



Transport Accident Investigation Commission
Te Komihana Tirotiro Aitua Waka

Annual Report 2015 – 2016

Year ended 30 June 2016

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

Transport Accident Investigation Commission
Annual Report 2016

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21 November 2016

Hon Minister Craig Foss
Associate Minister of Transport
Executive Wing
Parliament Buildings
Wellington

Dear Minister

We have the honour of presenting to you this Annual Report of the Transport Accident Investigation Commission for the 12 months ended 30 June 2016.

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

A handwritten signature in black ink, appearing to read 'Peter McKenzie'.

Peter McKenzie, QC
Deputy Chief Commissioner

A handwritten signature in black ink, appearing to read 'Jane Meares'.

Jane Meares
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

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The Transport Accident Investigation Commission

The Transport Accident Investigation Commission (the Commission) is a standing commission of inquiry established by the Transport Accident Investigation Commission Act 1990 (the Act). The Act prescribes the Commission's purpose, which is 'to determine the circumstances and causes of accidents and incidents with a view to avoiding similar occurrences in the future, rather than to ascribe blame to any person'.¹ It does this by investigating transport occurrences and then informing the transport sector and the public – both 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).

The Commission has broad investigative powers under the Act, including the power of entry and inspection, and the power to seize, remove and protect evidence. It also has wide powers under the Commissions of Inquiry Act 1908.

On occasion, coroners, the New Zealand Police, transport safety authorities (the regulators²) and other authorities may investigate the same transport occurrences as the Commission. The Commission has the unique and important role of conducting investigations independently of any other interest – for the purpose of helping to improve safety, and not to attribute blame or liability.

At 30 June 2016 the Commission had four Commissioners appointed by the Governor-General:

- Ms Helen Cull, QC, Chief Commissioner since March 2015 (appointed Deputy Chief Commissioner in May 2011, resigned in July 2016 upon appointment as a judge of the High Court)
- Mr Peter McKenzie, QC, Deputy Chief Commissioner (appointed in August 2015, term expires in October 2018)
- Ms Jane Meares, Commissioner (appointed in February 2015, term expires in April 2019)
- Mr Stephen Davies Howard, Commissioner (appointed in August 2015, term expires in April 2019).

The Commission is required under statute to employ a Chief Executive. At 30 June 2016 the Chief Executive employed 16 investigative staff (including the Chief Investigator of Accidents and two modal managers) and 12 corporate support staff. The Commission is structured into two main units: Investigation Services and Business Services. Investigation Services is led by the Chief Investigator of Accidents and consists of teams of investigators responsible for investigating rail, maritime and aviation occurrences. Business Services performs a range of corporate functions, including finance, research, legal, governance, policy, communications, human resources, information and communications technology, information management and general administration. The Commission's organisational structure is shown in Figure 2 on page 29.

Commissioners' remuneration is disclosed in section 4 of this report.

¹ Section 4 of the Transport Accident Investigation Commission Act 1990.

² Maritime New Zealand, the Civil Aviation Authority and the NZ Transport Agency.

Deputy Chief Commissioner's overview

Our role is to expose the critical elements of adverse events so they can be avoided in future

The Commission has an expansive overview of the safety performance of New Zealand's transport system. Our attention is drawn to transport system safety performance in the aviation, rail and sea environments through notifications of adverse events, both accidents and incidents, that are occurring in these transport modes on a daily basis. Annually we receive, on average, about 1,000 notifications across our modes of interest.

Most of the events reported to us are of minor or moderate consequence. But they carry value in the information that comes to light when the lens of inquiry is placed over the circumstances surrounding the events, exposing the critical elements that drive similar systems towards failure. Understanding how these critical elements interrelate enables the Commission to determine the causes of the adverse events. We can then make the necessary recommendations to those best able to influence or remediate the circumstances surrounding the events, any systemic or behavioural changes required and/or any legislative changes required for improved transport safety.

Some events reported to us have eventuated in severe, sometimes catastrophic consequences, resulting in people being harmed or killed. Understanding what happened and how the critical elements became active drivers of the adverse events is necessary if loss of life is to be avoided in similar circumstances in the future. It is not the Commission's task to inquire into the causes of deaths; that is the Coroners' mandate. However, through our inquiries we can help the Coroners to understand better the circumstances leading to death.

We are continually striving to improve our investigation and inquiry processes

To improve our work in determining the circumstances and causes of accidents and incidents in the transport system we have adopted a two-pronged approach. First, concentrating on our internal organisational environment, we have strengthened our investigative capabilities, growing our investigation team by six investigators including a new forensic data role. We have also, for the first time in our 25 years of organisational life, four Commissioners rather than three. Having four Commissioners ensures continuity of the Commission's work, particularly when vacancies arise.

In addition, we are supporting the work of our people through a programme of upgrading our quality assurance systems. The aim is to ensure that inquiry and investigation management processes are effective, efficient and easily implemented.

The second aspect of our organisational improvement programme concentrates on our operating environment. We are mindful of the values that guide us in ensuring that natural justice is maintained. We are progressively enhancing our information and communication systems to support accessibility to the Commission and the information it is able to share during the course of its inquiries. In this regard we are paying particular attention to our inquiry stakeholders, who include government, regulatory and industry organisations, commercial transport operators, international organisations and those most directly affected by the accidents and incidents we investigate – the people involved and their families.

We have been able to undertake the steps outlined above through the increased funding we received in 2015/16. The additional \$1.4 million has enabled us to strengthen our resources in terms of our people and the tools available to support them in their work. With increased resources we look forward to: improving timeliness in the completion of the Commission's inquiries; having a more accessible Commission in terms of making information available in a timely, responsive manner; and enhanced communications with inquiry stakeholders.

Our work depends on public trust and confidence

The Commission recognises that we cannot be effective in serving the public without their trust and confidence in the work we do. That public trust and confidence was called in to question in relation to our inquiry into a 2010 accident at Fox Glacier aerodrome.³ Aspects of the conduct of that inquiry were challenged through the media following the Coroner's inquest into the deaths of nine people on board the aircraft.

The Commission was not formally requested to re-open its inquiry, nor did any party offer any new and significant evidence. However, we resumed the inquiry and released our addendum report together with an independent review of the investigation process. The review was thorough, the key safety issues were identified and the recommendations made during and following the inquiry did not change, although some additional findings were made. Nevertheless, the Commission acknowledges that we must work hard to maintain public trust and confidence in the robustness of our investigation processes. As a consequence, the Commission's ongoing work programme is paying particular attention to being transparent in what we do and how we communicate effectively with all of our stakeholders, as well as ensuring that investigation processes are robust. The work centred on upgrading our quality assurance systems is a key activity in this area.

We are not always able to ascertain cause

Determining the circumstances and causes of accidents and incidents with a view to helping prevent recurrences is the prime purpose of the Commission. However, while circumstances may be ascertained, causes cannot always be determined. This is as frustrating for investigators as it is for those who want, and need, to know why things happened the way they did.

During the year the Commission dealt with three similar inquiries involving Robinson helicopters.⁴ The common theme in these inquiries was the circumstances of the accidents – in each case the helicopter broke up in flight, with loss of life, through a phenomenon known as 'mast bumping'. In each case the Commission was unable to determine unequivocally the cause of the mast bumping. Being unable to determine the causes of these similar in-flight break-ups is of real concern. The Robinson helicopter is a popular aircraft in New Zealand. In addition, the number of accidents involving Robinson helicopters in New Zealand may have significant implications for the global Robinson helicopter fleet. As a first step, in an effort to capture the events immediately proximal to an accident, the Commission has made a recommendation to the Ministry of Transport to promote through the International Civil Aviation Organization (ICAO) the desirability of helicopter operators installing data and image recorders. This action will not prevent a reoccurrence, but it should help accident investigators to determine the circumstances surrounding accidents.

Because the Commission was unable to determine the definitive causes of the Robinson helicopter accidents, it resolved to add Robinson helicopter mast bumping to its Watchlist. The Watchlist is a safety monitoring publication and presents the Commission's highest-priority safety issues across the aviation, maritime and rail transport modes. The aim is to highlight where transport systems need to change so that safety is improved.

The Commission's work can have international impacts

The Commission's work can have international impacts. In June 2016 Maritime New Zealand reported to the Commission on submissions it had made to the International Maritime Organization (IMO) in February 2015. The submissions were in response to one of the Commission's recommendations in its report on the grounding of the container ship *Rena*.⁵ The recommendation and submission related to

³ Inquiry 10-009 *Walter Fletcher FU24, ZK-EUF loss of control on take-off and impact with terrain, Fox Glacier aerodrome, South Westland, 4 September 2010*

⁴ Inquiry 2013-003 *Robinson R66, ZK-IHU, Mast bump and in-flight break-up, Kaweka Range, 9 March 2013*; Inquiry 15-002 *Robinson R44, ZK-IPY, Lochy River, near Queenstown, 19 February 2015*; open inquiry AO-2014-006 *Robinson R44 Helicopter ZK-HBQ, in-flight break-up, Kahurangi National Park, 7 October 2014*.

⁵ Inquiry 11-204 *Container ship MV Rena grounding, on Astrolabe Reef, 5 October 2011*.

the sharing amongst IMO member states of information about their respective maritime education, training and certification systems.

Acknowledgement of the Hon Justice Helen Cull, QC

Helen Cull, QC resigned from the Commission in July 2016 following her appointment as a judge of the High Court. She had been appointed to the Commission as Deputy Chief Commissioner in May 2011 and later to the position of Chief Commissioner in March 2015.

On behalf of my fellow Commissioners and the team at the Commission I would like to acknowledge the outstanding contribution Justice Cull made during her time on the Commission. Her drive for excellence in the inquiry process and reporting of findings was instrumental in shaping the Commission's work.

Concluding remarks

Finally, thank you to the management and staff of the Commission, who have demonstrated their commitment to supporting the very important work of the Commission in helping to keep all those who travel across New Zealand's territory safe. Our investigators deserve a special acknowledgement. They are our frontline team. They invariably attract intense scrutiny when undertaking their investigations on behalf of the Commission. The work is difficult, often unpleasant in nature and not without personal risk at times.



Peter McKenzie, QC
Deputy Chief Commissioner

1. Non-financial reporting: improving safety through accident inquiry

1.1. The Commission improves safety through investigation and reporting

The Commission's statutory role is to inquire into the circumstances and causes of accidents and incidents

1.1.1. The Commission has one output class: Inquiries. Inquiries are the means by which the Commission fulfils its statutory role of determining the circumstances and causes of accidents and incidents. It does this by investigating transport occurrences and then informing the transport sector and the public – domestically and internationally – of what happened, the lessons that can be learnt, and what might need to change to help prevent a recurrence.

1.1.2. Findings are communicated mainly through the publication of reports and recommendations. The Commission's recommendations are directed at those who are most influential in the transport sector and who can take action to improve safety in the aviation, rail and maritime modes. Recommendations are not mandatory, so the Commission can achieve improved safety only by influencing others to act.

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

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

1.1.4. During 2015/16 the Commission received 1,001 notifications of accidents and incidents. This was similar to the number received in the previous year (1,088). About half (507) were in the maritime mode, although a significant proportion of these (just over 100) 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 2014/15 year. (The charts are based on figures excluding the maritime workplace occurrences.)

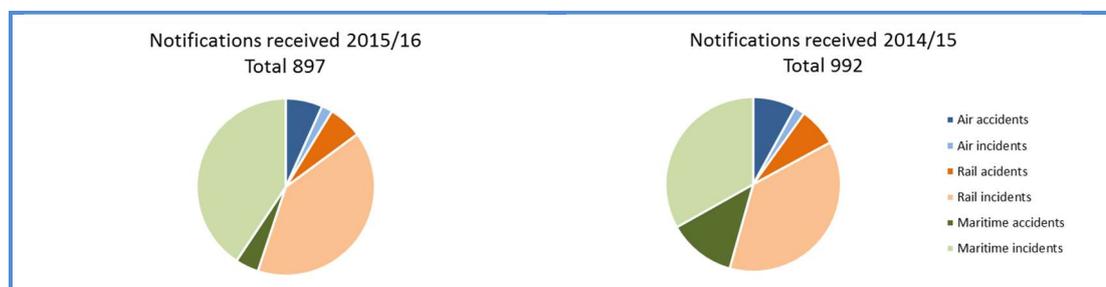


Figure 1: Number of notifications received

1.1.5. 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 about which it is notified. The Commission opened 11 inquiries in 2015/16, about 1% of the notifications received.

Written reports communicate the outcomes of inquiries in various ways

1.1.6. A written report is the culmination of the Commission's investigation and inquiry process. The report gives a detailed account of the occurrence and the analysis to determine the circumstances and cause. It contains the core messages from the outcome of the inquiry – what happened and what needs to be done – which are communicated in various ways to those who can act to improve safety. The 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.

- Findings are the Commission’s conclusions, its having examined the underlying facts of the occurrence into which it is inquiring. The number of findings loosely equates to the complexity of both the occurrence and the inquiry.
- Safety issues are factors that either contribute to an occurrence 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.
- Key lessons distil the transferable learnings identified so that the conditions in the transport system that led to the accident or incident can be addressed by others, and similar situations avoided.
- Safety actions describe what others did in response to the occurrence and inquiry process before the inquiry finished, and for which a safety recommendation(s) would otherwise have been made.
- Recommendations highlight the most serious safety issues identified in an inquiry and ask for something to be done. Recipients’ responses received by the time of publication are included in the published report. Investigators follow up on recipients’ progress in fulfilling recommendations.

The Commission completed 13 inquiries during the year and made 23 recommendations

1.1.7. Table 1 shows the domestic inquiry reports published during the year and the recommendations arising from the inquiries.

Table 1: Domestic inquiry reports published in 2015/16, and recommendations

Aviation inquiry	Recommendations
10-009R Addendum to Final Report AO-2010-009 <i>Walter Fletcher FU24, ZK-EUF loss of control on take-off and impact with terrain, Fox Glacier aerodrome, South Westland, 4 September 2010</i>	No additional recommendations were made.
13-003 <i>Robinson R66, ZK-IHU, mast bump and in-flight break-up, Kaweka Range, 9 March 2013</i>	<p>Two recommendations were made to the Director of Civil Aviation:</p> <ul style="list-style-type: none"> • to include the knowledge and training requirements of Special Federal Aviation Regulation No. 73, or an equivalent requirement, as a prerequisite for the issue of a Robinson R66 type rating • to promptly publicise the recent changes to the Robinson R66 (and R44) Pilot’s Operating Handbooks that caution against flight in high winds and turbulence, and which advise pilots to reduce power and speed if turbulence is expected or encountered. <p>Two recommendations were made to the Administrator, Federal Aviation Administration:</p> <ul style="list-style-type: none"> • to extend the knowledge and training requirements of Special Federal Aviation Regulation No. 73 to pilots of the Robinson R66 helicopter • to 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 NTSB [National Transportation Safety Board] recommendation A-96-12.

Aviation inquiry	Recommendations
13-006 <i>Misaligned take-off at night, Airbus A340, CC-CQF, Auckland Airport, 18 May 2013</i>	<p>Two recommendations were made to the Director of Civil Aviation:</p> <ul style="list-style-type: none"> to review the use of 'should' in advisory circulars to remove ambiguity regarding compliance requirements. in conjunction with the Chief Executive of Airways, to check that runway lighting systems at certificated aerodromes comply with Part 139. <p>One recommendation was made to the Chief Executive of Auckland International Airport Ltd:</p> <ul style="list-style-type: none"> in conjunction with the Chief Executive of Airways, to adjust luminous intensity settings for taxiway and runway lights; and enable controllers to select the respective light intensities recommended by ICAO for various levels of ambient lighting.
14-002 <i>Kawasaki BK117 B-2, ZK-HJC, double engine power loss, near Springston, Canterbury, 5 May 2014</i>	<p>One recommendation was made to the Director of Civil Aviation:</p> <ul style="list-style-type: none"> to review all modifications to the cockpit lighting on BK117 helicopters for night vision use, to ensure they do not unduly increase the risk of a similar incident occurring. <p>One recommendation was made to the Chief Executive of Garden City Helicopters:</p> <ul style="list-style-type: none"> to amend company policies, procedures and practices relating to the management of pilot competency. <p>The Commission gave notice to the Director of Civil Aviation:</p> <ul style="list-style-type: none"> that the Commission had made the recommendation above to the CE of Garden City Helicopters.

