Australian Government

Australian Transport Safety Bureau

Annual Report 2018–19

Australia's national transport safety investigator

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Australian Government
Australian Transport Safety Bureau

Chief Commissioner

16 September 2019

The Hon Michael McCormack MP
Deputy Prime Minister
Minister for Infrastructure, Transport and Regional Development
Parliament House
CANBERRA ACT 2600

Dear Deputy Prime Minister

I am pleased to present the Annual Report of the Australian Transport Safety Bureau (ATSB), reporting on our operations for the year ended 30 June 2019.

This annual report has been prepared in accordance with the requirements for non-corporate Commonwealth entities under section 46 of the *Public Governance, Performance and Accountability Act 2013* (PGPA Act) and summarises the ATSB's performance for the year.

The report includes the ATSB's financial statements as required by section 42 of the PGPA Act and an audit report on those statements in accordance with section 43 of the same Act.

In addition to fulfilling the requirements of the PGPA Act, the report satisfies section 63A of the *Transport Safety Investigation Act 2003* (TSI Act).

I also certify that I am satisfied that the ATSB has prepared risk assessment and fraud control plans and has in place appropriate fraud prevention, detection, investigation, reporting and data collection procedures and processes that meet the specific needs of the ATSB and comply with the Commonwealth Fraud Control Framework.

Yours sincerely

Greg Hood
Chief Commissioner and Chief Executive Officer

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SECTION 1

Chief Commissioner's review 2018–19

1

CHIEF COMMISSIONER'S REVIEW 2018–19

In 2018–19, the ATSB continued to make a significant contribution to transport safety in Australia, thanks to the release of several substantial and high profile investigation reports which contained valuable safety learnings for the aviation, rail and marine transport modes. During the year, we also entered into a strategic partnership with the Royal Melbourne Institute of Technology (RMIT) University, continued with our program of work to further improve our operational efficiency and effectiveness, and implemented an initiative to increase the number of Memoranda of Understandings (MOU) with transport industry associations.

There was much attention on the agency in September 2018 with the publication of the final report from our investigation into a King Air aircraft's collision with a building in a retail precinct at Melbourne's Essendon Airport in 2017 (**AO-2017-024**).

The investigation found the aircraft's rudder trim was set incorrectly for take-off, resulting in a loss of directional control. The investigation drew upon the ATSB's world-leading human factors capabilities, which resulted in safety messaging around the use of checklists as an essential tool for overcoming limitations with pilot memory and ensuring action items are completed in sequence without omission. This messaging highlights the ATSB's approach to safety investigation, which is to ensure that all the lessons can be learnt to help stop accidents in the future.

On an international level, the ATSB's contribution to safety was exemplified by the release of our final report from the investigation into a serious incident involving an ATR 72 turboprop airliner, which experienced an inadvertent pitch disconnect following an in-flight upset. This resulted in serious structural damage to the aircraft's horizontal tailplane (**AO-2014-032**). The investigation into this complex event identified a number of safety factors, including some in relation to the continuing airworthiness of the aircraft, and aircraft certification standards.

As a consequence, the ATSB issued Safety Recommendations to the European Union Aviation Safety Agency to review the current design standards in consideration of the effect that dual pilot control inputs may have on the safe operation of an aircraft.

The ATSB is tasked with using its resources to improve transport safety for the greatest public benefit. We do this through systemic safety investigations that can lead to wide-reaching safety actions, thanks to our highly developed technical expertise and investigation analysis capabilities. I am proud of our capabilities and our program of continual improvement to best deliver transport safety outcomes.

Those capabilities were demonstrated when, during the year, the ATSB sponsored one of the premier psychology, human factors and crew resource management symposiums in the Asia–Pacific region. The ATSB also facilitated additional human factors training courses, adding to the more than 40 courses we have conducted since 2000 to educate those in a position to influence safety.

Partnership with Royal Melbourne Institute of Technology (RMIT) University

The ATSB is focused on ensuring its own people have the highest investigative capabilities and in educating others to achieve the same. If the public trusts that investigators, regulators and operators are identifying and managing safety risks, then there is confidence in safety of the transport system. A significant achievement that I recognise as realising this objective is the partnership entered into this year between the ATSB and RMIT University.

This partnership is part of a vision to create a centre of excellence in the field of accident investigation and transport safety in the Asia–Pacific region. Industries in Australia, throughout the Asia–Pacific and around the world are now able to obtain ATSB-sponsored qualifications in transport safety investigation. The partnership expects to extend to offering a Master's-level qualification, as well as facilitating transport safety related research.

The first intake of students occurred on 1 July 2019 to study for a Graduate Certificate in Transport Safety Investigation. In 2020, a Diploma in Transport Safety Investigation will be offered before evolving into a Master's program. Students will gain access to the best insights into the fundamentals of accident investigation, from attending an accident scene and gathering evidence, through to identifying human and other factors that contributed to an accident, investigation analysis and technical report writing.

Strategic Partnership Agreement signing on 27 February 2019. Source: ATSB

Enhancing our efficiency

The ATSB is undertaking a program of work to enhance its operational efficiency and effectiveness. The ATSB's interest is in making the greatest possible contribution to transport safety across the aviation, rail and marine modes of transport with its available resourcing. In particular, we are striving to make sure that our investigation reports are delivered in a timely manner.

During 2018–19, we benchmarked our performance against similar accident investigation agencies overseas. I am pleased to report that our performance is comparable with a number of internationally respected agencies. The median length of time we take to complete an investigation is slightly higher by comparison, but the ATSB is completing more per investigator than some of its comparators. We recently introduced amended key performance indicators to reflect the time it takes to complete complex investigations that look at in-depth systemic factors.

The Australian National Audit Office (ANAO) also audited our operational efficiency during the year. The ANAO found the ATSB has established key elements of an overall framework to promote efficient investigation processes. The ANAO also found that our efficiency had been declining with its use of resources, but acknowledged a number of actions that had already been taken by the ATSB to make improvements, including formalising aspects of its program-managed approach to investigations.

Our continued efficiency improvements will be supported by the large cohort of 17 new transport safety investigators who commenced with us in 2018. After completing their training and gaining further investigation experience, these recruits will take on higher levels of responsibility within the ATSB's teams-based approach to investigation.

Building our networks

The ATSB recognises the value of being able to call upon the highest levels of expertise to best identify safety issues, and to that end, in 2018–19 we embarked upon an initiative to enter into Memoranda of Understandings (MOU) with transport industry associations. MOUs have now been signed with the Australian Federation of Air Pilots, the Australian and International Air Pilots Association, the Australian Licenced Aircraft Engineers Association, the Australian Association for Unmanned Systems, the Australian Certified Unmanned Aerial Vehicle Operators, Civil Air, and the Human Intervention Motivation Study Australia Advisory Group.

The ATSB will seek to further its reach by signing additional MOUs with industry associations and activating those relationships in 2019–20.

Squadron Leader Clare Fry with ATSB Chief Commissioner Greg Hood. Source: ATSB

We are also deepening our partnership with the Defence Flight Safety Bureau (DFSB), which performs an equivalent role to us for Defence aviation. Both organisations are committed to investigating accidents and incidents, and analysing occurrence data under the 'no-blame' philosophy, with the sole aim of preventing recurrences. Under our MOU, the organisations can conduct joint investigations and participate in each other's investigations. The relationship and knowledge sharing was strengthened during the year through a secondment of a DFSB investigator, who brought further human factors expertise to the ATSB.

The ATSB renewed its MOU with the Defence Flight Safety Bureau (DFSB) during a brief signing ceremony in Canberra on 5 April 2019. Source: ATSB

Communicating with influence

The ATSB actively works to influence safety well beyond the publication of investigation reports. This year we held our inaugural FlySafe and RailSafe safety forums, while our SeaSafe marine safety forum will be held in 2019–20. These forums target safety messaging to receptive audiences from across the modes with the expectation that those audiences will share the safety messages with their industry-based colleagues. We have participated in a number of other industry-led safety conferences with this intent.

We have been active online using our website as an engaging information portal, as well as using our social media channels to publish information that is relevant to our stakeholders. In June, we published a video targeting emergency personnel on the potential dangers of inactivated rocket-deployed parachute systems on aircraft. The video has been viewed more than 2,600 times on YouTube, and more than 15,000 times on Facebook. We are a modern investigation agency that knows how to harness the available and emerging communication mediums to influence safety action.

The ATSB delivered the RailSafe 2019 Rail Safety Forum on 2 April 2019. Source: ATSB

We are focused on delivering the right content to traditional media, too. We have our own dedicated media studio for producing video and audio content for television and radio broadcasts. Conscious of the need to remember those who can inspire us to innovate, our studio is named after Macarthur Job OAM. 'Mac' was a pioneer of aviation safety messaging in Australia, editing the principal safety promotion publication of the Department of Civil Aviation's Air Safety Investigation Branch – the *Aviation Safety Digest*. Known as the 'crash comic', we have further preserved this history by making the 150 editions of the digest (spanning 1953 to 1991) available online through the ATSB's **website**.

Aviation

During the year, we completed 32 complex aviation safety investigations and 28 short investigations.

In addition to the aviation accidents previously highlighted, other significant aviation investigation reports released in 2018–19 include a runway excursion at Darwin Airport involving a Boeing 737 aircraft in December 2016 (**AO-2016-166**); a collision with terrain involving a Diamond DA40 aircraft near Southport, Queensland in September 2017 (**AO-2017-096**); and an in-flight upset involving a Boeing 747-438 aircraft near Hong Kong Airport in April 2017 (**AO-2017-044**).

The Darwin runway excursion resulted from factors that included a small increase in crosswind that led to a significant deviation of the aircraft from the runway centreline at a critical time during the final approach. The investigation highlighted the challenges of landing in darkness and poor weather conditions when landing on wide runways that lack centreline lighting. The operator and Darwin Airport have taken action to provide flight crews with information about the specific risks of approaches at the airport, while a safety recommendation made to the International Civil Aviation Organization has been referred to that body's Aerodrome Design and Operations Panel for further study.

The collision with terrain of a Diamond DA40 aircraft near Southport resulted in fatal injuries to the instructor and student pilot on board. The aircraft entered a developed spin during manoeuvres consistent with advanced stall recovery training, which likely included intentional incipient spins. The spin continued until the aircraft collided with terrain. Although the investigation could not fully establish the reasons for the accident, the investigation identified varying interpretations of an 'incipient spin'. The ATSB advised that operators and pilots should clarify with manufacturers the extent to which the early stages of a spin are permissible and ensure aircraft are always operated in accordance with limitations.

The in-flight upset of a Boeing 747 aircraft near Hong Kong resulted from factors that included the aircraft's aerodynamic stall warning stick shaker activating a number of times and the aircraft experiencing multiple oscillations of pitch angle and vertical acceleration. The safety messaging from this investigation covered the need for comprehensive theory and practical training to ensure flight crews have a complete understanding of aircraft systems and they maintain effective handling skills. The training should provide flight crews with the knowledge to correctly configure the aircraft's automatic flight systems and manual handling skills to respond adequately to in-flight upsets.

Rail

The ATSB completed seven complex rail safety investigations and two short investigations in 2018–19. Included in these releases is the ATSB's investigation into the derailment of a coal train near Oakey in Queensland in July 2017 (**RO-2017-007**). It was found to be highly likely the underframe of a heavy road vehicle collided with rail infrastructure at a level crossing. Rail lines were displaced, causing the derailment and destroying about 300 metres of rail infrastructure. The accident highlights how vitally important it is for a driver in a road incident at a level crossing to report any damage and for rail infrastructure managers to ensure crossings are subject to regular and effective inspection.

We released our report from an investigation into another derailment involving an ore train near Walla in Western Australia in December 2015 (**RO-2015-023**). The derailment occurred due to a broken rail. A fracture of the rail was probably initiated by the rapid growth of a detectable, yet unidentified, fatigue-related defect. It is important that track maintenance and infrastructure fault detection is of a high standard to avoid similar occurrences.

A further derailment investigation involved a freight train near Dry Creek, South Australia in July 2017 (**RO-2017-008**). There had been a break in the section of track that was precipitated by a defect in the rail introduced in the manufacturing process 90 years ago. The rail break was not visually obvious, and when the freight train passed over it, the last three wagons derailed. The safety message in this accident was around the inspection of rail infrastructure. If an inspection cannot test or can only partly test rails, maintenance personnel must report the shortfall to highlight operational risk and the requirement for a timely supplementary examination.

Marine

The ATSB completed five complex marine safety investigations and four short investigations. The published reports included an investigation into a fall from height and serious injuries to crew members on board the *Shanghai Spirit* near Port Alma, Queensland in January 2017 (**MO-2017-001**). A mobile scaffold tower was used to conduct routine painting and touch-up work in the cargo holds. Two crew members conducted the work from the upper tiers and remained unsecured when the scaffolding was moved. The tower became unbalanced and toppled forward onto the deck. The safety message highlighted the importance of adhering to procedures that assure safety, as well as the value of effective supervision.

We released our report from the grounding of the Australian Border Force cutter *Roebuck Bay* on Henry Reef in the Great Barrier Reef in September 2017 (**MO-2017-009**). The vessel's route plan had been amended during the passage planning process, resulting in the route being inadvertently plotted across Henry Reef. The cutter's electronic chart display and information system (ECDIS) identified the reef as a danger to the planned route. However, the vessel's officers did not identify the danger, either visually or using the ECDIS. The investigation highlighted that the safe and effective use of ECDIS as the primary means of navigation depends on the mariner being thoroughly familiar with the operation, functionality, capabilities and limitations of the specific equipment in use on board their vessel.

The report for the investigation into contact with a wharf by the vessel *Madang Coast* in Townsville, Queensland in November 2015 (**MO-2015-007**) was also released. As the *Madang Coast* moved alongside the wharf, the forward spring line slipped and could not be used during the manoeuvre, as the distance from the stern to the wharf was too far for the aft mooring party to throw any heaving lines ashore. The stern's movement away from the wharf continued, making contact with another ship, while the bow made contact with the wharf. In this case, the risk management processes were not sufficiently mature nor resilient enough to effectively identify and mitigate risks in pilotage services. The investigation highlights the value of a safety management system that includes effective risk management processes.

Outlook

Appointed as the Chair of the International Transportation Safety Association (ITSA) in 2019, I will host an ITSA forum in Sydney in 2020. ITSA is a network of the heads of independent safety investigation authorities from around the world. The forum is valuable for sharing safety information and pursuing best practices in investigations. The ATSB will be seeking to continue to benchmark its performance against its peers to ensure that we are delivering optimal outcomes for transport safety in Australia.

Before ITSA, I will be releasing the ATSB's 'Vision 2025' statement. The ATSB's vision is to '**stop accidents**', with a mission to '**drive safety action in a rapidly changing transport environment**.' Vision 2025 is aspirational, sharpening the agency's focus when conducting investigations, while the mission recognises the transformational nature of the transport operating environment in which investigations are being conducted, and our intention is to influence safety outcomes in that environment.

The vision statement will reflect elements of the Minister's new *Statement of Expectations*, issued on 15 July 2019. This includes the need to give priority to transport safety investigations that will deliver the greatest public benefit through improvements to transport safety. Focusing on the public benefit means that the ATSB will have regard for factors that include the potential to save lives, as well as preventing serious adverse economic impacts that result from accidents. There are costs that come with providing safe transport systems, but the cost of an accident can be much higher.

I will also ensure the ATSB pays close attention to the government inquiries related to transport reforms. Two in particular have the potential to result in jurisdictional changes for the ATSB if there are any recommendations resulting in policy change. The Productivity Commission's inquiry into National Transport Regulatory Reform is looking at the impacts of the rail, marine and road heavy vehicle changes that came out of intergovernmental agreements from 2011 to move the industries towards single national jurisdictions. The Australian Government Review of National Road Safety Governance is examining how to bring down the number of road deaths and serious injuries. Consistent with the Minister's *Statement of Expectations*, the ATSB is providing input into these reviews.

I am positive about the agency and the role we will play in improving transport safety going forward. The ATSB has been through significant organisational change over the last few years, all directed towards enhancing our productivity and establishing a shared vision. The ATSB's staff are dedicated, hard-working experts in their field. Their contribution to safety is highly valued and, with their support, I intend to ensure they are empowered and enabled to make this contribution well into the future.

Greg Hood
Chief Commissioner

SECTION 2

Agency overview

2

AGENCY OVERVIEW

The ATSB is Australia's national transport safety investigation agency. Its primary function is to improve aviation, rail and marine safety. It does this by receiving information about accidents and other safety occurrences, analysing data, and investigating occurrences and safety issues in order to identify and communicate factors that affect, or might affect, transport safety.

The ATSB is part of the Infrastructure, Transport, Cities and Regional Development portfolio. Within the portfolio are other important transport agencies, whose roles are focused on delivering an efficient, sustainable, competitive, safe and secure transport system for all transport users, through regulation, financial assistance and safety investigations. These include:

- Department of Infrastructure, Transport, Cities and Regional Development
- Civil Aviation Safety Authority (CASA)
- Airservices Australia
- Australian Maritime Safety Authority (AMSA)
- Office of the National Rail Safety Regulator (ONRSR)
- National Transport Commission.

Purpose

The ATSB is an independent statutory agency of the Australian Government. It is governed by a Commission and is entirely separate from transport regulators, policy makers and service providers. At the same time, it is required to cooperate with others who have a role in maintaining and improving transport safety. The ATSB's purpose is to improve the safety of aviation, rail and marine transport through:

- the independent investigation of transport accidents and other safety occurrences
- data recording, analysis and research
- fostering safety awareness, knowledge and action.

The ATSB performs its functions in accordance with the provisions of the *Transport Safety Investigation Act 2003* (TSI Act) and, where applicable, relevant international agreements. The TSI Act makes it clear that the ATSB cannot apportion blame, assist in determining liability or, as a general rule, assist in court proceedings. Its sole focus remains the prevention of future accidents and the improvement of safety.

The TSI Act also sets out the independence of the ATSB, in the interests of avoiding conflicts of interest and external interference in its role in transport safety investigation, research and analysis, and fostering public awareness of transport safety.

The ATSB maintains a national information dataset of all safety-related occurrences in aviation and accidents and significant safety occurrences in the rail and marine sectors. The information it holds is essential to its capacity to analyse broad safety trends and it informs its investigation and safety education work.

The ATSB participates in overseas investigations involving Australian-registered aircraft and ships, and cooperates more broadly with its overseas counterparts.

The ATSB has a specific mandate to report publicly on its analysis and investigations, and to conduct public education programs to improve transport safety.

The ATSB's role

While independent, the ATSB is accountable to Parliament through the Minister for Infrastructure, Transport and Regional Development. Consistent with the Minister's *Statement of Expectations,* the ATSB gives primacy to transport safety investigations that have the potential to deliver the greatest public benefit. The ATSB does this through:

- receiving and assessing reports of transport safety matters, including notifications of safety occurrences and confidential reporting
- independently conducting 'no-blame' investigations of accidents and other safety occurrences
- conducting research into transport statistics and technical issues
- identifying factors that contribute to accidents and other safety occurrences that affect, or have the potential to affect, transport safety
- encouraging safety action in response to safety factors by acknowledging action taken by operators, and by issuing safety recommendations and advisory notices
- raising awareness of safety issues by reporting publicly on investigations and conducting educational programs
- assisting Australia to meet its international regulatory and safety obligations, and conducting an active program of regional engagement with other transport safety agencies.

The ATSB's objectives

In fulfilling its role of improving transport safety and cooperating with others, the ATSB:

- focuses its resources in the areas that are most likely to result in safety improvements
- harnesses the expertise and information necessary to perform its safety role
- conducts impartial, systemic and timely investigations
- identifies safety issues clearly and objectively without attributing blame or liability
- ensures the significance of safety issues are clearly understood by all concerned
- promotes effective safety action.

Cooperation with the transport industry

The ATSB works cooperatively with the aviation, rail and marine industries, as well as with transport regulators and governments at state, national and international levels, to improve safety standards for all Australians.

The ATSB relies on its ability to build trust and cooperation with the transport industry and the community for its success in improving safety. The TSI Act requires the ATSB to cooperate with government agencies, private organisations and individuals who have transport safety functions and responsibilities, or who may be affected by the ATSB's transport safety activities. The ATSB also cooperates with equivalent national bodies in other countries and international organisations with responsibilities for worldwide transport safety standards.

The ATSB actively targets communications to ensure that transport industry stakeholders understand the importance of no-blame investigations. In order to cultivate a strong reporting culture within the transport industry, the ATSB promotes an appropriate level of confidentiality and protection for sensitive safety information provided during the course of an investigation.

Mandatory occurrence reporting

The TSI Act requires any responsible person who has knowledge of any accident or serious incident (or any immediately reportable matter) to report it as soon as it is reasonably practicable. Immediately reportable matters also require a written notification within 72 hours, as do safety incidents (or routine reportable matters).

While the terms of this requirement may seem broad, the *Transport Safety Investigation Regulations 2003* (TSI Regulations) provide a list of persons who, by the nature of their qualifications, experience or professional association, would be likely to have knowledge of an immediate or routine reportable matter for their mode of transport.

In addition, responsible persons are not required to report a transport safety matter if they believe, on reasonable grounds, that another responsible person has already reported, or is in the process of reporting, that matter.

The ATSB maintains a 24-hour service to receive notifications, including a toll-free telephone number (for immediately reportable matters in all modes). In aviation, a secure online form for written notifications is available on the ATSB website. In rail, as of 1 July 2019, all immediately notifiable matters are reported to the ONRSR, who then report to the ATSB (prior to this date the telephone notifications came to the ATSB first). The written notifications are provided to the ATSB via reporting to the ONRSR. In marine, both immediately reportable and routine reportable matters are reported to the ATSB via AMSA.

Every year the ATSB's notifications team receives over 16,000 notifications of safety occurrences. These are spread over aviation, marine and rail. Inevitably, there are duplicate notifications and many of the notifications submitted concern matters not required to be reported under the TSI Act. Nevertheless, each one is reviewed and recorded.

In 2018–19, the ATSB's notifications team received 16,623 aviation notifications, 454 rail notifications and 377 marine notifications in the form of telephone calls, emails and website contact. From those, the team has identified 6,083 aviation and 192 marine accidents, serious incidents and incidents for the year. In rail, all 454 notifications were processed.

While not all reported occurrences are investigated, the details of each occurrence are retained within the ATSB's occurrence database. These records are a valuable resource, providing a detailed portrait of transport safety in Australia. The ATSB regularly analyses the database to identify emerging trends and issues. The searchable public version of the aviation occurrence database is available on the ATSB website at **www.atsb.gov.au** and contains data from July 2003 onwards. The online database is used by industry, academics, the media and regulators to search and research past events.

Aviation

The ATSB investigates accidents and incidents involving civil aircraft in Australia and Australian-registered aircraft overseas. It does so in a manner consistent with the Convention on International Civil Aviation (Chicago Convention 1944) Aircraft Accident and Incident Investigation (Annex 13). The ATSB also assists with the investigations of overseas agencies involving Australian-registered aircraft and may assist with foreign aircraft if an overseas investigation authority seeks assistance and the ATSB has suitable resources available. The ATSB may also have observer status in important overseas investigations. This provides valuable opportunities to learn from overseas organisations and to benchmark knowledge and procedures against counterpart organisations.

The ATSB also analyses data on all notified accidents and incidents. It conducts research into specific matters of concern that emerge from data analysis, and specific incidents or matters that may be referred by other organisations. The ATSB cooperates with organisations who are best placed to improve safety, such as CASA, Airservices Australia and the Defence Flight Safety Bureau, as well as aircraft manufacturers and operators. The ATSB also works collaboratively with the Department of Infrastructure, Transport, Cities and Regional Development and other safety agencies to assist the Australian Government in implementing transport safety initiatives.

Marine

The ATSB investigates incidents and accidents involving Australian-registered ships anywhere in the world, and foreign ships in Australian waters or en route to Australian ports.

The ATSB works cooperatively with international regulatory authorities, AMSA and other transport safety investigation agencies, as well as ship owners and operators.

Marine investigations are conducted in a manner consistent with the International Maritime Organization's Casualty Investigation Code.

The ATSB publishes and distributes a range of marine transport safety reports and safety educational material to the international maritime community, the International Maritime Organization, educational institutions and maritime administrators in Australia and overseas.

From 1 July 2018, AMSA's regulator role extended to include service delivery for all domestic commercial vessels (DCVs) as part of the Council of Australian Governments' 2011 national maritime reforms. The national reforms do not include funding for the ATSB to conduct DCV investigations, so the ATSB's marine jurisdiction continues to be limited to interstate and overseas shipping.

Rail

As of 1 July 2017, the ATSB became the single national rail safety investigator for all states and territories in Australia.

This role includes collecting occurrence information, analysing data, and investigating rail transport safety matters on the metropolitan, regional and freight networks.

The ATSB works cooperatively with organisations such as the ONRSR and rail operators—all of whom share a responsibility to improve safety. The ATSB also has collaboration agreements with the New South Wales and Victorian state safety investigation organisations.

Specialist investigation capabilities

Material failure analysis

The ATSB maintains in-house capabilities for examining any physical evidence relating to transport safety investigations. The group of engineering specialists comprises experts across multi-disciplinary engineering fields to conduct forensic analysis of components and structures from aviation, rail and marine occurrences at the ATSB's engineering facility in Canberra. The experts collaborate with other ATSB investigators, external stakeholders and subject matter experts from similar agencies around the world to provide detailed insight into the often complex set of technical factors that contribute to transport safety occurrences.

Data and recorder recovery

The ATSB maintains a centre of excellence for aviation, marine and rail 'black box' data recovery and analysis. Flight data recorders, cockpit voice recorders, quick access recorders, ground proximity warning systems, voyage data loggers and train data loggers can all be downloaded and analysed at the ATSB.

The data from other electronics installed in aircraft, such as GPS, mobile phones and digital cameras, can also be recovered using in-house chip recovery expertise.

Human factors

The ATSB has investigators with specialist expertise in the capabilities and limitations of human performance in relation to the design, manufacture, operation and maintenance of products and systems. Human factors are a core component of every ATSB safety investigation and this area includes the examination of elements such as decision-making, focus of attention, the role of workload and fatigue management.

Licensed aircraft maintenance engineers

The ATSB employs a number of investigators with a background as licensed aircraft maintenance engineers to undertake technical work necessary for investigations into aviation accidents and incidents. These investigators combine their extensive industry knowledge of the installation, maintenance and repair of aircraft, aircraft systems and structure and surfaces to determine whether any part of the aircraft system contributed to an occurrence.

Other transport specialists

ATSB investigators come from a variety of backgrounds and have a range of specialist skills which are combined to ensure investigations are considered from multiple angles. In addition to those mentioned above, specialists on staff at the ATSB include:

- pilots
- aeronautical, mechanical and civil engineers
- air traffic controllers
- ship captains and officers
- ship and rail engineers
- train drivers
- train controllers
- data scientists.

Site survey

The strength of the ATSB's investigation analysis, and its findings, rests on the ability to collect as much data as possible about and from an accident. In addition to the expertise of its investigators, the ATSB incorporates technology to collect and use data about accident sites. This technology includes laser mapping and the use of remotely piloted aircraft systems (RPAS).

For a number of years, the ATSB has been using the FARO 3D Focus laser site scanning technology to capture an accident site in both detailed distance measurements and high-resolution site images.

In 2017, the ATSB secured a Remotely Piloted Aircraft Operator's Certificate through CASA, granting the ATSB the necessary approvals to gather data and evidence during its on-site investigations using remotely piloted aircraft up to seven kilograms.

RPAS are becoming an important tool in ATSB investigations, with 18 ATSB investigators receiving training in the use of the ATSB's DJI Phantom 4 RPAS. With this technology, investigators can undertake an initial site survey to check for safety hazards before entering a site. They can also perform site mapping more quickly and with measurements that are more accurate. RPAS can capture comprehensive footage of an entire accident site—imagery that could previously only be obtained with a helicopter—and which can help investigations enormously.

The use of RPAS also presents substantial cost saving and ease-of-use benefits to the ATSB when compared with traditional site surveying techniques, equipment and software.

Range of investigation products

The ATSB produces a final report for all its investigations. Reports communicate important safety issues, actions and information, and provide transparency into the ATSB investigation process.

The main products produced are occurrence investigations, safety studies and statistical reports. The ATSB also produces an up-to-date online searchable aviation occurrence database and weekly summaries of marine occurrences and concerns raised via the REPCON (confidential reporting) system.

Occurrence investigations

Occurrence investigations typically examine a single accident or incident in detail. The sequence of events and factual background information are documented, and findings are presented along with a safety analysis to explain those findings. These investigations identify safety issues—ongoing systemic risks to safety—and the safety actions taken by organisations to address these safety issues. The ATSB may also issue formal safety recommendations.

Safety studies

Safety studies typically investigate multiple occurrences of a similar nature. Conducted as an investigation under the TSI Act, they aim to uncover safety issues through the analysis of occurrence and other data.

Statistical and trend publications

The ATSB produces official Australian aviation occurrence statistics each year, and aviation wildlife strike statistics every two years. The ATSB also conducts trend monitoring of all aviation occurrences—the results of which are used to help decide which occurrences the ATSB investigates and which safety studies are conducted. Results are also shared with other government agencies, as well as industry. Statistical reports are not conducted under the TSI Act.

Occurrence briefs

Introduced in 2018, occurrence briefs are concise reports that detail the facts surrounding a transport safety occurrence, as received in the initial notification and any follow-up enquiries. They provide an opportunity to share safety messages in the absence of an investigation.

Investigation levels

The ATSB's response to reported safety matters is classified by the level of resources and/or time they require, as well as their complexity. The following safety investigation levels were used by the ATSB for occurrence investigations and safety studies in 2018–19. Each level presented below (in order) builds on the previous level.

Short investigations

Short investigations are limited-scope office-based investigations conducted under the TSI Act. Investigation activities generally include sourcing photos and documentation of any transport vehicle damage and/or the accident site, interviews with involved parties, the collection of documents, such as procedures, and internal investigations by manufactures and operators. Occurrences investigated are normally simple and common accidents and incidents. A short summary report of up to eight pages will be produced which includes a description of the sequence of events, limited contextual factual information, a short analysis and findings. Findings include safety factors (events and conditions that increase risk) which are limited to those relating to the occurrence. Any proactive safety actions taken by industry will also be reported. Short investigations usually require only one ATSB staff member.

Defined investigations

Defined investigations may involve in-the-field activity or may be conducted as an office-based investigation. They require numerous ATSB resources and result in an agreed-scope product with a limited set of findings and a defined-size report. Evidence collected for defined investigations can also include recorded information, multiple interviews, analysis of similar occurrences, and a review of procedures and other risk controls related to the occurrence or set of occurrences. Occurrences investigated are generally less complex accidents and incidents. Investigation reports are typically 10–20 pages long, with an expanded analysis to support the broader set of findings that may also include safety factors not relating directly to or contributing to the occurrence(s). Defined investigations may also identify safety issues (safety factors with an ongoing risk) relating to ineffective or missing risk controls. Identified safety issues are documented in the investigation report, along with proactive safety action taken by industry and ATSB safety recommendations.

Complex investigations

Complex investigations can involve in-the-field activity, and a range of ATSB and possibly external resources. They are less confined in scope and will involve a significant effort collecting evidence across many areas. The breadth of the investigation will often cover multiple organisations. Occurrences and sets of occurrences investigated normally involve very complex systems and processes. In addition to investigating failed and missing risk controls, complex investigations may also investigate the organisational processes, systems, cultures and other factors that relate to those risk controls, including from the operator, regulator and certifying and standards authorities. Complex investigations result in substantial reports, often with several safety issues identified.

For the purpose of reporting against key deliverables and key performance indicators 'defined investigations' are counted as complex investigations.

Major investigations

Major investigations are reserved for very significant accidents and are likely to involve significant ATSB and external resources and additional one-off government funding. They result in a comprehensive report.

Confidential reporting (REPCON)

The ATSB operates the voluntary and confidential reporting scheme (REPCON) for the aviation, rail and marine industries. Any person within these industries, or member of the travelling public, may submit a REPCON report of a reportable safety concern. The scheme is designed to capture safety concerns—including unsafe practices, procedures and risk controls within an organisation or affected part of the industry.

Each reported safety concern is de-identified by the ATSB by removing all personal details concerning the reporter and any individual named in the report. This de-identified text is passed back to the reporter, who must authorise the content before the REPCON can be proceeded further. The de-identified text is then forwarded to the relevant organisation that is best placed to address the safety concern. The organisation's response will then be forwarded to the relevant regulator for further action, as deemed necessary.

The aim of the REPCON scheme is to ensure safety action is taken to address the reported safety concerns. This can include variations to standards, orders, practices and procedures, or an education campaign. The ATSB may use the de-identified version of the reported safety concern to issue an information brief or alert bulletin to whichever person or organisation is best placed to take safety action in response to the safety concern. The ATSB publishes the outcome of each REPCON on its website.

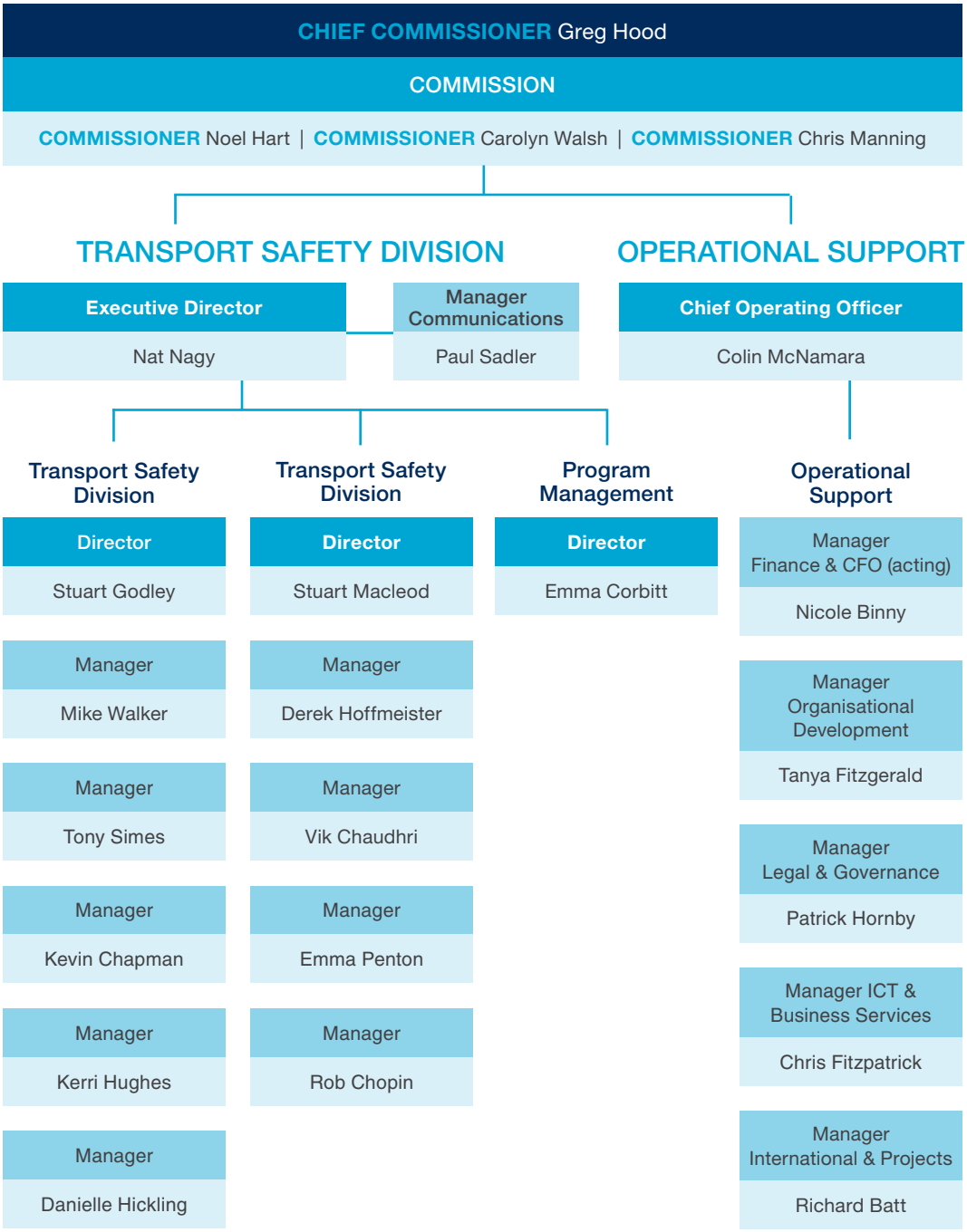
International cooperation

The ATSB is committed to close engagement with its international counterpart agencies and relevant multilateral organisations. In line with Australian Government policy, the ATSB places a specific emphasis on engagement with countries in the Asia–Pacific region, particularly with Indonesia and Papua New Guinea.

The ATSB is actively involved in the work of the International Civil Aviation Organization (ICAO) and the International Maritime Organization (IMO). The ATSB is an active member of the International Transportation Safety Association (ITSA) and will host the annual ITSA meeting in 2020.

The ATSB continues to make its expertise and resources widely available in support of transport safety. Representatives from New Zealand, the UK, the European Union, South Africa, China, Bangladesh, Taiwan and Malaysia visited the ATSB for discussions related to transport safety over this reporting period. In addition, participants from Saudi Arabia, Taiwan, Singapore, Hong Kong, New Zealand, the UK, Kenya, Nauru, Papua New Guinea and Korea attended specialist investigator training courses at the ATSB.

ORGANISATIONAL STRUCTURE



Last update 31 May 2019

COMMISSION AND EXECUTIVE MANAGEMENT TEAM

CHIEF COMMISSIONER AND CHIEF EXECUTIVE OFFICER

Mr Greg Hood

Greg Hood is the Chief Commissioner of the Australian Transport Safety Bureau (ATSB)—Australia's national transport safety investigation agency. Mr Hood was appointed to the role of Chief Commissioner and Chief Executive Officer of the ATSB on 1 July 2016.

In his time as Chief Commissioner, Mr Hood has overseen a number of significant transport safety investigations and report releases across the three modes of aviation, rail and marine.

With almost 40 years' experience across a wide range of operational, training and management roles within the Department of Defence and the civil aviation industry, Mr Hood has been well positioned to drive an innovation agenda at the ATSB. The ATSB's 'Evolution Program' has already seen enhancements to its world-leading practices, including streamlined operations, a multidisciplinary teams-based approach to transport safety investigations, and the introduction of remotely piloted aircraft to capture evidence following accidents and other safety occurrences.

Mr Hood began his career as an air traffic controller in the Royal Australian Air Force (RAAF). Mr Hood has since had a wide range of operational, training and leadership roles across the civil aviation industry. Mr Hood has had the unique experience of acting as Director of Aviation Safety at the Civil Aviation Safety Authority and acting Chief Executive of Airservices Australia, before his appointment as Chief Commissioner and Chief Executive Officer at the ATSB.

Mr Hood has a passion for the transport industry in general, and transport safety in particular. As well as being a glider and powered aircraft pilot, Greg is involved with a number of aviation bodies. He is a Fellow of the Royal Aeronautical Society, a Freeman in the Honourable Company of Air Pilots, and a Life Member of the Qantas Founders Museum.

