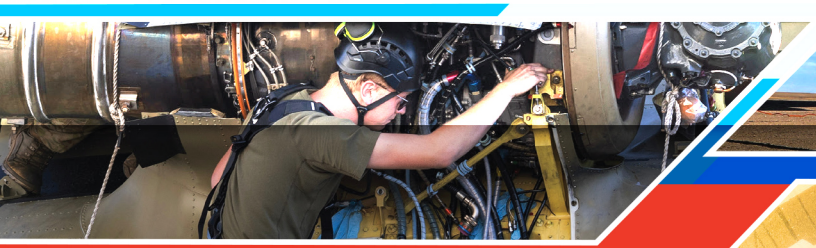
Defence Aviation

Safety Reporting System



DEFENCE FLIGHT SAFETY BUREAU

DFSB

GUIDEBOOK – EDITION 4

Aim and Scope

The purpose of this Guidebook is to familiarise Defence Aviation personnel with the Defence Aviation Safety Reporting System. Within Defence, aviation safety reporting is managed through the corporate Defence Sentinel software application. However, the reporting system itself is more than just an IT platform—it comprises a structured framework of policy, processes, and tools that ensure a standardised and integrated approach to reporting, classification, investigation, codification, and management of aviation safety reports across Defence Aviation organisations.

Beyond basic familiarisation, this Guidebook is primarily intended for safety representatives fulfilling the role of Aviation Reviewer, as well as personnel responsible for conducting Aviation safety investigations as part of the organisation's Safety Management System (SMS).

The Guidebook consists of four parts:

Part One provides general information on aviation safety reporting, including an overview of aviation events and issues, report categories and the aviation safety reporting Sentinel software application.

Part Two focuses on the role of the Aviation Reviewer and steps the user through the process for reviewing an Aviation Event that has been submitted via Sentinel, from confirming the event details to its classification and the decision on whether or not to conduct an investigation.

Part Three steps the user through the process for conducting an aviation safety investigation as part of the organisation's SMS, including the input of investigation information, safety actions and recommendations into Sentinel.

Part Four outlines the roles of the Aviation Reviewer and the Approving Authority in Aviation Sentinel and the processing of an Aviation Safety Report.

This Guidebook should be read in conjunction with the Defence Aviation Safety Reporting and Investigation Manual (DASRIM)[1] which contains additional explanation and guidance. The DASRIM (replacing the Defence Aviation Safety Manual) provides policy, procedures, and guidance for the reporting and investigation of Defence aviation safety events.

1 DASRIM scheduled for release Q3 2025.

EMERGENCY & SUPPORT CONTACTS

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Senior Maintenance Officer			
Executive Officer			
Wing/Regiment ASO			
FEG ASO/FASO/SO1 Safety			
Senior Maintenance Officer			

REVISION HISTORY

Date	Version	Description
10 Oct 18	1.0	First release
26 Mar 19	1.1	Minor amendments
07 Jul 19	1.2	Minor amendments
27 Nov 20	2.0	Updated in line with Sentinel release 8.1
11 Feb 21	2.1	Updated Table 1– Appointing Authority by Classification of Event
29 Aug 22	2.2	Updated Table 1– Appointing Authority by Classification of Event
01 Nov 22	2.2	Minor update – bypass investigation
30 Jun 23	3.0	Major additions – Part 1 Overview of Aviation Safety Reporting and Part 2 The role of the Aviation Reviewer
24 Oct 23	3.1	Minor update – Positive Findings and Actions & Recommendations tip
12 Mar 25	4.0	Major update incorporating Sentinel release version 9.0 (Master BP46351680)

IMPORTANT. This guide does not contain information on the conduct of Defence Flight Safety Bureau (DFSB) independent investigations. Any questions regarding the content of this guide should be directed to your senior aviation safety representative in the first instance, and then DFSB if necessary. Suggested changes to this guidebook should be directed through DFSB Reporting, Intelligence and Research sub-directorate (email: asr.servicedesk@defence.gov.au).

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PART ONE:

Aviation Safety Reporting & Sentinel

What is the purpose of Aviation Safety Reporting?

Aviation safety reporting exists for the sole purpose of improving aviation safety through the identification of system vulnerabilities. It focuses on the risk to people arising from aircraft operations and encompasses both the manner in which aircraft are flown, and the tasks, activities and management systems that enable safe flight.

Collectively, everyone involved in Defence Aviation represents a critical source of safety information from which safety lessons can be learnt. Full, open, timely and accurate reporting of information related to aviation safety events and issues allows the organisation to respond to information received and apply corrections to the system.

Safety reporting is also essential in building a repository that facilitates information sharing and identification of systemic vulnerabilities.

If you don't measure it, you can't manage it.

ATTRIBUTION: VARIOUS

The quality and quantity of Aviation Safety Reporting (ASR) facilitates analysis, which provides tangible evidence to inform improvement. It serves a secondary function of meeting regulatory requirements for reporting certain occurrences to the Defence Aviation Safety Authority as described in DASR.GR.40.

Why is it important to have a just culture?

Valuable safety reporting is possible when people are willing to report observations and errors because the organisation guarantees an objective, fair, accountable and learned response.

A just and fair safety culture must exist within an organisation that strives for, or displays, a generative safety culture. It is recognised that while the majority of individual or team actions should not incur remedial or punitive action, there will be some situations where such action is necessary. Importantly, the safety investigation and any disciplinary or administrative action are to be managed as separate organisational processes.

If, during an internal aviation safety investigation, it becomes apparent that a Defence or civilian offence is likely to have been committed, the investigation is to be immediately suspended and the chain-of-command advised prior to recommencing (when appropriate).

Aviation safety investigations are to focus on the performance of the aviation system. Accordingly, safety actions and recommendations are to focus on implementing or improving controls that will eliminate or minimise the safety hazard or risk and therefore prevent a recurrence of the event. Safety actions and recommendations must not recommend disciplinary or administrative action.

Separate to the safety investigation, commanders should use the Safety Behaviour Management Tool available on the DFSB website (DPN only) to determine acceptable and unacceptable behaviour outcomes and commensurate action.

Who can submit an Aviation Safety Report?

Anyone in Defence Aviation who is involved in, witnesses, or is notified of an aviation safety event or issue may initiate an ASR. Usually, the reporter of an ASR will be an involved individual or supervisor.

Aviation Safety Report (ASR) is the collective term to describe a report submitted via the Aviation Safety Report module in Sentinel that includes aviation safety events, aviation safety issues, fatigue and duty limit variation reports.

What must be reported?

Any person in Defence who is involved in, witnesses or is notified of an aviation safety event or issue, must ensure an ASR is raised in Sentinel. There is no prescribed list of specific occurrences that are required to be reported through the ASR system, however an Accountable Manager, Hazard Tracking Authority, or relevant commander may prescribe particular or specific occurrences that must be reported. AMC GR.40 – Occurrence Reporting specifies ASR in Sentinel (IAW DASR.SMS) as the primary Occurrence Report format for organisations with access.

Defence organisations also need to be aware of, and satisfy, their reporting requirements outside of Defence, see DASRIM[2].

What should be reported?

The Aviation Safety Reporting framework is based on a general requirement to report all aviation safety events and issues which have (or could have) an aviation safety implication. For practical purposes, individuals are encouraged to report safety-related

2 DASRIM scheduled for release Q3 2025.

information which they perceive as having safety significance — an actual or potential hazard to aviation safety.

Note:
If there is doubt as to whether an ASR is required, a report must be raised.

When should an Aviation Event report be raised?

The Aviation Event report is used to record any event where an aviation system (including the human element) fails to perform in the expected manner and adversely affects, or is perceived by an individual as having the potential to adversely affect, aviation safety.

Multiple organisations may be involved in a single safety-related event, each with its own responsibilities and reporting requirements. As part of their respective Safety Management Systems (SMS), regulated organisations[3] may need to submit separate reports for the same event. This ensures that all hazards are identified and managed by the responsible organisation. While collaboration and information sharing are encouraged, each organisation must independently fulfil its reporting obligations in accordance with DASR and internal policies.

Example: An aircraft suffers a bird strike and the aircrew raise a report (as a Flight Operations organisation type) to capture this safety event. When the responsible aerodrome operator (as an Aerodromes organisation type) is made aware of this event, it must also raise a report to capture the hazard (bird control) and manage this hazard accordingly.

Note:
Multiple organisations may be involved in a single safety-related event, each with its own responsibilities and reporting requirements. As part of their respective Safety Management Systems (SMS), regulated organisations may need to submit separate reports for the same event.

When should an Aviation Issue report be raised?

The Aviation Issue report is used to provide an additional proactive mechanism for capturing safety information not necessarily associated with an aviation safety event. Aviation safety issues will usually refer to problems with an organisation's risk controls, or a variety of internal and external organisational influences that impact on the effectiveness of its risk controls. They can also relate to a specific part of the safety system or a series of aviation safety events that suggest an area of vulnerability.

3 Flight Operations, Aircraft Maintenance, Continuing Airworthiness Management, Aircraft Design, Production and Certification, Air Navigation Services, Aerodromes, Air Cargo Delivery and Air Battle Management organisations

Aviation safety issues may be identified through many internal sources including safety data analysis, audits and inspections, safety meetings, data monitoring programs, and operational experience. Aviation safety issues can also be identified in the review of information from external sources such as the aircraft manufacturer, engineering organisations, external investigation reports, civil aviation and foreign militaries.

Note:
The reporting of aviation events and issues are distinctly different, however the procedures for investigating and managing report workflow are largely similar.

What is Sentinel?

The Sentinel software application is the ADF's mandated method of reporting all aviation safety events and issues. Sentinel provides a single mechanism to support the reporting, management and analysis of all aviation safety reporting activities. Sentinel is available to all Defence Aviation personnel with access to the Defence Protected Network. ASR is the overarching term to describe reports submitted via the Defence Aviation safety report functionality in Sentinel and includes the following report types:

- Aviation Event
- Aviation Issue
- Fatigue
- Duty Limit Variation.

Refer to the Defence Aviation Fatigue Management Guidebook for information on Fatigue and Duty Limit Variation reporting, available on the DFSB website (DPN only).

Sentinel Workflow Overview

The Aviation Event and the Aviation Issue are processed using a common workflow **(1)**. For each stage, the Sentinel user is guided with a checklist that lists the tasks to be completed to progress the ASR.

Figure 1: Sentinel workflow

DRAFTER

Drafter — Reports the initial details of the Aviation Event or Aviation Issue via the Sentinel Defence Kiosk. This role can be performed by anyone with access to the Aviation module in Sentinel.

AVIATION REVIEWER

Aviation Reviewer — Reviews, updates and supplements the details entered by the Drafter. Includes completing the Event Risk Classification and nominating the Investigator(s) and Approving Authority. Conducts a review of what happened in the event and may seek to clarify information to inform the event classification and the decision whether to formally investigate or to bypass the investigation. A safety representative (e.g. Aviation Safety Officer (ASO) or Maintenance Aviation Safety Officer (MASO)) typically performs this role.

INVESTIGATOR

Investigator — Confirms the details, reviews and updates (if appropriate) the Assessment tile, conducts the investigation, logs the results of the investigation into the Analysis tile, and may also raise actions and recommendations. This role is typically performed by a safety representative (e.g. ASO or MASO).

REVIEWER (S1 Review)

Reviewer (S1 Review) — Reviews the event/issue details and the investigation and may also create actions/recommendations. Can re-open the investigation if required. This role is typically performed by a safety representative (e.g. ASO or MASO).

APPROVING AUTHORITY (S2 Review)

Approving Authority (AA) (S2 Review) — Reviews the event/issue details, including the investigation and actions and recommendations (if investigated). If satisfied, the AA releases the actions and recommendations and signs off the ASR. If required, the AA can send the ASR back to the Aviation Reviewer for further review or reopen the investigation if it is found unsatisfactory. This role is typically performed by the CO or delegate.

HTA

Hazard Tracking Authority (HTA) – Reviews all reports generated under the HTA, may create and release actions and recommendations, may reopen reports. Closes the report if satisfied with the outcomes and residual risk. The report cannot be closed until all actions and recommendations are completed in Sentinel.

The ‘ASR Support and Resources’ page on the DFSB website (DPN only), provides guidance and tools to assist users with completing each stage of the workflow.

PART TWO:

Role of the Aviation Reviewer

This section steps the user through the role of the Aviation Reviewer in the processing of an Aviation Event and an Aviation Issue. It is the role of Aviation Reviewer to oversee the initial review of the Aviation Event/Aviation Issue, and the initial processing of an Aviation Event/Aviation Issue in Sentinel. An Aviation Event must be submitted in Sentinel and progressed to the completion of First Release within seven calendar days. The review timeframe requirement starts from when the event took place or from the time the reporter becomes aware that an aviation safety event has occurred. The intent of this timeframe is to enable the timely communication of basic information of the safety event to be relayed to the aviation community and the preservation of perishable safety data.

There is no set timeframe for the processing of an Aviation Issue, however, an Aviation Issue Report should be raised as soon as practically possible after the discovery that an Aviation Issue exists.

The role of Aviation Reviewer is typically performed by a safety representative (e.g. Aviation Safety Officer (ASO) or Maintenance Aviation Safety Officer (MASO)). Alternatively, should an ASO-trained reviewer not be available, a member who is briefed and/or mentored by an ASO may be appointed.

Aviation Event – Aviation Reviewer Checklist

The Reviewer Checklist highlighted on the right hand side of **Figure 2** lists the tasks to be completed to progress the report. Selection of a task from the checklist will direct the Reviewer automatically to the corresponding area of the Sentinel event. These areas of the checklist can also be accessed via the Sentinel tiles shown on the left hand side of **Figure 2**.

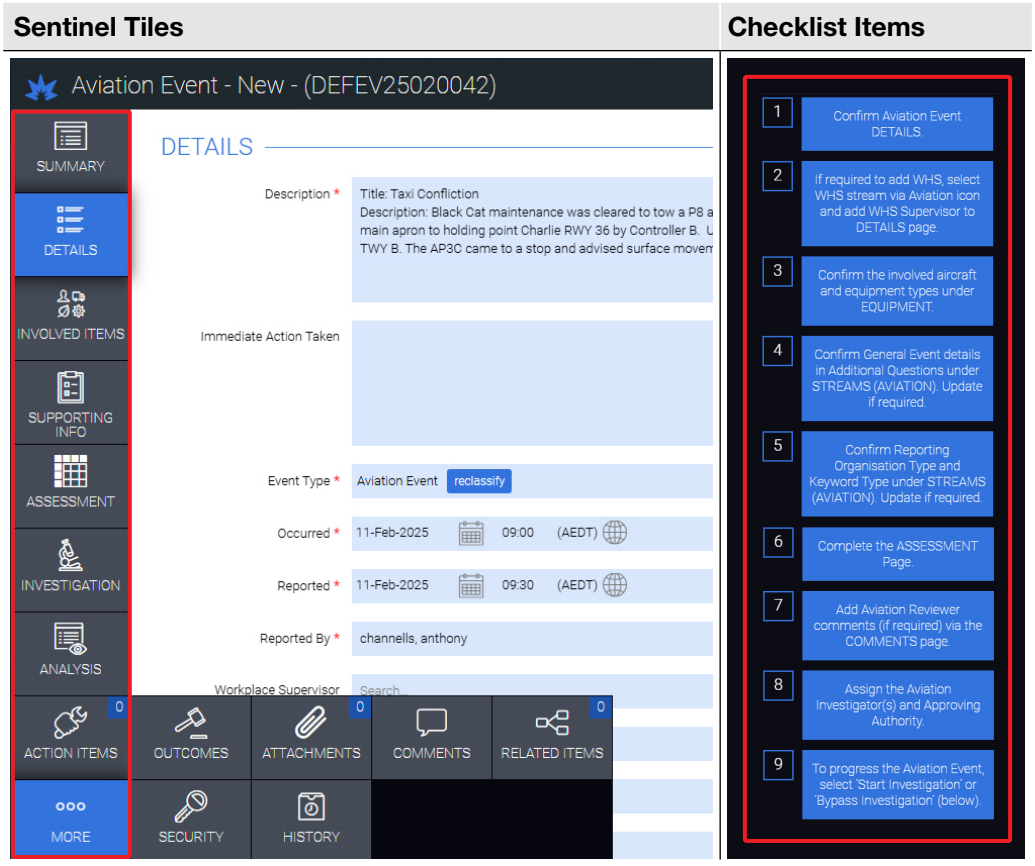

Figure 2: Review Checklist and Sentinel Tiles (Aviation Event)

Note:
All mandatory tasks in the Aviation Reviewer checklist must be completed before the report can progress to the next stage of the report lifecycle. Tasks can be completed in any order.

Confirm DETAILS (checklist item 1)

The Details page **(Figure 3)** contains factual information about the issue. This information should be as accurate as possible and must be updated if further information becomes available. The Aviation Reviewer should seek additional information if the issue details are inaccurate or lack clarity. The Aviation Reviewer is to ensure that the issue details are complete and up to date prior to classifying the issue.

Note:
If the event does not qualify as an Aviation Issue, the report was raised in error, or is a duplicate of another report (e.g. two reports for the same issue), the Aviation Reviewer must reject the report (see **Figure 23**).

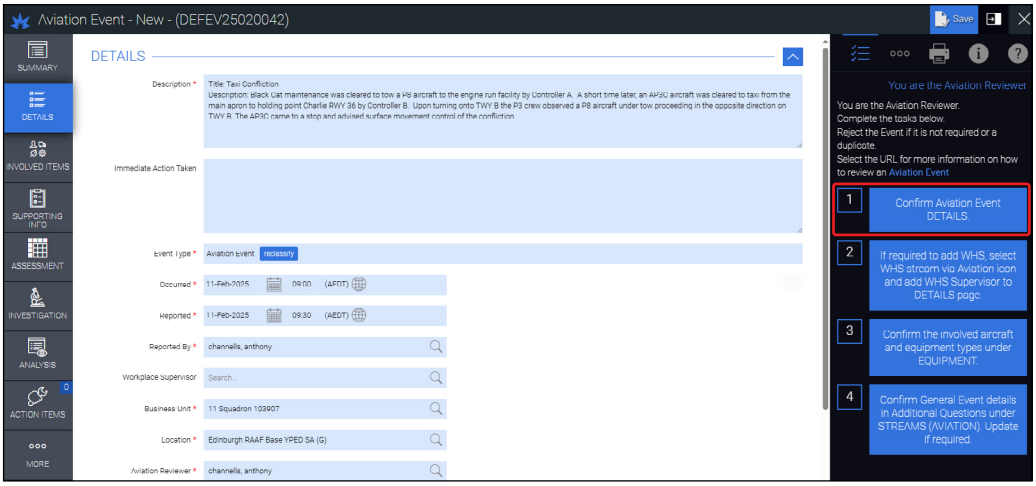

Figure 3: Details page (Aviation Event)

In order to effectively complete the checklist items, the Aviation Reviewer may need to seek additional information, including from involved persons, and/or discuss the event with others. This enables the Aviation Reviewer to confirm the event details and its classification. The Aviation Reviewer is then able to make an informed decision on whether or not a safety investigation is required.

Guidance

Title

Must be concise and accurate.

Description

Describes the **when**, the **what**, and the r**esult**.

When

State when it happened to provide context (e.g. 'During cruise en-route Richmond to Townsville …')

What

Briefly describe what happened, including any individual actions or technical failure/ malfunction (e.g. '… a hydraulic system warning was displayed on #2 engine').

Result

Briefly state the outcome (e.g. 'The engine was shut down and the aircraft diverted to Amberley').

The description may also include additional factual circumstances known at the time of raising the report (e.g. 'After exiting the aircraft, hydraulic fluid was observed dripping from the #2 engine drain mast').

The description must **not** contain:

- speculation as to the root cause of the event
- personal details of any involved person
- sensitive operational information
- emotive language
- unnecessary text regarding happenings that did not occur (e.g. 'The aircraft was not damaged')
- acronyms, unless they are commonly used terms, or spelled out initially (e.g. Environmental Control System (ECS)).

Immediate Action Taken

Description of any immediate action taken is clear, concise and accurate.

The description must not contain:

- information not relevant to the immediate actions taken
- personal details of any involved person.

Event Type

Ensure the correct Event Type is selected. (See **When should an Aviation Event report be raised?**) Note that changing the event type after report creation will result in the deletion of some related information.

Occurred (date/time)

The occurred date is the date that the event occurred (if known), the date when the event was discovered, or the date when the reporter becomes aware that an aviation safety event has occurred, whichever occurs first. Ensure date and time is accurate, and the correct time zone is selected (the default time zone is AEST, UTC +10).

Reported (date/time)

The reported date is the date the report is entered into Sentinel. Ensure date and time is accurate, and the correct time zone is selected (the default time zone is AEST, UTC +10).

Business Unit

Ensure correct business unit is selected.

- Check contractor & deployed units report their business unit correctly.
- If raising an event on behalf of another unit, the default business unit should be changed to that unit.

For contractor organisations; consult with the Defence agency that has administrative control over contractors to determine which Sentinel business unit should be used.

For deployed units; use the business unit identifier of the unit, which is the designated Military Air Operator (MAO) for that aircraft type (e.g. an event raised for a C130J aircraft that is force-assigned to an operational task element would be raised under 37SQN, and not the operation designator).

Location

Select the 'lowest' level location that most appropriately indicates where the event occurred.

At Sea. For events that occurred at sea (e.g. aircraft operating from a ship at sea, or a ship's location at the time of the event). If the appropriate body of water cannot be found, or the at sea location is OPSEC restricted, select 'At Sea'.

Australia. For events that occurred in Australia, select the lowest level location (e.g. select 'Amberley RAAF Base YAMB QLD', rather than 'QLD' or 'Australia').

- Australia includes the states and territories of mainland Australia and Australian external territories (Norfolk Island, Christmas Island, etc.).
- The majority of Australian aerodromes can be searched for using the ICAO code.