Rail inquiry	Recommendations
12-103 <i>Derailment of freight Train 229, Rangitawa-Maewa, North Island Main Trunk, 3 May 2012</i>	No recommendations were made.
12-104 <i>Train 723 overran limit of track warrant, Parikawa, Main North line, 1 August 2012</i>	<p>One recommendation was made to the Secretary for Transport:</p> <ul style="list-style-type: none"> to ensure professionals providing health care to personnel in safety-critical roles inform appropriate authorities of any concerns regarding fitness for duty. <p>One recommendation was made to the Chief Executive of the NZ Transport Agency:</p> <ul style="list-style-type: none"> to work with the National Rail System Standards Executive to ensure Standards clearly state that safety-critical workers must complete the self-assessment questionnaire when presenting for any type of health assessment. <p>One recommendation was made to the Chief Executive of KiwiRail:</p> <ul style="list-style-type: none"> to allow KiwiRail medical professionals automatic access to employees' private medical records as necessary to ensure employees in safety-critical roles are not impaired by prescription or over-counter medications.

Rail inquiry	Recommendations
12-105 <i>Unsafe recovery from wrong-route at Wiri Junction, 31 August 2012</i>	No recommendations were made.
13-104 <i>Derailment of metro passenger Train 8219, Wellington, 20 May 2013</i>	<p>One urgent recommendation was made to the Chief Executive of KiwiRail:</p> <ul style="list-style-type: none"> • to address safety issues with the way maintenance was conducted in its Wellington maintenance depot. <p>One recommendation was made to the Chief Executive of the NZ Transport Agency:</p> <ul style="list-style-type: none"> • to monitor the progress of KiwiRail's response to the recommendation.
13-107 <i>Express freight MP16 derailment, Mercer, North Island Main Trunk, 3 September 2013</i>	<p>One recommendation was made to the Chief Executive of KiwiRail:</p> <ul style="list-style-type: none"> • to closely monitor the replacement of brake blocks on individual wagons to provide another predictive tool for preventing premature wheel-bearing failures.
14-101 <i>Collision between heavy road vehicle and the Northern Explorer passenger train, Te Onetea Road level crossing, Rangiriri, 27 February 2014</i>	<p>Two recommendations were made to the Chief Executive of the NZ Transport Agency:</p> <ul style="list-style-type: none"> • to work with KiwiRail and Waikato District Council to ensure a fully road-compliant long vehicle can use the level crossing with the recommended margins for safety • to work with KiwiRail and all road controlling authorities to ensure that rail level crossing assessments include a measure of the road profile and compatibility with the allowable dimensions for long and low road vehicles.
Interim report (urgent recommendations) to rail inquiry 15-101 <i>Pedestrian fatality, Morningside Drive level crossing, West Auckland, 29 January 2015</i>	<ul style="list-style-type: none"> • Three urgent recommendations were made to the Chief Executive of the NZ Transport Agency – that: • he liaise with the appropriate authorities to ensure some form of active warning device or barrier is installed to prevent pedestrians inadvertently stepping out in front of trains when entering or exiting the Morningside station platform • from a regulatory perspective he take the necessary steps to ensure that the relevant Safety Case(s) and resultant safety system(s) expressly articulate which party or parties is responsible for controlling and protecting pedestrians as they cross the boundaries between railway stations and the rail corridor • he liaise with the relevant road control authorities in Auckland and Wellington, and KiwiRail, to review all pedestrian rail crossings and ensure that they have a level of protection commensurate with the level of risk currently and in the immediate future.

Maritime inquiry	Recommendations
10-206 Coastal container ship Spirit of Resolution, grounding on Manukau Bar, Auckland, 18 September 2010	No recommendations were made.
11-202 Roll-on-roll-off passenger ferry Monte Stello, contact with rock, Tory Channel, Marlborough Sounds, 4 May 2011	One recommendation was made to the Chief Executive of KiwiRail: <ul style="list-style-type: none"> to ensure the bridge resource management policy and procedures outlined in its safety management system remain relevant and effective for all crews on all ships in the fleet, all of the time.
14-201 Dream Weaver, flooding due to structural failure of the hull, Hauraki Gulf, 23 February 2014	One recommendation was made to the Chief Executive of Maritime New Zealand: <ul style="list-style-type: none"> to review the Dream Weaver operation with a view to ensuring that the vessel is fit for its intended purpose and that the operator's safety management system, or the succeeding MOSS system, is operating as it should.

- 1.1.8. Appendix 3 briefly sets out the safety issues, key lessons, safety actions and recommendations for each of the inquiry reports, including the urgent recommendations published in 2015/16.

Recommendations ask for action to be taken to deal with serious safety issues

- 1.1.9. As described, recommendations are a formal inquiry output made during or at the conclusion of an inquiry. They deal with the most serious safety issue(s) identified in the inquiry and ask for something to be done. Not every inquiry generates a recommendation(s); others highlight recommendations previously made and sometimes (and ideally) relevant parties will already have taken action since the occurrences that mean there is no need to make recommendations. Most recommendations are directed at operators and regulators.
- 1.1.10. 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 best-practice investigation and inquiry practices, on their being practicable, and on recipients being committed to responding to recommendations and dedicating the required resources to improve safety.

During the year, ten recommendations were closed

- 1.1.11. In 2015/16 ten safety recommendations were closed. The actions taken by regulators and operators to implement these recommendations are discussed in section 1.4.
- 1.1.12. Table 2 shows, for each of the ten financial years to 30 June 2016, the number of recommendations the Commission has issued and the number that remain open.
- 1.1.13. Progress in acting on the Commission's recommendations is frustratingly slow. As Table 2 shows, over half of the 312 recommendations issued in the past ten years remain open. The rail sector is the most responsive to acting on the Commission's recommendations, with a third of recommendations issued in the ten-year period still open for action. The aviation and maritime sectors, however, each have over two-thirds of the recommendations issued for action still open.
- 1.1.14. In many instances there are good reasons for the slow progress in sector responses. 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 substantial change programmes. This takes time depending on the transport systems involved and what needs to change to remedy identified transport safety risks. For example, regulatory change is required, the process may take a number of years.

1.1.15. However, not all of the recommendations issued are so tightly time bound. The Commission's inquiries expose transport system risks. The recommendations are intended to help remedy or reduce those risks. Every recommendation remaining open is a risk unaddressed. It is for this reason that the Commission intends to pay closer attention to the progress made to act on its recommendations. In addition, the Commission intends to work more closely with regulators to improve the sector responses to the Commission's recommendations.

Table 2: Status of recommendations from inquiries completed 2007-2016

Year ended 30 June	Aviation			Rail			Maritime			Total		
	Issued	Open (No.)	Open (%)	Issued	Open (No.)	Open (%)	Issued	Open (No.)	Open (%)	Issued	Open (No.)	Open (%)
2007	6	2	33%	15		0%	6	2	33%	27	4	15%
2008	26	17	65%	7		0%	21	7	33%	54	24	44%
2009	10	9	90%	19		0%	12	7	58%	41	16	39%
2010	6	4	67%	10	1	10%	9	5	56%	25	10	40%
2011	10	8	80%	15	4	27%	20	17	85%	45	29	64%
2012	18	10	56%	6	3	50%	7	5	71%	31	18	58%
2013	11	11	100%	5	4	80%	5	5	100%	21	20	95%
2014	9	7	78%	14	8	57%	4	2	50%	27	17	63%
2015	5	5	100%	11	8	73%	6	4	67%	22	17	77%
2016	10	10	100%	7	7	100%	2	2	100%	19	19	100%
Total	111	83	75%	109	35	32%	92	56	61%	312	174	56%

1.2. The Commission seeks more action on two high-risk safety issues

1.2.1. During the year the Commission placed particular emphasis on two high-risk safety issues. The Commission has previously made recommendations on these matters, but it considers sector participants need to take more action. These safety issues are discussed in the following section. The Commission further identified two safety themes arising from the year's inquiries; these are also discussed below.

Concerted effort is needed to reduce 'mast bumping' accidents in Robinson helicopters

1.2.2. In last year's *Annual Report* the Commission commented on the particular scrutiny it had given to Robinson helicopters (page 7 of the *Annual Report 2014 - 2015*). The Commission continues to be concerned about the number of accidents in New Zealand in which Robinson helicopters have experienced 'low-G mast bumping'.⁶ Since 1991 the Commission or the Civil Aviation Authority (CAA) have investigated nine accidents or incidents involving Robinson helicopters where low-G mast bumping occurred, including six in the past four years. Nine

⁶ 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.

people have died in these accidents. The low-G mast bumping accident rate in New Zealand is considerably higher than it is in the US.

- 1.2.3. Helicopters with semi-rigid, two-bladed main rotor systems are susceptible to mast bumping in 'low-G' conditions. Low-G mast bumping is caused by excessive movement between a main rotor hub and its driveshaft during a low-G condition. Low-G can be caused by a 'cyclic pushover' manoeuvre or by turbulence. Other contributing factors for low-G mast bumping, in isolation or combination, include large or abrupt flight control inputs, high power settings and/or high-speed flight, and operating at light weights in turbulence.
- 1.2.4. The Commission has made safety recommendations on this issue, which remain open. The recommendations are seeking concerted action by regulatory authorities, the manufacturer, operators, instructors and pilots to promote the safe operation of Robinson helicopters in the New Zealand environment, and to better understand the helicopter's operating characteristics under low-G conditions, and the factors that can culminate in mast bumping.
- 1.2.5. To give a higher profile to its concerns, the Commission considered placing Robinson helicopter mast bumping accidents on its Watchlist. The Watchlist, discussed in more detail in the section beginning at paragraph 2.1.20, is a safety monitoring publication that is reviewed annually. A Watchlist item related to low-G mast bumping accidents in New Zealand was subsequently published.

Safety could be improved for pedestrians and vehicles at level crossings

- 1.2.6. Commission investigations have highlighted safety improvements that could have been, or should be, made for road vehicles and pedestrians using level crossings. A recent inquiry⁷ found ambiguities in who was responsible for the safety of pedestrians using crossings, a particular concern in metropolitan areas with growing patronage and increasingly frequent trains.
- 1.2.7. Other inquiries⁸ have shown that changes to rules and standards for road vehicles, such as those relating to permissible lengths and clearances, are incompatible with the conditions at some level crossings, such as sight lines and road camber.
- 1.2.8. The Commission is pleased that some action has been taken in response to urgent recommendations issued during 2015/16.⁹ But the potential remains for serious accidents to continue to occur as a result of the problems identified through our inquiries. The Commission considers more could be done to improve safety for pedestrians and vehicles at level crossings. It has placed this issue on its Watchlist.

1.3. The Commission continues to monitor other safety themes

- 1.3.1. The Commission has identified two other themes running through its inquiries. They are discussed below.

Non-adherence to standards or lack of standard operating procedures

- 1.3.2. In three of the inquiries closed in 2015/16, either a lack of standard procedures or non-adherence to existing procedures was identified as a safety issue, and in another, existing procedures weren't adhered to.¹⁰

⁷ Inquiry 15-101 *Pedestrian fatality, Morningside Drive level crossing, West Auckland, 29 January 2015.*

⁸ Refer to inquiry 14-101 *Collision between heavy road vehicle and the Northern Explorer passenger train, Te Onetea Road level crossing, Rangiriri, 27 February 2014.*

⁹ Inquiry 15-101 *Pedestrian fatality, Morningside Drive level crossing, West Auckland, 29 January 2015.*

¹⁰ Refer to the information in Appendix 3 for inquiries 12-104, 13-104 and 14-101.

- 1.3.3. Where safety systems are vulnerable to human error, or tasks are critical to safety, standard procedures must be in place. Instructions and check sheets must be clear and procedures adhered to.

Miscommunication or no requirement for information to be shared

- 1.3.4. In four of the inquiries closed in 2015/16 some kind of miscommunication, ambiguity or lack of requirement for sharing information was identified as a safety issue.¹¹ This is not a new issue. If safety actions haven't been taken in the course of an inquiry to remove such ambiguities, or to be clear about warnings and cautions (as in inquiry 13-003), the Commission has issued recommendations to do so (see the recommendations in inquiries 13-006 and 12-104).
- 1.3.5. The Commission reiterates that communication between people in safety-critical roles must be clear and concise, confirmed to be understood, and follow standard procedures.

1.4. The Commission's recommendations have improved transport safety

- 1.4.1. The Commission's recommendations are usually made to regulators or operators because they are best placed to make changes. Recommendations, especially where they are made to regulators, can require careful consideration and planning before they are implemented. The Commission keeps a recommendation 'open' until it is satisfied that sufficient action has been taken. It can take some time, therefore, before a recommendation is closed.
- 1.4.2. This section reports progress on recommendations the Commission has made in previous years, and the significant recommendations closed during the year. Each illustrates the impact the Commission is having on safety in the transport sector.

Regulatory changes to reduce the risk of substance impairment make progress

- 1.4.3. On 10 February 2016, the Associate Minister of Transport announced the introduction of new measures for managing drugs and alcohol in the aviation, rail and maritime sectors:
- requiring, by 2017, all operators in the commercial aviation and maritime sectors to have drug and alcohol management plans that must include random testing
 - allowing regulators to undertake non-notified drug and alcohol testing
 - undertaking more policy development to consider giving the Commission the ability to require alcohol and drug testing of survivors involved in accidents and incidents.
- 1.4.4. In announcing the measures, the Associate Minister noted they were the result of a review prompted by the Commission's recommendations from its inquiry into the hot-air balloon crash near Carterton in January 2012.¹²
- 1.4.5. The Commission welcomes the new measures. The consumption of alcohol and cannabis and the use of other performance-impairing substances have featured repeatedly in occurrences investigated by the Commission. We have made a series of findings and recommendations in relation to this issue; we have also placed it on our Watchlist to give our concerns further emphasis (refer to paragraph 2.1.20 for more information about the Watchlist).

International maritime training, education and certification systems improved

- 1.4.6. In June 2016 Maritime New Zealand reported to the Commission on submissions it had made to the IMO in February 2015. The submissions were in response to one of the Commission's

¹¹ Refer to the information in Appendix 3 for inquiries 13-006, 13-003, 12-104 and 12-105.

¹² Inquiry 12-001 *Hot-air balloon collision with power lines and in-flight fire, near Carterton, 7 January 2012.* (Safety recommendation 012/13.)

recommendations in its report on the grounding of the container ship *Rena*.¹³ The recommendation and submission related to the sharing amongst IMO member states of information about their respective maritime education, training and certification systems. The recommendation was subsequently closed.

- 1.4.7. The inquiry into the grounding of the *Rena* was a major inquiry for the Commission. It is a satisfactory outcome that the maritime regulator was responsive to, and accepted, the recommendations that were directed to it. It also demonstrates how the Commission's work can have international impacts.

Maritime New Zealand reviews the management of coastal navigation

- 1.4.8. On 11 February 2016 Maritime New Zealand released its *Coastal Navigation Safety Review Report*. In releasing the report, the Maritime New Zealand Director explained that the review had given consideration to the Commission's recommendations in its report on the grounding of the container ship *Rena*.¹⁴ These recommendations related to the collection of data on shipping movements around New Zealand, and monitoring and controlling the use of virtual aids to navigation around the New Zealand coast.

