through the independent functioning of the Commission and protection of its evidence that people can speak to us freely, and we can better understand what happened.

[5] Section 4 of the Transport Accident Investigation Commission Act 1990.
[6] Maritime New Zealand, the Civil Aviation Authority, and the New Zealand Transport Agency.
[7] Paragraph 5.4, Annex 13 to the Convention on International Civil Aviation; Chapter 16 International Maritime Organization Casualty Investigation Code

2.3. Our organisation consists of Commissioners and their supporting staff

2.3.1. The Commission is a small independent Crown entity, fully funded by the Crown. Commissioners have two roles to fulfil as members of the Commission. First, as Commissioners they make determinations as to the circumstances and causes of the accidents and incidents before them; second, they are the Board of the Transport Accident Investigation Commission for the purposes of the Crown Entities Act 2004.

2.3.2. The Commission meets its obligations as a statutory decision-maker and board by sitting two days, usually in the third week of each month, 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

2.3.3. At 30 June 2017, the Commission had five Commissioners, who are appointed by the Governor-General. This is the first time in the 27-year life of the Commission that membership has reached the allowed full complement of five members. The increase in the number of Commissioners has brought greater resilience to the Commission and enabled a greater depth of inquiry into the matters it deals with.

- Ms Jane Meares, Chief Commissioner (first appointed in February 2015, and appointed Chief Commissioner in November 2016, term expires October 2021)

  Ms Meares is a commercial barrister based in Wellington. She undertakes a broad range of commercial and public sector advisory work, and holds several board memberships including the chair of the Parliamentary Counsel's risk and audit committee.

- Mr Peter McKenzie, QC, Deputy Chief Commissioner (appointed August 2015, term expires October 2018)

  Mr McKenzie is a commercial barrister in sole practice in Wellington. He has considerable commercial expertise and has lectured and consulted internationally on company, banking, and securities law.

- Mr Stephen Davies Howard, Commissioner (appointed August 2015, term expires April 2019)

  Mr Davies Howard is a Wellington-based company director with a wealth of strategic international experience. He holds a commercial pilot licence and a commercially endorsed Ocean Yachtmaster's certificate.

- Mr Richard Marchant, Commissioner (appointed November 2016, term expires April 2019)

  Mr Marchant is an Auckland-based barrister who has prosecuted a large number of cases on behalf of government agencies. He is a member of the New Zealand Bar Association and of the Criminal Bar Association, and is a member of the performance review committee of Ministry of Justice.

- Ms Paula Rose, QSO, Commissioner (appointed May 2017, term expires April 2019)

  Ms Rose is a Canterbury-based director and safety professional. She was formerly National Manager, Road Policing with NZ Police, and Deputy Chair of the Independent Taskforce on Workplace Health and Safety. She holds a number of board positions including WorkSafe NZ.

Staff supporting the Commissioners

2.3.4. A small organisation supports the Commissioners, who employ a Chief Executive. As at 30 June 2017, the Chief Executive had 28 staff, including two who were part time.

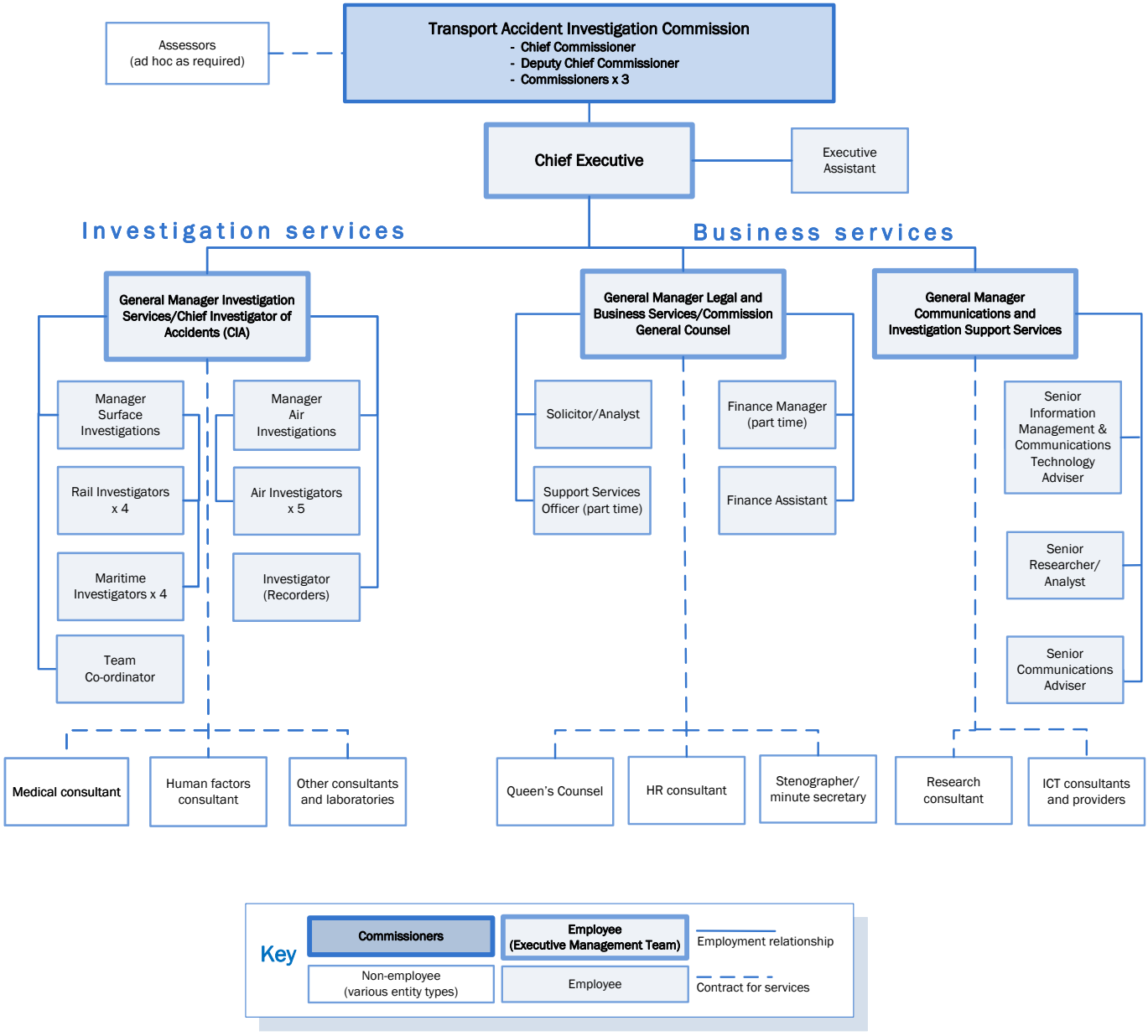


Figure 1: Organisational chart as at 30 June 2017

3. Our work: the year in review

3.1. The Commission's work follows an established procedure of investigation and formal fact-finding inquiry

3.1.1. The Commission's work is driven by a statutorily prescribed notification process, which requires certain thresholds to be met for the Commission to open an inquiry and activate an investigation into an accident or serious incident. It is through the investigation and inquiry processes that safety issues relevant to the circumstances are identified and, where possible, causes ascertained.

3.1.2. Once the threshold to open an inquiry has been 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 recommendations for remedial action where appropriate
- publishing findings and recommendations.

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

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

3.2. Activation through notification

About 1,000 notifications of accidents and incidents are received each year

3.2.1. The Commission receives notifications of certain incidents and accidents in air, rail, and maritime transport from various sources, but mainly from the respective modal regulators. The Commission then decides whether or not to open an inquiry.

3.2.2. During 2016/17, we received 1,155 notifications of accidents and incidents. This is a 15% increase on the number received last year (1,001). Over half were in the maritime mode, although more than a quarter of these related to workplace occurrences and were outside the Commission's jurisdiction. The proportion of accidents and incidents received by mode is shown below, compared with the 2015/16 year. (The charts are based on figures excluding the maritime workplace occurrences.)

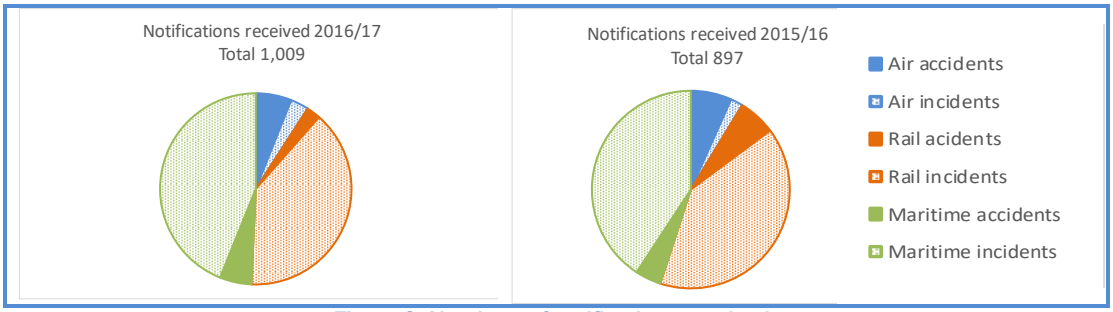


Figure 2: Numbers of notifications received

3.2.3. Each notification is categorised against one or more event types. Appendix 2 shows data on the most frequent notifications, according to event type, for each mode. Trends in event types are monitored and taken into account when the Commission considers whether or not to open an inquiry into any particular occurrence. The Commission opened 19 inquiries in 2016/17, representing about 1.6 percent of the notifications received.

Table 1: Notifications received and inquiries opened

	2016/17			2015/16		
	Notifications received	Inquiries opened	Inquiries not opened	Notifications received	Inquiries opened	Inquiries not opened
Air	92	8	84	78	3	75
Rail	420	4	416	416	3	413
Maritime	643	7	636	507	5	502
Total	1,155	19	1,136	1,001	11	990

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

Investigative staff dealt with 50 cases during the year

3.3.1. As well as opening 19 inquiries, the Commission maintained progress on 14 continuing inquiries and closed a further 17.

Table 2: Inquiries opened and closed

	2016/17				2015/16			
	Open at 30 June	Inquiries continued	Inquiries opened	Inquiries closed	Open at 30 June	Inquiries continued	Inquiries opened	Inquiries closed
Air	16	8	8	5	13	10	3	4
Rail	7	3	4	6	9	6	3	6
Maritime	10	3	7	6	9	4	5	3
Total	33	14	19	17	31	20	11	13

The way we do investigations is changing because of technology

3.3.2. The Commission's investigators gather evidence from a wide range of sources, including examination of accident sites, wreckage, and witness interviews. Increasingly, valuable information about accidents and incidents can be drawn from sources such as flight data recorders, and vehicle and personal devices. Obtaining evidence from these data sources requires specialist skills. The extra baseline funding received by the Commission has enabled it to establish a new role of Accident Investigator (Recorders). The role contributes the expertise necessary to ensure the Commission can draw on all the evidence available to it from data sources.

3.3.3. Since joining the Commission in January 2016, the specialist investigator has contributed various types of analyses to about 30 inquiries. An example of the benefits to the investigation process is the successful recovery of flight track data from badly burnt equipment (from an accident in which a helicopter crashed and caught fire in the Glenbervie forest, near Whangarei).[8] Another example is the trend analysis of past vessel tracks in Port Chalmers in support of an investigation into the grounding of a bulk carrier.[9] In both cases, the data has provided valuable information about the circumstances of the accidents, and evidence as to cause.

Accidents involving helicopters currently form a large portion of the aviation casebook

3.3.4. Two thirds (14 out of 21) of the Commission's aviation inquiries dealt with over the year — either opened, closed, or continuing — involved helicopters (although two of these inquiries related to the same accident, because the inquiry into it had been re-opened in light of new evidence). In part, this reflected the Commission's interest in accidents involving Robinsons, which is discussed in more detail in section 4.1. (Seven of the 14 helicopter inquiries dealt with over the year, including the re-opened one, involved Robinsons.)

3.3.5. The circumstances of the helicopter accidents varied with no discernible theme. The Commission has noted, however, that in three of the accidents[10] the operators were working within the adventure tourism sector. The tourism sector also features in the maritime investigations dealt with in 2016/17 (see paragraph 3.3.11 below). Operators in the tourism sector are more likely to carry passengers, sometimes into inaccessible or hazardous areas of the country. Accidents therefore have potentially higher consequences in terms of damage, injury and death, as well as the reputation of New Zealand's tourism sector. The Commission is mindful of the importance of transport and transport safety to the economy.

Worksite safety has been a theme of the year's rail investigations

3.3.6. Last year, the Commission released a report into a mid-2014 accident in which an express train struck a hi-rail excavator within a protected work area.[11] The Commission found that non-compliance with standard operating procedures for the planning, establishment, and running of the protected work area contributed to the accident. The excavator driver was critically injured in the accident.

3.3.7. Failure to follow standard procedures designed to provide for safe railway operations continues to result in the potential for serious accidents. Over 2016/17, the Commission

[8] Open inquiry AO-16-007: *R44 impact with terrain Glenbervie Forest, 31 October 2016*
[9] Open inquiry MO-2016-204: *Bulk Carrier,* Molly Manx*, Grounding, Otago Harbour, 19 August 2016*
[10] Open inquiries AO-2013-010: *Aerospatiale AS350 B2 ZK-IMJ, collision with second helicopter, Tyndall Glaciers, 28 October 2010*; AO-15-007: *AS350BA Eurocopter, ZK-HKU, collision with terrain, Fox Glacier, 21 November 2015*; and AO-2016-006: *AS350 Squirrel helicopter, crash landing, North of Arrowtown, 12 September 2016*
[11] Inquiry 14-104: *Express freight train striking hi-rail excavator within a protected work area, Raurimu Spiral, North Island Main Trunk line, 17 June 2014*

received 92 notifications of occurrences involving safe working irregularities, and dealt with three inquiries related to incidents within protected work areas (no-one was injured in these incidents). Two of these accidents involve the failure of workers to adhere to worksite protection practices.

3.3.8. In one of the three inquiries[12], the Commission found that the operator's process for planning and authorising the protected work area was not entirely followed — the rail protection officer informed train control that the worksite was clear without first checking positively that it was.