Before joining the ATSB, Greg was a Board Member of Safeskies Australia and a recent past-president of the Canberra Philharmonic Society. Greg has also served as a member of the business advisory council for World Vision and has, for the past three years, been a Champion for the St Vincent de Paul CEO Sleepout, raising funds for Australia's homeless.

ATSB commissioners with the executive management team. Source: ATSB

COMMISSIONER

Mr Noel Hart

Noel Hart has over 40 years' experience in the shipping, oil and gas industries, including thirteen years at sea in senior deck officer positions. His qualifications include a Master Mariner Class One degree, and business administration and MBA certificates.

Mr Hart left his seagoing career to join BP Australia in 1985 and has held management positions with BP Shipping in Melbourne, London and Chicago, in roles including Australasian Regional Shipping Manager, Liquefied Natural Gas and Shuttle Tanker Fleet Manager, Director of Marine and Technical Assurance (UK), and Regional and Commercial Manager (USA).

From 2006 to 2009, he was appointed to the position of General Manager of North West Shelf Shipping Service Company, based in Perth. In this position, Mr Hart was responsible for the safe shipping of liquefied natural gas from north western Australia to Asia and other global customers.

While based in London, Mr Hart was Chairman of the General Purposes Committees of both the Oil Companies International Marine Forum and the Society of International Gas Tanker and Terminal Operators. He also served as Director of the Middle East Navigational Aids Service, and was an alternate Director of both the Alaskan Tanker Company and the Marine Preservation Society in the USA, as well as the Australian Marine Oil Spill Centre.

From November 2008 to October 2018 Mr Hart was Chairman of Maritime Industry Australia Ltd – Australia's peak maritime association.

In June 2019, he was appointed as a director of the Mid West Ports Authority in Western Australia, and has been a Commissioner at ATSB for nearly 10 years.

COMMISSIONER

Ms Carolyn Walsh

Carolyn Walsh has over 35 years' experience in policy development, regulation and safety management at both the Commonwealth and state levels. She has 15 years' experience in the transport sector, initially as Executive Director of Strategy in the New South Wales Office of the Coordinator General of Rail, and then as Chief Executive of the New South Wales Independent Transport Safety and Reliability Regulator.

In addition to her role as a Commissioner of the ATSB, Ms Walsh is currently Chair of the National Transport Commission. She is also a member of the Audit and Risk Committees for the New South Wales Law Enforcement Conduct Commission, New South Wales Public Service Commission, State Transit Authority of New South Wales, Ministry of Health, Western Sydney Local Health District and the City of Sydney.

Ms Walsh has specialist expertise in safety (both transport and occupational health and safety), risk management and the regulatory framework governing transport operations in Australia.

Ms Walsh has a Bachelor of Economics degree and is a graduate of the Australian Institute of Company Directors.

COMMISSIONER

Mr Chris Manning

Chris Manning has over 40 years' experience in the aviation industry. In the early 1970s he was an air traffic controller and, from 1975 until 2008, an airline pilot for Qantas.

Captain Manning flew several Boeing types, gaining a B767 command in 1989. He was a check and training captain throughout the 1990s, and was President of the Australian and International Pilots Association from 1999 until 2002.

From 2003 until his retirement from Qantas in 2008, he was Chief Pilot and Group General Manager Flight Operations. He chaired the Australian Aviation Associations Forum from 2008 until 2015. He is a Director of Aerospace Australia Limited (Avalon Airshow), is Chairman of Airport Coordination Australia and is a founding Director of the Australian Aviation Hall of Fame.

EXECUTIVE DIRECTOR – TRANSPORT SAFETY

Mr Nat Nagy

Nat Nagy has been involved in the transport industry since 1996 in a diverse range of operational and leadership roles.

He joined the ATSB following a career as a commercial pilot and air traffic controller. He has held several strategic leadership and transformation roles in Airservices Australia, including General Manager Demand and Capacity Management, and Manager Air Traffic Management Service Support. In these roles, he led the workforce in the National Operations Centre, Aeronautical Information Services, Strategic Initiatives Delivery and Flight Procedures Design business areas. Most recently, Mr Nagy has been a Business Change Manager for Airservices Australia's Accelerate Program where he delivered a program of technological, organisational and cultural change.

Mr Nagy now leads the operational division of the ATSB across the aviation, rail, and marine domains and has a core focus on the improvement of transport safety across all industries.

He has tertiary qualifications in business, and is currently studying for a Master's Degree in Business.

CHIEF OPERATING OFFICER – OPERATIONAL SUPPORT

Mr Colin McNamara

Colin McNamara joined the Australian Public Service in 2004. Prior to this, he served as a General Service Officer in the Australian Army and was awarded the Australian Active Service Medal in 1999.

Prior to his appointment as the ATSB's Chief Operating Officer, Mr McNamara managed a range of corporate functional areas including Human Resources, Organisational Development, Governance and Major Projects. Through his appointment, Mr McNamara continues to play a critical role in contributing to the strategic direction of the agency, and in achieving relevant objectives of the Australian Government.

Mr McNamara holds a range of professional qualifications in personnel management and is a professional member of the Australian Human Resources Institute.

OUTCOME AND PROGRAM STRUCTURE

Program 1.1 objective

The ATSB will work actively with the aviation, marine and rail industries, transport regulators and governments at a local, state, national and international level to improve transport safety standards to the greatest public benefit. Investigations and related activities seek to raise awareness of identified safety issues and to encourage stakeholders to implement actions to improve future safety.

There are three core objectives which arise from the ATSB's functions under the TSI Act:

1. **Independent 'no-blame' investigation of transport accidents and other safety occurrences**

   Independent investigations that are selective and systemic, and which focus on future safety rather than on blame, increase stakeholder awareness and action on safety issues, and foster industry and public confidence in the transport system.

2. **Safety data recording, analysis and research**

   Timely receipt and assessment of transport accident and other safety occurrence notifications allows the ATSB to identify and refer safety issues at the earliest opportunity. The maintenance and analysis of a body of safety information (including transport safety data, research and investigation reports) enables stakeholders and researchers to gain a better understanding of safety trends and safety issues.

3. **Fostering safety awareness, knowledge and action**

   Awareness and understanding of transport safety issues is increased through a range of activities, including consultation, education, and the promulgation of research and investigation findings and recommendations. These contribute to the national and international body of safety knowledge and foster action for the improvement of safety systems and operations.

HOW THE ATSB REPORTS

Section 63A of the TSI Act requires that:

The annual report prepared by the Chief Executive Officer and provided to the Minister under section 46 of the *Public Governance, Performance and Accountability Act 2013* (PGPA Act) for a period must include the following:

- prescribed particulars of transport safety matters investigated by the ATSB during the period
- a description of investigations conducted by the ATSB during the period that the Chief Commissioner considers raises significant issues in transport safety.

The ATSB observes and complies with *Resource Management Guide No 135—Annual report for non-corporate Commonwealth entities* issued by the Department of Finance. This report is based on the guidance for 2018–19 published in May 2019.

This annual report details the ATSB's performance against the program objectives, deliverables and key performance indicators published in the *Infrastructure, Regional Development and Cities Portfolio Budget Statements 2018–19*. The ATSB annual report also includes audited financial statements in accordance with the PGPA Act.

Priorities for investigation

The ATSB focuses on transport safety as the highest priority. In 2018–19, the ATSB gave priority to transport safety investigations that have the potential to deliver the best safety outcomes for the travelling public. A new *Statement of Expectations* from the Minister for Infrastructure, Transport and Regional Development, provided to the ATSB in July 2019, sets the direction for the ATSB to give priority to transport safety investigations that have the potential to deliver the greatest public benefit through improvements to transport safety. The evolution in the ATSB's mission from focusing on the travelling public to driving safety that is for the greatest public benefit is necessary to reflect the contribution the ATSB makes to preventing loss of life, as well as avoiding significant local, state and national economic costs that can be associated with an accident. The ATSB is not resourced to investigate every single accident or incident that is reported but allocates priorities within the transport modes to ensure that investigation effort achieves the best outcomes for safety improvement. The ATSB recognises that there is often more to be learned from serious incidents and patterns of incidents, and gives focus to these investigations, as well as specific accident investigations.

Three ways to action

The TSI Act requires specified people and organisations to report to the ATSB on a range of safety occurrences (called 'reportable matters'). Reportable matters are defined in the TSI Regulations. In principle, the ATSB can investigate any of these reportable matters. In practice, they are actioned in one of three ways to contribute to the ATSB's functions:

1. A report of an occurrence that suggests a safety issue may exist will be investigated immediately (occurrence investigation). Investigations may lead to the identification/confirmation of the safety issue and evaluation of its significance. It will then set out the case for safety action to be taken in response.
2. A report of an occurrence that does not warrant full investigation may warrant additional fact gathering for future safety analysis, to identify safety issues or trends (such as inclusion in a safety study).
3. Basic details of an occurrence, based primarily on the details provided in the initial occurrence notification, will be recorded in the ATSB's occurrence database to be used in future safety analysis to identify safety issues and trends (including safety studies), and in aviation, will be available in the online searchable occurrence database. These may be published individually as occurrence briefs.

Aviation broad hierarchy

The ATSB allocates its investigation resources to be consistent with the following broad hierarchy of aviation operation types:

1. passenger transport—large aircraft
2. passenger transport—small aircraft:
   a) regular public transport and charter of small aircraft
   b) humanitarian aerial work (for example: the Royal Flying Doctor Service, search and rescue flights)
3. commercial (fare-paying and recreation—for example: joy flights)
4. aerial work with participating passengers (for example: news reporters, geological surveys)
5. flying training
6. other aerial work:
   a) non-passenger carrying work (for example: agriculture, cargo)
   b) private transport or personal business
7. high-risk personal recreation/sports aviation/experimental aircraft operations.

The ATSB endeavours to investigate all fatal accidents involving VH-registered powered aircraft subject to the potential transport safety learnings and resource availability.

Marine broad hierarchy

The ATSB allocates its investigative resources to be consistent with the following broad hierarchy of marine operation types:

1. passenger operations
2. freight and other commercial operations
3. non-commercial operations.

Rail broad hierarchy

The ATSB allocates its investigative resources to be consistent with the following hierarchy of rail operation types:

1. mainline operations that impact on passenger services
2. freight and other commercial operations
3. non-commercial operations.

Level of response

The level of investigative response is determined by resource availability and factors such as those detailed below. These factors (expressed in no particular order) may vary in the degree to which they influence the ATSB's decisions to investigate and respond. Factors include:

- the anticipated safety value of an investigation, including the likelihood of furthering the understanding of the scope and impact of any safety system failures
- the likelihood of safety action arising from the investigation, particularly of national or global significance
- the existence and extent of fatalities/serious injuries and/or structural damage to transport vehicles or other infrastructure
- the obligations or recommendations under international conventions and codes
- the nature and extent of public interest—in particular, the potential impact on public confidence in the safety of the transport system
- the existence of supporting evidence, or requirements, to conduct a special investigation based on trends
- the relevance to identified and targeted safety programs
- the extent of resources available, and projected to be available, in the event of conflicting priorities
- the risks associated with not investigating—including consideration of whether, in the absence of an ATSB investigation, a credible safety investigation by another party is likely
- the timeliness of notification
- the training benefit for ATSB investigators.

The objective of the classification process is to quickly identify, allocate resources for and appropriately manage occurrences that:

- require detailed investigation
- need to be recorded by the ATSB for future research and statistical analysis
- need to be passed to other agencies for further action
- do not contribute to transport safety.

SECTION 3

Report on performance

3

REPORT ON PERFORMANCE

This section reviews the ATSB's results against the performance criteria and deliverables set out in the *Portfolio Budget Statements 2018–19* and the *ATSB Corporate Plan 2018–19*. The ATSB's effectiveness in achieving planned outcomes during 2018–19 is also reviewed here.

Annual performance statement

I, as the accountable authority of the Australian Transport Safety Bureau, present the annual performance statement of the Australian Transport Safety Bureau for the year ended 30 June 2019, as required under paragraph 39(1)(a) of the *Public Governance, Performance and Accountability Act 2013* (PGPA Act). In my opinion, this annual performance statement is based on properly maintained records, accurately reflects the performance of the entity, and complies with subsection 39(2) of the PGPA Act.

Greg Hood
Chief Executive Officer

9 September 2019

Table 1: Results against performance criteria

Purpose

As set out in the *Portfolio Budget Statements 2018–19* and the *ATSB Corporate Plan 2018–19*, the ATSB's purpose is to improve the safety of, and public confidence in, aviation, marine and rail transport through:

- the independent 'no-blame' investigation of transport accidents and other safety occurrences
- safety data recording, analysis and research
- fostering safety awareness, knowledge and action.

Performance criterion	Target	Result
Safety actions completed that address safety issues identified by ATSB investigation reports—critical safety issues.	100%	There were no critical safety issues identified in 2018–19.
Safety actions completed that address issues identified by ATSB investigation reports—all other safety issues.	70%	67% of all other safety issues identified by ATSB investigation reports in 2018–19 were adequately addressed.
Number of active complex investigations in progress at each month's end (12-month rolling average, as at 30 June).	75	Average of 86.5 active complex investigations in progress at the end of each month.
Average time taken to complete and publish complex investigation reports.	21 months	Average of 23.9 months taken to complete and publish complex investigation reports.
Number of active short investigation in progress at each month's end (12-month rolling average, as at 30 June).	30	Average of 35.5 active short investigations in progress at the end of each month.
Average time taken to complete and publish short investigation reports.	6 months	Average of 9.8 months taken to complete and publish short investigation reports.
Occurrence briefs completed within one month.	90%	35% of occurrence briefs were completed within one month.
An increase from 2017–18 in the overall number of safety issues identified from safety studies and complex investigations.	Up to 10%	There was a 29% increase in the overall number of safety issues identified from 2017–18.
Occurrence and safety study investigations to be initiated on the basis of data-driven analysis.	Up to 15%	21% of all occurrence and safety study investigations were directly linked to SafetyWatch priorities.
Through an annual stakeholder survey, stakeholder respondents recall ATSB safety messaging relevant to their industry.	70%	82% of stakeholder respondents recall ATSB safety messaging.
An increase in the overall number of ATSB social media engagements.	Up to 10%	A 20% increase in social media engagements was recorded.
ATSB safety messages disseminated by independent media channels.	5 per month (average)	On average, 17 safety messages per month were disseminated by independent media channels.

Performance at a glance

The 2018–19 financial year has focused on positioning the ATSB to improve its efficiency and effectiveness. The Australian National Audit Office's efficiency audit of the ATSB acknowledged in its report the decline in the efficiency of ATSB investigations over a number of years. This is reflected in the performance against some of the timeliness key performance indicators for investigations.

The ATSB recognises that efficiency is an essential factor in influencing improvements in transport safety. The ANAO's report acknowledges that before the audit, the ATSB was already engaged in a program to enhance its efficiency. The ATSB sought and received funding to replenish its workforce and re-profile its capital investment strategies to meet the projected needs in essential technical equipment, data warehousing requirements and core enterprise systems. The ATSB has invested heavily in recruiting, training and mentoring new investigators that will result in enhanced efficiencies as their competencies develop and mature. Further, the ATSB has already commenced a program of work to apply a project management approach to investigations. This program is providing the ATSB with greater visibility of workloads and availability of skills across its workforce.

This audit has assisted the ATSB to make further improvements. The ATSB released a varied Corporate Plan during the year to put in place more suitable key performance indicators for timeliness and demand/capacity. The ATSB has a key performance indicator of 21 month average to complete complex investigations which reflects the current demand and capacity situation of the ATSB. As the ATSB implements the measures to achieve greater efficiency, this average timeframe will come down. The ATSB notes though that the time taken to complete complex investigations is comparable to the time taken by its counterparts around the world.

The ATSB has benchmarked its timeliness performance against other accident investigations around the world. While the ATSB has previously benchmarked the quality of investigations and recognised a best practice approach, a benchmarking focus on investigation efficiency should assist the ATSB and likeminded investigation agencies to learn from each other.

In 2019–20, the ATSB will undertake a review of its current set of deliverables and key performance indicators to determine whether they can be amended to better articulate the agency's evolving services and contributions to transport safety and also to ensure the performance indicators are within the control of the ATSB. The ATSB will seek to make its performance criteria reflect the best practice recommendations from the ANAO's *Public Governance Performance and Accountability Act 2013*, Implementation and Corporate Planning audits – *ANAO report 33 2017–18* and *ANAO report 362017-18*.

While the ATSB remains committed to improving its overall efficiency, the results show the ATSB's continued focus on safety messaging is gaining traction as demonstrated through the stakeholder survey results. The ATSB is working to disseminate material for safety action broadly. We are also finding more safety issues to form the basis of that messaging.

Table 2: Performance at a glance 1

Deliverables	Year	Number of active investigations in progress at each month's end (12-month rolling average, as at 30 June)
Complex investigations		
Aviation	2018–19	66
Marine	2018–19	8
Rail	2018–19	12
Short investigations		
Aviation	2018–19	28
Marine	2018–19	2
Rail	2018–19	6

Table 3: Performance at a glance 2

Deliverables	Year	Number completed[1]	Average time
Complex investigations			**Average time in months to complete**
Aviation	2018–19	23	25
	2017–18	23	26
	2016–17	27	23
Marine	2018–19	4	26
	2017–18	3	20
	2016–17	4	16
Rail	2018–19	7	19
	2017–18	6	22
	2016–17	10	16
Short investigations			
All modes	2018–19	34	10
	2017–18	39	6
	2016–17	110	3
Occurrence briefs			**Per cent completed within one month**
All modes	2018–19	108	35%
	2017–18	40	19%

1 Includes occurrence, safety issues and research investigations conducted under the TSI Act. The figures do not include assistance to investigations conducted by an external party. Note that previous ATSB annual reports include assistance to investigations conducted by an external party. The figures will, therefore, appear higher in previous annual reports.

Key results

Table 4 summarises the ATSB's performance against key indicators published in the *Portfolio Budget Statements 2018–19*.

Table 4: ATSB performance against key performance indicators

	Target	Performance	Page
Key performance indicators			
Safety actions completed that address safety issues identified by ATSB investigation reports:			Pages 104–131
> critical safety issues	100%	Nil identified	
> all other safety issues.	70%	67%	
Number of active complex investigations in progress at each month's end (12-month rolling average, as at 30 June).	75	86.5	Page 41
Average time taken to complete and publish complex investigation reports.	21 months	23.9	Page 42
Number of active short investigations in progress at each month's end (12-month rolling average, as at 30 June).	30	35.5	Page 41
Average time taken to complete and publish short investigation reports.	6 months	10 months	Page 42
Occurrence briefs completed within one month.	90%	35%	Page 42
An increase from 2017–18 in the overall number of safety issues identified from safety studies and complex investigations.	Up to 10%	Up 29%	Page 48
Occurrence and safety study investigations to be initiated on the basis of data-driven analysis.	Up to 15%	21%	Pages 48–49
Through an annual stakeholder survey, stakeholder respondents recall ATSB safety messaging relevant to their industry.	70%	82%	Page 69
An increase in the overall number of social media engagements.	Up to 10%	Up 20%	Pages 66–67
ATSB safety messages disseminated by independent media channels.	5 per month (average)	17 per month (average)	Pages 64–69

	Target	Performance	Page
Deliverables			
Complete and publish reports.	Up to: > 35 complex investigations > 100 short investigations > 100 occurrence briefs.	 34 34 108	Pages 46–47
Ensure preparedness for a major accident by reviewing and testing major accident response and management capabilities through participation in one major exercise per year.	One major accident exercise per annum.	Participation in one major exercise with internal audit.	Page 47
Provide assistance to investigations overseas in accordance with international arrangements and where resources permit, with a report produced annually addressing the transport safety contribution of this support.		All assistance provided to overseas investigations maintained through an international Accredited Representative register.	Pages 70–71
Mature the ATSB's data analysis tools and techniques to enhance the ATSB's proactive capability for determining safety hazards and risks to be used in making assessments about occurrences to investigate and safety studies to commence.		Expanded.	Page 48
Expand the ATSB's data warehouse to include national rail data.		Expanded.	Page 49
Assess, classify and publish summaries of accident and incident occurrences received.	Details of occurrences being investigated are published within one working day.	65%	Pages 48, 50
	Summaries of aviation occurrences are ready to be published in the public online database within 10 working days of receipt.	42%	Pages 48, 50
Assess confidential reports for clarity, completeness and significance for transport safety.	A de-identified summary of the confidential report will be provided to any relevant third party within 10 working days.	27%	Pages 48, 50-52

	Target	Performance	Page
	Within six weeks, advise a responsible party in a position to take safety action in response to the safety concern.	56%	Pages 48, 50–52
Publish statistical and trend monitoring publications (including the *Aviation Occurrence Statistics Report*).	Five publications.	4	Pages 48, 53–63
The ATSB will proactively influence safety awareness in the aviation, rail and marine industries, and among the travelling public, through communication and education activities.	Active engagement at key industry events across the modes. Establishing SafetyWatch priorities. Increasing the accessibility of investigation report content and safety products through its website, mailing lists, use of social media, industry publications and mediums such as video content. Pushing media coverage of ATSB investigations and safety awareness activities.	See detailed report.	Pages 64–69
Assist transport safety in the international region, through direct cooperation and the delivery of approved projects and other support activities provided for by program funding agreements, with a publication produced annually addressing the transport safety contribution of these activities.	Delivery of approved projects within program funding allocation.	See detailed report.	Pages 70–71

INDEPENDENT 'NO-BLAME' INVESTIGATIONS OF TRANSPORT ACCIDENTS AND OTHER SAFETY OCCURRENCES, AND RESEARCH

This section describes the ATSB's performance against the deliverables relating to the ATSB's role as the independent 'no-blame' transport safety investigator, as published on page 21 of the *ATSB Corporate Plan 2018–19*.

Deliverables

To meet its objective for improved transport safety, the ATSB has committed to the following independent 'no-blame' investigation of transport accidents and other safety occurrences, and research deliverables:

- Complete and publish up to:
  - 35 complex investigations
  - 100 short investigations
  - 100 occurrence briefs.
- Ensure preparedness for a major accident by reviewing and testing major accident response and management capabilities through participation in one major exercise per annum.
- Provide assistance to investigations overseas in accordance with international arrangements and where resources permit, with a report produced annually addressing the transport safety contribution of this support.

Aviation investigations

In 2018–19, the ATSB initiated 15 complex safety investigations and 37 short investigations. In addition, 14 external investigations were commenced.

During this reporting period, the ATSB completed 32 complex investigations, including 22 occurrence investigations, nine external investigations and one safety study. The ATSB also completed 28 short aviation investigations (28 short occurrence investigations and no external investigations).

The safety study completed was:

- *Analysis of Wake Turbulence Occurrences at Sydney Airport 2012–16.*

As at 30 June 2019, there were 62 ongoing complex aviation investigations, 21 ongoing short investigations and 18 external investigations.

Marine investigations

In 2018–19, the ATSB initiated one short investigation. No complex marine investigations were commenced. The ATSB also initiated one external marine investigation.

During this reporting period, the ATSB completed five complex occurrence investigations (including one external) and four short occurrence investigations.

As at 30 June 2019, the ATSB continues to investigate eight marine occurrences (six as complex investigations, one as short investigation and one external investigation).

Rail investigations

In 2018–19, the ATSB initiated seven complex rail occurrence investigations and five short rail occurrence investigations.

During this reporting period, the ATSB completed seven complex rail investigations (seven occurrence investigations and no safety issue investigations). It also completed two short rail occurrence investigations.

As at 30 June 2019, the ATSB continues to investigate 16 rail safety occurrences (12 complex investigations and four short investigations).

Preparedness for a major accident

Being prepared to respond quickly and effectively to a major aviation, rail or marine accident is a key function of the ATSB.

In response to an internal review, the ATSB has revised its *Major Investigation Preparedness Plan* (MIPP). The MIPP comprises a comprehensive suite of procedures and information that will guide the ATSB response to a major transport accident.

To maintain preparedness, the ATSB actively engages with the transport industry to develop an awareness of the ATSB's role, and participates in practical exercises to test the effectiveness of the ATSB's response arrangements. In June 2019, the ATSB conducted an exercise to simulate the establishment of the ATSB Accident Response Centre (ARC) in response to a major accident.

These activities have provided valuable input to ensuring that the ATSB is ready to respond effectively to a major transport accident.

SAFETY DATA RECORDING, ANALYSIS AND RESEARCH

This section describes the ATSB's performance against the deliverables set out on page 21 of the *ATSB Corporate Plan 2018–19*.

Deliverables

To meet its objective for improved transport safety, the ATSB has committed to the following safety data recording, analysis and research deliverables:

- Mature the ATSB's data analysis tools and techniques to enhance the ATSB's proactive capability for determining safety hazards and risks to be used in making assessments about occurrences to investigate, and safety studies to commence.
- Expand the ATSB's data warehouse to include national rail data.
- Assess, classify and publish summaries of accidents and incident occurrences received. Details of occurrences being investigated are published within one working day. Summaries of aviation occurrences are ready to be published in the public online database within 10 working days of receipt.
- Assess confidential reports for clarity, completeness and significance for transport safety and, where appropriate, advise within six weeks any responsible party in a position to take safety action in response to the safety concern.
- Publish five statistical and trend monitoring publications (including the *Aviation Occurrence Statistics Report*).

In 2018–19, the ATSB continued to analyse occurrence data held in its aviation safety occurrence database as part of Australia's international obligation to determine if preventative safety measures are required.

In addition to these deliverables, the ATSB continued to support active aviation occurrence investigations. During 2018–19, the ATSB completed significant data analysis for most aviation occurrence investigations. This work helped to determine the investigation scope, inform investigation conclusions and safety issue risk assessments, and document past occurrences of similar incidents.

Data analysis tools and warehouse

The ATSB initiated a data analysis expansion program in 2018–19 by:

- introducing PowerBI for an executive investigation progress dashboard
- continuing to work with Airservices Australia to secure up-to-date aviation airport movement data
- participating in feasibility planning with the Bureau of Infrastructure, Transport and Regional Economics for a shared multi-agency aviation data warehouse.

Data and recorder recovery

The ATSB's data and recorder recovery staff maintain support and readiness for the recovery and download of recorded data from a variety of damaged and undamaged sources across the aviation, rail and marine transport modes.

Over this reporting period, the ATSB continued to support external agencies by providing assistance to Recreational Aviation Australia, the West Australian Department of Transport, and international aviation investigation agencies (Myanmar, Indonesia) to recover data from damaged recording devices.

Material failure analysis

The ATSB possesses expertise and specialised facilities to enable the detailed examination of physical evidence, allowing for significant insights into the causes of factors of transport safety occurrences. Over 2018–19, transport safety investigators with engineering specialist backgrounds have provided technical input and analysis across a variety of investigations. This included detailed examination of a fractured Cessna 210 wing carry-through spar that caused one of the aircraft's wings to separate in flight (AO-2019-026), and resulted in the release of safety action from the manufacturer in the form of mandatory service instructions. The group also assisted in investigations involving, among other things, gas system components relating to an in-flight balloon fire (AO-2019-001), a rail wheel that fractured during normal operation (RO-2019-001), and the identification of fuel system debris relating to an in-flight engine shut down (AO-2019-002).

In addition, the ATSB has provided technical assistance to Recreational Aviation Australia, the Australian Sport Rotorcraft Association and the Papua New Guinea Accident Investigation Commission in the examination of aircraft structures and components involved in several aviation accidents and occurrences.

Reporting

The ATSB's target for assessing, classifying and publishing summaries of accidents and incidents is:

- one day for occurrences being investigated (all modes)
- 10 days for summaries of other incidents (aviation).

Of 77 occurrences investigated, 50 (65 per cent) were processed with summaries published on the ATSB website within one working day of the start of the investigation.

In 2018–19, 42 per cent of aviation occurrence notifications were processed and ready for publication within 10 working days. The average time for processing was 21 working days.

Confidential reporting

In 2018–19, the ATSB's Confidential Reporting Scheme (REPCON) received 137 notifications (of which 63 were classified as REPCONs). Of these 137 notifications, 77 concerned aviation (32 REPCONs), 57 concerned rail (30 REPCONs) and three concerned marine (one REPCON).

Of the 27 REPCON reports completed in 2018–19, 15 (55 per cent) resulted in safety action by stakeholders.

The following summaries provide examples of safety concerns that were raised, along with the safety action taken after the concerns were reported through REPCON. Some information has been redacted to preserve confidentiality.

Aviation

- Multiple reporters expressed a safety concern regarding cabin crew fatigue operating the [Location 1–Location 2] pairing. Each reporter stated that the slip time in [Location 2] was insufficient for adequate rest and all mentioned experiencing high levels of fatigue, including significantly reduced levels of alertness and exhaustion. Most reporters mentioned struggling to stay awake during the landing phase and being concerned that they would not be able to operate effectively in the event of an emergency. As a result of the REPCON and the Operator's internal review of fatigue incident reports, bio-mathematical modelling and crew surveys, the Operator advised that as of the next roster period, the four day flying pattern was being cancelled and the standby duty for crew on the five day pattern would be discontinued. The Regulator noted that the response from the Operator was an articulation of a very good example of a best practice approach to fatigue.

- Multiple reporters expressed a safety concern regarding an unmarked wire fence erected across a decommissioned cross runway. Whilst the runway was not included in the ERSA, the reporters stated that it could be reasonably assumed by flight crew that a grass strip at a serviceable aerodrome would be a suitable landing option if required in an emergency situation. As a result of these reports, the aerodrome operator advised the ATSB that it would review all options to ensure the runway was easily identifiable from the air as being unsuitable for use due to obstacles.
- Multiple reporters expressed a safety concern regarding line pilots at [Location] experiencing high levels of fatigue and stress. Reports further stated that recent resignations of experienced pilots was due to the poor safety culture at [Operator], including a culture of suppression and intimidation in which staff are afraid to speak up about safety concerns and fear they will be punished if they do so. The operator responded to the REPCON stating that they have an open and transparent reporting system whereby personnel are able to, and do, directly communicate any concerns to the safety department, and the operator has evidence to support this statement. There has been no evidence to support that resignations were due to a poor safety culture at [Operator]. Additionally, there has also been no evidence found to support an assertion of suppression and intimidation within the organisation in these matters. As a result of the REPCON report, the Regulator advised that multiple documents including pilot rosters had been requested from the operator for review and assessment. In addition, the Regulator scheduled a level 2 surveillance event—onsite inspection.

Marine

- The reporter expressed a safety concern regarding pilot boat operations in Torres Strait during monsoon and local cyclonic conditions. The reporter stated that as there is no resident Harbour Master at [Location], storm safety action is directed towards land and wharf operations and [Location] routinely remains open while the other Ports are closed. Due to commercial competition, pilot boat crews may encounter increasing pressure to “extend the envelope” in these extreme weather conditions and continue operating regardless of sea conditions. The reporter queried if Ports should be closed when conditions reach pre-determined limits. The Harbour Master advised that while pilot vessels are directly responsible for ensuring they operate their vessels safely, as a result of the REPCON report, the Harbour Master advised that they would continue to monitor pilot vessel operations in all pilotage areas within the region to ensure they comply with the relevant Extreme Weather Event Contingency Plans. The Australian Maritime Safety Authority advised that while the compliance inspections and audits conducted to date corroborate the establishment of adequate risk mitigation arrangements, as a result of the REPCON, local Marine Safety Inspectors will perform a series of focused inspection campaigns to verify the effective implementation of these arrangements on the pilot vessels at this location.

Rail

- The reporter expressed a safety concern regarding the lack of training provided to employees and inadequate promotion of updated operational procedures. The reporter stated that operator has released approximately 270 operational document changes to their train crew since 01 January 2018. Each of these required the employee to read the document, interpret any changes from the previous edition and recall these in an operational environment. As a result of the REPCON, the operator advised that as part of its focus on continuous improvement, a governance team would be established (with project working groups already formed and progressing projects) to review current practices and propose improvements, including in the area of management of operational documents and change management processes. In addition, the operator advised it would also reiterate to its workforce that all workers have a duty to raise safety concerns to ensure a safe system of work and to aid in the continuous improvement of its rail operations.
- The reporter expressed a concern regarding a declining safety culture following a restructure of the organisation. The reporter stated that there was a disregard for safety, specifically in relation to fatigue management of employees, poor maintenance of locomotives and rolling stock, and training and qualification of train crews. The reporter advised that operator was operating locomotives with critical safety defects despite train drivers raising concerns about driving them on a regular basis. The reporter further stated that experienced train crews have not been re-certified in train inspection for excessive periods and drivers are operating trains on routes where their qualifications had lapsed many years prior. As a result of the REPCON, the operator advised that it was investigating the claims in the report and once finalised any outcomes would be shared with the Office of the National Rail Safety Regulator (ONRSR). ONRSR advised that it was planning regulatory activities to address the issues raised in the REPCON.
- The reporter expressed a safety concern regarding Passenger Service Supervisors (PSS) routinely breaching the 'radio right of way' procedure. The reporter advised that the PSS are required to be in position at their designated station, located at the back carriage of the train, when the train departs every station. The PSS are required to ring a bell once the status OK light is observed to alert the driver that all passengers are clear of the doors and that it is safe for the train to depart. As a result of the REPCON, the operator advised that 'right of way' requirements had been reiterated to PSS's by Standards Officers and that face-to-face briefings had been conducted to applicable staff at multiple locations. The operator further advised that a General Instruction in relation to the 'right of way' procedure, as well as other door controls will be issued via the weekly information pack to train crew in the coming weeks.

Safety studies (research and safety issues)

In 2018–19, the ATSB completed one safety study (under the TSI Act):

- *Analysis of Wake Turbulence Occurrences at Sydney Airport 2012–2016*.

Data and educational publications

In 2018–19, the ATSB completed three data and education reports:

- *Airline pilot safety culture and experience survey*
- *Exploration of aviation gasoline lead content in northern Australia.*

Statistical reports

In 2018–19, the ATSB published two statistical reports:

- *Aviation Occurrence Statistics 2008–2017*
- *Aviation wildlife strike statistics 2008–2017.*

Details on the ATSB's safety studies, data and education, and statistical publications are provided below.

Analysis of Wake Turbulence Occurrences at Sydney Airport 2012–2016 (AR-2017-011)

For fixed-wing aircraft, wake turbulence is the combined effect of jet blast or propeller wash with wake vortices. Wake vortices are the primary contributor to wake turbulence. The initial strength of the vortices is primarily dependent upon the generating aircraft's speed, weight and wingspan. These vortices decay with time and largely become non-hazardous—depending on atmospheric conditions—within several minutes.

The wake vortices can affect following aircraft in a similar way to flying through weather-related turbulence. More specifically, aircraft encountering wake turbulence may experience an induced roll, which can increase safety risk, especially during phases of flight close to ground such as arrivals and departures. The risk of an injury resulting from a wake turbulence encounter is higher for cabin crew than passengers, who are generally secured in their seats earlier during arrivals.

To minimise the risk to safety associated with wake turbulence, air traffic control separates aircraft arriving or departing from an airport using wake turbulence separation standards. These are time and/or distance-based measures that limit the separation of leading and following aircraft and are designed to reduce the likelihood and severity of

wake turbulence occurrences. These standards are not applicable to parallel runways which are separated by more than 760 m. As a result, they do not apply during parallel runway operations at Sydney Kingsford Smith International Airport (Sydney Airport), where the parallel runways are separated by around 1,000 m.

In 2016, through routine monitoring of safety occurrence data, the ATSB identified a potential safety issue regarding the high proportion of wake turbulence occurrences at Sydney Airport.

To identify the contributing factors to this higher rate of occurrences at Sydney, and the level of safety risk of wake turbulence occurrences at the airport, the ATSB initiated an Aviation Research investigation under the *Transport Safety Investigation Act 2003*.

In Australia, between 2012 and 2016, 179 wake turbulence occurrences were reported to the ATSB, with 78 of these occurring at Sydney Airport. In addition to its high proportion of wake turbulence occurrences, seven of the eight minor injuries reported as being a result of a wake turbulence occurrences were at Sydney. Further, when compared with the combined data from other major Australian airports (Adelaide, Brisbane, Melbourne and Perth), an aircraft was more likely to have a missed approach or goaround, a ground proximity alert, or have control issues following a wake turbulence encounter at Sydney Airport.

Sydney Airport is the only major Australian airport currently with parallel runways. The distance between these runways is such that they are treated as individual runways and do not require the application of the wake turbulence separation standard for aircraft operating to a single runway.

The investigation found that at Sydney Airport, when the time between arriving aircraft (including those operating on parallel runways) is less than one per minute, the likelihood of encountering wake turbulence increased substantially, with Runway 34 Right (the shorter of the parallel runways) the most likely to be affected.

Despite the distance between the parallel runways at Sydney Airport exceeding the regulatory standard (for aircraft separation to treat the parallel runways the same as a single runway), evidence indicates that wake turbulence generated by aircraft arriving on one runway can affect aircraft arriving on the parallel runway, especially under certain wind conditions. Aircraft arriving on Runway 34 Left were found to be the most likely cause for more than half of the Runway 34 Right arrival wake turbulence occurrences. A leading Airbus A380 (a super heavy aircraft) probably generated more than one-third of these occurrences.

The rate of reported wake turbulence occurrences by arriving aircraft following an Airbus A380 was more than double that of any other aircraft type arriving at Sydney. All A380

wake turbulence occurrences took place outside peak arrival periods (one or more aircraft arrivals per minute). Medium weight aircraft, such as a Bombardier DHC-8 or Boeing 737, were more likely to report an encounter with wake turbulence than larger aircraft. No light aircraft reported encountering wake turbulence at the airport.

There were no reported wake turbulence occurrences at Sydney Airport between 2012 and 2016 that occurred during a reported loss of separation (breach of the wake turbulence separation standard). In contrast to wake turbulence occurrences, the rate of other turbulence occurrences at Sydney Airport is consistent with other major Australian airports.

The investigation concluded that there was a disproportionate rate and level of consequence of reported wake turbulence occurrences for aircraft arriving at Sydney Airport compared to other major Australian airports in the years 2012 to 2016. Given the parallel runway configuration, wake turbulence occurrences at Sydney Airport were found to be associated with:

- arrival densities of one or more aircraft per minute (including parallel runway arrivals), especially on flights that arrived on Runway 34 Right
- wind direction from the west or north-west for aircraft arriving on Runway 34 Right, especially when coinciding with a heavy or super heavy aircraft arriving on Runway 34 Left
- arrivals following an Airbus A380 compared to other aircraft.

More than half of the wake turbulence occurrences during arrival at Sydney Airport were associated with one or more of the above three factors. Removing all of these factors would halve the occurrence rate and make it more comparable to other major airports, however, the rate at Sydney Airport would likely still be higher than other major Australian airports. This suggests other factors beyond the scope of this investigation are also influencing wake turbulence at Sydney.

Airservices Australia will publish an Aeronautical Information Circular (AIC) aimed at operators who operate into Sydney Airport. The AIC will advise industry of the injuries associated with wake turbulence for Runway 34 Right as identified in the ATSB Report. The AIC will also recommend that cabin crew should be seated and secured in the earlier part of the approach.

However, the ATSB did not consider that the proposed safety action would adequately reduce the risk associated with the safety issue. As such, the ATSB has issued a safety recommendation that Airservices introduce measures to reduce the frequency of wake turbulence occurrence at Sydney Airport.