KiwiRail improves safety at Melling rail station in Wellington

- 1.4.9. During the year the Commission closed two urgent recommendations made to KiwiRail in relation to two accidents in which trains had collided with the stop block at Melling Station, in April 2013 and May 2014.¹⁵ The Commission recommended that KiwiRail:

... replace the type of stop block that was in use at Melling with a new shock-absorbing type design that would be matched to the likely impact forces from a Matangi train.

And that it:

... relocate the terminal pole for the overhead line at Melling Station to be clear of the potential train overrun path.

- 1.4.10. Both recommendations were closed during the year. KiwiRail has replaced the buffer stop at Melling Station. It has also moved the terminal pole for the overhead power line, reducing the consequences of a train overrunning the platform and striking the stop block.

Ships over 500 gross tonnage to be fitted with bridge navigation watchkeeping alarm systems

- 1.4.11. Another recommendation closed in 2015/16 related to the grounding of the *Anatoki* in 2010.¹⁶ The *Anatoki* was a New Zealand-registered coastal cargo vessel. On 6 May 2010, on a short coastal voyage from Nelson to Tarakohe, it ran aground off Rangihaeata Head in Golden Bay.

- 1.4.12. The Commission found that the grounding occurred because the progress of the *Anatoki* was not being monitored at the time and that the performance of the mate on watch was probably

¹³ Inquiry 11-204 *Container ship MV Rena grounding on Astrolabe Reef, 5 October 2011*. The Commission recommended that the Director of Maritime New Zealand promote, through the appropriate IMO forum, the importance of sharing amongst member states information regarding the quality of member states' maritime education, training and certification systems, including a consideration of making the five-yearly evaluations of member states' systems available to other member states. (Safety recommendation 012/14.)

¹⁴ Recommendations to the Director of Maritime New Zealand from inquiry 11-204 were that he:

- consider the use of virtual aids to navigation and ... work with regional councils and port companies to control the use of virtual aids to navigation until they have been fully assessed and appropriate performance criteria set ... (safety recommendation 013/14)
- begin to collate national data on shipping movements around the New Zealand coast that will in future enable Maritime New Zealand and local government authorities to monitor the potential need to introduce ship routing of some form (safety progress 014/14).

¹⁵ Inquiries RO-2013-103 and RO-2014-103 *Passenger train collisions with Melling Station stop block, 15 April 2013 and 27 May 2014*. At the time of writing these two inquiries were open; they will be reported together.

¹⁶ Inquiry 10-202 *MV Anatoki, grounding, off Rangihaeata Head, Golden Bay, South Island, 6 May 2010*.

impaired by acute sleep loss. The Commission considered that a working bridge watch navigational and alarm system should have been fitted to the *Anatoki* to mitigate the known risk of one-man bridge operations. Had one been fitted the mate might have been alerted in time to prevent the grounding. The Commission's recommendation was that:¹⁷

... the Director of Maritime New Zealand requires New Zealand-registered coastal vessels operating under one-man-bridge-operation to have a bridge watch navigational and alarm system to mitigate the known risk of sole watchkeepers falling asleep or becoming distracted from monitoring the progress of their vessels.

- 1.4.13. The Director of Maritime New Zealand subsequently amended a Maritime Rule to require ships over 500 gross tonnage to be fitted with bridge navigation watchkeeping alarm systems, which were to be in operation at all times when the ships were underway.

Pilots educated on the appropriate phraseology to use in emergency situations

- 1.4.14. In 2011 the Commission published its report on an incident in which a Cessna C208 aeroplane experienced a reduction in engine performance and a strong smell of fuel in the cabin.¹⁸ The potential consequences of the incident should have prompted the pilot to make an urgency or distress call to air traffic control to ensure an appropriate level of emergency services responded. However, the pilot used a term that did not indicate the appropriate level of response. In its report the Commission noted that in previous reports it had commented on the need for pilots to declare the appropriate level of urgency using the standard phraseology for the situation.

- 1.4.15. The Commission made the following recommendation:¹⁹

The Commission recommends that the Director of Civil Aviation promote to all pilots and operators, through the best means available, the need to use the appropriate phraseology to declare a level of urgency or distress that reflects the true nature of an emergency.

- 1.4.16. In 2012 the CAA used its annual aviation safety seminar to educate pilots around New Zealand on radio communications and the need to use appropriate phraseology in emergency situations.

- 1.4.17. The issue of miscommunication continues to arise in the Commission's inquiries – see paragraph 1.3.4.

Pilot training improved for mountain flying

- 1.4.18. In 2009 the Commission released a report on a fatal aeroplane accident in Te Urewera National Park in 2007.²⁰ The inquiry determined that the instructor did not have the training and skills necessary to recognise the dangers associated with flying over mountainous terrain or make an early decision to avoid entering the valley. The Commission recommended that the Director of Civil Aviation deal with the lack of formalised aeroplane mountain-flying training. The Commission noted that a lack of training had been implicit in several mountain-flying accidents in the previous 15 years, with at least 29 lives lost.

- 1.4.19. Since issuing the recommendation there have been considerable changes in pilot training syllabi for private and commercial pilots. These changes have resulted in pilots being better trained to fly in New Zealand's mountainous terrain, and the reduction in these types of

¹⁷ Safety recommendation 019/12.

¹⁸ Inquiry 10-003 Cessna C208 Caravan, ZK-TZR, engine fuel leak and forced landing, Nelson, 10 February 2010.

¹⁹ Safety recommendation 001/11.

²⁰ Inquiry 07-011 Cessna A152 Aerobat, ZK-KID, impact with terrain, Te Urewera National Park, 23 kilometres south-east of Murupara, 26 October 2007.

accident confirms this. There has also been extensive publicity, with the publishing of numerous articles in the CAA's bimonthly magazine sent to all licence holders.

1.4.20. The recommendation was closed in August 2015.

Other recommendations closed

1.4.21. Four recommendations were issued to an operator after an inquiry into the loss of control of an aircraft on take-off from Queenstown aerodrome in August 2005.²¹ The recommendations related to safety procedures. The operator ceased trading in 2008, with its air operator's certificate effectively passing to a new company. The new company acknowledged the importance of the recommendations, and provided the Commission with evidence that its procedures were in accordance with the intent of the recommendations.

1.5. No repeat accidents – ever!

Measuring the Commission's contribution to safer transport

1.5.1. The Commission's purpose is to determine the circumstances and causes of accidents and incidents with a view to avoiding similar occurrences in the future. Its vision is that there are *No repeat accidents – ever!*, thus supporting the desired outcome of safer transport. However, measuring the Commission's influence on this outcome is difficult.

1.5.2. As described in last year's *Annual Report*, the Commission had been unsuccessful in finding reliable data for quantitative measures of the transport sector outcomes to which it contributed. The aim had been to develop a small set of trend indicators for occurrence types related to the Commission's caseload. (Refer to the table headed 'Outcome measures' on page 10 of the *Statement of Intent 2015 – 2019*.)

1.5.3. To measure outcomes, the Commission this year focused on more detailed information about the improvements to transport safety resulting from its recommendations, and an analysis of themes arising from safety issues identified during its inquiries. The Commission considers that looking at the themes of safety issues and the actions taken by industry participants in response to its recommendations gives a more comprehensive picture of its contribution to transport sector outcomes.

Measuring impact through investigation, learning and influence

1.5.4. The Commission has one output class: Inquiries. Details about the Commission's output and performance measures can be found in:

- the Statement of Performance (against the forecast in the *Statement of Performance Expectations 2015 – 16*), which follows in section 3 on page 31
- Appendix 1, which lists the Commission's full casebook of inquiries open at any time during the financial year²²
- Appendix 2, which shows caseload data for the previous three years.

1.5.5. Although measuring impacts is difficult, the actual or potential impacts of an individual inquiry's progress or output can be assessed from the key features of the final inquiry report: findings, identified safety issues, safety actions and recommendations. These have been described earlier in this report (see paragraph 1.1.6). Appendix 3 sets out the key lessons, safety actions and recommendations from the 13 inquiries and one interim report completed

²¹ Inquiry 05-008 Cessna U206G, ZK-WWH, loss of control on take-off, Queenstown Aerodrome, 10 August 2005.

²² An up-to-date list of current inquiries, published inquiry reports and safety recommendations is available on the Commission's website www.taic.org.nz along with general corporate information.

during the year. The Commission's website (www.taic.org.nz) hosts copies of the inquiry and recommendations databases.

Summary of output and performance

- 1.5.6. Below are key points of the Commission's output for 2015/16 (2014/15 comparison figures are shown in brackets).
- 1.5.7. Key points for the quantity and timeliness of inquiries are:
- during 2015/16 the Commission opened 11 (11) domestic inquiries
 - the total number of domestic inquiries completed in 2015/16 – 13 plus one interim report/urgent recommendations (11 plus one interim report) – was less than the target for the year (20 to 25 and two interim reports). The lower-than-target result was expected given the level of capacity available at the time. As explained in the following section, performance will increase with the Commission's additional resources
 - cases open at the end of the year had been open for an average of 341 (359) working days. Twenty-three percent (54%) of cases closed were completed within 220 and 440 days
 - the Commission also assisted overseas peer agencies during the year with nine (five) inquiries with a New Zealand connection. All nine were in the aviation mode. This work also takes some investigator time.
- 1.5.8. Key points for safety recommendations are:
- ten (36) safety recommendations were closed from six (26) inquiries. They had been open for an average of 1,336 (2,296) working days
 - at the end of 2015/16, 222 (211) safety recommendations were open with an average age of 1,402 (1,316) working days. The increasing average age is due in part to historical safety recommendations, which may have been superseded by sector restructuring and technology changes. They require research and formal decisions by the Commission before they can be closed. The Commission continues to work with recipients to close historical recommendations.
- 1.5.9. Readers are cautioned against making direct comparisons with respect to safety recommendations. Differences can occur because a large number of related recommendations generated by a single inquiry may be closed at the same time, or because of the particular nature of inquiries underway or closed in a particular year.

Timeliness of reports remains a focus for the Commission

- 1.5.10. When staffed with nine fully effective investigators, the Commission estimated it should complete between 20 and 25 domestic inquiries a year (two or three per investigator), taking an average 330 working days (18 months), with half of all inquiries ideally completed within 220 to 440 working days (one to two years). The target number of inquiries completed did not change for 2015/16 despite the six additional investigators recruited during the year. It takes some time before investigators are considered fully effective, usually two or three years of training and experience. Over time the target for completed inquiries will be re-set.
- 1.5.11. Timeliness targets were not achieved during the year. The target for the percentage of inquiries closed between 220 and 440 working days was 50%; of the 13 inquiries closed during the year, three (23%) fell within this range. This was partly due to the focus on closing 'aged' inquiries. Two maritime inquiries closed this year were older than 1,000 working days.²³

²³ Inquiries 11-202 *Roll-on-roll-off passenger ferry Monte Stello, contact with rock, Tory Channel, Marlborough Sounds, 4 May 2011*; and 10-206 *Coastal container ship Spirit of Resolution, grounding on Manukau Bar, Auckland, 18 September 2010*.

These inquiries had been given lower priority because of the Commission's heavy workload and level of resources available at the time. A factor was the inquiry into the running aground of the *Rena* in October 2011, which consumed the Commission's maritime resources for the following three years.²⁴ In one of the older cases there were no urgent safety issues and, in the other, an urgent safety issue was identified early in the inquiry and corrective action taken. The newly recruited investigators contributed to the Commission's capacity to close these lower-priority older inquiries.

- 1.5.12. The 2015/16 target for the second timeliness measure, the (12-month rolling) average age of open domestic inquiries, was 330 working days. The actual average as at 30 June 2016 was 365 working days. This reflects some older cases remaining in the Commission's casebook. However, the Commission expects that timeliness will improve with its continuing focus on closing these older cases, and increased capacity.

²⁴ Inquiry 11-204 *Container ship MV Rena grounding, on Astrolabe Reef, 5 October 2011*.

2. Non-financial reporting: delivering effective investigations

2.1. Organisational focus has been on managing new resources

Strategic direction is maintained

- 2.1.1. The Commission's vision is *No repeat accidents – ever!*. Like any vision, it is an aspirational one. It is unlikely to be achieved due to accident risk that is either deliberately accepted or cannot be eliminated. It can only be realised by the concerted efforts of individuals and private and public sector entities involved in transport.
- 2.1.2. The Commission's particular contribution towards its vision is captured by its mission statement of 'Safer transport through investigation, learning and influence'. The vision and mission statements are consistent with the Commission's statutory purpose 'to determine the circumstances and causes of accidents and incidents with a view to avoiding similar occurrences in the future'.
- 2.1.3. The Commission seeks to pursue its goal by working to ensure that safety issues are properly identified and resolved. The Commission has set five strategic objectives to ensure that it 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.
- 2.1.4. 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 organisational themes setting management priorities for the Commission's daily operations and ongoing organisational development. The operating intentions for 2015/16 are shown in Table 3.

Table 3: Strategic objectives and intentions for 2015/16

Strategic objectives	Strategic intentions for 2015/16
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

A change management programme is ensuring that the new funding is applied successfully

2.1.5. To ensure that the additional funding is applied successfully, the Commission has in place a change management programme to support and enhance organisational performance. The projects comprising the programme are:

- employment relations
- recruitment
- change infrastructure
- case management
- quality assurance
- evidence handling
- development and culture
- inquiry protocols.

Running the change programme

2.1.6. A Change Programme Board oversees activities relating to the change management programme, to ensure that it is well planned and delivered. The emphasis in 2015/16 was on embedding new resources and processes, including recruiting, inducting and training new staff, particularly investigators. These activities are discussed below.

2.1.7. The year was an especially busy one for Commission management. In 2015/16 the Commission's funding increased from \$3.865 million to \$5.233 million. The additional funding allowed for an increase in staff numbers (six investigators and three corporate staff). The Commission's output and strategic direction remain unchanged, but the new funding did reshape the timing of strategy implementation and will change output targets over time.

2.1.8. This section continues with an overview of the Commission's change management programme, designed to support and enhance organisational performance in light of the new funding. The paragraphs that follow relate to the individual strategic operating intentions. Each begins by setting out the measure(s) and target(s) for the operating intention, as set out in the *Statement of Intent for 2015 - 2019*.

Improving operating efficiency

2.1.9. Three of the projects making up the change management programme were completed: employment relations, recruitment and change infrastructure. The case management, quality assurance and evidence handling projects were rolled into one larger Quality Assurance (QA) Framework project because of the dependencies between them. The scope was expanded to include a full process review. This work is well underway and will ensure that our systems are effective. The expected completion date is December 2016.

2.1.10. The development and culture project remains in progress. Its aims underpinned much of the work undertaken in the completed projects (employment relations, recruitment and change infrastructure), which in turn provided a foundation for the next stages of the development and culture project. Development and culture activities during 2015/16 included a series of workshops for staff to help develop an understanding of teamwork, stress management and how the Commission fits within the broader machinery of government. Future work will include talent management and succession planning.

2.1.11. During the year a draft inquiry protocols framework was developed and approved. See paragraph 2.1.35 for more information.

- 2.1.12. The Commission also looked at opportunities to achieve better value in the services it purchases. As it is a small Crown entity, economies of scale are often hard to come by, so the all-of-government model contracts for Crown entities, prepared by the Ministry of Business, Innovation and Employment, are helpful. In this financial year the Commission adopted the all-of-government banking services contract.
- 2.1.13. Shared services initiatives that would help to improve operating efficiencies are an ongoing consideration at the Commission. During the year the Commission considered a shared services approach for its human resources functions; however, outsourcing proved more efficient in terms of cost and services supplied because of the Commission's small size.