In Flight. For events that occurred in transit between aerodromes (i.e. the event did not occur in the vicinity of the departure or destination aerodrome).

- If the event occurs during flight and the location is unknown (e.g. evidence of bird strike discovered after flight), select 'In Flight'.

Overseas. If the event occurred overseas, select the country and location if available.

- If no suitable location selection is available, select applicable country.
- If no suitable country selection is available, select 'Overseas'.
- Frequently used overseas aerodromes can be searched for using the ICAO code.

Add WHS Stream if required (checklist item 2)

The WHS aspects of an aviation safety event need to be considered and reported separately in accordance with the relevant Single Service WHS requirements. Any personnel injury including Minor Injury, Exposure, or Near Miss **must** be reported and investigated separately using a WHS Sentinel Report.

Note:
The use of the WHS stream functionality is the preferred method of reporting an event that includes aviation safety and WHS aspects.

To add a WHS stream, select 'Aviation' in the top right corner of the page and click on 'WHS' **(Figure 4)**.

Appoint a workplace supervisor (entered in the Workplace Supervisor field) to investigate/review the WHS component of the event.

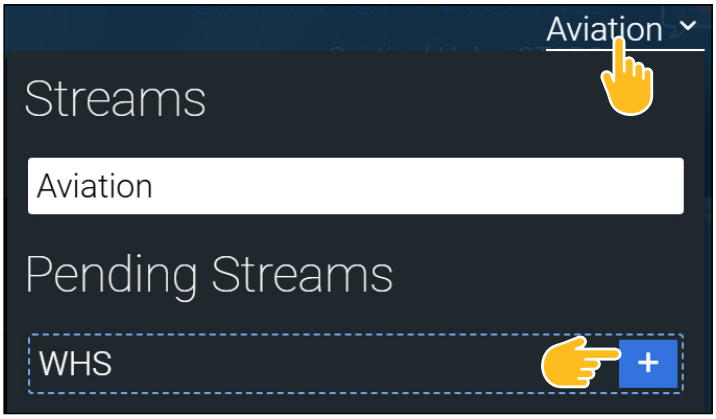

Figure 4: Adding a WHS Stream

Note:
A workplace supervisor must be entered for a dual stream event, otherwise you will not be able to progress the event (both Aviation and WHS streams) to the investigation phase.

If the Drafter has included a WHS stream when raising the report, you will be able to toggle between the Aviation and WHS streams when you select 'Aviation' or 'WHS' from the top right hand corner of the page **(Figure 4)**.

Guidance

In the case where the Drafter has raised a separate WHS report, the WHS report **must** be linked to the Aviation Event via the Related Items tile **Figure 5**.

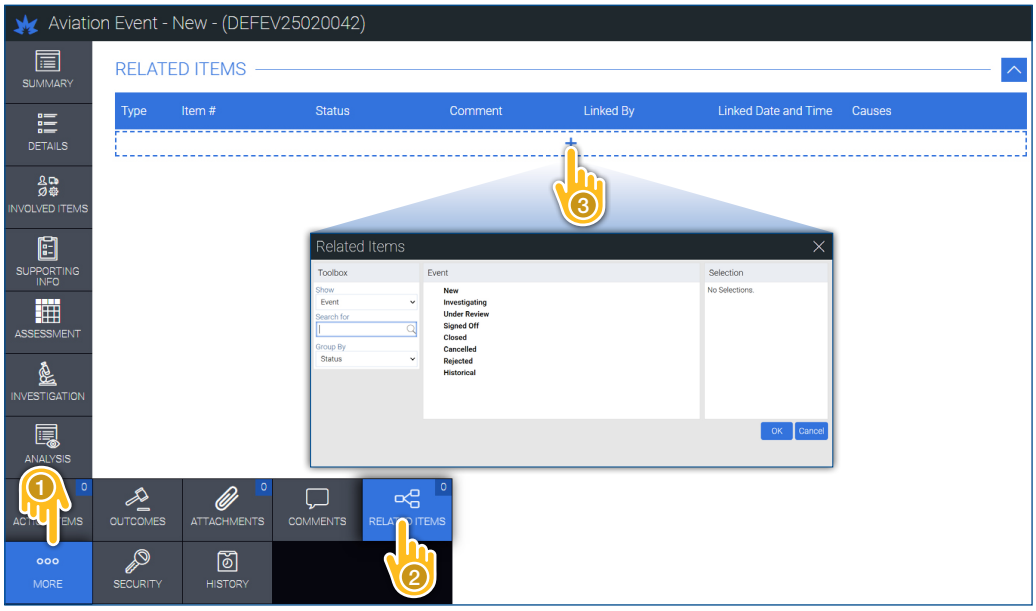

Figure 5: Relating an Item

Confirm EQUIPMENT (checklist item 3)

Ensure all involved equipment has been added **(Figure 6)**. If multiple aircraft are involved, ensure all involved aircraft types have been added.

Note:
If there is no equipment involved (e.g. runway incursion by a person), ensure the following has been selected: **'1. Aircraft Type N/A — Not Applicable; N/A'**

Individually select each of the added equipment and ensure:

- 'Damage Severity' selection is correct
- 'Supporting Information' has been added where required and is correct.

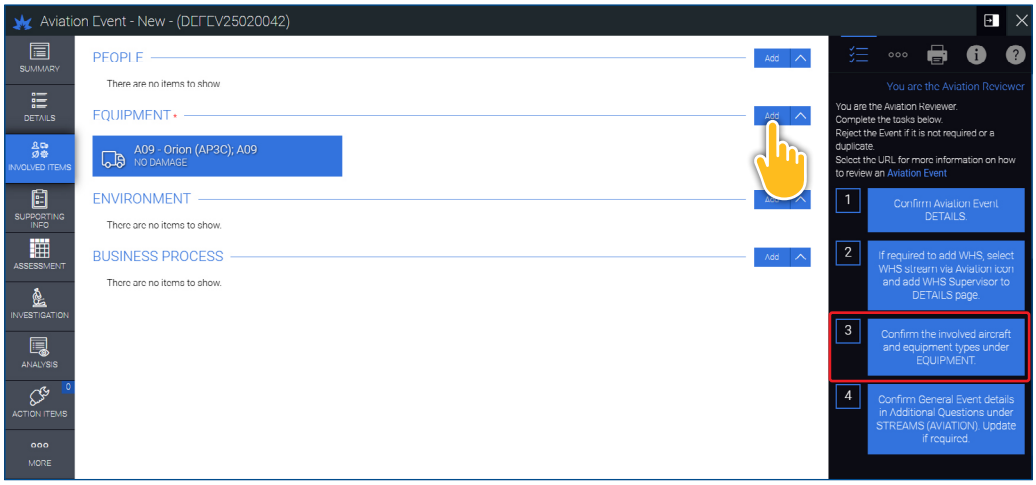

Figure 6: Involved Items page (Aviation Event)

Select 'Finalise' once the 'Supporting Information' has been verified complete and correct, refer **Figure 7**.

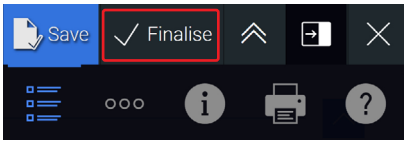

Figure 7: Finalise a page

Guidance

Aircraft

Select from the '1. Aircraft Type' list to access a list of aircraft types.

- If a civilian aircraft or civilian UAS was involved, select the 'Civil Aircraft' or 'Civil UAS; Civil RPAS' aircraft type.
- If the aircraft type is unknown, select '2. Unknown Aircraft; Unknown.'

Explosive Ordnance (EO)

If the event involved EO, refer to EO/ASR report selection guidance to determine the following:

- whether the event involving EO should be reported via an aviation stream or EO stream
- how to use an aviation stream (Aviation Event) to satisfy EO Incident reporting requirements.

Confirm GENERAL EVENT DETAILS (checklist item 4)

Note:
Checklist item 4 and 5 can be completed together (both are confirmed via the 'Aviation Event Additional Questions' tile).

Select the 'Aviation Event Additional Questions' tile **(Figure 8)** and ensure all 'General Event Details' selections are correct and any additional questions are complete and correct.

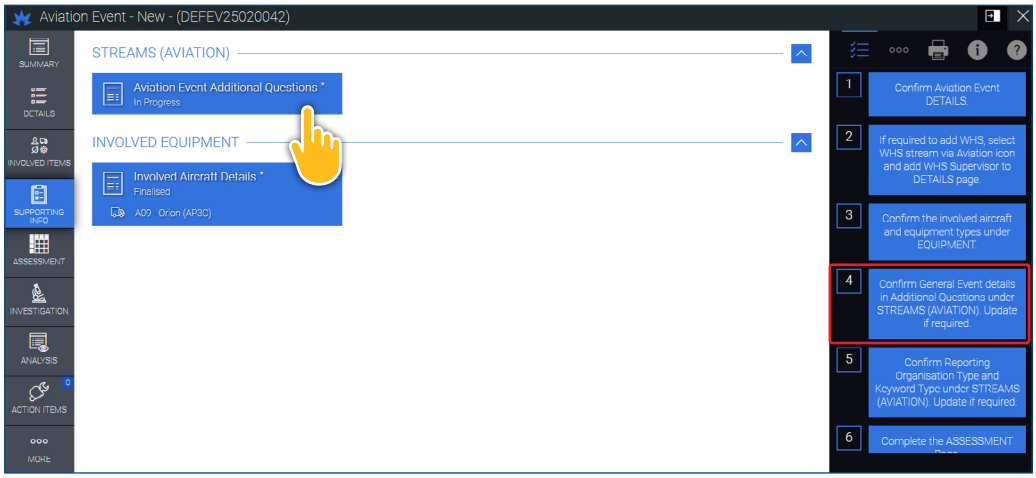

Figure 8: Supporting Info page (Aviation Event)

Select 'Finalise' once the 'Aviation Event Additional Questions' has been verified complete and correct, refer **Figure 9**.

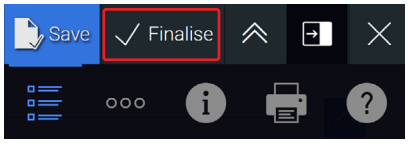

Figure 9: Finalise a page

Guidance

Contractor Organisation

If the event involved a contractor organisation, ensure the correct contractor organisation is selected. If the organisation is not listed use the 'Other Contractor Organisation' option and specify in the resulting text field.

Military Exercise

If the event occurred during a military exercise, ensure the correct exercise is selected. If the military exercise is not listed use the 'Other Military Exercise' option and specify in the resulting text field.

Outside Australia

Indicate if the event occurred outside Australia or its territories. 'Inside' Australia includes the states and territories of Australia and Australia's external territories[4].

Domestic or Overseas Operation

If the event occurred during a domestic or overseas Operation, specify the operation in the text field, taking into account any OPSEC restrictions.

Embarked or Ship-based Activity

If the event occurred while embarked or during a ship-based activity, ensure the correct involved ship is selected. If the ship is not listed use the 'Other Ship' option and specify in the resulting text field.

Confirm Reporting Organisation Type and Keyword Type (checklist item 5)

Select the 'Aviation Event Additional Questions' tile **(Figure 10)** and ensure all 'Reporting Organisation Type' and 'Keyword Type' selections are correct and any additional questions are complete and correct.

Note:
Checklist item 4 and 5 can be completed together (both are confirmed via the 'Aviation Event Additional Questions' tile).

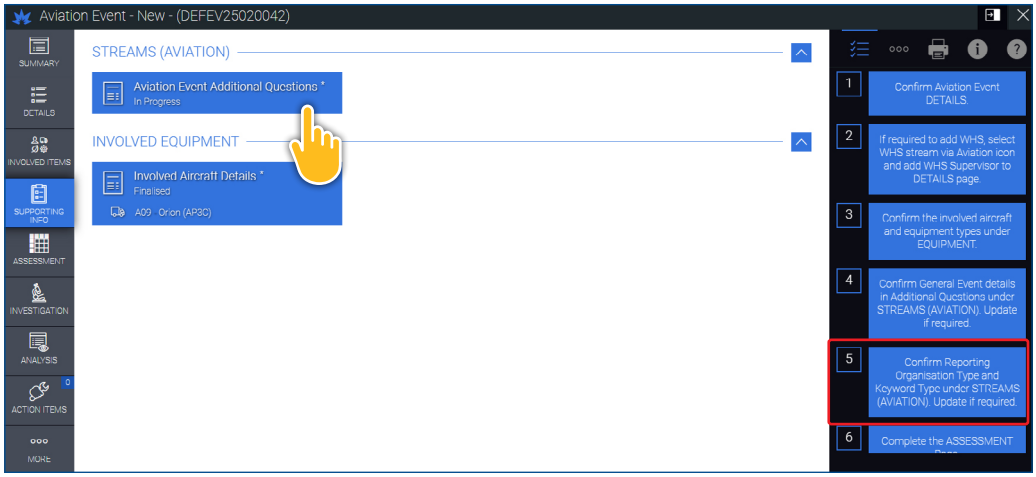

Figure 10: Supporting info page (Aviation Event)

4 Australia's external territories include Norfolk Island, Christmas Island, Cocos (Keeling) Islands, Coral Sea Islands, Australian Antarctic Territory, Ashmore and Cartier Islands, Heard Island and the McDonald Islands.

Select ‘Finalise’ once the ‘Aviation Event Additional Questions’ have been verified as complete and correct, refer **Figure 11**.

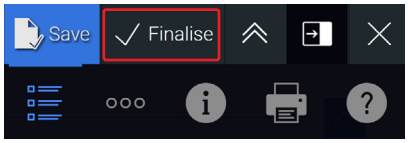

Figure 11: Finalise a page

Guidance

Reporting Organisation Type

The organisations available to select reflect the range of aviation domains regulated by DASR. Ensure that the reporting organistion type selected best describes the type of organisation raising the report. In most cases, the organsiation raising the report is the organisation the reporter belongs to. For example, a pilot may select the ‘Flight Operations’ organisation type despite raising a report on a runway lighting fault (aerodrome issue). The aerodorme operator will then raise their own report as the ‘Aerodromes’ organsiation type to assess and manage the runway lighting fault.

Note:
Selection of certain Reporting Organisation types will cause additional related questions to appear.

The following provides more detail about each reporting organisation type.

OT01 Flight Operations

– Includes MAO conducting crewed and un-crewed aircraft operations, air battle management and air cargo delivery.

OT02 Aircraft Maintenance

– Includes DASR 145 Maintenance organisations.

OT03 Continuing Airworthiness Management

– Includes DASR M Continuing Airworthiness Management organisations.

OT04 Aircraft Design, Production and Certification

– Includes DASR 21 Design organisations.

OT05 Air Navigation Services

– Includes DASR Air Navigation Service Providers (ANSP) organisations (Air Traffic Services, Communication, Navigation, Surveillance Services and system maintenance, Aeronautical Information Service, Maritime Control Services, and Meteorological Services).

OT06 Aerodromes

– Includes DASR 139 Aerodrome Operators and the provision of aerodrome ground services.

OT07 Air Cargo Delivery

– Includes DASR Air Cargo Delivery (ACD) Service Providers.

OT08 Air Battle Management

– Includes DASR ABM Operators.

Organisation Type Additional Questions

Selection of the following Reporting Organisation types will cause additional questions to appear.

OT01 Flight Operations Additional Questions

Q1. In which phase of flight did the event occur?

- 'Military Flying Profiles/Manoeuvring' should be selected when the phase of flight is not reflected in the other options.

Q2. Did the event affect completion of planned flight or mission objectives?

Q3. Did the event occur during 'student under training' activity?

- Student under training is defined as aircrew Initial Employment Training.

Q4. Did the event occur during a flying display or flypast activity?

Q5. Did the event occur during a Flight Test activity?

- Flight test activity is defined as test activity being performed under the authority of a recognised Flight Test Organisation.
- Flight test activity does not include maintenance check flights.

Q6. Were Night Vision Imaging Systems (NVIS) in use during the event?

- Select 'Yes' when NVIS were in use during the event (the use of NVIS need not have contributed to the event).

Q7. Was a Command Clearance in effect during the event?

- Select 'Yes' when a Command Clearance was in effect during the event and is relevant to the event.

Q8. Are Defence Long Range Operations (DLRO) relevant to the event (DLRO significant event)?

- A DLRO significant event is where during Defence Long Range Operations, there is any system malfunction, degradation or other in-flight event, which requires the flight crew to make a decision to turn back, divert or continue at an increased level of alertness.

Q9. Did the event involve Non-Defence Registered Aircraft?

- Select 'Yes' when the aircraft involved in the event is not recorded on the Defence Register and is operated by or on behalf of Defence.

Q10. Is the Latitude/Longitude of the event location relevant?

- Select 'Yes' when Latitude and Longitude information is of value to the report (e.g. aids the investigation phase), or supports useful retrospective data analysis.
- Latitude and Longitude data is required in decimal degrees format (DDD.DDDD).

Q11. Was a person(s) injured or exposed to a hazardous substance/material as a direct consequence of the Aviation Event?

- If 'Yes' is selected, enter the number of personnel for each category in the table shown at **Figure 12** (this information is used for data capture and trending purposes only).

Note:
If an injury was sustained as a direct consequence of an aviation event, ensure the Sentinel WHS stream has also been activated.

FILL IN THE BELOW TABLE WITH THE NUMBER OF PEOPLE THAT EXPERIENCED EACH ...

	Category	Quantity *
1	Minor - A person(s) was injured or exposed to a hazardous substance/material, but does not meet the serious definition.	0
2	Serious - The highest level of injury sustained was a serious injury or illness. A serious injury or illness is defined as per the WHS Act.	0
3	Fatal	0

NOTE: If an injury was sustained as a direct consequence of an aviation event, ensure the Sentinel WHS Event stream has been activated.

Figure 12: Personnel Injury Table

OT02 Aircraft Maintenance Additional Questions

Note:
The OT02 Aircraft Maintenance Additional Questions will not appear until a Keyword Type is also selected from the 'MO Maintenance Operations' category.

Q1. What category of maintenance task was being performed?

- See DASR Glossary for definition of terms.

Q2. When was the maintenance issue identified?

Q3. What was the effect of the event on maintenance operations?

Q4. Did the event involve a Flight Safety Sensitive/Critical maintenance task?

- See DASR M and DASR 145 for definition of terms.

Q5. Did the event involve aircrew conducting maintenance?

- Excludes accompanied maintenance team members.

Q6. Did the event involve the failure of an error capture method (i.e. design and testing barrier, locking method, testing method or independent inspection)?

- See DASR M and DASR 145 for definition of terms.

Q7. Was activity being conducted on Aircraft Stores/Weapons/Ordnance?

OT05 Air Navigation Services Additional Questions

Q1. Select the type of Air Navigation Service

- Select 'Communication, Navigation & Surveillance Services' option for maintenance events on Air Navigation Service systems or related equipment.

Note:
When 'Air Traffic Services' or 'Maritime Control Services' are selected, the following additional questions will appear:

Q2. Is the event attributable to an External Organisation?

- Select 'Yes' when the event is attributable to an External Organisation. External Organisation is defined as an organisation external to the reporting organisation.

Q3. Are controller position/duty hours information applicable to this event?

- Selecting 'Yes' for this question allows information about controller position and duty hours to be recorded (personal information that identifies individuals must not be recorded). Local procedure should dictate when the controller position/duty hours is required to be entered.

OT07 Air Cargo Delivery Additional Questions

Q1. What was the type of load?

- The load options are defined on the right-hand side of the screen.
- 'N/A' may be selected when the standard options are not applicable (e.g. when reporting an airside breach event).

Keyword Type

Keywords are used to succinctly describe what happened in the aviation safety event. It is essential that events are coded consistently at data capture so that data analysis is accurate and consistent across Defence Aviation.

Keywords are selected from the Event Keyword Taxonomy (available as a pdf at Attachment 1 of this Guide and as an interactive database on the DFSB website).

Event Keyword Taxonomy

The Event Keyword Taxonomy standardises the codification of events and represents the range of Defence Aviation safety events that could occur. The taxonomy is derived from the event taxonomy used by the European Union Aviation Safety Agency (EASA) safety reporting system and is broadly aligned with the event taxonomy of the Australian Transport Safety Bureau (ATSB). Military specific keywords have been included where required to provide for Defence-specific aviation activity. The Event Keyword Taxonomy helps organisations systematically codify events based on their nature.

The Event Keyword Taxonomy has two levels of indenture, categorised by functional area, then by sub-function at level one, then by event descriptor (what happened) at level two. Each event descriptor is assigned a unique alpha-numeric code that depicts its

hierarchical relationship. For example, the alpha-numeric code breakdown assigned to keyword 'AD.16.08 Aerodrome Lighting' is shown at **Figure 13.**

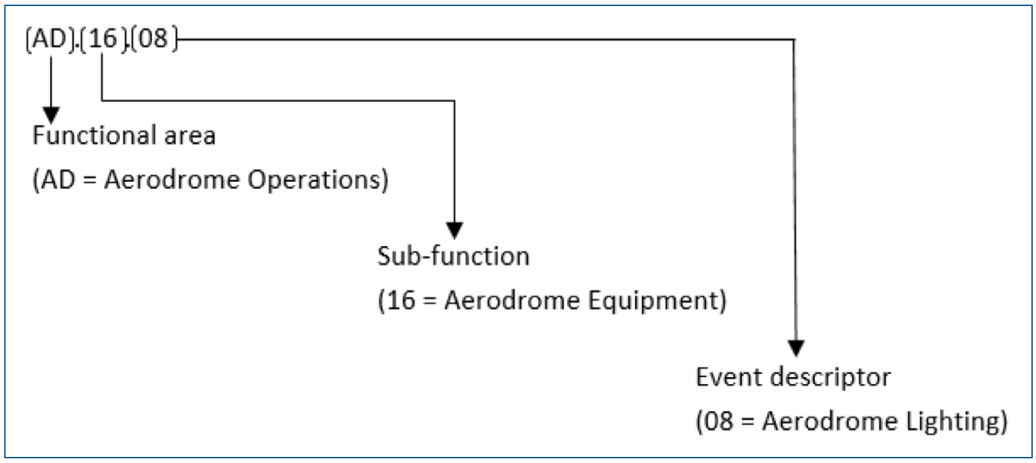

Figure 13: Keyword Alpha-Numeric Breakdown

Functional Area Descriptions

The functional area categories are described as follows:

AC: Air Cargo Delivery Services

- Events related to the safe provision of air cargo delivery services. Includes preparation, loading (placement and restraint) and unloading of air cargo (e.g. personnel, freight, dangerous goods), and technical failure or malfunction of related equipment.