Airservices has since informed the ATSB that the following measures will also be implemented:

- provide wake turbulence caution to aircraft on approach to 34R that will operate within the wake turbulence distance of a Heavy or Super heavy aircraft making an approach to runway 34L
- increasing separation distances for arrivals from 4 NM to 5 NM on runways 16L/R and 34L/R
- applying the single-runway wake turbulence standard to the parallel runways when the leading aircraft is a super heavy like an A380 and the following aircraft is light (under 25,000 kg).

The ATSB agrees that these have the potential to reduce the wake turbulence risk but encourages Airservices to consider conducting their own quantitative analyses to explore other options that could further reduce the risk of wake turbulence for aircraft arriving into Sydney Airport.

When departing or arriving at Sydney Airport, aircrews need be alert to the increased likelihood of encountering wake turbulence especially during periods of high movement density or during parallel runway operations, when operating on Runway 34 Right with wind coming from the west or north-west, and/or following an Airbus A380.

Fatigue experiences and culture in Australian commercial air transport pilots (AR-2015-095)

Fatigue is an inevitable risk in aviation. As it cannot be completely eliminated, it must be managed. Data on fatigue and its impact on air transport safety is generally only obtained if there is an incident or accident. As a result, there is generally a lack of understanding of the baseline level of fatigue in day-to-day Australian air transport across operators.

To provide the air transport industry, regulators and policy makers with further insights into industry perceptions of fatigue, the ATSB conducted a survey of commercial pilots engaged in passenger, freight, and aeromedical operations in the second half of 2016. To understand the reported level of fatigue during normal operations, the survey aimed to discover the amount of sleep and rest obtained by pilots, as well as their perceptions on the length of rests and duty times. The survey also aimed to capture data on the organisational aspects of fatigue, including how pilots feel about removing themselves from duty because of fatigue experienced and how they think management perceive this behaviour.

The majority of survey respondents reported they were sufficiently well rested by the end of their last duty. Over half of pilots reported having 7 hours of sleep or more in the previous 24 hours, and over 60 per cent reported having more than 14 hours in the previous 48 hours, at the end of the last flight. The survey also found a small but significant number of pilots, 10 per cent and 17 per cent, who reported obtaining less than 5 hours of sleep in the previous 24 hours, or less than 12 hours in the previous 48 hours, respectively, at the end of their last flight. These sleep thresholds have been shown to be associated with impaired performance.

Less sleep on duty was more prevalent for international and domestic jet airline pilots than other air transport pilots (regional, charter and aeromedical). While around one third of the respondents reported obtaining the same amount of sleep at home as they did while on duty, around half of international and domestic pilots reported obtaining less hours of sleep on duty than at home. About 15 per cent of international pilots responded they had no rest during their last international flight.

Domestic pilots completed duties on a stand-by day more often than other pilots. Some believed the rest period between duties was too short, duty periods were too long, and access to food during duties was more difficult compared with other pilots, indicating some pilots within this group have negative perceptions of rest opportunities provided by their employers.

Over 90 per cent of pilots indicated their employer offered a formal process for removing themselves from duty due to fatigue. About one third of respondents indicated they removed themselves from duty at least once in the past year, mostly between one and three days. The pilots who removed themselves from duty generally perceived their actions left a negative impression with management (with the exception of aeromedical pilots), and did not feel comfortable doing so.

Responsibility to manage the risk of fatigue lies with both the individual pilot and organisation. It is the individual pilot's responsibility to use rest periods to obtain adequate sleep and to remove themselves from duty if they feel fatigued. It is important for operators to implement policies to reduce the likelihood of fatigue-related issues through rostering practices and by providing an organisational culture where crew can report fatigue in a supportive environment. The results of this research suggest that operating in circumstances conducive to fatigue is an ongoing challenge for a proportion of Australian air transport pilots.

Exploration of change in aviation gasoline lead content in northern Australia on reported engine-related occurrences (AR-2018-058)

This research commenced following receipt of correspondence suggesting that an increase in helicopter engine issues in northern Australia was potentially linked to a change to reduced lead content fuel in these areas. The Civil Aviation Safety Authority (CASA) advised the ATSB that, in December 2015, the colour and branding of fuel supplied to the northern region of Australia changed, from green Avgas 100/130 to blue Avgas 100LL (low lead). Although the maximum permissible lead content reduced with this change, CASA advised that the actual lead content of the supplied Avgas 100/130 fuel had already been below the maximum permitted by the Avgas 100LL standard prior to December 2015.

An analysis of safety occurrence records was conducted to identify if any significant changes to the number of reported engine failures or malfunctions had occurred following the introduction of Avgas 100LL. The analysis found that overall there had been no discernible increase in reported engine failures or malfunctions in northern Australia after the introduction of Avgas 100LL in December 2015. Specifically for helicopters with Lycoming piston engines, there was an increase in reported occurrences of engine failures or malfunctions since 2014, largely dominated by northern Australia. However, occurrence numbers are low so some year-to-year variation from chance alone is expected. Additionally, the increase did not align with the introduction of Avgas 100LL in December 2015.

Potential symptoms of the issues were reported as premature cylinder removals, and a high rate of exhaust valve and guide wear. The analysis found only one incident related to valve wear in northern Australia following the reported fuel change. However, the ATSB found a disproportionate number of engine failures or malfunctions in piston engine helicopters with unidentified failure mechanisms following the change to Avgas 100LL. Although it was not possible to eliminate the introduction of Avgas 100LL fuel as a potential factor in these engine failures, conclusive findings could not be drawn based on the available evidence.

In response to the concerns raised, the Northern Fuels Stakeholder Investigation Group was formed to investigate this issue further. Additionally, CASA has introduced airworthiness bulletin (AWB) 85-024 Issue 1, to raise awareness of an increasing incidence of premature exhaust valve and valve guide wear.

In July 2018, a working group was formed, with representatives from operators, maintainers, the primary affected engine manufacturer, the fuel supplier and CASA, to discuss the fuel concerns. The group noted that Avgas fuel quality was one area of inquiry and that no conclusions had been made at this stage regarding a potential fuel-related issue.

In August 2018, CASA issued an airworthiness bulletin (AWB) in relation to piston engine exhaust valve and valve guide distress. The purpose of the AWB was to advise of an 'increasing incidence of premature exhaust valve and valve guide wear, due to elevated combustion temperatures'. This AWB identified the affected population as Robinson helicopters fitted with Lycoming engines located in the northern regions of Australia.

The AWB also identified that, 'it has not been conclusively determined that changes in the fuel composition is the source of the engine problems' and that 'the described problem is not limited to Lycoming products… with Continental engines installed in fixed wing aircraft also having similar occurrences'.

CASA also encouraged operators to 'Report all instances of premature exhaust valve and guide wear to CASA via the DRS system available on the CASA website'. CASA's defect reporting service (DRS) is a mechanism of reporting and recording of problems identified during maintenance. As discussed earlier, problems identified during maintenance are not necessarily reported to the ATSB, and CASA's DRS data was not included in the ATSB's analysis.

A review of the ATSB's occurrence data found that:

- There has been no discernible increase in reported engine failures or malfunctions in northern Australia after the introduction of Avgas 100LL in December 2015.
- There was an increase in reported occurrences of engine failures or malfunctions in helicopters with Lycoming piston engines since 2014, largely dominated by northern Australia. However, occurrence numbers are low so some year-to-year variation from chance alone is expected. Additionally, the increase did not align with the introduction of Avgas 100LL in December 2015.
- A disproportionate number of helicopter engine failures or malfunctions where the failure mechanism could not be identified occurred after the introduction of Avgas 100LL in December 2015. Although it could not be identified what these failures were at the time of publication, the possibility that new factors may exist contributing to engine failures in northern Australia cannot be eliminated.
- Overall, the review did not identify a link between the introduction of Avgas 100LL in December 2015 and reported engine-related occurrences in northern Australia. However, taking into account the data limitations, the small number of occurrences, and the proportion of unknown failure mechanisms, it was not possible to draw any absolute conclusions.

Aviation Occurrence Statistics 2008–2017 (AR-2018-030)

Each year, thousands of safety occurrences involving Australian and foreign-registered aircraft are reported to the Australian Transport Safety Bureau (ATSB) by individuals and organisations in Australia's aviation industry and by members of the public.

This report is part of a series that aims to provide information to the aviation industry, manufacturers and policy makers, as well as to the travelling and general public, about these aviation safety occurrences. In particular, what can be learned to improve transport safety in the aviation sector.

The study uses information over the ten-year period from 2008–2017 to provide an insight into the current and possible future trends in aviation safety.

The majority of air transport operations in Australia each year proceed without incident.

In 2017, nearly 200 aircraft were involved in accidents in Australia, with 203 involved in a serious incident (an incident with a high probability of an accident). There were 40 fatalities in the aviation sector in 2017, which was a significant increase from the 21 fatalities in 2016. There were no fatalities in either high or low capacity regular public transport (RPT) operations, which has been the case since 1975 and 2010 respectively.

Almost half of all fatalities that occurred in commercial air transport operations during the study period occurred in 2017. During 2017, there were 14 fatalities from 21 accidents in commercial air transport operations, 21 fatalities from 93 accidents in general aviation operations, and five fatalities from 53 accidents in recreational aviation operations.

Terrain collisions were the most common accidents or serious incidents for aircraft involved in general aviation, recreational aviation and remotely piloted aircraft in 2017. Aircraft control, followed by terrain collisions, were the most common occurrence type associated with an accident or serious incident for aircraft involved in air transport operations.

Wildlife strikes, including birdstrikes, were again the most common type of incident involving both commercial air transport and general aviation operations. Runway events and aircraft control incidents were the most common types of incident reported for recreational aviation.

The accident and fatal accident rates for general and recreational aviation reflect their higher-risk operational activity when compared to commercial air transport operations. They also reflect the significant growth in recreational aviation activity over the last ten years and this sector's increased reporting culture.

General aviation accounts for one-third of the total hours flown by Australian-registered aircraft and over half of all aircraft movements across Australia.

The total accident rate, per hours flown, indicates general aviation operations are nine times more likely to have an accident than commercial air transport operations, with recreational operations around twice as likely to experience an accident than general aviation operations.

The fatal accident rate, per hours flown, indicates general aviation operations are around fifteen times more likely to experience a fatal accident than commercial air transport operations, and recreational operations are almost 30 times more likely to experience a fatal accident than commercial air transport operations.

Private/business helicopters followed closely by recreational gyrocopters had the highest fatal accident rate for any aircraft or operation type, whereas recreational aeroplanes had the highest total accident rate. There were no fatal accidents involving general aviation balloons reported during the study period.

Aeroplanes remain the most common aircraft type flown, which is reflected in the proportion of accidents they are involved in. In 2017, 15 of the 22 fatal accidents involved aeroplanes—three gliders, two helicopters, and two weight shift aircraft were also involved in fatal accidents.

Since 2016, the increased availability and use of remotely piloted aircraft (RPA) saw them match helicopters as the second highest aircraft type for reported accidents. However, there were no collisions with other aircraft, fatalities or serious injuries relating to RPA reported to the ATSB. While the consequences of an accident involving an RPA have been low to date, their increased use, and possible interactions with traditional aviation, is an emerging trend in transport safety that will continue to be monitored closely by the ATSB.

Note: Previous editions of Aviation Occurrence Statistics reports contained an error regarding the number of occurrences and subsequently rates for balloons conducting general aviation operations and air transport – charter operations. This error was communicated to the ATSB by the Australian Ballooning Federation. A systemic error was identified and rectified within the reporting system. This report has a decrease in the number of occurrences, and rates, for balloons conducting private operations, and a corresponding increase for balloons conducting charter operations compared to previous editions.

This report highlights the importance of effective and timely reporting of all aviation safety occurrences, not just for the potential of initiating an investigation, but also for further study and analysis of aviation transport safety.

While there has been an increase in accident and incident reporting, the limited detail provided for most occurrences, especially by recreational flyers, remains a challenge for the industry and ATSB. This report also highlights the need for improvements in the reporting rates for some areas in general aviation.

By comparing accident and occurrence data across aviation operation types, the ATSB is able to develop a complete picture of the aviation industry to identify emerging trends in aviation transport safety, identify further areas for research and recommend pre-emptive safety actions.

Australian aviation wildlife strike statistics 2008–2017 (AR-2018-035)

Occurrences involving aircraft striking wildlife, particularly birds, continue to be the most common aviation occurrence reported to the ATSB. Strikes with birds are a potential safety risk and present a significant economic risk for aerodrome and aircraft operators. The aim of the ATSB's statistical report series is to provide information back to pilots, aerodrome and aircraft operators, regulators, and other aviation industry participants to assist them with managing the risks associated with bird and animal strikes. This report updates the last edition (published in 2016) with data from 2016–2017.

Between 2008 and 2017, there were 16,626 confirmed birdstrikes reported to the ATSB. The number of reported birdstrikes has increased in recent years, with 2017 having the highest on record with 1,921. Despite being a high frequency occurrence, birdstrikes rarely result in aircraft damage or injuries. Of the 16,626 birdstrikes in this reporting period, 99.8 per cent were classified as incidents, while 19 (~0.1 per cent) were classified as accidents and another five (~0.03 per cent) as serious incidents. Nine birdstrikes, or approximately 0.05 per cent of the birdstrikes in the ten years, resulted in minor injuries to pilots or passengers. There were no reported serious injuries or fatalities associated with a birdstrike occurrence in the ten-year period.

Domestic high capacity aircraft were those most often involved in birdstrikes, and the birdstrike rate per aircraft movement for these aircraft was significantly higher than all other categories. Both the number and rate of birdstrikes per 10,000 movements in high capacity operations have increased in the past two years 2016–2017. In contrast, the number of birdstrikes in low capacity operations and general aviation has remained relatively consistent in the most recent two years.

The number of birdstrikes involving a bird ingested into an engine in high capacity air transport operations has risen in recent years with about one in ten birdstrikes for turbofan aircraft involving a bird ingested into an engine. Additionally, over the ten-year reporting period, there have been 11 occurrences involving one or more birds ingested into two engines of turbofan-powered aircraft.

The five most commonly struck flying animals in the 2016 –2017 period were flying foxes, galahs, magpies, and 'bats' (many of which were likely to be flying foxes) and plovers.

Compared to birdstrikes, non-flying animal strikes are relatively rare, with 396 animal strikes reported to the ATSB between 2008 and 2017. The most common animals involved were hares, rabbits, kangaroos, wallabies, and foxes. Damaging animal strikes mostly involved kangaroos and wallabies.

Australian aviation wildlife strike statistics provide a reminder to everyone involved in the operation of aircraft and aerodromes to be aware of the hazards posed to aircraft by birds and non-flying animals. The growth of reporting to the ATSB over the last 10 years has helped to understand better the nature of birdstrikes, and what and where the major safety risks lie. As such, timely and thorough reporting of birdstrikes is paramount. This assists the aviation industry to manage better their safety risk. Over the ten years from 2008 to 2017, about 40 per cent of all birdstrikes reported to the ATSB contained no species information. The more detailed the information is provided to the ATSB, the more accurate and useful reports like this one will be.

FOSTERING SAFETY AWARENESS, KNOWLEDGE AND ACTION

This section describes the ATSB's performance against the fostering safety awareness, knowledge and action deliverables set out on page 21 of the *ATSB Corporate Plan 2018–19*.

Deliverables

To meet its objective of improving transport safety, the ATSB has committed to the following fostering safety awareness, knowledge and action deliverables:

- The ATSB will proactively influence safety awareness through communication and education activities including:
  - active stakeholder engagement at key industry events across the three modes
  - promoting the ATSB's SafetyWatch priorities
  - promoting the safety messaging of ATSB investigation reports through the targeted use of its website, email lists, social media channels and supplied content to industry publications and mainstream media
  - facilitating and shaping media coverage of ATSB investigations and safety awareness activities.
- The ATSB will assist with transport safety in the broader international region, through direct cooperation and the delivery of approved projects and other support activities provided for by program funding agreements, with a publication produced annually detailing the transport safety contribution of these activities.

Industry engagement and events

The ATSB works to build awareness of its functions and enhance its reputation through its communication and stakeholder engagement activities. This is vital to ensuring the industry is receptive to safety messaging and that the ATSB meets its aim of fostering public awareness of transport safety. The ATSB continues its strong record of engagement with industry through:

- participation in consultative forums with industry and other safety agencies
- representation at conferences and events
- bilateral engagement with operators, associations and other stakeholders
- active involvement in safety education forums.

In 2018–19, the ATSB facilitated the creation and delivery of the inaugural transport safety forums FlySafe and RailSafe. The ATSB strategically aligned these forums with other major transport industry events in order to maximise participation from key stakeholders. A similar forum for the marine industry, SeaSafe, is in development for 2019–20. These forums are key elements of the ATSB's new stakeholder engagement strategy.

FlySafe 2019

On 28 February 2019, the ATSB, in conjunction with CASA and Airservices Australia, successfully delivered the FlySafe 2019 Aviation Safety Forum during the Australian International Airshow at Avalon, Victoria. A decision has yet to be made on whether to hold FlySafe forums annually or bi-annually.

RailSafe 2019

On 2 April 2019, the ATSB delivered the RailSafe 2019 Rail Safety Forum during the Rail Industry Safety and Standards Board (RISSB) annual rail safety conference in Melbourne. RailSafe 2020 will be held as part of RISSB's rail safety conference in Sydney during the first half of 2020.

SeaSafe 2019

The ATSB is preparing to deliver the SeaSafe 2019 Marine Safety Forum during the Marine Industry Australia Limited's (MIAL) two-day conference at the Pacific 2019 International Maritime Exposition in Sydney between 9–10 October 2019.

Other industry engagement

The ATSB regularly participates in national and international conferences and industry events where doing so presents an opportunity to share safety messages and engage with relevant stakeholders. In 2018–19, this included participation in the following events:

- Australian Airports Association National Conference
- Australia and New Zealand Societies of Air Safety Investigators Conference
- Australian Aviation Psychology Association Symposium
- Australian Women Pilots' Association Annual Conference
- Civil Security Congress and Exposition
- International Transportation Safety Association Meeting
- Regional Aviation Association of Australia National Convention
- Rail Industry Safety and Standards Board's Rail Safety Conference
- Australian Helicopter Industry Association's RotorTech Conference and Exposition
- Royal Aeronautical Society's Lawrence Hargrave Memorial Lecture

- Safeskies Australia Conference
- Women in Aviation Career's Day
- Women in Aviation/Aerospace Australia Summit.

The ATSB also hosted a number of national and international visitors to its office in Canberra throughout the year, providing an opportunity for representatives from the aviation, marine and rail sectors to meet key staff and tour the technical facilities and media studio.

SafetyWatch

In 2018–19, the ATSB continued to promote its SafetyWatch initiative. SafetyWatch highlights the broad safety concerns that come from the ATSB's investigation findings and occurrence data reported by industry.

The ATSB encourages the transport industry to give heightened attention to the following priority areas where more can be done to improve safety:

- too low on approach
- fatigue
- in-flight decision-making
- safe work on track
- data input errors
- non-controlled airspace
- safety risk of RPAS
- marine pilotage.

Throughout the year, the ATSB undertook a range of communication activities (website news items, social media and general media) to raise awareness of these issues within the transport industry.

A review of SafetyWatch priority areas and the effectiveness of the initiative will be conducted during 2019–20.

Social media

The ATSB continued to make effective use of its social media platforms to engage with the transport industry, the media and the travelling public during 2018–19.

Since launching in 2015, the ATSB Facebook page has attracted more than 17,500 followers. This channel has been particularly effective in both referring users to the ATSB website (61,107 referrals to the ATSB's website in 2018–19) and hosting ATSB video content (more than 22,000 video views in 2018–19).

The ATSB's Twitter account continues to be a key channel for highlighting the release of reports and investigation updates, particularly the media. Through this social media platform, the ATSB can provide a short safety message along with a link to more information on its website.

By the end of June 2019, the ATSB's Twitter followers had increased to around 8,200, including journalists, transport industry specialists and members of the general public.

The ATSB also utilises the LinkedIn professional networking social media platform, with more than 5,000 followers.

In May 2019, the ATSB launched an Instagram account, which attracted more than 200 followers in the space of a month.

In 2018–19, the ATSB also increased its engagement with audiences through videos, which were distributed to media, hosted on its website and placed on the ATSB's YouTube channel and Facebook page.

The ATSB's YouTube channel saw a 22 per cent increase in subscribers across the year—the highest percentage increase in five years—and now has almost 800.

In September 2018, the ATSB published a video to promote the release of the safety messaging of the final investigation report into the collision with terrain of Beechcraft King Air, VH-ZCR (AO-2017-024). This video included an animation of the accident sequence, a professional voiceover, still images from the accident report and video commentary from the ATSB's Chief Commissioner. It has been viewed more than 13,000 times and is the ATSB's third most-watched YouTube video to date.

In early June 2019, the ATSB published a video to promote safety awareness for emergency services personnel and others who attend aviation accidents to be aware of the potential dangers of inactivated rocket-deployed parachute systems. The video was distributed through the ATSB's social media channels, as well as to several other industry organisations. This video has been viewed more than 2,600 times on YouTube and more than 15,000 times on Facebook.

In late June 2019, the ATSB published a video to promote the key safety messages from the investigation into the grounding of the Australian Border Force Cutter *Roebuck Bay* on Henry Reef (335-MO-2017-009). It has been viewed more than 900 times on YouTube and 4,600 times on Facebook.

Media

The ATSB undertakes proactive and responsive media activities in conjunction with the media outlets to inform the transport industry and travelling public of its investigations and safety messaging. During the year, the ATSB worked closely with local, state, national and international media to promote community and industry awareness of its transport safety messages.

The ATSB's proactive media management activities include media conferences, interviews, media statements, pitches to journalists, opinion pieces and the distribution of pre-recorded content.

Throughout the year, the ATSB utilised its in-house media studio facility to produce and distribute 21 pieces of pre-recorded audio and video content for distribution to national radio and TV outlets.

The ATSB also managed responses to 615 media enquiries during 2018–19.

Communication and education

As Australia's national transport safety investigator, the ATSB is committed to communicating the safety lessons from its investigation findings, research activities and occurrence reports. This information has valuable safety messages which can help improve transport safety and, ultimately, save lives.

In 2018–19, the ATSB continued to highlight emerging safety issues and trends, using a range of communication channels and activities, for the benefit of industry and the travelling public.

Website

The **atsb.gov.au** website continues to be the ATSB's principal communication channel. In 2018–19, the ATSB website supported 2,324,180 page views and 827,520 user sessions.

The latest iteration of the ATSB website went live in December 2018 after an extensive refresh program which was focused on improving the user experience, particularly for mobile devices, and enhanced functionality to support digital content.

The ATSB continually evolves its website to meet audience needs and allow for new and emerging technologies, and is a central element of the ATSB's response to the Australian Government's 'digital first' agenda.

Online aviation database

The **ATSB National Aviation Occurrence Database** contains de-identified information on aviation accidents and incidents in a searchable format. The database has been designed to fulfil searches for information involving the most common requests received by the ATSB, including date range, aircraft and operation type, injury level, occurrence category and type, location, and airspace type and class. Users are able to search aviation occurrence statistics from the ATSB website.

In 2018–19, the National Aviation Occurrence Database had 6,177 page views.

Stakeholder survey

Safety education is a critical component of the work of the ATSB, as it fosters safety awareness, knowledge and action. To measure the effectiveness of its engagement and communication with stakeholders, the ATSB distributed its annual stakeholder survey via its website and social media channels. The ATSB also asked several aviation, rail and marine transport associations to help broaden the scope of respondents by disseminating a link to the survey to their members.

Over 580 respondents—more than double that of last year—completed the 2019 online survey which asked stakeholders 10 questions. The questions focused on the recollection of ATSB safety products and issues relevant to their industry. The results of this survey will be used to help guide the ATSB's future communications and education activities.

Partnership with the Royal Melbourne Institute of Technology (RMIT) University

In February 2019, the ATSB announced a strategic partnership with RMIT University that will see one of Australia's leading tertiary institutions offer transport safety investigator qualifications. Prior to the partnership, the ATSB conducted its own nationally accredited Diploma of Transport Safety Investigation training in-house.

Under a new partnership, RMIT is offering a Graduate Certificate in Transport Safety Investigation, which encompasses the aviation, marine and rail transport modes.

Longer term, the Graduate Certificate qualification will create a pathway to further higher education programs leading to Graduate Diploma and Master's-level qualifications.

The partnership will provide industry in Australia and throughout the Asia–Pacific region with access to high-quality, ATSB-sponsored training in transport accident investigation, as well as providing a framework to facilitate important transport safety related research through a credible university-based methodology.

Regional cooperation

The ATSB has a significant program of regional engagement, underpinned by the ATSB's reputation as a world-leading transport safety investigation agency. This content addresses the deliverable to produce a report on the transport safety contribution of this engagement.

In support of the Australian Government's transport safety agenda in the Asia–Pacific region, the ATSB takes a leading role in the ICAO Asia Pacific Accident Investigation Group and the Marine Accident Investigators Forum in Asia.

The ATSB places a specific emphasis on engagement with Indonesia, through the ongoing involvement in the Australian Government Indonesia Transport Safety Assistance Package (ITSAP), and Papua New Guinea (PNG), consistent with the Memorandum of Understanding on Cooperation in the Transport Sector.

Indonesia

Under the Department of Foreign Affairs and Trade funded ITSAP program, the ATSB continues to help develop capability within the National Transportation Safety Committee (NTSC), the Indonesian agency responsible for the investigation of aviation, rail, marine and land transport accidents and incidents.

The three main strands of the ATSB–NTSC program of activities include:

- provision of NTSC investigator training and professional development
- guiding and mentoring of NTSC investigators by ATSB investigators
- development of the NTSC transport recorder capability.

Significant ATSB–NTSC achievements under the ITSAP program include:

- train-the-trainer projects leading to the development of NTSC Aircraft Accident Investigation Fundamentals, Investigation Analysis, Cognitive Interviewing and Human Factors training courses
- a well-developed NTSC capability for the download and analysis of aircraft flight data recorder (FDR) and cockpit voice recorder (CVR) 'black boxes'.

Notably, on 29 October 2018, a Lion Air passenger aircraft was lost in the sea near Jakarta. At the request of the Indonesian Government, the ATSB deployed four transport safety investigators to assist with the download of data from the flight data recorder and cockpit voice recorders.

Papua New Guinea

Under the Papua New Guinea (PNG) Memorandum of Understanding on Cooperation in the Transport Sector, the ATSB has an ongoing program of cooperation and capability-building with the PNG Accident Investigation Commission (AIC), PNG's aviation safety investigation agency.

Key elements of the ATS–AIC program include:

- mentoring of AIC Commissioners by ATSB Commissioners in matters related to AIC governance and strategic issues
- training in Human Factors for AIC investigators
- technical support for AIC investigations.

Participants at the October 2018 ICAO Regional Accident Investigation Workshop in Bangkok, Thailand. Source: ICAO APAC

FINANCIAL PERFORMANCE UPDATE

This section should be read in conjunction with the ATSB's audited financial statements for 2018–19 that appear in section 6 of this report.

The ATSB operates as a separate non-corporate Commonwealth entity, having been established on 1 July 2009. The main assets of the ATSB were transferred from the (then) Department of Infrastructure and Regional Development and include plant and equipment, specialised technical assets and intangible software assets.

The ATSB recorded a deficit of $0.61 million for 2018–19, compared to a deficit of $0.94 million in 2017–18. Excluding depreciation and amortisation, the ATSB realised an underlying surplus of $0.06 million which compares to a $0.23 million deficit in 2017–18.

The ATSB's new capital requirements are detailed in its Departmental Capital Budget published in the *2018–19 Portfolio Budget Statements*. Over time, the ATSB's estimated capital injections fall short of the deficits associated with the non-funding of depreciation and amortisation. Without adequate capital injections by the Government, this presents a challenge to the ATSB in maintaining its underlying equity and asset capability going forward.

The Government no longer provides appropriation funding to cover non-cash expenses of depreciation and amortisation to non-corporate Commonwealth entities. In the absence of revenue for depreciation and amortisation, the ATSB and other non-corporate entities are more likely to deliver a negative operating result or deficit, and these will accumulate. Offsetting this build-up of retained deficits requires a commitment by the Government to provide annual capital injections to meet new capital requirements.

Table 5: Summary of financial performance and position

	2018–19 $M	2017–18 $M
Revenue from Government	20.2	20.4
Other revenue	6.0	4.8
Total income	26.2	25.2
Employee expenses	16.0	15.3
Supplier expenses	10.1	10.0
Depreciation and amortisation	0.7	0.7
Total expenses	26.8	26.1

		2018–19 $M	2017–18 $M
Operating surplus/(deficit)		(0.6)	(0.9)
Financial assets	A	21.9	22.3
Non-financial assets	B	2.6	2.5
Liabilities	C	4.8	4.9
Net Assets – A + B – C		19.6	19.9

Source: ATSB

SECTION 4

Significant safety investigations

4

AVIATION INVESTIGATIONS

The first investigation below represents a long-term investigation with international implications, concerning the design and certification of a European passenger air transport aircraft, leading to several safety recommendations. The other investigations below detail a runway excision of a passenger jet at Darwin Airport, leading to a safety recommendation to the International Civil Aviation Organization, and the fatal accident of a King Air aircraft into a shopping centre at Essendon. The training fatal accident led to a safety advisory notice concerning the use of aircraft for spin training not approved for intentional spins, and the balloon accident investigation showed an emerging area of injury risk to aviation passengers in Australia.

In-flight upset, inadvertent pitch disconnect, and continued operation with serious damage involving ATR 72 aircraft, VH-FVR, 47 km WSW of Sydney Airport, NSW on 20 February 2014 (AO-2014-032)

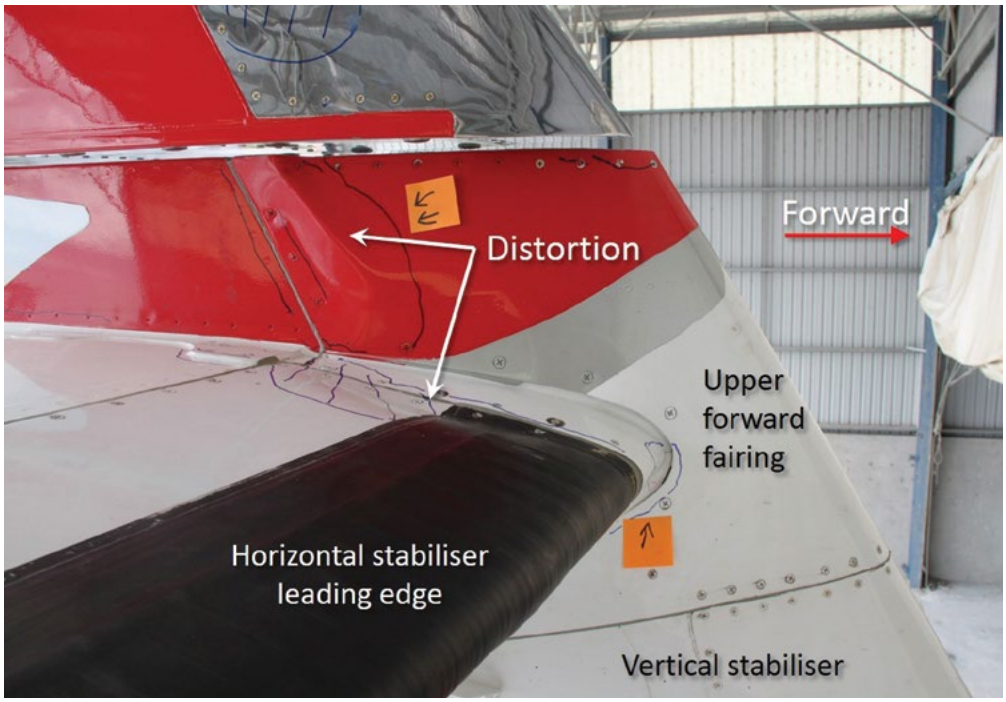
On 20 February 2014, Virgin Australia Regional Airlines (VARA) was operating an ATR 72 aircraft, on a scheduled passenger flight from Canberra to Sydney. During descent with the first officer as pilot flying and passing through about 8,500 ft, the aircraft encountered a significant windshear that resulted in a rapidly decreasing tailwind. This led to a rapid increase in airspeed, with the airspeed trend vector indicating well above the maximum operating speed of the aircraft (VMO). The first officer reduced engine power and made nose-up control inputs in an attempt to slow the aircraft. In response to the unexpectedly high airspeed trend indication and their proximity to VMO, the captain (pilot not flying) perceived a need to take over control of the aircraft but did not immediately alert the first officer of his intent. About one second after the captain initiated the nose-up control inputs, the first officer (unaware that the captain was also making control inputs) reversed his control input. The differential forces in the left (captain) and right (first officer) pitch control systems reached the threshold to activate the pitch uncoupling mechanism, disconnecting the left and right pitch control systems from each other.

Given the high airspeed, asymmetric elevator deflections that occurred immediately following the pitch disconnect event resulted in aerodynamic loads that exceeded the strength of the horizontal stabiliser and resulted in significant damage to the stabiliser.

At the start of the pitching manoeuvre, the cabin crew member was thrown from her seat and suffered a broken leg. The flight crew continued the flight using one of the pitch control systems and landed without further incident at Sydney.

During the post-flight maintenance inspection, the damaged horizontal stabiliser was not detected and the aircraft was released to service. During the next five days the aircraft was operated on 13 flights and was subject to routine walk-around visual inspections by flight crew and engineers. No one identified any anomalies until flight crew observed some damage after a suspected bird strike. The aircraft was grounded and subjected to extensive maintenance that included replacement of the horizontal and vertical stabilisers.

Figure 1: Upper tailplane of VH-FVR showing damage to horizontal and vertical stabilisers that was evident when the damage was identified 5 days and 13 flights after the in-flight upset/pitch disconnect and associated maintenance



Source: ATSB

The ATSB's investigation report (**AO-2014-032**) is available from the ATSB's website at **www.atsb.gov.au**

Runway excursion involving Boeing 737, VH-VUI, at Darwin Airport, Northern Territory, on 6 December 2016 (AO-2016-166)

On 6 December 2016, with thunderstorm activity in the area, a Boeing 737-800 aircraft operated by Virgin Australia on a scheduled passenger flight from Melbourne, Victoria was on approach to runway 29 at Darwin Airport, Northern Territory. The flight crew established and maintained clear visual reference to the runway and surrounds until they encountered heavy rain shortly before reaching the runway threshold. Under the influence of a light but increasing crosswind, the aircraft drifted right without the flight crew being able to discern the extent of the drift.

The aircraft landed 21 m to the right of the runway centreline and, shortly after touchdown, the right landing gear departed the sealed surface of the runway, destroying six runway lights before the aircraft returned to the runway. The aircraft incurred minor damage from ground debris and there were no injuries.

A relatively small increase in crosswind resulted in a significant deviation from the runway centreline at a critical time during final approach. The absence of adequate visual cues influenced the flight crew's ability to detect and correct the deviation.

International guidelines recommend, but do not mandate, the use of centreline lighting on wider runways. In recent years, two runway veer-offs have occurred at runway 29 at Darwin, which is the only runway in Australia that is wider than 50 m and not equipped with centreline lighting. No similar occurrence has happened at any other of the busier airports in Australia, where the runways are either narrower, or are a similar width but with centreline lighting.

A study of relevant occurrences world-wide found that the likelihood of a runway veer-off on landing increases significantly when using a runway that is wider than 50 m and does not have centreline lighting. This is likely due to limitations in the visual cues available in such circumstances.

There was no advisory information about this hazard in the operator's manuals or in the aerodrome information provided to operators by Darwin Airport.

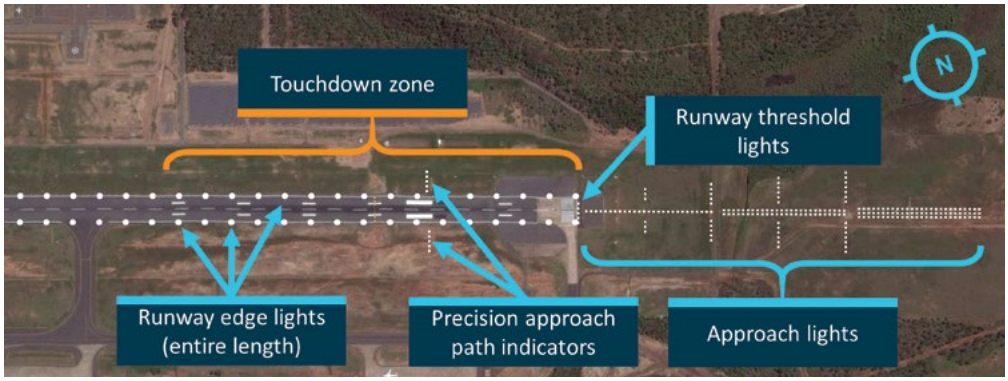
The ATSB also found limitations in the weather information provided to the flight crew while on approach to land.

The aircraft operator and airport operator initiated a number of safety actions as a result of the occurrence, including providing flight crews with information about the specific risks of approaches to Darwin Airport at night in conditions with reduced visibility.

The ATSB has issued a safety recommendation to the International Civil Aviation Organization and Darwin Airport to consider measures to reduce the safety risk identified in this report relating to wide runways without centreline lighting.

Approaches in darkness and poor weather can be challenging. Centreline lighting greatly assists flight crews align the aircraft with the runway but many runways, including most in Australia, are not equipped with it. A wide runway without centreline lighting, such as that in Darwin, poses a particular challenge. Pilots and operators who are aware of any circumstances that are different to what is usually encountered and account for it in their planning are more likely to avoid being 'caught out' at a critical time.

Figure 2: General arrangement of runway lighting at Darwin Airport runway 29



Light locations are approximate, and actual light colours are not represented. Source: ATSB/Google Earth

The ATSB's investigation report (**AO-2016-166**) is available from the ATSB's website at **www.atsb.gov.au**

Loss of control and collision with terrain involving B200 King Air, VH-ZCR at Essendon Airport, Victoria on 21 February 2017 (AO-2017-024)

On the morning of 21 February 2017, the pilot of a Beechcraft B200 King Air aircraft, registered VH-ZCR was conducting a charter passenger flight from Essendon Airport, Victoria to King Island, Tasmania with four passengers on board. The aircraft's take-off roll was longer than expected and a yaw to the left was observed after rotation. The aircraft's track began diverging to the left of the runway centreline before rotation and the divergence increased as the flight progressed. The aircraft entered a shallow climb followed by a substantial left sideslip with minimal roll. The aircraft then began to descend and the pilot transmitted a Mayday call. The aircraft subsequently collided with a building in the Bulla Road Precinct Retail Outlet Centre of Essendon

Airport. The aircraft was destroyed by the impact and post-impact fire, and all on board were fatally injured. The building was severely damaged and two people on the ground received minor injuries.