3.3.9. In another incident[13] the rail protection officer had allowed the maintenance workers to occupy the track minutes after he had authorised a passenger train to travel through the protected area. Some of the workers were aware that the train was due but no one had challenged the rail protection officer when he allowed them to resume work. The operator had not trained and assessed any of the maintenance workers in non-technical (communication) skills.

3.3.10. In the third incident, the driver of a freight train travelled past a compulsory stop board that had been erected to protect a worksite.[14] The inquiry into this accident is continuing.

During the year, the Commission dealt with five investigations involving cruise ships

3.3.11. The Commission currently has five open inquiries involving passenger ships, which is higher than usual.[15] In August 2016, the Commission issued two urgent recommendations concerning the risk assessment process for cruise ships using Tory Channel and the way Maritime New Zealand pilotage requirements are being interpreted.[16] The Commission is mindful of the growth in the number of cruise ships coming to New Zealand; and that the number of ships, as well as the number of passengers per ship, are forecast to increase.[17] Therefore, if safety issues common to these occurrences are identified, they could have significant implications. We continue our investigation and inquiry processes into these occurrences.

Assistance with overseas inquiries is increasing

3.3.12. 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). 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 a significant number of New Zealanders have died as a result of an accident.

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[12] Inquiry 14-105: *Near collision between train and hi-rail excavator, Wairarapa Line near Featherston, 11 August 2014*
[13] Inquiry 15-103: *Track occupation irregularity, leading to near collision, Manunui-Taumarunui, 15 December 2015*
[14] Open inquiry RO-2017-101: *Train 371, unauthorised entry to protected work site, Pongakawa-Hauone, 7 February 2017*
[15] Two occurrences in which *L'Austral* contacted a submerged object, one in Snares Island in January 2017, and one in Milford Sound a month later (open inquiries MO-2017-201 and MO-2017-202 respectively); the *Seabourn Encore* parted its mooring and contacted a cement carrier in Timaru in February 2017 (open inquiry MO-2017-204); *Azamara Quest*, contact with submerged object in Tory Channel in January 2016 (open inquiry MO-2016-202); and an explosion, which resulted a in crew fatality, on the *Emerald Princess* in Port Chalmers in February 2017.
[16] Urgent recommendations: Marine inquiry MO-2016-202: *Cruise ship* Azamara Quest*, contact with Wheki Rock, Tory Channel, 27 January 2016*, published 29 August 2016.
[17] Refer to section 4.1 of the Ministry of Business, Innovation, and Employment's Tourism Insight Series: http://www.mbie.govt.nz/info-services/sectors-industries/tourism/tourism-research-data/tourism-insight-series/tis-ch4-cruise-infrastructure.pdf

3.3.13. The Commission may also support an international agency's investigation of an event with a New Zealand connection. During the year, the Commission assisted nine overseas inquiries under New Zealand's obligations as a signatory to the ICAO Convention.

3.3.14. Requests for assistance are expected to increase for two main reasons. One is that countries such as Tonga, the Cook Islands, and Vanuatu are increasingly calling on the Commission's assistance to help them comply with the requirements of the Convention. Under Annex 13 to the 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. The Commission expects specific arrangements for providing such assistance to be developed over the coming year.

3.3.15. A second reason is that New Zealand is the state of design or manufacture of an increasing number and range of aircraft. As the state of design or manufacture, New Zealand has rights and responsibilities under Annex 13 to the ICAO Convention with respect to incident and accident investigation.

3.4. The inquiry process tests the evidence and identifies safety issues.

The inquiry process has three distinct elements

3.4.1. The Commission's inquiry process has three distinct elements. The first is consideration of draft reports prepared by the investigator in charge of the accident or incident being investigated. 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[18] release the report to interested persons[19] and allow them to comment on, or refute, those findings. The Commission generally allows 21 days for interested persons to make submissions.

3.4.2. 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. Depending on the issues raised in the written submissions the Commission may hear oral submissions.

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

3.4.4. In 2016/17 the Commission sat 10 times receiving 49 papers, approving 18 for consultation and 18 for publication. In addition, the Commission issued 29 recommendations and closed 38.

Complex inquiries can mean the inquiry process is extended

3.4.5. Depending on the complexity of the case, the Commission may extend sitting hours to receive further submissions from interested persons on particular cases, or to extend lines of inquiry given the nature of the submissions received.

[18] Transport Accident Investigation Commission Act 1990, Part 2, s14 (5).
[19] '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).

3.4.6. An example is the inquiry into the passenger and freight ferry *Aratere.*[20] This was a technically complex case, where the Commission considered the first draft report in April 2015, 17 months after the accident occurred. The submissions received were substantive and highly technical. The Commission sought independent advice when it became clear there was significant divergence in opinion between subject matter experts. Further consultation and deliberations took another 19 months. The final report was approved for publication in November 2016, three years after the accident occurred.

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

Safety issues (risk identification)

3.5.1. 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 adverse occurrences.

3.5.2. Over 2016/17, the Commission observed common factors in the safety issues identified during inquiries across the modes (see the recommendations section below). In addition, each mode has its own system specific issues characteristic of the dynamic interface between the vehicle in operation with the environment. An example is the prevalence of helicopter in-flight break-ups in conditions of high terrain and turbulence, which has raised questions as to the fitness for purpose of the aircraft, the handling characteristics of the aircraft under certain conditions, and the proficiency of pilots for the environment in which they are flying.

Findings

3.5.3. 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

3.5.4. Recommendations communicate the required action to remedy the identified safety issues. The intention of making recommendations is to prevent similar accidents and incidents from re-occurring.[21] Not every inquiry generates recommendations, others highlight recommendations previously made; and sometimes (and ideally) relevant parties will already have taken actions since the occurrence that mean there is no need to make a recommendation. Most recommendations are directed to operators and regulators.

3.5.5. Interim reports or urgent recommendations are released as necessary to help prevent accidents. Publishing information early in the inquiry is especially important where the consequences for people and the environment are high.

[20] Inquiry 13-203: *Interislander passenger and freight ferry* Aratere*, propeller shaft fracture and loss, Tory Channel, 5 November 2013*.
[21] See Annex 13 to the Convention on International Civil Aviation Aircraft Accident and Incident Investigation, (10th Ed.), p 1-2.

Table 3: Recommendations issued and closed (including urgent recommendations issued during the year)

	2016/17 Recommendations			2015/16 Recommendations[22]		
Mode	Open as at 30 June 2017	Issued	Closed	Open as at 30 June 2016	Issued	Closed
Air	87	12	15	90	10	8
Rail	28	6	13	35	7	2
Maritime	90	11	10	89	2	1
Total	205	29	38	214	19	11

Note on number of recommendations issued. This number includes:

- recommendations contained in published reports (24 in 2016/17) minus any that had been issued in previous years as urgent recommendations (9)
- urgent recommendations issued during the year (7)
- recommendations issued in late June 2016/17 but which were included in reports published in July 2017, therefore falling into the following financial year (7 recommendations fell into this category).

3.5.6. Recommendations issued throughout the year covered:

- Ensuring standards and processes (including risk assessment processes) are fit for purpose, and are adhered to (10 including two of the urgent recommendations).
- Improving documentation or other data recording (3).
- Improving equipment or infrastructure from a safety perspective (2).

3.5.7. Most of the urgent recommendations issued (5) related to informing relevant parties about identified safety issues so they could take immediate action.

3.6. Inquiry reports and the Watchlist communicate core messages

Reports communicate in detail the outcome of inquiries

3.6.1. Reports are the culmination of the Commission's investigation and inquiry processes and communicate the outcome. The Commission's reports give a detailed account of the accident and the analysis to determine the circumstances and causes. A report contains the core messages from the outcome of an inquiry — what happened and what needs to be done. Core messages are communicated in various ways to those who can act to improve safety. A report sets out the findings and identified safety issues, notes safety actions and recommendations made in response to the safety issues, and draws broader lessons for the transport sector.

[22] Note that figures in this table vary slightly from those reported in last year's annual report. 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). In addition, as part of the work to improve recommendation reporting, historical recommendations are being reviewed with a view to closure. (Refer to paragraph 4.2.5.) This has revealed several recommendations incorrectly given an 'open' status in the Commission's database, when they should be shown as 'closed'. The 2015/16 Annual Report reported 222 open recommendations as at 30 June 2016, open for an average of 1,402 working days. The adjusted figure, as shown in the table, is 214 open recommendations, open for an average of 1,377 working days.

Table 4: Number of inquiries closed

Number of inquiries closed							
2016/17				2015/16			
Air	Rail	Maritime	Total	Air	Rail	Maritime	Total
5	6	6	17	4	6	3	13

3.6.2. Of the 17 inquiries closed during the year, nine involved fatalities; in total, 11 people died in the accidents. In one of these fatal accidents, a further two people were seriously injured. One other inquiry also involved a serious injury.

The Commission is increasing its efforts to release interim reports

3.6.3. The Commission is increasingly releasing interim reports, rather than publishing only the full report when an inquiry is closed. The aim is to communicate information about the circumstances of an accident as early as possible. The Commission continues to issue urgent recommendations where necessary to deal with urgent safety issues.

The Watchlist communicates the highest-priority safety issues

3.6.4. The Watchlist is a safety monitoring publication, which presents the Commission's highest-priority safety issues in the aviation, maritime, and rail transport sectors. It is the Commission's mechanism for conveying key messages about how safety risks can be reduced, and where it considers the sector should be paying attention.

3.6.5. The items on the Watchlist relate to:

- The issue of people in safety-critical roles being impaired as a result of using drugs or alcohol.
- Encouraging the use of technologies to track aircraft, ships and boats, and rail vehicles. Since the publication of the Watchlist, good progress has been made in achieving visibility of trains on the rail network.
- 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.
- The concern with New Zealand's rate of 'mast-bumping' accidents involving Robinson helicopters.

3.6.6. Each year, Watchlist topics are reviewed, and existing items are updated where necessary. The Commission added no new items to the Watchlist in 2016/17.

4. Our impact on the transport sector

4.1. How we've contributed to a safer transport system

4.1.1. Recommendations can be viewed as a call for action. Below are three case studies demonstrating how a call for action and a responsive sector agency can achieve the outcome we seek — a safer transport system.

Aviation Case Study: Robinson helicopters in-flight break-ups with indeterminate cause

4.1.2. The Robinson fleet offers three helicopter models: the R22, a two-seater available in the market since 1979; the R44, a four-seater available in the market since 1992; and the latest model, the R66, available in the market since 2010. All the models feature the Robinson signature semi-rigid, two-bladed main rotor design with a teetering hinge.

4.1.3. Over the last 28 years there have been 18 in-flight break-ups involving Robinson helicopters in New Zealand. Fifteen of these accidents involved R22s, 13 of them prior to 2013. Since 2013 there have been five events with two involving the R22, two involving the R44, and one involving the R66.

4.1.4. Of the 18 accidents 12 were determined to have involved low-G mast bumping, 10 with fatal consequences. Mast bumping is contact between an inner part of a main rotor blade or a rotor hub and the main rotor drive shaft (or 'mast'). Mast bumping usually results in the helicopter breaking up in flight, which is fatal for those on board. "Low-G" conditions, in which an object is described as being 'weightless' can be caused by large or abrupt flight control inputs or by turbulence.

4.1.5. The Commission inquired into nine of the 18 accidents, with four of the nine occurring between 2013 and 2015. Although inquiries were able to ascertain low-G mast bumping as the immediate cause of the in-flight break-ups, they were unable to definitively identify the initiating circumstances and cause(s) leading to the mast bumping. This has resulted in an enduring safety issue as to the nature of the dynamics at play when mast bumping occurs.

4.1.6. Unable to make unequivocal determinations, the Commission issued two recommendations calling for action from international organisations who are able to influence greater understanding of the technical and operating dynamics of Robinson helicopters.

4.1.7. One recommendation was to the Federal Aviation Administration, the US aviation regulator.[23]

> *Reinstate research into the dynamic behaviour of two-bladed, teetering, underslung rotor systems, taking full advantage of available technology, with the aim of achieving the original goal of the National Transportation Safety board recommendation A-96-12.*

4.1.8. The Federal Aviation Administration has responded, stating that modelling rotor behaviour was very limited in its application because of the many variables involved. Validating the results of modelling would subject flight crews to unnecessary flight hazards, and it will take no further action.

[23] Recommendation 005/16, inquiry 13-003: *Robinson R66, ZK-IHU, Mast bump and in-flight break-up, Kaweka Range, 9 March 2013*.

4.1.9. The second recommendation was to the Secretary of Transport.[24]

> *…that he promote, through the appropriate ICAO (International Civil Aviation Organization) forum, the need for cockpit video recorders and/or other forms of data capture in the cockpits of certain classes of helicopter to address this safety issue* [that mast bump accidents have gone largely unexplained].

4.1.10. The Civil Aviation Authority is taking action to respond to this recommendation.

4.1.11. The Commission continues to engage with the Helicopter Association and other industry stakeholders to reduce the rate of mast bumping accidents.

Rail Case Study: Commission recommendations contribute to a decrease in derailments

4.1.12. Over the year, the Commission closed a recommendation relating to 'dynamic interaction', a factor contributing to freight train derailments.[25] After that recommendation was issued in April 2005, the Commission made further recommendations about other factors contributing to derailments, specifically bogie side frames, and acoustic monitoring of roller bearings.[26] These recommendations have also since been closed.

4.1.13. From the time of the first recommendation, derailments have reduced considerably, from 60 in 2005 to seven in 2017. The reduction in numbers represents a significant improvement in safety over this period. This outcome illustrates how successive 'bites' at a complex safety issue that has several causative factors — plus, as happened in this case, commitment from the regulator and operator to putting resource into infrastructure, rolling stock, and operating procedures — can be effective in improving transport safety. This case study demonstrates that, in some instances, the Commission's impact on transport safety may be apparent only after a period of time, and by considering clusters of recommendations.

Maritime Case Study: Helping to improve systems for safe drills of launching free-fall lifeboats

4.1.14. In February 2015 the Commission published its report on its investigation into a lifting sling failure on a freefall lifeboat on the general cargo vessel *Da Dan Xian*. The sling failed while four crew were conducting a launch and retrieval drill with the lifeboat, injuring one of the crew members. The failure involved one of four wire-rope pennants that connect the lifeboat to the mechanism that launches and retrieves the vessel.