AD: Aerodrome Operations

- Events related to the safe operation of an aerodrome. Includes aerodrome design, hazard control, vehicle or equipment operations, emergency or fire services, maintenance or construction, and technical failure or malfunction of related equipment.

AO: Aircraft Operations

- Events related to the safe operation of an aircraft.

AS: Airspace Services

- Events related to the safe provision of airspace services. Includes airspace management, information flow, coordination, equipment interaction, aeronautical information, meteorological services, and technical failure or malfunction of related equipment.

GS: Ground Services

- Events related to the safe provision of ground services. Includes marshalling, parking, fuelling and technical failure or malfunction of related equipment.

MO: Maintenance Operations

- Events related to the safe operation of maintenance. Principal use is aircraft

maintenance, however may also be used for events related to the safe operation of maintenance on any aviation support system.

- TF: Aircraft Technical Failure/Malfunction
- Events related to the technical failure or malfunction of aircraft system(s).

OE: Any Other Event

- Any other event not listed elsewhere within the Event Keyword Taxonomy.

Note:
The 'OE Any Other Event' keyword must only be used when no other suitable selection exists. The 'OE Any Other Event' keyword has no subordinate levels of indenture.

Primary and Secondary Keywords

Users should select more than one keyword when an event involves multiple distinct aspects that are relevant to safety analysis. For example, if an event includes aspects relating to flight operations and airspace services, keywords from both categories should be selected to provide a complete representation of the event (see **Example 3 below**). Selecting multiple categories ensures a more accurate and comprehensive dataset, supporting data sharing and analysis efforts.

The primary keyword is used to code the **most significant aspect** of what happened in the event. A primary keyword must be coded and only one primary keyword can be coded.

Secondary keywords are used to codify other aspects of what happened in the event. Multiple secondary keywords can be selected.

Example 1: An aircraft hydraulic system failure in flight has resulted in a wheels up landing.

- In this event, the most significant aspect of the event is the wheels up landing and the other aspect of the event is the hydraulic system failure.
- A0.2.60 Wheels up landing is the primary keyword and TF.06.52 Hydraulic System is the secondary keyword.

Example 2: Fuel exhaustion caused by data entry error.

- In this event, the most significant aspect of the event is the fuel exhaustion and the other aspect of the event is the data entry error.
- **AO.26.04 Fuel exhaustion** is the primary keyword and **AO.28.04 Fuel planning** and **AO.20.02 Data entry error** are the secondary keywords.

Example 3: Loss of separation resulting from a breakdown in co-ordination and HO/TO procedure was not followed.

- In this event, the primary keyword is AO.10.12 Loss of separation (Aircraft Operations) and the secondary keywords are AS.06.06 Handover/takeover procedure (Airspace Services) and AS.06.02 Breakdown of coordination (Airspace Services).

Keyword Additional Questions

Note that some keywords contain additional questions in the Supporting Information Form (SIF). Changing the keyword will discard the answers provided for the additional questions attached to the previous keyword. Ensure any keyword additional questions in the SIF are complete and correct.

Ensure to finalise the SIF in order to progress the aviation event.

Keyword Quality Considerations

The following points ensure a consistent approach to correct keyword selection:

- It is essential that events are coded correctly so that retrospective keyword data analysis is accurate. Poor coding from incorrect keyword selection compromises data quality and erodes confidence in the data analysis.
- Primary keywords describe the most significant aspect of the event.
- Secondary keywords are to be used to code other aspects of what happened in the event.
- Each keyword has a description that is accessed by clicking on the information symbol (ⓘ) located to the left of each keyword in the Keyword selection pop-up screen. Use the description to assist in determining correct keyword selection.

Note:
It is important to review, and if required, add or update the keyword(s) and additional questions once more information is known about the event (e.g. during or post investigation). This ensures that the report contains a comprehensive picture of what happened in the event.

Complete Assessment Page (checklist item 6)

Complete the 'Assessment' page **(Figure 14)**.

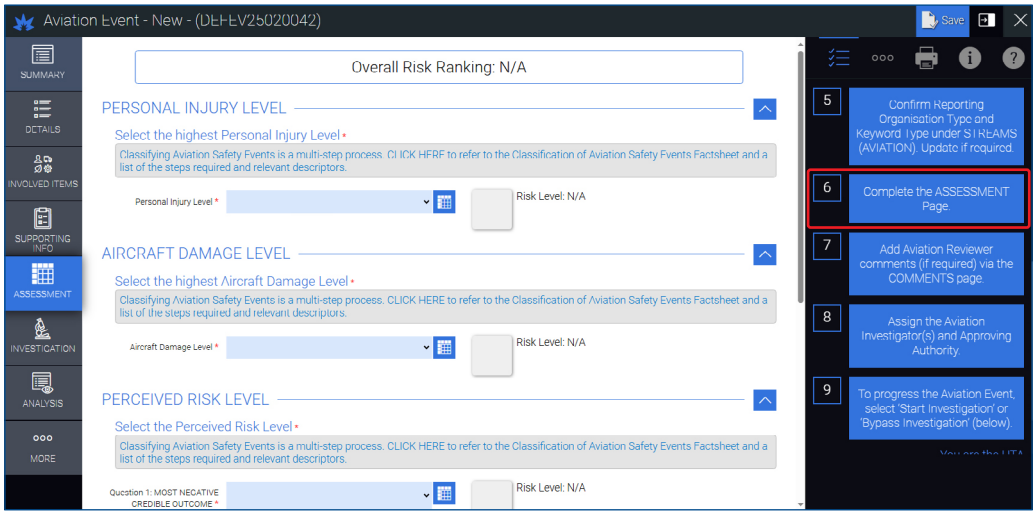

Figure 14: Assessment page (Aviation Event)

Select 'Save' once the 'Assessment' page has been completed, refer **Figure 15**.

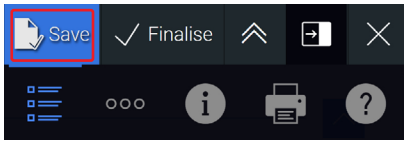

Figure 15: Save a page

Guidance

Event Classification

The Event Classification classifies the severity of an aviation safety event, and is determined by assessment of the Personnel Injury Level (PIL), Aircraft Damage Level (ADL) and the Perceived Risk Level (PRL). PIL, ADL and PRL are individually assessed from the context of the selected Reporting Organisation Type, and assigned an alphabetical designation from Class A (most severe) to Class D (least severe). The Classification factsheets are available at Attachments 2 to 5 of this guide and on the DFSB website.

Note:
The Classification of Aviation Event factsheets must be used to classify an event.

The Event Classification is automatically calculated based on the highest assessment made for PIL, ADL and PRL **(Figure 16)**

The Event Classification can be manually changed by turning off the 'Auto Calculate' feature (as seen in **Figure 16**).

Note:
This feature was developed for Specific or Open category UAS ADL classification ONLY (see 'Classification of Aviation Safety Events – UAS Operations', available at Attachments 3 of this guide and on the DFSB website). The automatic calculation of the Event Classification must not be changed for any other event without prior consultation with DFSB (email: asr.servicedesk@defence.gov.au).

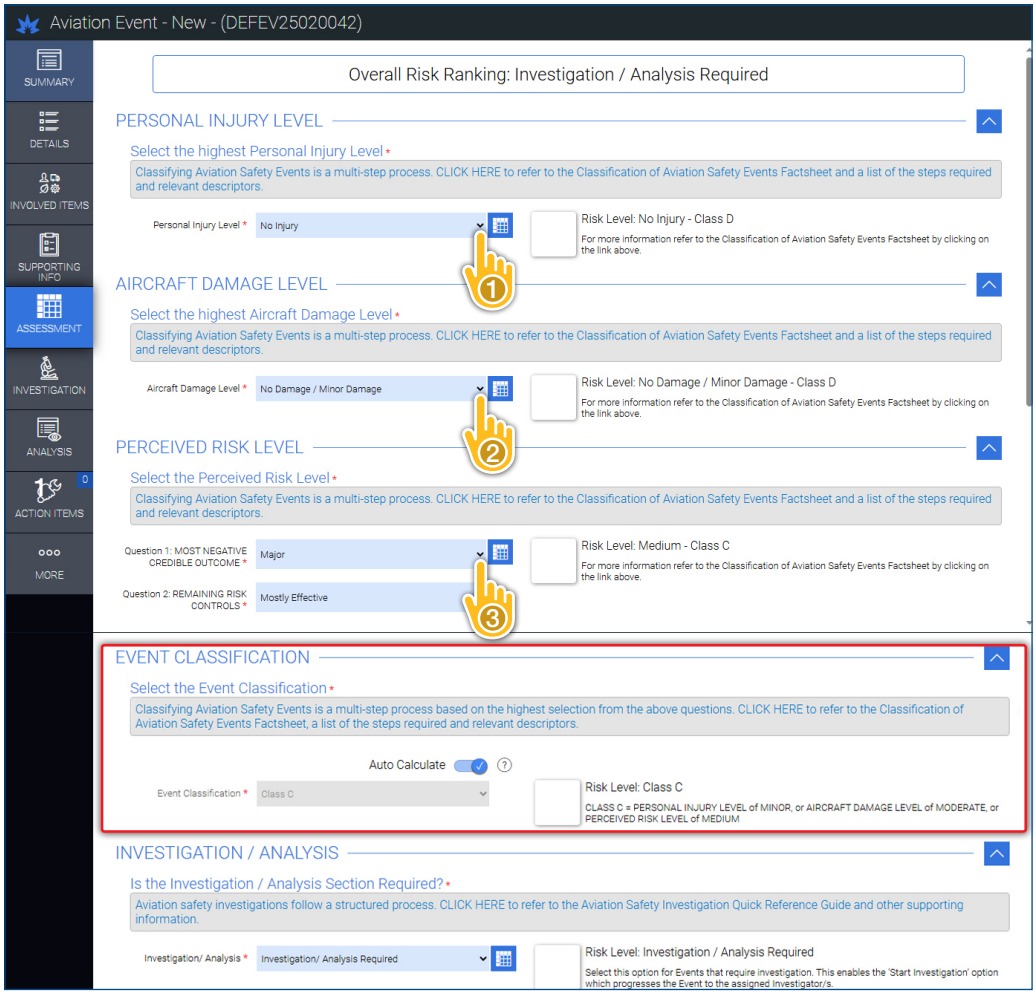

Figure 16: Auto Calculate Event Classification

Investigation / Analysis

The decision to investigate and the depth of an investigation should take a risk-based approach, where events with a high-risk potential should be investigated, and investigated in greater depth, than those with a lower risk potential. The Event Classification must be used to inform the decision to investigate (see **Table 1**).

Note:
If the investigation decision does not align with the guidance given in **Table 1**, then a comment must be added to the 'Comments' tile that explains why this decision was taken, see **Add Aviation Reviewer Comments** (**checklist item 7**).

Table 1: Classification vs. Investigation

Event Classification	Default Investigation Decision
Class A	**Investigate** (see Note 1)
Class B	**Investigate** (see Note 2)
Class C	**Investigate** (Command led)
Class D (PRL: Low)	**Data capture only** (see Note 3)
Class D (PRL: Very Low)	**Data capture only**

Note 1: All Class A events are independently investigated by DFSB.

Note 2: The default investigation authority for all Class B events is DFSB. DFSB may choose to defer the investigation to the responsible Command. In this case, DFSB will determine the complexity of the investigation and the level of DFSB involvement during the SMS investigation process.

Note 3: A decision may be taken to investigate Class D events (with a PRL of Low) upon consideration of the following factors:

- Safety value can be gained from investigation (which includes opportunity for safety actions or recommendations to be made).
- Recent similar events have not been previously investigated (e.g. emerging trend).
- Investigation contributes to a targeted safety program.
- There is an investigation training or experience benefit (e.g. for a newly appointed ASO).

While the investigation of every safety report may provide an opportunity to learn, in reality the situation is more complicated — investigations require resources to collect and analyse information as well as to document, track and implement their outcomes. This is particularly challenging for organisations with mature reporting cultures generating a large number of reports.

Remember…

- Not all safety events require investigation.
- Every event is reviewed by a higher safety authority, regardless of whether an investigation has occurred.
- A cumulative trend of similar Class C or Class D events should be raised as an Aviation Issue report and investigated via that method.

Bypass Investigation

Events that are not investigated are recorded as 'Data capture only', allowing for the investigation workflow to be 'Bypassed'.

Workflow. Figure 17 illustrates the workflow for an event that has been recorded as 'Data capture only'/'Bypass Investigation'. Following selection of 'Data capture only'/'Bypass Investigation', the Aviation Event progresses to the Approving Authority (for S2 review) and the Aviation Event is considered to have passed 'First Release'.

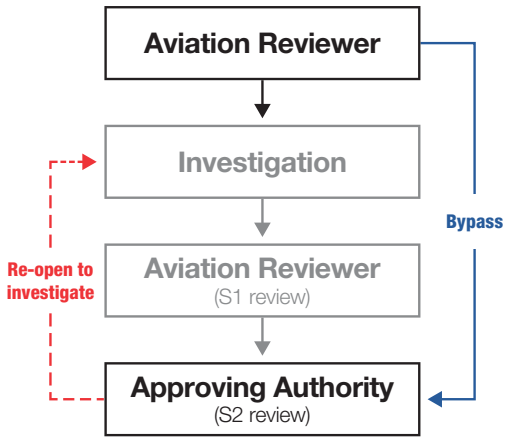

Figure 17: Bypass Investigation Workflow

The Approving Authority then has the choice to either:

- sign off the Aviation Event or
- initiate an investigation (whereby the event will be redirected to the nominated investigator).

The investigation decision relies on the judgement of the Aviation Reviewer. If in doubt, discuss with your command chain and senior aviation safety representative, or contact DFSB for advice asr.servicedesk@defence.gov.au.

Monitoring of Bypassed Events

It is necessary to periodically assess bypassed (data capture only) events to identify emerging hazards that may warrant further investigation. The Aviation Issue report should be used to link associated bypassed events and record and investigate the emerging hazard.

Note:
The requirement into periodically assess bypassed (data capture only) events must be integrated into an organisation's hazard review processes.

Add Aviation Reviewer Comments (checklist item 7)

If required, add a comment **(Figure 18)**. Ensure the correct comment category is selected. Once complete, select the tick icon (☑) to save the comment.

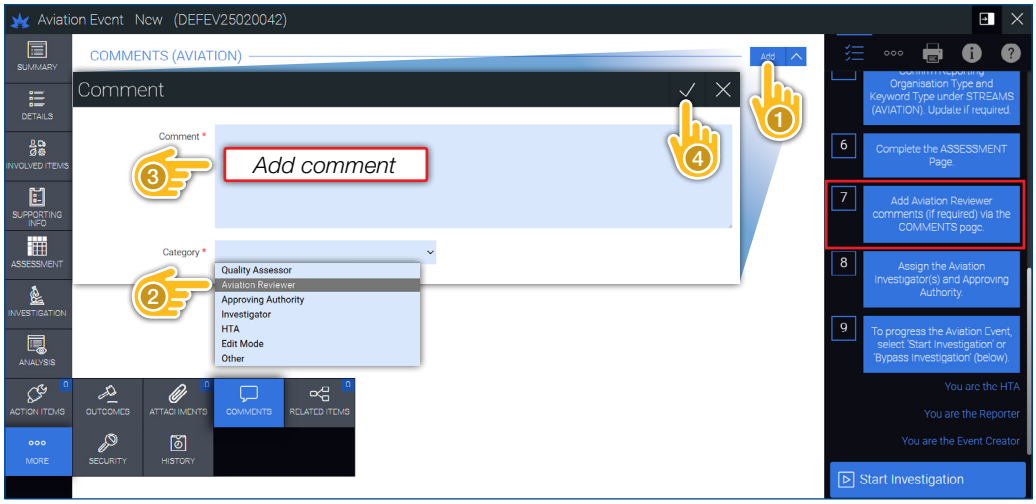

Figure 18: Add Comments page (Aviation Reviewer – Event)

Guidance

The addition of Aviation Reviewer comments is highly encouraged. It affords the opportunity to provide:

- comment about the event
- context to the event classification
- guidance to the investigator as to the level of complexity required
- comment on the quality of the report
- any other information deemed important to record in relation to the event, not previously captured elsewhere in the report.

Note:
A comment must be made that explains the reason why an investigation decision does not align with the guidance provided at **Table 1**.

The 'Comment Category' must align with the intent of the comment or the context to which the comment is being made. For example, a comment on the quality of the report

must have the comment category of ‘Quality Assessor’ selected; HTA comments must have the comment category of ‘HTA’ selected; etc.

Assign Investigator(s) and Approving Authority (checklist item 8)

Select the ‘Assign Investigator(s) and Approving Authority’ tile to access the Investigations page **(Figure 19)**. Select appropriate people to perform the ‘Investigator’ and ‘Approving Authority’ roles. Additional investigators can be appointed via the ‘Investigation Team Members’ field, however this is not mandatory.

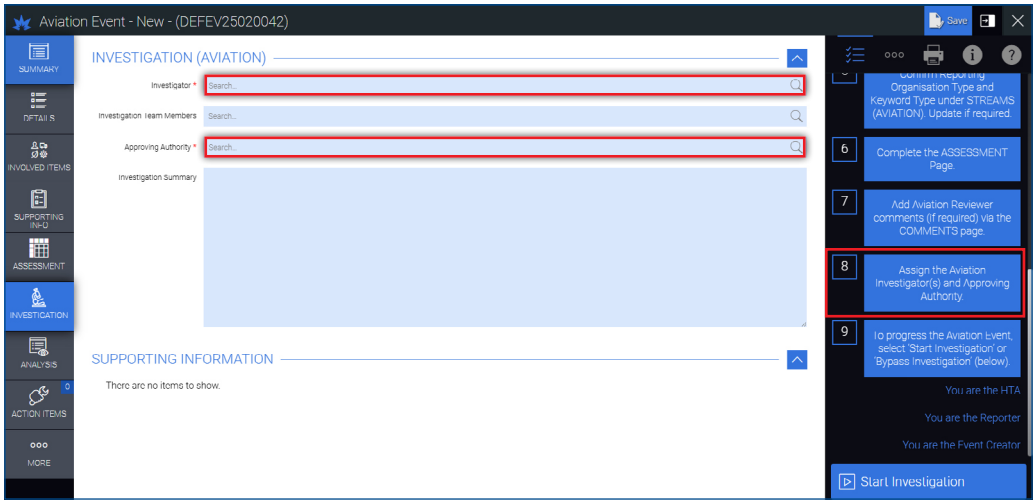

Figure 19: Investigation page (Aviation Event)

Select ‘Save’ once the ‘Investigation’ page has been completed, refer **Figure 20**.

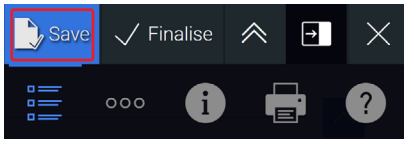

Figure 20: Save a page

A person that has previously received DFSB ASO training performs the Investigator role. If an ASO trained person is unavailable, an untrained person may perform the Investigator role providing they are pre-briefed on (or mentored through) the investigation process by an ASO-trained person.
The CO (or delegate) performs the Approving Authority role.

Guidance

Both an Investigator and an Approving Authority must be selected and saved before the report workflow can be progressed.

An Investigator must be selected even if the event is not to be investigated. This allows the Approving Authority to open an investigation if deemed necessary during their review process.

If a WHS stream has been activated, an Investigator and Approving Authority in the WHS Investigation page must be selected. Failure to do so will prevent progression of the report workflow. The WHS stream is accessed by selection from the top right hand corner of the screen **(Figure 4).**

Progress the Event (checklist item 9)

This is the final checklist item for the Aviation Reviewer. Depending on the investigate decision made at checklist step 6, the Aviation Reviewer is presented with the selection of either the 'Bypass Investigation' button or 'Start Investigation' button **(Figure 21)**.