The ATSB found that the pilot did not detect that the aircraft's rudder trim was in the full nose-left position prior to take-off. The position of the rudder trim resulted in a loss of directional control and had a significant impact on the aircraft's climb performance in the latter part of the flight. At the time of the accident, the operator did not have an appropriate flight check system in place for VH-ZCR. Although this did not contribute to this accident, it increased the risk of incorrect checklists being used, incorrect application of the aircraft's checklists, and checks related to supplemental equipment not being performed. The aircraft's cockpit voice recorder did not record the accident flight due to a tripped 'impact switch', which was not reset prior to the accident flight. This deprived the investigation of potentially valuable recorded information. The ATSB determined that the aircraft was operated above its maximum take-off weight on the accident flight. This was not considered to have influenced the accident. The ATSB also found that the presence of the building struck by the aircraft did not increase the severity of the consequences of this accident. In the absence of that building, the aircraft's flight path would probably have resulted in an uncontrolled collision with a busy freeway, with the potential for increased ground casualties. Although not contributing to this accident, the ATSB identified that two other buildings within the retail precinct exceeded the airport's obstacle limitation surfaces. While those exceedances had been approved by the Civil Aviation Safety Authority, the ATSB identified several issues relating to the building approval process for the precinct.

It is beyond the scope of this investigation to consider in detail the issues identified with the Bulla Road Precinct building approval processes. These issues will be addressed in the current ATSB Safety Issues investigation *The approval process for the Bulla Road Precinct Retail Outlet Centre* **AI-2018-010**.

Cockpit checklists are an essential tool for overcoming limitations with pilot memory, and ensuring that action items are completed in sequence and without omission. The improper or non-use of checklists has been cited as a factor in some aircraft accidents. Research has shown that this may occur for varying reasons and that experienced pilots are not immune to checklist errors. This accident highlights the critical importance of appropriately actioning and completing checklists.

This accident also emphasises the importance of having flight check systems in place that are applicable to specific aircraft in their current modification status. In addition, it emphasises:

- the value of cockpit voice recorders
- the significance of ensuring aircraft weight and balance limitations are not exceeded
- the challenges associated with decision-making in critical stages of a flight such as the take-off ground roll.

Figure 3: Beechcraft B200 King Air aircraft, registered VH-ZCR immediately prior to collision with a building in the Bulla Road Precinct

Source: Supplied

The ATSB's investigation report (**AO-2017-024**) is available from the ATSB's website at **www.atsb.gov.au**

In-flight upset involving Boeing 747-438, VH-OJU, 110 km SE of Hong Kong Airport, on 7 April 2017 (AO-2017-044)

On 7 April 2017, a Qantas Airways Boeing 747-438, registered VH-OJU, was operated as scheduled passenger flight QF29 from Melbourne, Victoria, to Hong Kong International Airport, in the Hong Kong Special Administrative Region of the People's Republic of China. On board were 17 crew and 347 passengers.

While descending toward Hong Kong International Airport, air traffic control instructed the flight crew to hold at waypoint BETTY.

When entering the holding pattern, the aircraft's aerodynamic stall warning stick shaker activated a number of times and the aircraft experienced multiple oscillations of pitch angle and vertical acceleration. During the upset, passengers and cabin crewmembers struck the cabin ceiling and furnishings.

A lavatory smoke alarm later activated, however, the cabin crew determined the smoke alarm to be false and silenced the alarm. The aircraft landed at Hong Kong International Airport without further incident. Four cabin crewmembers and two passengers suffered minor injuries during the incident and the aircraft cabin sustained minor damage.

The ATSB found that while planning for the descent, the flight crew overwrote the flight management computer provided hold speed. After receiving a higher than expected hold level, the flight crew did not identify the need to re-evaluate the hold speed. This was likely because they were not aware of a need to do so, nor were they aware that there was a higher hold speed requirement above FL 200. Prior to entering the hold, the speed reduced below both the selected and minimum manoeuvring speeds. The crew did not identify the low speed as their focus was on other operational matters.

The ATSB also found that due to a desire to remain within the holding pattern and a concern regarding the pitch up moment of a large engine power increase, the pilot flying attempted to arrest the rate of descent prior to completing the approach to stall actions. In addition, the pilot monitoring did not identify and call out the incomplete actions. This resulted in further stall warning stick shaker activations and pilot induced oscillations that resulted in minor injuries to cabin crewmembers and passengers.

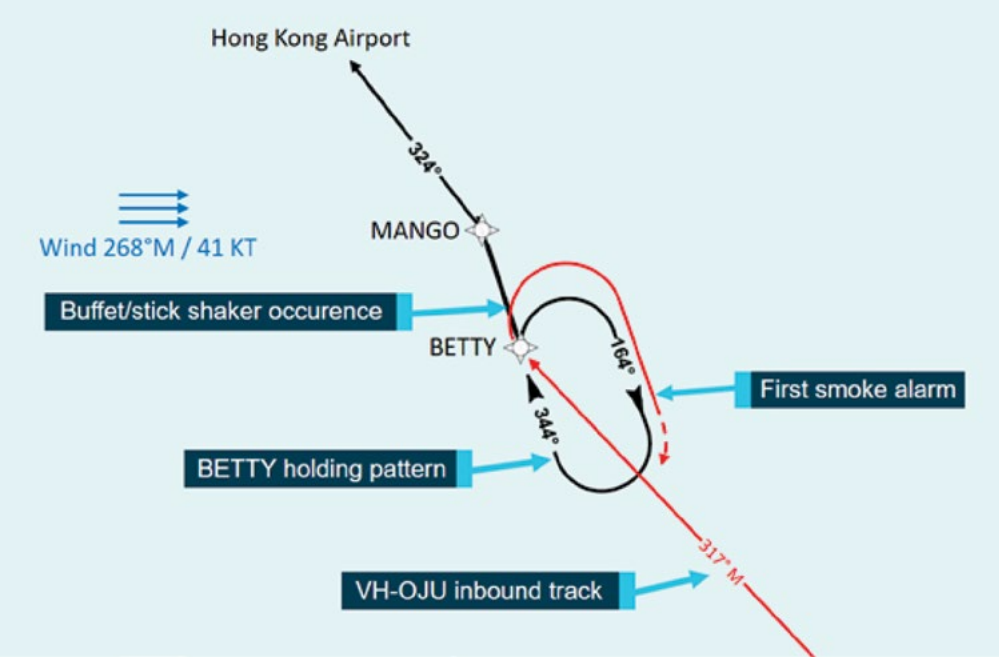
Additionally, the operator provided limited guidance for hold speed calculation and stall recovery techniques at high altitudes or with engine power above idle. This in turn limited the ability of crew to retain the necessary manual handling skills for the recovery.

In response to the occurrence, the operator updated flight crew training lesson plans and commenced retraining of flight crew in more complex stall recovery events. The operator also amended the Boeing 747-400, 787 and 737 flight crew training manuals and updated flight crew ground school lesson plans to ensure standardisation of training.

Balancing competing attention or decision demands can interrupt trained flight crew responses leading to procedures not being completed in full, particularly so if flight crews are not receiving comprehensive and regular training in the application of these skills.

Comprehensive theory and practical training can ensure that flight crews have a complete understanding of aircraft systems and maintain effective manual handling skills. This training should provide flight crew with the knowledge to correctly configure the aircraft's automatic flight systems and manual handling skills to respond adequately to in-flight upsets.

Figure 4: BETTY holding pattern



The figure shows the BETTY holding pattern, along with the recorded wind conditions, the approximate track of VH-OJU as it entered the holding pattern and the locations of the buffet/stick shaker occurrence and first smoke alarm. Source: Hong Kong Civil Aviation Department, annotated by ATSB.

The ATSB's investigation report (**AO-2017-044**) is available from the ATSB's website at **www.atsb.gov.au**

Collision with terrain involving Diamond DA40, VH-MPM, 42 km west of Southport Aerodrome, Queensland, on 26 September 2017 (AO-2017-096)

On 26 September 2017, an instructor and student conducted a training flight in a Diamond Aircraft Industries DA40 aircraft, registered VH-MPM, from Archerfield Airport, Queensland. The flight training organisation was Aircrew Training and Support Pty Ltd, and the purpose of the flight was a simulated Recreational Pilot Licence (RPL) flight test to prepare the student for an upcoming RPL flight test.

The aircraft entered a developed spin during manoeuvres consistent with advanced stall recovery training which likely included intentional incipient spins. The spin continued until the aircraft collided with terrain. The instructor and student were fatally injured and the aircraft was destroyed.

The ATSB found that the aircraft limitation prohibiting intentional spins was intended to include incipient spins. However, the manoeuvre was not defined and some operators considered that the manoeuvre was not an intentional spin. In addition, the aircraft was not certified for developed spin recovery, and the capability of the aircraft to recover from a developed spin had not been established nor was it required to be.

The ATSB also found that the instructor could not or did not prevent the aircraft from entering a developed spin, for reasons that could not be established.

The instructor's flight records showed no evidence of spin training since his initial instructor training in January 2011. After this initial training, there was no requirement for an instructor to undergo any further spin training. However, a week before the accident flight, the student had mishandled the recovery from an incipient spin and the accident flight instructor had taken control of the aircraft and recovered, showing that he had the ability to recover from a spin at that stage of development.

The ATSB has issued a Safety Advisory Notice (**AO-2017-096-SAN-012**) for training organisations conducting incipient spins in non-spin-permitted aircraft.

The Civil Aviation Safety Authority will review incipient spin recovery guidance provided in the *Flight Instructor Manual*.

Although the reasons for the accident could not be fully established, the investigation identified varying interpretations of an 'incipient spin'. Operators and pilots should clarify with manufacturers the extent to which the early stages of a spin are permissible and ensure that aircraft are always operated in accordance with limitations.

Furthermore, operators should have procedures, and instructors should take all steps, to ensure that they maintain the necessary skills to avoid unintentional spins and recover from both incipient and developed spins.

The New Zealand Civil Aviation Authority booklet, **Spin Avoidance and Recovery** provides valuable guidance for pilots in spin avoidance and recovery. The booklet provides the following advice for pilots regarding spin recovery:

To have a chance at recovery, the pilot must immediately recognise the spin, and its direction, know exactly what to do in the right order, and then execute the procedure correctly the first time.

Figure 5: VH-MPM accident site

Source: ATSB

The ATSB's investigation report (**AO-2017-096**) is available from the ATSB's website at **www.atsb.gov.au**

Hard landing involving Kavanagh B-350 hot-air balloon, VH-EUA, 6 km ENE of Yarra Glen, Victoria on 8 February 2018 (AO-2018-016)

On 8 February 2018, a Kavanagh B-350 hot-air balloon, registration VH-EUA, operated by Go Wild Ballooning, departed Glenburn, Victoria for a scenic charter flight with a pilot and 15 passengers on board. About 45 minutes into the flight, over the Yarra Valley, the balloon experienced a sudden wind change with associated turbulence. The pilot decided to land immediately rather than continue over rising and heavily vegetated terrain. The resulting landing was hard and fast and 11 passengers were injured, with four of them receiving serious injuries.

The ATSB found that information about the sudden wind change was not available to the pilot prior to the flight. In particular, the most recent local balloon forecast (provided in a recorded telephone message) was inadvertently not publicly available, and other forecast information available to the pilot did not accurately state the timing of the wind change. The ATSB identified a safety issue with the procedure used by the Bureau of Meteorology to confirm the local weather forecast for balloon operators in the Melbourne area was correctly uploaded and therefore available.

Although some passengers were provided with a safety briefing prior to boarding the balloon, the operator's normal safety briefing for passengers post boarding was not conducted. In addition, the briefing prior to boarding was not effective in ensuring all passengers understood the required landing position to use in the event of an emergency landing. The ATSB identified a safety issue with the operator's risk controls for ensuring safety briefings were conducted, and that passengers understood the briefing and the availability and content of its safety information cards.

The Bureau of Meteorology has commissioned a new system and modified its procedures for providing local weather briefings to balloon operators in the Melbourne area. This new recording system automatically uploads the recording to the automated telephone service.

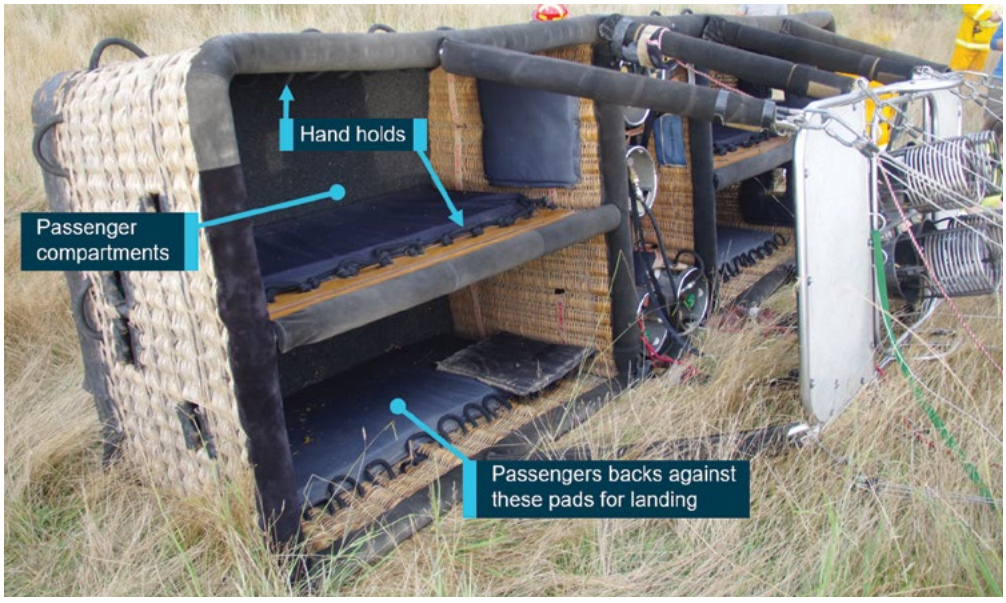
The operator has implemented a procedure that all passengers are required to demonstrate the landing position after boarding the aircraft. In addition, the operator has implemented procedures for all pilots to share wind and weather conditions to optimise safe and suitable launch sites in addition to conducting more regular checks of nearby aerodrome weather information.

Pilots are reminded that good command judgement is required for all operations when actual weather conditions do not appear as forecast.

In relation to the emergency descent and landing, this accident highlights the importance of operators briefing balloon passengers about what to do in an emergency and the landing position. Proper preparation for landing is shown to reduce the likelihood and severity of injury, and operators should ensure that passengers understand the instructions provided. It is recommended that all passengers should board the basket and practice the position they should adopt for landing. This allows the operator to determine any misunderstanding prior to flight.

It is also recommended that safety information cards, with diagrams, be readily available to help communicate important safety information, particularly to people from a non-English speaking background.

Figure 6: VH-EUA final resting position



Source: Victorian Police with annotations by ATSB to show passenger compartments, hand holds and passenger position for landing.

The ATSB's investigation report (**AO-2018-016**) is available from the ATSB's website at **www.atsb.gov.au**

RAIL INVESTIGATIONS

The first investigation below demonstrates how inadequate detection schemes for maintenance needs at occupation level crossings can leave track infrastructure vulnerable to damage from heavy vehicles. The other investigations below similarly show how the lack of detection of track deterioration can lead to derailments.

Derailment of coal train, 8 km west of Oakey, Queensland, on 21 July 2017 (RO-2017-007)

On 21 July 2017, a loaded coal train derailed at a level crossing on the Western Line between Oakey and Jondaryan, Queensland. The hauling locomotives and 18 wagons came off the track, destroying about 300 m of rail infrastructure.

It is very likely that the underframe of a low-clearance heavy road vehicle collided with the railway infrastructure as it traversed the level crossing soon before the coal train reached the crossing. The impact with railway infrastructure resulted in the lateral displacement of rail lines, which consequently derailed the coal train.

The rail infrastructure manager's monitoring and inspection process at the Dunkeld Access Road level crossing did not ensure the approach roads within the rail corridor and the crossing surface were maintained within safe operating limits throughout its lifecycle. As a result, the elevated gravel-based level crossing road and crossing surface deteriorated to a point where the underframe of a low-clearance heavy road vehicle collided with the exposed head of each rail as it traversed the crossing.

The driver of the heavy road vehicle did not report the collision with rail infrastructure to the asset owner (Queensland Rail) or the local police in accordance with the Queensland Government road transport guidelines. Therefore, the relevant authorities were not in a position to contact the driver of the train before reaching the level crossing.

At the time of the derailment, there was no interface agreement between the rail infrastructure manager and a responsible road authority.

Following the derailment, Queensland Rail (QR) repaired the level crossing and installed a sealed asphalt surface on both sides of the crossing to mitigate the risk of erosion and deterioration. QR also advised that it had taken or was undertaking a series of actions to improve its inspection processes of level crossings to ensure that more focus is placed on inspecting the condition of the approach roads at the crossings. In addition, QR is reviewing its safety standards and relevant documentation in relation to identified defects at level crossings and how the defects are recorded and managed.

QR also advised it had a state-wide audit program in place to assess the current safety status of all private crossings, and upgrade them to the QR standard and/or seek to enter interface agreements.

Rail infrastructure managers, who are responsible for the management of the rail corridor, need to ensure that approach roads and the crossing surface at level crossings are subject to regular and effective inspection and monitoring processes. This is particularly relevant for level crossings with gravel-based road surfaces and inclined approach roads.

If rail infrastructure is damaged due to a road accident, it is vitally important that the driver responsible report the matter to the local police or the asset owner as soon as possible.

Figure 7: An image taken by the assessor during the July 2012 assessment of level crossing ID 2309

Source: QR. The assessors report recorded that the crossing gravel surface is breaking up and the track is 'pumping' and contributing to surface deterioration.

The ATSB's investigation report (**RO-2017-007**) is available from the ATSB's website at **www.atsb.gov.au**

Derailment of freight train 1501S, near Dry Creek, South Australia on 28 July 2017 (RO-2017-008)

At about 0617 on 28 July 2017, a Bowmans Intermodal containerised ore train (1501S) travelling empty from Port Flat, South Australia (SA) stopped at Dry Creek South in SA. The driver felt the performance of the train 'very sluggish', as it was not rolling as it had prior to rounding a curve on the approach to Dry Creek South. The train crew notified the Australian Rail Track Corporation (ATRC) network control officer at Mile End, SA of their situation and that they intended to inspect their train. A short time later, the train crew confirmed to the network control officer that the last three wagons from 1501S had derailed. The train crew were uninjured. However, there was substantial damage to the wagons, track and signalling infrastructure.

The ATSB found a vertical split head defect had developed undetected from imperfections introduced during the manufacture of the rail 90 years ago. The defect propagated vertically and longitudinally, roughly through the centre line of the lower leg rail in the curve approaching Dry Creek South. The passage of a previous train (1122) over this section of track caused an initial rail break, affecting the integrity of the rail and electrical continuity of the associated track circuit, which prevented a signal from clearing for the next train (1501S). The network control officer authorised the driver to pass the signal at stop, with the condition that the train travel at low speed.

However, the rail break was not visually obvious to the train crew as the locomotive rounded the curve. As the rear of that train passed over the break, a 2 m section of rail fragmented causing the last three wagons to derail. Detailed (ultrasonic) inspection of the track about one month prior to the occurrence recorded a sustained loss of back wall echo at the derailment location, automatically marking the rail with a spray of paint. However, the ultrasonic inspection operator attributed the recorded event to the poor surface condition of the railhead, which is a common condition that can inhibit the testing. There was no retesting initiated or surface condition report lodged in response to the recorded event. The absence of any follow-up missed an opportunity to identify the presence of the vertical split head defect prior to the rail fracture and the subsequent derailment of 1501S.

Following the incident, Speno implemented a review of testing techniques used by operators where poor surface condition exists and the procedures for reporting and testing of rail affected by surface condition. The Australian Rail Track Corporation reaffirmed the adequacy of the Track and Civil Code of Practice for ultrasonic inspections and the reporting requirements in accordance with contractual arrangements with the ultrasonic inspection operator. The rail in the Dry Creek area is programmed for replacement during 2018 as part of the Adelaide to Tarcoola Re-Railing Project.

Defects can develop in rails (and welds) due to a wide range of reasons. Early detection and treatment of a defect that could cause a fracture of the rail is of major importance. While poor surface condition of the railhead is a known limit to the effectiveness of ultrasonic testing, its presence can mask internal track defects, particularly when the condition exists over an extended area. If an inspection cannot test or can only partly test rails, maintenance personnel must report the shortfall to highlight operational risk and the requirement for a timely supplementary examination.

Figure 8: Derailment of freight train 1501S

Source: ATSB

The ATSB's investigation report (**RO-2017-008**) is available from the ATSB's website at **www.atsb.gov.au**

Derailment of loaded ore train M03544 near Walla, Western Australia, on 3 December 2015 (RO-2015-023)

On 2 December 2015, BHP Billiton (BHPB) train M03544 was loaded with iron ore at Yandi, Western Australia (WA). The train departed Yandi at about 2211 Western Standard Time (WST) and travelled north towards Port Hedland, WA, on the Newman main line. At about 0530 on 3 December 2015, the train controller based in Perth was alerted to a dragging equipment detector (DED) alarm at the 67 km mark at Walla. Seven seconds later, train M03544 recorded a loss of brake pipe air pressure before the train came to a stop with the lead locomotive positioned near the 64.188 km mark, about 3 km from the DED. The train controller contacted the train driver, advising that DED alarms had activated on both the east and west tracks. The train driver informed the controller that a loss of brake pipe air pressure had resulted in an uncommanded brake application bringing the train to a stop. Shortly afterwards, as the driver walked towards the rear of the train to determine the cause of the loss of air pressure, he found that the train had separated and derailed.

The ATSB investigation identified that train M03544 derailed due to a broken rail. A fracture of the rail was probably initiated by the rapid growth of a detectable, yet unidentified, fatiguerelated transverse defect(s) in the west rail near the 67 km mark during the passage of the train. The investigation also identified that the condition of the rail in the vicinity of the fracture contributed to relatively frequent failures in that area. Finally, ultrasonic defect testing of the rail was undertaken in the heat of the day, potentially masking defects due to compressive forces in the rail.

In response to this occurrence, the operator of the train and track, BHP Billiton, took measures to improve track condition and reduce in-service rail defects by:

- accelerating the re-railing of 833 kilometres of track, including replacement of the track in the vicinity of the fracture
- the introduction of processes to:
  - reduce the initiation of rolling contact fatigue cracks in rail track
  - improve rail defect detection to prevent fatigue cracks from progressing to track failure.

Early detection, assessment, and effective management of track defects is critical to minimising the risk of derailment and maintaining safe rail operations. Therefore, it is essential that track maintenance and infrastructure fault detection be of a high standard.

Figure 9: Derailed, loaded iron ore cars located in the rear portion of train M03544

Source: BHP Billiton

The ATSB's investigation report (**RO-2015-023**) is available from the ATSB's website at **www.atsb.gov.au**

MARINE INVESTIGATIONS

The first investigation below concerns a grounding of an Australian Government vessel on a reef which the investigation traced back to the introduction of electronic charts from converted paper charts, the display of those charts and the training of officers to use this equipment. The investigation has led to wide-ranging safety actions that will likely influence world standards. The other investigations relate to a fall from height of crew, and a berthing contact accident leading to the identification of a number of safety issues.

Grounding of *ABFC Roebuck Bay* on Henry Reef, Queensland, on 30 September 2017 (MO-2017-009)

On 30 September 2017, shortly after midnight, the Australian Border Force cutter *Roebuck Bay* (*ABFC Roebuck Bay*) grounded on Henry Reef in the Great Barrier Reef, Queensland. The cutter was on a passage from Saibai Island in the Torres Strait Islands archipelago bound for Lizard Island, located about 71 NM south-east of Cape Melville. The cutter sustained substantial damage to the keel, stabiliser fins and propellers, with hull breaches in way of the storage void and tank compartment spaces. There were no reported injuries or oil pollution. The cutter was subsequently towed off the reef, stabilised and towed to Cairns, arriving on 5 October 2017.

The ATSB found that *ABFC Roebuck Bay*'s route plan was amended during the passage planning process resulting in the route being inadvertently plotted across Henry Reef, a potential navigational danger. The cutter's electronic chart display and information system (ECDIS) identified the reef as a danger to the planned route. However, the ship's deck officers did not identify the danger, either visually or using the ECDIS. It was also likely that the ECDIS lookahead function did not encounter Henry Reef's chart symbol and therefore, did not generate an alarm before the grounding. The look-ahead was set-up based on Australian Border Force (ABF) work instructions, which also included other settings that likely reduced the ECDIS's effectiveness.

The effectiveness of the officers' visual check was likely influenced by a misinterpretation of chart symbology and possible obscuration of the reef's chart symbol and label. In addition, the officers' expected that the ECDIS would not save a route plotted across a chart danger, and had a misunderstanding of the ECDIS safety checking functions. The investigation found that the cutter's officers did not possess an adequate level of knowledge to operate the cutter's VisionMaster FT ECDIS as the primary means of navigation. The typespecific ECDIS familiarisation training, as undertaken by ABF deck officers, was not effective in preparing the cutter's officers for the operational use of the ECDIS. There was also no consistent provision of ECDIS annual continuation familiarisation training, as required by ABF procedures.

The ECDIS on board most ABF cutters, including ABFC *Roebuck Bay*, operated on a non-type-approved naval software version, although DNV GL (Det Norske Veritas – Germanischer Lloyd) certified them as using type-approved ECDIS as the primary means of navigation.

The cutters' ECDIS were also not updated to the latest International Hydrographic Organization (IHO) standards at the time of the grounding, specifically, the S-52 standard Presentation Library 4.0. Consequently, enhanced safety features of the new presentation library, which could have potentially alerted the officers to the danger posed by Henry Reef, were not available.

The ATSB also identified a risk associated with the hydrographic use of point feature objects to represent physical features of relatively significant spatial extent on an electronic navigational chart. The ATSB found that this could increase the risk of the hazard posed by such features being misinterpreted by mariners and potentially reduce the effectiveness of the ECDIS safety checking functions.

The ABF have advised the ATSB of several proposed and implemented measures aimed at improving fleet knowledge of ECDIS functions and features. There is an increased focus on passage planning, watchkeeping and use of ECDIS during the annual maritime operational compliance audits of vessels. These audits will now include training and information sessions and watchkeeper assessments. The training package and requirements for ECDIS annual familiarisation training has been updated. Task books have also been implemented for each role to reduce the effects of incorrect information being communicated by trickle-down training. Specific training documentation for the navigation officer's role has also been improved.

The ABF is also engaged in ongoing work with the ECDIS manufacturer to improve ECDIS typespecific familiarisation training.

The ABF also advised that a review of navigation related procedures and work instructions was undertaken and completed. This resulted in several work instructions being updated and re-issued with the lessons learnt from the investigation incorporated into the instructions.

The ABF undertook a program of software and hardware upgrades to update all cutters to the IHO's S-52 Presentation Library 4.0. This was completed in September 2018.

The Australian Maritime Safety Authority have reminded all Recognised Organisations of the requirement that an ECDIS is only compliant when installed and operated in accordance with the type-approval issued. The authority have sought DNV GL's internal review of their vessel survey and certification processes and any corrective action taken. The Australian Maritime Safety Authority have also received confirmation that ABF vessel management plans captured the non-type-approved nature of ABF ECDIS units.

The Australian Hydrographic Office has identified about 2,200 point features on 243 Australian Electronic Navigational Charts potentially affected by the identified point feature safety issue. Commencing in December 2018, these point features were updated by encoding an obstruction area around the existing underwater, awash rock, obstruction or isolated danger symbols. In addition, the AHO has published an online supplement to the *Seafarers Handbook for Australian Waters* that will be fully incorporated as a new chapter into the new edition of the handbook (Edition 5), due for publication in 2019. The supplement addresses the dangerous effects of overscaled ECDIS displays near features such as isolated danger symbols. The supplement also aims to address a number of misconceptions amongst mariners regarding the accuracy of bathymetry within Electronic Navigational Charts and the impact that accuracy should have upon route planning and conduct. The content has also been offered to the IHO for publication as an IHO standard.

The safe and effective use of ECDIS as the primary means of navigation depends on the mariner being thoroughly familiar with the operation, functionality, capabilities and limitations of the specific equipment in use on board their vessel. ECDIS type-specific familiarisation should be designed, delivered and undertaken so as to ensure the transfer of knowledge required to confidently operate the ECDIS as the manufacturer intended it to be operated. ECDIS, as a complex software based system, is subject to constant change and improvement. In order for mariners to always have the best possible advantage in conducting safe navigation, ECDIS needs to be maintained so as to be compatible with the latest applicable standards mandated by the appropriate organisations.

While the use of ECDIS and ENCs as an essential tool for navigation provides many safety benefits, navigation with ECDIS is fundamentally different from navigation with paper charts. The implementation of ECDIS and the replacement of paper charts has introduced certain risks to the conduct of marine navigation, as highlighted in this investigation. While the challenges faced by regulators, manufacturers, hydrographic offices and other concerned parties in resolving these risks is acknowledged, the ultimate goal must be to eliminate significant risks or at least reduce them to an acceptable level in terms of navigational safety.

Figure 10: ABFC Roebuck Bay aground on Henry Reef

Source: Australian Border Force

The ATSB's investigation report (**MO-2017-009**) is available from the ATSB's website at **www.atsb.gov.au**

A video supporting the report's release is available on the ATSB's YouTube channel: **www.youtube.com/atsbinfo**

Fall from height and serious injuries to crewmembers on board *Shanghai Spirit* near Port Alma, Queensland, on 29 January 2017 (MO-2017-001)

During the afternoon of 29 January 2017, the deck crewmembers of *Shanghai Spirit* were conducting painting and routine touch-up work in the cargo holds. They used a mobile scaffold tower to access areas of bulkhead about 6 to 9 m above the hold bottom. Two crewmembers conducted the work from the upper tiers of the scaffold tower and remained unsecured on it when it was moved. To access the full length of the hold bulkhead, the work required repositioning the scaffold tower on multiple occasions. After the work on the aft bulkhead was completed, it was decided to paint the hopper tank edge. As the scaffold tower was moved with the unsecured crewmembers, it became unbalanced and toppled forward onto the deck. The two crewmembers on the scaffold tower were seriously injured in the fall and were evacuated to a hospital ashore for treatment.

The ATSB found that, contrary to established procedures, two crewmembers remained on the unsecured scaffold tower in preparation for repositioning, rendering it top-heavy and unstable. Consequently, when moved it toppled and fell. Additionally, neither crewmember on the scaffold tower utilised the required safety harness and associated safety lines which would have prevented them falling when climbing or working on the tower. Finally, the afternoon work in hold number four was not supervised by an officer as required by company procedure and in contrast to the morning activity. The absence of formal supervision, in combination with a desire to expedite the task in difficult working conditions, probably led to the crewmembers remaining unsecured on the scaffolding as it was repositioned.

The scaffolding equipment operating instructions and maintenance manuals/guidelines have been included in the company's safety management system. Further, there is now a requirement for monthly and quarterly inspection of the equipment. The use of scaffolding is now specifically classed as 'working at heights' and is therefore subject to all planning and precautionary measures such as risk assessment, working aloft permits and precautions. Personnel Protective Equipment training and awareness has been reviewed and enhanced. Additionally, new crewmembers will be subject to pre-joining training that now includes the use of scaffolding.

This accident highlights the importance of adhering to procedures that assure safety as well as the value of effective supervision. Owners, operators and crewmembers are reminded to plan and undertake risk assessments for assigned tasks in order to identify any shortcomings in procedures and required risk-mitigation measures.

Figure 11: Shanghai Spirit alongside at Port Alma

Source: ATSB

The ATSB's investigation report (MO-2017-001) is available from the ATSB's website at www.atsb.gov.au

Contact with wharf by *Madang Coast*, Townsville, Queensland, on 16 November 2015 (MO-2015-007)

At about 2106 Eastern Standard Time, on 16 November 2015, a pilot boarded *Madang Coast* for its transit into Townsville, Queensland. The master and pilot completed the master-pilot information exchange, which included the berthing plan at Berth 10. As the ship approached the berth, the first line ashore, the forward spring, was looped over a bollard on Berth 10. The forward mooring party made two turns around the first post of the bitts and held onto the spring line. However, shortly after, as weight came onto the line, the line slipped on the post and fell slack. *Madang Coast* started moving off the berth towards a ship on the opposite berth. Despite repeated efforts to hold on to the line, it continued to fall slack. Subsequently, *Madang Coast*'s bow made contact with the shore end of Berth 10 and its port quarter with the ship on the opposite berth. Both ships sustained minor damage and there were no injuries.

As *Madang Coast* came alongside the wharf, the forward spring line slipped and could not be used to manoeuvre against. After the spring line slipped, the distance from the stern to the wharf was too far for the aft mooring party to throw any heaving lines ashore. Hence, the stern's movement away from the wharf continued. The shipping agent requested a tug reduction for the ship's berthing. The acting regional harbour master, pilot manager

and the ship's master were all unaware that the agent's application was made without the master's knowledge. The pilotage service did not have documented guidance procedures for berthing or any associated contingencies. The risk management processes were not sufficiently mature nor resilient enough to effectively identify and mitigate risks in pilotage services.

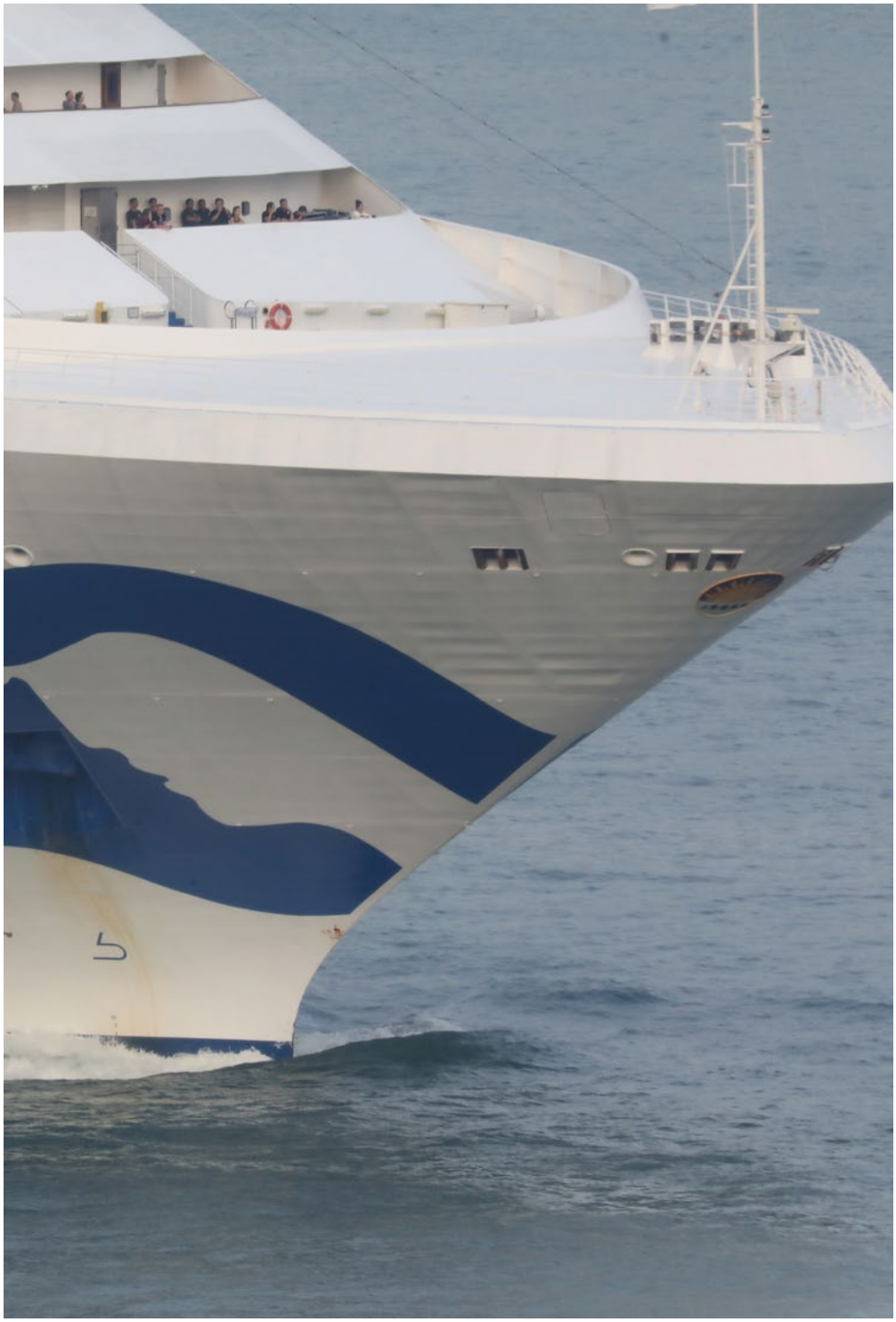
The Port of Townsville Limited (POTL) Pilotage Services has completed a review of, and subsequently updated and fully implemented a safety management system (SMS). The SMS included detailed berthing, operations and emergency procedures amongst others. The qualifications and training requirements for licensing pilots for the number of observation, supervised and check trips have significantly increased. The tug reduction requesting procedure has been updated and now requires a declaration by the ship's master that an assessment of the intended manoeuvre(s) to and/or from berths have been undertaken.

Risk management issues associated with the safe pilotage of ships are commonly known by all parties involved. However, the reality as opposed to the hypothesised scenarios are not always understood nor acted upon. Numerous incidents and their subsequent findings already provide the answers to many of retrospective questions that are asked. Where internal risk management processes may fail to address those questions, forward thinking can. Effective risk management systems and processes can lead to the identification, collation and assessment of found hazards, and, thus, provide the most appropriate mitigation measures.

Figure 12: Madang Coast

Source: Australian Border Force

The ATSB's investigation report (**MO-2015-007**) is available from the ATSB's website at **www.atsb.gov.au**



Generic image Source: ATSB

SECTION 5

Formal safety issues and actions

5

FORMAL SAFETY ISSUES AND ACTIONS

ATSB investigations primarily improve transport safety by identifying and addressing safety issues. Safety issues are events or conditions that increase safety risk and:

- can reasonably be regarded as having the potential to adversely affect the safety of future operations
- are characteristics of an organisation or a system, rather than of a specific individual, or operational environment at a specific point in time.

Safety issues will usually refer to an organisation's risk controls, or to a variety of internal and external organisational influences that impact the effectiveness of its risk controls. They are factors for which an organisation has some level of control and responsibility and, if not addressed, will increase the risk of future accidents.

The ATSB prefers to encourage stakeholders to take proactive safety action to address safety issues identified in its reports. Nevertheless, the ATSB may use its powers under the TSI Act to make a formal safety recommendation either during or at the end of an investigation—depending on the level of risk associated with a safety issue and the extent of corrective action already taken.

When safety recommendations are issued, they clearly describe the safety issue of concern, but they do not provide instructions or opinions on a preferred corrective action. Like equivalent overseas organisations, the ATSB has no power to enforce the implementation of its recommendations. It is a matter for the organisation to which an ATSB recommendation is directed to assess the costs and benefits of any means of addressing a safety issue, and act appropriately.

When the ATSB issues a safety recommendation to a person, organisation or agency, they must provide a written response within 90 days. That response must indicate whether they accept the recommendation, any reasons for not accepting part or all of the recommendation, and details of any proposed safety action to give effect to the recommendation.

The ATSB can also issue a safety advisory notice (SAN) suggesting that an organisation, or an industry sector, consider a safety issue and take appropriate action. There is no requirement for a formal response to a SAN.