4.1.15. The Commission found corrosion had weakened the wire rope pennant. The wire rope had been encased in plastic sheathing, so the corrosion had gone undetected. The Commission found that encasing steel wire in plastic sheathing where the wire is to be used in a maritime environment had significant implications for maritime safety and conformance to international standards. As a result, the Commission recommended the Director of Maritime New Zealand raise the issue through the appropriate International Maritime Organization (IMO) safety committee.[27]

> *…the Commission recommended that the Director of Maritime New Zealand submit this report to the International Maritime Organization and raise the implications that*

[24] Recommendation 014/16, inquiry 15-002: *Mast bump and in-flight break-up, Robinson R44, ZK-IPY, Lochy River, near Queenstown, 19 February 2015*
[25] Recommendation 010/05, inquiry 03-114: *Express freight Train 220, derailment, Shannon, 21 November 2003*.
[26] Recommendation 043/10 (closed February 2012), inquiry 09-101 (incorporating 08-105): *express freight train derailments owing to the failure of bogie side frames, various locations on the North Island Main Trunk, between 21 June 2008 and 7 May 2009*; and recommendation 008/08 (closed December 2010), inquiry 07-114: *Derailment caused by a wheel-bearing failure, Huntly, 19 October 2007, and 11 subsequent wheel-bearing failures at various locations during the following 12-month period*
[27] Recommendation 002/15, inquiry 14-202: *Lifting sling failure on freefall lifeboat, general cargo ship Da Dan Xia, Wellington, 14 April 2014*

plastic-sheathed wire ropes have for maritime safety through the appropriate International Maritime Organization safety committee for its consideration.

4.1.16. In June 2016, Maritime New Zealand advised the Commission it had followed through on the recommendation. The Commission's report was forwarded to the IMO where the report was referenced for work at the IMO on new guidelines for simulated launching of freefall lifeboats during drills. The Commission closed the recommendation in July 2016.

4.2. Sector response to recommendations

For change to happen, others must respond to our recommendations

4.2.1. The Commission's recommendations are not mandatory; it is up to the recipients of the recommendations to act on them to improve safety. The effectiveness of the Commission's work depends on its recommendations being based on robust investigation and inquiry practices, and on being practicable; and on recipients being committed to responding to recommendations and dedicating the required resources to improve safety.

4.2.2. New Zealand's Transport Accident Investigation Commission Act 1990 is derived from international treaties. These treaties anticipate recommendations issued by the mandated investigation authority are acted upon — promptly. Annex 13 to the Convention on International Civil Aviation (Annex 13) specifically addresses this point[28] establishing the standards for issuing and receiving safety recommendations. Paragraph 6.10 of Annex 13 requires the state receiving a safety recommendation to inform the proposing state within 90 days of the notification of the safety recommendation what preventative action is taken or under consideration. Where the receiving state declines to take action their reasons must be given.

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

4.2.4. The Transport Accident Investigation Act 1990 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 the safety recommendations it issues. As a matter of good practice, the Commission records the responses to the safety recommendations it issues (paragraph 6.11, Annex 13). Where action taken is determined to give effect to the recommendation proposal, the Commission records its status as 'closed, acceptable'; otherwise, recommendations are recorded as 'open'.

Improving monitoring of response to recommendations

4.2.5. Last year we reported our frustrations at the slow progress being made in closing recommendations. Monitoring the progress of action being taken in response to the safety recommendations has lacked attention. Following a request from the Associate Minister of Transport in late 2016, and mindful of the impact of weak monitoring, the Commission and transport regulators have agreed to work together to establish an integrated framework for systemic monitoring and reporting on the progress of safety recommendations issued by the Commission.

[28] See Annex 13 to the Convention on International Civil Aviation Aircraft Accident and Incident Investigation, (10th Ed.), p 6-3.

4.3. Measuring outcomes

4.3.1. The Commission's vision is that there are *No repeat accidents — ever!*, thus supporting the Minister's desired outcome of safer transport. Direct measurement of the Commission's influence on this outcome is difficult, because, for change to occur, we rely on sector participants to act in response to our inquiries and recommendations. 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 to achieve. 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.

4.3.2. Each year, the Commission undertakes a stakeholder survey, which, in part, acts as a proxy measure for the Commission's effect on transport sector outcomes. In the 2016/17 survey, a majority of respondents agreed or strongly agreed that the Commission 'has a positive influence on transport safety', and that 'people take notice when [it] speaks publicly on transport safety. The result is similar to that for 2015/16.

4.4. Responses to the recommendations the Commission issued in 2016/17

4.4.1. In 2016/17, the Commission issued 29 recommendations. Seven of the recommendations were issued in June 2017 for reports that were published in July 2017; these will be reported in next year's Annual Report. The other 22 recommendations, and the responses to them, are included in the information provided in appendix 3.

5. Non-financial reporting: delivering effective investigations

5.1. Organisational focus has been on completing and embedding new processes and systems

Strategic direction is maintained

5.1.1. The Commission's overarching aspirational goal is for there to be No repeat accidents – ever! The Commission seeks to pursue its goal by working to ensure safety issues are properly identified and resolved. The *Statement of Intent 2015-2019* sets out five strategic objectives to ensure the Commission contributes to a safer transport system and meets its statutory obligations. The strategic objectives are:

- Deliver sound, cost effective Crown entity performance
- Develop and maintain responsive reciprocal stakeholder relationships
- Share inquiry and entity information
- Develop and maintain capable staff
- Properly conduct investigations

5.1.2. To meet the wants and needs of stakeholders, and deliver independent safety-focused investigations in keeping with its legislation and operating environment, the Commission works to five operating intentions. Operating intentions, which are informed by the strategic objectives, are organisation themes setting management priorities for the Commission's daily operations and on-going organisational development. The operating intentions for 2016/17 are shown in Table 5.

Table 5: Strategic objectives and intentions for 2016/17

Strategic objectives	Strategic intentions for 2016/17
Deliver sound, cost effective Crown entity performance	Continuously improve operating efficiency
Develop and maintain responsive reciprocal stakeholder relationships	Develop and maintain inquiry stakeholder programme
Share inquiry and entity information	Communicate more about what the Commission does, learns, and recommends to help improve transport safety
Develop and retain capable staff	Acquire, develop and retain strategic skills
	Develop and maintain a workforce plan
Properly conduct investigations	Develop and maintain inquiry and investigation best practice

The year's activities mean good progress is being made against strategic objectives

5.1.3. The remainder of this section reports activity during the year contributing to progress in achieving the Commission's strategic objectives. The follow-on effects of the November 2016 Kaikoura earthquake presented some challenges for the organisation in maintaining activity. There was a period of disruption when staff were required to vacate the Commission's usual premises because of structural damage. They continue to work in temporary accommodation. All important business processes were maintained over the disrupted period, and staff were able to access the information and communication

technologies they needed to maintain productivity with minimal effect on the work of the Commission.

The Change Management Programme is largely complete

5.1.4. A Change Management Programme Board is overseeing the application of the Commission's funding increase from $3.865 million in 2014/15 to $5.233 million the following year, and to $5.639 million in the current financial year (2016/17). The aim of the change management programme is to support and enhance organisational performance.

5.1.5. Two aspects of the change management programme are continuing: the Quality Assurance Framework project, and the development and culture programme.

5.1.6. Work on the quality assurance framework progressed with the completion of process mapping of investigation services. The process mapping is now being extended to the rest of the Commission's processes and integrating them with those of investigations services. The project extension has pushed the completion date to the end of November 2017 rather than June 2017. In preparation for going live, the Commission has started a series of staff workshops so they are aware of and understand the changes.

5.1.7. The development and culture project continues. This project has several strands, including development of an organisation-wide training and development plan; and consideration of other factors required to best effect the desired organisational culture. Currently, the Commission's human resources consultant is working with staff and managers to identify organisational behavioural values. Action plans based on these values will be developed and implemented.

A new major accident, business continuity and organisational resilience policy was adopted

5.1.8. In April 2017, the Commission adopted a new major accident, business continuity and organisational resilience policy. The policy ensures the Commission can respond efficiently and effectively to business continuity disruptions, including the challenges of a major accident investigation. A range of activities took place in support of the new policy. These include psychological first aid training, improved business processes, and equipment purchases. A work programme in support of preparedness to deal with multiple and serious events will be maintained.

Strategic objectives	Strategic intentions	Measure	Target 2016/17	Progress
Deliver sound, cost effective Crown entity performance	Continually improve operating efficiency	Change management programme successfully applies increased funding for intended purposes and effect	Recruitment and training of additional staff. Maintenance and execution of change management programme, including appropriate project management components (such as risk and progress monitoring).	Recruitment and training of additional staff was completed in 2015/16 The Change Management Programme is largely complete. For progress on those aspects still continuing — the Quality Assurance Framework and the development and culture project, refer to the section beginning at paragraph 5.1.4. One aspect of the Quality Assurance Framework that has resulted in new management tools is the case management project. This project reviewed the Commission's systems in light of the timeliness imperatives the new funding is placing on investigation processes. The project included the development of new tools for managing milestones and inquiries, and is designed to reduce the likelihood of backlogs developing. The system is now operational, providing information about the progress of cases to investigators, managers, and Commissioners. Information is easily updated, and tailored reports can be easily generated. Reporting to the Commission and Board began in February 2017.
		Evaluate all-of-government and shared services opportunities as they arise, and implement if appropriate	To be reported/ implemented by 30 June.	All appropriate government and shared services opportunities have been implemented.

Strategic objectives	Strategic intentions	Measure	Target 2016/17	Progress
Develop and maintain responsive, reciprocal stakeholder relationships	Develop and maintain inquiry stakeholder programme	Inquiry stakeholder contact programme developed and implemented	Implementation reported against targets established by the programme	The Commission is progressively enhancing information and communication systems to foster understanding of the Commission and the information it is able to share during the course of its inquiries. In this regard, the Commission is paying particular attention to its inquiry stakeholders, who include government, regulatory and industry organisations, commercial transport operators, international organisations, and those most directly affected by the accidents and incidents it investigates — the people involved and their families. The Commission has implemented a victims and families stakeholder process, which forms part of the inquiry stakeholder contact programme. The process ensures consistent messaging across all inquiries. Over the current reporting period, milestones for each inquiry have been developed. A policy and guidelines were drafted during the year, and tools for use by staff are currently being developed. It is expected that the policy, guidelines and tools will be finalised and in use by the end of 2017.

Strategic objectives	Strategic intentions	Measure	Target 2016/17	Progress
Share inquiry and entity information	Communicate more about what the Commission does, learns, and recommends to help improve transport safety	Watchlist updated at least annually	Reviewed and published by 30 June.	The Commission added no new items to the Watchlist this year. Existing items were updated and consulted with relevant parties before being refreshed on the Commission's website
		Website provides accessible and comprehensive past and current inquiry and corporate information, including provision for user subscription to notifications of relevant content changes	Annual positive growth in website visits and online subscribers to website publishing notifications	The new website was awaiting final external quality assurance testing before going live.

Strategic objectives	Strategic intentions	Measure	Target 2016/17	Progress
Develop and maintain capable staff	Acquire, develop and retain strategic skills	Number of fully qualified investigators/total number of investigators (excluding Chief Investigator)	11/15	Training for new staff, especially investigators, continued over the reporting period. As at 30 June 2017, there were 16 investigators although one was due to retire. Of the remaining 15, 13 investigators were considered fully effective, ahead of the target for the year.
	Develop and maintain a workforce plan	Workforce plan developed	Implementation against finalised deliverables	The Commission's workforce plan been developed and implemented. Some strands were incorporated into the Development and Culture project, which is still in progress (refer to paragraph 5.1.7). Two investigators were recruited during the year. One was a replacement for an air investigator who resigned effective from February 2017; the other was a rail investigator recruited in anticipation of a retirement in September 2017. The workforce plan was developed partly in response to the need to manage the implications of the age profile of the Commission's staff.

Strategic objectives	Strategic intentions	Measure	Target 2016/17	Progress
Properly conduct investigations	Develop and maintain investigation best practice	Review against ICAO (International Civil Aviation Organization) standards every two years		In December 2016 external auditors from the International Civil Aviation Organization (ICAO) visited the Commission. The visit formed part of the auditors' review of how compliant New Zealand is with its international aviation obligations, including the Commission's performance in its role as New Zealand's independent safety investigation agency (ICAO terminology). During their visit, the auditors looked comprehensively at all aspects of the Commission's investigation process including policies, procedures, and investigation techniques. The initial audit report gave New Zealand a compliance rating of 87% with respect to accident investigation. Since then, further corrective action has been taken. The audit is a 'spot check' as part of a continuous monitoring process. New Zealand continues to work towards remedying the remaining non-conformities as part of that continuous process.
		Complete reviews of investigation and inquiry guidelines	Remedial codification completed	The inquiry protocols review has been completed; at its May 2017 meeting, the Commission adopted the inquiry protocols document. The inquiry protocols provide consistency in approach and statutory direction. Further work will be to develop contextual information, which will be especially useful for new Commissioners. This will complete the full set of documents for the inquiry protocols project.
		Successful judicial review of a Commission inquiry process or decision	0	No judicial reviews of a Commission inquiry process or decision.
		Successful challenge to an Ombudsman, the Privacy Commissioner, or the Human Rights Commissioner of an administrative decision or action	0	No challenges to an Ombudsman, the Privacy Commissioner, or the Human Rights Commissioner of an administrative decision or action.

5.2. Corporate organisation

Workforce profile

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

Table 6: Employee workforce composition

		As at 30 June	
		2017	2016
Total number of staff		29	29
Gender	Male	20	18
	Female	9	11
Ethnicity	European	27	26
	Maori	0	0
	Asian	1	1
	Pacific	0	1
	Other	1	1
Age (years)	<41	6	8
	41-50	7	5
	51-55	5	4
	56-60	7	4
	>60	7	8
Disability	Yes	0	0
	No	29	29

Organisational culture

5.2.2. The Commission's employees come from specialised disciplines in the transport and other sectors, giving rise to a strong professional culture.

5.2.3. The Commission has strong international relationships with its peer organisations. Its standing among its peers is enhanced through investment in accident investigation training for its investigation staff with an internationally recognised provider, and ongoing professional development for corporate staff.

5.2.4. The Commission actively encourages investigative and other staff to work together in multi-disciplinary teams on accident cases or projects.