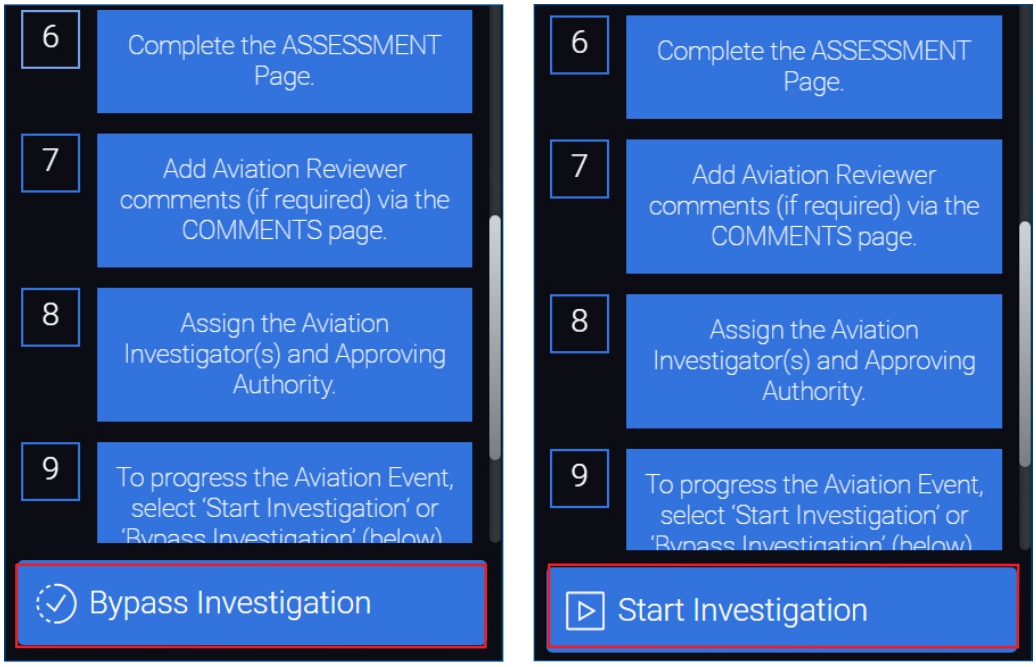

Figure 21: Bypass and Investigation buttons

Upon making the selection, the 'Send Mercury Message' pop-up will appear **(Figure 22)**.

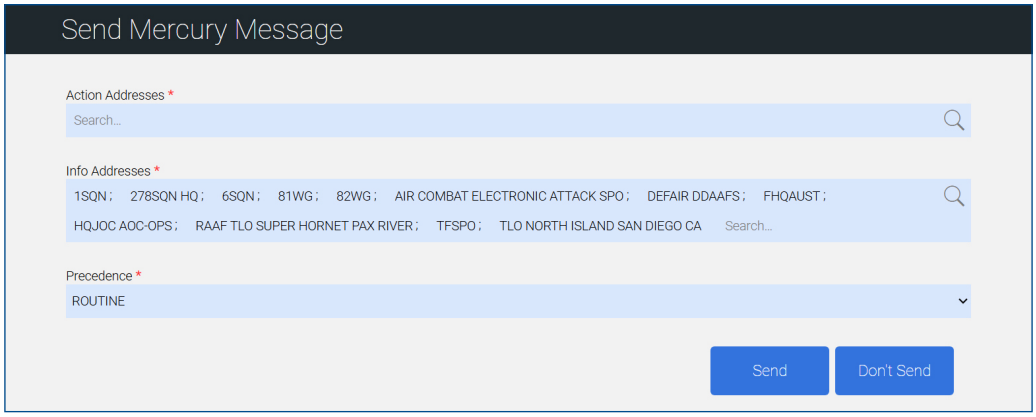

Figure 22: Mercury Message pop-up

Aviation Reviewers should consult with their senior aviation safety representative on the requirement to send the Mercury Message.

- If a message is not required to be sent, select 'Don't Send'.
- If a message is required to be sent, populate the required fields and then select 'Send'.

Note:
Mercury Message addressees can be added or removed as needed. If an update to the Mercury Message addressee list options is required, the senior aviation safety representative should send a request for amendment to the ASR Service Desk (asr.servicedesk@defence.gov.au).

Once this step is completed, the report has passed 'First Release' and will now be viewable by all users of the ASR in Sentinel application.

Reject a Report

To reject a report, select the 'More' (ooo) button on the top right hand corner of the page, then select 'Reject' and follow the prompts **(Figure 23).**

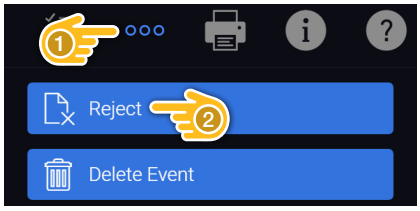

Figure 23: Reject a report

Guidance

There are three reasons why a report is rejected:

- The report was raised in error.
- The report is duplicate with another report (two reports for the same event).
- The event posed no actual or potential hazard to aviation safety.

Note:
The 'Reject' option is not available in the 'More' menu after 'First Release' has occurred (i.e. the report has been sent to the Investigator (for investigation), or sent to the Approving Authority (investigation has been bypassed).

Aviation Issue – Aviation Reviewer Checklist

The Reviewer Checklist highlighted on the right hand side of **Figure 24** lists the tasks to be completed to progress the report. Selection of a task from the checklist will direct the Reviewer automatically to the corresponding area of the Sentinel event. These areas

of the checklist can also be accessed via the Sentinel tiles shown on the left hand side of **Figure 24**.

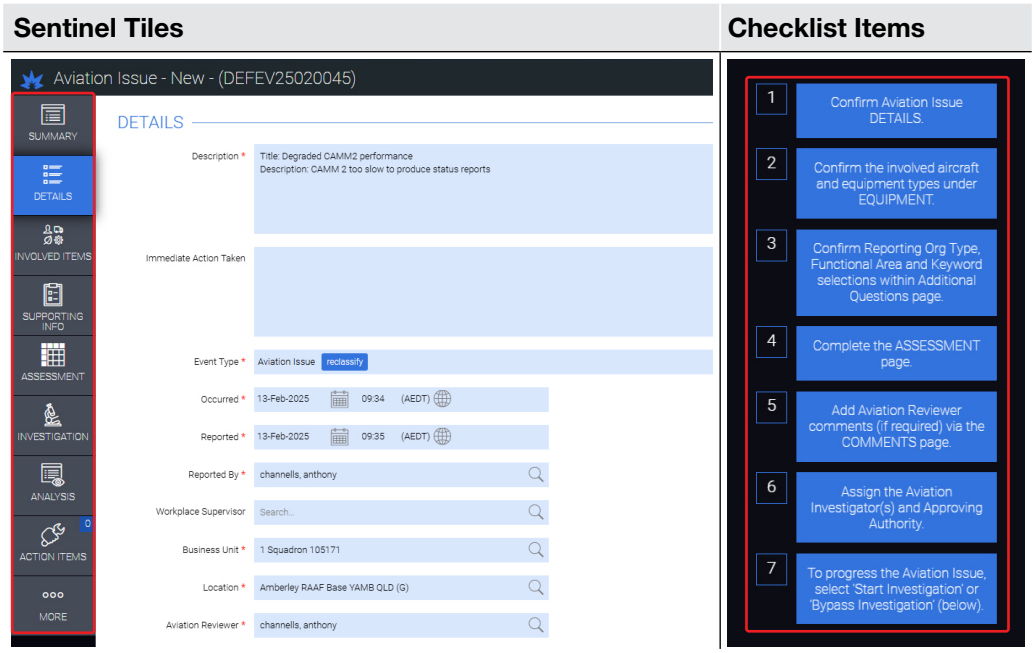

Figure 24: Review Checklist and Sentinel Tiles (Aviation Issue)

Note:
All mandatory tasks in the Aviation Reviewer checklist must be completed before the report can progress to the next stage of the report lifecycle.
Tasks can be completed in any order.

Confirm DETAILS (checklist item 1)

The Details page **(Figure 25)** contains factual information about the issue. This information should be as accurate as possible and must be updated if further information becomes available. The Aviation Reviewer should seek additional information if the issue details are inaccurate or lack clarity. The Aviation Reviewer is to ensure that the issue details are complete and up to date prior to classifying the issue.

Note:
If the event does not qualify as an Aviation Issue, the report was raised in error, or is a duplicate of another report (e.g. two reports for the same issue), the Aviation Reviewer must reject the report (see **Figure 23**).

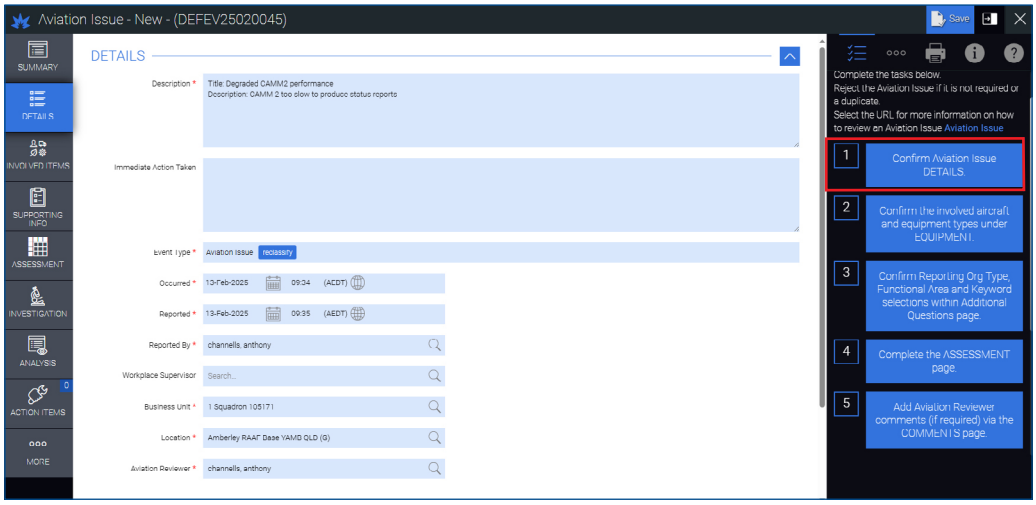

Figure 25: Details page (Aviation Issue)

The Aviation Reviewer may need to seek additional information in order to effectively complete the checklist items. This enables the Aviation Reviewer to confirm the issue details and its classification. The Aviation Reviewer is then able to make an informed decision on whether or not a safety investigation is required.

Guidance

An Aviation Issue report can be raised for a variety of reasons and provides a flexible mechanism to support the reporting, tracking and investigation (if required) of safety issues. The Aviation Issue report has the same workflow as the Aviation Event, however there are less data entry requirements since the issue is not recording a single event.

A WHS stream cannot be created from within the Aviation Issue report, thus the 'Workplace Supervisor'[5] field must be left blank.

Title

Must be concise and accurate.

Description

Describes the **what** and the **why**.

What

Briefly describe what the aviation safety issue is (e.g. 'The portable electronic device that hosts the aircraft maintenance manuals is inhibiting the safe conduct of aircraft maintenance').

5 A Workplace Supervisor is only applicable to a WHS event.

Why

Briefly state why it constitutes being raised as an aviation safety issue (e.g. 'Nine recent maintenance related Aviation Events have in some part been attributable to the maintenance manual portable electronic device malfunctioning (screen frozen) or shutting down un-commanded (overheating or poor battery life').

The description must **not** contain:

- speculation as to the root cause of the issue
- personal details of any involved person
- sensitive operational information
- emotive language
- unnecessary text regarding happenings that did not occur (e.g. 'The aircraft was not damaged')
- acronyms, unless they are commonly used terms, or spelled out initially (e.g. Environmental Control System (ECS)).

Immediate Action Taken

Description of any immediate action taken is clear, concise and accurate.

The description must **not** contain:

- information not relevant to the immediate actions taken
- personal details of any involved person.

Event Type

Ensure the correct Event Type is selected. Changing the Event Type after the report is released will result in the deletion of related information.

Occurred (date/time)

The occurred date is the date that the reporter first becomes aware that an aviation safety issue exists. Ensure date and time is accurate, and the correct time zone is selected (the default time zone is AEST, UTC +10).

Reported (date/time)

The reported date is the date the report is entered into Sentinel. Ensure date and time are accurate, and the correct time zone is selected (the default time zone is AEST, UTC +10).

Business Unit

Ensure correct business unit is selected.

- Check contractor & deployed units report their business unit correctly.
- If raising a report on behalf of another unit, the default business unit should be changed to that unit.

For Contractor Organisations

Consult with the Defence agency that has administrative control over contractor to determine which Sentinel business unit should be used.

Location

Ensure either of the first two options are not selected (World. Geographic). Location selection should reflect the location that best represents the issue (e.g. for an aviation safety issue that relates to unsafe aircraft operation from a particular aerodrome, select the applicable aerodrome ICAO code as the location).

At Sea

If the appropriate body of water cannot be found, or the at sea location is OPSEC restricted, select “At Sea”.

Australia

Select the lowest level location (e.g. Select ‘Amberley RAAF Base YAMB QLD, rather than ‘QLD’ or ‘Australia’).

- ‘In Australia’ includes the states and territories of mainland Australia and Australian external territories (Norfolk Island, Christmas Island, etc.).
- The majority of Australian aerodromes can be searched for using the ICAO code.

In Flight

Only to be used for issues that are only relevant during inflight transit between aerodromes (i.e. the issue is not relevant at any other time).

Overseas

If the issue relates to an overseas location, select the country and location if available.

- If no suitable location selection is available, select the applicable country.
- If no suitable country selection is available, select ‘Overseas’.
- Frequently used overseas aerodromes can be searched for using the ICAO code.

Confirm EQUIPMENT (checklist item 2)

Ensure all involved equipment has been added **(Figure 26)**.

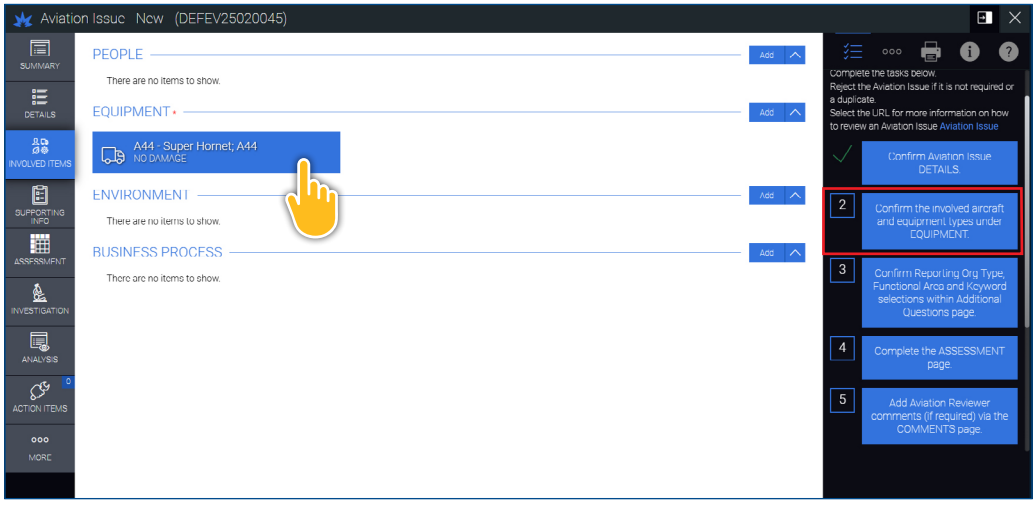

Figure 26: Involved Items page (Aviation Issue)

Guidance

Confirm equipment using the Aviation Event process (see **Confirm Equipment**).

Confirm Reporting Organisation Type, Functional Area & Keyword Type (checklist item 3)

Ensure correct selection of Reporting Organisation Type, Functional Area & Keyword(s) **(Figure 27)**.

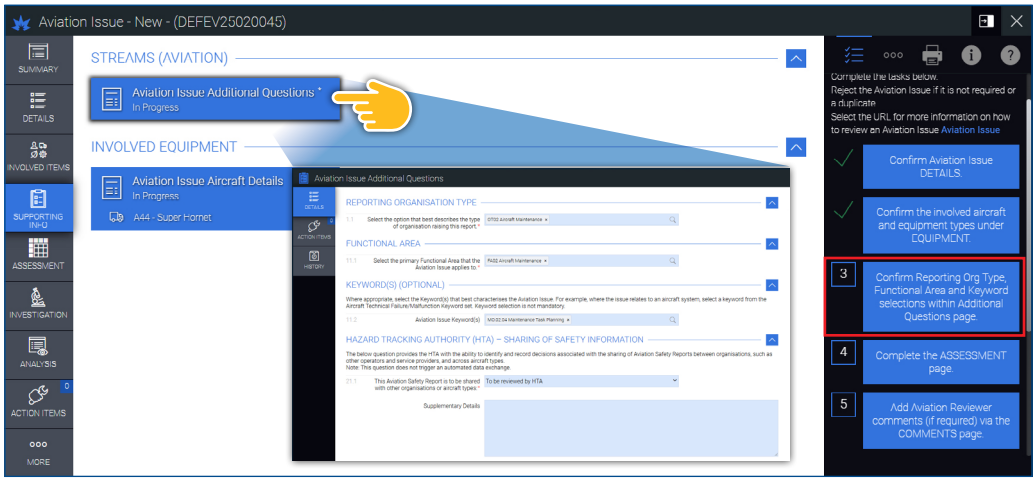

Figure 27: Supporting Info page (Aviation Issue)

Guidance

Reporting Organisation Type

Confirm Reporting Organisation Type using the Aviation Event process (see **Reporting Organisation Type**).

> **Note:**
> The Aviation Issue report does not contain additional questions associated with Reporting Organisation Type.

Functional Area

The Functional Area identifies the primary area that the issue applies to.

Example: The taxiway lighting system is not functioning correctly at a Defence aerodrome. Initial attempts to repair the lighting system have been unsuccessful.

- **FA06 Aerodrome Operations** is selected as the Functional Area.

Keyword(s)

Aviation Issue keyword selection is optional and should only be used where there is value in codifying coding that best characterises the issue. Multiple Aviation Issue keywords can be selected.

Example: The taxiway lighting system is not functioning correctly at a Defence aerodrome. Initial attempts to repair the lighting system have been unsuccessful.

- The issue is best characterised as a taxiway lighting system problem.
- The taxiway lighting system is part of the aerodrome lighting system.
- AD.16.08 Aerodrome Lighting is selected as the keyword.

> **Note:**
> The Aviation Issue report does not contain additional questions associated with Keyword Type.

Complete Assessment Page (checklist item 4)

Complete the ‘Assessment’ page **(Figure 28)**.

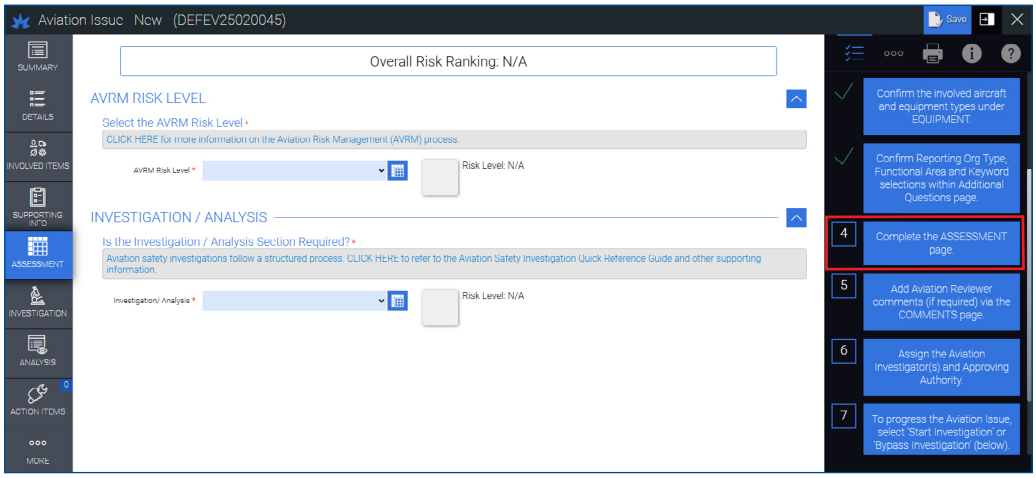

Figure 28: Assessment page (Aviation Issue)

Select ‘Save’ once the ‘Assessment’ page has been completed, refer **Figure 29**.

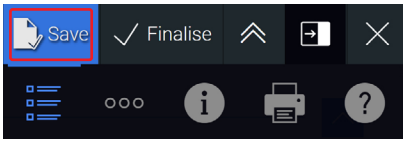

Figure 29: Save a page

Guidance

AVRM Risk Level

The Risk Management process **must** be used to classify an Aviation Issue (refer DASRIM[6]).

Investigation / Analysis

The decision to investigate takes a risk-based approach, where issues with high-risk potential should be investigated, and investigated in greater depth, than those with low risk potential. Aviation safety issues of a medium or higher risk should be investigated.

6 DASRIM scheduled for release Q3 2025.

Add Aviation Reviewer Comments (checklist item 5)

If required, add a comment **(Figure 30)**. Ensure the correct comment category is selected. Once complete, select the tick icon (☑) to save the comment.

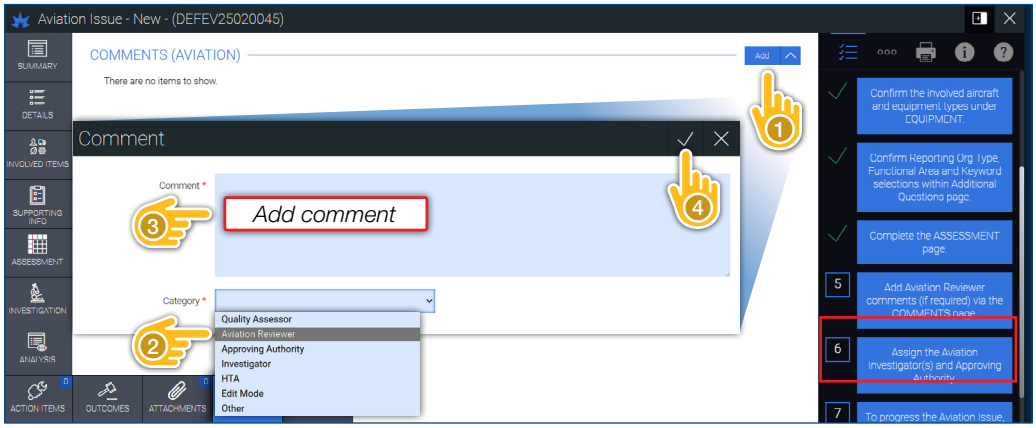

Figure 30: Add Comments page (Aviation Reviewer – Issue)

Guidance

The addition of Aviation Reviewer comments are highly encouraged. It affords the opportunity to provide:

- comment about the issue
- context to the issue classification
- guidance to the investigator as to the level of complexity required
- comment on the quality of the report
- any other information deemed important to record in relation to the issue, not previously captured elsewhere in the report.