Safety issues are broadly classified in terms of their level of risk:

- critical safety issue—associated with an intolerable level of risk and generally leading to the immediate issue of a safety recommendation unless corrective safety action has already been taken
- other safety issue—associated with a risk level regarded as unacceptable unless it is kept as low as reasonably practicable. Where there is a reasonable expectation that safety action could be taken in response to reduce risk, the ATSB will issue a safety recommendation to the appropriate agency when proactive safety action is not forthcoming.

All ATSB safety issues and associated safety actions, along with the most recent status, are published on the ATSB website for all investigation reports released since July 2010.

Source: ATSB

SAFETY ISSUES IDENTIFIED THROUGH ATSB INVESTIGATIONS

All safety issues are risk assessed by the ATSB. In 2018–19, the ATSB identified the following number of safety issues.[2]

Table 6: Number of safety issues identified in 2018–19

Safety issue risk	Aviation	Marine	Rail	Total
Critical	0	0	0	0
Other	26	9	19	54
Total	**26**	**9**	**19**	**54**

Safety action is sought to address any safety issues when proactive safety action is not forthcoming. Once safety action has been undertaken, the ATSB conducts another risk assessment of the safety issue. When the post-action risk assessment results in either an acceptable level of risk or a risk as low as reasonably practicable, the safety issue status is categorised as 'adequately addressed'.

The *Portfolio Budget Statements 2018–19* specify, as two of the ATSB's key performance indicators (KPIs), that:

- safety action is taken by stakeholders to address 100 per cent of critical safety issues identified
- safety action is taken by stakeholders to address 70 per cent of all other safety issues identified.

2 Includes safety issues identified through rail investigations conducted on behalf of the ATSB by OTSI NSW and CITS Victoria.

KPI STATUS OF SAFETY ISSUES IDENTIFIED IN 2018–19

There were no critical safety issues identified through ATSB investigations in 2018–19.

The breakdown of other safety issues, by transport mode, is summarised in the following table:

Table 7: Status of other safety issues identified in 2018–19

Status of safety issues	Aviation	Marine	Rail	Per cent
Adequately addressed	14	7	15	67%
Partially addressed	1	0	0	2%
Not addressed	0	0	0	0%
No longer relevant	0	0	0	0%
Safety action still pending	11	2	4	31%
Total	**26**	**9**	**19**	**100%**

RESPONSES TO SAFETY ISSUES IDENTIFIED IN 2018–19

The tables below document each safety issue identified in 2018–19 and its current status assigned by the ATSB, along with the justification for that status.

Table 8: Aviation—Responses to other safety issues identified in 2018–19

Safety issue	Status	Status justification
AO-2014-032: In-flight upset, inadvertent pitch disconnect, and continued operation with serious damage involving ATR 72 aircraft, VH-FVR, 47 km WSW of Sydney Airport, NSW on 20 February 2014		
AO-2014-032-SI-02: The aircraft manufacturer did not account for the transient elevator deflections that occur as a result of the system flexibility and control column input during a pitch disconnect event at all speeds within the flight envelope. As such, there is no assurance that the aircraft has sufficient strength to withstand the loads resulting from a pitch disconnect.	Safety action still pending	
AO-2014-032-SI-03: The design of the ATR 72 pitch control system resulted in limited tactile feedback between the left and right control columns, reducing the ability of one pilot to detect that the other pilot is making control inputs. In addition, there were no visual or auditory systems to indicate dual control inputs.	Safety action still pending	
AO-2014-032-SI-04: Flexibility in the ATR 72's pitch control system between the control columns results in a change in the aircraft's longitudinal handling qualities and control dynamics when dual control inputs are made. This could result in an aircraft–pilot coupling event where flight crew may find it difficult to control the aircraft. (Safety issue)	Safety action still pending	
AO-2014-032-SI-05: The design standard for large transport aircraft, Joint Aviation Requirements—Part 25 (JAR-25), did not require that the demonstrated potential for flexibility in the control system to develop transient dynamic loads, be considered during certification. Similarly, the current certification standard for Large Aeroplanes (CS-25) does not address this issue.	Safety action still pending	
AO-2014-032-SI-06: Although the design standard for the aircraft (JAR-25) required the control system to be of sufficient strength to withstand dual control inputs, it did not require consideration of the effect that dual control inputs may have on control of the aircraft. Similarly, the current design standard (CS-25) does not address this issue.	Safety action still pending	

Safety issue	Status	Status justification
AO-2014-032-SI-07: The aircraft manufacturer, ATR, did not provide a maintenance inspection to specifically assess the effect of an in-flight pitch disconnect on the structural integrity of the horizontal stabilisers. As a result, if an in-flight pitch disconnect occurred, the aircraft may not be inspected at a level commensurate with the criticality of the event. (Safety issue)	Adequately addressed	The ATSB considers that the action taken by ATR addresses this safety issue.
AO-2014-032-SI-08: As a legacy of there being no inspection specific to an in-flight pitch disconnect, there is potential for other ATR aircraft to have sustained an in-flight pitch disconnect in the past and be operating with undetected horizontal stabiliser damage.	Adequately addressed	The ATSB considers that the action taken by ATR addresses this safety issue.

Safety issue	Status	Status justification
AO-2015-046: Reduced braking effectiveness during landing involving Boeing 737-800, VH-VOP at Christchurch Airport, New Zealand, on 11 May 2015		
AO-2015-046-SI-01: Several months prior to the incident, Virgin Australia Airlines/Virgin Australia International changed their policy on calculating landing performance for damp runways from referencing a wet runway to a dry runway.	Safety action still pending	
AO-2015-046-SI-02: There was no regulatory direction from the Civil Aviation Safety Authority on how a damp runway was to be considered for aircraft landing performance.	Safety action still pending	
AO-2015-046-SI-03: Virgin Australia Airlines/Virgin Australia International did not have a policy requiring crews to independently cross-check environmental information and landing performance calculations in-flight, removing an opportunity to detect crew errors.	Safety action still pending	
AO-2015-046-SI-05: Civil Aviation Order 20.7.1B stipulated that a 1.15 (15 per cent) safety margin was to be applied to the actual landing distance for jet-engine aircraft with a maximum take-off weight greater than 5,700 kg. This safety margin may be inadequate under certain runway conditions, which increases the risk of a runway excursion. The corresponding guidance in Civil Aviation Advisory Publication 235-5(0) had not been updated to account for this.	Safety action still pending	

Safety issue	Status	Status justification
AO-2015-084: Unsafe proximity and radar vector below minimum vector altitude involving a Boeing 777-31HER, A6-EBU, and two Boeing 737-838s, VH-VXS and VH-VYE at Melbourne Airport, Victoria on 5 July 2015		
AO-2015-084-SI-01: The hazard associated with the inability to separate aircraft that are below the appropriate lowest safe altitude at night was identified but not adequately mitigated. This resulted in a situation where, in the event of a simultaneous go-around at night during land and hold short operations at Melbourne Airport, there was no safe option available for air traffic controllers to establish a separation standard when aircraft were below minimum vector altitude.	Adequately addressed	The safety actions taken by Airservices Australia, assessed as adequate by the Civil Aviation Safety Authority, addressed the safety issue identified by the ATSB.

Safety issue	Status	Status justification
AO-2015-107: Unreliable airspeed indication and stall warning involving an Airbus A320, VH-FNP, near Perth, Western Australia on 12 September 2015		
AO-2015-107-SI-01: Although the NAV ADR DISAGREE had more immediate safety implications relating to unreliable airspeed, the ECAM alert priority logic placed this alert below the engine-related faults. As a result, the NAV ADR DISAGREE alert was not immediately visible to the flight crew due to the limited space available on the ECAM display.	Adequately addressed	The ATSB is satisfied that this proactive safety action, when completed, will address the safety issue by providing flight crew with timely advice of a NAV ADR DISAGREE alert in the presence of multiple ECAM alerts. This change will give flight crew the best opportunity to detect an unreliable airspeed indication event in a high workload situation.
AO-2015-107-SI-02: A NAV ADR DISAGREE alert can be triggered by either an airspeed discrepancy, or angle of attack discrepancy. The alert does not indicate which, and the associated procedure may lead flight crews to incorrectly diagnosing the source of the alert when the airspeed is erroneous for a short period and no airspeed discrepancy is present when the procedure is carried out.	Adequately addressed	The ATSB is satisfied that these proactive safety actions, when available in the A320 fleet, will address the safety issue by providing the flight crew with the best opportunity to identify a transient airspeed disagreement and not disregard stall warnings when activated. The further action of the Unreliable Airspeed Mitigation Means will also provide enhanced awareness of an unreliable airspeed indication situation.

Safety issue	Status	Status justification
AO-2016-078: Fuel exhaustion and collision with terrain involving McDonnell Douglas Corporation 369, VH-PLY, 36 km NW Hawker, South Australia, on 17 July 2016		
AO-2016-078-SI-01: The current legislation does not require commercial operators of aircraft not greater than 5,700 kg maximum take-off weight to provide instructions and procedures for crosschecking the quantity of fuel on board before and/or during flight. This increases the risk that operators in this category will not implement effective fuel policies and training to prevent fuel exhaustion events.	Adequately addressed	The introduction of CASA 29/18—Civil Aviation (Fuel Requirements) Instrument 2018, which commenced on 28 February 2019 for Air Operators and Part 141 certificate holders, adequately addresses the safety issue.

Safety issue	Status	Status justification
AO-2016-160: Terrain awareness warning system alert involving Eurocopter BK 117C-2, VH-SYB, near Crookwell, New South Wales, on 21 October 2016		
AO-2016-160-SI-01: Although CHC Helicopter Australia's operations manual stated that emergency medical service flights should be conducted under instrument flight rules (IFR) 'where practical', its procedures for night visual flight rules (NVFR) operations using night vision goggles did not clearly state when IFR rather than NVFR should be used. [Safety issue]	Adequately addressed	The ATSB is satisfied that the operator took appropriate steps to reduce the risk of there being varying interpretations of its flight planning policies amongst its pilots.

Safety issue	Status	Status justification
AO-2016-166: Runway excursion involving Boeing 737 registered VH-VUI at Darwin Airport, Northern Territory, on 6 December 2016		
AO-2016-166-SI-01: Category I runways that are wider than 50 m and without centreline lighting are over-represented in veer-off occurrences involving transport category aircraft landing in low visibility conditions. The installation of centreline lighting on wider category I runways is recommended but not mandated by the International Civil Aviation Organization Annex 14.	Safety action still pending	
AO-2016-166-SI-02: The absence of centreline lighting and the 60 m width of runway 11/29 at Darwin result in very limited visual cues for maintaining runway alignment during night landings in reduced visibility.	Safety action still pending	
AO-2016-166-SI-03: Virgin Australia did not have formal guidance for flight crews regarding the limited visual cues for maintaining alignment to runway 11/29 at Darwin during night landings in reduced visibility.	Adequately addressed	The operator's action, in conjunction with other safety actions, should provide crews with adequate guidance to enable them to assess risk and prepare for approaches in low visibility conditions at Darwin Airport.
AO-2016-166-SI-04: The En Route Supplement Australia (ERSA) did not have formal guidance for flight crews regarding the limited visual cues for maintaining alignment to runway 11/29 at Darwin during night landings in reduced visibility.	Adequately addressed	The additional information provided in the ERSA should improve the risk awareness and decision-making of flight crews during low visibility approaches to Darwin Airport.

Safety issue	Status	Status justification
AO-2017-032: In-flight loss of propeller involving Saab 340B, VH-NRX, 19 km (10 NM) SW of Sydney Airport, New South Wales, on 17 March 2017		
AO-2017-032-SI-01: The engine manufacturer did not have specific inspection procedures in the maintenance documents of the propeller shaft to detect a fatigue crack originating from the dowel pin hole.	Adequately addressed	The release of the service bulletins and airworthiness directives introduced a targeted inspection of the PGB flange and shaft area, along with an additional inspection method. As of June 2018, 168 inspections had been completed, with six rejections and no cracking. Additionally, the new inspection criteria has been incorporated into the maintenance manual, so inspection of the critical area is now part of the ongoing maintenance for the PGB propeller shaft.

Safety issue	Status	Status justification
AO-2017-044: In-flight upset involving Boeing 747-438, VH-OJU, 110 km SE of Hong Kong Airport on 7 April 2017		
AO-2017-044-SI-01: The operator provided flight crew with limited training and guidance in stall prevention and recovery techniques at high altitudes or with engine power above idle.	Adequately addressed	The retraining of flight crew and amended lesson plans incorporating more complex stall warning recovery training, along with the provision of further education material, enables flight crew to be adequately prepared to recover from stall warning activations at high altitudes or with engine power above idle.
AO-2017-044-SI-02: The operator provided flight crew with limited training and guidance relating to the need for crew to re-evaluate their holding speed for a change in altitude (specifically above flight level 200).	Adequately addressed	Updated training manuals and lesson plans provided flight crew with the requisite knowledge and guidance to adequately prepare an aircraft for changes in holding level.

Safety issue	Status	Status justification
AO-2018-016: Hard landing involving Kavanagh B-350 hot-air balloon, VH-EUA, 6 km ENE of Yarra Glen, Victoria on 8 February 2018		
AO-2018-016-SI-01: The Bureau of Meteorology did not have a procedure to ensure that a recording of the local weather forecast for balloon operations in the Melbourne area was correctly uploaded and accessible to balloon pilots.	Adequately addressed	The ATSB is satisfied that the safety action will reduce the risk associated with this safety issue.
AO-2018-016-SI-02: Although the operator had procedures for conducting a verbal safety briefing prior to flight and had safety briefing cards available, its risk controls did not provide assurance that all passengers would understand the required procedures for emergency landings. More specifically: > safety briefing cards were not routinely made available to passengers prior to or during flight > safety briefing cards for non-English speaking passengers did not include diagrams to help communicate important information > the procedure for safety briefings did not require passengers to physically demonstrate that they understood the required landing position > the procedure for safety briefings did not require the pilot and ground crew to crosscheck that a safety briefing had been conducted prior to departure.	Partially addressed	The ATSB is satisfied that, although not every aspect of the safety issue has been or is being addressed, the safety action taken and proposed will reduce the risk associated with this safety issue.

Safety issue	Status	Status justification
AR-2017-011: Analysis of Wake Turbulence Occurrences at Sydney Airport 2012–2016		
AR-2017-011-SI-01: Given the parallel runway configuration, there was a disproportionate rate of reported wake turbulence occurrences for aircraft arriving at Sydney Airport compared to other major Australian airports in the years 2012 to 2016. Wake turbulence occurrences at Sydney Airport were found to be primarily associated with three factors: > arrival densities of one or more aircraft per minute (including parallel runway arrivals), especially on flights that arrived on Runway 34 Right > wind direction from the west or north west for aircraft arriving on Runway 34 Right, especially when coinciding with a heavy or super heavy aircraft arriving on Runway 34 Left > arrivals following an Airbus A380 compared to other aircraft.	Safety action still pending	

Table 9: Marine—Responses to safety issues identified in 2018–19

Safety issue	Status	Status justification
MO-2015-007: Contact with wharf by *Madang Coast*, Townsville, Queensland on 16 November 2015		
MO-2015-007-SI-01: The Port of Townsville Limited Pilotage Service risk management processes were not sufficiently mature nor resilient enough to effectively identify and mitigate risks during pilotage.	Adequately addressed	The action taken by the Pilotage Service by reviewing and updating the safety management system addresses the issues.
MO-2015-007-SI-02: The Port of Townsville Limited Pilotage Services' Pilotage Service Safety Management System did not have documented guidance on berthing manoeuvres nor any associated contingencies.	Adequately addressed	The actions taken by the Port of Townsville Limited (POTL) and the POTL Pilotage Services have detailed berthing manoeuvres and identified emergency situations providing contingency guidance to the pilots.
MO-2015-007-SI-03: The Port Procedures manual for Townsville allowed shipping agents to request a tug reduction without the knowledge of the ship's master.	Adequately addressed	The action taken by Maritime Safety Queensland and the Pilotage Service will eliminate the likelihood of an unexpected tug reduction.
MO-2015-007-SI-04: The regional harbour master and the pilotage service did not have processes in place to follow up audit findings, to ensure that they were appropriately monitored, actioned and closed out in a timely manner.	Safety action still pending	

Safety issue	Status	Status justification
MO-2017-001: Fall from height and serious injuries to crewmembers on board *Shanghai Spirit* near Port Alma, Queensland, on 29 January 2017		
MO-2017-001-SI-01: Guidelines for the provision, care and use of shipboard equipment were not supported by suitable documentation. The only documentation was for mobile scaffolding equipment of different design and not for that in use on the ship.	Adequately addressed	The action taken by Asia Maritime Pacific by adding the applicable operating instructions and maintenance manuals guidelines to the safety management system and implementing monthly and quarterly inspections addresses the issues.

Safety issue	Status	Status justification
MO-2017-009: Grounding of *ABFC Roebuck Bay* on Henry Reef, Queensland, on 30 September 2017		
MO-2017-009-SI-01: Although the online VisionMaster FT ECDIS type-specific familiarisation training included the relevant content, the training as undertaken by Australian Border Force deck officers was not effective in preparing *ABFC Roebuck Bay*'s officers for the operational use of the ECDIS.	Safety action still pending	
MO-2017-009-SI-02: Most Australian Border Force cutters, including *ABFC Roebuck Bay*, were installed with ECDIS operating on non-type-approved naval software. Subsequently, DNV GL, acting on behalf of the Australian Maritime Safety Authority, incorrectly certified these vessels as using type-approved ECDIS to meet the chart carriage requirements of the regulations. This removed an opportunity to put in place controls to ensure ongoing safety compliance.	Adequately addressed	Customs vessel management plans now capture the fact that most ABF cutters are installed with ECDIS operating on non-type-approved naval software. In future, this will allow steps to be taken to ensure that the ABF ECDIS equipment maintains safety compliance equivalent to the type-approved commercial systems or, will at least allow for an appreciation of any risks related to delays in maintaining up to date safety compliance. The Australian Maritime Safety Authority's (AMSA) notification to other Recognised Organisations will serve to highlight the importance of ensuring that ECDIS equipment is only used as the primary means of navigation when it meets the requirements of the regulations.
MO-2017-009-SI-03: ECDIS on board most Australian Border Force cutters, including *ABFC Roebuck Bay*, operated with a non-type-approved naval software version that was not updated to the latest applicable standards of the International Hydrographic Organization. The ECDIS therefore did not comply with the minimum requirements of an ECDIS being used to meet the chart carriage requirements of the regulations. As a result, the enhanced safety features of the new presentation library, which would have potentially alerted the officers to the danger posed by the reef, were not available.	Adequately addressed	The upgrade of ECDIS on board ABF cutters serves to bring the vessels into alignment with the latest applicable standards of the International Hydrographic Organization (IHO). The update to PresLib 4.0 ensures that ABF watchkeepers now have the benefit of the improved user experience, new symbols, enhanced safety features and reduction in audible alerts that was the intended purpose of the new presentation library.

Safety issue	Status	Status justification
MO-2017-009-SI-04: The hydrographic use of point feature objects to represent physical features of relatively significant spatial extent on an Electronic Navigational Chart can increase the risk of the hazard posed by such features being misinterpreted by mariners and potentially reduce the effectiveness of the ECDIS safety checking functions.	Adequately addressed	Australian Hydrographic Office (AHO) work to remediate the existing Australian ENC portfolio by encoding circular obstruction area features at the same location as applicable point features significantly reduces the risk identified by this safety issue. While the new area feature does not specifically reflect the shape and extent of Henry Reef, it nevertheless reduces the risk of the reef not being detected, both visually and when using the ECDIS. The challenges involved in charting all possible area features to the standard desired by users with specialised needs are significant. However, close engagement between such users and hydrographic service providers can help prioritise waters where better hydrographic detail may be required. The information published by the AHO will serve to improve the general awareness among mariners of the potential risks of using over-scaled ECDIS displays near point features representing rocks, wrecks and obstructions. It will also aid to improve users' understanding of chart accuracy. The submission of this publication to the IHO for consideration as an IHO standard provides an opportunity to raise awareness of this safety issue on an international level. (See full text in Safety Actions section).

Table 10: Rail—Responses to other safety issues identified in 2018–19

Safety issue	Status	Status justification
RO-2015-023: Derailment of loaded ore train M03544 near Walla, Western Australia, on 3 December 2015		
RO-2015-023-SI-01: The general condition of the rail on the west track, in the vicinity of the rail fracture, contributed to relatively frequent failures in that area.	Adequately addressed	The ATSB welcomes the safety action taken by BHP Billiton (BHPB) to improve the track condition through track renewal and increased monitoring/maintenance. The ATSB is satisfied that the actions taken by BHPB will addresses this safety issue.

Safety issue	Status	Status justification
RO-2016-001: Derailment of freight train WG713 at Denman, New South Wales, on 19 January 2016		
RO-2016-001-SI-01: The shear key was not installed in accordance with the geotechnical engineer's specification with respect to the following: a) It did not include a cross-drain b) Its actual width was less than the specified width.	Adequately addressed	The Australian Transport Safety Bureau notes the response provided and is satisfied with the action taken by ARTC.
RO-2016-001-SI-02: The location did not have adequate surface drainage which likely contributed to formation degradation over time.	Adequately addressed	The Australian Transport Safety Bureau notes the response provided and is satisfied with the action taken by ARTC.
RO-2016-001-SI-03: A more stringent maintenance response than that for an isolated track geometry defect was not considered or implemented in accordance with ARTC's COP. A more stringent maintenance response should have been considered given the degraded formation and the track's rapid deterioration between 12–14 January 2016, two days prior to the derailment.	Adequately addressed	The Australian Transport Safety Bureau notes the response provided and is satisfied with the action taken by ARTC.

Safety issue	Status	Status justification
RO-2016-006: Runaway and collision between 'J' class and 'Nagasaki' class trams, Sydney Tramway Museum, Loftus, New South Wales, on 15 May 2016		
RO-2016-006-SI-02: STM did not follow its change management process for adopting the new hardwood chock type. Subsequently, the hardwood chock could not be applied reliably under the 'J' class wheel and could not restrict its movement [Safety Issue].	Adequately addressed	The Australian Transport Safety Bureau notes the response provided and is satisfied that the action taken by STM addresses the safety issue.
RO-2016-006-SI-03: STM did not comply with its risk control in ensuring that trams were attended when parked [Safety Issue].	Adequately addressed	The Australian Transport Safety Bureau notes the response provided and is satisfied that the action taken by STM addresses the safety issue.
RO-2016-006-SI-04: STM did not require the application of all available and reasonably practicable risk controls when parking trams with respect to their location and handbrake application [Safety Issue].	Adequately addressed	The Australian Transport Safety Bureau notes the response provided and is satisfied that the action taken by STM addresses the safety issue.

Safety issue	Status	Status justification
RO-2016-009: Level crossing collision between truck and passenger train 8753, Phalps Road, Larpent, Victoria, on 13 July 2016		
RO-2016-009-SI-01: Available risk controls to manage the risk posed by known sighting deficiencies at the Phalps Road level crossing were not deployed by V/Line or the Colac Otway Shire Council.	Adequately addressed	The safety action taken addresses the safety issue.
RO-2016-009-SI-02: The interaction between V/Line and the Colac Otway Shire Council was ineffective at addressing identified sighting issues at the Phalps Road level crossing.	Adequately addressed	The safety action taken addresses the safety issue.
RO-2016-009-SI-03: More than 100 level crossings in the V/Line regional rail network (including 35 at the intersection of passenger lines and public roads) were non-compliant with the left-side viewing angle requirements of AS 1742.7:2016. These crossings had an acute road-to-rail angle that affected the ability of drivers to sight trains approaching from their left.	Safety action still pending	

Safety issue	Status	Status justification
RO-2016-009-SI-04: V/Line's level crossing assessment processes did not result in deployment of available risk controls at many passively protected acute-angle level crossings.	Safety action still pending	
RO-2016-009-SI-05: Errors remained within the ALCAM database due to the type of equipment used to measure road and rail bearings during ALCAM surveys in 2009.	Adequately addressed	The re-survey of level crossings in Victoria between 2017 and 2022 will address this safety issue.

Safety issue	Status	Status justification
RO-2017-001: Runaway of grain train 8960, Dombarton to Unanderra, New South Wales, on 22 April 2017		
RO-2017-001-SI-01: The train was loaded by approximately 10% more than that recorded on the consist, it is probable that the additional mass placed an extra load on the braking system and affected the handling characteristics of the train.	Adequately addressed	A QUBE investigation officer conducted weekly audits of trains operating between Moss Vale and Inner Harbour following this incident. This included a check that the train consist was recorded correctly.

Safety issue	Status	Status justification
RO-2017-007: Derailment of coal train, 8 km west of Oakey, Queensland, on 21 July 2017		
RO-2017-007-SI-01: Queensland Rail's track monitoring and inspection processes were not effective in identifying significant deterioration in the condition of level crossing ID 2309 and its approach roads to ensure the safe operating limits of the level crossing throughout its lifecycle.	Adequately addressed	The ATSB is satisfied that the action taken and proposed by Queensland Rail will reduce the risk associated with this safety issue.

Safety issue	Status	Status justification
RO-2017-013: Derailment of acid train 9T90 near Kimburra, Queensland on 28 September 2017		
RO-2017-013-SI-01: Anomalies in the magnetic particle inspection procedures likely led to the crack not being detected.	Safety action still pending	
RO-2017-013-SI-02: The GATX 840P1 axle was susceptible to fatigue cracking due to relatively minor damage that was not reliably detected prior to failure.	Safety action still pending	

Safety issue	Status	Status justification
RO-2017-016: Derailment of freight train 7MC1 at Wallan, Victoria on 4 November 2017		
RO-2017-016-SI-01: ARTC allowed identified track twist defects to remain in track contrary to network track geometry requirements.	Adequately addressed	The ATSB is satisfied that the safety action taken by ARTC addresses the safety issue.

Safety issue	Status	Status justification
RO-2018-005: Derailment of coal train EF01, Duaringa, Queensland, on 24 January 2018		
RO-2018-005-SI-01: When planning track disturbing work, Aurizon's normal practice was to use its Hazard Location Register as a record of past occurrences at a specific location. Aurizon did not use the Hazard Location Register as a resource to consider the situational characteristics of a location that may increase risk, such as continuous welded rail, track gradient and proximity to fixed points such as turnouts or level crossings.	Adequately addressed	The ATSB is satisfied that the safety action will reduce the risk associated with the safety issue.
RO-2018-005-SI-02: A variety of techniques to indicate and record rail stress at specific locations are available, however Aurizon had not used any of these techniques in some locations with elevated risk of rail stress, such as tangent track on steep grades. As a result, Aurizon could not readily determine the presence or absence of compressive rail stress at these locations.	Adequately addressed	The ATSB acknowledges that Aurizon has taken (or is proposing to take) safety action to improve their knowledge of rail stress throughout its network. Although this proactive safety action does not specifically address all aspects of the safety issue, the ATSB believes the risk of derailments will be reduced by this safety action, together with the other action in relation to the other safety issue with its hazard location register (RO-2018-005-SI-01).

SAFETY ACTIONS

Table 11: Number of safety actions released in 2018–19

Safety action type	Aviation	Marine	Rail	Total
Proactive safety action[3]	20	9	19	48
Safety advisory notice	2	0	0	2
Safety recommendation	6	0	1	7
Total	**28**	**9**	**20**	**57**

3 Only include proactive safety action taken by industry linked to an ATSB-identified safety issue.

ATSB RECOMMENDATIONS CLOSED IN 2018–19

There were no marine or rail safety recommendations closed in 2018–19.

Table 12: Aviation—ATSB recommendations closed in 2018–19

Investigation	**AR-2012-034: Loss of separation between aircraft in Australian airspace January 2008 to June 2012**
Safety issue	There was a disproportionate rate of loss of separation incidents which leads to a higher risk of collision in military terminal area airspace in general and all airspace around Darwin and Williamtown in particular. Furthermore, loss of separation incidents in military airspace more commonly involved contributing air traffic controller actions relative to equivalent civil airspace occurrences.
Number	AR-2012-034-SR-014
Organisation	Department of Defence
Recommendation	The Australian Transport Safety Bureau recommends that the Department of Defence undertake a review of all processes and risk controls in place to reduce both the disproportionate risk of loss of separation incidents and the elevated risk of collision in military terminal area airspace in general and all airspace around Darwin and Williamtown in particular, and the relatively more common contributing air traffic controller actions.
Released	18 October 2013
Final action	26 June 2019
Final action	The ATSB notes the significant reviews conducted by the Department of Defence in relation to this recommendation and the associated safety actions. Analysis of the rates of loss of separation incidents in the six years 2013-2018 has shown an associated reduction in the rate of loss of separation incidents in terminal and tower airspace at Darwin, Townsville and Williamtown, relative to the original study period of 2008–2012. For Townsville and Williamtown, the LOS incident rate per 100,000 aircraft movements was comparative to the levels of civil-controlled Class C airport LOS rates used in the original analysis. However, for Darwin, the rate of LOS incidents is still above the levels of civil-controlled Class C airport LOS rates used in the original analysis. The LOS incidents that ATC actions contributed to, all three locations had a lower rate of reported ATC contributed LOS incidents from 2013 to 2018 compared to the original safety issue period 2008 to 2012. For Darwin, there has been an increase in the rate of LOS incidents from pilot actions across the time period.

SAFETY RECOMMENDATIONS RELEASED IN 2018–19

There were no marine safety recommendations released in 2018–19.

Table 13: Aviation—Safety recommendations released in 2018–19

Investigation	**AO-2014-032: In-flight upset, inadvertent pitch disconnect, and continued operation with serious damage involving ATR 72 aircraft, VH-FVR, 47 km WSW of Sydney Airport, NSW on 20 February 2014**
Safety issue	The design of the ATR 72 pitch control system resulted in limited tactile feedback between the left and right control columns, reducing the ability of one pilot to detect that the other pilot is making control inputs. In addition, there were no visual or auditory systems to indicate dual control inputs.
Number	AO-2014-032-SR-057
Organisation	Avions de transport régional (ATR)
Recommendation	The ATSB recommends that ATR assess the operational risk associated with limited tactile feedback between left and right control columns in the context of no visual or auditory systems to indicate dual control inputs.
Released	24 May 2019

Investigation	**AO-2014-032: In-flight upset, inadvertent pitch disconnect, and continued operation with serious damage involving ATR 72 aircraft, VH-FVR, 47 km WSW of Sydney Airport, NSW on 20 February 2014**
Safety issue	Although the design standard for the aircraft (JAR-25) required the control system to be of sufficient strength to withstand dual control inputs, it did not require consideration of the effect that dual control inputs may have on control of the aircraft. Similarly, the current design standard (CS-25) does not address this issue.
Number	AO-2014-032-SR-054
Organisation	European Aviation Safety Agency
Recommendation	The ATSB recommends that EASA take further action to review the current design standard (CS-25) in consideration of effect that dual control inputs may have on control of aircraft.
Released	24 May 2019

Investigation	AO-2014-032: In-flight upset, inadvertent pitch disconnect, and continued operation with serious damage involving ATR 72 aircraft, VH-FVR, 47 km WSW of Sydney Airport, NSW on 20 February 2014
Safety issue	Flexibility in the ATR 72's pitch control system between the control columns results in a change in the aircraft's longitudinal handling qualities and control dynamics when dual control inputs are made. This could result in an aircraft-pilot coupling event where flight crew may find it difficult to control the aircraft. (Safety issue)
Number	AO-2014-032-SR-058
Organisation	Avions de transport régional (ATR)
Recommendation	The ATSB recommends that ATR perform a detailed review of the effects of dual control inputs on the aircraft's longitudinal handling qualities and control dynamics to determine if there are any detrimental effects that could lead to difficulty in controlling the aircraft throughout the approved flight envelope and operational range. Any issues identified should be appropriately dealt with.
Released	24 May 2019

Investigation	AO-2016-166: Runway excursion involving Boeing 737, VH-VUI, at Darwin Airport, Northern Territory, on 6 December 2016
Safety issue	The absence of centreline lighting and the 60 m width of runway 11/29 at Darwin result in very limited visual cues for maintaining runway alignment during night landings in reduced visibility.
Number	AO-2016-166-SR-014
Organisation	Darwin Airport Operator
Recommendation	The Australian Transport Safety Bureau recommends that Darwin International Airport address the risk of very limited visual cues for maintaining runway alignment during night landings in reduced visibility that arise from the combination of the absence of centreline lighting and the 60 m width of runway 11/29 at Darwin.
Released	15 May 2019

Investigation	AO-2016-166: Runway excursion involving Boeing 737, VH-VUI, at Darwin Airport, Northern Territory, on 6 December 2016
Safety issue	Category I runways that are wider than 50 m and without centreline lighting are over-represented in veer-off occurrences involving transport category aircraft landing in low visibility conditions. The installation of centreline lighting on wider category I runways is recommended but not mandated by the International Civil Aviation Organization Annex 14.
Number	AO-2016-166-SR-013
Organisation	International Civil Aviation Organization
Recommendation	The Australian Transport Safety Bureau recommends that the International Civil Aviation Organization review the effectiveness of Annex 14, recommendation 5.3.12.2 (for the installation of runway centreline lighting on Category I runways that are wider than 50 m), given that Category I runways that are wider than 50 m and without centreline lighting are over-represented in veer-off occurrences involving transport category aircraft landing in low visibility conditions.
Released	15 May 2019

Investigation	AR-2017-011: Analysis of Wake Turbulence Occurrences at Sydney Airport 2012–2016
Safety issue	Given the parallel runway configuration, there was a disproportionate rate of reported wake turbulence occurrences for aircraft arriving at Sydney Airport compared to other major Australian airports in the years 2012 to 2016. Wake turbulence occurrences at Sydney Airport were found to be primarily associated with three factors: > arrival densities of one or more aircraft per minute (including parallel runway arrivals), especially on flights that arrived on Runway 34 Right > wind direction from the west or north west for aircraft arriving on Runway 34 Right, especially when coinciding with a heavy or super heavy aircraft arriving on Runway 34 Left > arrivals following an Airbus A380 compared to other aircraft.
Number	AR-2017-011-SR-011
Organisation	Airservices Australia
Recommendation	The Australian Transport Safety Bureau recommends that Airservices Australia introduce measures to reduce the frequency of wake turbulence occurrence at Sydney Airport. Measures that could reduce the likelihood of these occurrences are primarily associated with: > arrival densities of one or more aircraft per minute (including parallel runway arrivals), especially on flights that arrived on Runway 34 Right > wind direction from the west or north west for aircraft arriving on Runway 34 Right, especially when coinciding with a heavy or super heavy aircraft arriving on Runway 34 Left > arrivals following an Airbus A380 compared to other aircraft.
Released	14 February 2019

Table 14: Rail—Safety recommendations released in 2018–19

Investigation	RO-2017-013: Derailment of acid train 9T90 near Kimburra, Queensland on 28 September 2017
Safety issue	Anomalies in the magnetic particle inspection procedures likely led to the crack not being detected.
Number	RO-2017-013-SR-007
Organisation	Aurizon
Recommendation	The Australian Transport Safety Bureau recommends that Aurizon addresses the non-use of standard test pieces during magnetic particle inspection.
Released	13 June 2019

SAFETY ADVISORY NOTICES RELEASED IN 2018–19

Table 15: Safety advisory notices released in 2018–19

Investigation	AO-2016-078: Fuel exhaustion and collision with terrain involving McDonnell Douglas Corporation 369, VH-PLY, 36 km NW Hawker, South Australia, on 17 July 2016
Safety issue	The current legislation does not require commercial operators of aircraft not greater than 5,700 kg maximum take-off weight to provide instructions and procedures for crosschecking the quantity of fuel on board before and/or during flight. This increases the risk that operators in this category will not implement effective fuel policies and training to prevent fuel exhaustion events.
Number	AO-2016-078-SAN-009
Organisation	Air Operator Certificate holders
Safety advisory notice	From 2003 to 2017, the ATSB has received 26 reports of fuel exhaustion events from Air Operator Certificate holders operating aircraft not greater than 5,700 kg MTOW. Two key contributing factors from these reports are pilots not cross-checking the fuel on board before and/or during flight. Aircraft greater than 5,700 kg MTOW are not represented in the ATSB fuel exhaustion reports. In accordance with CAO 20.2 operators of these aircraft are required to publish instructions and procedures in their operations manuals for the pilot in command to verify the fuel on board before flight. Additionally, CAAP 215-1 Appendix B includes guidelines for publishing operations manual procedures for inflight fuel checks and management. CASA 29/18 – Civil Aviation (Fuel Requirements) Instrument 2018, which contains proposed changes to the current fuel regulations and guidance material is scheduled to commence 8 November 2018. The ATSB considers that the implementation of these changes will address this safety issue. Until the proposed changes to the current fuel regulations and guidance material are implemented, the ATSB advises Air Operator Certificate holders for aircraft not greater than 5,700 kg MTOW, to consider this safety issue and take action where appropriate.
Released	02 August 2018

Investigation	AO-2017-078: In-flight break-up involving Robinson R22 helicopter, VH-HGU, 7 km north-west of Cloncurry, Queensland on 2 August 2017
Safety issue	N/A
Number	AO-2017-078-SAN-001
Organisation	All maintenance personnel for Robinson Helicopters
Safety advisory notice	The Australian Transport Safety Bureau advises all maintenance personnel for Robinson helicopters to ensure that before re-using a self-locking nut, that the correct part number is fitted, and that the D210-series corrosion-resistant nuts are used for reassembly of critical fasteners in accordance with the Robinson Helicopter Company instructions for continued airworthiness.
Released	28 March 2019

Investigation	AO-2017-096: Collision with terrain involving Diamond DA40, VH-MPM, 42 km west of Southport Aerodrome, Queensland, on 26 September 2017
Safety issue	N/A
Number	AO-2017-096-SAN-012
Organisation	Civil Aviation Safety Authority
Safety advisory notice	The ATSB identified concerns relating to the conduct of incipient spin training in aircraft types for which spinning is prohibited. The DA40 aircraft type is certified to recover from a one-turn spin or a three-second spin (whichever takes longer), and is not proven or certified to be recoverable from a longer spin. The aircraft's manuals state that intentional spins are prohibited. During the ATSB investigation, the aircraft manufacturer clarified that this limitation prohibits any action that is intended to induce a spin, even if the aircraft is immediately recovered. Aircraft types with similar limitations are currently in use throughout the world for flying training. In Australia, the Civil Aviation Safety Authority requires the demonstration of recovery from an incipient spin during flight tests. However, there is no clear and consistent definition of the point at which a manoeuvre becomes a spin (or incipient spin) for the purposes of flying training. Crucially, the ATSB found that there can be varying interpretations of an 'incipient spin', and this has led to aircraft not approved for intentional spins being used for incipient spin training and assessment.
Released	22 May 2019

Investigation	AO-2018-053: Airspeed indication failure on take-off involving Airbus A330, 9M-MTK, Brisbane Airport, Queensland, on 18 July 2018
Safety issue	N/A
Number	AO-2018-053-SAN-003
Organisation	Operators using Brisbane Airport
Safety advisory notice	The Australian Transport Safety Bureau advises all operators that conduct flights to Brisbane Airport to consider the use of pitot probe covers and, if covers are used, ensure there are rigorous procedures for confirming that covers are removed before flight.
Released	30 August 2018

SECTION 6

Financial statements

6

Australian Government

Australian Transport Safety Bureau

Financial Statements 2018-19

Australian Transport Safety Bureau

CONTENTS

STATEMENT BY THE CHIEF COMMISSIONER AND CHIEF FINANCIAL OFFICER

In our opinion, the attached financial statements for the year ended 30 June 2019 comply with subsection 42(2) of *the Public Governance, Performance and Accountability Act 2013* (PGPA Act), and are based on properly maintained financial records as per subsection 41(2) of the PGPA Act.