Develop and maintain inquiry stakeholder programme

- 2.1.14. At the time of writing a draft inquiry stakeholder contact programme was under assessment at senior management level. It involved a policy statement, guidelines and tools. The Communications team had also started implementing a new next-of-kin stakeholder process that ensures the delivery of consistent messages across all inquiries.
- 2.1.15. The Commission undertook its fourth independently conducted, formal survey of inquiry participants and key stakeholders. The 2016 stakeholder survey was a qualitative survey of respondents from regulatory agencies, operators and other sector groups. The purpose of the survey was to gauge stakeholders' views of the Commission staff's overall performance, communications and operating style and demonstration of ascribed corporate values, and the extent to which stakeholders believed the Commission was helping to improve transport safety.
- 2.1.16. Overall, the results were positive. Respondents for the most part held the Commission in a positive light and believed it to be honest, independent and working well with stakeholders. Most respondents considered that the Commission fulfilled its statutory obligations in delivering independent and impartial inquiry reports, and that the Commission was transparent and open.
- 2.1.17. The main issue for our stakeholders was the timeliness of our investigations and the release of reports. These results were similar to previous years' results. A key strategic objective of the Commission is to produce timely reports. The additional resources received are allocated towards having more investigative staff to handle cases and improving processes to support the effective delivery of inquiries to completion in a timely manner.
- 2.1.18. The Commission has a rolling programme of reviews of its memoranda of understanding (MOUs) with organisations with which it works closely. The programme of reviews helps to ensure that the operating processes that support the Commission's working relationships with these organisations remain efficient and effective. In November 2015 the Commission signed an MOU with the Chief Coroner. The coroners and the Commission may on occasion investigate the same accident. The purpose of the MOU is to set out operating protocols between the two organisations, so that we can co-operate with each other within the parameters of our own statutory functions. An MOU with the Australian Transport Safety Bureau was developed, and at the end of 2016/17 it was ready for signing. The MOU with the Bureau has a particular emphasis on mutual assistance in case of a major accident or incident.
- 2.1.19. The Commission maintained its programme of international engagement in 2015/16 through the attendance of the Chief Commissioner and Chief Executive at the annual International Transportation Safety Association (ITSA) chairpersons' meeting. ITSA is the main forum for strengthening international relations. The purpose of the Association is to promote independent investigations into the causes of transport accidents, and for member agencies to provide mutual assistance in in-depth investigations. The Commission considers attendance at the ITSA and other meetings, such as the Marine Accident Investigators' International Forum, as crucial for building capability and maintaining responsive, reciprocal stakeholder relationship programmes. This is especially important given the size of the Commission.

Should a major accident occur, the Commission would need to draw on the assistance of these overseas agencies; having existing connections and relationships in such circumstances would mean a better and swifter response.

Communicate more about what we do, learn and recommend to improve transport safety

2.1.20. The Commission reviewed its Watchlist, the first review since its inaugural publication in 2015. The Watchlist, a safety monitoring publication, presents the Commission's highest-priority safety issues in the aviation, maritime and rail transport sectors. The first issue of the Watchlist included three topics:

- The issue of people in safety-critical roles being impaired as a result of using drugs or alcohol. (See the section beginning at paragraph 1.4.3 for progress in this matter.)
- 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 that they understand and practise safe boating behaviour before getting out on the water.

2.1.21. Two new items were subsequently added:

- Safety for pedestrians and vehicles crossing rail tracks
- Robinson helicopters: mast bumping accidents in New Zealand.

2.1.22. The Commission's website continued to provide a searchable database of all current and closed inquiries and their published reports, as well as safety recommendations. Website users could continue to self-manage subscriptions to be notified of the publication of reports in modes of interest. The development of a new website with enhanced features had been delayed in previous years because of resource constraints but now, with the appointment of a senior communications adviser, this work is nearing completion.

Acquire, develop and retain strategic skills

2.1.23. The recruitment project of the change management programme was completed during the reporting period. All six investigator positions, and all three corporate staff positions, were filled. The Commission has female investigators for the first time, with two among the new appointments.

2.1.24. The Commission's training programme in 2015/16 concentrated on new staff, particularly investigators. Four of the six new investigators completed the 'fundamentals' course at Cranfield University in the United Kingdom. The other two had already completed the fundamentals course; one of those undertook advanced training at Cranfield during the year. In the 2016/17 financial year the Commission plans to send five of the new staff to complete the advanced course. This will complete the initial induction training for the new investigators.

2.1.25. Attendance at the Cranfield course ensures that investigators are trained in common international practices. It also supports opportunities for inter-agency collaboration, and holds real benefits should New Zealand experience a major accident. In such a situation the Commission would have to draw on the assistance of international colleagues, and inter-operability with other nations would be critical to a rapid and effective response. No Southern Hemisphere institution offers the equivalent comprehensive accident investigation training.

2.1.26. In addition to the Cranfield programme, specialist courses in human factors and interviewing techniques are planned in the coming 12 months. On-the-job training and mentoring by senior staff has been formally planned. The new investigative staff are already being involved in site investigations and it is expected that they will be considered fully qualified within two or three years.

- 2.1.27. During the 2015/16 year a recent European graduate of Cranfield University, who has master's qualifications in aeronautical engineering and human factors, completed her five-month internship with the Commission. This was the Commission's first experience in taking on an intern from overseas. Commission managers judged the internship a success. Such opportunities may be offered again as an effective contribution to succession planning within the organisation.

Develop and maintain a workforce plan

Measure	Statement of Intent target for year ended 30 June 2016
Workforce plan developed	Revised performance management system finalised and operational

- 2.1.28. The Commission has an ageing workforce. A workforce plan was developed to manage the risk of an impending wave of likely retirements and, with those retirements, a loss of skills and experience amongst professional staff. The workforce plan is being actioned through several projects. For example, actions relating to maintaining workforce capacity (such as hiring cross-modal investigators and considering recruitment incentives to attract a broader range of investigators) were taken through the recruitment and employment relations projects of the change management programme. Some aspects of the workforce plan, such as retirement planning, were taken into business-as-usual management. The revised performance management system is in place.
- 2.1.29. The QA Framework project also incorporates some workforce plan actions, such as the team-based approach to investigations being developed.
- 2.1.30. Other areas for focus in the 2016/17 financial year include retention and succession planning, non-technical training (these form part of the development and culture project), and identifying, managing and developing talent.

Develop and maintain inquiry and investigation best practice

Measure	Statement of Intent target for year ended 30 June 2016
Review against ICAO standards every two years	Self-review and external review
Complete review of investigation and inquiry guidelines	Review completed.

- 2.1.31. The CAA has a programme for preparing New Zealand for the upcoming ICAO audit in December 2016, which will include the Commission's conformance in its role as New Zealand's independent safety investigation agency (ICAO terminology). The programme involves two workstreams. The first is closing off the non-conformities and observations raised in New Zealand's ICAO audit in 2006 (where practicable). The second relates to the new ICAO Universal Safety Oversight Audit Program (Continuous Monitoring Approach), which has evolved since New Zealand underwent its last ICAO audit in 2006. ICAO has generated a set of protocol questions that are based on compliance with ICAO standards and recommended practices.
- 2.1.32. The QA Framework project encompasses a full review of investigation processes. As noted above, it is due for completion by December 2016.
- 2.1.33. In September 2015 the Chief Executive commissioned a review to strengthen operating procedures and improve organisational and individual performance as a result of the Commission releasing its addendum to report 10-009 *Walter Fletcher FU24, ZK-EUF loss of*

control on take-off and impact with terrain, Fox Glacier aerodrome, South Westland, 4 September 2010.

- 2.1.34. The review identified three key areas where the investigation process could have been better. These related to the resourcing of the investigation, the management of evidence at the accident site and the analysis of the evidence. All these matters were dealt with.
- 2.1.35. The Commission is developing inquiry protocols to provide general guidance to successive Commissions on the inquiry process, including appropriate questioning at various points in the process. The protocols will also provide tools for the Commission to influence more directly the work of its investigators, for example through written directions on matters of process or policy.
- 2.1.36. As noted above, the draft inquiry protocols framework was developed and approved during 2015/16. In the next financial year, 2016/17, the framework will be further refined.

2.2. The Commission was active in its response to new health and safety legislation

- 2.2.1. In anticipation of the changes to the Health and Safety at Work Act 2015, which came into effect on 4 April 2016, the Commission undertook a revision of its health and safety policy and processes. Changes are required and are under development as part of the full process review currently in progress (see paragraph 2.1.9), and these have been given priority in light of the new Act.
- 2.2.2. An important aspect of health and safety for Commission investigation staff is training related to the hazards they might encounter travelling to, and at, accident sites. This training relates to helicopter winching, helicopter underwater escape, alpine survival, blood-borne pathogens and the use of safety and communications equipment, as well as managing stress.
- 2.2.3. The Commission receives a health and safety debriefing after each visit by investigators to an accident site. Health and safety is also a regular item on the agenda for the Commission's monthly meetings.

2.3. Progress continues on implementing information management and communications technologies

- 2.3.1. The Commission's *Information Management and Communications Technologies (IM&CT) Strategy and Service Plan 2015/16* was approved in August 2015. A senior information management adviser has since been appointed to help implement the work programme, together with a fixed-term contractor. The additional resources meant that several of the IM&CT projects were completed during 2015/16. These included upgraded hardware across the organisation, a review of security (including new processes and guidelines), and a review of physical records, which included the start of a formal disposal programme.

2.4. Corporate organisation

Workforce profile

- 2.4.1. The Commission is a small organisation that relies on the knowledge, skills and professionalism of its specialist workforce. As at 30 June 2016 the Commission had a total of 29 staff including the Chief Executive; four were part time and one was on a fixed-term contract.

Table 4: Employee workforce composition

		As at 30 June	
		2015	2016
Total number of staff		22	29
Gender	Male	12	18
	Female	10	11
Ethnicity	European	21	26
	Māori	0	0
	Asian	1	1
	Pacific	0	1
	Other	0	1
Age (years)	<51	10	13
	51-55	3	4
	56-60	3	4
	>60	6	8
Disability	Yes	0	0
	No	22	29

Review of employment practices

- 2.4.2. A review of employment practices was completed at the end of the last financial year, in anticipation of the 2015/16 recruitment programme. The aim was to ensure that the organisation could continue to attract and retain the right people with the right skills and competencies, and was supported by the right systems and processes. The review recommended a simplification of performance management, a more consistent approach to employee contractual arrangements, and a review of remuneration practices.
- 2.4.3. The recommended changes were implemented during 2015/16. Two key activities were the organisation's performance management and remuneration systems. Changes to the performance management system were completed. They were designed to align organisational goals and individual effort, and ensure clarity about the link between individual performance and remuneration. The changes to the remuneration system are now in place, with the aim of ensuring reliable labour market information for specialist staff. Also, a remuneration banding structure was introduced to enable the organisation to support career aspirations in an affordable and sustainable manner.

Organisational culture

- 2.4.4. The Commission's employees come from a range of specialised disciplines, from the transport and other sectors, giving rise to a strong professional culture.

- 2.4.5. The Commission has strong international relationships with its peer organisations. Its standing among its peers is enhanced through its investment in internationally recognised accident investigation training and ongoing professional development for corporate staff.
- 2.4.6. The Commission actively encourages investigative and other staff to work together in multi-disciplinary teams on accident cases and projects.

2.5. **Developing and maintaining staff**

Recruitment

- 2.5.1. The Commission is an equal opportunities employer. It 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 assure the suitability of selected candidates.
- 2.5.2. All new employees and other workers, for example contract staff, are subject to an individualised induction process to help them assimilate quickly into the organisation and understand its expectations. These expectations include those set out in the code of conduct for the State Services 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

- 2.5.3. 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.
- 2.5.4. The Commission's training programme ensures that 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. Investigators may also take up modespecific training and professional education opportunities beyond the maintenance of professional credentials that might be required for their role. The training of new staff, especially investigators, was a major activity for the Commission during the year (see paragraph 2.1.24).
- 2.5.5. The Commission also supports professional corporate staff to maintain currency in their professional disciplines. Corporate staff are funded to attend professional courses and international working meetings. Table 5 shows the training hours for investigators and other staff in 2015/16.

Table 5: Training hours for 2015/16

		2015/16 Target	2015/16 Actual	2014/15 Actual
Training hours per annum (for staff employed for the full 2015/16 year) <i>Target is based on 100 hours per annum per investigator, and 40 hours per annum for other staff plus one tertiary programme (negotiated)</i>	Investigators	1,000 hours	670	997
	Other staff	200-400 hours	816	830
Training hours per annum (for staff recruited during 2015/16)	Investigators		1,234	
	Other staff		241	

- 2.5.6. During the year the Commission put into place an organisation-wide approach to development opportunities. The purpose is to enable a consolidated performance and career development opportunity for all employees.

2.6. Good employer initiatives

Work design

- 2.6.1. As a small organisation the Commission requires flexibility in the workforce to respond quickly 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) for employees who are required to work in the weekends.
- 2.6.2. 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

- 2.6.3. 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

- 2.6.4. The Commission remains committed to promoting a safe and healthy working environment for employees. To help achieve this objective the Commission contributes to gym memberships or similar exercise-related subscriptions, contributes to eye examinations and prescription glasses, and funds optional 'flu vaccinations. 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 and other staff deployable to accident sites.
- 2.6.5. The Commission remains committed to supporting health and safety requirements by having floor wardens and trained first aiders in the workplace, providing fully stocked first aid kits and civil defence resources on each floor and providing regular health and safety training. Section 2.2 discusses the Commission's response to the new health and safety legislation that came into effect in April 2016.

Harassment and bullying prevention

- 2.6.6. 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 the State Services Commission's guidelines. The Commission's position on harassment, including sexual harassment and bullying, is made known to new employees and other onsite workers during inductions. This ensures that a strong and clear message about unacceptable behaviour is delivered early in an employee's working life with the Commission.

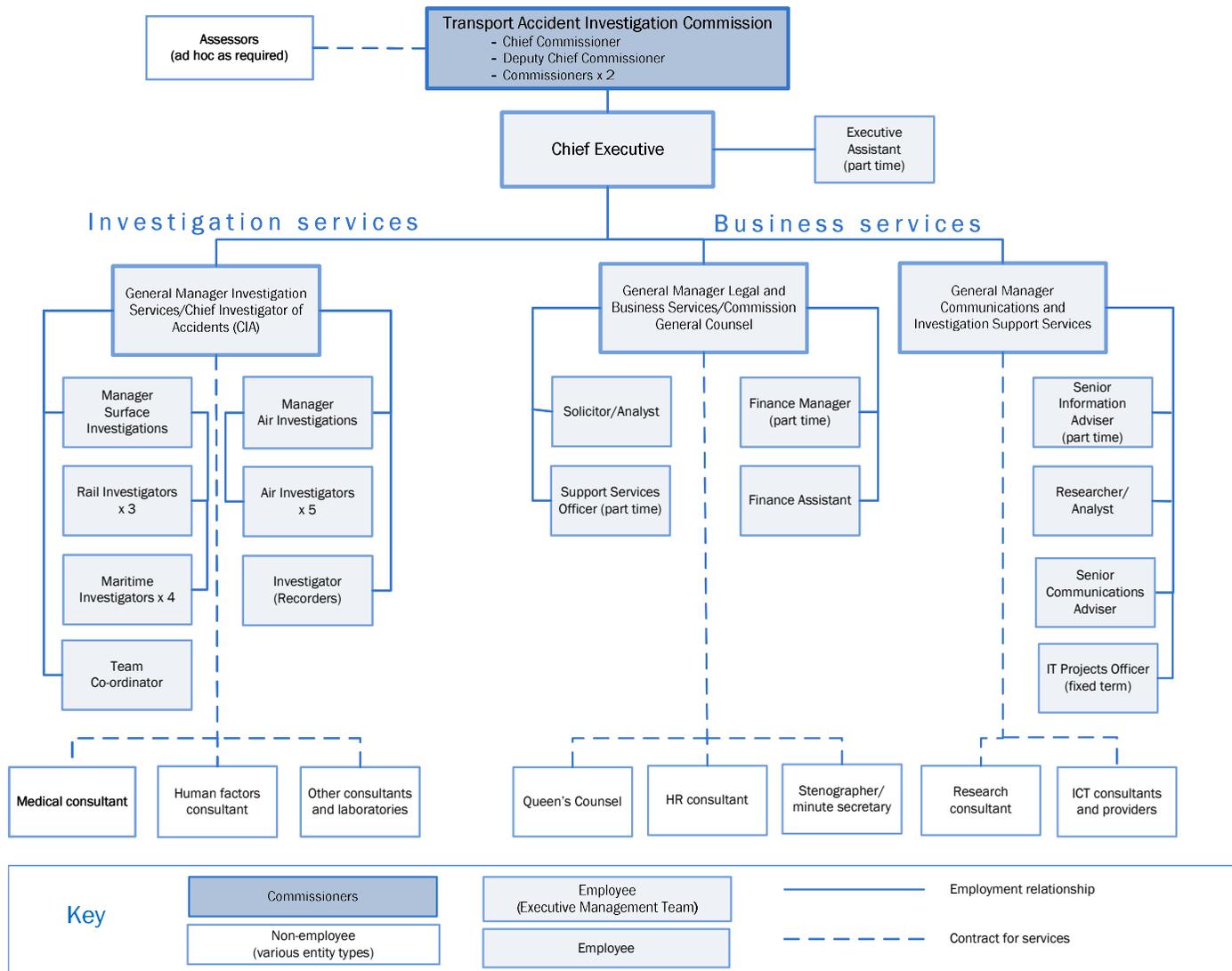


Figure 2: Organisational chart as 30 June 2016

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 2016.