The 'Comment Category' must align with the intent of the comment or the context with which the comment is being made. For example, a comment on the quality of the report must have the comment category of 'Quality Assessor' selected; HTA comments must have the comment category of 'HTA' selected; etc.

Assign Investigator(s) & Approving Authority (checklist item 6)

Select Investigator(s) and Approving Authority using the Aviation Event process (see **Assign Investigator(s) & Approving Authority**).

Progress the Event (checklist item 7)

Progress the Aviation Issue using the Aviation Event process (see **Assign Investigator(s) & Approving Authority**).

Reject a Report

To reject a report use the Aviation Event process (see **Reject a Report**).

PART THREE:

Aviation Safety Investigations

Why investigate?

At a basic level, aviation safety events and issues are investigated to identify and eliminate system deficiencies and to improve system controls in order to prevent recurrence (in the case of an aviation safety event) or to prevent a risk or hazard from being realised (in the case of an aviation safety issue).

How to determine the complexity of a Safety Investigation?

The complexity of a safety investigation conducted as a part of an organisation's SMS may vary considerably depending on the circumstances – from the conduct of a brief desktop investigation to a full in-depth investigation.

The complexity of a safety investigation refers to the scope and depth with which the investigation is conducted.

The **scope** of a safety investigation refers to the range of issues and factors that are examined during the investigation. It encompasses the boundaries of the investigation and the specific areas that will be covered (i.e. the number of lines of inquiry).

The **depth** of a safety investigation refers to the extent to which the investigation delves into each issue and factors that are examined. It involves the level of detail that is pursued, the thoroughness of the examination, and the precision of the analysis. The depth of a safety investigation may also refer to the organisational span of the investigation. For example, a less complex investigation may limit its depth to areas within a single business unit. In contrast, a more complex investigation may examine the role and influence of higher-level and external organisations.

The same factors that influence the decision to investigate also inform the complexity of the safety investigation. Generally speaking, the higher the safety risk or actual consequences of the safety event, the more complex the investigation will be. However, the expected safety value of an investigation, including the likelihood of furthering the understanding of the scope and impact of any safety system failures should also be

taken into account when determining the complexity of the investigation. Be mindful that the more complex the investigation, the more time and resources that need to be devoted to it. Refinements of the scope and depth of the investigation may occur as more information becomes available.

What about Events or Issues that are not investigated?

Safety events and issues that are not investigated are said to be 'Data capture only' and the investigation module is 'Bypassed' in Sentinel. This simply means that the safety report contains a short factual summary detailing the circumstances surrounding the safety event using the information gathered during the initial notification, and from any follow-up information with relevant parties.

Safety Investigations within an SMS

Where the organisation's SMS process requires an investigation to be conducted, the results of the investigation are entered into the reporting system and submitted for consideration and action by an appropriate Appointing Authority. The Appointing Authority is the designated member authorised to convene and close an aviation safety investigation. The circumstances and classification of the event will determine the Appointing Authority (see **Table 2**).

Table 2: Event Classification and Minimum Appointing Authority

Event Class	Minimum Appointing Authority	Required Consultation
Class A	Environmental Commander (COMAUSFLT, COMD AVNCOMD, and ACAUST)	The Defence Aviation Authority and DFSB
Class B	Hazard Tracking Authority (HTA)	Environmental Commander (or delegate) and DFSB
Class C	Unit commander or delegate	HTA (as appropriate, dependent upon the circumstances)
Class D	Unit commander or delegate	Nil

Who can investigate?

Individuals conducting aviation safety investigations must have completed Aviation Safety Officer (ASO) training or remain under the supervision of the appointed ASO/Maintenance Aviation Safety Officer (MASO) in the conduct of aviation safety investigations.

Are Aviation Issue investigations different?

Although safety investigations are generally conducted in relation to a specific aviation safety event, the same principles may also be applied to the investigation of safety issues identified through Aviation Issue reports.

Principles of Aviation Safety Investigations

The principles that underpin aviation safety investigations have been developed over many years of aviation accident investigation. In order to achieve the best safety outcomes and ensure consistency of approach, standardisation of reports and facilitation of trend and statistical analysis, the following principles apply:

- The intent of a safety investigation is to establish the contributing factors that increase safety risk, and to ascertain actions that can be taken to prevent recurrence (in the case of an aviation safety event) or to prevent a risk or hazard from being realised (in the case of an aviation safety issue).
- The investigation should begin as soon as practicable to ensure all perishable information is collected and protected.
- The size and scope of the investigation, and the resources expended, should be commensurate with the classification and scale of the event and the anticipated safety outcomes.
- Safety actions and recommendations should be recorded in Sentinel, and their implementation and effectiveness monitored.

- The investigation follows a structured process.
- The investigation should determine the systemic factors that contributed to the event to enable formulation of appropriate and effective action that can be taken to improve the safety system.
- Contributing safety factors should be categorised in accordance with the Contributing Factors Taxonomy.
- Safety actions and recommendations should be focused on implementing or improving controls that will eliminate or minimise the safety hazard or risk and therefore prevent a recurrence of the event. Safety actions and recommendations must not recommend punitive action.
- Appropriate personnel de-identification measures are to be applied.
- There should be no apportioning of blame or liability – the aim is to identify and remediate system deficiencies to eliminate or control risks so far as reasonably practicable (SFARP)

Investigation Powers and Protections

Investigating officers act under the authority of the Appointing Authority (see **Safety Investigations within an SMS**).

There is a general requirement for all Defence Aviation personnel to participate in safety investigations including the conduct of interviews and making available for inspection all documents, recordings, equipment, and anything else relevant to the determination of contributory factors of the investigation. If, during an investigation, it becomes apparent that an individual is not actively participating in the investigation process, the investigation is to be paused and the chain-of-command advised prior to recommencing (when appropriate).

An investigation conducted as a part of an organisation's SMS is to be conducted in accordance with the principles of aviation safety investigations and is not to apportion blame or liability. If facts arise from an aviation safety investigation that a DFDA matter has been committed or administrative action is deemed warranted (and this does sometimes occur), then command will be required to initiate a separate administrative/ DFDA investigation in order to proceed. Information gathered as a part of a safety investigation cannot be used for internal Administrative or DFDA purposes. This is because individuals subject to Administrative or DFDA action must be afforded procedural fairness in accordance with the Defence Regulation 2016. Defence cannot guarantee the protection of information gathered as a part of a safety investigation from disclosure to external tribunals and courts (for example, an IGADF Inquiry).

Investigators are encouraged to use the DFSB endorsed introductory script when conducting interviews so that individuals are appropriately informed of the limits that apply to protecting safety information (see **Pre-interview Introductory Script**).

Standards of Proof in Aviation Safety Investigations

The sole purpose of a safety investigation is to improve the safety of the organisation, not to apportion blame or liability. As such, the legal standards of proof such as beyond reasonable doubt or on the balance of probabilities are neither necessary nor appropriate. An excessively high standard of proof may impose an unnecessary burden when establishing likely contributing factors or other circumstances relating to a safety event, and may impede organisational learning.

Findings, actions and recommendations resulting from the investigation of an aviation safety event are to be based upon the best judgement of the investigating team carrying out an impartial and objective analysis of the available information.

The Investigation Process

The conduct of an investigation follows a structured process (see **Figure 31**).

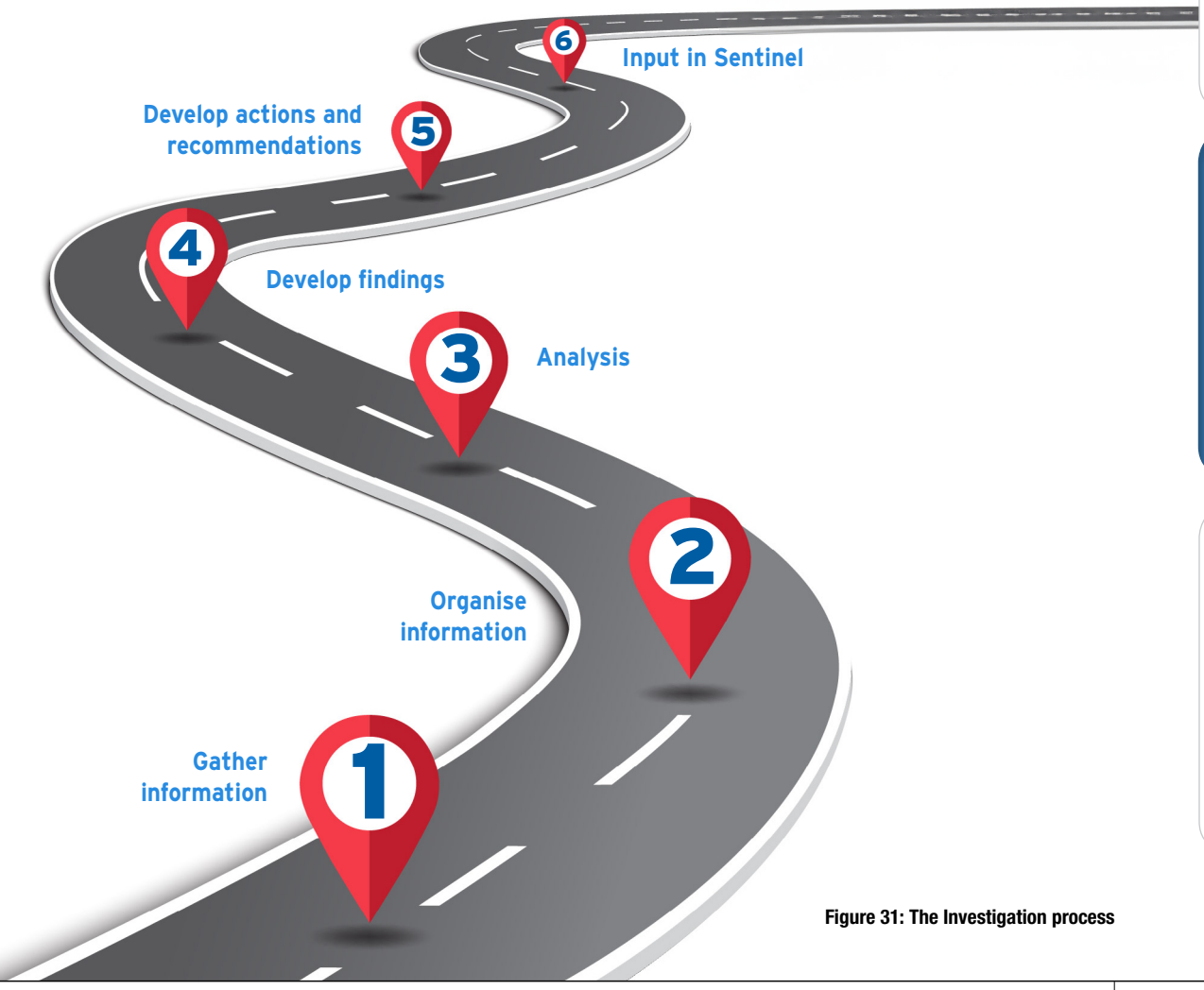

Figure 31: The Investigation process

The investigation is to be conducted outside of the reporting system (Sentinel) with the results of the investigation entered into the reporting system once finalised. The investigative process is applicable to investigating both safety events and safety issues.

Step 1: Gather information

There are many models that can help the investigator to determine what areas of a system may require investigation and where to look for information to inform the investigation.

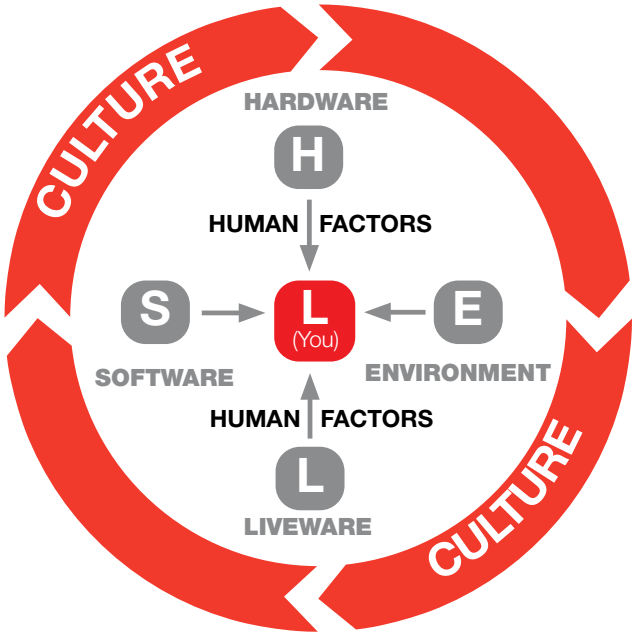

Figure 32: C-SHELL Model for gathering information

The C-SHELL Model

The C-SHELL model **(Figure 32)** is a good place to start — it helps to identify sources of information, and may help the investigator appreciate the overall situation.

Culture

Individuals and groups develop shared beliefs, values and norms to make sense of the organisation in which they work. An organisation's culture exerts a powerful influence on the way members think, feel and behave.

- What is the safety culture in the unit, trade/mustering, crew, service?
- How did the culture influence the task being performed?
- Were there any undesirable group norms?

Software

This category includes documentation such as maps, charts, standard operating procedures, checklists, OIP, standing instructions (SIs) and aircraft flight manuals.

- Was the documentation up to date, fit for purpose?
- Was the information readily available to the personnel?

Hardware

All physical aspects of the aircraft and associated equipment.

- Was the equipment serviceable and suitable?
- Were tools/spares available/authorised/appropriate for use?
- Did the work place constrain access to, or operation of, the equipment?

Environment

How did aspects of the environment including weather, terrain, navigation aids, aircraft cockpit, lighting, noise, vibrations, temperature etc. affect the event?

Liveware (crew and other personnel)

The liveware components consist of the crew/team actions as well as their interaction with others, and include:

- actions before, during and after the event
- Non-Technical Skills within the crew and with each other
- training, skills and experience, authorisations
- attitudes and beliefs
- medically fit for duty
- types of information
- recorded information.

There are several sources of recorded evidence that may be available to the investigator. Some of this is perishable and may be erased through normal maintenance or operational activities (maintenance downloads or simply removing aircraft power). Immediate steps **must** be taken to preserve this evidence. Sources include:

- Flight Data Recorders (FDR) and Cockpit Voice Recorders (CVR), these sources of data are strictly controlled
- Mission or maintenance data recorders
- Head-Up Devices (HUD)/helmet/radar/EW recordings
- other recordings such as those made by personal devices
- air traffic control voice and/or radar tapes/records (access approval required through 44WG)
- access swipe cards log work start and finish times
- GPS data
- briefing boards/notes or partial procedures trainers
- any photos or video taken by witnesses/bystanders.

Other information

Gathering information also includes collecting other relevant documentation, such as procedures, training records, risk management plans and hazard registers.

Conducting interviews

Interviews are an important part of safety investigations as they elicit information from those individuals who are directly or indirectly involved with the event. Additionally,

interviews provide an opportunity to gather relevant information to reconstruct an event and to understand why it happened. Effective interviewing is an essential skill that takes time, practice and motivation, to both develop and maintain. A poor interview may undermine the outcome of an investigation, but a good interview can reveal critical information.

People to consider when conducting interviews include:

- those involved in the event
- the peers of those involved in the event
- those who saw the event
- subject matter experts
- commanders/managers.

Pre-interview Introductory Script

Investigators are encouraged to use the following introductory script when conducting interviews so that individuals are appropriately informed of the investigation process and the limits that apply to protecting safety information:

'Thank you for coming today.

As you may be aware, the << CO/OC>>, << Rank Name>>, has appointed me as the investigating officer to conduct an aviation safety investigation into the aviation safety occurrence involving << event title>> that occurred on <<day, date>>.

The intent of an aviation safety investigation is to understand what happened, and why it happened, so that appropriate safety action can be taken to prevent recurrence, and improve safety outcomes. It is not to attribute blame or liability. In the interests of the Defence Aviation generative safety culture, you are required to participate openly in this investigation, including providing honest and open answers in this interview, and making available for inspection all documents, recordings, equipment, and anything else relevant to the determination of contributory factors.

You should be aware that the information you provide in this interview will be treated as confidential, and protected as far as possible by the investigation team within Defence.

You should also be aware that if the SMS investigation reveals facts that a disciplinary offence has been committed or highlights behaviour that necessitates administrative action, command may initiate a separate investigation and take such action as they deem appropriate. (While I can provide those assurances within Defence, I cannot fully guarantee the protection of this information from disclosure to external tribunals and courts (for example, an IGADF Inquiry).

Your information is a valued and important part of the safety investigation process. I intend to take notes, simply to ensure I capture your information correctly. If you would like to review the notes at the end of the session, please let me know.

Before we commence, do you have any questions?'

For more information refer to the Interviewing Techniques factsheet for guidance on conducting a good interview. The factsheet is available at Attachment 6 to this Guide and on the DFSB website (DPN only).

Step 2: Organise information

Once you have collected all the information relevant to the investigation, it is important to put it into some sort of order so you can understand what happened and analyse the event. Organising the information assists in ensuring the investigation follows a logical path, identifying and resolving conflicting information, identifying missing data, and providing a visual display of the investigative process for chain of command and unit briefings. The recommended tool to organise information collected is the event timeline, supported by the concept of 5-whys.

Constructing the event timeline

One approach to organising information is to start with constructing an event timeline, which shows key details of the event sequence (what happened leading up to the event, the event itself, and what happened after the event until control was regained).

Event timelines are easy to construct and are an excellent way of depicting complex events in a logical manner. The timeline should include when the event started, what constituted the start, and include information on the activities prior to and after the incident, and any information that may be relevant. Refer to **Figure 33** below for a simple event timeline example.

Figure 33: Simple Event Timeline Example

At this stage, it is better to include too much detail to avoid the risk of leaving something out that could be relevant. For example, many events have multiple factors, each of which would not necessarily lead to an event, but together make an event very likely. Ideally, each part of the timeline should include the time it happened, but even a relative time in relation to other components may be useful. If more than one string of incidents occurred leading up to the event, draw separate event timelines, showing where the strings converged to create the event. **Figure 34** below illustrates an event with two strings of incident leading to the event.

Figure 34: Example timeline with two event strings

The event timeline should only include components that had an immediate effect on the event. For example, poor organisational planning that occurred two months ago may be identified during the investigation as a contributing factor but not as a part of the timeline. At this stage, do not speculate on possible causes. Speculation could lead to inappropriate conclusions. A flowchart or Excel spreadsheet is recommended to record the event timeline.

The concept of 5-Whys

Fixing the problem by addressing the underlying safety issues is the ultimate aim of any investigation. The 5-Whys is a basic methodology or tool to discover the probable underlying factors that contributed to an event. More often than not, people fix a problem by dealing with issues that are immediately apparent. While it may provide a quick fix, the problem tends to rear its ugly head in the same form or with a different face later on. The concept of 5-whys is as follows:

- Ask why an event happened or a condition was present.
- Continue asking why until the question can no longer be answered.
- When why can no longer be answered you have reached:
  - a control point (risk control)
  - a point that is beyond organisational control
  - a point where more data needs to be collected to answer why.

Example Event

Taxi — Tow Confliction

What happened?

Black Cat Maintenance was cleared to tow a P8 aircraft to the engine run facility by Controller A. A short time later, an AP3C aircraft was cleared to taxi from the main apron to holding point Charlie RWY 36 by Controller B. Upon turning onto TWY B, the P3 crew observed a P8 aircraft under tow proceeding in the opposite direction on TWY B. The AP3C came to a stop and advised surface movement control of the confliction.

Interviews with air traffic controllers were conducted. It was found that HO/TO procedures played a role in the event. See **Figure 35** for an event timeline.

Some risk control questions to ask include:

- What prevented the event from being worse?
- Which controls were effective and why?
- Which controls failed and why?
- What should have stopped it but didn't?
- What was absent altogether?

Note:
It is not always necessary to ask 'Why' five times. While asking 'Why' five times is generally sufficient; it may be also more or less. The real key is to avoid making any assumptions and keep asking 'Why' until all the potential contributing factors and safety issues have been identified.