5.2.5. In December 2016, as part of its development and culture project (refer to paragraph 5.1.7), the Commission conducted a staff-wide culture survey. This was the start of a process of identifying concrete steps the Commission can take to improve culture. The first of these has been to develop — in consultation with staff — revised organisational values. Action plans based on these values will be implemented over the coming year. The survey will be repeated to measure change.

5.3. Developing and maintaining staff

Recruitment

5.3.1. 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 to increase the validity of appointees.

5.3.2. 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

5.3.3. 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. However, 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.

5.3.4. 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.

5.3.5. The Commission also supports professional corporate staff to maintain currency in their professional disciplines. Corporate staff were funded to attend professional courses and international working meetings. Table 7 below shows the training hours for investigators and other staff over 2016/17.

Table 7: Training hours

		2016/17 Actual (hours)	2016/17 Target (hours)	2015/16 Actual (hours)
Training hours per annum (for staff employed for the full 2015/16 year) *Target is based on 100 hours per annum per investigator; and 40 hours per annum for other staff plus one tertiary programme (negotiated)*	Investigators Other staff	1,679 1,061	1,000 200-400	1,904 1,057

5.3.6. 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.

5.4. Good employer initiatives

Work design

5.4.1. 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.

5.4.2. 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

5.4.3. The Commission offers a pay-for-performance remuneration system designed to attract and retain high performing employees. In 2014/15 the remuneration system was reviewed and refreshed to better meet this goal, including options for providing rewards and recognition, as well as leave entitlements. An amended remuneration policy and practice to better reflect organisational needs was introduced in 2015/16.

A safe and healthy working environment

5.4.4. The Commission remains committed to promoting a safe and healthy working environment for employees. During the year the Board approved a new Health and Safety Policy, which sets out its commitment to worker health and safety, and its health and safety policy and strategy. The Commission's 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, TAIC's wreckage facility, and other in-the-field investigation management activities. As part of its health and safety system the Commission provides training and protective and corporate clothing appropriate to roles, as well as medical examinations for investigators.

5.4.5. In addition, the Commission contributes to gym memberships or similar exercise-related subscriptions, contributes to eye examinations and prescription glasses, and funds optional flu vaccinations. There are floor wardens and trained first aiders in the work place, fully-stocked first aid kits on each floor, and staff receive regular health and safety training.

Harassment and bullying prevention

5.4.6. 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 employees' working life with the Commission.

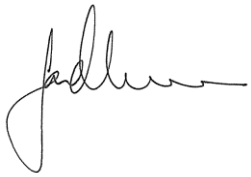
Statement of responsibility

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 2017.



Jane Meares
Chief Commissioner

Peter McKenzie, QC
Deputy Chief Commissioner

31 October 2017

6. Statement of performance for output targets

6.1.1. The Commission has one output class: inquiries. This section provides an overview of the Commission's performance results for this financial year. Details of inquiries active during the year, including metadata from which some of the following measures are calculated, are at appendix 1. Refer to the Statement of Comprehensive Revenue and Expense in section 7 for the revenue and expenditure of this output class. Table 8 and Table 9 report against the targets set out on pages 3 and 4 of the *Statement of Performance Expectations 2016-2017*

Table 8: Performance measures for the year ended 30 June 2017 (Financial, volume, timeliness, and quality)

Measure	Actual 2016/17	SPE Target 2016/17	Actual 2015/16
Financial			
Average cost of domestic inquiries closed	$352k	$250k[1]	$290k
Volume			
Number of domestic inquiries completed	17	20-25	13
Number of interim reports published	4	2	1
Number of inquiries by overseas jurisdictions assisted	10	4-8	9
Number of domestic inquiries in progress at each month's end (12 month rolling average, as at 30 June)	32[2]	30	34
Timeliness			
For domestic inquiries in progress as at 30 June, the proportion open for fewer than 440 working days increases	79%	50%	New measure[3]
For domestic inquiries completed, the proportion open for fewer than 440 working days increases	35%	50%	New measure[3]
Quality			
Judicial reviews of Commission inquiries that overturn decisions or identify process issues	0	0	0
Successful challenge to an Ombudsman, the Privacy Commissioner, or the Human Rights Commission of an administrative decision or action	0	0	0

Notes

References to 'working days' and 'days' are calculations using a year of 220 working days.

[1]Calculated by allocating all costs (including general overheads) to inquiries. A proportion of overheads is allocated to all open inquiries, and a further proportion of overheads is allocated according to time spent on each inquiry.

[2]The number of cases open as at 30 June 2017 was 33 (compared with 31 as at 30 June 2016).

[3]Last year's measures for timeliness were '12-month rolling average of age (working days) of domestic inquiries in progress at each month's end' (365 as at 30 June 2016 and 307 as at 30 June 2017); and 'Percentage of domestic inquiries closed between 220 and 440 working days' (23% in 2015/16 and 29% in 2016/17).

Table 9: Performance measures for the year ended 30 June 2017 (Impact)

Measure	Actual 2016/17	SPE Target 2016/17	Actual 2015/16
Impact			
Stakeholders' assessments of the Commission's work on transport safety	Most stakeholders believe Commission having positive impact[1]	Most stakeholders believe Commission having positive impact[3]	Most stakeholders believe Commission having positive impact
Average age of open safety recommendations	Average age increased[2]	Average age declines	Average age increased
Agencies' response to investigations	62% a further 28% were partially accepted, or accepted conditional on resources, 10% were rejected or referred elsewhere	90% of safety recommendations made are accepted by recipient upon issue	70% a further 17% were partially accepted, or accepted conditional on resources, no reply had been received to 1
	Achieved Safety actions: 70 Recommendations: 29	Number of safety actions > Number of recommendations	Achieved Safety actions: 40 Recommendations: 23
	Achieved Safety actions: 70 Safety issues: 33	Number of safety actions > Number of safety issues	Achieved Safety actions: 40 Safety issues: 27

Notes

References to 'working days' and 'days' are calculation using a year of 220 working days.

[1] The Stakeholder Survey is a qualitative measure, and therefore reporting percentage responses has little statistical value. In 2016/17, 51 respondents participated in online surveys. The independent researcher conducting the survey concluded 'While the overall findings are positive, they are less so than in previous surveys. It is not clear exactly why this is the case, but the sample of respondents includes a cluster who have had negative experiences with one aviation investigation. This survey also allowed for 'neither agree nor disagree' responses and as such provides respondents with the option for neutral responses which has not been allowed for in the past.'

[2] The average age of open safety recommendations increased from 1,377 working days as at 30 June 2016 to 1,390 working days as at 30 June 2017. In last year's annual report, the average age of open safety recommendations was reported as 1,402 working days. Refer to the footnote to Table 3 on page 14 for an explanation.

[3] From 2016/17 the stakeholder surveys are being conducted six-monthly to provide timely feedback on the Commission's performance.

7. Financial statements

TRANSPORT ACCIDENT INVESTIGATION COMMISSION
STATEMENT OF COMPREHENSIVE REVENUE AND EXPENSE FOR THE YEAR ENDED 30 JUNE 2017

	Notes	Actual 2017 $000	Budget 2017 $000	Actual 2016 $000
Revenue				
Funding from the Crown		5,639	5,639	5,233
Interest revenue		22	33	32
Other revenue	2	51	24	177
Total Revenue		5,712	5,696	5,442
Expenditure				
Audit Fees		19	19	19
Commissioners' fees	9	211	233	199
Depreciation and amortisation expense	5&6	213	217	167
Lease, rentals and outgoings		640	658	651
Personnel costs	8	3,441	3,318	3,094
Other expenses		1,216	1,251	1,494
Total Expenditure		5,740	5,696	5,624
Net Surplus/(Deficit)		(28)	-	(182)
Other Comprehensive revenue and expense		-	-	-
Total Comprehensive revenue and expense		(28)	-	(182)

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 2017

Assets	Notes	Actual 2017 $000	Budget 2017 $000	Actual 2016 $000
Current assets				
Cash and cash equivalents	3	1,066	951	1,189
Receivables	4	36	2	4
Prepayments		85	24	40
Total current assets		1,187	977	1,233
Non-current assets				
Property, plant and equipment	5	328	269	322
Intangible assets	6	495	520	572
Total non-current assets		823	789	894
Total assets		2,010	1,766	2,127
Liabilities and taxpayers' funds				
Current liabilities				
Payables and deferred revenue	13	357	145	461
Employee entitlements	7	285	140	261
Total current liabilities		642	285	722
Non-current liabilities				
Employee entitlements	7	26	-	35
Total non-current liabilities		26	-	35
Total liabilities		668	285	757
Net assets		1,342	1,481	1,370
Equity				
General funds	14	1,342	1,481	1,370
Total equity		1,342	1,481	1,370

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 2017

	Note	Actual 2017 $000	Budget 2017 $000	Actual 2016 $000
Balance at 1 July		1,370	1,481	1,552
Total comprehensive revenue and expense for the year		(28)	-	(182)
Balance at 30 June	14	1,342	1,481	1,370

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 2017

	Notes	Actual 2017 $000	Budget 2017 $000	Actual 2016 $000
Cash flows from operating activities				
Receipts from the Crown		5,639	5,639	5,233
Interest received		22	33	33
Receipts from other revenue		44	24	175
Payments to suppliers		(2,252)	(2,155)	(2,108)
Payments to employees		(3,426)	(3,318)	(2,931)
GST (net)		(6)	-	(2)
Net cash flows from operating activities		21	223	400
Cash flows from investing activities				
Purchase of property, plant and equipment		(98)	(121)	(249)
Purchase of intangible assets		(46)	-	(11)
Net cash flows from investing activities		(144)	(137)	(260)
Cash Flows from Financing Activities				
Net Cash Flows from Financing Activities		-	-	-
Net (decrease)/increase in cash and cash equivalents		(123)	102	140
Cash and cash equivalents at the beginning of the year		1,189	849	1,049
Cash and cash equivalents at the end of the year	3	1,066	951	1,189

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 2017, and were approved by the Board on 31 October 2017.

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).

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 of 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 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 of 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 2017 $000	Actual 2016 $000
Rental revenue from property subleases	24	18
Other revenue	27	159
Total revenue	51	177

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 2017 $000	Actual 2016 $000
Cash at bank and on hand	366	442
Short-term deposits maturing in less than 3 months	700	747
Total cash and cash equivalents	1,066	1,189

4. Receivables

Accounting policy

Short-term receivables are recorded at the amount due, less any provision for uncollectability.

A receivable is considered uncollectable when there is evidence the amount due will not be fully collected. The amount of the impairment is the difference between the amount due and the present value of the amounts expected to be collected.

Breakdown of other revenue and further information

	Actual 2017 $000	Actual 2016 $000
Receivables (gross)	36	4
Less: provision for uncollectability	-	-
Total receivables	36	4
Total receivables comprises:		
Receivables from the sale of goods and services (exchange transactions)	36	4

5. Property, plant and equipment

Accounting policy

Property, plant and equipment consists of the following asset classes: buildings, leasehold improvements, furniture and office 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. When revalued assets are sold, the amounts included in revaluation reserves in respect of those assets are transferred to the accumulated surplus/(deficit) within equity.

Subsequent costs

Costs incurred subsequent to initial acquisition are capitalised only when it is probably 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	1.5 – 10	10% to 50%
Furniture and equipment	1.2 – 14	7% to 21%

Leasehold improvements are depreciated over the unexpired period of the lease or the estimated remaining useful lives of the improvements, whichever is the shorter.

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 it 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.

5. Property, plant and equipment (continued)

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 2015	154	188	148	490
Balance at 30 June 2016	298	198	158	654
Balance at 1 July 2016	298	198	158	654
Additions	43	44	10	97
Disposals	(2)	(1)	(1)	(4)
Balance at 30 June 2017	339	241	167	747
Accumulated depreciation				
Balance as at 1 July 2015	78	166	105	349
Balance at 30 June 2016	99	118	115	332
Balance at 1 July 2016	99	118	115	332
Depreciation Expense	27	45	17	89
Elimination on disposal	(1)	-	(1)	(2)
Balance at 30 June 2017	125	163	131	419
Carrying Amounts				
At 1 July 2015	76	22	43	141
At 30 June 2016 and 1 July 2016	199	80	43	322
At 30 June 2017	214	78	36	328

As at year end there was no work in progress (2015-16: nil)

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
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 2015	992	992
Balance at 30 June 2016 and 1 July 2016	1,003	1,003
Additions	46	46
Disposals	(12)	(12)
Balance at 30 June 2017	1,037	1,037
Accumulated amortisation		
Balance at 1 July 2015	332	332
Balance at 30 June 2016 and 1 July 2016	431	431
Amortisation expense	123	123
Disposals	(12)	(12)
Impairment losses	-	-
Balance at 30 June 2017	542	542
Carrying amounts		
At 1 July 2015	660	660
At 30 June and 1 July 2016	572	572
At 30 June 2017	495	495

As at year end there was no work in progress (2015-16: 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 2017 $000	Actual 2016 $000
Current portion		
Accrued salaries and wages	63	58
Annual leave	202	190
Long service leave	20	13
Total current portion	285	261
Non-current portion		
Long service leave	26	35
Total non-current portion	26	35
Total employee entitlements	311	296

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 2017 $000	Actual 2016 $000
Salaries and wages	3,212	2,684
Defined contribution plan employer contributions	87	70
Increase/(decrease) in employee entitlements	15	163
Recruitment	63	126
Other staff costs	64	51
Total personnel costs	3,441	3,094

9. Commissioner remuneration

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

Commissioner	Actual 2017 $000	Actual 2016 $000
Ms HA Cull, QC (Chief Commissioner until June 2016)	-	66
Ms J Meares (Chief Commissioner from November 2016)	67	47
Mr P McKenzie, QC (Deputy Chief Commissioner)	49	43
Mr S Davies Howard (Commissioner)	53	43
Mr R Marchant (Commissioner)	34	-
Ms S Paula Rose (Commissioner)	8	-
Total Commissioner remuneration	211	199

10. Employee remuneration

	Actual 2017	Actual 2016
Total remuneration paid or payable:		
$100,000-$109,999	2	-
$110,000-$119,999	4	4
$120,000-$129,999	1	2
$130,000-$139,999	5	2
$140,000-$149,999	1	1
$150,000-$159,999	2	2
$160,000-$169,999	-	-
$170,000-$179,999	-	-
$180,000-$189,999	1	1
$190,000-$199,999	-	-
$200,000-$209,999	-	-
$210,000-$219,999	-	-
$220,000-$229,999	-	-
$230,000-$239,999	1	1
Total employees	**17**	**13**

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 2017 $000	Actual 2016 $000
Commission Members		
Remuneration	211	199
Full-time equivalent members	0.66	0.65
Leadership Team		
Remuneration	732	726
Full-time equivalent members	4	4
Total key management personnel remuneration	943	925
Total full time equivalent personnel	4.66	4.65

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 2017 $000	Actual 2016 $000
Not later than one year	610	501
Later than one year and not later than five years	1,952	1,408
Later than five years	543	755
Total non-cancellable operating leases	3,105	2,664

TAIC leases three properties and has an operating lease for photocopier equipment. 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 and deferred revenue

Accounting policy

Short-term payables are recorded at their face value.