In our opinion, at the date of this statement, there are reasonable grounds to believe that the Australian Transport Safety Bureau entity will be able to pay its debts as and when they fall due.

Colin McNamara
Chief Commissioner A/g
13 September 2019

Nicole Binny
Chief Financial Officer A/g
13 September 2019

Australian National
Audit Office

INDEPENDENT AUDITOR'S REPORT

To the Minister for Infrastructure, Transport and Regional Development

Opinion

In my opinion, the financial statements of the Australian Transport Safety Bureau ('the Entity') for the year ended 30 June 2019:

(a) comply with Australian Accounting Standards – Reduced Disclosure Requirements and the *Public Governance, Performance and Accountability (Financial Reporting) Rule 2015*; and

(b) present fairly the financial position of the Entity as at 30 June 2019 and its financial performance and cash flows for the year then ended.

The financial statements of the Entity, which I have audited, comprise the following statements as at 30 June 2019 and for the year then ended:

- Statement by the Chief Commissioner and Chief Financial Officer;
- Statement of Comprehensive Income;
- Statement of Financial Position;
- Statement of Changes in Equity;
- Cash Flow Statement;
- Overview; and
- Notes to the financial statements, comprising a summary of significant accounting policies and other explanatory information.

Basis for Opinion

I conducted my audit in accordance with the Australian National Audit Office Auditing Standards, which incorporate the Australian Auditing Standards. My responsibilities under those standards are further described in the *Auditor's Responsibilities for the Audit of the Financial Statements* section of my report. I am independent of the Entity in accordance with the relevant ethical requirements for financial statement audits conducted by the Auditor-General and his delegates. These include the relevant independence requirements of the Accounting Professional and Ethical Standards Board's APES 110 *Code of Ethics for Professional Accountants* (the Code) to the extent that they are not in conflict with the *Auditor-General Act 1997*. I have also fulfilled my other responsibilities in accordance with the Code. I believe that the audit evidence I have obtained is sufficient and appropriate to provide a basis for my opinion.

Accountable Authority's Responsibility for the Financial Statements

As the Accountable Authority of the Entity the Chief Commissioner is responsible under the *Public Governance, Performance and Accountability Act 2013* for the preparation and fair presentation of annual financial statements that comply with Australian Accounting Standards – Reduced Disclosure Requirements and the rules made under that Act. The Chief Commissioner is also responsible for such internal control as the Chief Commissioner determines is necessary to enable the preparation and fair presentation of financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, the Chief Commissioner is responsible for assessing the ability of the Entity to continue as a going concern, taking into account whether the Entity's operations will cease as a result of an administrative restructure or for any other reason. The Chief Commissioner is also responsible for disclosing, as applicable, matters related to going concern and using the going concern basis of accounting unless the assessment indicates that it is not appropriate.

GPO Box 707 CANBERRA ACT 2601
19 National Circuit BARTON ACT
Phone (02) 6203 7300 Fax (02) 6203 7777

Auditor's Responsibilities for the Audit of the Financial Statements

My objective is to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes my opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with the Australian National Audit Office Auditing Standards will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of the financial statements.

As part of an audit in accordance with the Australian National Audit Office Auditing Standards, I exercise professional judgement and maintain professional scepticism throughout the audit. I also:

- identify and assess the risks of material misstatement of the financial statements, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for my opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control;
- obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Entity's internal control;
- evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by the Accountable Authority;
- conclude on the appropriateness of the Accountable Authority's use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Entity's ability to continue as a going concern. If I conclude that a material uncertainty exists, I am required to draw attention in my auditor's report to the related disclosures in the financial statements or, if such disclosures are inadequate, to modify my opinion. My conclusions are based on the audit evidence obtained up to the date of my auditor's report. However, future events or conditions may cause the Entity to cease to continue as a going concern; and
- evaluate the overall presentation, structure and content of the financial statements, including the disclosures, and whether the financial statements represent the underlying transactions and events in a manner that achieves fair presentation.

I communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that I identify during my audit.

Australian National Audit Office

Colin Bienke
Senior Director

Delegate of the Auditor-General

Canberra
13 September 2019

Statement of Comprehensive Income

for the period ended 30 June 2019

	Notes	2019 $'000	2018 $'000	Original Budget $'000
NET COST OF SERVICES				
Expenses				
Employee Benefits	1.1A	**(16,029)**	(15,333)	(16,221)
Suppliers	1.1B	**(10,059)**	(10,024)	(7,917)
Depreciation and amortisation	2.2A	**(699)**	(715)	(580)
Finance Costs	1.1C	**(6)**	(7)	(2)
Write-Down and Impairment of Other Assets	1.1D	**(15)**	(71)	-
Total Expenses		**(26,808)**	(26,150)	(24,720)
Own-Source Income				
Own-Source Revenue				
Sale of Goods and Rendering of Services	1.2A	**1,540**	1,759	1,778
Other Revenue	1.2B	**4,412**	3,009	2,118
Total Own-Source Revenue		**5,952**	4,768	3,896
Gains				
Other Gains	1.2C	**2**	28	-
Total Gains		**2**	28	-
Total Own-Source Income		**5,954**	4,796	3,896
Net Cost of Services		**(20,854)**	(21,354)	(20,824)
Revenue from Government	1.2D	**20,244**	20,411	20,244
Deficit Attributable to the Australian Government		**(610)**	(943)	(580)
OTHER COMPREHENSIVE INCOME				
Items not subject to subsequent reclassification to net cost of services				
Changes in asset revaluation surplus		**(31)**	-	-
Total Other Comprehensive Income		**(31)**	-	-
Total Comprehensive Income		**(641)**	**(943)**	**(580)**

The above statement should be read in conjunction with the accompanying notes.

Statement of Financial Position

as at 30 June 2019

	Notes	2019 $'000	2018 $'000	Original Budget $'000
ASSETS				
Financial Assets				
Cash and Cash Equivalents	2.1A	**152**	90	368
Trade and Other Receivables	2.1B	**21,638**	22,028	21,884
Accrued Revenue		**78**	202	223
Total Financial Assets		**21,868**	22,320	22,475
Non-Financial Assets				
Heritage and Cultural	2.2A	**15**	15	-
Plant and Equipment	2.2A	**1,179**	1,412	1,991
Computer Software	2.2A	**1,127**	772	664
Prepayments		**278**	269	144
Total Non-Financial Assets		**2,600**	2,468	2,799
Assets Held for Sale		**16**	48	-
Total Assets		**24,484**	24,836	25,274
LIABILITIES				
Payables				
Suppliers	2.3A	**(406)**	(422)	(1,148)
Other Payables	2.3B	**(182)**	(419)	(238)
Total Payables		**(588)**	(841)	(1,386)
Interest Bearing Liabilities				
Leases	2.4A	**(119)**	(143)	(222)
Total Interest Bearing Liabilities		**(119)**	(143)	(222)
Provisions				
Employee Provisions	4.1A	**(4,135)**	(3,931)	(4,881)
Other Provisions		**-**	-	(76)
Total Provisions		**(4,135)**	(3,931)	(4,957)
Total Liabilities		**(4,842)**	(4,915)	(6,565)
Net Assets		**19,640**	19,921	18,709
EQUITY				
Contributed Equity		**13,839**	13,478	13,542
Reserves		**430**	461	462
Retained Surplus		**5,371**	5,982	4,075
Total equity		**19,640**	19,921	18,079

The above statement should be read in conjunction with the accompanying notes.

Statement of Changes in Equity

for the period ended 30 June 2019

	Notes	2019 $'000	2018 $'000	Original Budget $'000
CONTRIBUTED EQUITY				
Opening Balance				
Balance carried forward from previous period		**13,478**	13,114	12,797
Adjusted Opening Balance		**13,478**	13,114	12,797
Transactions with Owners				
Equity injection - Appropriations		**-**	-	329
Departmental capital budget		**361**	364	416
Total Transactions with Owners		**361**	364	745
Closing balance as at 30 June		**13,839**	13,478	13,542
RETAINED EARNINGS				
Opening Balance				
Balance carried forward from previous period		**5,982**	6,925	5,285
Adjusted Opening Balance		**5,982**	6,925	5,285
Comprehensive Income				
Deficit for the period		**(610)**	(943)	(580)
Total Comprehensive Income		**(610)**	(943)	(580)
Closing Balance as at 30 June		**5,371**	5,982	4,705
ASSET REVALUATION RESERVE				
Opening Balance				
Balance carried forward from previous period		**461**	461	462
Adjusted Opening Balance		**461**	461	462
Comprehensive Income				
Changes in asset revluation surplus		**(31)**	-	-
Total Comprehensive Income		**(31)**	-	-
Closing Balance as at 30 June		**430**	461	462
Total Equity as at 30 June		**19,640**	19,921	18,709

The above statement should be read in conjunction with the accompanying notes.

During 2016-17, approval was given to re-profile $1.724 miilion for Departmental Capital Budget (DCB) and equity injections ($0.384m for 2019-20)

Accounting Policy

Equity Injections

Amounts appropriated which are designated as 'equity injections' for a year (less any formal reductions) and Departmental Capital Budgets (DCBs) are recongised directly in contributed equity in that year.

Cash Flow Statement

for the period ended 30 June 2019

	Notes	2019 $'000	2018 $'000	Original Budget $'000
OPERATING ACTIVITIES				
Cash Received				
Appropriations		**20,005**	22,370	20,144
Sale of goods and rendering of services		**2,416**	2,107	1,778
GST received		**387**	362	-
Other		**201**	107	-
Total Cash Received		**23,008**	24,946	21,922
Cash Used				
Employees		**(16,483)**	(15,942)	(16,121)
Suppliers		**(6,432)**	(8,329)	(5,801)
Other		**(188)**	(108)	-
Total Cash Used		**(23,103)**	(24,379)	(21,922)
Net Cash from /(used by) Operating Activities		**(95)**	567	-
INVESTING ACTIVITIES				
Cash Received				
Proceeds from sales of property, plant and equipment		**30**	25	-
Total Cash Received		**30**	25	-
Cash Used				
Purchase of property, plant and equipment		**(836)**	(761)	(745)
Purchase of Software		**-**	(406)	-
Total Cash Used		**(836)**	(1,167)	(745)
Net Cash Used by Investing Activities		**(806)**	(1,142)	(745)
FINANCING ACTIVITIES				
Cash Received				
Contributed Equity		**986**	297	745
Total Cash Received		**986**	297	745
Cash Used				
Repayment of Finance Leases		**(23)**	-	-
Total Cash Used		**(23)**	-	-
Net Cash from Financing Activities		**963**	297	745
Net Increase/(Decrease) in Cash Held		**62**	(278)	-
Cash and cash equivalents at the beginning of the reporting period		**90**	368	368
Cash and Cash Equivalents at the end of the reporting period	2.1A	**152**	90	368

The above statement should be read in conjunction with the accompanying notes.

Budget Variances Commentary

The explanations provide a comparison of the original budget as presented in the 2018-19 Portfolio Budget Statements (PBS) to the 2018-19 final outcome as presented in accordance with Australian Accounting Standards for the Australian Transport Safety Bureau (ATSB).

Variances are considered to be 'major' based on the following criteria:
- the variance between budget and actual is greater than 10%: and
- the variance between budget and actual is greater than 2% of total expenses or total own source revenues: or
- the variance between budget and actual is below this threshold but is considered important for the reader's understanding or is relevant to an assessment of the discharge of accountability and to an analysis of performance of the agency.

In some instances, a budget has not been provided for in the PBS, for example non-cash items such as asset revaluations and sale of assets adjustments. Unless the variance is considered to be 'major' no explanation has been provided.

Explanations of major variances	Affected line items (and statement)
Expenses The majority of the Supplier expenses variance is due to increased costs for accident investigations, this has been offset by corresponding revenue for the cost recovery of these investigations through agreements with the States. The Depreciation variance is due to the purchases of new software since the budget profile was projected.	**Statement of Comprehensive Income** Expenses - Suppliers Expenses - Depreciation and Amortisation
Income The Revenue variance is due to a one off contribution in 2018-19 from the Department of Infrastructure, Transport, Cities and Regional Development (DITCRD) and an increase in revenue from investigations due to higher than projected investigation services completed during the financial year the ATSB receives services free of charge from the Chief Investigator Transport Safety, Victoria and the NSW Office of Transport Safety Investigations.	**Statement of Comprehensive Income** Own Source Revenue - Other Revenue
Other Revenue The variance is due to a one off contribution from DITCRD for capital purchases and an increased in resources received free of charge from investigation services.	**Statement of Comprehensive Income**
Financial Assets The budgeted estimate for cash and accrued revenue is made on a rolling three-year historical trend, which has resulted in an estimate being less than the 2018-19 actual.	**Statement of Financial Position** Financial Assets - Cash and Cash Equivalents Financial Assets - Accrued Revenue
Non-Financial Assets Heritage and Cultural assets variance is due to the donation of a Pegasus Mark II Propeller in 2017, this was donated following the budget profile. Plant and equipment is under budget due to underspends mainly attributable to the purchase of a Scanning Electron Microscope and other specialist investigation equipment, which has been offset by Internal Computer software development being under projected. The budgeted estimate for other non-financial assets is made on a rolling three-year historical trend, which has resulted in an estimate being lower than the 2018-19 actual.	**Statement of Financial Position** Non-Financial Assets - Heritage and Cultural Non-Financial Assets - Plant and Equipment Non-Financial Assets - Computer Software Non-Financial Assets - Other Non-Financial Assets
Payables The variance between the budget outlines within the PBS and the actual outcome for the 2018-19 financial year can be mainly attributed to the accrued expenses relating to the missing Malaysia airlines Flight 370 (MH370) that was being reflected in the original budget.	**Statement of Financial Position** Payables - Suppliers Payable - Other Suppliers
Interest bearing liabilities The lease variance is due to the budget figure was calculated based on the 4 vehicle leases the Agency had at the time of preparing the budgets, the Agency in 2018-19 has 3 vehicle leases.	**Statement of Financial Position** Interest Bearing Liabilities - Leases

Budget Variances Commentary

Provisions Employee provisions are lower than budget mainly due to cessations not factored during the orginal budget process. During 2018 the Agency had 24 unfactored cessations and a further 20 unfactored cessations in 2019. The variance in Other Provisions is due to the waiver of makegood requirements in 2017-18.	**Statement of Financial Position** Provisions - Employee Provisions Provisions - Other Provisions
Statement of Changes in Equity Total equity is over budget by $1.1 million mainly due to differences between the actual and budgeted opening balances.	**Statement of Changes in Equity**
Cash Flow Statement Variances in the Cash Flow Statement are broadly consistent with the variances explained above for income and expenses.	**Cash Flow Statement**

Overview

The Basis of Preparation

The financial statements are general purpose financial statements and are required by:

a) section 42 of the *Public Governance, Performance and Accountability Act 2013* .

The financial statements have been prepared in accordance with:

a) *Public Governance, Performance and Accountability (Financial Reporting) Rule 2015* (FRR); and

b) Australian Accounting Standards and Interpretations issued by the Australian Accounting Standards Board (AASB) that apply for the reporting period.

The financial statements have been prepared on an accrual basis and in accordance with the historical cost convention, except for certain assets and liabilities at fair value. Except where stated, no allowance is made for the effect of changing prices on the results or the financial position. The financial statements are presented in Australian dollars.

New Accounting Standards

Adoption of New Australian Accounting Standard Requirements
The following new standards were issued prior to the signing of the statement by the Chief Commissioner and Chief Financial Officer, were applicable to the current reporting period and had a material effect on the entity's financial statements.

AASB 15 Revenue from Contracts with Customers	AASB 15 replaces the previous revenue standards: *AASB 118 Revenue and AASB 111 Construction Contracts* . AASB 15 also replaces the related Interpretations on revenue recognition: *AASB Interpretation 13 Customer Loyalty Programs, AASB Interpretation 15 Agreements for the Construction of Real Estate, AASB Interpretation 18 Transfers of Assets from Customers, AASB Interpretation 131 Revenue—Barter Transactions Involving Advertising Services* and *AASB Interpretation 1042 Subscriber Acquisition Costs in the Telecommunications Industry* . With the exception of Interpretation 1042, which was developed to address a specific interpretative issue in Australia, each of the standards and interpretations being replaced by AASB 15 correspond to IASB standards and interpretations being replaced by IFRS 15. Changes include: - establishes principles for reporting information about the nature, amount, timing and uncertainty of revenue and cash flows arising from an entity's contracts with customers, with revenue recognised as 'performance obligations' are satisfied; and - applies to contracts of NFP entities that are exchange transactions. *AASB 1004 Contributions* will continue to apply to non-exchange transactions until the Income for NFP project is completed.
AASB 16 Leases	AASB 16 brings all leases onto the balance sheet of lessees, thereby increasing the transparency surrounding such arrangements and making the lessee's balance sheet better reflect the economics of its transactions.

Taxation

The ATSB is exempt from all forms of taxation except Fringe Benefits Tax (FBT) and the Goods and Services Tax (GST).

Events After the Reporting Period

There were no events subsequent to 30 June 2019 that had the potential to significantly effect the ongoing structure and financial activities of the ATSB.

Financial Performance

This section analyses the financial performance of the Australian Transport Safety Bureau for the year ended 30 June 2019.

1.1 Expenses

	2019 $'000	2018 $'000
1.1A: Employee Benefits		
Wages and salaries	(12,018)	(11,681)
Superannuation		
Defined contribution plans	(1,299)	(1,451)
Defined benefit plans	(768)	(609)
Leave and other entitlements	(1,572)	(1,113)
Separation and redundancies	(248)	(363)
Other Employee Expenses	(124)	(116)
Total employee benefits	**(16,029)**	(15,333)

Accounting Policy
Accounting policies for employee related expenses is contained in the People and relationships section.

1.1B: Suppliers		
Goods and services supplied or rendered		
Investigation services	(3,797)	(3,502)
Office rent[1]	(1,663)	(1,647)
Information technology	(1,551)	(1,460)
Travel	(651)	(741)
Contracted Services	(809)	(616)
Services from the Department of Infrastructure, Transport, Cities and Regional Development (DITCRD)	(531)	(565)
Training and conferences	(186)	(272)
Communications	(216)	(244)
Publications and printing	(62)	(79)
Legal	(20)	(30)
Consultants	(52)	(136)
Audit fees	(91)	(47)
Other	(239)	(411)
Total goods and services supplied or rendered	**(9,867)**	(9,750)
Goods supplied	(131)	(217)
Services rendered	(9,736)	(9,533)
Total goods and services supplied or rendered	**(9,867)**	(9,750)
Other suppliers		
Workers compensation expenses	(192)	(274)
Total other suppliers	**(192)**	(274)
Total suppliers	**(10,059)**	(10,024)
Leasing commitments		
Commitments for minimum lease payments in relation to non-cancellable		
Within 1 year	**(373)**	-
Between 1 to 5 years	**(1,516)**	-
More than 5 years	**-**	-
Total operating lease commitments	**(1,889)**	-

1. The ATSB occupies, 3 premises that DITCRD leases, 1 premises that the Department of Health leases and 1 premisis that the Department of Communications leases.

The Agency, in its capacity as lessee, has entered into 1 operating lease for office accommodation purposes. The lease conditions included annual rent reviews with fixed percentage increases. Operating leases are effectively non-cancellable.

Accounting Policy
Where an asset is acquired by means of a finance lease, the asset is capitalised at either the fair value of the lease property or, if lower, the present value of minimum lease payments at the inception of the contract and a liability is recognised at the same time and for the same amount.

The discount rate used is the interest rate implicit in the lease. Leased assets are amortised over the period of the lease. Lease payments are allocated between the principal component and the interest expense.

Operating lease payments are expensed on a straight-line basis which is representative of the pattern of benefits derived from the leased assets.

	2019 **$'000**	2018 $'000
1.1C: Finance Costs		
Finance leases	(6)	(7)
Total finance costs	**(6)**	(7)

Accounting Policy

All borrowing costs are expensed as incurred.

1.1D: Write-Down and Impairment of Other Assets		
Impairment of property, plant and equipment	(15)	(71)
Total write-down and impairment of other assets	**(15)**	(71)

1.2 Own-Source Revenue and gains

	2019 $'000	2018 $'000
Own-Source Revenue		
1.2A: Sale of Goods and Rendering of Services		
Rendering of services	**1,540**	1,759
Total sale of goods and rendering of services	**1,540**	1,759

Accounting Policy

Revenue from the sale of goods is recognised when:

a) the risks and rewards of ownership have been transferred to the buyer;
b) the entity retains no managerial involvement or effective control over the goods;
c) the revenue and transaction costs incurred can be reliably measured; and
d) it is probable that the economic benefits associated with the transaction will flow to the ATSB.

Revenue from rendering of services is recognised by reference to the stage of completion of contracts at the reporting date. The revenue is recognised when:

a) the amount of revenue, stage of completion and transaction costs incurred can be reliably measured; and
b) the probable economic benefits associated with the transaction will flow to the ATSB.

The stage of completion of contracts at the reporting date is determined by reference to the proportion that costs incurred to date bear to the estimated total costs of the transaction.

Receivables for goods and services, which have 30 day terms, are recognised at the nominal amounts due less any impairment allowance account. Collectability of debts is reviewed at the end of the reporting period. Allowances are made when collectability of the debt is no longer probable.

1.2B: Other Revenue		
Resources received free of charge		
Remuneration of auditors[1]	**51**	47
Investigation Services	**3,681**	2,962
Other	**680**	-
Total other revenue	**4,412**	3,009

1. The ANAO does not provide any other services other than audit of Financial Statements.

Gains		
1.2C: Other Gains		
Sale proceeds	**2**	28
Total other gains	**2**	28

Accounting Policy

Resources Received Free of Charge

Resources received free of charge are recognised as revenue when, and only when, a fair value can be reliably determined and the services would have been purchased if they had not been donated. Use of those resources is recognised as an expense. Resources received free of charge are recorded as either revenue or gains depending on their nature.

Contributions of assets at no cost of acquisition or for nominal consideration are recognised as gains at their fair value when the asset qualifies for recognition, unless received from another non-corporate or corporate Commonwealth entity as a consequence of a restructuring of administrative arrangements.

1.2D: Revenue from Government		
Appropriations		
Departmental appropriations	**20,244**	20,411
Total revenue from Government	**20,244**	20,411

Accounting Policy

Revenue from Government

Amounts appropriated for departmental appropriations for the year (adjusted for any formal additions and reductions) are recognised as Revenue from Government when the ATSB gains control of the appropriation. Appropriations receivable are recognised at their nominal amounts.

Financial Position

This section analyses the Australian Transport Safety Bureau's assets used to conduct its operations and the operating liabilities incurred as a result.
Employee related information is disclosed in the People and Relationships section.

2.1 Financial Assets

	2019 $'000	2018 $'000
2.1A: Cash and Cash Equivalents		
Cash on hand or on deposit	**152**	90
Total cash and cash equivalents	**152**	90

Accounting Policy
Cash is recognised at its nominal amount. Cash and cash equivalents includes:
a) cash on hand;
b) demand deposits in bank accounts with an original maturity of 3 months or less that are readily convertible to known amounts of cash and subject to insignificant risk of changes in value.

2.1B: Trade and Other Receivables		
Goods and services receivables		
Goods and services	**88**	59
Total goods and services receivables	**88**	59
Appropriations receivables		
Appropriation receivable	**21,210**	21,213
Total appropriations receivables	**21,210**	21,213
Other receivables		
Statutory receivables	**47**	79
Receivables from Government[1]	**293**	677
Total other receivables	**340**	756
Total trade and other receivables (gross)	**21,638**	22,028
Total trade and other receivables (net)	**21,638**	22,028

Trade and other receivables have been assessed for impairment and none was identified.

1. The restatement of the comparative amounts reported for the 2017-18 year is due to prior approval given in 2016-17 to re-profile $1.724 million for the Departmental Capital Budget (DCB) and equity injections. As the ATSB retains the control, these amounts are recognised as receivables from Government (2019: $293k and 2018: $633k). The change does not affect the total receivables balance.

Accounting Policy
Receivables

Trade receivables and other receivables that have fixed or determinable payments that are not quoted in an active market are classified as 'loans and receivables'. Loans and Receivables are measured at amortised cost using the effective interest method less impairment. Interest is recognised by applying the effective interest rate.

2.2 Non-Financial Assets

2.2A: Reconciliation of the Opening and Closing Balances of Property, Plant and Equipment and Intangibles

Reconciliation of the opening and closing balances of property, plant and equipment for 2019

	Heritage and cultural $'000	Plant and equipment $'000	Computer Software[1, 2] $'000	Total $'000
As at 1 July 2018				
Gross book value	**15**	**1,847**	**6,107**	**7,969**
Accumulated depreciation, amortisation and impairment	**-**	**(435)**	**(5,335)**	**(5,770)**
Total as at 1 July 2018	**15**	**1,412**	**772**	**2,199**
Additions				
Purchase	**-**	**203**	**49**	**252**
Internally developed	**-**	**-**	**584**	**584**
Impairments recognised in net cost of services	**-**		**(15)**	**(15)**
Depreciation and amortisation	**-**	**(436)**	**(263)**	**(699)**
Total as at 30 June 2019	**15**	**1,179**	**1,127**	**2,321**
Total as at 30 June 2019 represented by				
Gross book value	**15**	**2,030**	**6,653**	**8,698**
Accumulated depreciation, amortisation and impairment	**-**	**(850)**	**(5,526)**	**(6,376)**
Total as at 30 June 2019	**15**	**1,179**	**1,127**	**2,321**

1. The carrying amount of computer software included $1.016m internally generated software and $110k purchased software.

2. Impairment losses of $0.015m were recognised for Software (2018: Nil).

The Agency expects to dispose of $16k of Plant and Equipment within the next 12 months.

Revaluation of non-Financial assets

All revaluations are conducted in accordance with the revaluation policy stated in Note 5.3

Accounting Policy

Assets are recorded at cost on acquisition except as stated below. The cost of acquisition includes the fair value of assets transferred in exchange and liabilities undertaken. Financial assets are initially measured at their fair value plus transaction costs where appropriate.

Asset Recognition Threshold

Purchases of property, plant and equipment are recognised initially at cost in the statement of financial position, except for purchases costing less than $5,000 excluding GST, which are expensed in the year of acquisition (other than where they form part of a group of similar items which are significant in total).

The initial cost of an asset includes an estimate of the cost of dismantling and removing the item and restoring the site on which it is located. This is particularly relevant to 'make good' provisions in relation to property leases taken up by the DITCRD properties and occupied by the ATSB where an obligation exists to restore the property to its original condition. As the property leases are held by the DITCRD, these costs are included in the value of the ATSB's Property, Plant and Equipment asset class with a corresponding provision for the 'make good' recognised.

Depreciation

Depreciable property, plant and equipment assets are written-off to their estimated residual values over their estimated useful lives to the ATSB using, in all cases, the straight-line method of depreciation.

Depreciation rates (useful lives), residual values and methods are reviewed at each reporting date and necessary adjustments are recognised in the current, or current and future reporting periods, as appropriate.

Depreciation rates applying to each class of depreciable asset are based on the following useful lives:

	2019	2018
Plant and Equipment	3 to 10 Years	3 to 10 Years
Computer Equipment	4 Years	4 Years
Office Equipment	3 to 10 Years	3 to 10 Years
Heritage & Cultural	100 Years	100 Years

2.2 Non-Financial Assets - continued

Impairment

All assets were assessed for impairment as at 30 June 2019. Where indications of impairment exist the assets's recoverable amount is estimated and an impairment adjustment is made if the asset's recoverable amount is less than its carrying amount.

The recoverable amount of an asset is the higher of its fair value less costs of disposal and its value in use. Value in use is the present value of the future cash flows expected to be derived from the asset.

Where the future economic benefit of an asset is not primarily dependent on the asset's ability to generate future cash flows, and the asset would be replaced if the entity were deprived of the asset, its value in use is taken to be its depreciated replacement cost.

Derecognition

An item of property, plant and equipment is derecognised upon disposal or when no further future economic benefits are expected from its use or disposal.

Heritage and Cultural Assets

The ATSB has a Pegasus Mark II Propeller from a Supermarine Walrus plane. The Supermarine Walrus was a British single-engine amphibious biplane reconnaissance aircraft first flown in 1933.

The ATSB has classified this item as heritage and cultural asset as it is primarily used for purpose which relates to its heritage and cultural significance.

Intangibles

The ATSB's intangibles comprise of internally developed software for internal use and purchased software. These assets are carried at cost less accumulated amortisation and accumulated impairment losses. Intangibles are amortised on a straight line basis over their anticipated useful life and the default useful life is five years.

All intangibles were assessed for indications of impairment as at 30 June 2019.

Assets held for sale

Assets held for sale include computer and laboratory equipment that are available for sale. The sale is

2.3 Payables

	2019 $'000	2018 $'000
2.3A: Suppliers		
Trade creditors and accruals	**(292)**	(265)
Accrued Expenses	**(114)**	(157)
Total suppliers	**(406)**	(422)
Settlement is usually made within 30 days.		
2.3B: Other Payables		
Salaries and wages	**(166)**	(162)
Superannuation	**(16)**	(17)
Separations and redundancies	**-**	(190)
Unearned Income	-	(50)
Total other payables	**(182)**	(419)
Other payables to be settled		
No more than 12 months	**(182)**	(419)
Total other payables	**(182)**	(419)

Accounting Policy

Supplier and other payables are recognised at amortised cost. Liabilities are recognised to the extent that the goods or services have been received (and irrespective of having been invoiced).

2.4 Interest Bearing Liabilities

	2019 $'000	2018 $'000
2.4A: Leases		
Finance Leases	**(119)**	(143)
Total leases	**(119)**	(143)

In 2019, 3 finance leases existed in relation to office pool vehicles. The leases were non-cancellable and for fixed terms averaging 3.67 years, with a maximum of 5 years. The interest rate implicit in the vehicle leases averaged 4.53% (2018: 4.53%). The lease assets secured the lease liabilities. The ATSB guaranteed the residual values of all assets leased. There were no contingent rentals.

Accounting Policy
A distinction is made between finance leases and operating leases. Finance leases effectively transfer from the lessor to the lessee substantially all the risks and rewards incidental to ownership of leased assets. An operating lease is a lease that is not a finance lease.

Where an asset is acquired by means of a finance lease, the asset is capitalised at either the fair value of the lease property or, if lower, the present value of minimum lease payments at the inception of the contract and a liability is recognised at the same time and for the same amount.

The discount rate used is the interest rate implicit in the lease. Leased assets are amortised over the period of the lease. Lease payments are allocated between the principal component and the interest expense.

Funding

This section identifies the Australian Transport Safety Bureau's funding structure.

3.1 Appropriations

3.1A: Annual Appropriations ('Recoverable GST exclusive')

Annual Appropriations for 2019

	Annual Appropriation $'000	Adjustments to appropriation[1] $'000	Total appropriation $'000	Appropriation applied in 2019 (current and prior years) $'000	Variance[2] $'000
Departmental					
Ordinary annual services	**20,244**	**2,646**	**22,890**	**(23,127)**	**(236)**
Capital Budget[3]	**416**	**-**	**416**	**(836)**	**(420)**
Other services					
Equity Injections	**329**	**-**	**329**	**-**	**329**
Total departmental	**20,989**	**2,646**	**23,635**	**(23,963)**	**(327)**

1. PGPA Act Section 74 receipts
2. The variance in the departmental expeses is due to accrued expenses from prior year being drawn down in the current year from operating funding as well as unspent appropriation from the departmental captial budget.
3. Departmental Capital Budgets are appropriated through Appropriation Acts (No.1,3,5). They form part of ordinary annual services, and are not separately identified in the Appropriation Acts.

Annual Appropriations for 2018

	Annual Appropriation $'000	Adjustments to appropriation $'000	Total appropriation $'000	Appropriation applied in 2018 $'000	Variance[1] $'000
Departmental					
Ordinary annual services	20,411	2,239	22,650	(24,379)	(1,729)
Capital Budget[2]	702	-	702	(1,167)	(465)
Other services					
Equity Injections	509	-	509	-	509
Total departmental	21,622	2,239	23,861	(25,546)	(1,685)

1. A large portion of the $1.729 million variance is directly related to the search for the MH370 and uncontrollable variables, such as weather. Other expenses in relation to the search for the missing aircraft were delayed and not utilised in prior years.
2. Departmental Capital Budgets are appropriated through Appropriation Acts (No.1,3,5). They form part of ordinary annual services, and are not separately identified in the Appropriation Acts.

3.1B: Unspent Annual Appropriations ('Recoverable GST exclusive')

	2019 $'000	2018 $'000
Departmental		
Appropriation Act (No. 1) 2017-18 (Cash at Bank - 30 June)	**-**	90
Appropriation Act (No. 1) 2017-18	**1,008**	20,704
Appropriation Act (No. 2) 2017-18 (Equity Injection)	**80**	509
Appropriation Act (No. 1) 2018-19	**19,377**	**-**
Appropriation Act (No.1) 2018-19 (DCB)	**416**	**-**
Appropriation Act (No. 2) 2018-19 (Equity Injection)	**329**	**-**
Appropriation Act (No. 1) 2018-19 (Cash at Bank - 30 June)	**152**	-
Total departmental	**21,362**	21,303

1. The above unspent balance for 2017-18 and 2018-19 does not include amounts of $0.677 million and $0.293 million respectively for capital funds refased during 2016-17. While ATSB retains the controls of these amounts, they had yet to be appropriated.

3.2 Net Cash Appropriation Arrangements

	2019 $'000	2018 $'000
Total comprehensive income less depreciation/amortisation expenses previously funded through revenue appropriations	**58**	(228)
Plus: depreciation/amortisation expenses previously funded through revenue	**(699)**	(715)
Total comprehensive income - as per the Statement of Comprehensive Income	**(641)**	(943)

From 2010-11, the Government introduced net cash appropriation arrangements, where revenue appropriations for depreciation/amortisation expenses ceased. Entities now receive a separate capital budget provided through equity appropriations. Capital budgets are to be appropriated in the period when cash payment for capital expenditure is required.

People and relationships

This section describes a range of employment and post employment benefits provided to our people and our relationships with other key people.

4.1 Employee Provisions

	2019 $'000	2018 $'000
4.1A: Employee Provisions		
Leave	**(4,135)**	(3,931)
Total employee provisions	**(4,135)**	(3,931)

Accounting Policy

Liabilities for 'short-term employee benefits' (as defined in AASB 119 *Employee Benefits*) and termination benefits due within twelve months of the end of reporting period are measured at their nominal amounts.

The nominal amount is calculated with regard to the rates expected to be paid on settlement of the liability.

Other long-term employee benefits are measured as a net total of the present value of the defined benefit obligation at the end of the reporting period minus the fair value at the end of the reporting period of plan assets (if any) out of which the obligations are to be settled directly.

Leave

The liability for employee benefits includes provision for annual leave and long service leave. No provision has been made for sick leave as all sick leave is non-vesting and the average sick leave taken in future years by employees of the ATSB is estimated to be less than the annual entitlement for sick leave.

The leave liabilities are calculated on the basis of employees' remuneration at the estimated salary rates that will be applied at the time the leave is taken, including the ATSB's employer superannuation contribution rates to the extent that the leave is likely to be taken during service rather than paid out on termination.

The liability for long service leave has been determined by reference to the Australian Government Shorthand Method outlined in the FRR for reporting periods ending on or after 1 July 2015. The estimate of the present value of the liability takes into account attrition rates and pay increases through promotion and inflation.

Superannuation

The ATSB's staff are members of the Commonwealth Superannuation Scheme (CSS), the Public Sector Superannuation Scheme (PSS) or the PSS accumulation plan (PSSap).

The CSS and PSS are defined benefit schemes for the Australian Government. The PSSap is a defined contribution scheme.

The liability for defined benefits is recognised in the financial statements of the Australian Government and is settled by the Australian Government in due course. This liability is reported in the Department of Finance administered schedules and notes.

The ATSB makes employer contributions to the employees' superannuation scheme at rates determined by an actuary to be sufficient to meet the current cost to the Government. The ATSB accounts for the contributions as if they were contributions to defined contribution plans.

4.2 Key Management Personnel Remuneration

Key management personnel are those persons having authority and responsibility for planning, directing and controlling the activities of the ATSB, directly or indirectly.

Key management personnel of the ATSB incorporates the Chief Commissioner and other senior executive who the Chief Executive considers to be a KMP because of their responsibilities or nature of their work. Key management personnel remuneration is reported in the table below:

	2019 **$'000**	2018 $'000
Short-term employee benefits	**(924)**	(1,141)
Post-employment benefits	**(106)**	(144)
Other long-term employee benefits	**(92)**	(113)
Total key management personnel remuneration expenses[1]	**(1,122)**	(1,398)

1. The total number of key management personnel that are included in the above table is 3 individuals (2018: 4 individuals). The Agency has reduced by 1 SES position since 2017-18.

The 2017-18 financial statements also included 3 Part-Time Commissioners and 1 CFO and 2 Acting CFO as Key Management Personnel. This assessment has been reassessed and confirmed that although these positions provide subject matter expertise to the Agency (Commissioners) and make operational decisions in their respective areas of responsibility (CFO role), they do not satisfy the definition of a key management personnel in accordance with AASB 124 Related Party Disclosures. As a result, the 2017-18 comparative key management personnel remuneration has been restated to exclude those 6 key management personnel and their remuneration expenses of $548k, consisting of Short-term employee benefits $448k, Post-employment benefits $72k and Other long-term employee benefits $28k.

4.3 Related Party Disclosures

Related party relationships:

The ATSB is an Australian Government controlled entity. Related parties to the ATSB are the Key Management Personnel (KMP) including the Portfolio Minister and Executive, their close family members, and other Australian Government entities.

Transactions with related parties:

Given the breadth of Government activities, related parties may transact with the government sector in the same capacity as ordinary citizens. Such transactions include the payment or refund of taxes, and higher education loans. These transactions have not been separately disclosed in this note.

No material transactions with related parties occurred during the financial year.

Managing uncertainties

This section analyses how the Australian Transport Safety Bureau manages financial risks within its operating environment.

5.1 Contingent Assets and Liabilities

Quantifiable Contingencies

There are no quantifiable contingencies. (2018: Nil)

Unquantifiable Contingencies

There are no unquantifiable contingencies. (2018: Nil)

Accounting Policy

Contingent liabilities and contingent assets are not recognised in the statement of financial position but are reported in the notes. They may arise from uncertainty as to the existence of a liability or asset or represent an asset or liability in respect of which the amount cannot be reliably measured. Contingent assets are disclosed when settlement is probable but not virtually certain and contingent liabilities are disclosed when settlement is greater than remote.