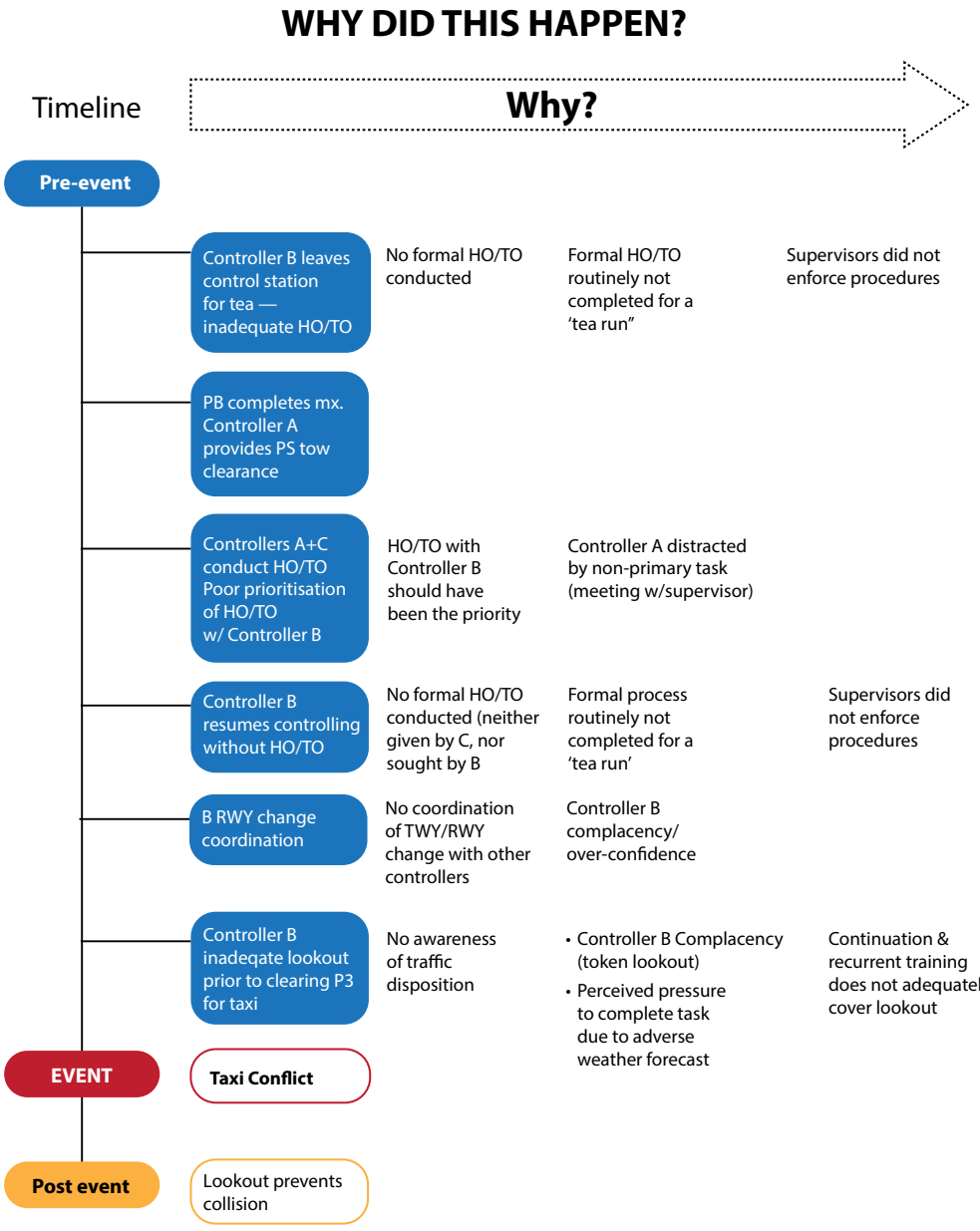

Figure 35: Event timeline used in conjunction with the 5-Whys: Taxi tow confliction

Finalising the organisation of information

Once the investigator(s) has agreed on the timeline and actions and conditions relating to the critical component(s), those personnel directly involved with the event should be consulted to verify that these are correct. This step is vital to ensure the later investigation findings are accurate and credible.

Using the 5-whys analysis along with the event timeline is the best way to organise the information collected. However, timelines alone do not identify the contributing factors of the events, and they should be used in conjunction with the analysis of information.

Step 3: Analyse information

The analysis of information is the most time consuming but worthwhile step in the investigation process as it answers the overall question, 'Why did the event happen?'

The analysis stage uses the Contributing Factors Taxonomy – Defence Safety Analysis Model (SAM) to analyse the data from **Step 1: Gather information** and **Step 2: Organise information**. This technique is designed to ensure that the investigation does not only focus on the errors and violations of people. The SAM identifies the workplace factors that contributed to the event, the deficient risk controls and the organisational influences within the system that act as forerunners to an aviation safety event. In the process of applying the SAM, investigators also check the information that has been gathered and organised to determine whether there are any gaps in the investigation.

Background on SAM — the Reason Model

The SAM draws on the work of the organisational psychologist and human error expert Professor James Reason (Reason's Organisational Accident Model) and the Australian Safety Transport Bureau (ATSB).

According to the Reason model, widely known as the 'Swiss cheese model', accidents rarely result solely from the actions of operational personnel (such as pilots, drivers, masters, engineers, or controllers). Rather, most accidents are due to a combination of problems originating at all levels of the organisation.

In simple terms, the accident sequence begins with the negative consequences of organisational processes (for example, management decisions associated with planning, scheduling, designing, specifying, communicating, and regulating). These organisational conditions are transmitted to the workplace in which the relevant operational tasks are performed. They can result in, or manifest through, local conditions (such as fatigue, high workload, lack of skills) that have a negative impact on an individual's performance and set the conditions for 'unsafe acts' (errors and violations).

According to the Reason model, these unsafe acts can have consequences that are not identified or controlled by the defences or safety net built into the system (for example, warnings and emergency procedures).

Therefore, local conditions and inadequate defences can facilitate or fail to adequately control unsafe acts. Furthermore, these local conditions and inadequate defences can be symptoms of wider systemic issues or organisational conditions, such as poor risk management, poor supervision, and inadequate training systems. In other words, the system's defences (barriers, safety guards or controls) can be absent or have limitations (i.e. they can have gaps or holes). These limitations can result from unsafe acts of operational personnel (sometimes termed active failures). Alternatively, they can originate from management decisions and organisational processes. These longer lasting gaps in the defences have been termed latent failures or latent conditions.

In summary, the Reason model emphasises that unsafe acts have a key role to play in the development of accidents. However, the origins of unsafe acts often lie in management systems, not within the individuals who made the unsafe acts. In other words, the model emphasises a whole of system approach to improving safety rather than an approach focussing on the individuals who initiate or undertake unsafe acts.

Updating the Reason Model – the SAM

Reason's Organisational Accident Model has been adopted as the model or investigation in many industries. In recent years, however, practitioners have become aware of its various limitations. The ATSB, for example, was concerned that the model did not deal with technical problems. An example of a technical problem would be a component that failed to perform according to its specifications. In order to provide a more generic model that would be more applicable to a wider range of investigations, and better fulfil the role of identifying potential safety factors, the ATSB modified some aspects of the Reason model. The SAM is based on the ATSB model and is illustrated in **Figure 36**.

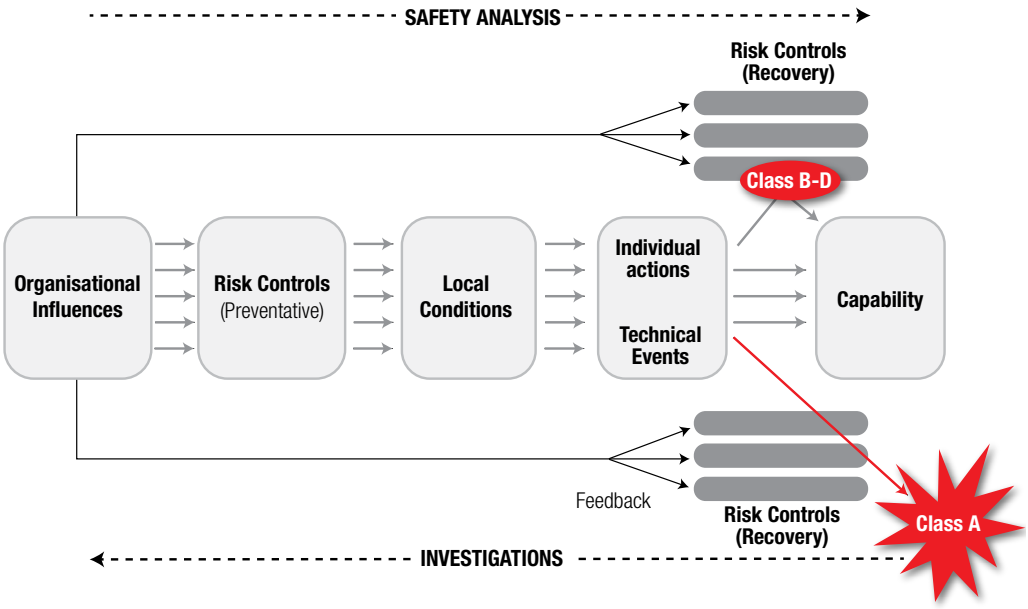

Figure 36: Safety Analysis Model (SAM).

How to use the SAM

The SAM allows the investigator(s) to review the organised data and identify the individual/team actions or technical failures that directly contributed to the event. From here, ask, 'Why did this happen?' to identify the subsequent factors according to the five 'contributing' levels of the SAM:

- absent, partially failed, or failed recovery risk controls
- local conditions
- individual/team actions and technical failure
- organisational influences.
- absent, partially failed, or failed preventative risk controls

The Safety Analysis Worksheet helps investigators to apply the SAM and conduct their analysis.

At the end of the analysis, the investigator will have answered, 'Why did the event happen?' through the identification and classification of contributing factors using the SAM.

The Safety Analysis Worksheet is available at Attachment 7 to this Guide and on the DFSB website (DPN only).

The Contributing Factors Taxonomy – Defence Safety Analysis Model is available at Attachment 8 to this Guide and on the DFSB website (DPN only).

Individual/Team Actions and Technical Failure/Malfunction

Individual/Team Actions. Individual/team actions are always committed actively (i.e. someone did or did not do something) and have a direct relation with the event. They are observable behaviours performed by operational personnel. While individual actions can both reduce or increase risk, when the term is used in the context of the Contributing Factors Taxonomy, it is taken to refer to individual/team actions that increase risk.

It is important that the analysis phase of an investigation clearly identifies the individual/team actions and uses them as a platform to identify any underlying safety issues that may exist. A fundamental principle of safety investigation and human factors is to encourage the organisation to look beyond the individuals and examine the system and the underlying reasons for the individual actions.

Some investigators may find it useful to consider that individual actions explain how rather than why some of the events happened. For example, problems associated with preparation and planning activities, including briefings conducted as part of planning for a particular task is considered an individual or team action. When considering the actions of individuals, it is useful to consider whether, if a similar situation arose again, it would be desirable for the individual's actions to be different.

Table 3 contains coded contributing factor types for individual/team actions or technical failure/malfunction that investigators may wish to incorporate into their analysis as prompts. The codes are not designed to be used as checklists, but are particularly valuable for trend analysis and data entry (**Step 6: Enter investigation results into Sentinel**).

Table 3: Contributing factors for Individual/Team Actions and Technical Failure/Malfunction

Individual/Team Actions	Technical Failure/Malfunction
• Planning/preparation • Equipment/information utilisation • Internal communication • External communication • Monitoring • Coordination/teamwork • Inspecting • Record keeping • Workload management	• System/component failure or malfunction

Once the role of the individual or team action in the event is identified, consider whether the action (or inaction) was an error or a violation.

Errors are defined as an action or inaction that leads to deviations from organisational or the person's intentions or expectations. This includes errors resulting from perceiving something incorrectly or not understanding the situation correctly, inadvertently deviating from what was planned, and performing the wrong action for the situation.

Violations are defined as an action/inaction that represents an intentional deviation from procedures or standards or requirements associated with task completion.

The conceptual boundaries between errors and violations are not always clear as both involve a deviation of action from some required standard of performance. The question of 'intention' is what differentiates errors and violations and it is what makes violations more dangerous than errors.

The drivers behind an error or violation can be determined by looking at the local conditions and the underlying systemic issues uncovered during the investigation. For example, an operator followed the wrong checklist (error in individual action: equipment/information utilisation) because they were under pressure to complete the task (local condition: task completion pressure) and was unfamiliar with the task (local condition: experience/recency for task). In turn, the pressure to complete the task and lack of task familiarity was found to have been brought about by poor supervision (risk control: active supervision/control).

By looking past the type of error, the local conditions and risk controls provide a richer explanation for why the error occurred.

Note:
A violation typically involves an intentional individual or team action that results in unanticipated adverse consequences. Most violations are well-intentioned, targeting desired outcomes such as task completion and simplification. Where a violation involves an act of serious carelessness (serious disregard of an obvious risk or profound failure of professional responsibility) or sabotage (intended harm to individual, asset, workplace or organisation) the investigation is to be immediately suspended and the chain-of-command advised.

Separate to the aviation safety investigation, the DFSB Safety Behaviour Management Tool (SBMT) provides commanders with a method of determining acceptable and unacceptable safety behaviour and commensurate action. The SBMT is available on the DFSB website (DPN only).

Technical Failure/Malfunction. In many ways, technical failures can be considered as being similar to individual/team actions that increase safety risk, as they are both describing components that occur at an operational level. Similarly, they can both be influenced by a range of local conditions and risk controls. In addition, they are often considered at an earlier stage than individual/team actions in the investigation analysis process as more often than not, it is the technical problems that operational crew react to (sometimes triggering individual/team actions or inactions).

Local Conditions

Local conditions are those conditions that exist in the immediate context or environment in which individual/team actions or technical failures occur, and can have an influence on the individual/team actions or technical failures. Local conditions include characteristics of the individuals (e.g. knowledge, skills of the individual or the team, team interactions, and personal factors), the equipment involved, as well as the nature of the task and the environment (e.g. the workspace, the physical environment, and weather).

Check:

Does this contributing factor describe something about the task demands, work environment, individual capabilities or human factors that promoted the individual team actions or technical failures or undermined the effectiveness of the system's defences?

Local conditions can increase the likelihood of individual/team actions that increase safety risk (for example, fatigue, insufficient knowledge, high workload). Local conditions can also increase the likelihood of technical failures, which increase safety risk (for example, local conditions that can be associated with an engine failure could include pre-existing material defects or high operating temperatures).

Most local conditions also stem from deficient risk controls (preventative) or organisational influences, so it is important that the investigation also considers how the identified local conditions were influenced by these systemic factors.

Table 4 contains coded contributing factor types for local conditions that investigators may wish to incorporate into their analysis as prompts. The codes are not designed to be used as checklists, but are particularly valuable for trend analysis and data entry **(Step 6: Enter investigation results into Sentinel).**

Table 4: Contributing Factors for Local Conditions

Local Conditions	Examples:
Knowledge, skills and experience	Knowledge/skills with task, reliance on undocumented knowledge
Personal factors	Physical/mental limitations, fatigue/alertness, attention
Task/job factors	Distractions, high workload, incorrect task information
Social/group factors	Communication barriers, team interaction, group norms
Environmental conditions	Weather, visibility
Workspace environment	Lighting, noise, temperature, air quality
Physical environment	Infrastructures

Risk Controls

Risk controls are the measures put in place by an organisation to facilitate and assure safe performance of the operational components of the system (that is, operational personnel and equipment). They can be viewed as the outputs of the organisation's safety management system. Risk controls can be either recovery or preventative:

Check:

Does this contributing factor describe the equipment, work process, control measure, detection system, procedure, or attribute which normally prevents this safety event or limits the consequences?

- Recovery risk controls are put in place to detect and correct or otherwise minimise the adverse effects of local conditions, individual/team actions and technical failures. They can be viewed as the outputs of the organisation's safety management system. Such last-line controls include equipment or procedures for detection, warning, recovery, containment, escape and evacuation, as well as individual awareness

and protective equipment. On occasions, these recovery risk controls will be breached and a safety event will result, or the consequences associated with a safety event will become more severe.

- Preventive risk controls are put in place to minimise the likelihood of undesirable local conditions, individual/team actions and/or technical failures. Preventative risk controls facilitate and guide performance at the operational level to ensure individual/team actions and technical events are conducted effectively, efficiently and safely. Such controls include procedures, training, equipment design and work rosters.

Risk control effectiveness

At any particular time in any safety system, there will be weaknesses in some risk controls, and these weaknesses will change over time. These holes or weaknesses can occasionally align, leading to serious consequences.

Absent or failed preventative and recovery risk controls can be viewed as holes in an organisation's safety management system. It is important that the investigation identifies an absent, partially failed, or failed risk control so that organisational deficiencies can also be identified.

Partially Failed. Controls are in place but may be partially documented or communicated, or inconsistently applied. Weaknesses in the controls are minor or moderate and tend to reflect opportunities for improvement rather than serious deficiencies in systems or practices.

Questions to ask:

- **What risk controls were there?**
- **What could have been there?**
- **What made the risk controls ineffective?**
- **Did the risk controls not work at all? (Failed?)**
- **Did the risk control work only partially as intended? (Partially failed?)**
- **What controls could have been in place to address source of risk (Absent?)**

Failed. Controls are not documented or communicated, or are inconsistently implemented in practice. The controls are not operating as intended and risk is not being managed.

Absent. Controls are not in place to address the source of the risk.

Table 5 contains coded contributing factor types for risk controls that investigators may wish to incorporate into their analysis as prompts. The codes are not designed to be used as checklists, but are particularly valuable for trend analysis and data entry **(Step 6: Enter investigation results into Sentinel)**.

Table 5: Contributing Factors for Risk Controls

Risk Controls	Examples:
Systems and equipment	Display/control systems, equipment, tools and materials, warning/detection systems
Facilities/infrastructure	Design of building
Procedures/processes/ practices/data	Technical manuals/publications, workplace instructions/orders/procedures
Training/assessment	Initial Employment Training, Continuation/ Promotion/Recurrent Training
People management/supervision	Active supervision/control, people management
Authorisation/categorisation	Management and/or process of authorisation/categorisation
Technical failure controls	Design/engineering, manufacture, maintenance, operation

Organisational Influences

Organisational influences are those conditions that establish, maintain or otherwise influence the effectiveness of an organisation's risk controls.

There are two main types of organisational influences — organisational conditions and external influences.

Check:

Does this contributing factor identify an organisational influence present before the event and which undermined or removed the risk controls?

Organisational conditions are the safety management processes and other characteristics of an organisation that influence the effectiveness of its risk controls. Safety management processes and organisational characteristics include hazard identification, risk assessment, safety assurance, organisational resources, planning and communication.

Organisational conditions can exist at all levels of the organisation – from the unit all the way through to the ADF. The higher the level of organisational conditions that are looked at, the more complex the investigation becomes.

External influences are the processes and characteristics of external organisations that influence the effectiveness of an organisation's risk controls and organisational conditions. These influences include the regulatory standards and assurance provided by regulatory agencies.

Table 6 below contains coded contributing factor types for organisational influences that investigators may wish to incorporate into their analysis as prompts. The codes are not designed to be used as checklists, but are particularly valuable for trend analysis and data entry **(Step 6: Enter investigation results into Sentinel)**.

Table 6: Contributing Factors for Organisational Influences

Organisational Influences	Examples:
Organisational characteristics	Communication/consultation, organisational resources, organisational structure
Safety management processes	Safety assurance, safety policy/objectives, safety risk management
Regulatory influences	Issues with regulatory material and compliance monitoring

Step 4: Develop Findings

A safety investigation produces a series of findings. Findings can be thought of as the conclusions that are drawn from the analysis of the information gathered; findings succinctly summarise the outcomes of the investigation. There are three types of findings – contributing, positive, and indirect findings.

Contributing Finding

Contributing findings directly and negatively relate to the circumstances of the event. Specifically, each contributing finding targets an element of the event (such as individual actions, local conditions, risk controls, organisational influences), if it had not occurred or existed at the relevant time, then either:

- the event would probably not have occurred; or
- adverse consequences associated with the event would probably not have occurred or have been as serious; or
- another contributing element would probably not have occurred or existed.

Contributing findings address the individual/team action(s) (or technical failure/malfunction), the associated contributing local condition(s), risk control(s) and organisational influence(s) (if any). These separate findings can be written as components of the SAM entered into Sentinel as separate findings.

For example, findings 1-3 from the taxi-tow confliction example at **Figure 35** can be written separately:

- **Finding 1:** Controller C and B did not conduct a HO/TO prior to controller B resuming control duties after leaving their control station (Individual/team actions).
- **Finding 2:** Non-adherence to the published HO/TO procedures for tea runs at YPED has normalised over time (Local condition).
- **Finding 3:** HO/TO requirements are defined in [XXX publication]; however, procedural compliance had not been routinely enforced by supervisors (Risk control).

Contributing findings can also be written as a single statement that address those relevant aspects of the SAM. An example of a finding taken from an event timeline is at **Figure 37**.

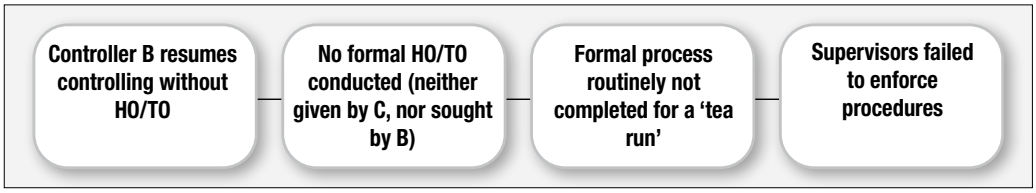

Figure 37: A finding from the event timeline

Using the example from **Figure 37** the finding may be written and entered into Sentinel as:

- **Finding 1:** Controller B resumes controlling without a HO/TO as Controller A did not provide one and Controller B did not seek one. Interviews revealed that formal HO/TO procedures were not routinely completed for tea runs and supervisors did not enforce these procedures.

Positive Finding

Positive findings directly and positively relate to the circumstances of the event. Positive findings can be the individual/team actions that played a substantial role in reducing risk, and were beyond normal expectations. Examples can include exceptional leadership or displays of Non-Technical Skills. Positive findings can also be any situation where the design or provision of equipment, systems or other risk controls has significantly reduced safety risk, and the reduction was beyond normal expectations or requirements. They can also include situations where the effective functioning of a recovery risk control is worth noting. Examples may include ACAS/TCAS resolution advisories and GPWS alerts that prevent collisions (that is, a collision was likely to have occurred if the alert had not been provided).

Put simply, positive findings are the actions or risk controls that 'saved the day' or played an important role in reducing the risk associated with the event.

When considering positive findings, ask:

- What actions or risk controls had a significant influence on reducing the risk associated with this occurrence?

- Were there any individual or team actions that detected or corrected a risky situation, and were beyond what was intended or could reasonably be expected?
- What risk controls detected or corrected a risky situation?

Indirect Finding

There may be other findings that did not directly or negatively contribute to the event, but are worth noting. Indirect findings can also include those factors that have the **potential to increase safety risk in the future**. Additionally, an investigation may need to make findings that concern the credibility or relevance of the available information, whereas others deal with the content of the information. For example, the investigation may need to make findings to answer questions such as the following:

- What was the aircraft configuration at the time of the event?
- What was the speed?
- Who was the handling pilot?
- Was the maintainer appropriately qualified?
- When was the last maintenance of the engine performed?
- What was the workplace/environmental conditions at the time?