Breakdown of payables

	Actual 2017 $000	Actual 2016 $000
Payables under exchange transactions		
Creditors	208	76
Income in advance	25	-
Accrued expenses	56	311
Total payables under exchange transactions	289	387
Payables under non-exchange transactions		
Taxes payables (GST,PAYE, and rates)	68	74
Total payables under non-exchange transactions	68	74
Total payables	357	461

14. Equity

	Actual 2017 $000	Actual 2016 $000
Accumulated surplus/(deficit)		
Balance at 1 July	1,370	1,552
Surplus/(deficit) for the year	(28)	(182)
Balance at 30 June	1,342	1,370

15. Financial instruments

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

	Actual 2017 $000	Actual 2016 $000
Loans and receivables		
Cash and cash equivalents	1,066	1,189
Receivables	36	4
Total loans and receivables	1,102	1,193
Financial liabilities measured at amortised cost		
Payables (excluding taxes payable)	289	387
Total financial liabilities measured at amortised cost	289	387

16. Contingencies

Contingent liabilities

There were no contingent liabilities existing at balance date. (2016: Nil)

Contingent assets

At balance date TAIC was continuing to receive reparations for money that was taken fraudulently. Reparations received at 30 June 2017 were $4,800 (2016: $5,200). The contingent asset at balance date is $277k (2016: $282k).

As a result of the November 2016 Kaikoura earthquake TAIC vacated their damaged office premises and leased temporary office space. At balance date a claim was with insurers to recover moving and temporary office set up costs of $86k and additional rental costs of $105k.

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 $27,000 higher than budgeted due to a contribution received towards the cost of TAIC's new funding benefits review.

Commissioners' fees

Commissioners' fees are $22,000 less than budget due to all additional commissioner meeting days budgeted for not required.

Statement of financial position

Cash and cash equivalents

Cash and cash equivalents are higher than budgeted due to timing of creditor payments.

Receivables

Receivables are higher than budgeted due to timing of receipts from the Ministry of Transport for their contribution to a maritime conference and funding benefits review work.

Prepayments

Prepayments are higher than budgeted mainly due to a rental bond paid on temporary premises rented due to earthquake disruptions.

Property, plant and equipment

Property, plant and equipment are higher than budgeted due to the cost of installing a balustrade costing $29,000 for health and safety reasons. Also IT equipment purchases later than planned and corresponding depreciation adds to the variance.

Intangible assets

Intangible assets are less than planned due to budgeted software purchases not going ahead due to changing requirements and other service options available.

Payables

Payables are higher than budgeted mainly due to large June invoices in creditors for information technology services and timing of other creditor payments.

Employee entitlements

Employee entitlements are mainly higher than budgeted due to an increase in the annual leave accrual.

Statement of changes in cash flows

The statement of changes in cash flows shows a net movement in cash for the period $123,000 less than budgeted mainly due to a costs associated with the earthquake disruption.

AUDIT NEW ZEALAND
Mana Arotake Aotearoa

Independent Auditor's Report

To the readers of Transport Accident Investigation Commission's financial statements and performance information for the year ended 30 June 2017

The Auditor-General is the auditor of 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 of the Commission on his behalf.

Opinion

We have audited:

- the financial statements of the Commission on page 33 to 47, that comprise the statement of financial position as at 30 June 2017, the statement of comprehensive revenue and expenses, statement of changes in equity and statement of cash flows for the year ended on that date and the notes to the financial statements including a summary of significant accounting policies and other explanatory information; and
- the performance information of the Commission on pages 31 to 32.

In our opinion:

- the financial statements of the Commission on pages 33 to 47:
    - present fairly, in all material respects:
        - its financial position as at 30 June 2017; 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 Standards.
- the performance information on pages 31 to 32:
    - presents fairly, in all material respects, the Commission's performance for the year ended 30 June 2017, 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

- complies with generally accepted accounting practice in New Zealand.

Our audit was completed on 31 October 2017. 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.

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 2 to 30 and 52 to 79, 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

Appendix 1: Inquiries open as at 30 June 2017

Table 10 is ordered by date launched for all inquiries (domestic and overseas assist) live at the end of the financial year. Appendix 3 contains information on the inquiries closed during the year.

Table 10: Inquiries open as at 30 June 2017

Inquiry #	Mode	Description	Launched	Investigation Type
13-010	Air	Aerospatiale AS350 B2 ZK-IMJ, collision with second helicopter, Tyndall Glaciers	29/10/2013	Domestic
14-001	Air	Boeing 737-3B7 Freighter, right-hand undercarriage collapse during landing roll, Honiara, Solomon Islands	29/1/2014	Overseas
14-105	Rail	Empty passenger train and excavator, near collision, between Featherston and Dalefield	11/8/2014	Domestic
14-005	Air	Aerospatiale AS350 helicopter, snow landing accident, Mount Alta, 20 km north-west of Wanaka	16/8/2014	Domestic
15-001	Air	Pacific Aerospace Ltd 750XL, engine failure, Lake Taupo	7/1/2015	Domestic
15-201	Maritime	Passenger ferry Kea, collision with wharf, Devonport wharf, Auckland	17/2/2015	Domestic
15-003	Air	Robinson R44, Main rotor blade failure, Waikaia	25/2/2015	Domestic
15-004	Air	Australian-registered B737 VH-VOP, Landing event, Christchurch	11/5/2015	Overseas
15-005	Air	Loss of air traffic control services, nationwide	23/6/2015	Domestic
15-007	Air	AS350BA Eurocopter, ZK-HKU, collision with terrain, Fox Glacier	21/11/2015	Domestic
15-008	Air	PAC 750 XL, forced landing after engine shut-down, North Carolina, USA	10/12/2015	Overseas
15-103	Rail	Track occupation irregularity, Taumarunui	15/12/2015	Domestic
15-009	Air	Break down of traffic separation, Hamilton control zone	17/12/2015	Domestic
16-201	Maritime	Passenger vessel Pee Jay V, fire and abandonment, Whakatane	18/1/2016	Domestic
16-202	Maritime	Passenger ship Azamara Quest, struck Wheki Rock, Tory Channel	27/1/2016	Domestic
16-003	Air	PAC 750 XL aeroplane, forced landing, Nepal	9/3/2016	Overseas
16-004	Air	Guimbal Cabri light helicopter, in-flight fire, Rotorua	16/4/2016	Domestic
16-101	Rail	Near Collision, between passenger trains, Wellington	31/5/2016	Domestic
16-204	Maritime	Moly Manx grounding, Otago Harbour	19/8/2016	Domestic

Inquiry #	Mode	Description	Launched	Investigation Type
16-006	Air	AS350 Squirrel helicopter, crash landing, North of Arrowtown	12/9/2016	Domestic
15-002R	Air	Robinson R44, impact with terrain, Queenstown	28/9/2016	Domestic
16-102	Rail	Freight train, passing a signal at danger, Paerata	26/10/2016	Domestic
16-007	Air	Robinson R44, impact with terrain, Glenbervie Forest, Northland	1/11/2016	Domestic
16-205	Maritime	Panama-registered bulk carrier New Legend Pearl, crew fatality, Northland	4/11/2016	Domestic
16-008	Air	Robinson R66, impact with ground, Hokonui Hills, Southland	14/11/2016	Domestic
16-206	Maritime	Fishing charter vessel Francie, capsize, entrance to Kaipara Harbour	28/11/2016	Domestic
17-201	Maritime	Passenger vessel, L'Austral, contact with submerged object, Snares Island	13/1/2017	Domestic
17-101	Rail	Freight train, unauthorised entry to work site, Pongakawa	7/2/2017	Domestic
17-202	Maritime	L'Austral, contact with rock, Milford Sound	9/2/2017	Domestic
17-203	Maritime	Passenger vessel Emerald Princess, explosion resulting in crew fatality, Port Chalmers, Dunedin	9/2/2017	Domestic
17-204	Maritime	Seabourn Encore, contact with cement carrier, Timaru	12/2/2017	Domestic
17-001	Air	Squirrel AS320BA, impact with terrain, Port Hills, Christchurch	14/2/2017	Domestic
17-002	Air	Robinson R22, Reefton	28/3/2017	Domestic
17-102	Rail	Signalling Irregularity, 42 & 43 signals, Wellington	3/4/2017	Domestic
17-003	Air	ATR Nelson landing gear	9/4/2017	Domestic
17-004	Air	BK117 Pauatahanui, Wellington	2/5/2017	Domestic
17-103	Rail	Near Collision, between passenger trains, Wellington	17/5/2017	Domestic
17-005	Air	Australian-registered Fletcher aeroplane, impact with terrain, Bathurst, Australia	20/6/2017	Overseas

Comparison of the Commission's casebook as at 30 June 2017 with the same time last year

The graphs below are 'snapshots' of the Commission's casebook at 30 June 2016 and 30 June 2017. Each line represents an inquiry.

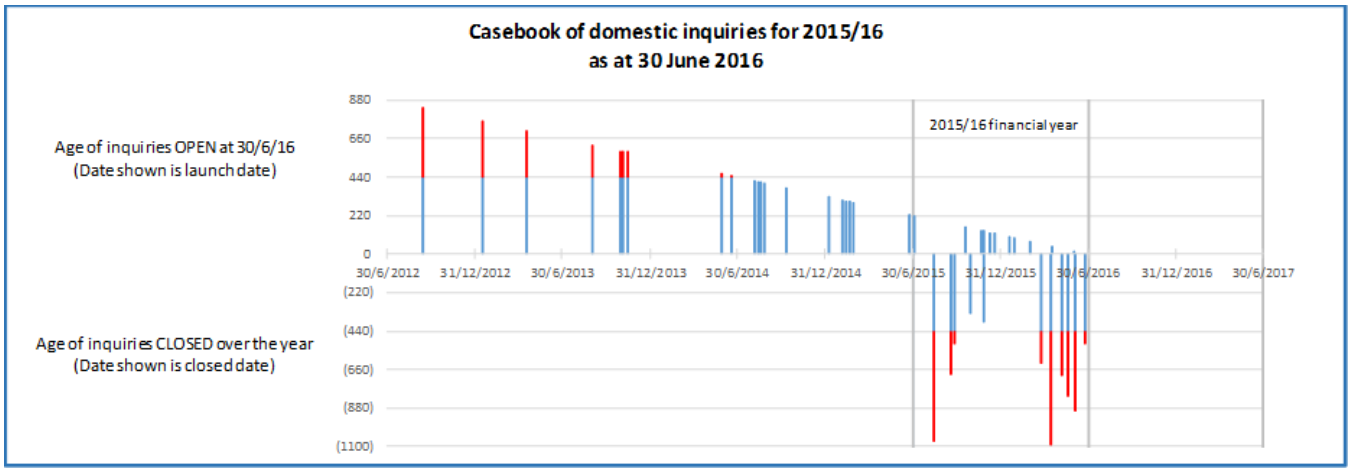
Each open inquiry is shown as a line above the horizontal axis with the date indicating when it was opened, and the vertical axis showing how long it had been open as at 30 June.

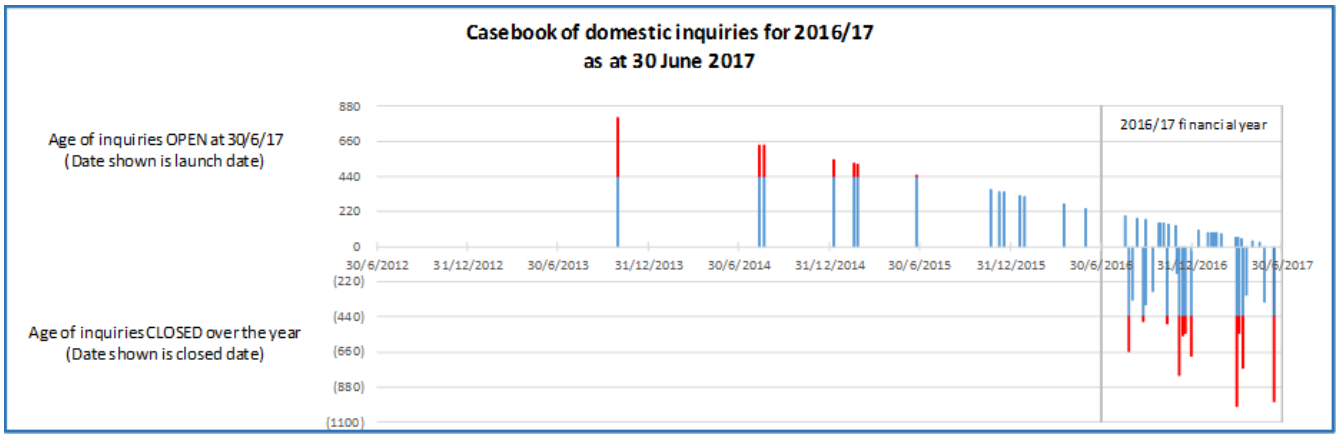
Closed inquiries are shown below the horizontal axis with the date indicating when it was closed, and the vertical axis indicating how old the inquiry was when it closed.

The red sections of the lines indicate where the age of an inquiry has exceeded 440 working days.

Both graphs have the same time scale. (Note that some dates have been slightly offset so that individual inquiries can be seen more clearly on the graphs.)

The second graph shows that compared with the same time last year, the Commission has fewer open 'aged' cases.