5.2 Financial Instruments

	2019 $'000	2018 $'000
5.2A: Categories of Financial Instruments		
Financial Assets under AASB 139		
Loans and receivables		
Cash and cash equivalents		90
Trade and other receivables		59
Total loans and receivables		149
Total financial assets		149
Financial Assets under AASB 9		
Financial assets at amortised cost		
Cash and cash equivalents	**152**	
Trade and other receivables	**88**	
Total financial assets at amortised cost	**240**	
Financial Liabilities		
Financial liabilities measured at amortised cost		
Trade Creditors	**(292)**	(265)
Finance Leases	**(119)**	(143)
Total financial liabilities measured at amortised cost	**(411)**	(408)
Total financial liabilities	**(411)**	(408)

Classification of financial assets on the date of initial application of AASB 9.

Financial assets class	Note	AASB 139 original classification	AASB 9 new classification	AASB 139 carrying amount at 1 July 2018 $'000	AASB 9 carrying amount at 1 July 2018 $'000
Cash and Cash Equivalents	2.1A	Loans and Receivables	Amortised Cost	90	90
Trade receivables	3.1B	Loans and Receivables	Amortised Cost	59	59
Total financial assets				**149**	**149**

5.2 Financial Instruments - Continued

Reconciliation of carrying amounts of financial assets on the date of initial application of AASB 9.

	AASB 139 carrying amount at 30 June 2018 $'000	Reclassification $'000	Remeasurement $'000	AASB 9 carrying amount at 1 July 2018 $'000
Financial assets at amortised cost				
Cash and Cash Equivalents	90			**90**
Trade and other receivables	59	-	-	**59**
Total amortised cost	**149**			**149**

There has been no change in carrying amount of financial assets on transitioning from AASB 139 to AASB 9.

Accounting Policy

Financial assets

With the implementation of AASB 9 *Financial Instruments* for the first time in 2019, the entity classifies its financial assets in the following categories:

a) financial assets at fair value through profit or loss;
b) financial assets at fair value through other comprehensive income; and
c) financial assets measured at amortised cost.

The classification depends on both the entity's business model for managing the financial assets and contractual cash flow characteristics at the time of initial recognition. Financial assets are recognised when the entity becomes a party to the contract and, as a consequence, has a legal right to receive or a legal obligation to pay cash and derecognised when the contractual rights to the cash flows from the financial asset expire or are transferred upon trade date.

Comparatives have not been restated on initial application.

Financial Assets at Amortised Cost

Financial assets included in this category need to meet two criteria:
1. the financial asset is held in order to collect the contractual cash flows; and
2. the cash flows are solely payments of principal and interest (SPPI) on the principal outstanding amount.

Amortised cost is determined using the effective interest method.

Effective Interest Method

Income is recognised on an effective interest rate basis for financial assets that are recognised at amortised cost.

Impairment of Financial Assets

Financial assets are assessed for impairment at the end of each reporting period based on Expected Credit Losses, using the general approach which measures the loss allowance based on an amount equal to *lifetime expected credit losses* where risk has significantly increased, or an amount equal to *12-month expected credit losses* if risk has not increased.

The simplified approach for trade, contract and lease receivables is used. This approach always measures the loss allowance as the amount equal to the lifetime expected credit losses.

A write-off constitutes a derecognition event where the write-off directly reduces the gross carrying amount of the financial asset.

Financial liabilities

Financial liabilities are classified as either financial liabilities 'at fair value through profit or loss' or other financial liabilities. Financial liabilities are recognised and derecognised upon 'trade date'.

Financial Liabilities at Amortised Cost

Financial liabilities, including borrowings, are initially measured at fair value, net of transaction costs. These liabilities are subsequently measured at amortised cost using the effective interest method, with interest expense recognised on an effective interest basis.

	2019 $'000	2018 $'000
5.2B: Net Gains or Losses on Financial Liabilities		
Financial liabilities measured at amortised cost		
Interest expense	**(6)**	**(7)**
Net losses on financial liabilities measured at amortised cost	**(6)**	(7)
Net losses from financial liabilities	**(6)**	(7)

The net interest expense from financial liabilities not at fair value through profit or loss is $6k (2018: $7k).

5.3 Fair Value Measurement

Accounting Policy

The ATSB has Heritage & Cultural and Property plant and equipment assets and the fair value for each asset is measured at market selling price, or depreciated replacement cost in isolated instances where no market prices or indicators are available for specialised, diagnostic equipment.

Following initial recognition at cost, property, plant and equipment are carried at fair value. Valuations are conducted with sufficient frequency to ensure that the carrying amounts of assets do not differ materially from the asset's fair value as at the reporting date. The regularity of independent valuations depends on the volatility of movements in market values for the relevant assets.

The ATSB previously engaged Australian Valuation Solutions (AVS) in 2016-17 to undertake a revaluation of all plant and equipment assets as at 30 June 2017 and confirm that the models developed comply with AASB 13.

Revaluation adjustments were made on a class basis. Any revaluation increment was credited to equity under the heading of asset revaluation reserve except to the extent that it reversed a previous revaluation decrement of the same asset class that was previously recognised in the surplus/deficit. Revaluation decrements for a class of assets were recognised directly in the surplus/deficit except to the extent that they reversed a previous revaluation increment for that class.

Any accumulated depreciation as at the revaluation date was eliminated against the gross carrying amount of the asset and the asset was restated to the revalued amount.

5.3A: Fair Value Measurement

	Fair value measurements at the end of the reporting period	
	2019	2018
	$'000	$'000
Non-financial assets		
Heritage and cultural	**15**	15
Property, plant and equipment	**1,179**	1,412
Total Non-financial assets	**1,194**	1,427

Other Information

6.1: Aggregate Assets and Liabilities

	2019 $'000	2018 $'000
6.1: Aggregate Assets and Liabilities		
Assets expected to be recovered in:		
No more than 12 months	**22,069**	22,368
More than 12 months	**2,415**	2,468
Total assets	**24,484**	24,836
Liabilities expected to be settled in:		
No more than 12 months	**(2,046)**	(983)
More than 12 months	**(2,796)**	(3,931)
Total liabilities	**(4,842)**	(4,915)

SECTION 7
Management and accountability

7

MANAGEMENT AND ACCOUNTABILITY

The Commission

The ATSB is governed by a Commission, comprising a Chief Commissioner and three part-time Commissioners.

The Commission provides guidance on the selection of accidents and other safety incidents to be investigated. It also supports the ATSB in encouraging safety action ahead of final reports, thus reducing the need to issue safety recommendations.

The Commission operates within the corporate governance framework of the *ATSB Commission Governance Manual*. The manual sets out the Commission's legislative requirements, parliamentary and ministerial accountability, membership and functions, administrative policies and procedures, and reporting obligations.

The Commission meets face-to-face at least four times a year and manages ATSB business through regular teleconferences and electronic communications in accordance with its obligations under the TSI Act and its agreed policies.

Executive management

The ATSB Executive meets fortnightly to discuss strategic management issues and priorities. The ATSB Executive consists of the Chief Commissioner, the Executive Director Transport Safety and the Chief Operating Officer.

Audit and Risk Committee

The Audit and Risk Committee provides independent assurance and advice to the Chief Commissioner (and to the Commission and Executive) on the ATSB's financial and performance reporting responsibilities, risk oversight and management, and system of internal control. The Audit and Risk Committee consists of an independent chair, an independent member and an ATSB management nominee. The Committee held four meetings throughout the financial year, in September and December 2018, and March and June 2019.

In 2018–19, the Committee advised and provided assurance on a range of matters including the ATSB's:

- Internal Audit Annual Program
- enterprise risk management, fraud control and business continuity frameworks
- performance reporting
- financial statement preparations
- work health and safety management
- compliance with the *Public Governance, Performance and Accountability Act 2013* (PGPA Act) and the associated Rule
- internal audit governance framework—including the Internal Audit Charter and *Internal Audit Strategic Plan 2018–20.*

The internal audit program for 2018–19 focused on assuring the ATSB's legislative compliance and performance against its core functions. The program included the following internal audits:

- impact of organisational change
- corporate planning and performance statements
- internal budget setting, monitoring and reporting processes.

The Audit and Risk Committee will monitor the implementation of the recommendations coming out of the Australian National Audit Office's efficiency audit of the ATSB in 2018–19.

Business planning and reporting

Each year, the ATSB develops an Annual Plan to set business objectives for the financial year. The Annual Plan is consistent with the strategic direction provided through the Corporate Plan, published on the ATSB website. The Annual Plan incorporates the operational priorities, activities, deliverables and key performance indicators for the financial year.

The *ATSB Annual Plan 2018–19* gave priority to:

- safety data recording, analysis and data sharing
- occurrence and safety issue investigations of accidents, serious incidents and other occurrences
- communication and education
- maintaining and enhancing capability and readiness
- strategic projects
- managing ATSB resources.

Risk management

Consistent with the *Public Governance, Performance and Accountability Act 2013* (the PGPA Act), the ATSB maintains a risk management framework. The framework includes a Risk Management Policy, Risk Management Strategy, Risk Management Plan and Enterprise Risk Register. The framework is an integral element of the ATSB's broader governance, planning and management framework. The ATSB has integrated risk assessment and mitigation into business practices, planning and performance reporting—at both corporate and business unit levels.

The ATSB is committed to a comprehensive, coordinated and systematic approach to the management of risk—directed towards supporting managers at all levels to anticipate and plan for risk, and to respond appropriately. For 2018–19, the ATSB focused on risks related to capability, reputation, health and safety, and jurisdictional reach.

The Commission, the Executive and the Audit and Risk Committee regularly review the risk management framework. Ongoing review of risk management planning ensures the ATSB is well-placed to achieve the objectives of its risk management policy and that risk management is consistently practiced across the agency.

Business continuity plan

The ATSB's business continuity management framework details the policies and procedures for the agency to respond to a business disruption. The framework ensures the ATSB is well-placed to implement recovery processes and return to business-as-usual as quickly as possible while preserving the safety of staff and limiting the damage and disruption to business operations.

In 2018–19, the ATSB continued to review and test its operational risk management processes and responses, which mitigate the impact of non-routine business disruptions. The Audit and Risk Committee regularly reviews the ATSB's business continuity operations.

Fraud control

In accordance with the *Public Governance, Performance and Accountability Act 2013* (the PGPA Act), the ATSB maintains a fraud management framework which includes a Fraud Policy and Strategy Statement and a Fraud Control Plan.

The ATSB manages a fraud risk register to identify potential fraud risks and subsequently minimise the incidence of fraud. This process is accompanied by development, implementation and regular assessment of fraud prevention, detection and response strategies.

The ATSB's staff awareness program incorporates activities for existing and new staff.

The Audit and Risk Committee and the Commission receive regular reports on fraud risks and the implementation of controls and treatments. The Committee and the Commission review the Fraud Control Plan to ensure the ATSB has appropriate processes and systems in place to capture, and effectively investigate, fraud-related information.

Ethical standards

During the reporting period, the ATSB continued to demonstrate its commitment to promoting ethical standards and behaviours relating to workplace and employment.

Highlights of 2018–19 include:

- providing briefing information on the APS values, Employment Principles and Code of Conduct in induction packages and during training sessions
- promoting the APS Values, Employment Principles and Code of Conduct through individual performance development plans
- providing staff with access to information on ethical standards via the ATSB's intranet and the Australian Public Service Commission's (APSC) website
- providing staff with guidance on Public Interest Disclosure policy and procedures
- delivering specific training on conflicts of interest and ensuring all staff regularly review their conflict of interest declarations
- providing staff with information and guidance on bullying and harassment policy and procedures
- providing staff with training on the ATSB's fraud control policy and procedures and acceptance of gifts and benefits policy
- promoting the APS Values, Employment Principles and Code of Conduct in recruitment and selection activity.

Management of human resources

Over this reporting period, the ATSB supported and developed staff through workforce planning, individual performance and development plans, leadership and capability development programs, health and wellbeing programs, and workplace arrangements and advice.

During the year, the ATSB dedicated significant time and resources to sourcing and building a strategic partnership with RMIT University. This partnership positions the ATSB and RMIT to collaborate on professional development programs designed specifically to improve transport safety investigation capability across Australia and the Asia–Pacific region.

Highlights of 2018–19 include:

- sourcing and implementing an online performance development system, placing an increased emphasis on employees and managers having meaningful performance conversations
- an evaluation and refinement of the agency's sourcing and recruitment methods, improving selection decisions to address capability requirements
- conducting a review into mental health management, incorporating the latest research and a Psychosocial Safety Climate survey
- fostering diverse methods for the delivery of training and induction programs, increasing opportunities for point-in-time learning on the job
- providing support and advice to managers and staff on employment matters, and maintaining effective payroll services
- expanding partnerships with other Australian Public Service (APS) agencies and industry networks to build capability and inter-agency mobility options.

Staffing profile

In accordance with workforce planning projections, the ATSB's staffing profile has remained relatively stable, from 105 at the end of June 2018 to 101 by the end of June 2019. The associated staff turnover rate was approximately 16 per cent. Table 16 displays the ATSB staff numbers, by classification, as of 30 June 2019.

Table 16: The ATSB's staffing profile at 30 June 2019

Substantive classification	Gender x (full time)	Female (full time)	Female (part time)	Male (full time)	Male (part time)	Non-ongoing	Total
Statutory Office holders			1	1	2		4
Senior Executive Service				1		1	2
EL 2		5	2	27		1	35
EL 1	1	9		14		2	26
APS 6		8	3	13			24
APS 5		5	1	5		1	12
APS 4		1				1	2
APS 3							
Total							**105**

This total is comprised of the following employment arrangements:

- ninety nine staff (representing all non-SES employees) covered by the enterprise agreement
- two SES employees covered by section 24(1) determinations, established in accordance with the ATSB's SES remuneration policy
- four statutory office holders (representing the Commissioners) determined by the remuneration tribunal.

There are no other employment arrangements in place and there is no provision for performance pay.

Of the 101 SES and non-SES employees, 76 employees were based in Canberra, 15 based in Brisbane, three based in Adelaide, four based in Perth, two based in Melbourne and one based in Sydney.

Non-salary benefits provided to employees under the enterprise agreement include:

- options for home-based work
- ability to work part-time
- flexible working arrangements
- access to different leave types
- influenza vaccinations and health checks
- access to the Employee Assistance Program.

Indigenous employees

At 30 June 2019, the ATSB had one ongoing employee who identified as Indigenous.

The ATSB has embraced the Commonwealth Aboriginal and Torres Strait Islander Employment Strategy and aims to build Indigenous representation within the public sector. The ATSB's key action areas for this reporting period include:

- investing in Indigenous capability and development opportunities for staff
- improving the awareness of Indigenous culture in the workplace through information and training sessions
- participation by staff in Indigenous networks run throughout the APS and portfolio-wide by the Department of Infrastructure, Transport, Cities and Regional Development.

Salary rates

Table 17 displays the salary rates supporting the above employment arrangements at 30 June 2019.

Table 17: The ATSB's salary rates at 30 June 2019

Substantive classification	Lower($)	Upper($)
Statutory office holders	As determined by the remuneration tribunal	
EL2	119 102	146 382*
EL1	100 186	121 458
APS 6	78 210	93 032
APS 5	72 131	77 884
APS 4	64 611	70 209

* Maximums include transport safety investigator and respective supervisor salaries, representing a $2,042–$10,443 increase on standard APS6–EL2 rates.

** Senior executive remuneration for the 2018–19 financial year is captured and presented through Table 39: Information about remuneration for key management personnel.

Organisational culture

During 2018–19, implementation of an Operational Improvement Program was a key focus for the ATSB, to create a culture that:

- supports both practical and efficient ways of working
- fosters leadership and management at all levels
- builds a capable and diverse workforce
- embraces different learning opportunities.

When taking into account the agency's wellbeing indicators, derived from the 2019 staff census results, it is pleasing to see that staff remain positive in terms of their jobs, attachment to the purpose of the agency, feelings of personal accomplishment and workplace safety—as evidenced by these census results:

- 80% of staff are proud to work in the ATSB
- 96% of staff believe strongly in the purpose and objectives of the ATSB
- 78% of staff think their immediate supervisor cares about their health and wellbeing
- 81% of staff say that the ATSB is committed to creating a diverse workforce
- 89% of staff are happy to go the 'extra mile' at work when required

- 91% of staff in my workgroup are committed to workplace safety
- 92% of staff believe their immediate workgroup act in accordance with the Australian Public Service values.

Conversely, the ATSB identified a number of results (trends) as new or ongoing challenges, including themes associated with internal communications, health and wellbeing, change management and innovation. The ATSB will work with staff to address these areas over the year ahead.

Training and development

The ATSB is committed to building a strong, capable and resilient workforce. It does so by embracing greater opportunities for learning through on-the-job activities (70%), relational learning through peers and networks (20%) and blended training (10%).

During 2018–19, the ATSB implemented the remaining recommendations from the learning and development review completed in 2017. The ATSB has now delivered a strong platform for learning and development opportunities for staff into the future.

Highlights for 2018–19 include:

- nineteen transport safety investigators received the Diploma of Transport Safety Investigation.
- twenty transport safety investigators obtained Statements of Attainment (50%) for the Diploma of Transport Safety Investigation
- the ATSB continued to make enhancements to its training resources and materials, and provided over 28 different face-to-face training courses to employees throughout the year
- twenty five managers and employees completed Mental Health First Aid training, as part of the ATSB's commitment to building capability and improving the mental health and wellbeing of employees
- a new e-learning platform (myTalent) was implemented, providing managers and employees with greater access to learning and development opportunities, and 33% of employees have taken advantage of this learning since April 2019
- the ATSB continued to provide training opportunities for a broad range of industry-based personnel through its human factors awareness course.

Purchasing

The ATSB purchases goods and services in accordance with the Commonwealth Procurement Rules (CPRs). These rules are applied through the Accountable Authority instructions. The ATSB's procurement policies and processes have been developed to ensure that:

- it undertakes competitive, non-discriminatory procurements
- it uses resources efficiently, effectively, economically and ethically
- it makes all procurement decisions in an accountable and transparent manner.

Consultants

The ATSB engages consultants when it lacks specialist expertise, or when independent research, review or assessment is required. Consultants are typically engaged to:

- investigate or diagnose a defined issue or problem
- carry out defined reviews or evaluations
- provide independent advice, information or creative solutions to assist in the ATSB's decision-making.

The ATSB policies on selection and engagement of consultants are in accordance with the CPR's. Before engaging consultants, the ATSB takes into account the skills and resources required for the task, the skills available internally and the cost effectiveness of engaging an external contractor.

During 2018–19, five new consultancy contracts were entered into involving total actual expenditure of $51,644. There were no ongoing consultancy contracts carried over from the 2017–18 year.

Annual reports contain information about actual expenditure on contracts for consultancies. Information on the value of contracts and consultancies is available from the AusTender website at **www.tenders.gov.au**

Australian National Audit Office access clauses

There were no contracts during 2018–19 that did not provide for the Auditor-General to have access to the contractors' premises.

Exempt contracts

No contracts were exempted on public interest grounds from publication on AusTender during 2018–19.

Procurement initiatives to support small business

The ATSB supports small business participation in the Commonwealth Government procurement market. Small and medium enterprises (SME) and small enterprise participation statistics are available on the Department of Finance's website at www.finance.gov.au

The ATSB seeks to support SMEs, consistent with paragraph 5.4 of the Commonwealth Procurement Rules. It ensures that its communications are expressed in clear and simple language. Its finance system is set up to ensure prompt payments to all contractors and suppliers, and it makes use of credit cards.

Legal services and expenditure

Paragraph 11.1(a) of the Legal Services Directions 2017, issued by the Attorney-General under the *Judiciary Act 1903*, requires chief executives of departments and agencies to ensure that legal services expenditure is appropriately recorded and monitored. Chief executives must also ensure that their agencies make records of their legal services expenditure for the previous financial year, available by 30 October in the following financial year. The following amounts are exclusive of GST.

The ATSB's expenditure on legal services for 2018–19 was $286,766 comprising:

- $19,740 on external legal services
- $237,864 on internal legal services

External scrutiny and participation

Coronial Inquests

The ATSB was required to participate in two coronial inquests in 2018–19.

In-flight break-up involving Cicaré CH-7B, VH-SWQ 43 km north-west of Barcaldine Airport Queensland on 12 May 2014 (AO-2014-086)

On 21 December 2018, Coroner David O'Connell made findings following an inquest for an accident where a Cicaré CH-7B amateur-built helicopter, registered VH-SWQ, was involved in spotting operations for a cattle muster on a private station 43 km north-west of Barcaldine, Queensland. Contact was lost with the helicopter and a search party found that it had crashed inverted by a dry creek bed. The private pilot, the sole occupant was found dead.

The wreckage and its distribution pattern were consistent with an in-flight break-up.

The ATSB found that the stabiliser assembly separated from the tail boom inflight and contacted the tail rotor blades. The resulting imbalance from the damaged tail rotor blades led to separation of the tail rotor gearbox assembly from the helicopter, and subsequent loss of control and collision with terrain.

The ATSB's technical examination found that the stabiliser assembly failed due to cracking associated with metal fatigue.

On 6 March 2015, in consideration of the potential fleet implications of the failure mechanism of the stabiliser assembly on VH-SWQ, the ATSB sent an advisory letter to all Australian registered CH-7B owners alerting them to the circumstances of the accident. The letter highlighted the importance of maintaining and operating their helicopter in accordance with the manufacturer's requirements. The letter also advised owners to discuss any serviceability concerns with the manufacturer before further flight. Owners were also reminded to seek advice from an appropriately licenced aircraft engineer and/or the Civil Aviation Safety Authority.

The Coroner made a finding that the crash occurred due to the particular design and manufacture of the parts which failed in flight. The ATSB is examining the design and manufacture issues further as part of its investigation into another Cicaré accident occurring near Roy Hill Station, WA, on 28 July 2015 (AO-2015-089). Similarly, the stabiliser in that accident had separated from the tail boom as a result of fatigue cracking of the stabiliser mount. The ATSB will release its findings in the second half of 2019.

However, while the ATSB is examining the design issues further, it is important that proper attention is paid to the other safety messages arising out of the ATSB's investigation of the VH-SWQ accident. Helicopter pilots and operators should be aware of the potential dangers of abnormal vibration levels. Changes in vibration may indicate an impending failure of a component or structural part. While experience will assist a pilot to determine what vibration is normal, accurate assessment can only be made by qualified personnel using specialised equipment.

Various dynamic components need to be balanced within the manufacturer's limits during maintenance to enable the service life to be achieved and ensure the safety of the helicopter and its occupants.

Ongoing safety requires aircraft owners and maintainers to operate and maintain the aircraft in accordance with relevant regulations, including those specific to experimental aircraft. While the regulations allow for an experimental aircraft builder to be granted approval to conduct ongoing maintenance, the builder must have sufficient engineering skill and knowledge.

Loss of control involving Cessna Aircraft Company U206G, VH-FRT Caboolture Airfield, Queensland, on 22 March 2014 (AO-2014-053)

The ATSB attended two hearings of an inquest conducted by State Coroner Terry Ryan in 2018. The inquest was into a matter involving a Cessna U206G aircraft, registered VH-FRT, that was being used for tandem parachuting operations at Caboolture Airfield, Queensland. On 22 March 2014 the aircraft took off from Caboolture Airfield with a pilot, two parachuting instructors and two tandem parachutists on board.

Shortly after take-off, witnesses at the airfield observed the aircraft climb to about 200 ft above ground level before it commenced a roll to the left. The left roll steepened and the aircraft then adopted a nose-down attitude until impacting the ground in an almost vertical, left-wing low attitude. All the occupants on board were fatally injured. A post-impact, fuel-fed fire destroyed the aircraft.

The ATSB identified that the aircraft aerodynamically stalled at a height from which it was too low to recover control prior to collision with terrain. The reason for the aerodynamic stall was unable to be determined. Extensive fire damage prevented examination and testing of most of the aircraft components. Consequently, a mechanical defect could not be ruled out as a contributor to the accident.

A number of safety issues were also identified by the ATSB. These included findings associated with occupant restraint, modification of parachuting aircraft and the regulatory classification of parachuting operations.

The current classification of parachuting as a private operation means there are fewer risk controls than for other similar aviation activities that also involve payment for carriage. Prospective tandem parachutists should be aware that accident data indicates that parachuting is less safe than other aviation activities, such as scenic flights.

The ATSB released its findings on 23 June 2017. The ATSB investigation report (AO-2014-053) is available on the ATSB's website at **www.atsb.gov.au**. At the time of writing, the State Coroner had not handed down his findings.

Australian National Audit Office

The Australian National Audit Office (ANAO) audited our operational efficiency during the year (Auditor-General Report No. 29 of 2018–19). The ANAO found the ATSB has established key elements of an overall framework to promote efficient investigation processes. The ANAO also found that our efficiency had been declining with its use of resources, but acknowledged a number of actions that had already been taken by the ATSB to make improvements, including formalising aspects of its program-managed approach to investigations.

SECTION 8
Appendices


8

APPENDIX A: OTHER MANDATORY INFORMATION

Work health and safety

The ATSB seeks to safeguard the health and safety of its employees, contractors and visitors by providing a safe working environment. Its aim is to prevent work-related injuries and illness and support employee wellbeing.

During 2018–19, one compensation claim was accepted by Comcare and effectively managed by applying the ATSB's rehabilitation management system. The ATSB had no reportable incidents under the *Work Health and Safety Act 2011*.

Highlights for 2018–19 include:

- the ATSB Work Health and Safety Committee met six times, and health and wellbeing initiatives were identified and developed in consultation with employees and committee members
- training and induction programs have been developed to raise awareness and promote work health and safety practices across the ATSB's different work areas
- access to the Employee Assistance Program for employees and their families
- monitoring the wellbeing of staff and implementing early intervention solutions
- the effective case management of a compensation claim and the application of a contemporary rehabilitation system
- the completion of an internal review into mental health management and the utilisation of the University of South Australia's Psychosocial Safety Climate survey to benchmark the ATSB against government and non-government organisations.

Advertising and market research

During 2018–19, the ATSB spent $1,353.00 on advertising for recruitment. There were no further payments for advertising or market research.

Ecologically sustainable development and environmental performance reporting

(Section 516A of the *Environment Protection and Biodiversity Conservation Act 1999*)

The ATSB is fully committed to the principles of ecologically sustainable development. The nature of its work as Australia's national transport safety investigator—with a focus on the investigation of transport accidents, research into transport safety and dissemination of safety information—means that the ATSB's commitment is expressed through its day-to-day activities within its offices.

The ATSB operates under the Energy Efficiency in Government Operations (EEGO) policy and through its sub-lease office accommodation arrangements with the Department of Infrastructure, Transport, Cities and Regional Development, the ATSB's environmental management system complies with ISO 14001:2004—the international standard for environmental management systems. The system is focused on the ATSB's office-based activities in Canberra. Initiatives are applied at regional office premises, where appropriate.

The ATSB has contracted out its data centres to private providers, with the result that servers and information and communication technology (ICT) infrastructure are located outside the ATSB premises. This produced a significant saving in energy use. The ATSB has limited its energy use through various initiatives that focus on improving the energy efficiency of the property portfolio, for example:

- operating a virtualised and cloud IT infrastructure environment
- using 7% green energy
- ensuring that desktop IT equipment uses energy-saving policies, such as automatic turn-off for monitors and hard drives after periods of inactivity
- reducing the number of printers in the network
- setting each printer default to mono (black) and double-sided printing
- using photocopy paper containing 60 per cent recycled paper for internal use
- conserving energy, water, paper and other natural resources yet still maintaining a comfortable work environment
- actively recycling paper waste
- promoting the separation of general waste into recyclable and non-recyclable items before disposal
- promoting video conferencing as an alternative to travel, where practicable
- using motion-sensor lighting in offices
- reducing the effect of direct sunlight on air conditioning systems by installing blinds or tinting, where appropriate.

Grant programs

The ATSB did not administer any grant programs during 2018–19.

Diversity and inclusion

During 2018–19, the ATSB focused on initiatives to provide an inclusive workforce diverse in background, thinking and experiences.

Highlights for 2018–19 include:

- continued implementation of the ATSB's sourcing strategy, with a strong emphasis on attracting people from diverse backgrounds into a career as a transport safety investigator
- advertising one vacancy under RecruitAbility, and one vacancy under the Affirmative Measures—Indigenous
- providing staff with information about APS-wide diversity networks and forums, supporting participation and attendance at networking opportunities with colleagues across the Australian Public Service (APS).

Changes to disability reporting in annual reports

The National Disability Strategy 2010–2020 sets out a 10-year national policy framework to improve the lives of people with disability, promote participation and create a more inclusive society.

High-level reporting will track progress against each of the six outcome areas of the strategy and present a picture of how people with disability are faring. The reports can be found at **www.dss.gov.au**

Freedom of Information

The following information explains how to request access to documents held by the ATSB under the *Freedom of Information Act 1982* (FOI Act). It also explains what records the ATSB holds, and what arrangements the ATSB has in place for outside participation.

Entities to the FOI Act are required to publish information to the public as part of the Information Publication Scheme (IPS). This requirement is in Part II of the FOI Act and has replaced the former section 8 requirement to publish a statement in an annual report.

Each agency must display, on its website, a plan showing what information it publishes in accordance with the IPS requirements.

Detailed information about the FOI Act is available via the Office of the Australian information Commissioner (OAIC) website at **www.oaic.gov.au** and the Federal Register of Legislation website at **www.legislation.gov.au**

How to lodge a request for information

Information about how to make an application under the FOI Act can be found on the ATSB's website at **www.atsb.gov.au**

A request for access to documents made under the FOI Act must:

- be in writing
- state that the request is an application for the purposes of the FOI Act
- provide enough information to enable the documents sought to be identified
- give details of how notices under the FOI Act may be sent (for example, by providing an electronic address).

Submission of FOI requests, or enquiries about access, should be directed to:

Freedom of Information Coordinator
Australian Transport Safety Bureau
PO Box 967
CIVIC SQUARE ACT 2608

Phone: (02) 6122 1601
Email: **FOI-ATSB@atsb.gov.au**

Charges

There are no application fees payable to lodge an FOI request.

The ATSB may impose a charge for the work involved in providing access to documents required through a request under the FOI Act. These charges are imposed in accordance with the FOI Act and the *Freedom of information (Charges) Regulations 2019*. These charges may relate to the time spent searching for and retrieving relevant documents, decision-making time, photocopying and other costs. The FOI Act also provides that the first five hours of decision-making time is waived. The applicant will be notified as soon as possible with an estimate of the charges associated with the processing of the request. The request will not be processed until the applicant responds to such notification.

In some circumstances, charges associated with the processing of the request may be remitted. Should the applicant wish to seek remission of the charges, the criteria considered by the ATSB include whether:

- payment of the charges, or part of the charges, would cause financial hardship to the applicant or a person on whose behalf the application was made
- giving access to documents is in the general public interest, or in the interest of a substantial section of the public.

The applicant would need to contact the ATSB in writing, or by email, to explain why they meet the criteria, or to inform the agency of overall circumstances which justify non-payment of charges. Requests for the remission of the charges should be forwarded to the Freedom of information Coordinator.

It may not be possible to obtain access to all the documents sought in an FOI request. Access is limited by exemptions, such as section 38—secrecy provisions of the FOI Act.

It is important to note that the ATSB is required to perform its functions under section 12AA of the TSI Act. A significant amount of information gathered by the ATSB during the course of its investigations is defined as restricted information under section 3 of the TSI Act, and access to such information is exempt from release under subparagraph 38(1)(b)(i) of the FOI Act.

Freedom of Information activity in 2018–19

The ATSB received 15 new requests for access to documents under the FOI Act in 2018–19. Table 18 provides details of the ATSB's Freedom of Information activity for 2018–19.

Table 18: Freedom of Information activity[4]

2018–2019	
Requests	
On hand at 1 July 2018 (A)	5
New requests received (B)	15
Requests withdrawn (C)	5
Requests transferred in full to another agency (D)	0
Requests on hand at 30 June 2019 (E)	0
Total requests completed at 30 June 2019 (A+B-C-D-E)	15
Action on requests	
Access in full	0
Access in part	9
Access refused	6
Access transferred in full	0
Request withdrawn	5

2018–2019	Numbers
Response times (excluding withdrawn)	
0–30 days	11
31–60 days	4
61–90 days	0
90+ days	0
Internal review	
Requests received	4
Decision affirmed	3
Decision amended	2
Request withdrawn	0
Review by Office of the Australian Information Commissioner	
Applications received	1
Administrative Appeals Tribunal (AAT) review of FOI decisions	
Applications received	0

4 These statistics cannot be compared directly with the deadlines set in the *Freedom of Information Act 1982*, as the FOI Act provides for extensions of time to allow for consultation with third parties, negotiation of charges and other issues.

Records the ATSB holds

The ATSB holds records such as:

- human and financial resource management records
- briefing papers and submissions prepared for ministers, parliamentary secretaries, parliamentary committees, the Cabinet and the Executive Council (most of these are classified documents)
- business papers, briefing notes and meeting records for committees, and conferences in which the ATSB services or participates
- documents prepared by international agencies
- documents relating to the development of legislation
- internal administration documents
- internal treaties, memoranda of understanding and international conventions
- legal documents, including legislation, contracts, leases and court documents
- maps and other geographical information
- ministerial responses to parliamentary questions, interdepartmental and general correspondence and papers
- policy documents, recommendations and decisions
- registers of documents, agreements and approvals
- statistics and databases
- technical standards, guidelines, specifications, charts, photographs, drawings and manuals
- accident and incident investigation and notification records.

To view a list of manuals and other documents the ATSB uses when making decisions or recommendations that affect the public, visit the ATSB website at **www.atsb.gov.au**

Under section 8C of the FOI Act, exempt matter is not required to be published. The ATSB reserves the right to delete exempt matter from its information prior to providing access.

To find out more about the types of personal information the ATSB holds, please refer to the ATSB Privacy Policy on the ATSB website at **www.atsb.gov.au**

For further information, please contact the ATSB either by telephone on 1800 020 616 or by email at **atsbinfo@atsb.gov.au**

Functions and decision-making powers

The ATSB's functions are detailed in section 12AA of the TSI Act and are further described throughout this report.

Certain officers exercise decision-making powers under portfolio legislation and other matters. These responsibilities are set out in the *Administrative Arrangements Order* (AAO) for the Commonwealth of Australia and relate to transport safety, including investigations.

For a complete and up-to-date copy of the AAO, visit **www.legislation.gov.au**

To assist ATSB employees in exercising their powers appropriately, and enable access to their decision-making authorities, the ATSB uses an intranet site which allows employees to view delegations online. It also allows employees to check information about the powers and authorities assigned under the legislation set out in the AAO and by laws such as the PGPA Act and the *Public Service Act 1999*. Powers delegated under the TSI Act are recorded on the back of identity cards for all investigators.

Arrangements for outside participation

The ATSB consults widely to gain the views of its stakeholders and clients about future policy directions and program delivery. This includes consulting with other Australian state and territory government departments and agencies, as appropriate, and with foreign governments—particularly in the context of transport safety investigations. The ATSB may also contact a very broad range of stakeholders for particular policy issues.

APPENDIX B: ENTITY RESOURCE STATEMENT 2018–19

Table 19: ATSB Resource Statement 2018–19

	Actual available appropriation for 2018–19 $'000 (a)	Payments made 2018–19 $'000 (b)	Balance remaining 2018–19 $'000 (a) – (b)
Ordinary Annual Services[1]			
Departmental appropriation[2]	44 100	23 963	20 137
Total	**44 100**	**23 963**	**20 137**
Total ordinary annual services A	**44 100**	**23 963**	**20 137**
Other services			
Departmental non-operating			
Equity injections	838	–	838
Total	**838**	**–**	**838**
Total other services B	**–**	**–**	**–**
Total net resourcing and payments for the Australian Transport Safety Bureau	**44 938**	**23 963**	**20 975**

1 Appropriation Act (No. 1) 2018–19 and includes prior year departmental appropriation and section 74 Retained Revenue Receipts.

2 Includes an amount of $0.416m in 2018–19 for the Departmental Capital Budget. For accounting purposes, this amount has been designated as 'contributions by owners'.

Expenses for Outcome 1

Outcome 1: Improved transport safety in Australia including through: independent 'no blame' investigation of transport accidents and other safety occurrences; safety data recording, analysis and research; and fostering safety awareness, knowledge and action.

Table 20: Expenses for Outcome

	Budget* 2018–19 $'000 (a)	Actual Expenses 2018–19 $'000 (b)	Variation 2018–19 $'000 (a) – (b)
Program 1.1: Australian Transport Safety Bureau			
Departmental expenses			
Departmental appropriation[1]	22 022	22 377	(355)
Expenses not requiring appropriation in the Budget year	2 698	4 431	(1 733)
Total for Program 1.1	**24 720**	**26 808**	**(2 088)**
Total expenses for Outcome 1	**24 720**	**26 808**	**(2 088)**

* Full year budget, including any subsequent adjustment made to the 2018–19 Budget at Additional Estimates.

1 Departmental Appropriation combines Ordinary annual services (Appropriation Act Nos. 1 and 5) and Retained Revenue Receipts under section 74 of the PGPA Act 2013.

	2017–18	2018–19
Average Staffing Level (number)	102	106

APPENDIX C: GLOSSARY

Accident	An investigable matter involving a transport vehicle occurs when: > a person dies, or suffers serious injury, as a result of an occurrence associated with the operation of the vehicle > the vehicle is destroyed, or seriously damaged, as a result of an occurrence associated with the operation of the vehicle > any property is destroyed, or seriously damaged, as a result of an occurrence associated with the operation of the vehicle.
Accident Investigation Commission (AIC)	The Papua New Guinea Government institution responsible for the investigation of safety deficiencies in aviation transport.
Aerial work	Aircraft operations—including ambulance and emergency medical services, agriculture, mustering, search and rescue, fire control, surveying and photography.
Agricultural operations	Operations involving the carriage and/or spreading of chemicals, seed, fertiliser or other substances for agricultural purposes—including the purposes of pest and disease control.
Airworthiness directive	A notification to owners and operators of certified aircraft that a known safety deficiency with a particular model of aircraft, engine, avionics or other system exists and must be corrected. if a certified aircraft has outstanding airworthiness directives that have not been complied with, the aircraft is not considered airworthy.
Amateur-built aircraft	Aircraft not built in a factory but for the user's personal use or recreation. May include ultra-light, original design, plans built, kit built or experimental aircraft.
AMSA	Australian Maritime Safety Authority.
ARTC	Australian Rail Track Corporation.
ATSB safety action	Formal activities conducted by the ATSB to initiate safety action by relevant organisations to address a safety issue. Includes safety recommendations and safety advisory notices.
Australian Accredited Representative	An Australian representative who is appointed in the case of safety occurrences involving Australian-registered aircraft outside Australian territory, normally an ATSB investigator.
AUV	Autonomous underwater vehicle.
Blood-borne pathogen	A blood-borne agent causing disease that can be spread by blood contamination.
CASA	Civil Aviation Safety Authority.
Catastrophic accident	A sudden disastrous investigable matter involving a transport vehicle.