Peter McKenzie, QC
Deputy Chief Commissioner



Jane Meares
Commissioner

31 October 2016

3. Statement of performance for output targets

- 3.1.1. 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 in Appendix 1 and in Table 1 on page 7. Refer to the statement of comprehensive revenue and expense in section 4 for the revenue and expenditure of this output class. Table 6 and Table 7 report against the targets set out on pages 3 and 4 of the *Statement of Performance Expectations 2015 – 2016* (SPE).

Table 6: Performance measures for the year ended 30 June 2016 (financial, volume, timeliness and quality)

Measure	Actual 2014/15	Actual 2015/16	SPE Target 2015/16
Financial			
Average cost of domestic inquiries closed*	\$302k	\$290k	\$127k ¹
Volume			
Number of domestic inquiries completed*	11	13	20-25
Number of interim reports published	1 [#]	1	2
Number of inquiries by overseas jurisdictions assisted*	5	9	4-8
12-month rolling average of domestic inquiries in progress at each month's end* (30 June data)	36 ^{2, 3}	34	30
Recruitment and training of additional staff*	New measure	Recruitment of all new positions was completed as agreed	As agreed between the Ministry of Transport and Commission
Timeliness			
12-month rolling average of age (workings days) of domestic inquiries in progress at each month's end	317 ³	365 ⁴	330
Percentage of domestic inquiries closed between 220 and 440 working days	55% [#]	23% ⁵	50%
Quality			
Judicial reviews of Commission inquiries that overturn decisions or identify process issues*	nil	nil	nil
Successful challenge to an ombudsman, the Privacy Commissioner or Human Rights Commission of an administrative decision or action	nil	nil	nil

Notes

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

* Vote Transport performance measures for Non-Departmental Output Expenses: Accident or Incident Investigation and Reporting (M72).

[#] This measure was new from 2015/16, with 2014/15 data included for information purposes.

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 2016 was 31 (compared with 33 as at 30 June 2015).

³ Some figures for 2014/15 have been recalculated since the publication of the *Annual Report 2014 - 2015*. The recalculated figures now include report 10-009R *Addendum to Final Report 10-009 Walter Fletcher FU24, ZK-EUF loss of control on take-off and impact with terrain, Fox Glacier aerodrome, South Westland, 4 September 2010*. This report was published in October 2015. It was subsequently added to the casebook

because it represented a significant piece of work in its own right and absorbed considerable resources. The recalculated figures (with previously reported figures in brackets) are:

- inquiries in progress: 33 (32)
- number of domestic inquiries in progress as at 30 June (12-month rolling average): 36 (35)
- average age (working days) of domestic inquiries in progress as at 30 June: 359 (362)
- average age (working days) of domestic inquiries in progress as at 30 June (12-month rolling average): 317 (321).

⁴ The increase in the 12-month rolling average of age of domestic inquiries compared with 2014/15 reflects the ageing nature of the casebook. Although the number of cases open was lower than in the previous year, there were more cases close to the 440-working-day margin than in prior years.

⁵ The 2015/16 actual result is 32% lower than the 2014/15 actual result. This is because a focused effort was made in closing off cases older than 440 working days, predominantly in the rail mode. The forecast is a target and assumes that a smaller proportion of the casebook sits within the 220 to 440 parameter.

Table 7: Performance measures for the year ended 30 June 2016 (impact)

Measure		Actual 2014/15	Actual 2015/16	SPE Target 2015/16
Impact				
Stakeholders' assessments of the Commission's work on transport safety		Most stakeholders believe Commission having positive impact	Most stakeholders believe Commission having positive impact ¹	See note 4
Average age of open safety recommendations		Average increased	Average increased ²	Average declines
Agencies' response to investigations	Proportion of safety recommendations accepted by recipients upon issue*	67% a further 17% were partially accepted or accepted conditional on resources [#]	70% a further 17% were partially accepted or accepted conditional on resources; no reply was received to one	90% of safety recommendations made are accepted by recipients upon issue
		Achieved Safety actions: 38 Recommendations: 12	Achieved Safety actions: 40 Recommendations: 23	Number of safety actions > Number of recommendations
		Achieved Safety actions: 38 Safety issues: 31	Achieved Safety actions: 40 Safety issues: 27	Number of safety actions > Number of safety issues
Historical impact review (qualitative measure)		0 ³	See note 4	Review determines that the Commission has had an impact (assessed by examining specific types of accident/incident)

Notes

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

*Vote Transport performance measures for Non-Departmental Output Expenses: Accident or Incident Investigation and Reporting (M72).

[#]This measure was new from 2015/16, with 2014/15 data included for information purposes.

¹ The stakeholder survey is a qualitative measure, and therefore reporting percentage responses has little statistical value. In 2015/16, 15 respondents participated in a telephone survey. The independent researcher conducting the survey concluded that 'Overall, [respondents] hold the Commission in a positive light and believe it to be honest, independent and working well with stakeholders'. But, 'the timeliness of investigations and the release of reports is still the key issue for stakeholders'.

² The average age of open safety recommendations increased from 1,316 working days as at 30 June 2015 to 1,402 working days as at 30 June 2016.

³ and ⁴ From 2016/17 the stakeholder surveys will be conducted six-monthly and will replace the historical impact reviews. The survey information is considered to provide more timely and comprehensive feedback on the Commission's performance.

4. Financial statements

TRANSPORT ACCIDENT INVESTIGATION COMMISSION STATEMENT OF COMPREHENSIVE REVENUE AND EXPENSE FOR THE YEAR ENDED 30 JUNE 2016

	Notes	Actual 2016 \$000	Budget 2016 \$000	Actual 2015 \$000
Revenue				
Funding from the Crown		5,233	5,233	3,960
Interest revenue		32	30	38
Other revenue	2	177	23	32
Total revenue		5,442	5,286	4,030
Expenditure				
Audit fees		19	18	18
Commissioners' fees	9	199	281	121
Depreciation and amortisation expense	5&6	167	162	138
Lease, rentals and outgoings		651	638	631
Personnel costs	8	3,094	3,063	2,252
Other expenses		1,494	1,124	928
Total expenditure		5,624	5,286	4,088
Net surplus/(deficit)		(182)	-	(58)
Other comprehensive revenue and expense		-	-	-
Total comprehensive revenue and expense		(182)	-	(58)

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 2016

Assets	Notes	Actual 2016 \$000	Budget 2016 \$000	Actual 2015 \$000
Current assets				
Cash and cash equivalents	3	1,189	1,048	1,049
Receivables	4	4	2	3
Prepayments		40	24	31
Total current assets		1,233	1,074	1,083
Non-current assets				
Property, plant and equipment	5	322	235	141
Intangible assets	6	572	550	660
Total non-current assets		894	785	801
Total assets		2,127	1,859	1,884
Liabilities and taxpayers' funds				
Current liabilities				
Payables	13	461	145	199
Employee entitlements	7	261	140	133
Total current liabilities		722	285	332
Non-current liabilities				
Employee entitlements	7	35	-	-
Total non-current liabilities		35	-	-
Total liabilities		757	285	332
Net assets		1,370	1,574	1,552
Equity				
General funds	14	1,370	1,574	1,552
Total equity		1,370	1,574	1,552

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 2016

	Note	Actual 2016 \$000	Budget 2016 \$000	Actual 2015 \$000
Balance at 1 July		1,552	1,574	1,610
Total comprehensive revenue and expense for the year		(182)	-	(58)
Balance at 30 June	14	1,370	1,574	1,552

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 2016

	Note	Actual 2016 \$000	Budget 2016 \$000	Actual 2015 \$000
Cash flows from operating activities				
Receipts from the Crown		5,233	5,233	3,960
Interest received		33	30	38
Receipts from other revenue		175	23	32
Payments to suppliers		(2,108)	(2,061)	(1,644)
Payments to employees		(2,931)	(3,063)	(2,305)
GST (net)		(2)	-	13
Net cash flows from operating activities		400	162	94
Cash flows from investing activities				
Purchase of property, plant and equipment		(249)	(137)	(33)
Purchase of intangible assets		(11)	-	(5)
Net cash flows from investing activities		(260)	(137)	(38)
Cash flows from financing activities				
Net cash flows from financing activities		-	-	-
Net (decrease)/increase in cash and cash equivalents		140	25	56
Cash and cash equivalents at the beginning of the year		1,049	1,023	993
Cash and cash equivalents at the end of the year	3	1,189	1,048	1,049

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 Inland Revenue. 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.

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 2016, and were approved by the Board on 29 September 2016.

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 include 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 \$30 million.

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

Revenue

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

Funding from the Crown

TAIC is primarily funded by 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 the 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 prices of the same or similar assets at the time the assets were 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 using the effective interest method.

Rental revenue

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

Foreign currency transactions

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

Leases

Operating leases

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.

Receivables

Short-term receivables are recorded at their face value, less any provision for impairment.

A receivable is considered impaired when there is evidence that TAIC will not be able to collect the amount due. The amount of the impairment is the difference between the carrying amount of the receivable and the present value of the amount expected to be collected.

Investments

Bank term deposits

Investments in bank term deposits are initially measured at the amounts invested.

After initial recognition, investments in bank deposits are measured at amortised cost using the effective interest method, less any provision for impairment.

Property, plant and equipment

Property, plant and equipment consist of the following asset classes: buildings, leasehold improvements, furniture and office equipment.

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

Additions

The cost of an item of property, plant or equipment is recognised as an asset if, and only if, it is probable that future economic benefits or the 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 or 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 amounts of the assets. 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 general funds.

Subsequent costs

Costs incurred subsequent to initial acquisition are capitalised only when it is probable that future economic benefits or the 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 costs 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%-20%
Computer equipment	1.5-10	10%-50%
Furniture and equipment	1.2-14	7%-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 are reviewed, and adjusted if applicable, at each financial year end.

Intangible assets

Software acquisition and development

Acquired computer software licences 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 expenses 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 life and associated amortisation rates of major classes of intangible asset have been estimated as follows:

Intangible asset	Useful life (years)	Amortisation rate
Software	2.1-10	10%-48%

Impairment of property, plant and equipment and intangible assets

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

Non-cash-generating assets

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

Value in use is determined using a depreciated replacement cost approach, a 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 the 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.

Payables

Short-term payables are recorded at their face value.

Employee entitlements

Short-term employee entitlements

Employee benefits that are due to be settled within 12 months after the end of the period in which an employee renders a 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.

Superannuation scheme

Defined contribution scheme

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.

Provisions

A provision is recognised for future expenditure of uncertain amount or timing when there is a present obligation (either legal or constructive) as a result of a past event, it is probable that an outflow of future economic benefits will be required to settle the obligation, and a reliable estimate can be made of the amount of the obligation.

Provisions are measured at the present value of the expenditure expected to be required to settle the obligation using a pre-tax discount rate that reflects current market assessments of the time value of money and the risks specific to the obligation. The increase in the provision due to the passage of time is recognised as an interest expense and is included in 'finance costs'.

Onerous contracts

A provision for onerous contracts is recognised when the expected benefits or service potential to be derived from a contract are lower than the unavoidable cost of meeting the obligations under the contract.

The provision is measured at the present value of the lower of the expected cost of terminating the contract and the expected net cost of continuing with the contract.

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 it is recognised as part of the related asset or expense.

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

The net GST paid to, or received from, Inland Revenue, including the GST relating to investing and financing activities, is classified as 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 expectations 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 disclosed below:

Estimating useful lives and residual values of property, plant and equipment

At each balance date the useful lives and residual values of TAIC's property, plant and equipment are reviewed. Assessing the appropriateness of useful life and residual value estimates of property, plant and equipment requires a number of factors to be considered, such as the physical condition of the assets, the expected period of use of the assets by TAIC, and the expected disposal proceeds from the future sale of the assets.

TAIC has not made any significant changes to past assumptions concerning useful lives and residual values.

Critical judgements in applying the Commission's accounting policies

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

Lease classification

Determining whether a lease agreement is a finance lease or an operating lease requires judgement as to whether the agreement transfers substantially all the risks and rewards of ownership to TAIC.

Judgement is required on various aspects that include, but are not limited to, the fair value of the leased asset, the economic life of the leased asset, whether or not to include renewal options in the lease term and determining an appropriate discount rate to calculate the present value of the minimum lease payments.

Classification as a finance lease means the asset is recognised in the statement of financial position as property, plant and equipment, whereas for an operating lease no such asset is recognised.

TAIC has exercised its judgement on the appropriate classification of equipment leases, and has determined that it has no finance leases.

2. Other revenue

	Actual 2016 \$000	Actual 2015 \$000
Rental revenue from property subleases	18	18
Other revenue	159	14
Total revenue	177	32

3. Cash and cash equivalents

	Actual 2016 \$000	Actual 2015 \$000
Cash at bank and on hand	442	323
Short-term deposits maturing in less than three months	747	726
Total cash and cash equivalents	1,189	1,049

4. Receivables

	Actual 2016 \$000	Actual 2015 \$000
Receivables (gross)	4	3
Less: provision for impairment	-	-
Total receivables	4	3
Total receivables comprises:		
Receivables from the sale of goods and services (exchange transactions)	4	3

5. Property, plant and equipment

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

	Buildings	Computer equipment	Furniture and office equipment	Total
	\$000	\$000	\$000	\$000
Cost				
Balance as at 1 July 2014	170	171	131	472
Balance at 30 June 2015	154	188	148	490
Balance at 1 July 2015	154	188	148	490
Additions	144	89	16	249
Disposals	-	(79)	(6)	(85)
Balance at 30 June 2016	298	198	158	654
Accumulated depreciation				
Balance as at 1 July 2014	81	152	91	324
Balance at 30 June 2015	78	166	105	349
Balance at 1 July 2015	78	166	105	349
Depreciation expense	21	31	16	68
Elimination on disposal	-	(79)	(6)	(85)
Balance at 30 June 2016	99	118	115	332
Carrying amounts				
At 1 July 2014	89	19	40	148
At 30 June 2014 and 1 July 2015	76	22	43	141
At 30 June 2016	199	80	43	322

As at year end there was no work in progress (2014/15: nil).