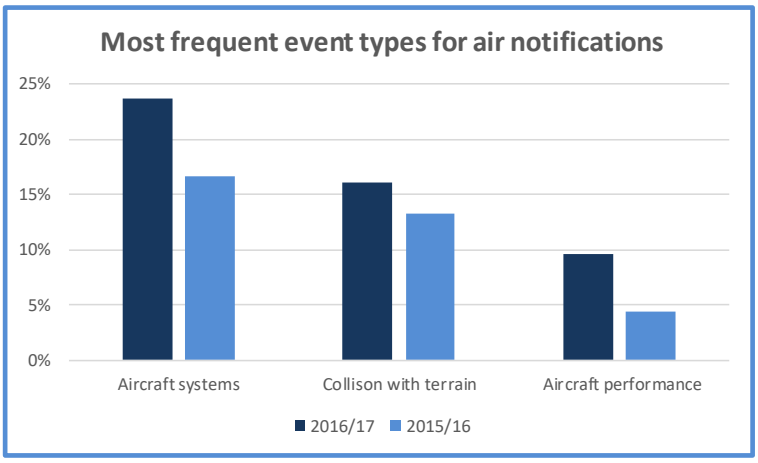


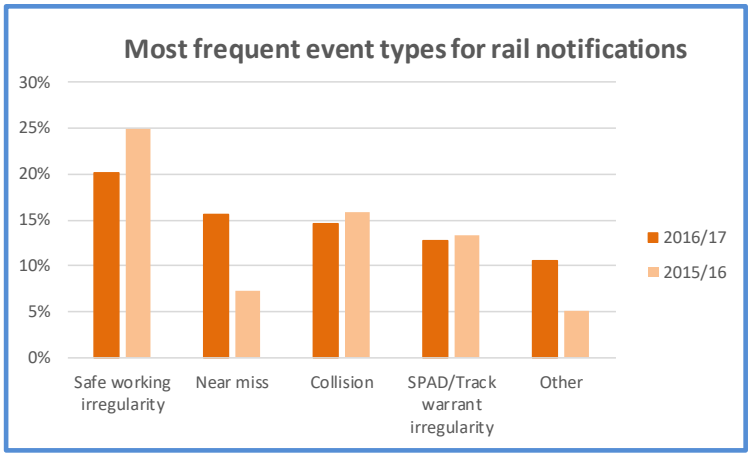


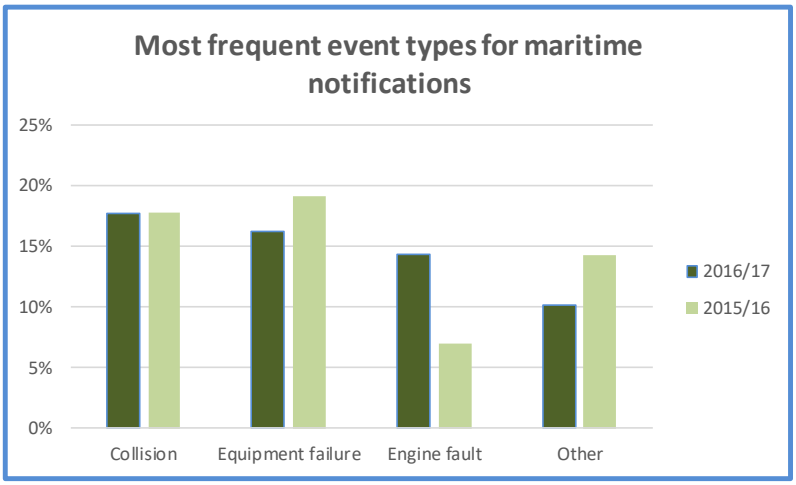
Appendix 2: Notifications and caseload data for 2016/17

Notifications

The most frequent notifications, according to event type, are shown below for each mode for the 2016/17 year. These are the events types against which more than 10% of notifications were categorised, compared with the frequency for the 2015/16 year.







Caseload

Table 11: Caseload data 2016/17

		Air			Rail			Maritime			Total		
		Jun-15	Jun-16	Jun-17	Jun-15	Jun-16	Jun-17	Jun-15	Jun-16	Jun-17	Jun-15	Jun-16	Jun-17
Caseload at year end													
Inquiries	Opened	7	3	8	2	3	4	2	5	7	11	11	19
	Continued	7	10	8	10	6	3	5	4	3	22	20	14
	Total	14	13	16	12	9	7	7	9	10	33	31	33
Elapsed WD	Opened	812	297	847	283	268	315	266	638	817	1,361	1,203	1,979
	Continued	2,608	4,152	3,903	4,610	3,102	1,213	3,234	2,126	1,153	10,452	9,380	6,269
	Total	3,420	4,449	4,750	4,893	3,370	1,528	3,500	2,764	1,970	11,813	10,583	8,248
Average WD	Opened	116	99	106	142	89	79	133	128	117	124	99	104
	Continued	373	415	488	461	517	404	647	532	384	475	387	448
	Total	244	342	297	408	374	218	500	307	197	358	270	250
Completed by year end													
	Inquiries completed	5	4	5	4	6	6	2	3	6	11	13	17
	Elapsed WD	2,238	2,086	2,762	1,543	3,998	3,543	913	2,545	2,972	4,694	8,629	9,277
	Average WD	448	522	552	386	666	591	457	848	495	427	664	546
Total active inquiries during year													
	Active inquiries	19	17	21	16	15	13	9	12	16	44	44	50
	FTE investigators	3	5	5	3	3	4	3	4	4	9	13	14

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 2017, a rail investigator had been recruited to replace another who was shortly to retire.)
- Some rail and maritime elapsed and average working day figures for 2014/15 were incorrectly reported in last year's Annual Report.

Appendix 3: Key lessons, safety actions, and recommendations for 2016/17

The following pages set out the impact information (as represented by the key lessons, safety actions and recommendations) for the inquiries completed in 2016/17. Please note that the carefully worded contents of inquiry reports have been extensively précised in this summary 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 are included in the information. Some of these are précised; again, the published inquiry reports, which contain the recommendations, are the definitive record.

Aviation inquiry 13-008 Boeing 737, cabin depressurization, Auckland, 30 August 2013

Event type	Cabin depressurization
Safety issues identified	The following safety issues were identified in this investigation: • Non-adherence to published emergency checklists for loss of cabin pressure. • The training of cabin crew in the use of the emergency oxygen equipment and the cabin depressurisation procedure. • The possibility of the cabin being pressurised on the ground following the use of the Cabin Altitude Warning checklist.
Findings (number) *Greater ≈ more complex*	4
Key lessons (number and précis) *"What did we identify that others should take heed of to avoid it happening to them?"*	There were 5 key lessons: • An unexpected loss of cabin pressure in any aeroplane is a serious event that can cause passengers and crew to lose consciousness rapidly from a lack of oxygen. In such an event the appropriate emergency actions must be undertaken immediately. • Emergency procedure checklists ensure crew members take all important actions at a critical time of high workload. Unless the captain has an exceptional reason to deviate from a checklist, all steps should be performed from beginning to end, if possible without interruption. • Crew members must be trained in and familiar with all emergency equipment and procedures. They need to be alert for emergency situations that differ from the standard scenarios that are practised and demonstrated repeatedly. • An aircraft door is difficult to open on the ground while the cabin is pressurized, which can delay an evacuation. Pilots manually controlling cabin pressure must ensure the cabin is fully depressurised to allow the doors to open. • Special care must be taken with the maintenance of aircraft emergency equipment, such as oxygen systems.
Safety actions (number and précis) *"What has been done while the inquiry's been underway that's removed the need for a relevant recommendation?"*	4 safety actions had been taken since the accident: • The operator (Air NZ) acted to improve crew performance in these areas: pilots' declaration of an emergency situation, flight crew adherence to the published emergency checklists, cabin crew response to a depressurisation. • The operator acted to improve these aspects of training: oxygen mask training with gas flow, and familiarity with chemical oxygen generators. • The operator reviewed the quality control of the packing of oxygen masks across its fleets. • The manufacturer amended the Cabin Altitude Warning checklist to direct pilots controlling pressure manually to open the outflow valve upon landing.
Safety recommendations (number and précis) *"What needs to change to reduce the likelihood of a recurrence?"*	Nil

Aviation inquiry 15-002 Robinson R44, impact with terrain, Queenstown, 19 February 2015

Event type	Impact with terrain
Safety issues identified	The following safety issues were identified in this investigation: • The causes of mast bumping and in-flight break-ups are often undetermined because of the catastrophic nature of the accidents, which make it difficult to either eliminate or confirm mechanical failure.
Findings (number) *Greater ≈ more complex*	7
Key lessons (number and précis) *"What did we identify that others should take heed of to avoid it happening to them?"*	There was 1 key lesson: • Pilots need to fly in a manner that avoids low-G conditions rather than allow them to develop and then expect that they can recover from them.
Safety actions (number and précis) *"What has been done while the inquiry's been underway that's removed the need for a relevant recommendation?"*	6 safety actions had been taken since the accident: • The CAA conducted several reviews including: • an examination of existing requirements in New Zealand, the USA and Australia • an examination of current Robinson accident data • an examination of current Robinson safety awareness training in New Zealand and the USA • meetings with the Commission, Robinson, the FAA, experienced flight examiners and instructors, and the New Zealand Helicopter Association • The Director of Civil Aviation introduced special conditions for pilots of R22 and R44 helicopters, with effect from 1 July 2016. • The manufacturer amended its Safety Notice SN-32 by inserting an introductory sentence stating, "Flying in high winds or turbulence should be avoided."; and advising pilots to "reduce speed" when flying solo or lightly loaded.
Safety recommendations (number and précis) *"What needs to change to reduce the likelihood of a recurrence?"*	1 recommendation was made to the Secretary for Transport. • that he promotes, through the appropriate ICAO forum, the need for cockpit video recorders and/or other forms of data capture in the cockpits of certain classes of helicopter. 1 recommendation was made to the Director of Civil Aviation. • that a recommendation has been made to the Secretary for Transport that he promote, through the appropriate ICAO forum, the need for cockpit video recorders and/or other forms of data capture in the cockpits of certain classes of helicopter.
Response	The Ministry of Transport considered the recommendation premature as the costs and benefits of such a recommendation have not been canvassed. The Director of Civil Aviation considered the recommendation made to the Secretary of Transport and accepted it, but with a caveat that reflects the Secretary's response — that is, that the Director of Civil Aviation conduct a safety and cost benefit exercise of installing flight data and/or cockpit video in certain classes of helicopters. The Director will initiate an issue assessment paper on recording devices for certain classes of helicopters. Given the timeframe of such a study is likely to be lengthy, the Director cannot provide a completion date at this stage.

Aviation inquiry 14-004 Piper PA32, collision with terrain, near Poolburn Reservoir, Central Otago, 5 August 2014

Event type	Collision with terrain
Safety issues identified	The following safety issues were identified in this investigation: • An apparent difference between what the CAA said was an unauthorised activity (stock-clearing manoeuvres) and what the industry understood to be a permitted activity.
Findings (number) *Greater ≈ more complex*	5
Key lessons (number and précis) *"What did we identify that others should take heed of to avoid it happening to them?"*	There were 2 key lessons: • Flying at close proximity to the ground requires a high degree of accuracy. Pilots should be aware of the stall characteristics of their aircraft, in particular how they are affected by manoeuvres such as steep turns. Pilots should also be aware of the effects of wind on the amount of ground covered during a turn. • Operators must issue clear guidelines and procedures for their pilots, and ensure compliance. Pilots should be required to regularly demonstrate proficiency in carrying out the types of manoeuvres and operations they perform for the operator.
Safety actions (number and précis) *"What has been done while the inquiry's been underway that's removed the need for a relevant recommendation?"*	Nil
Safety recommendations (number and précis) *"What needs to change to reduce the likelihood of a recurrence?"*	1 recommendation was made to the Director of Civil Aviation. • that he provides a clear statement to relevant sectors of the aviation industry on whether stock clearing is a permitted activity. If the Director decides it is a permitted activity, he should provide clear guidance on the conduct of the activity.
Response	There is no CAA rule provision for stock clearing; therefore, the CAA cannot provide clear guidance on the conduct of the activity in the context of existing Rules. However, the CAA recognised that an operation to a remote airstrip presents a risk to air transport in that the landing area may have visible hazards, including the presence of stock, which could affect the safety of a landing. The Director agreed to pursue a means to enable air transport operators to overfly a remote airstrip below 500 feet for the purposes of ensuring the landing area is visibly free from hazards. The CAA believes the alternative safety action will address the safety issue.

Rail inquiry 15-101 Rail pedestrian crossing, fatality, Morningside Station, 29 January 2015

Event type	Pedestrian fatality
Safety issues identified	The following safety issues were identified in this investigation: • Many pedestrian level crossings in provincial areas do not meet NZ Transport Agency (NZTA) guidelines. • The lack of active warnings at the Morningside Road pedestrian level crossing when leaving Morningside Station. • The lack of clarity over who is responsible for safety and control at the boundaries between station platforms and the rail corridor in Auckland. • The ability of the risk assessment process for pedestrian level crossings to keep pace with infrastructure changes and increasing patronage. • The use of performance-impairing drugs by a driver of a passenger train.
Findings (number) *Greater ≈ more complex*	7
Key lessons (number and précis) *"What did we identify that others should take heed of to avoid it happening to them?"*	There was 1 key lesson: • Pedestrians using mobile devices are less aware of hazards around them. The design of rail infrastructure must factor this in.
Safety actions (number and précis) *"What has been done while the inquiry's been underway that's removed the need for a relevant recommendation?"*	9 safety actions had been taken since the accident: • Auckland Transport organised a risk assessment. • Auckland Transport in conjunction with KiwiRail and NZTA made several changes at Morningside Station: new level crossing signage installed at the pedestrian mazes, vegetation cleared from around the level crossing, road markings upgraded, general signage reviewed and improved, a flexi-median post installed to prevent motor vehicles overtaking on the approaches to the level crossing. • Transdev approved a random drug and alcohol testing policy. • The train driver attended a drug and alcohol rehabilitation programme. • Transdev has reviewed its guidelines, policies and procedures pertaining to drug and alcohol use by employees.
Safety recommendations (number and précis) *"What needs to change to reduce the likelihood of a recurrence?"*	4 recommendations were made to the Chief Executive of the NZTA. • That he liaises with the appropriate authorities to ensure an active warning device or barrier is installed preventing pedestrians inadvertently stepping out in front of trains when entering or exiting Morningside Station platform. (Urgent recommendation 2015/16.) • That from a regulatory perspective he ensures clarity about which party or parties is responsible for controlling and protecting pedestrians as they cross boundaries between railway stations and the rail corridor. (Urgent recommendation 2015/16.) • That he liaises with the relevant road controlling authorities in Auckland and Wellington, and KiwiRail, to review the level of protection at all pedestrian level crossings is appropriate to the risk. (Urgent recommendation 2015/16.) • That he liaises with KiwiRail and relevant road controlling authorities to ensure provincial level crossings meet the NZTA's Traffic Control Devices Manual – Part 9 – Level Crossings.
Response	The Transport Agency accepted the recommendations.