Other indirect findings that may be considered relevant to include in the findings include:

- findings to resolve significant ambiguity or controversy that occurred during the investigation, which was not addressed by the contributory findings
- findings about possible scenarios or safety factors when firm contributing findings were not able to be made.

Indirect findings are worth noting as collectively they provide a comprehensive picture of the event and assures Command that the key aspects of the investigation are considered.

For example, in the course of investigating the taxi tow conflict event, the aerodrome lighting was found to have failed on several occasions. While the lighting issue did not contribute to the event under investigation, it needs to be addressed to improve safety. Alternatively, consider raising an Aviation Issue to report an indirect finding that warrants separate investigation and management as an aviation safety issue.

A safety investigation is not a broad audit or examination of an organisation or safety system with unlimited resources. Although all safety issues that are identified during an investigation should be raised, regardless of whether they were contributory or indirect, the search for potential safety issues needs to be pragmatically focused in areas that are related to the circumstances of the event. In other words, to be efficient and timely, safety investigations should not stray too far from the path of contribution when searching for potential safety issues.

Note:
Findings must be derived from Steps 1, 2 and 3 of the investigation process. Findings should be supported by information collected during the investigation, such as interviews, log books and photographs. Each finding description should be substantiated with a rationale. The rationale provides a short summary of the investigation analysis relevant to the specific finding. The rationale gives readers the context and justification to support the finding.

Step 5: Determine effective Safety Actions and Recommendations

Once all safety issues have been identified (to a reasonable extent) and investigation findings have been formed, effective safety actions and recommendations should logically link to the investigation findings and are raised in order to prevent recurrence.

Safety actions are those activities assigned by the Approving Authority (AA) to an individual within the span of their command/management authority. For example, if the AA is the CO, safety actions are only to be assigned to personnel within the unit. Safety recommendations are safety outcomes that need to be completed by agencies outside the unit and should be assigned to the HTA. All safety actions and recommendations are required to be entered into Sentinel **(Step 6: Enter investigation results into Sentinel)**. The principles of effective safety actions and recommendations are as follows:

- **Balanced and considered**. Through team discussion and consultation with the organisation involved, can this safety action or recommendation be achieved? Is this realistic given the context, resourcing and culture of the organisation? Only the organisation involved can decide this.
- **Evidence based**. The safety action or recommendation must be able to be traced back to the investigation findings.
- **Address safety issues**. Not just the errors and violations (behaviours) that we see. We need to get to the causes of these behaviours.
- **Written and targeted carefully**. The aim of an investigation is to identify the safety issues that contributed to the event, and to come up with effective safety actions and recommendations to prevent recurrence. Without well-written safety actions and recommendations to prevent recurrence, the investigation may be wasted.

How to write effective Safety Actions and Recommendations

The SMARTER concept ensures that actions and recommendations are achievable, traceable, relevant, have a deadline, and can be evaluated and revised (if necessary). Refer to **Figure 38** for the outline of the SMARTER concept.

S	**Specific**	What is it that you actually want to achieve?
M	**Measureable**	How will you show that the action or recommendation has been met?
A	**Achievable**	You may want to break the action or recommendation down into sizeable, achievable chunks
R	**Relevant**	How does the action or recommendation address the safety issue?
T	**Time-bound**	Provide a time to guide when the action or recommendation should be met
E	**valuate**	Evaluate the effect on existing safety issues/risk controls
R	**Review**	Review the effectiveness of actions and recommendations

Figure 38: SMARTER Safety Actions and Recommendations

Points to consider when formulating effective safety actions and recommendations:

- Can the safety issue be eliminated – such as changing the time of day of the activity or using simulation to train in an aircraft manoeuvre?
- If it can't be eliminated, use the hierarchy of controls to identify more effective ways to minimise the risk.
- Another procedure – additional procedures do not always work. Why did the existing procedure fail and will an additional procedure fix the problem?
- Briefing a unit on an event can be useful but is not a solution in itself. Enduring solutions to prevent recurrence are required.

Units should consider risk management processes when implementing actions.

Step 6: Enter investigation results into Sentinel

Step 6 is where the outputs from Steps 1 through to 5 are entered into Sentinel. **Figure 39** illustrates how the investigation steps are recorded in the Sentinel Investigator checklist **(Figure 40)**.

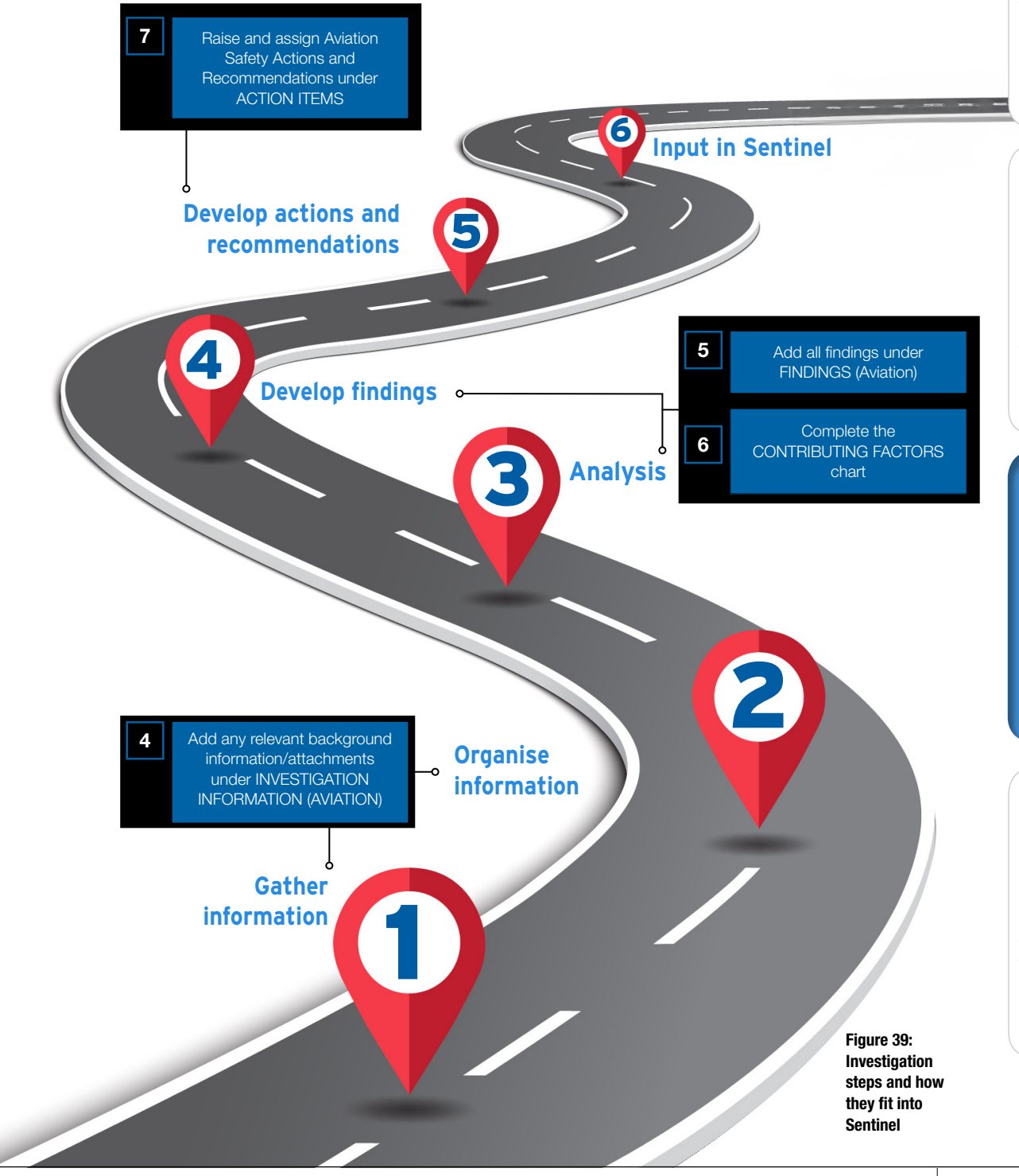

Figure 39: Investigation steps and how they fit into Sentinel

Investigator Checklist

The investigator will be presented with a checklist which lists the tasks to be completed to progress the report to the next stage of the workflow. Each checklist item directs the investigator to the corresponding area of the Sentinel event, refer **Figure 40**.

Note:
An error message will display if the investigator attempts to progress past the investigation stage and a mandatory task has not been completed.

Checklist items 1, 2 and 3 direct the investigator to review the description, time, location, involved aircraft, other equipment information and supporting information (eg event taxonomy keyword selection).

Note:
Secondary keywords are to be added to codify aspects identified during investigation of the event.

Checklist items 8, 10 and 11 direct the investigator to review the assessment and confirm the Aviation Reviewer and AA.

Complete checklist items 1, 2, 3, 8, 10 and 11 as per the instructions given in **Aviation Event – Aviation Reviewer Checklist**.

The following sections provide detailed information on completing checklist items 4 to 7, 9 and 12.

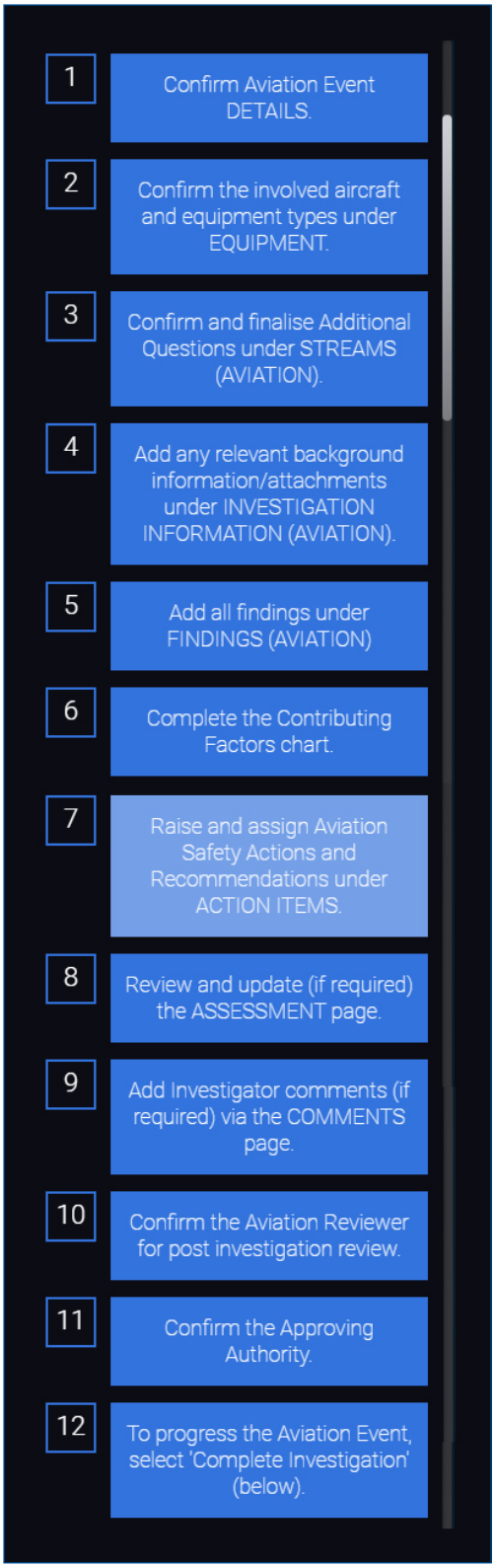

Figure 40: Investigator Checklist

Investigation Information (AVIATION) (checklist item 4)

Select the Investigation Information (AVIATION) checklist item to access the 'Analysis' page **(Figure 41)**. The Analysis page is used to record information collected during the investigation process **(Step 1: Gather information and Step 2: Organise information)**.

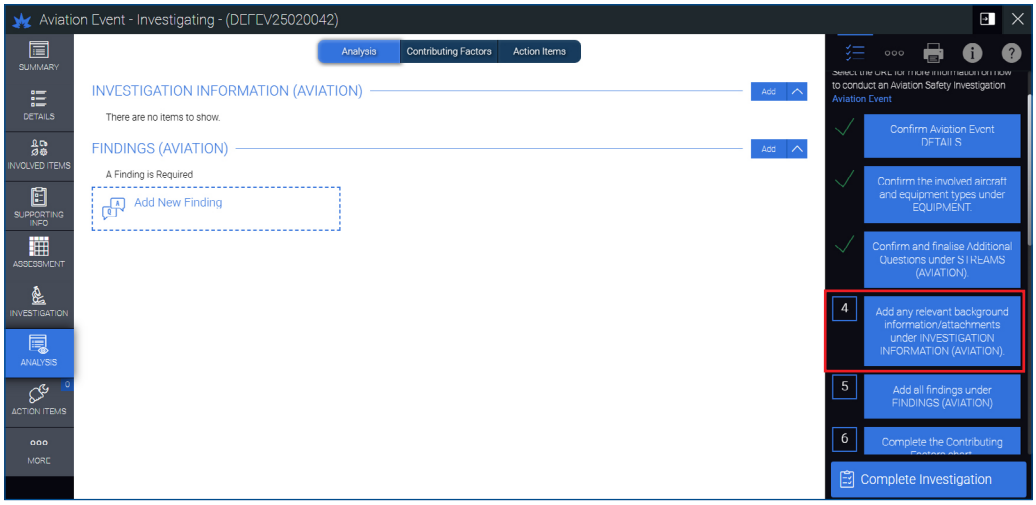

Figure 41: Analysis page

The information stored in this area should include any supporting material related to the investigation. The supporting material should help the reader understand the context of the investigation and may (or may not) be related to a finding or a set of findings. For example, the event timeline can be added to the Investigation Information as it supports the understanding of the investigation, but is not necessarily related to any finding. Select 'Add' to record investigation information, shown in **Figure 42**.

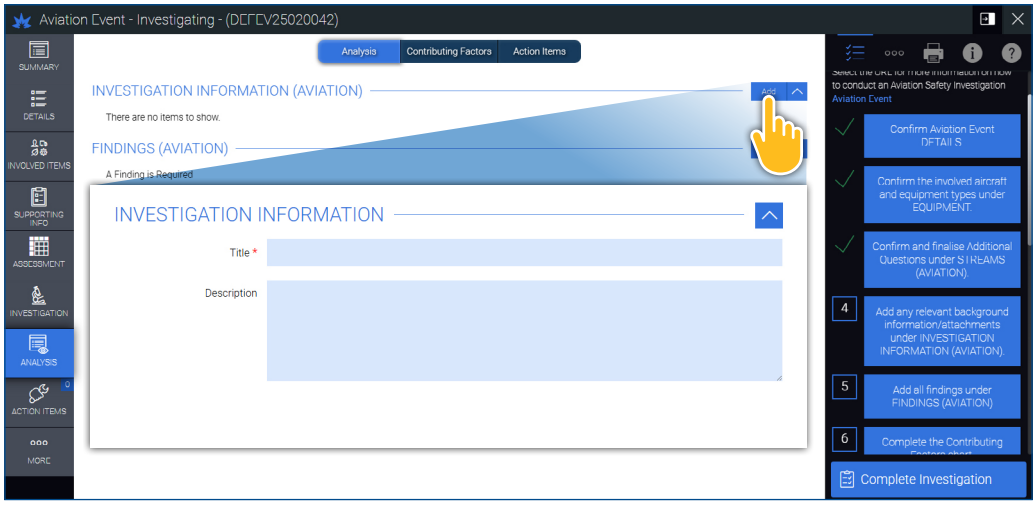

Figure 42: Add Investigation Information

Other supporting material such as the Safety Analysis Worksheet, a summary of witness statements, photos, reference material, maps and material that supports the claims made in a finding or a set of findings etc. should also be included to support the investigation, refer to **Figure 43**.

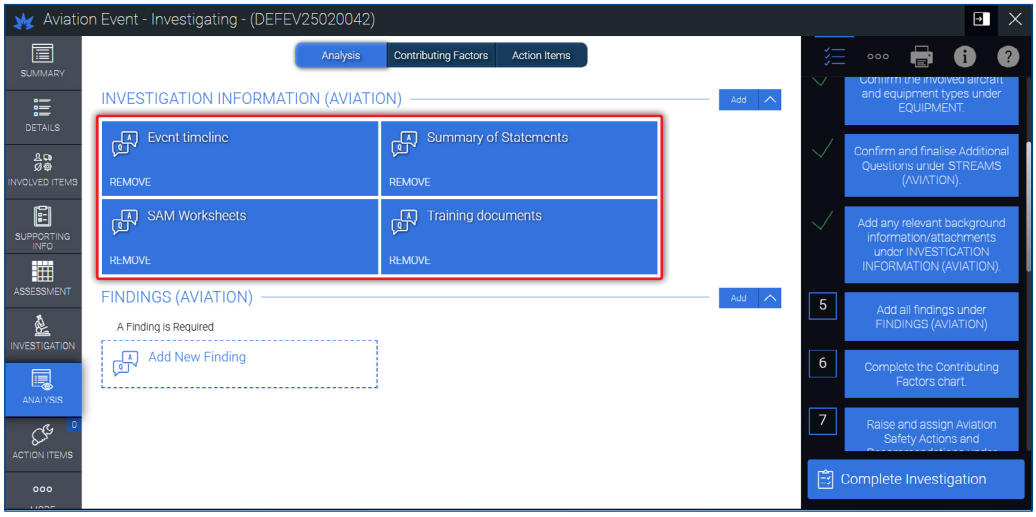

Figure 43: Investigation Information overview

Attachments added to Investigation Information

Attachments (photos/documents etc.) can be added by the URL method or the File method.

Attach URL. For large file size attachments, or when it is necessary to restrict access to attachments (via Objective access permission):

- save the attachment in Objective
- add the Objective link to the report as a URL via the Attachments tab **(Figure 44)**
- refer to the URL attachment in the Investigation Information.

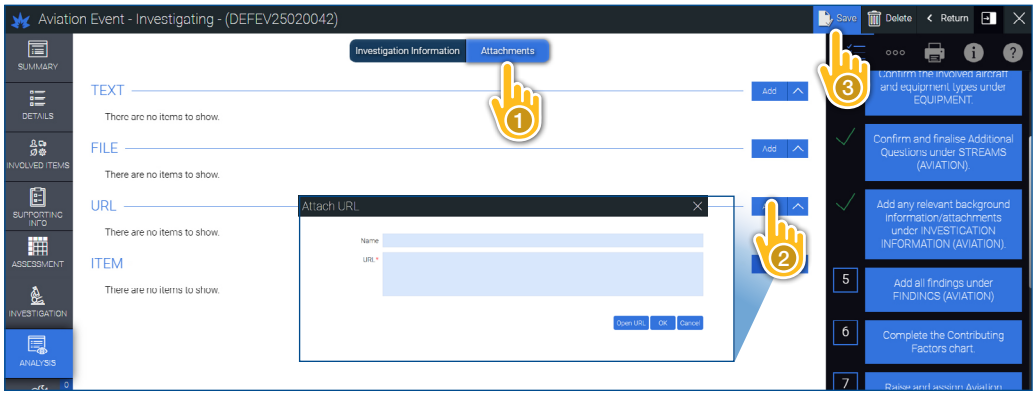

Figure 44: Investigation Information – Attach a URL

Attach File. For small file size attachments **and** when restricted access to attachments is not necessary:

- add the attachment to the report as a File via the Attachments tab **(Figure 45)**
- refer to the File attachment in the Investigation Information.

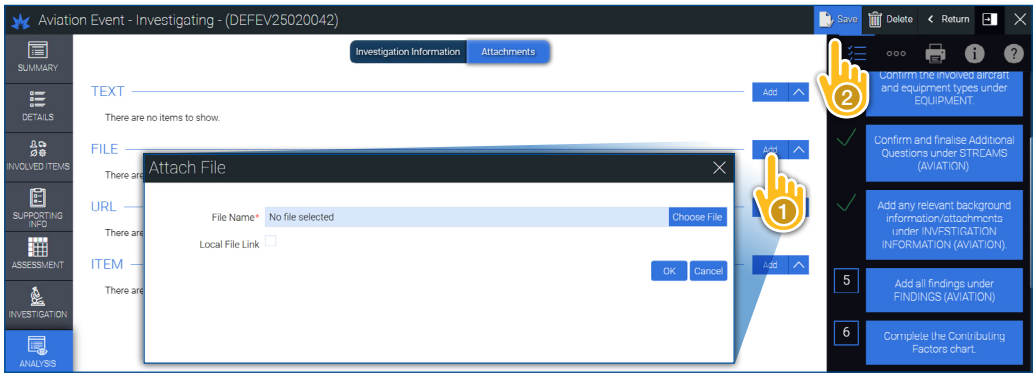

Figure 45: Investigation Information – Attach a File

Findings (AVIATION) (checklist item 5)

The Findings tab records the analysis of the information **(Step 3: Analyse information)** and records the findings developed as a result of the analysis **(Step 4: Develop findings)**. Findings can be added by the Standard method or the Contributing Factors method.

Standard method. Add findings through the Analysis tab on the 'Analysis' page **(Figure 41)**:

- Add a finding by selecting 'Add New Finding', or use the 'Add' button **(Figure 46)**.