6. Intangible assets

Movements for each class of intangible asset are as follows:

	Acquired software	Total
	\$000	\$000
Cost		
Balance at 1 July 2014	987	987
Balance at 30 June 2015 and 1 July 2015	992	992
Additions	11	11
Disposals	-	-
Balance at 30 June 2016	1,003	1,003
Accumulated amortisation		
Balance at 1 July 2014	235	235
Balance at 30 June 2015 and 1 July 2015	332	332
Amortisation expense	99	99
Disposals	-	-
Impairment losses	-	-
Balance at 30 June 2016	431	431
Carrying amounts		
At 1 July 2014	752	752
At 30 June and 1 July 2015	660	660
At 30 June 2016	572	572

As at year end there was no work in progress (2014/15: nil).

7. Employee entitlements

	Actual 2016	Actual 2015
	\$000	\$000
Current portion		
Accrued salaries and wages	58	17
Annual leave	190	116
Long service leave	13	-
<i>Total current portion</i>	261	133
Non-current portion		
Long service leave	35	-
<i>Total non-current portion</i>	35	-
Total employee entitlements	296	133

8. Personnel costs

	Actual 2016 \$000	Actual 2015 \$000
Salaries and wages	2,684	2,209
Defined contribution plan employer contributions	70	53
Increase/(decrease) in employee entitlements	163	(53)
Recruitment	126	-
Other staff costs	51	43
Total personnel costs	3,094	2,252

9. Commissioner remuneration

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

Commissioner	Actual 2016 \$000	Actual 2015 \$000
Ms HA Cull, QC (Chief Commissioner)	66	62
Ms J Meares (Commissioner)	47	19
Mr P McKenzie, QC (Deputy Chief Commissioner)	43	-
Mr S Davies Howard (Commissioner)	43	-
Mr JL Marshall, QC (Chief Commissioner) (retired February 2015)	-	40
Total Commissioner remuneration	199	121

10. Employee remuneration

	Actual 2016	Actual 2015
Total remuneration paid or payable:		
\$100,000-\$109,999	-	3
\$110,000-\$119,999	4	1
\$120,000-\$129,999	2	4
\$130,000-\$139,999	2	-
\$140,000-\$149,999	1	3
\$150,000-\$159,999	2	-
\$160,000-\$169,999	-	-
\$170,000-\$179,999	-	1
\$180,000-\$189,999	1	-
\$190,000-\$199,999	-	-
\$200,000-\$209,999	-	-
\$210,000-\$219,999	-	-
\$220,000-\$229,999	-	1
\$230,000-\$239,999	1	-
Total employees	13	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 of such transactions.

<i>Key management personnel compensation</i>		
	Actual 2016 \$000	Actual 2015 \$000
<i>Commission members</i>		
Remuneration	199	121
Full-time-equivalent members	0.65	0.33
<i>Leadership team</i>		
Remuneration	726	692
Full-time-equivalent members	4	4
Total key management personnel remuneration	925	813
Total full-time-equivalent personnel	4.65	4.33

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

Operating leases as lessee

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

	Actual 2016 \$000	Actual 2015 \$000
Not later than one year	501	501
Later than one year and not later than five years	1,408	1,561
Later than five years	755	1,103
Total non-cancellable operating leases	2,664	3,165

TAIC leases two 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 in August 2023. TAIC does not have the option of purchasing the asset at the end of the lease term.

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

13. Payables

	Actual 2016 \$000	Actual 2015 \$000
Payables under exchange transactions		
Creditors	76	50
Accrued expenses	311	72
Total payables under exchange transactions	387	122
Payables under non-exchange transactions		
Taxes payables (GST, PAYE and rates)	74	77
Total payables under non-exchange transactions	74	77
Total payables	461	199

14. Equity

	Actual 2016 \$000	Actual 2015 \$000
Accumulated surplus/(deficit)		
Balance at 1 July	1,552	1,610
Surplus/(deficit) for the year	(182)	(58)
Balance at 30 June	1,370	1,552

15. Financial instruments

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

	Actual 2016 \$000	Actual 2015 \$000
Loans and receivables		
Cash and cash equivalents	1,189	1,049
Receivables	4	3
Total loans and receivables	1,193	1,052
Financial liabilities measured at amortised cost		
Payables (excluding taxes payable)	387	122
<i>Total financial liabilities measured at amortised cost</i>	387	122

16. Contingencies

Contingent liabilities

There were no contingent liabilities existing at balance date (2015: nil).

Contingent assets

At balance date TAIC was continuing to receive reparations for money that had been taken fraudulently. Reparations received at 30 June 2016 were \$5,200 (2015: \$5,200). The contingent asset at balance date was \$282,000 (2015: \$287,000).

17. Events after the balance date

There were no significant events after balance date.

18. Explanation of major variances against budget

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

Statement of comprehensive revenue and expense

Other expenses

Other expenses are higher than budgeted by \$370,000, mainly due to investigation operations involving wreckage recovery.

Other revenue

Other revenue is \$154,000 higher than budgeted, mainly due to a contribution received for wreckage recovery.

Commissioners' fees

Commissioners' fees are \$82,000 less than budget due to additional Commissioner meeting days budgeted for but not required, and also due to new Commissioners commencing later than budgeted.

Statement of financial position

Cash and cash equivalents

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

Property, plant and equipment

Property, plant and equipment are higher than budgeted due to the refurbishment of the Wellington office as part of the change programme being higher than the initial estimate included in the budget.

Payables

Payables are higher than budgeted, mainly due to the June accrual for wreckage recovery.

Employee entitlements

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

Statement of changes in cash flows

The statement of changes in cash flows shows a net movement in cash for the period of \$115,000 more than budgeted, mainly due to a \$150,000 cash contribution received for wreckage recovery.

19. Adjustments arising on transition to the new PBE accounting standards

Reclassification adjustments

There were no reclassifications on the face of the financial statements in adopting the new PBE accounting standards.

Recognition and measurement adjustments

There were no recognition and measurement adjustments in the financial statements in adopting the new PBE accounting standards.

Independent Auditor's Report

To the readers of the Transport Accident Investigation Commission's financial statements and performance information for the year ended 30 June 2016

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, including the performance information for an appropriation, of the Commission on her behalf.

Opinion on the financial statements and the performance information

We have audited:

- the financial statements of the Commission on pages 35 to 50, that comprise the statement of financial position as at 30 June 2016, the statement of comprehensive income, statement of changes in equity and statement of cash flows for the year ended on that date and the notes to the financial statements that include accounting policies and other explanatory information; and
- the performance information of the Commission on pages 16 to 24 and 31 to 34.

In our opinion:

- the financial statements of the Commission:
 - present fairly, in all material respects:
 - its financial position as at 30 June 2016; and
 - its financial performance and cash flows for the year then ended; and
 - comply with generally accepted accounting practice in New Zealand and have been prepared in accordance with Public Benefit Entity (PBE) Reporting Standards.
- the performance information:
 - presents fairly, in all material respects, the Commission's performance for the year ended 30 June 2016, including:
 - for each class of reportable outputs:
 - its standards of performance achieved as compared with forecasts included in the statement of performance expectations for the financial year;

- its actual revenue and output expenses as compared with the forecasts included in the statement of performance expectations for the financial year;
 - what has been achieved with the appropriation; and
 - the actual expenses or capital expenditure incurred compared with the appropriated or forecast expenses or capital expenditure.
- complies with generally accepted accounting practice in New Zealand.

Our audit was completed on 31 October 2016. This is the date at which our opinion is expressed.

The basis of our opinion is explained below. In addition, we outline the responsibilities of the Board and our responsibilities, and explain our independence.

Basis of opinion

We carried out our audit in accordance with the Auditor-General's Auditing Standards, which incorporate the International Standards on Auditing (New Zealand). Those standards require that we comply with ethical requirements and plan and carry out our audit to obtain reasonable assurance about whether the financial statements and the performance information are free from material misstatement.

Material misstatements are differences or omissions of amounts and disclosures that, in our judgement, are likely to influence readers' overall understanding of the financial statements and the performance information. If we had found material misstatements that were not corrected, we would have referred to them in our opinion.

An audit involves carrying out procedures to obtain audit evidence about the amounts and disclosures in the financial statements and the performance information. The procedures selected depend on our judgement, including our assessment of risks of material misstatement of the financial statements and the performance information, whether due to fraud or error. In making those risk assessments, we consider internal control relevant to the preparation of the Commission's financial statements and performance information 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.

An audit also involves evaluating:

- the appropriateness of accounting policies used and whether they have been consistently applied;
- the reasonableness of the significant accounting estimates and judgements made by the Board;
- the appropriateness of the reported performance information within the Commission's framework for reporting performance;
- the adequacy of the disclosures in the financial statements and the performance information; and
- the overall presentation of the financial statements and the performance information.

We did not examine every transaction, nor do we guarantee complete accuracy of the financial statements and the performance information. Also, we did not evaluate the security and controls over the electronic publication of the financial statements and the performance information.

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

Responsibilities of the Board

The Board is responsible for preparing financial statements and performance information that:

- comply with generally accepted accounting practice in New Zealand and public benefit entity reporting standards;
- present fairly the Commission's financial position, financial performance and cash flows; and
- present fairly the Commission's performance.

The Board's responsibilities arise from the Crown Entities Act 2004.

The Board is responsible for such internal control as it determines is necessary to enable the preparation of financial statements and performance information that are free from material misstatement, whether due to fraud or error. The Board is also responsible for the publication of the financial statements and the performance information, whether in printed or electronic form.

Responsibilities of the Auditor

We are responsible for expressing an independent opinion on the financial statements and the performance information and reporting that opinion to you based on our audit. Our responsibility arises from the Public Audit Act 2001.

Independence

When carrying out the audit, we followed the independence requirements of the Auditor-General, which incorporate the independence requirements of the External Reporting Board.

Other than the audit, 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 2016

Table 8 is ordered by date launched for all inquiries (domestic and overseas assist) live at the end of the financial year. See Table 1 on page 7 for inquiries closed during the year.

Table 8: Inquiries open as at 30 June 2016

Inquiry #	Mode	Description	Launched	Investigation type
12-203	Maritime	MO-2012-203 Fishing vessel <i>Amaltal Columbia</i> , fire onboard, 85 km northwest of Lyttelton	12/9/2012	Domestic
13-101	Rail	RO-2013-101 Freight Train 345, Derailment, Mission Bush Branch	14/1/2013	Domestic
13-103	Rail	RO-2013-103 Train 5618, collision with the stop block, Melling Station	15/4/2013	Domestic
13-008	Aviation	AO-2013-008 Boeing 737, cabin depressurisation, Auckland	30/8/2013	Domestic
13-010	Aviation	AO-2013-010 Aerospatiale AS350 B2 ZK-IMJ, collision with second helicopter, Tyndall Glaciers	29/10/2013	Domestic
13-011	Aviation	AO-2013-011 ZK-VAH, Runway excursion, Auckland airport	3/11/2013	Domestic
13-203	Maritime	MO-2013-203 Interislander passenger and freight ferry <i>Aratere</i> , propeller shaft fracture and loss, Tory Channel	6/11/2013	Domestic
14-001	Aviation	Boeing 737-3B7 Freighter, right-hand undercarriage collapse during landing roll, Honiara, Solomon Islands	29/1/2014	Overseas assist
14-003	Aviation	AO-2014-003 Pacific Aerospace 750XL, hard landing, Warrenton, Virginia, USA	14/5/2014	Overseas assist
14-103	Rail	RO-2014-103 Matangi passenger train, failed to stop, Melling Station	27/5/2014	Domestic
14-104	Rail	RO-2014-104 Freight train, collision with excavator, between National Park and Raurimu	17/6/2014	Domestic
14-004	Aviation	AO-2014-004 Piper PA32, impact with terrain, near Poolburn Dam, near Alexandra	5/8/2014	Domestic
14-105	Rail	RO-2014-105 Empty passenger train and excavator, near collision, between Featherston and Dalefield	11/8/2014	Domestic
14-005	Aviation	AO-2014-005 Aerospatiale AS350 helicopter, snow landing accident, Mount Alta, 20 km north-west of Wanaka	16/8/2014	Domestic
14-203	Maritime	MO-2014-203 <i>Captain MJ Souza</i> , fatality on-board, Kiribati Islands region	25/8/2014	Domestic
14-006	Aviation	AO-2014-006 Robinson R44 Helicopter ZK-HBQ, in-flight break-up, Kahurangi National Park	10/10/2014	Domestic