Maritime inquiry 15-202 Container ship, Madinah, loss of person overboard, Lyttelton Harbour entrance, 2 July 2015

Event type	Loss of person overboard
Safety issues identified	The following safety issues were identified in this investigation: • There was no dedicated formal procedure for rigging the accommodation ladders and gangways on board. • Although the procedures on board for responding to a man overboard met industry best practice, the shipboard response to the emergency did not follow those procedures. • The use of plastic-coated wire for safety-critical applications. If the plastic coating becomes damaged, salt water can enter and become entrapped in the coating, which causes accelerated corrosion. The plastic coating makes it virtually impossible for the wire to be inspected or surveyed properly.
Findings (number) *Greater ≈ more complex*	5
Key lessons (number and précis) *"What did we identify that others should take heed of to avoid it happening to them?"*	There were 3 key lessons: • Where crew members work over the side of a ship at sea, they must wear a safety harness attached to a designated strong point and a buoyancy vest. • Plastic-coated wires must be treated with caution. Seafarers and surveyors must not assume the condition of any wire they cannot see, especially if it has a safety-critical purpose and is required by rules, regulations or procedures to be examined thoroughly. • Successful recovery of a person overboard requires many crew members to act quickly. They should follow quick-reference checklists to ensure: the alarm is raised appropriately; the position of the casualty is recorded and tracked; and the ship returns to the casualty as quickly as possible.
Safety actions (number and précis) *"What has been done while the inquiry's been underway that's removed the need for a relevant recommendation?"*	5 safety actions had been taken since the accident: • The operator has: • compiled a document on the procedure for safe rigging of gangways/accommodation ladders, which has been distributed fleet-wide • carried out a close inspection of all wires associated with gangways and accommodation ladder wires, fleet-wide • retrofitted gangways and accommodation ladders with new wires and ancillary equipment where deemed necessary, fleet-wide • compiled and instituted detailed inspection routines for gangways and accommodation ladders, which have been included in the planned maintenance system fleet-wide • compiled internal audit checklists for superintendents and the Health, Safety, Environment and Quality team for standing wires and associated equipment, for use throughout the fleet.
Safety recommendations (number and précis) *"What needs to change to reduce the likelihood of a recurrence?"*	Nil

Maritime inquiry 14-203 Captain MJ Souza, fatality on-board, Kiribati Islands region, 24 August 2014

Event type	Fatality on-board
Safety issues identified	The following safety issues were identified in this investigation: • Requirement for an appropriate rope management system on board the ship.
Findings (number) *Greater ≈ more complex*	5
Key lessons (number and précis) *"What did we identify that others should take heed of to avoid it happening to them?"*	There were 2 key lessons: • Tying a knot in a fibre rope will reduce its strength. When tying a knot, factoring in this reduction in strength is important. • Fibre ropes can fail due to cyclic tension loading, a form of fatigue damage that can be difficult to see in braided ropes. Mariners must consider more than a rope's surface appearance when deciding whether to retire it from service.
Safety actions (number and précis) *"What has been done while the inquiry's been underway that's removed the need for a relevant recommendation?"*	5 safety actions had been taken since the accident: • The operator has mitigated the risk of the choker line parting and striking crewmembers by moving it closer to the net and away from the position where crewmembers would stand while releasing dye bombs into the water. • The operator has started a rope register to identify the various ropes on the ship and log their usage. • The operator has increased oversight of the vessel at turnarounds. • The operator contracted a consultant to carry out a safety systems audit and report findings. • The operator updated the on-board Hazard Register.
Safety recommendations (number and précis) *"What needs to change to reduce the likelihood of a recurrence?"*	1 recommendation was made to the operator of the Captain M. J. *Souza*. • That it reviews its internal auditing procedures to ensure auditors make realistic assessments based on observed practices; and verify that the crew follow documented procedures and the procedures are appropriate for the task. Audit findings should be recorded together with any safety actions taken as a result of the audit.
Response	The operator stated it had implemented a programme to improve the Health and Safety culture on this vessel. This included an internal review Health and Safety Systems (ashore and on board) governing the Capt M J Souza, followed by several steps to improve Health and Safety outcomes. An independent Health and Safety audit was planned.

Maritime inquiry 16-203 Mount Hikurangi, *crew fatality during cargo loading operations, Port of Tauranga, 27 February 2016*

Event type	Crew fatality
Safety issues identified	The following safety issues were identified in this investigation: • The deck cadet was not wearing a safety harness. • The ship's safety management system required crew to use safety harnesses, but none did so routinely.
Findings (number) *Greater ≈ more complex*	4
Key lessons (number and précis) *"What did we identify that others should take heed of to avoid it happening to them?"*	There were 2 key lessons: • All crew members must wear safety harnesses, preferably connected to fall arrestors, when working at height. • The highest levels of management on board a ship must establish a strong safety culture. All levels of the organisation must encourage, monitor and enforce the safety culture so that best safety practices are followed.
Safety actions (number and précis) *"What has been done while the inquiry's been underway that's removed the need for a relevant recommendation?"*	2 safety actions had been taken since the accident: • The operator issued a risk assessment circular to all masters, deck officers and seafarers. It identified the risk of falling overboard when working close to the unguarded edge of the ship, and set out safety instructions. • At the time of the report, Maritime New Zealand was writing a safety bulletin to be distributed to the New Zealand maritime industry. The safety bulletin will highlight the inherent dangers involved with working at height and close to unguarded edges.
Safety recommendations (number and précis) *"What needs to change to reduce the likelihood of a recurrence?"*	Nil

Rail inquiry 13-103 Train 5618, collision with the stop block, Melling Station, 15 April 2013
Rail inquiry 14-103 Matangi passenger train, failed to stop, Melling Station, 27 May 2014

Event type	Passenger train failed to stop at station
Safety issues identified	The following safety issues were identified in this investigation: • The National Rail System Standards did not require the Matangi braking system to be tested under slippery track conditions against a standard, so the system had not been optimised for low-adhesion conditions. • The risk assessment for trains entering terminating stations with respect to allowable speed, and the effectiveness of stop blocks to absorb impact forces. • The pole supporting the overhead electrical traction line was directly in the path of an overrunning train. • Use of performance-impairing substances by train drivers.
Findings (number) *Greater ≈ more complex*	8
Key lessons (number and précis) *"What did we identify that others should take heed of to avoid it happening to them?"*	There were 3 key lessons: • Train braking systems must be designed, tested and optimised to provide adequate braking performance under slippery track conditions. • Train drivers must be trained on the characteristics of their trains' braking systems, and to drive them within the trains' capabilities. • When a new train type is being commissioned and entered into service, train operators should seek drivers' feedback on train performance.
Safety actions (number and précis) *"What has been done while the inquiry's been underway that's removed the need for a relevant recommendation?"*	6 safety actions had been taken since the accident: • Porter Haulage staff were briefed on the accident. • GWRC upgraded the computer-controlled brake system to ensure that trains would stop in the shortest possible distance in low-adhesion conditions. • KiwiRail retrained Wellington metro drivers on how Matangi computer-controlled brakes work and provided a best-practice braking technique under low-adhesion. • KiwiRail changed the network control operating procedures to reduce the risk of electric shock. • GWRC arranged a cross-organisation working group for the Wellington area to mitigate the risks of operating trains in low-adhesion conditions. • GWRC approved the procurement of a driver simulator for the Matangi.
Safety recommendations (number and précis) *"What needs to change to reduce the likelihood of a recurrence?"*	4 recommendations were made to KiwiRail. • That it applies a permanent speed restriction to the last section of the Melling Line to reduce the approach speed to Melling Station. • That it applies permanent speed restrictions to the approaches to other terminating stations on the controlled network as necessary. • That it replaces the type of stop block used at Melling with a new shock-absorbing design matched to the likely impact forces from a Matangi train. • That it relocates the terminal pole for the overhead line at Melling Station to be clear of the potential train overrun path. (Urgent recommendations issued 2014/15.) 2 recommendations were made to the Chief Executive of the NZTA. • That he requires a review of the National Rail System Standards to ensure they define low-adhesion braking requirements and are applied to trains on the National Rail System.

	• That he reviews the commissioning of the Auckland trains to ensure they are optimised for low adhesion conditions and to reduce the risk of similar incidents. (Further recommendations issued 2014/15.)
Response	The recommendations to KiwiRail were accepted and implemented, and have now been closed. The NZTA stated it cannot require a full review of the National Rail System Standard, but would work the NRSS executive to implement the recommendation. The NZTA has begun discussions with Auckland transport and CAF regarding this recommendation.

Rail inquiry 14-104 Freight train, collision with excavator, between National Park and Raurimu, 17 June 2014

Event type	Freight train, collision with vehicle
Safety issues identified	The following safety issues were identified in this investigation: • The process for protecting the work group relied too heavily on the rail protection officer being able to check the whereabouts of every member of a large work group, and assumptions that all workers on site understood when it was safe for them to occupy the track. • Notwithstanding the weakness in the process, the process was not adhered to, either in the planning or implementation of the work plan.
Findings (number) *Greater ≈ more complex*	6
Key lessons (number and précis) *"What did we identify that others should take heed of to avoid it happening to them?"*	There were 2 key lessons: • Workers carrying out safety-critical tasks can be placed in unsafe situations when standard operating procedures are not followed. • Seatbelts are known to prevent injuries in vehicle accidents and should always be worn where fitted.
Safety actions (number and précis) *"What has been done while the inquiry's been underway that's removed the need for a relevant recommendation?"*	5 safety actions had been taken since the accident: • Level crossing access and crossing information has been distributed to all driving staff information collect on other crossings considered to be hazardous. • KiwiRail's revised track safety rules for managing a protected work area. • The new rules ensure a protected work area is clear of personnel and machinery before trains are authorised to enter. • KiwiRail has changed the bulletin application lead times to provide more time for checking and reviewing the application. A quality assurance audit and monthly quality reporting have been implemented for the production of bulletins. • The NZ Transport Agency undertook a systems-focused investigation into the accident, which identified deficiencies.
Safety recommendations (number and précis) *"What needs to change to reduce the likelihood of a recurrence?"*	Nil

Maritime inquiry 13-203 Interislander passenger and freight ferry Aratere, propeller shaft fracture and loss, Tory Channel, 17 June 2014

Event type	Loss of propeller shaft
Safety issues identified	Nil
Findings (number) *Greater ≈ more complex*	17
Key lessons (number and précis) *"What did we identify that others should take heed of to avoid it happening to them?"*	Nil
Safety actions (number and précis) *"What has been done while the inquiry's been underway that's removed the need for a relevant recommendation?"*	Nil
Safety recommendations (number and précis) *"What needs to change to reduce the likelihood of a recurrence?"*	1 recommendation was made to the Chief Executive of KiwiRail. • That he ensures that where KiwiRail makes significant modifications to vessels, appropriate oversight is in place. Oversight includes keeping comprehensive records to demonstrate that components are safe and reliable and comply with the appropriate standards. 1 recommendation was made to Standards New Zealand. • That it submits this report to the ISO Secretariat for its information and to consider whether the current standards for manufacturing large-diameter marine propellers are appropriate for modern, high-efficiency propellers that operate closer to cavitation margins.
Response	Both recommendations were accepted. The recommendation to Standards New Zealand is now closed.

Maritime inquiry 12-203 Fire onboard Amaltal Columbia, *12 September 2012*

Event type	Onboard fire
Safety issues identified	Nil
Findings (number) *Greater ≈ more complex*	7
Key lessons (number and précis) *"What did we identify that others should take heed of to avoid it happening to them?"*	There were 4 key lessons: • The early detection of fires is critical to preventing their taking hold and spreading. • Older-style fluorescent light fittings are more prone to failure and likely to start a fire than more modern fittings. Operators of older ships should consider the risk of not replacing such lights with more modern and safer lights. • Arrangements that are designed to close off a space and contain a fire need to be quick, easy and intuitive to use, taking account of the conditions the crew are likely to encounter in a real fire. • The use of fire-retardant materials in the construction and fit-out of spaces on board ships will help to prevent the ignition and spreading of fires.
Safety actions (number and précis) *"What has been done while the inquiry's been underway that's removed the need for a relevant recommendation?"*	Nil
Safety recommendations (number and précis) *"What needs to change to reduce the likelihood of a recurrence?"*	Nil

Aviation inquiry 14-006 Robinson R44 II, ZK-HBQ, mast-bump and in-flight break-up, Kahurangi National Park, 7 October 2014

Event type	Mast-bump and in-flight break-up
Safety issues identified	The following safety issues were identified in this investigation: • The involvement of experienced pilots, and the R44 and R66 models, in recent mast-bumping accidents suggests the maximum wind speed limitations for inexperienced R22 pilots should be extended to the R44 and R66, and to all pilots of Robinson helicopters regardless of experience.
Findings (number) *Greater ≈ more complex*	10
Key lessons (number and précis) *"What did we identify that others should take heed of to avoid it happening to them?"*	There were 4 key lessons: • Pilots of two-bladed, semi-rigid rotor helicopters must be acutely aware of the risks and effects of encountering moderate or greater turbulence in strong winds, especially in the lee of high terrain. • If such turbulence is encountered while flying a two-bladed, semi-rigid rotor helicopter, the pilot should consider landing and waiting for improved conditions. • Pilots of two-bladed, semi-rigid rotor helicopters should be aware of the helicopters' increased susceptibility to low-G conditions when lightly loaded, and the adverse effects of high power and a high tail rotor on the rate of roll. • Pilots of Robinson helicopters should use the manufacturer's approved low-G recovery technique as soon as low-G conditions are felt.
Safety actions (number and précis) *"What has been done while the inquiry's been underway that's removed the need for a relevant recommendation?"*	2 safety actions had been taken since the accident: • Robinson released a Safety Alert regarding low-G mast-bumping accidents, It drew attention to the prohibition of low-G pushover manoeuvres and the importance of applying gentle aft cyclic as soon as low-G is felt. Pilots were also reminded to slow down and avoid overreacting in turbulence. • Robinson published Service Bulletins for the R44 and the R66 that instructed operators to install a placard below the airspeed indicators which reads: DO NOT EXCEED 110 KIAS EXCEPT IN SMOOTH AIR .
Safety recommendations (number and précis) *"What needs to change to reduce the likelihood of a recurrence?"*	1 recommendation was made to the Administrator, Federal Aviation Administration: • that he extends the limitations and requirements of the FAA's AD [airworthiness directive] 95-26-04 that currently apply to the R22, in regard to operating in strong winds and turbulence, to the R44 and R66 models; and extends those limitations and requirements so that they apply to all R22, R44 and R66 pilots regardless of their experience levels. 1 recommendation was made to the Director of Civil Aviation: • that until such time as the above recommendation is actioned by the FAA, he extend the limitations and requirements of FAA AD [airworthiness directive] 95-26-04 to R44 and R66 helicopters in New Zealand, and to all pilots of Robinson helicopters in New Zealand regardless of experience.
Response	The FAA considers that the limitations and procedures added to all Robinson flight manuals, which it has recently approved, and the issuance of a Robinson Safety Notice, meet the intent of the recommendation. The Civil Aviation Authority indicated it will consider whether the action sought by the Commission meets the legislative threshold for the issue of an Airworthiness Directive. It will take into consideration the fact there have been no 'mast bump' accidents in NZ during the past two years. At the time of providing the response, the CAA had a team in the US working with the FAA and the Robinsons Helicopter Company on possible amendments to the Limitations sections of the Pilot Operating Handbooks of the Robinson series aircraft and improvements to safety awareness training. It considered this work may meet the intent of the recommendation.