Charter	Operations that involve the carriage of cargo or passengers, but do not involve scheduled flights. The lack of scheduled flights, and fixed departure and arrival points, distinguishes charter operations from regular public transport operations.
Collective	The collective pitch control, or collective lever, in a helicopter changes the pitch angle of all the main rotor blades at the same time, independent of their position. Therefore, if a collective input is made, all the blades change equally. The result is that the helicopter increases or decreases its total lift derived from the rotor.
Commercial air transport	High-capacity regular public transport (RPT) flights, low-capacity RPT flights, charter flights and medical transport.
Complex investigations	Investigations rated at level 1, level 2 or level 3 in accordance with the ATSB's rating system.
Contributing safety factor	A safety factor that, if it had not occurred or existed at the relevant time, then: > the occurrence would probably not have occurred > adverse consequences associated with the occurrence would probably not have occurred or have been as serious > another contributing safety factor would probably not have occurred or existed.
COAG	Council of Australian Governments.
Critical safety issue	Associated with an intolerable level of risk and generally leading to the immediate issue of a safety recommendation, unless corrective safety action has already been taken.
CVR (black box)	Cockpit voice recorder.
DCV	Domestic Commercial Vessel as defined by the *Marine Safety (Domestic Commercial Vessel) National Law Act 2012*.
Defined Interstate Rail Network (DIRN)	The DIRN comprises over 10,000 route kilometres of standard gauge interstate track linking the capital cities of mainland Australia.
Directly Involved Party (DIP)	Those individuals or organisations that were directly involved in a transport safety occurrence or may have influenced the circumstances that led to an occurrence. This also includes those whose reputations are likely to be affected following the release of the investigation report.
ETOPS	Extended twin operations—a rule that allows twin-engine airliners to fly long-distance routes that were previously off-limits to twin-engine aircraft. There are different levels of ETOPS certification. Each one allows aircraft to fly on routes that have a certain amount of flying time from the nearest suitable airport.
Fatal accident	A transport accident in which at least one fatality results within 30 days of the accident.
Fatality/ Fatal injury	Any injury acquired by a person involved in a transport accident which results in death within 30 days of the accident.
Flight data recorder (black box)	A recorder placed in an aircraft for the purpose of facilitating the investigation of an aircraft accident or incident.

Flying training	Flying under instruction for the issue or renewal of a licence, rating, aircraft type endorsement or any other type of flying aimed at upgrading an individual's flight qualification—including solo navigation exercises conducted as part of a course of applied flying training, or check and training operations conducted by RPT operators.
General aviation (GA)	General aviation covers: > aerial work operations (including aerial agriculture, aerial mustering, search and rescue, and aerial survey) > flying training > private aviation > business and sports (including gliding) aviation—VH, or foreign-registered.
Hours flown	Calculated from the time the wheels start, with the intention of flight, to the time the wheels stop after completion of the flight.
Human factors	Human factors is the multi-disciplinary science that applies knowledge about the capabilities and limitations of human performance to all aspects of the design, operation and maintenance of products and systems. It considers the effects of physical, psychological and environmental factors on human performance in different task environments—including the role of human operators in complex systems.
ICAO	International Civil Aviation Organization.
Immediately reportable matter	A serious transport safety matter that covers occurrences such as: > accidents involving death > serious injury > destruction or serious damage of vehicles or property > when an accident nearly occurs.
IMO	International Maritime Organization.
Incident	An occurrence, other than an accident, associated with the operation of a transport vehicle that affects, or could affect, the safety of the operation.
ITSAP	The Australian Government's Indonesia Transport Safety Assistance Package.
JACC	Joint Agency Coordination Centre.
Less complex investigations	Those rated at level 4 or level 5 under the ATSB's rating scheme.
LOSA	Loss of separation assurance.
LSA	Light sport aircraft.
MAIFA	Marine Accident Investigators Forum in Asia.
Minor injury	An injury sustained by a person, in an accident, that was not fatal or serious and does not require hospitalisation.
Multi-modal	Across the three modes of transport covered by the ATSB: aviation, marine and rail.

National Transportation Safety Committee (NTSC)	An Indonesian Government institution responsible for the investigation of safety deficiencies in aviation, maritime and land transport.
Occurrences—accidents and incidents	Occurrences are reportable matters—either an immediately reportable matter (IRM) or a routine reportable matter (RRM). They comprise accidents, serious incidents and incidents.
ONRSR	Office of the National Rail Safety Regulator.
Other aerial work	Other aerial work includes: > operations conducted for the purposes of aerial work other than 'flying training' and 'agricultural operations' > operations classified as other aerial work—including aerial surveying and photography, spotting, aerial stock mustering, search and rescue, ambulance, towing (including glider, target and banner towing), advertising, cloud seeding, firefighting, parachute dropping and coastal surveillance.
Other safety issue	Associated with a risk level regarded as unacceptable unless it is kept as low as reasonably practicable. Where there is a reasonable expectation that safety action could be taken in response to reduce risk, the ATSB will issue a safety recommendation to the appropriate agency when proactive safety action is not forthcoming.
PGPA Act	*Public Governance, Performance and Accountability Act 2013*.
PIF	Post-impact fire.
Pilotage	Use of licensed coastal pilots to guide ships through designated areas.
Portfolio Budget Statements (PBS)	These statements explain the provisions of the appropriation bills (budget bills); that is, where the appropriate funds are going to be spent.
Private/business	Private flying is conducted for recreational or personal transport without revenue. Business flying refers to the use of aircraft as a means of transport to support a business or profession.
RAAus	Recreational Aviation Australia.
Recreational aviation	Aircraft being used for recreational flying that are registered by a recreational aviation administration organisation.
REEFVTS	Great Barrier Reef and Torres Strait Vessel Traffic Service. A coastal vessel traffic service which has been put in place by the Australian and Queensland Governments to improve safety and efficiency of vessel traffic, as well as to protect the environment.
Regular public transport (RPT)	Refers to aircraft that transport passengers and/or cargo according to fixed schedules and fixed departure/arrival points, in exchange for monetary reward. These services can be further divided into low- and high-capacity aircraft: > low-capacity RPT—an RPT aircraft that provides a maximum of 38 passenger seats, or a maximum payload no greater than 4,200 kilograms > high-capacity RPT—an RPT aircraft that provides more than 38 passenger seats, or a maximum payload greater than 4,200 kilograms.

REPCON	The aviation confidential reporting scheme.
REPCON Marine	The marine confidential reporting scheme.
Reportable safety concern	Any matter that endangers or could endanger a transport vehicle.
Safety action	The things that organisations and individuals do in response to the identification of safety issues, in order to prevent accidents and incidents. There are two main types: > ATSB safety action > non-ATSB safety action.
Safety advisory notice	Formal advice by the ATSB to an organisation, or relevant parts of the aviation industry, that it should consider the safety issue and take action where it believes it is appropriate. A safety advisory notice is a 'softer' output than a safety recommendation and is used for less significant safety issues—when the available evidence is more limited or when the target audience is not a specific organisation.
Safety factor	An event or condition that increases safety risk—something that increases the likelihood of an occurrence and/or the severity of the adverse consequences associated with an occurrence.
Safety issues	A safety factor which can reasonably be regarded as having the potential to adversely affect the safety of future operations and: > is a characteristic of an organisation or a system, rather than a characteristic of a specific individual, or > is characteristic of an operational environment at a specific point in time.
Safety recommendation	ATSB safety recommendations are formal recommendations from the ATSB to an organisation for it to address a specific safety issue. They focus on stating the problem (i.e. the description of the safety issue). They do not identify specific solutions for reducing risk.
SAR	Search and rescue.
SATCOM	Satellite communication.
Serious incident	An incident involving circumstances indicating an accident nearly occurred.
Serious injury	An injury which is sustained by a person in an accident and involves one or more of the following: > requires hospitalisation for more than 48 hours, commencing within seven days from the date the injury was received > results in a fracture of any bone (except simple fractures of fingers, toes or nose) > involves lacerations which cause severe haemorrhage, nerve, muscle or tendon damage > involves injury to any internal organ > involves second or third degree burns, or any burns affecting more than five per cent of the body surface > involves verified exposure to infectious substances or injurious radiation.

Short investigation	Short, factual, office-based investigations of less complex safety occurrences rated at level 5 under the ATSB's rating scheme.
SIIMS	Safety investigation information management system.
SOLAS	Safety of life at sea.
SPAD	Signal passed at danger.
Spectral analysis	Detailed analysis of the pilot's radio transmissions, background engine sounds and warnings.
Sports aviation	Aircraft excluded from the RPT, GA or military aircraft categories—including ultralights, gliders, hang gliders, rotorcraft and balloon aviation. Most, if not all, sport aviation craft are registered with various sporting bodies rather than with the Civil Aviation Safety Authority (CASA), although exceptions to this rule occur. Sports aviation also includes parachute operations and acrobatics. Sports aviation in this report does not include Australian nonVH registered aircraft.
STAR	Standard arrival route.
Statutory agency	A body or group of persons declared by an Act to be a statutory agency for the purposes of the *Public Service Act 1999*.
Systemic failure	A breakdown in the system as a whole.
Transport safety matter	As defined by the *Transport Safety Investigation Act 2003*, these matters consist of occurrences in which: > the transport vehicle is destroyed > the transport vehicle is damaged > the transport vehicle is abandoned, disabled, stranded or missing in operation > a person dies as a result of an occurrence associated with the operation of the transport vehicle > a person is injured or incapacitated as a result of an occurrence associated with the operation of the transport vehicle > any property is damaged as a result of an occurrence associated with the operation of the transport vehicle > the transport vehicle is involved in a near accident > the transport vehicle is involved in an occurrence that affected, or could have affected, the safety of the operation of the transport vehicle > something occurred that affected, is affecting, or might affect transport safety.
TSI Act	*Transport Safety Investigation Act 2003*.
ULB	Underwater locator beacon.

APPENDIX D: LIST OF REQUIREMENTS

The list below outlines compliance with key annual performance reporting information, as required in section 17AJ(d) of the *Public Governance, Performance and Accountability Rule 2014*.

PGPA Rule Reference	Part of Report	Description	Requirement	Page
17AD(g)	**Letter of transmittal**			
17AI		A copy of the letter of transmittal signed and dated by accountable authority on date final text approved, with statement that the report has been prepared in accordance with section 46 of the Act and any enabling legislation that specifies additional requirements in relation to the annual report.	Mandatory	v
17AD(h)	**Aids to access**			
17AJ(a)		Table of contents.	Mandatory	vi–xi
17AJ(b)		Alphabetical index.	Mandatory	220–223
17AJ(c)		Glossary of abbreviations and acronyms.	Mandatory	186–191
17AJ(d)		List of requirements.	Mandatory	192–200
17AJ(e)		Details of contact officer.	Mandatory	xi
17AJ(f)		Entity's website address.	Mandatory	xi
17AJ(g)		Electronic address of report.	Mandatory	xi
17AD(a)	**Review by accountable authority**			
17AD(a)		A review by the accountable authority of the entity.	Mandatory	2–11
17AD(b)	**Overview of the entity**			
17AE(1)(a)(i)		A description of the role and functions of the entity.	Mandatory	14–24
17AE(1)(a)(ii)		A description of the organisational structure of the entity.	Mandatory	25–30
17AE(1)(a)(iii)		A description of the outcomes and programmes administered by the entity.	Mandatory	31

PGPA Rule Reference	Part of Report	Description	Requirement	Page
17AE(1)(a)(iv)		A description of the purposes of the entity as included in corporate plan.	Mandatory	14–16
17AE(1)(aa)(i)		Name of the accountable authority or each member of the accountable authority.	Mandatory	216
17AE(1)(aa)(ii)		Position title of the accountable authority or each member of the accountable authority.	Mandatory	216
17AE(1)(aa)(iii)		Period as the accountable authority or member of the accountable authority within the reporting period.	Mandatory	216
17AE(1)(b)		An outline of the structure of the portfolio of the entity.	Portfolio departments—mandatory	Not applicable
17AE(2)		Where the outcomes and programs administered by the entity differ from any Portfolio Budget Statement, Portfolio Additional Estimates Statement or other portfolio estimates statement that was prepared for the entity for the period, include details of variation and reasons for change.	If applicable, Mandatory	Not applicable
17AD(c)	**Report on the Performance of the entity**			
	Annual performance Statements			
17AD(c)(i); 16F		Annual performance statement in accordance with paragraph 39(1)(b) of the Act and section 16F of the Rule.	Mandatory	38–45
17AD(c)(ii)	***Report on Financial Performance***			
17AF(1)(a)		A discussion and analysis of the entity's financial performance.	Mandatory	72–73
17AF(1)(b)		A table summarising the total resources and total payments of the entity.	Mandatory	184–185

PGPA Rule Reference	Part of Report	Description	Requirement	Page
17AF(2)		If there may be significant changes in the financial results during or after the previous or current reporting period, information on those changes, including: the cause of any operating loss of the entity; how the entity has responded to the loss and the actions that have been taken in relation to the loss; and any matter or circumstances that it can reasonably be anticipated will have a significant impact on the entity's future operation or financial results.	If applicable, Mandatory.	72–73
17AD(d)	**Management and Accountability**			
	Corporate Governance			
17AG(2)(a)		Information on compliance with section 10 (fraud systems).	Mandatory	164–165
17AG(2)(b)(i)		A certification by accountable authority that fraud risk assessments and fraud control plans have been prepared.	Mandatory	v
17AG(2)(b)(ii)		A certification by accountable authority that appropriate mechanisms for preventing, detecting incidents of, investigating or otherwise dealing with, and recording or reporting fraud that meet the specific needs of the entity are in place.	Mandatory	v
17AG(2)(b)(iii)		A certification by accountable authority that all reasonable measures have been taken to deal appropriately with fraud relating to the entity.	Mandatory	v
17AG(2)(c)		An outline of structures and processes in place for the entity to implement principles and objectives of corporate governance.	Mandatory	162–173

PGPA Rule Reference	Part of Report	Description	Requirement	Page
17AG(2)(d)–(e)		A statement of significant issues reported to Minister under paragraph 19(1)(e) of the Act that relates to noncompliance with Finance law and action taken to remedy noncompliance.	If applicable, Mandatory	Not applicable
	External Scrutiny			
17AG(3)		Information on the most significant developments in external scrutiny and the entity's response to the scrutiny.	Mandatory	170–173
17AG(3)(a)		Information on judicial decisions and decisions of administrative tribunals and by the Australian Information Commissioner that may have a significant effect on the operations of the entity.	If applicable, Mandatory	Not applicable
17AG(3)(b)		Information on any reports on operations of the entity by the Auditor-General (other than report under section 43 of the Act), a Parliamentary Committee, or the Commonwealth Ombudsman.	If applicable, Mandatory	Not applicable
17AG(3)(c)		Information on any capability reviews on the entity that were released during the period.	If applicable, Mandatory	Not applicable
	Management of Human Resources			
17AG(4)(a)		An assessment of the entity's effectiveness in managing and developing employees to achieve entity objectives.	Mandatory	165–169
17AG(4)(aa)		Statistics on the entity's employees on an ongoing and non-ongoing basis, including the following: (a) statistics on fulltime employees; (b) statistics on parttime employees; (c) statistics on gender; (d) statistics on staff location.	Mandatory	201–202

PGPA Rule Reference	Part of Report	Description	Requirement	Page
17AG(4)(b)		Statistics on the entity's APS employees on an ongoing and non-ongoing basis; including the following: > Statistics on staffing classification level; > Statistics on fulltime employees; > Statistics on parttime employees; > Statistics on gender; > Statistics on staff location; > Statistics on employees who identify as Indigenous.	Mandatory	165–168, 201–211
17AG(4)(c)		Information on any enterprise agreements, individual flexibility arrangements, Australian workplace agreements, common law contracts and determinations under subsection 24(1) of the *Public Service Act 1999*.	Mandatory	166–167
17AG(4)(c)(i)		Information on the number of SES and non-SES employees covered by agreements etc identified in paragraph 17AG(4)(c).	Mandatory	167
17AG(4)(c)(ii)		The salary ranges available for APS employees by classification level.	Mandatory	168
17AG(4)(c)(iii)		A description of non-salary benefits provided to employees.	Mandatory	167
17AG(4)(d)(i)		Information on the number of employees at each classification level who received performance pay.	If applicable, Mandatory	167
17AG(4)(d)(ii)		Information on aggregate amounts of performance pay at each classification level.	If applicable, Mandatory	166–168
17AG(4)(d)(iii)		Information on the average amount of performance payment, and range of such payments, at each classification level.	If applicable, Mandatory	166–168

PGPA Rule Reference	Part of Report	Description	Requirement	Page
17AG(4)(d)(iv)		Information on aggregate amount of performance payments.	If applicable, Mandatory	166–168
	Assets Management			
17AG(5)		An assessment of effectiveness of assets management where asset management is a significant part of the entity's activities.	If applicable, mandatory	Not applicable
	Purchasing			
17AG(6)		An assessment of entity performance against the *Commonwealth Procurement Rules*.	Mandatory	170–171
	Consultants			
17AG(7)(a)		A summary statement detailing the number of new contracts engaging consultants entered into during the period; the total actual expenditure on all new consultancy contracts entered into during the period (inclusive of GST); the number of ongoing consultancy contracts that were entered into during a previous reporting period; and the total actual expenditure in the reporting year on the ongoing consultancy contracts (inclusive of GST).	Mandatory	170
17AG(7)(b)		A statement that "*During [reporting period], [specified number] new consultancy contracts were entered into involving total actual expenditure of $[specified million]. In addition, [specified number] ongoing consultancy contracts were active during the period, involving total actual expenditure of $[specified million]*".	Mandatory	170
17AG(7)(c)		A summary of the policies and procedures for selecting and engaging consultants and the main categories of purposes for which consultants were selected and engaged.	Mandatory	170

PGPA Rule Reference	Part of Report	Description	Requirement	Page
17AG(7)(d)		A statement that *"Annual reports contain information about actual expenditure on contracts for consultancies. Information on the value of contracts and consultancies is available on the AusTender website."*	Mandatory	170
	Australian National Audit Office Access Clauses			
17AG(8)		If an entity entered into a contract with a value of more than $100 000 (inclusive of GST) and the contract did not provide the Auditor-General with access to the contractor's premises, the report must include the name of the contractor, purpose and value of the contract, and the reason why a clause allowing access was not included in the contract.	If applicable, Mandatory	Not applicable
	Exempt contracts			
17AG(9)		If an entity entered into a contract or there is a standing offer with a value greater than $10 000 (inclusive of GST) which has been exempted from being published in AusTender because it would disclose exempt matters under the FOI Act, the annual report must include a statement that the contract or standing offer has been exempted, and the value of the contract or standing offer, to the extent that doing so does not disclose the exempt matters.	If applicable, Mandatory	170
	Small business			
17AG(10)(a)		A statement that *"[Name of entity] supports small business participation in the Commonwealth Government procurement market. Small and Medium Enterprises (SME) and Small Enterprise participation statistics are available on the Department of Finance's website."*	Mandatory	171

PGPA Rule Reference	Part of Report	Description	Requirement	Page
17AG(10)(b)		An outline of the ways in which the procurement practices of the entity support small and medium enterprises.	Mandatory	171
17AG(10)(c)		If the entity is considered by the Department administered by the Finance Minister as material in nature—a statement that "*[Name of entity] recognises the importance of ensuring that small businesses are paid on time. The results of the Survey of Australian Government Payments to Small Business are available on the Treasury's website.*"	If applicable, Mandatory	Not applicable
	Financial Statements			
17AD(e)		Inclusion of the annual financial statements in accordance with subsection 43(4) of the Act.	Mandatory	134–159
	Executive Remuneration			
17AD(da)		Information about executive remuneration in accordance with Subdivision C of Division 3A of Part 23 of the Rule.	Mandatory	213–214
17AD(f)	***Other Mandatory Information***			
17AH(1)(a)(i)		If the entity conducted advertising campaigns, a statement that *"During [reporting period], the [name of entity] conducted the following advertising campaigns: [name of advertising campaigns undertaken]. Further information on those advertising campaigns is available at [address of entity's website] and in the reports on Australian Government advertising prepared by the Department of Finance. Those reports are available on the Department of Finance's website."*	If applicable, Mandatory	176

PGPA Rule Reference	Part of Report	Description	Requirement	Page
17AH(1)(a)(ii)		If the entity did not conduct advertising campaigns, a statement to that effect.	If applicable, Mandatory	176
17AH(1)(b)		A statement that *"Information on grants awarded by [name of entity] during [reporting period] is available at [address of entity's website]."*	If applicable, Mandatory	178
17AH(1)(c)		Outline of mechanisms of disability reporting, including reference to website for further information.	Mandatory	178
17AH(1)(d)		Website reference to where the entity's Information Publication Scheme statement pursuant to Part II of FOI Act can be found.	Mandatory	179
17AH(1)(e)		Correction of material errors in previous annual report.	If applicable, mandatory	Not applicable
17AH(2)		Information required by other legislation.	Mandatory	176–183

APPENDIX E: MANAGEMENT OF HUMAN RESOURCES

Table 21: All ongoing employees current report period (2018–19)

	Male			Female			Indeterminate			Total
	Full-time	Part-time	*Total male*	Full-time	Part-time	*Total female*	Full-time	Part-time	*Total indeterminate*	
NSW	1	-	1	-	-	-	-	-	-	*1*
QLD	14	-	14	-	1	1	-	-	-	*15*
SA	3	-	3	-	-	-	-	-	-	*3*
TAS		-	-	-	-	-	-	-	-	-
VIC	1	-	1	1	-	1	-	-	-	*2*
WA	4	-	4	-	-	-	-	-	-	*4*
ACT	37	-	37	27	5	32	1	-	1	*70*
Overseas	-	-	-	-	-	-	-	-	-	-
Total	**60**	**-**	**60**	**28**	**6**	**34**	**1**	**-**	**1**	**95**

Table 22: All non-ongoing employees in current report period (2018–19)

	Male			Female			Indeterminate			Total
	Full-time	Part-time	*Total male*	Full-time	Part-time	*Total female*	Full-time	Part-time	*Total indeterminate*	
NSW	-	-	-	-	-	-	-	-	-	-
QLD	-	-	-	-	-	-	-	-	-	-
SA	-	-	-	-	-	-	-	-	-	-
TAS	-	-	-	-	-	-	-	-	-	-
VIC	-	-	-	-	-	-	-	-	-	-
WA	-	-	-	-	-	-	-	-	-	-
ACT	3	1	4	2	-	2	-	-	-	*6*
Overseas	-	-	-	-	-	-	-	-	-	-
Total	**3**	**1**	**4**	**2**	**-**	**2**	**-**	**-**	**-**	**6**

Table 23: All ongoing employees in previous report period (2017–18)

	Male			Female			Indeterminate			Total
	Full-time	Part-time	*Total male*	Full-time	Part-time	*Total female*	Full-time	Part-time	*Total indeterminate*	
NSW	-	-	-	-	-	-	-	-	-	-
QLD	14	-	14	1	-	1	-	-	-	*15*
SA	3	-	3	-	-	-	-	-	-	*3*
TAS	-	-	-	-	-	-	-	-	-	-
VIC	1	-	1	1	-	1	-	-	-	*2*
WA	4	-	4	-	-	-	-	-	-	*4*
ACT	43	-	43	27	6	33	1	-	1	*77*
Overseas	1	-	1	-	-	-	-	-	-	*1*
Total	66	-	66	29	6	35	1	-	1	*102*

Table 24: All non-ongoing employees in previous report period (2017–18)

	Male			Female			Indeterminate			Total
	Full-time	Part-time	*Total male*	Full-time	Part-time	*Total female*	Full-time	Part-time	*Total indeterminate*	
NSW	-	-	-	-	-	-	-	-	-	-
QLD	-	-	-	-	-	-	-	-	-	-
SA	-	-	-	-	-	-	-	-	-	-
TAS	-	-	-	-	-	-	-	-	-	-
VIC	-	-	-	-	-	-	-	-	-	-
WA	-	-	-	-	-	-	-	-	-	-
ACT	1	1	2	1	-	1	-	-	-	*3*
Overseas	-	-	-	-	-	-	-	-	-	-
Total	**1**	**1**	**2**	**1**	**-**	**1**	**-**	**-**	**-**	**3**

APPENDIX F: EMPLOYMENT TYPE BY FULL-TIME AND PART-TIME STATUS

Table 25: Australian Public Service Act employees by full-time and part-time status in current report period (2018–19)

	Ongoing			Non-ongoing			Total
	Full-time	Part-time	*Total ongoing*	Full-time	Part-time	*Total non-ongoing*	
SES 3	-	-	-	-	-	-	-
SES 2	-	-	-	1	-	1	*1*
SES 1	1	-	1	-	-	-	*1*
EL 2	32	2	34	1	-	1	*35*
EL 1	24	-	24	2	-	2	*26*
APS 6	21	3	24	-	-	-	*24*
APS 5	10	1	11	1	-	1	*12*
APS 4	1	-	1	-	1	1	*2*
APS 3	-	-	-	-	-	-	-
APS 2	-	-	-	-	-	-	-
APS 1	-	-	-	-	-	-	-
Other	-	-	-	-	-	-	-
TOTAL	**89**	**6**	**95**	**5**	**1**	**6**	**101**

Table 26: Australian Public Service Act employees by full-time and part-time status in previous report period (2017–18)

	Ongoing			Non-ongoing			Total
	Full-time	Part-time	*Total ongoing*	Full-time	Part-time	*Total non-ongoing*	
SES 3	-	-	-	-	-	-	-
SES 2	-	-	-	1	-	1	*1*
SES 1	2	-	2	-	-	-	*2*
EL 2	36	3	39	-	-	-	*39*
EL 1	27	-	27	-	-	-	*27*
APS 6	21	1	22	-	-	-	*22*
APS 5	10	2	12	-	-	-	*12*
APS 4	-	-	-	1	-	1	*1*
APS 3	-	-	-	-	1	1	*1*
APS 2	-	-	-	-	-	-	-
APS 1	-	-	-	-	-	-	-
Other	-	-	-	-	-	-	-
TOTAL	**96**	**6**	**102**	**2**	**1**	**3**	**105**

APPENDIX G: AUSTRALIAN PUBLIC SECTOR (APS) CLASSIFICATION AND GENDER

Table 27: Australian Public Service Act ongoing employees in current report period (2018–19)

	Male			Female			Indeterminate			Total
	Full-time	Part-time	*Total male*	Full-time	Part-time	*Total female*	Full-time	Part-time	*Total indeterminate*	
SES 3	-	-	-	-	-	-	-	-	-	-
SES 2	-	-	-	-	-	-	-	-	-	-
SES 1	1	-	1	-	-	-	-	-	-	*1*
EL 2	27	-	27	5	2	7	-	-	-	*34*
EL 1	14	-	14	9	-	9	1	-	1	*24*
APS 6	13	-	13	8	3	11	-	-	-	*24*
APS 5	5	-	5	5	1	6	-	-	-	*11*
APS 4	-	-	-	1	-	1	-	-	-	*1*
APS 3	-	-	-	-	-	-	-	-	-	-
APS 2	-	-	-	-	-	-	-	-	-	-
APS 1	-	-	-	-	-	-	-	-	-	-
Other	-	-	-	-	-	-	-	-	-	-
TOTAL	**60**	**-**	**60**	**28**	**6**	**34**	**1**	**-**	**1**	**95**

Table 28: Australian Public Service Act non-ongoing employees in current report period (2018–19)

	Male			Female			Indeterminate			Total
	Full-time	Part-time	*Total male*	Full-time	Part-time	*Total female*	Full-time	Part-time	*Total indeterminate*	
SES 3	-	-	-	-	-	-	-	-	-	-
SES 2	1	-	1	-	-	-	-	-	-	*1*
SES 1	-	-	-	-	-	-	-	-	-	-
EL 2	-	-	-	1	-	1	-	-	-	*1*
EL 1	2	-	2	-	-	-	-	-	-	*2*
APS 6	-	-	-	-	-	-	-	-	-	-
APS 5	-	-	-	1	-	1	-	-	-	*1*
APS 4	-	1	1	-	-	-	-	-	-	*1*
APS 3	-	-	-	-	-	-	-	-	-	-
APS 2	-	-	-	-	-	-	-	-	-	-
APS 1	-	-	-	-	-	-	-	-	-	-
Other	-	-	-	-	-	-	-	-	-	-
TOTAL	**3**	**1**	**4**	**2**	**-**	**2**	**-**	**-**	**-**	**6**

Table 29: Australian Public Service Act ongoing employees in previous report period (2017–18)

	Male			Female			Indeterminate			Total
	Full-time	Part-time	*Total male*	Full-time	Part-time	*Total female*	Full-time	Part-time	*Total indeterminate*	
SES 3	-	-	-	-	-	-	-	-	-	-
SES 2	-	-	-	-	-	-	-	-	-	-
SES 1	2	-	2	-	-	-	-	-	-	*2*
EL 2	30	-	30	6	3	9	-	-	-	*39*
EL 1	17	-	17	9	-	9	1	-	1	*27*
APS 6	13	-	13	8	1	9	-	-	-	*22*
APS 5	4	-	4	6	2	8	-	-	-	*12*
APS 4	-	-	-	-	-	-	-	-	-	-
APS 3	-	-	-	-	-	-	-	-	-	-
APS 2	-	-	-	-	-	-	-	-	-	-
APS 1	-	-	-	-	-	-	-	-	-	-
Other	-	-	-	-	-	-	-	-	-	-
TOTAL	**66**	**-**	**66**	**29**	**6**	**35**	**1**	**-**	**1**	**102**

Table 30: Australian Public Service Act non-ongoing employees in previous report period (2017–18)

	Male			Female			Indeterminate			Total
	Full-time	Part-time	*Total male*	Full-time	Part-time	*Total female*	Full-time	Part-time	*Total indeterminate*	
SES 3	-	-	-	-	-	-	-	-	-	-
SES 2	1	-	1	-	-	-	-	-	-	*1*
SES 1	-	-	-	-	-	-	-	-	-	-
EL 2	-	-	-	-	-	-	-	-	-	-
EL 1	-	-	-	-	-	-	-	-	-	-
APS 6	-	-	-	-	-	-	-	-	-	-
APS 5	-	-	-	-	-	-	-	-	-	-
APS 4	-	-	-	1	-	1	-	-	-	*1*
APS 3	-	1	1	-	-	-	-	-	-	*1*
APS 2	-	-	-	-	-	-	-	-	-	-
APS 1	-	-	-	-	-	-	-	-	-	-
Other	-	-	-	-	-	-	-	-	-	-
TOTAL	**1**	**1**	**2**	**1**	**-**	**1**	**-**	**-**	**-**	**3**

APPENDIX H: AUSTRALIAN PUBLIC SERVICE ACT EMPLOYMENT TYPE BY LOCATION IN CURRENT REPORT PERIOD (2018–19)

Table 31: Australian Public Service Act employment type by location in current report period (2018–19)

	Ongoing	Non-ongoing	Total
NSW	1	-	*1*
QLD	15	-	*15*
SA	3	-	*3*
TAS	-	-	-
VIC	2	-	*2*
WA	4	-	*4*
ACT	70	6	*76*
Overseas	-	-	-
Total	**95**	**6**	**101**

Table 32: Australian Public Service Act employment type by location in previous report period (2017–18)

	Ongoing	Non-ongoing	Total
NSW	-	-	-
QLD	15	-	*15*
SA	3	-	*3*
TAS	-	-	-
VIC	2	-	*2*
WA	4	-	*4*
ACT	77	3	*80*
Overseas	1	-	*1*
Total	**102**	**3**	**105**

APPENDIX I: INDIGENOUS EMPLOYMENT

Table 33: Australian Public Service Act Indigenous employment in current report period (2018–19)

	Total
Ongoing	1
Non-ongoing	-
Total	**1**

Table 34: Australian Public Service Act Indigenous employment in previous report period (2017–18)

	Total
Ongoing	1
Non-ongoing	-
Total	**1**

APPENDIX J: EMPLOYMENT ARRANGEMENTS OF SES AND NON-SES EMPLOYEES

Table 35: Australian Public Service Act employment arrangements in current report period (2018–19)

	SES	Non-SES	Total
Section 24.1 Determination	2	-	2
Enterprise Agreement	-	99	99
Total	**2**	**99**	**101**

APPENDIX K: SALARY RANGES BY CLASSIFICATION LEVEL

Table 36: Australian Public Service Act employment salary ranges by classification level (minimum/maximum) in current report period (2018–19)

	Minimum salary($)	Maximum salary($)
SES 3	-	-
SES 2	271 830	271 830
SES 1	230 010	230 010
EL 2	119 102	146 382
EL 1	100 186	121 458
APS 6	78 210	93 032
APS 5	72 131	77 884
APS 4	64 611	70 209
APS 3	58 313	62 965
APS 2	51 110	56 427
APS 1	45 130	49 710
Other	-	-
Total	**1 090 633**	**1 179 907**

APPENDIX L: PERFORMANCE PAY BY CLASSIFICATION LEVEL

Table 37: Australian Public Service Act employment performance pay by classification level in current report period (2018–19)

	Number of employees receiving performance pay	Aggregated (sum total) of all payments made	Average of all payments made	Minimum payment made	Maximum payment made
SES 3	-	-	-	-	-
SES 2	-	-	-	-	-
SES 1	-	-	-	-	-
EL 2	-	-	-	-	-
EL 1	-	-	-	-	-
APS 6	-	-	-	-	-
APS 5	-	-	-	-	-
APS 4	-	-	-	-	-
APS 3	-	-	-	-	-
APS 2	-	-	-	-	-
APS 1	-	-	-	-	-
Other	-	-	-	-	-
Total	**-**	**-**	**-**	**-**	**-**

APPENDIX M: AID TO ACCESS

Table 38: Aids to access details in current report period (2018–19)

Annual report contact officer (title/position held)	Annual Report Coordinator
Contact phone number	1800 020 616
Contact email	atsbinfo@atsb.gov.au
Entity website (URL)	www.atsb.gov.au

Table 39: Information about remuneration for key management personnel[5]

		Short-term benefits			Post-employment benefits	Other long-term benefits		Termination benefits	Total remuneration
Name	Position title	Base salary	Bonuses	Other benefits and allowances	Superannuation contributions	Long service leave	Other long-term benefits		
G Hood	Chief Commissioner	407 828	0	4 906	20 531	10 047	31 243	0	474 555
N Nagy	Executive Director	271 830	0	4 906	41 862	6 694	20 843	0	346 135
C McNamara	Chief Operating Officer	230 010	0	4 906	43 472	5 662	17 637	0	301 687

5 An additional table about remuneration for senior executives (indicating total remuneration bands) is not required, as all senior executive remunerations within the ATSB have been detailed through the above table.

Table 40: Information about remuneration for other highly paid staff

		Short-term benefits			Post-employment benefits	Other long-term benefits		Termination benefits	Total remuneration
Total remuneration bands	Number of other highly paid staff	Average base salary	Average bonuses	Average other benefits and allowances	Average superannuation contributions	Average long service leave	Average other long-term benefits	Average termination benefits	Average total remuneration
$220 001–$245 000	2	146 382	0	41 745	33 865	4 589	0	0	226 581
$245 001–$270 000	-	-	-	-	-	-	-	-	-
$270 001–$295 000	-	-	-	-	-	-	-	-	-
$295 001–$320 000	-	-	-	-	-	-	-	-	-
$320 001–$345 000	-	-	-	-	-	-	-	-	-
$345 001–$370 000	-	-	-	-	-	-	-	-	-
$370 001–$395 000	-	-	-	-	-	-	-	-	-
$395 001–$420 000	-	-	-	-	-	-	-	-	-
$420 001–$445 000	-	-	-	-	-	-	-	-	-
$445 001–$470 000	-	-	-	-	-	-	-	-	-
$470 001–$495 000	-	-	-	-	-	-	-	-	-
$495 001–...	-	-	-	-	-	-	-	-	-

Generic image Source: ATSB

APPENDIX O: ACCOUNTABLE AUTHORITY

Table 41: Details of accountable authority during the reporting period current report period (2018–19)

		Period as the accountable authority or member	
Name	**Position title/ Position held**	**Date of commencement**	**Date of cessation**
Greg Hood	Chief Commissioner/CEO	1 July 2016	30 June 2021

APPENDIX P: REPORT ON FINANCIAL PERFORMANCE SUMMARY

Table 42: Entity resource statement subset summary in current report period (2018–19)

	Actual Available appropriation – current year (a)	**Payments made (b)**	**Balance remaining (a)-(b)**
	$'000	**$'000**	**$'000**
Departmental			
Annual appropriations – ordinary annual services	44 100	23 963	20 137
Annual appropriations – other services – non-operating	838	-	838
Total departmental annual appropriations	**-**	**-**	**-**
Departmental special appropriations	-	-	-
Total special appropriations	**-**	**-**	**-**
Special accounts	-	-	-
Total special accounts	**-**	**-**	**-**
less departmental appropriations drawn from annual/special appropriations and credited to special accounts	-	-	-
Total departmental resourcing (A)	**44 938**	**23 963**	**20 975**

	Actual Available appropriation – current year (a)	Payments made (b)	Balance remaining (a)-(b)
	$'000	$'000	$'000
Administered			
Annual appropriations – ordinary annual services	-	-	-
Annual appropriations – other services – non-operating	-	-	-
Annual appropriations – other services – specific payments to States, ACT, NT and local government	-	-	-
Annual appropriations – other services – new administered expenses	-	-	-
Total administered annual appropriations	**-**	**-**	**-**
Administered special appropriations	-	-	-
Total administered special appropriations	**-**	**-**	**-**
Special accounts	-	-	-
Total special accounts receipts	**-**	**-**	**-**
less administered appropriations drawn from annual/special appropriations and credited to special accounts	-	-	-
less payments to corporate entities from annual/special appropriations	-	-	-
Total administered resourcing (B)	**-**	**-**	**-**
Total resourcing and payments for entity X (A + B)	**44 938**	**23 963**	**20 975**

APPENDIX Q: CONSULTANTS

Table 43: Number and expenditure on consultants in current report period (2018–19)

	Total
No. of new contracts entered into during the period	5
Total actual expenditure during the period on new contracts (inc. GST)	$51 644
No. of ongoing contracts engaging consultants that were entered into during a previous period	0
Total actual expenditure during the period on ongoing contracts (inc. GST)	0

APPENDIX R: FINANCIAL STATEMENTS SUMMARY

Table 44: Statement of comprehensive income in current report period (2018–19)

	30 June 2019	30 June 2018	Budget 30 June 2019
	$'000	$'000	$'000
NET COST OF SERVICES			
Expenses			
Employee Benefits Expense	(16 029)	(15 333)	(16 221)
Suppliers Expense	(10 059)	(10 024)	(7 917)
Depreciation and Amortisation Expense	(699)	(715)	(580)
Finance Costs	(6)	(7)	(2)
Write-Down and Impairment of other Costs	(15)	(71)	(0)
Total Expenses	**(26 808)**	**(26 150)**	**(24 720)**
Income			
Total Own-Source Income	5 954	4 796	3 896
Net cost of services			
Net cost of services	(20 854)	(21 354)	(20 824)
Revenue from Government			
Revenue from Government	20 244	20 411	20 244
Surplus/(Deficit) after Tax			
Surplus/(Deficit) after Tax	(610)	(943)	(580)
OTHER COMPREHENSIVE INCOME			
Changes in Asset Revaluation surplus	(31)	0	*0*
Total comprehensive Income/(Loss)	**(641)**	**(943)**	**(580)**

SUBJECT INDEX

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