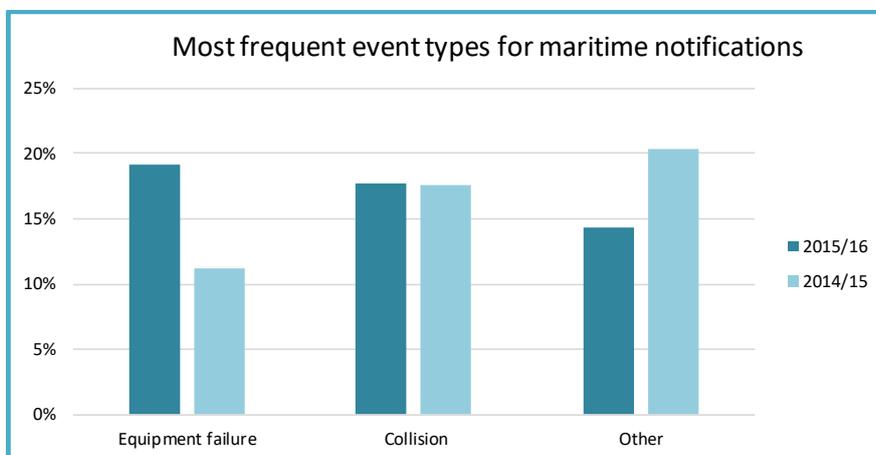
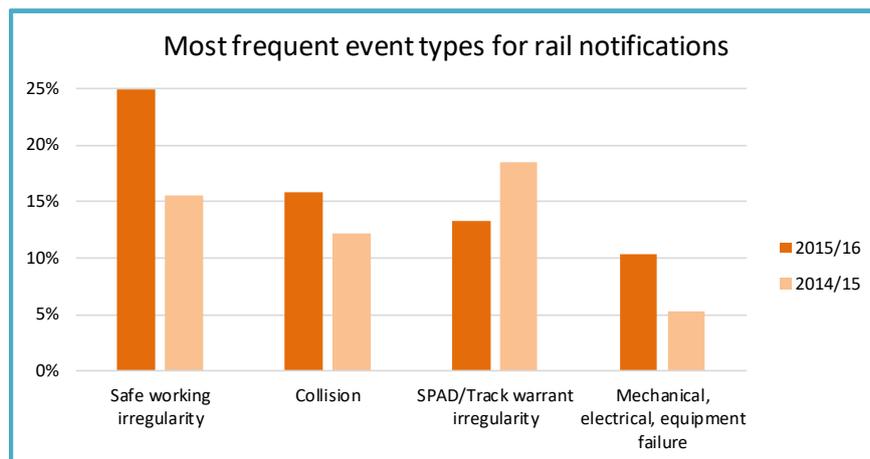
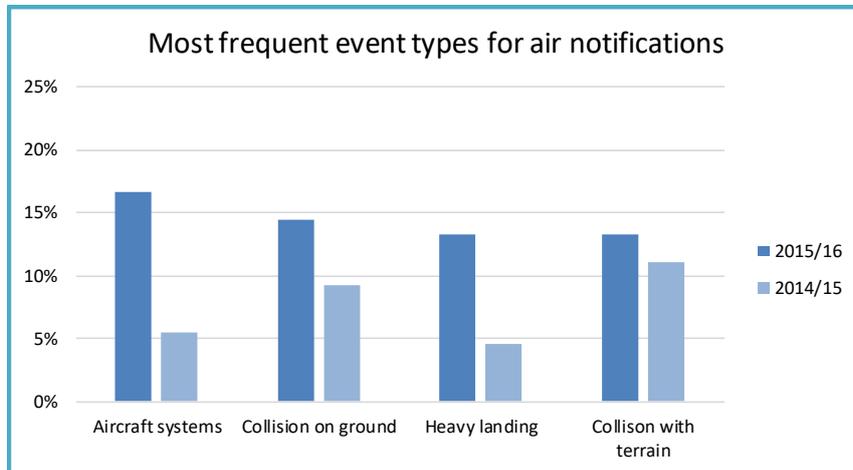
Inquiry #	Mode	Description	Launched	Investigation type
15-001	Aviation	AO-2015-001 Pacific Aerospace Ltd 750XL, engine failure, Lake Taupō	7/1/2015	Domestic
15-101	Rail	RO-2015-101 Rail pedestrian crossing, fatality, Morningside Station	3/2/2015	Domestic
15-201	Maritime	MO-2015-201 Passenger ferry <i>Kea</i> , collision with wharf, Devonport wharf, Auckland	17/2/2015	Domestic
15-002	Aviation	AO-2015-002 Robinson R44, impact with terrain, Queenstown	19/2/2015	Domestic
15-003	Aviation	AO-2015-003 Robinson R44, Main rotor blade failure, Waikaia	25/2/2015	Domestic
15-004	Aviation	AO-2015-004 Australian-registered B737 VH-VOP, Landing event, Christchurch	11/5/2015	Overseas assist
15-005	Aviation	AO-2015-005 Loss of air traffic control services, nationwide	23/6/2015	Domestic
15-202	Maritime	MO-2015-202 Container ship, <i>Madinah</i> , loss of person overboard, entrance to Lyttelton Harbour	3/7/2015	Domestic
15-006	Aviation	AO-2015-006 PAC 750 XL, fatal accident, Indonesia	14/8/2015	Overseas assist
15-203	Maritime	MO-2015-203 F.V. <i>Jubilee</i> , loss of vessel, Canterbury Bight	19/10/2015	Domestic
15-007	Aviation	AO-2015-007 AS350BA Eurocopter, ZK-HKU, collision with terrain, Fox Glacier	21/11/2015	Domestic
15-102	Rail	RO-2015-102 Electric locomotive, fire, Palmerston North	26/11/2015	Domestic
15-008	Aviation	AO-2015-008 PAC 750 XL, forced landing after engine shut-down, North Carolina, USA	10/12/2015	Overseas assist
15-103	Rail	RO-2015-103, track occupation irregularity, Taumarunui	15/12/2015	Domestic
15-009	Aviation	AO-2015-009 Breakdown of traffic separation, Hamilton control zone	17/12/2015	Domestic
16-201	Maritime	MO-2016-201 Passenger vessel <i>Pee Jay V</i> , fire and abandonment, Whakatāne	18/1/2016	Domestic
16-202	Maritime	MO-2016-202 Passenger ship <i>Azamara Quest</i> , struck Wheki Rock, Tory Channel	27/1/2016	Domestic
16-001	Aviation	AO-2016-001 Robinson R44 C-GZFX, collision with terrain, Ontario, Canada	18/2/2016	Overseas assist
16-203	Maritime	MO-2016-203 Mount Hikurangi, crew fatality during cargo loading operations, Port of Tauranga	29/2/2016	Domestic

Inquiry #	Mode	Description	Launched	Investigation type
16-002	Aviation	AO-2016-002 PAC 750 XL aeroplane, runway excursion, Molinella, Italy	6/3/2016	Overseas assist
16-003	Aviation	AO-2016-003 PAC 750 XL aeroplane, forced landing, Nepal	9/3/2016	Overseas assist
16-004	Aviation	AO-2016-004 Guimbal Cabri light helicopter, in-flight fire, Rotorua	16/4/2016	Domestic
16-101	Rail	RO-2016-101 Near collision between passenger trains, Wellington	31/5/2016	Domestic
16-005	Aviation	AO-2016-005 Fletcher FU-24-950, flap cable failure, Loomberah, NSW	30/6/2016	Overseas assist

Appendix 2: Caseload data for the year ended 30 June 2016

Notifications

The most frequent notifications, according to event type, are shown below for each mode for the 2015/16 year. These are the event types against which more than 10% of notifications were categorised, compared with the frequency for the 2014/15 year.



Caseload

Table 9: Caseload data 2015/16

		Air			Rail			Marine			Total		
		Jun-14	Jun-15	Jun-16									
Caseload at year end													
Inquiries	Opened	6	7	3	5	2	3	3	2	5	14	11	11
	Continued	6	7	10	9	10	6	4	5	4	19	22	20
	Total	12	14	13	14	12	9	7	7	9	33	33	31
Elapsed WD	Opened	695	812	297	355	283	268	802	264	638	1,852	1,359	1,203
	Continued	1,771	2,608	4,152	3,067	4,610	3,102	3,744	2,517	2,126	8,582	9,735	9,380
	Total	2,466	3,420	4,449	3,422	4,893	3,370	4,546	2,781	2,764	10,434	11,094	10,583
Average WD	Opened	116	116	99	299	71	89	401	88	128	301	99	109
	Continued	295	373	415	550	461	517	749	503	532	623	387	469
	Total	206	244	342	406	244	374	649	397	307	477	270	341
Completed by year end													
Inquiries completed	Inquiries completed	6	5	4	6	4	6	5	2	3	17	11	13
	Elapsed WD	3,098	2,238	2,086	2,223	1,543	3,998	2,099	913	2,545	7,420	4,694	8,629
	Average WD	516	448	522	371	386	666	420	457	848	436	427	664
Total active inquiries during year													
Active inquiries	Active inquiries	18	19	17	20	16	15	12	9	12	50	44	44
	FTE investigators	3	3	5	3	3	3	3	3	4	9	9	13

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 (FTEs), with one working across all modes.

Appendix 3: Key lessons, safety actions and recommendations for the year ended 30 June 2016

The following pages set out the impact information (as represented by the key lessons, safety actions and recommendations) for the inquiries completed in 2015/16. Please note that carefully worded inquiry reports' contents have been extensively précised in this summary to give a quick impression of the inquiries' complexity and impacts. The published inquiry reports are the definitive records that must be referred to for any other purpose.

Aviation inquiry 10-009R Addendum to Final Report 10-009 Walter Fletcher FU24, ZK-EUF, loss of control on take-off and impact with terrain, Fox Glacier aerodrome, South Westland, 4 September 2010

Event type	Loss of control on take-off and impact with terrain
Safety issues identified	No safety issues identified additional to those in the original report.
Findings (number) <i>Greater ≈ more complex</i>	Seven (additional to the original report)
Key lessons (number and précis) <i>'What did we identify that others should take heed of to avoid it happening to them?'</i>	No additional key lessons were identified.
Safety actions (number and précis) <i>'What has been done while the inquiry's been underway that's removed the need for a relevant recommendation?'</i>	Two safety actions had been taken since the accident (additional to those taken in response to recommendations the Commission issued in the original report): <ul style="list-style-type: none"> • New Civil Aviation Rule Part 115 Adventure Aviation (Certification and Operations) entered into force on 10 November 2011. • On 26 July 2012 the Civil Aviation Authority (CAA) issued an airworthiness directive for Fletcher aeroplanes relating to the installation of systems for horizontal stabilisation.
Safety recommendations (number and précis) <i>'What needs to change to reduce the likelihood of a recurrence?'</i>	No additional recommendations were made.

Event type	Mast bump and in-flight break-up
Safety issues identified	<p>The following safety issues were identified in this investigation:</p> <ul style="list-style-type: none"> • Four of the seven fatal R66 accidents that have occurred globally since the type was introduced into service in 2010 were mast bump or low-main-rotor-speed accidents. These are accident types seen with the smaller R22 and R44, which have the same main rotor design. However, the R66 was certificated without any special pilot training requirements to mitigate the risk of these types of accident. • At the time of this accident the flight manuals for Robinson helicopters did not adequately warn pilots of the hazardous operating practices and environmental conditions that can lead rapidly to a catastrophic mast bump. • Earlier research into the flight control systems and dynamic behaviour of the main rotor of lightweight helicopters, for example the design used by Robinson, was not completed as intended. Until the behaviour of such rotor systems in conditions of low G and turbulence is fully understood, it is possible that not all of the causal factors of mast bump accidents will be identified.
Findings (number) <i>Greater ≈ more complex</i>	Eight
Key lessons (number and précis) <i>'What did we identify that others should take heed of to avoid it happening to them?'</i>	<p>There were two key lessons:</p> <ul style="list-style-type: none"> • Pilots must be familiar with the complete Pilot's Operating Handbook for each aircraft type that they fly, as well as the approved flight manuals. • Pilots of Robinson helicopters, regardless of their experience, should avoid areas of high winds or turbulence, and closely adhere to the manufacturer's advice to reduce airspeed if turbulence is encountered.
Safety actions (number and précis) <i>'What has been done while the Inquiry's been underway that's removed the need for a relevant recommendation?'</i>	<p>Three safety actions had been taken since the accident:</p> <ul style="list-style-type: none"> • The following was added to the Normal Procedures section of the R66 (and R44) flight manuals: CAUTION If turbulence is expected, reduce power and use a slower than normal cruise speed. • The Director of Civil Aviation imposed conditions on the operation of Robinson R22 and R44 helicopters in New Zealand. • Robinson amended Safety Notice SN-32, 'High winds or turbulence'. One of the changes reinstated the previous advice that 'flying in high winds or turbulence should be avoided'.
Safety recommendations (number and précis) <i>'What needs to change to reduce the likelihood of a recurrence?'</i>	<p>Two recommendations were made to the Director of Civil Aviation:</p> <ul style="list-style-type: none"> • to include the knowledge and training requirements of Special Federal Aviation Regulation No. 73, or an equivalent requirement, as a prerequisite for the issue of a Robinson R66 type rating • to promptly publicise the recent changes to the Robinson R66 (and R44) Pilot's Operating Handbooks that caution against flight in high winds and turbulence, and which advise pilots to reduce power and speed if turbulence is expected or encountered. <p>Two recommendations were made to the Administrator, Federal Aviation Administration:</p> <ul style="list-style-type: none"> • to extend the knowledge and training requirements of Special Federal Aviation Regulation No. 73 to pilots of the Robinson R66 helicopter • to 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 NTSB [National Transportation Safety Board] recommendation A-96-12.

Event type	Misaligned take-off at night
Safety issues identified	<p>In addition to the factors contributing to the accident, two broader safety issues were identified relating to:</p> <ul style="list-style-type: none"> • the intensity settings for aerodrome lighting • administrative errors and potential ambiguity in the way relevant International Civil Aviation Organization (ICAO) standards for airport design and operations might be interpreted.
Findings (number) <i>Greater ≈ more complex</i>	Five
Key lessons (number and précis) <i>'What did we identify that others should take heed of to avoid it happening to them?'</i>	<p>There were two key lessons:</p> <ul style="list-style-type: none"> • Entering an active runway is a critical phase of flight. Pilots must give the manoeuvre their full attention and use all available means to confirm that they are lining up in the centre of the correct runway. • It is essential that pilots report as soon as practicable any suspicion that a runway is contaminated with debris.
Safety actions (number and précis) <i>'What has been done while the inquiry's been underway that's removed the need for a relevant recommendation?'</i>	<p>Three safety actions had been taken since the accident:</p> <ul style="list-style-type: none"> • The operator revised its before-take-off checks to ensure the instrumentation showing runway alignment was used routinely and not only during low-visibility conditions. • The CAA completed its review of Civil Aviation Rule Part 139 (Aerodrome – Certification, Operation and Use). Resulting changes included one dedicated to visual aids. • Airways, in conjunction with Auckland International Airport Ltd, realigned the taxiway markings.
Safety recommendations (number and précis) <i>'What needs to change to reduce the likelihood of a recurrence?'</i>	<p>Two recommendations were made to the Director of Civil Aviation:</p> <ul style="list-style-type: none"> • to review the use of 'should' in advisory circulars to remove ambiguity regarding compliance requirements • in conjunction with the Chief Executive of Airways, to check that runway lighting systems at certificated aerodromes comply with Part 139. <p>One recommendation was made to the Chief Executive of Auckland International Airport Ltd:</p> <ul style="list-style-type: none"> • in conjunction with the Chief Executive of Airways, to adjust luminous intensity settings for taxiway and runway lights; and enable controllers to select the respective light intensities recommended by ICAO for various levels of ambient lighting.

Event type	Double engine power loss
Safety issues identified	<p>Several safety issues were identified that directly or indirectly contributed to the incident:</p> <ul style="list-style-type: none"> • The pilot lacked recent experience and training on the aircraft type. • There was no aural warning to alert the pilot to the potential fuel starvation of both engines, which could have prevented the loss of power. • The modification of the cockpit lighting adversely affected the readability of the caution lights during daylight, when the dimmer was on. • The design of the BK117 fuel system meant that both engines would lose power at nearly the same time if a pilot mismanaged the fuel system and did not see the low-fuel-level warnings.
Findings (number) <i>Greater ≈ more complex</i>	Six
Key lessons (number and précis) <i>'What did we identify that others should take heed of to avoid it happening to them?'</i>	<p>There were three key lessons:</p> <ul style="list-style-type: none"> • Pilots lacking recent experience on an aircraft type should refer to written cockpit checklists wherever practicable. • Pilots who fly multiple aircraft types concurrently must remain vigilant to inadvertently transferring habits or procedures from one type to another. • Operators who require pilots to fly different aircraft types must have robust policies and procedures that ensure the pilots are appropriately experienced, trained, current and competent on each aircraft type.
Safety actions (number and précis) <i>'What has been done while the inquiry's been underway that's removed the need for a relevant recommendation?'</i>	<ul style="list-style-type: none"> • None.
Safety recommendations (number and précis) <i>'What needs to change to reduce the likelihood of a recurrence?'</i>	<p>One recommendation was made to the Director of Civil Aviation:</p> <ul style="list-style-type: none"> • to review all modifications to the cockpit lighting on BK117 helicopters for night vision use, to ensure they do not unduly increase the risk of a similar incident occurring. <p>One recommendation was made to the Chief Executive of Garden City Helicopters:</p> <ul style="list-style-type: none"> • to amend company policies, procedures and practices relating to the management of pilot competency. <p>The Commission gave notice to the Director of Civil Aviation:</p> <ul style="list-style-type: none"> • that the Commission had made the recommendation above to the Chief Executive of Garden City Helicopters.

Event type	Derailment
Safety issues identified	<p>One safety issue was identified:</p> <ul style="list-style-type: none"> The system for recording and monitoring the effects of track repair and maintenance was not picking up that the repair and maintenance work was not remedying identified track defects.
Findings (number) <i>Greater ≈ more complex</i>	Three
Key lessons (number and précis) <i>'What did we identify that others should take heed of to avoid it happening to them?'</i>	<p>There was one key lesson:</p> <ul style="list-style-type: none"> Any action taken to address track defects must be conducted properly, then checked and monitored to ensure the desired results have been achieved.
Safety actions (number and précis) <i>'What has been done while the inquiry's been underway that's removed the need for a relevant recommendation?'</i>	<p>Ten safety actions had been taken by KiwiRail since the accident:</p> <ul style="list-style-type: none"> A new track code supplement was published, providing guidelines for track inspectors. A rail engineering company provided training. A dedicated civil engineering team was set up to provide management oversight, increased focus and technical guidance for its track infrastructure and underlying formation assets throughout the rail corridor. A 'Significant Information Notice' was issued on the retention of a 10 kilometres per hour temporary speed restriction at a derailment site. The national implementation of a new computerised track infrastructure asset management system was completed. An improved suite of procedures for the management oversight of repeating track defects was introduced. Standards and training programmes for KiwiRail's track de-stressing and stability analysis undertakings were reviewed. Track buckle investigative procedures were expanded. New principle and standard documents were published for mainline derailment investigations. The North Island Main Trunk electric locomotive fleet was upgraded, with a modern, computerised event recorder design completed.
Safety recommendations (number and précis) <i>'What needs to change to reduce the likelihood of a recurrence?'</i>	None.