Aviation inquiry 13-011 Runway excursion, British Aerospace Jetstream 32, ZK-VAH, Auckland airport, 2 November 2013

Event type	Runway excursion
Safety issues identified	Nil.
Findings (number) *Greater ≈ more complex*	3
Key lessons (number and précis) *"What did we identify that others should take heed of to avoid it happening to them?"*	There was 1 key lesson: • Prompt action by a pilot on recognising a loss of directional control during take-off or landing will minimise the risk of a runway excursion.
Safety actions (number and précis) *"What has been done while the inquiry's been underway that's removed the need for a relevant recommendation?"*	Nil.
Safety recommendations (number and précis) *"What needs to change to reduce the likelihood of a recurrence?"*	Nil.

Rail inquiry 15-102 Electric locomotive fire at Palmerston North Terminal, 24 November 2015

Event type	Electromotive fire
Safety issues identified	The following safety issues were identified in this investigation: • The high-voltage cable assembly had been in service for less than 12 months, but records did not show if it was in serviceable condition. • Inconsistent operating procedures and training for crews on responding to a fire on a train across main rail operators. • The National Rail System Standards has no minimum standards for fire detection or suppression systems on the New Zealand rail network.
Findings (number) *Greater ≈ more complex*	9
Key lessons (number and précis) *"What did we identify that others should take heed of to avoid it happening to them?"*	There was 1 key lesson: • Public mass transport operators must provide staff with guidelines, procedures and training to enable them to deal effectively with a fire.
Safety actions (number and précis) *"What has been done while the inquiry's been underway that's removed the need for a relevant recommendation?"*	4 safety actions had been taken by since the accident. KiwiRail: • immediate inspection of the EF locomotive fleet for signs of high-voltage cable damage, oil leaks, flammable debris, rags, etc. • performed insulation integrity tests on all high-voltage cables in the EF fleet. • implemented periodic testing of the EF class fleet. • introduced a quality check after high-voltage cable assembly fitted.
Safety recommendations (number and précis) *"What needs to change to reduce the likelihood of a recurrence?"*	3 recommendations were made to the Chief Executive of the NZTA: • Ensure that in their safety cases the access provider of, and operators using the National Rail System, consider fire in rail vehicles as a safety risk, and demonstrate they have mitigated that risk as far as reasonably practicable. • When conducting safety assessments of each rail licence holder, ensure that they have identified and assessed the risk of fire in a rail vehicle; and that they have, as far as reasonably practicable, minimised the risk. • When conducting safety assessments of each rail licence holder operating on the National Rail System, ensure systems record in detail the maintenance history of safety-critical rail vehicle parts and that any tests on replacement parts are appropriate to simulate in-service conditions. 1 recommendation was made the National Rail Safety System Executive: • Adopt or develop a New Zealand Fire Standard that incorporates, but is not limited to: minimising sources of fire ignition, restricting fire propagation, the use of fire-resistant materials, the provision of appropriate firefighting equipment, ventilation systems , the installation of fixed fire protection systems, the ability to self-rescue or relocate the train in the event of a fire in a tunnel or similar hazardous location.
Response	The NZTA accepted all three recommendations. It noted that the first may involve significant work for some operators. The NRSS Executive noted that the request to 'adopt or develop' would not be within its scope, but does recognise that such matters are required to be considered for the operating environment. Therefore the NRSS Executive can propose, through relevant NRSS documentation, the consideration of relevant international standards for the interoperability environment.

Maritime inquiry 15-203 Loss of the fishing vessel Jubilee *and all hands, 12 nautical miles off the Rakaia River mouth, 18 October 2015*

Event type	Loss of vessel and all hands
Safety issues identified	The following safety issues were identified in this investigation: • the emergency means of escape from the *Jubilee*'s wheelhouse were not well designed and afforded the crew too few options in a capsize or sinking • the means of fire escape from the *Jubilee*'s wheelhouse and accommodation space may not have met the intent of maritime rules • the Maritime Rules lack advice and guidance on acceptable standards for surveyors to approve when the Maritime Rules defer to their discretion.
Findings (number) *Greater ≈ more complex*	11
Key lessons (number and précis) *"What did we identify that others should take heed of to avoid it happening to them?"*	There were 3 key lessons: • Good watchkeeping includes the safe navigation of the vessel, *and* vigilance as to the trim and stability of the vessel, and factors that could affect either. • Notwithstanding the minimum requirements in Maritime Rules, owners and designers of vessels should take a risk-based approach to providing escape routes from all compartments for all foreseeable emergencies. • Crews need to pre-plan escape routes from any part of their vessels for all foreseeable emergencies.
Safety actions (number and précis) *"What has been done while the inquiry's been underway that's removed the need for a relevant recommendation?"*	12 safety actions had been taken since the accident. The vessel's owner has made changes to the *Jubilee*'s sister vessels, including: • fitted a system to indicate an open hatch to personnel in the wheelhouse • improved drainage so water trapped inside the coaming around the fish hold can drain out but the risk of back flooding is reduced • improved drainage so water building up in the fish hold drains into an area where there is a bilge alarm and an automatic pump • fitted another bilge sump with pump and discharge pipework in the fish hold • fitted bilge alarms in the fish hold • installed wheelhouse glass breaking hammers and signs on both sides of the wheelhouse interior in addition to the regulation escape hatches • provided an alternative escape route the shelter deck • provided better access to the life raft and man-overboard ladder • fitted an additional ladder. The vessel's owner also made changes to a similar vessel in its fleet: • fitted a system to indicate an open hatch to personnel in the wheelhouse • raised the coaming height around the fish hatch • installed wheelhouse glass breaking hammers and signage on both sides of the wheelhouse interior in addition to the regulation escape hatches.
Safety recommendations (number and précis) *"What needs to change to reduce the likelihood of a recurrence?"*	2 recommendations were made the Director of Maritime New Zealand: • That he draws surveyors' and vessel owners' attention to the benefits of installing safety mechanisms designed to alert crew to any abnormal rises in water levels in compartments, particularly those compartments that compromise the reserve buoyancy or stability of fishing vessels.

	• That he work with surveyors and designers of fishing vessels to ensure that fishing vessels have effective means of escape from all compartments for all reasonably foreseeable emergency situations.
Response	The recommendations were accepted. The first recommendation was implemented by means of a safety bulletin and has since been closed.

Rail inquiry 13-101 Derailment of freight Train 345, Derailment, Mission Bush Branch line, 9 January 2013

Event type	Derailment
Safety issues identified	The following safety issues were identified in this investigation: • The incomplete electrical plug connection went undetected by several rail staff. • A driver did not have brake control over coupled wagons because of incorrect brake set-up. • When the third locomotive was couple to the disabled train no challenge and confirm actions were taken to complete a test the brakes. • There were several procedural lapses by three experienced rail staff members between the coupling of the two locomotives at Auckland and the train examiner's dismounting from the train 12 hours later.
Findings (number) *Greater ≈ more complex*	7
Key lessons (number and précis) *"What did we identify that others should take heed of to avoid it happening to them?"*	There were 3 key lessons: • Train drivers and train examiners need to comply with basic operating rules to ensure that trains have fully functioning and continuous air brake systems at all times. • It is important that all operating staff communicate properly and effectively and follow procedures. Departures from the plan or any unusual or unexplained events, must be communicated effectively. • Shift workers need to remain alert to any situation that could affect their cognitive performance, and that of their work colleagues.
Safety actions (number and précis) *"What has been done while the inquiry's been underway that's removed the need for a relevant recommendation?"*	9 safety actions had been taken by the operator since the accident, including: • issued a safety briefing on the consequences of incorrectly set up brake handles. • updated requirements for servicing staff to check brake handles are correctly set when locomotives were coupled for multiple operation. • updated and trialled systems to protect against incorrect brake set up • rolled out the system to DL-class locomotives • advised that the couplers in 34% of the fleet of freight wagons used to transport export steel had been converted from standard to automatic couplers to mitigate against coupler partings on moving trains. • reviewed the Tranzlog upgrade designed to detect an incorrect brake set-up on the DL-class locomotives with a view to installing the upgrade in its remaining single-cab diesel locomotive fleet. • improved its competency management system.
Safety recommendations (number and précis) *"What needs to change to reduce the likelihood of a recurrence?"*	Nil.

Interim report to maritime inquiry 16-202: Passenger ship Azamara Quest, struck Wheki Rock, Tory Channel, 27 January 2016

Event type	**Collision**
Safety issues identified	Two safety issues were identified: • The current harbour risk assessment for the safe navigation of ships through Tory Channel does not adequately consider the risks associated with international cruise ships transiting Tory Channel. • In the Commission's view Port Marlborough's Pilot Training and Proficiency Plan did not meet the intent of Maritime Rules Part 90: Pilotage.
Safety recommendations (number and précis) *"What needs to change to reduce the likelihood of a recurrence?"*	1 recommendation was made to the Director of Maritime New Zealand: • to review Port Marlborough New Zealand Limited's Port Safety Management System and ensure that it has appropriate procedures in place to meet the requirements of its Pilot Training and Proficiency Plan and that the plan meets the intent of Maritime Rules Part 90: Pilotage. 1 recommendation was made to the Chief Executive of the Marlborough District Council: • before allowing cruise ships to use Tory Channel in future, review its harbour risk assessment for the safe navigation of ships through Tory Channel, and in doing so consider the safe navigation of cruise ships through Tory Channel as a separate risk.
Response	The Director of Maritime NZ accepted the recommendation. The Council agreed that generic risk/hazard controls do not specifically address cruise ships transiting this area, and this is to be addressed; but the risks/hazards are already documented. It stated that A number of cruise ship-specific draft control measures were identified immediately post the Azamara Quest incident, each of which has an associated implementation date. The Council wishes to be satisfied that these dates and control measures are realistic, achievable, and cost effective.

Interim report to aviation inquiry 16-007: Robinson R44, impact with terrain, Glenbervie Forest, Northland, 31 October 2016

Event type	Impact with terrain
Safety issues identified	Nil
Safety recommendations (number and précis) *"What needs to change to reduce the likelihood of a recurrence?"*	Nil

Interim report to aviation inquiry 17-001: Squirrel AS320BA, impact with terrain, Port Hills, Christchurch, 14 February 2017

Event type	Impact with terrain
Safety issues identified	Nil
Safety recommendations (number and précis) *"What needs to change to reduce the likelihood of a recurrence?"*	1 recommendation was made to the Director of the Civil Aviation Authority: • To use pertinent materials (including the Commission's report) to remind the aviation industry of the lessons learned from accidents involving sling loads, in particular the use of monsoon buckets during firefighting operations.
Response	The CAA accepted the recommendation and will implement it as soon as practicable.

Interim report to maritime inquiry 17-203: Passenger vessel Emerald Princess*, explosion resulting in crew fatality, Port Chalmers, Dunedin, 9 February 2017*

Event type	Explosion resulting in fatality
Safety issues identified	There was 1 safety issue: • there might be other pressure vessels part of the same system or similar systems that could pose a significant danger to seafarers and passengers
Safety recommendations (number and précis) *"What needs to change to reduce the likelihood of a recurrence?"*	1 recommendation was made to the manufacturer: • To 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 1 recommendation was made to the International Association of Classification Societies: • To 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. 1 recommendation was made to Cruise Lines International Association: • To 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. 1 recommendation was made to the Director of Maritime New Zealand: • To inform all New Zealand surveyors and port state control officers 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.
Response	The manufacture advised that it was promptly contacting all customers having the same or similar equipment on board; and its service networks were following up to support customers in this dedicated inspection. Any nitrogen cylinder deemed unfit due to corrosion will be required to be removed for further assessment. The IACS asked the Commission to direct its recommendations to the vessel's Classification society for Class matters and flag Administration for Statutory matters. CLIA confirmed it would address this recommendation with its membership, upon publication of the actual report. It further asked that the final version of the report affirmatively state our commitment to do so. CLIA noted it represents approximately 95% of the world's oceangoing cruise ship capacity. Maritime New Zealand issued Safety Bulletin 34 to all New Zealand Surveyors and Port State Control Officers, trainee Port State Control Officers, Maritime Officers and their respective managers; and posted the bulletin on its website.

TAIC Annual Report 2017

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