Rail inquiry 12-104 Train 723, Overran limit of track warrant, Parikawa, Main North Line, 1 August 2012

Event type	Overran limit of track warrant
Safety issues identified	<p>Four safety issues were identified:</p> <ul style="list-style-type: none"> • The train driver, who was performing a safety-critical role, had been prescribed a number of potentially performance-impairing medications without the knowledge of the industry medical professionals. • There was no requirement for private medical practitioners to inform the rail industry medical professionals when they became aware that a person who performed a safety-critical role had medical conditions or had been prescribed performance-impairing medications that could render that person unfit for normal duty. • There was no requirement for the driver to complete the safety-critical worker health questionnaire before they presented for a special 'triggered' health assessment. • There was little or no warning system built in to KiwiRail's procedures to mitigate the risk of the track warrant control operating system failing due to human error.
Findings (number) <i>Greater ≈ more complex</i>	Nine
Key lessons (number and précis) <i>'What did we identify that others should take heed of to avoid it happening to them?'</i>	<p>There were four key lessons:</p> <ul style="list-style-type: none"> • Over-the-counter and prescribed medications can affect performance. Anyone in a safety-critical role should notify an industry health professional of any such medication. • Train drivers who do not follow the correct procedures can endanger lives. • Train controllers who do not follow the correct procedures can endanger lives. • Rail operators who do not strictly enforce standards risk engendering a culture of non-compliance among employees.
Safety actions (number and précis) <i>'What has been done while the inquiry's been underway that's removed the need for a relevant recommendation?'</i>	<p>Two safety actions had been taken since the accident:</p> <ul style="list-style-type: none"> • KiwiRail introduced a software application that detects and notifies train control should a train overrun its track warrant operating limits. • KiwiRail introduced additional requirements for personnel carrying out safety-critical tasks to complete a self-assessment questionnaire when presenting for 'triggered' health assessments.
Safety recommendations (number and précis) <i>'What needs to change to reduce the likelihood of a recurrence?'</i>	<p>One recommendation was made to the Secretary for Transport:</p> <ul style="list-style-type: none"> • to ensure professionals providing health care to personnel in safety-critical roles inform appropriate authorities of any concerns regarding fitness for duty. <p>One recommendation was made to the Chief Executive of the NZ Transport Agency:</p> <ul style="list-style-type: none"> • to work with the National Rail System Standards Executive to ensure Standards clearly state that safety-critical workers must complete the self-assessment questionnaire when presenting for any type of health assessment. <p>One recommendation was made to the Chief Executive of KiwiRail:</p> <ul style="list-style-type: none"> • to allow KiwiRail medical professionals automatic access to employees' private medical records as necessary to ensure employees in safety-critical roles are not impaired by prescription or over-counter medications.

Rail inquiry 12-105 Unsafe recovery from wrong-route at Wiri Junction, 31 August 2012

Event type	Unsafe recovery from wrong-route
Safety issues identified	The key safety issue identified was miscommunication between the driver and the train controller, resulting from an ambiguous conversation when a set of clear and precise instructions were required but not relayed.
Findings (number) <i>Greater ≈ more complex</i>	Six
Key lessons (number and précis) <i>'What did we identify that others should take heed of to avoid it happening to them?'</i>	There were two key lessons: <ul style="list-style-type: none"> • Train drivers must actively look at, correctly interpret and respond to all signals, rather than assume what lies ahead of their trains. • Communication between train controllers and train drivers must be clear and concise.
Safety actions (number and précis) <i>'What has been done while the inquiry's been underway that's removed the need for a relevant recommendation?'</i>	One safety action had been taken since the accident: <ul style="list-style-type: none"> • The automatic route-setting functionality in the train control software was turned when works in the Wiri Junction area were completed, significantly reducing the likelihood of a future wrong-routing through Wiri Junction.
Safety recommendations (number and précis) <i>'What needs to change to reduce the likelihood of a recurrence?'</i>	None.

Rail inquiry 13-104 Derailment of metro passenger Train 8219, Wellington, 20 May 2013

Event type	Derailment of metro passenger train
Safety issues identified	<p>There were two safety issues identified with the Wellington maintenance depot processes:</p> <ul style="list-style-type: none"> • There were no individual task instructions on how each job was to be done. • There was no check sheet associated with each task to record that important steps and checks for the task had been completed. <p>Similar safety issues had arisen in a previous report.²⁵</p>
Findings (number) <i>Greater ≈ more complex</i>	Four
Key lessons (number and précis) <i>'What did we identify that others should take heed of to avoid it happening to them?'</i>	<p>There was one key lesson:</p> <ul style="list-style-type: none"> • Maintenance staff must have clear instructions for tasks, and record progress against every important step of the instructions. Tasks involving safety-critical systems must be independently checked.
Safety actions (number and précis) <i>'What has been done while the inquiry's been underway that's removed the need for a relevant recommendation?'</i>	<p>Four safety actions had been taken since the accident:</p> <ul style="list-style-type: none"> • Similar trains were withdrawn from service immediately after the derailment, and braking systems checked. • Corrective maintenance was carried out at the time of the inspections. • A programme was implemented to replace relevant parts in similar trains at the next scheduled maintenance service checks. • Shift handover instructions were amended
Safety recommendations (number and précis) <i>'What needs to change to reduce the likelihood of a recurrence?'</i>	<p>One urgent recommendation was made to the Chief Executive of KiwiRail:</p> <ul style="list-style-type: none"> • to address safety issues with the way maintenance was conducted in its Wellington maintenance depot. <p>One recommendation was made to the Chief Executive of the NZ Transport Agency:</p> <ul style="list-style-type: none"> • to monitor the progress of KiwiRail's response to the recommendation.

²⁵ Inquiry 06-101: Diesel multiple unit passenger Train 3163, fire in diesel auxiliary engine, Manurewa, 15 March 2006.

Rail inquiry 13-107 Express freight MP16 derailment, Mercer, North Island Main Trunk,
3 September 2013

Event type	Derailment
Safety issues identified	A high incidence of brake block replacement, which can contribute to premature bearing failure.
Findings (number) <i>Greater ≈ more complex</i>	Four
Key lessons (number and précis) <i>'What did we identify that others should take heed of to avoid it happening to them?'</i>	There was one key lesson: <ul style="list-style-type: none"> To achieve the full benefit of new rail safety technology, proper processes for applying the technology must also be introduced and sufficient staff provided who are fully conversant with those processes.
Safety actions (number and précis) <i>'What has been done while the inquiry's been underway that's removed the need for a relevant recommendation?'</i>	Nine safety actions had been taken by KiwiRail since the accident; it has: <ul style="list-style-type: none"> created a position of RailBAM (railway bearing acoustic monitoring system) analyst formalised the process of managing the RailBAM information amended the maintenance standard for axle keep bolt assembly instructed mechanical depots to comply with standard made changes to the bearing evaluation methodology reviewed the instructions for field inspection documented the steps to be taken if background bearing noise present continued to work with RailBAM system provider to improve system functionality begun reviewing train inspection training so it adequately covers noise generated by failing wagon components.
Safety recommendations (number and précis) <i>'What needs to change to reduce the likelihood of a recurrence?'</i>	One recommendation was made to the Chief Executive of KiwiRail: <ul style="list-style-type: none"> to closely monitor the replacement of brake blocks on individual wagons to provide another predictive tool for preventing premature wheel-bearing failures.

Rail inquiry 14-101 Collision between heavy road vehicle and the Northern Explorer passenger train, Te Onetea Road level crossing, Rangiriri, 27 February 2014

Event type	Collision
Safety issues identified	<p>Two safety issues were identified:</p> <ul style="list-style-type: none"> • The view lines from the stop limit line on the road, along the rail tracks in both directions, did not comply with the minimum restart sighting distances set out in the NZ Transport Agency's Traffic Control Devices Manual, Part 9, Level Crossings. It was therefore possible that when a train was just out of a truck driver's view, a fully road-compliant heavy road vehicle would not have sufficient time to pass over the level crossing without being struck by the train. • Level crossing assessments do not require the road profile and the alignment of roads on the approach to and passing over level crossings to be routinely measured. Therefore, there are no checks made to ensure that all road-legal vehicles can pass over level crossings without becoming stuck, as happened in this case.
Findings (number) <i>Greater ≈ more complex</i>	Nine
Key lessons (number and précis) <i>'What did we identify that others should take heed of to avoid it happening to them?'</i>	<p>There was one key lesson:</p> <ul style="list-style-type: none"> • Drivers of road vehicles must comply with compulsory stop signs at rail level crossings to give them ample opportunity to look for trains, assess the situation and consider any risk before proceeding.
Safety actions (number and précis) <i>'What has been done while the Inquiry's been underway that's removed the need for a relevant recommendation?'</i>	<p>One safety action had been taken since the accident:</p> <ul style="list-style-type: none"> • The construction and haulage companies involved established arrangements to agree the suitability of heavy equipment and unloading sites.
Safety recommendations (number and précis) <i>'What needs to change to reduce the likelihood of a recurrence?'</i>	<p>Two recommendations were made to the Chief Executive of the NZ Transport Agency:</p> <ul style="list-style-type: none"> • to work with KiwiRail and Waikato District Council to ensure a fully road-compliant long vehicle can use the level crossing with the recommended margins for safety • to work with KiwiRail and all road controlling authorities to ensure that rail level crossing assessments include a measure of the road profile and compatibility with the allowable dimensions for long and low road vehicles.

Maritime inquiry 10-206 Coastal container ship Spirit of Resolution, grounding on Manukau Bar, Auckland, 18 September 2010

Event type	Grounding
Safety issues identified	No significant issues identified.
Findings (number) <i>Greater ≈ more complex</i>	Two
Key lessons (number and précis) <i>'What did we identify that others should take heed of to avoid it happening to them?'</i>	There was one key lesson: <ul style="list-style-type: none"> • Bar harbours are hazardous for all vessels. Crossing a bar in deteriorating sea conditions already at the margins of safety is high-risk and should not be contemplated.
Safety actions (number and précis) <i>'What has been done while the inquiry's been underway that's removed the need for a relevant recommendation?'</i>	None.
Safety recommendations (number and précis) <i>'What needs to change to reduce the likelihood of a recurrence?'</i>	None.

Maritime inquiry 11-202 Roll-on-roll-off passenger ferry Monte Stello, contact with rock, Tory Channel, Marlborough Sounds, 4 May 2011

Event type	Contact with rock
Safety issues identified	The required standards of bridge resource management were not achieved by the bridge team that was on board the <i>Monte Stello</i> when the accident happened.
Findings (number) <i>Greater ≈ more complex</i>	Six
Key lessons (number and précis) <i>'What did we identify that others should take heed of to avoid it happening to them?'</i>	There was one key lesson: <ul style="list-style-type: none"> • Bridge resource management (BRM) must be a standard operating procedure fully understood and followed by all crews, all of the time. It takes only one bridge team failure to result in a serious accident.
Safety actions (number and précis) <i>'What has been done while the inquiry's been underway that's removed the need for a relevant recommendation?'</i>	Five safety actions had been taken by KiwiRail since the accident; it has: <ul style="list-style-type: none"> • begun navigation audits across all ships and crews to verify compliance with best practice • used audit results to target areas for inclusion in training courses, and ensure consistent BRM • carried out human factors training courses for crews • commissioned detailed ship and route models, including berths for simulator training • begun developing a draft navigation audit proforma and procedure to be incorporated into its safety management system.
Safety recommendations (number and précis) <i>'What needs to change to reduce the likelihood of a recurrence?'</i>	One recommendation was made to the Chief Executive of KiwiRail: <ul style="list-style-type: none"> • to ensure the bridge resource management policy and procedures outlined in its safety management system remain relevant and effective for all crews on all ships in the fleet, all of the time.

Maritime inquiry 14-201 Dream Weaver, flooding due to structural failure of the hull, Hauraki Gulf, 23 February 2014

Event type	Flooding
Safety issues identified	<p>Three safety issues were identified. The operator's Safe Ship Management system (prescribed by Maritime New Zealand) had not addressed the following safety issues:</p> <ul style="list-style-type: none"> • Poor 'housekeeping' practices on board that prevented the bilge-pumping system working • A lack of sufficient crew training for emergency equipment, meaning the crew were unable to control the flooding • The wave-height/speed operating restrictions for the vessel were not conspicuously promulgated and enforced.
Findings (number) <i>Greater ≈ more complex</i>	Five
Key lessons (number and précis) <i>'What did we identify that others should take heed of to avoid it happening to them?'</i>	<p>There were six key lessons:</p> <ul style="list-style-type: none"> • Skippers must be aware of, and keep within, any operating restrictions associated with their vessels' designs. • Operators and surveyors should factor in vessels' ages when inspecting, maintaining and setting operating parameters. • Skippers must be aware of how their vessels will perform once turned into the wind and waves. • Crew members must be familiar with and trained in operating emergency systems on their vessels. • Bilge spaces must be kept clear of debris if a bilge-pumping arrangement is to be effective. • Arrangements for freeing water from the deck must be adequate and kept clear at all times.
Safety actions (number and précis) <i>'What has been done while the inquiry's been underway that's removed the need for a relevant recommendation?'</i>	None.
Safety recommendations (number and précis) <i>'What needs to change to reduce the likelihood of a recurrence?'</i>	<p>One recommendation was made to the Chief Executive of Maritime New Zealand:</p> <ul style="list-style-type: none"> • to review the <i>Dream Weaver</i> operation with a view to ensuring that the vessel is fit for its intended purpose and that the operator's safety management system, or the succeeding MOSS system, is operating as it should.

Interim report (urgent recommendations) to rail inquiry 15-101 Pedestrian fatality, Morningside Drive level crossing, West Auckland, 29 January 2015

Event type	Level crossing pedestrian fatality
Safety issues identified	<p>Three safety issues were identified:</p> <ul style="list-style-type: none"> • There were no active visual alarms or physical barriers to prevent pedestrians exiting the Morningside station platform inadvertently crossing the railway tracks at the Morningside Drive level crossing when trains were approaching. • The regulatory and operational aspects of the Auckland metropolitan rail system did not expressly deal with responsibility for safety and control at the boundaries between station platforms and the rail corridor. • The level of protection for people using pedestrian rail crossings in the Auckland metropolitan rail network was unlikely to be adequate because the risk assessment process for pedestrian rail crossings was not keeping pace with the infrastructure changes and increasing patronage on the metropolitan passenger trains.
<p>Safety recommendations (number and précis)</p> <p><i>'What needs to change to reduce the likelihood of a recurrence?'</i></p>	<p>Three urgent recommendations were made to the Chief Executive of the NZ Transport Agency – that:</p> <ul style="list-style-type: none"> • he liaise with the appropriate authorities to ensure some form of active warning device or barrier is installed to prevent pedestrians inadvertently stepping out in front of trains when entering or exiting the Morningside station platform • from a regulatory perspective he take the necessary steps to ensure that the relevant Safety Case(s) and resultant safety system(s) (including any lease or access agreements made under those systems) expressly articulate which party or parties is responsible for controlling and protecting pedestrians as they cross the boundaries between railway stations and the rail corridor • he liaise with the relevant road control authorities in Auckland and Wellington, and KiwiRail, to review all pedestrian rail crossings and ensure they have a level of protection commensurate with the level of risk currently and in the immediate future.

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