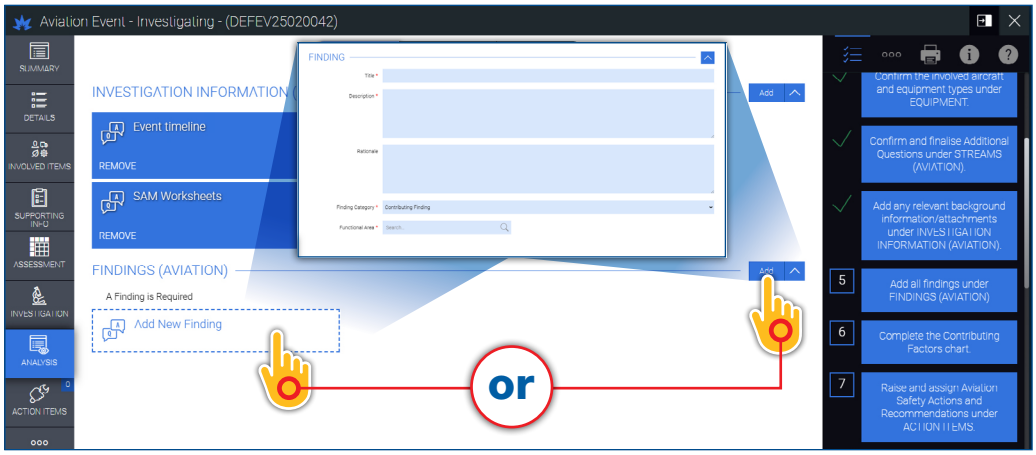

Figure 46: Add a finding (standard method)

Contributing Factors method. Only contributing findings can be entered through the Contributing Factors tab. For descriptions of contributory findings, positive findings, and indirect findings, refer to **Step 4: Develop findings**:

- Select the Contributing Factors tab on the 'Analysis' page.
- Add a finding by selecting 'Add Finding' **(Figure 47).**

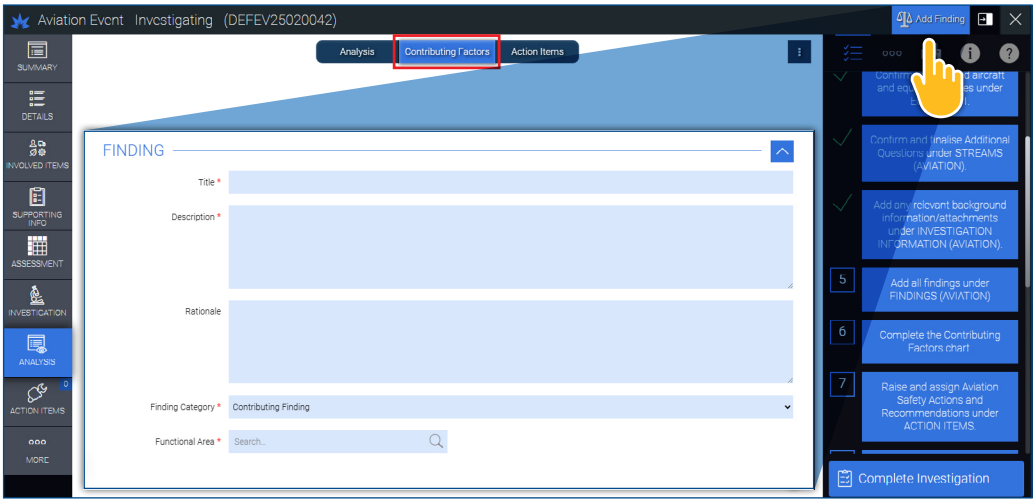

Figure 47: Add a finding (Contributing Factors method)

Finding Title and Description

The title of the finding should be a short summary of the finding. To assist with the readability and formatting of the Sentinel report, the title for each finding should include a numerical reference (e.g. 01, 02, 03) as per the Title shown at **Figure 48**.

The finding description should describe the conclusions drawn from the analysis of the gathered information **(Step 4: Develop findings)**.

Rationale

A hallmark of a thorough and robust investigation is that the finding or findings are supported by a rationale. The Rationale field **(Figure 48)** should provide a short summary of any relevant factual information and associated judgments or justification for the finding. The rationale can be thought of as the analysis of the information collected and gives the necessary context and justification to understand the finding. When providing a rationale, reference may be made to more detailed information that has been entered into the Investigation Information (AVIATION) section within the Analysis area of Sentinel or to the supporting material in Attachments (see **Attachments added to Investigation Information**).

Finding Category

Select whether the finding is a contributory finding, positive finding, or an indirect finding as described in **Step 4: Develop findings**.

Functional Area

Select which functional area the finding applies to. If the finding applies to more than one functional area, select the functional area with the greatest influence on the finding. The functional area is only available for contributing findings.

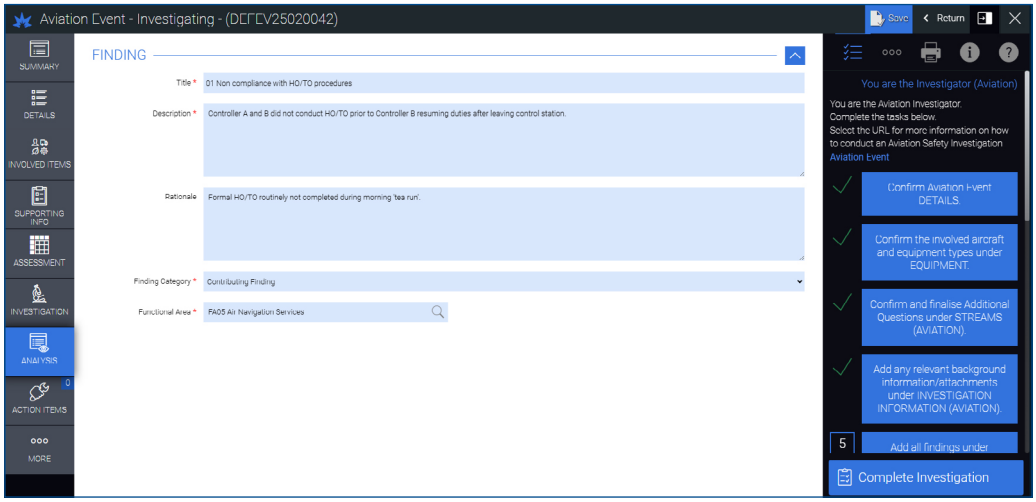

Figure 48: Finding tab

Contributing Factors (checklist item 6)

The Contributing Factors tab is accessed from the 'Analysis' page (**Figure 49)**. Contributing factors are to be coded once all the findings have been entered. Contributing factors are only available for contributory findings.

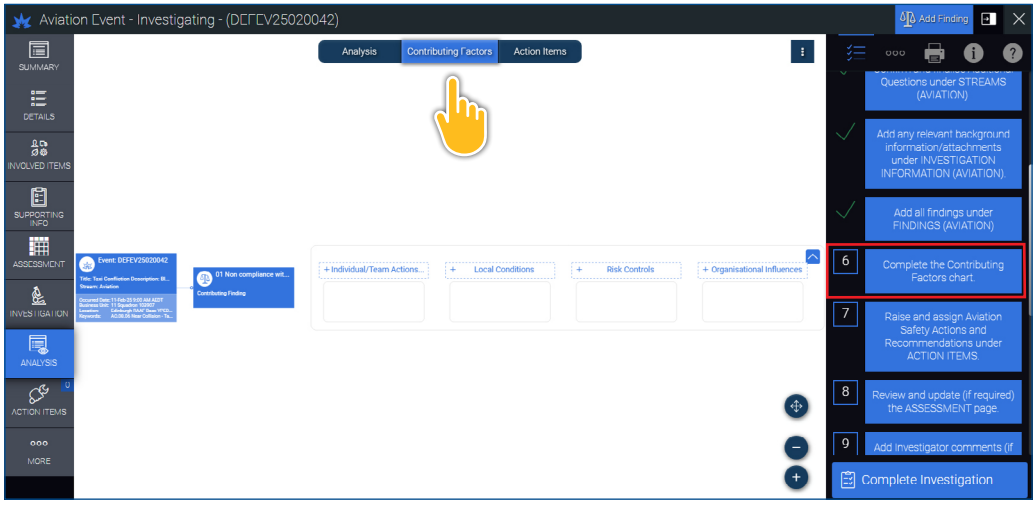

Figure 49: Contributing Factors tab

Code each contributory finding using the contributing factors in the SAM. The SAM is available at Attachment 8 to this Guide and on the DFSB website (DPN only).

Key considerations when coding contributing factors include:

- Contributing factors must have a related contributory finding(s).
- Identify key contributing factors and avoid selecting multiple similar factors which could lead to an unduly complex graphical view and the double counting of contributing factors. For example, there is no need to code 'Active Supervision/ Control' twice if it was found that the supervisor did not enforce HO/TO procedures in two instances. The contributing factors coding essentially describes the 'gist' of the findings in a few key words.
- Contributing factor identification enables formulation of appropriate and effective actions and recommendations to prevent recurrence.

The contributing factor can be entered by intelligent search by typing into the bar or manually selected via the search icon **(Figure 50)**.

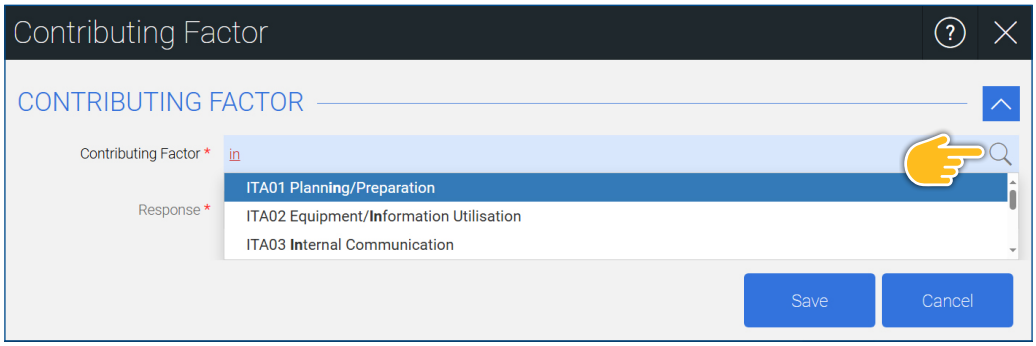

Figure 50: Search for Contributing Factor

Definitions for contributing factors can be accessed by selecting the info icon **(Figure 51)**.

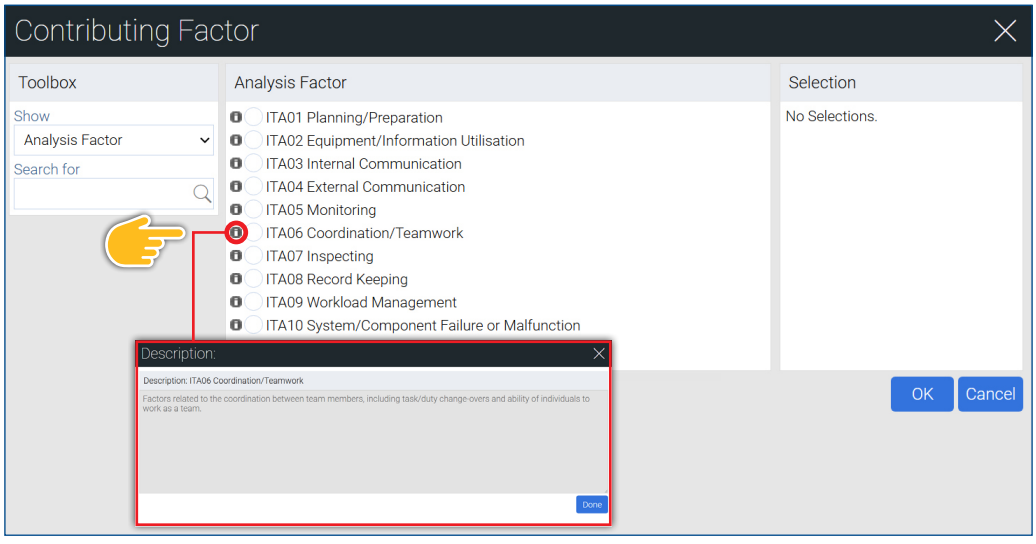

Figure 51: Contributing Factors definition via info icon

For Individual/Team Action contributing factors, select the response that identifies it as an error or a violation **(Figure 52)**.

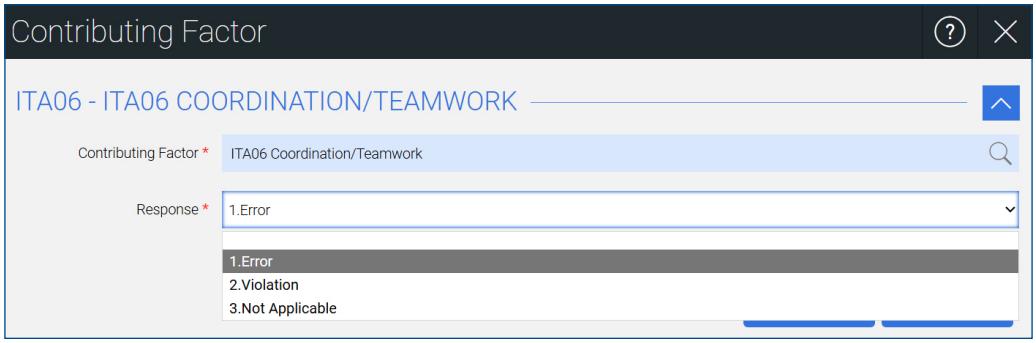

Figure 52: Response field for Individual/Team Actions

For Technical Failure/Malfunction contributing factors, select the response 'Not Applicable'.

For Risk Control contributing factors, select the response that identifies it as being preventative or recovery and whether the risk control was absent, partially failed, or completely failed **(Figure 53)**.

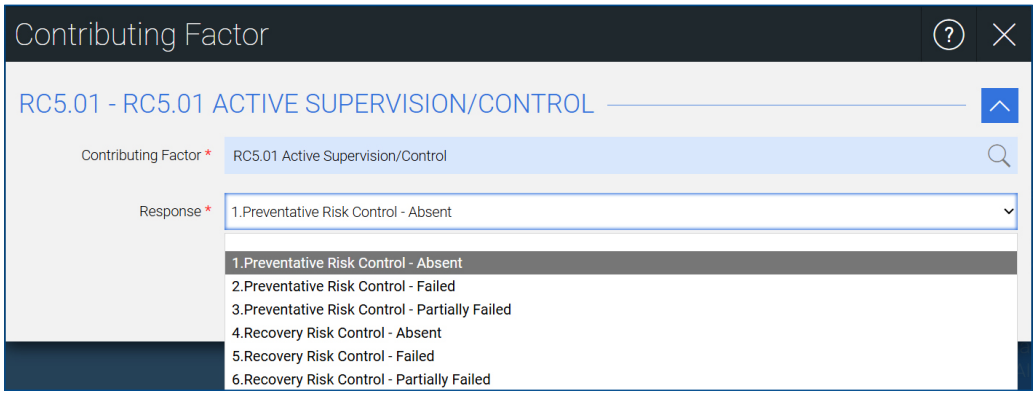

Figure 53: Response field risk controls

Graphical Overview

Once all contributory factors for the event are coded, a graphical overview can be generated by selecting Contributing Factors tab from the 'Analysis' page **(Figure 54)**. This overview displays contributory findings and the contributing factors. The overview can be printed by selecting the printer icon on the top right hand side of the screen.

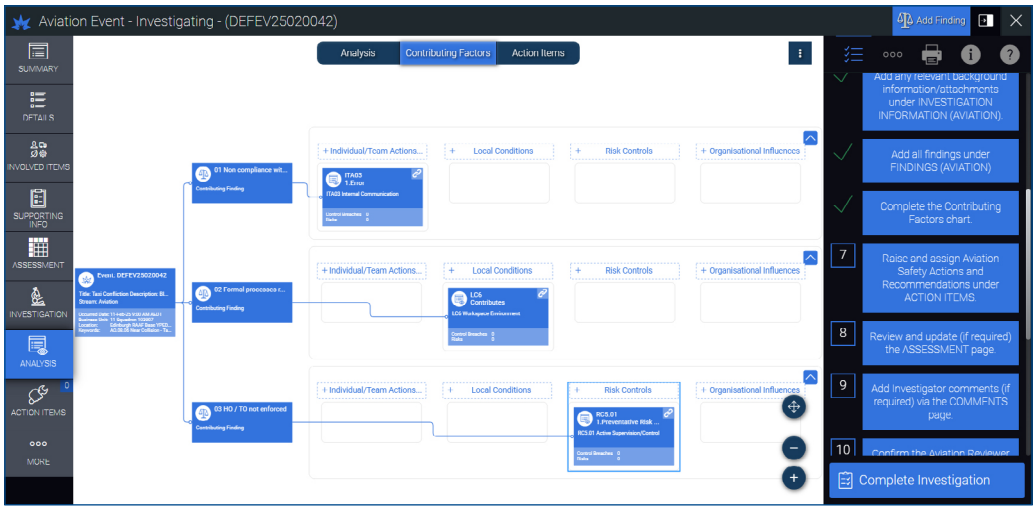

Figure 54: Graphical overview of contributing factors

Aviation Safety Actions and Recommendations (checklist item 7)

Checklist item 7 navigates the user to the Action Items page **(Figure 55)**. This is where the user can raise new aviation safety actions or recommendations and assign them to recipients as well as recording safety actions already completed.

Aviation safety actions and recommendations **must** be derived from the investigation findings (contributory or indirect findings only).

Aviation Safety Actions are those activities assigned by the AA to an individual within the span of their command/management authority. For example, if the AA is the CO, safety actions are only to be assigned to personnel within the unit.

Aviation Safety Recommendations are any activities that fall outside the responsibility/command authority of the event unit that are deemed appropriate to prevent a recurrence. All safety recommendations must be assigned to the Hazard Tracking Authority (HTA) representative — WASO for Air Force units; Navy and Army have dedicated administrators to carry out this process.

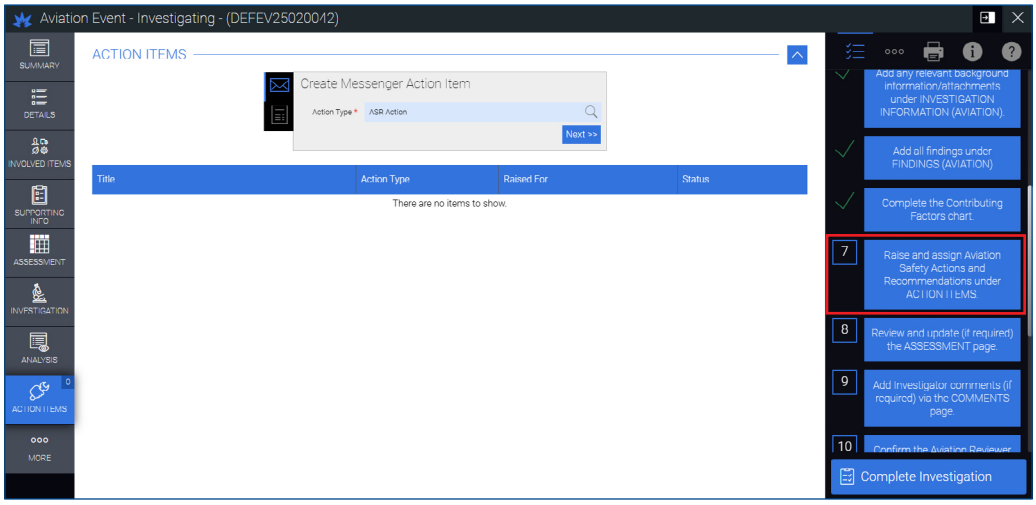

Figure 55: Action Items page

Raising new Aviation Safety Actions or Recommendations

To raise a new Aviation Safety Action or Recommendation, select either an aviation safety action ('ASR Action') or aviation safety recommendation ('ASR Recommendation'), see **Figure 56**. The search icon allows the selection of other ASR action types — ASR Recommendation and ASR Completed Action.

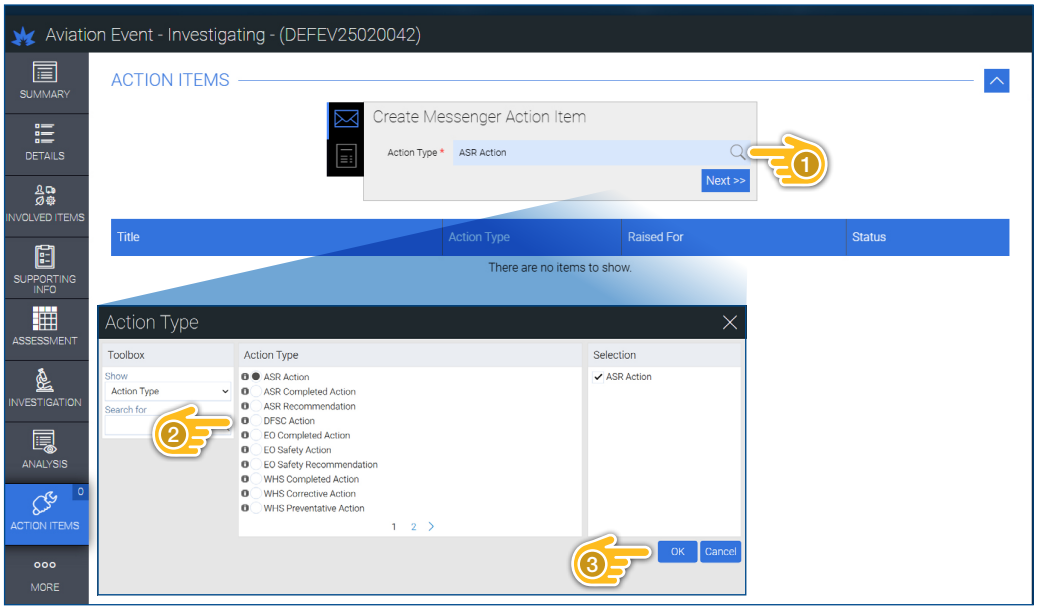

Figure 56: Create Aviation Safety Action or Recommendation

The information icon provides a description of each of the ASR actions types **(Figure 57)**.

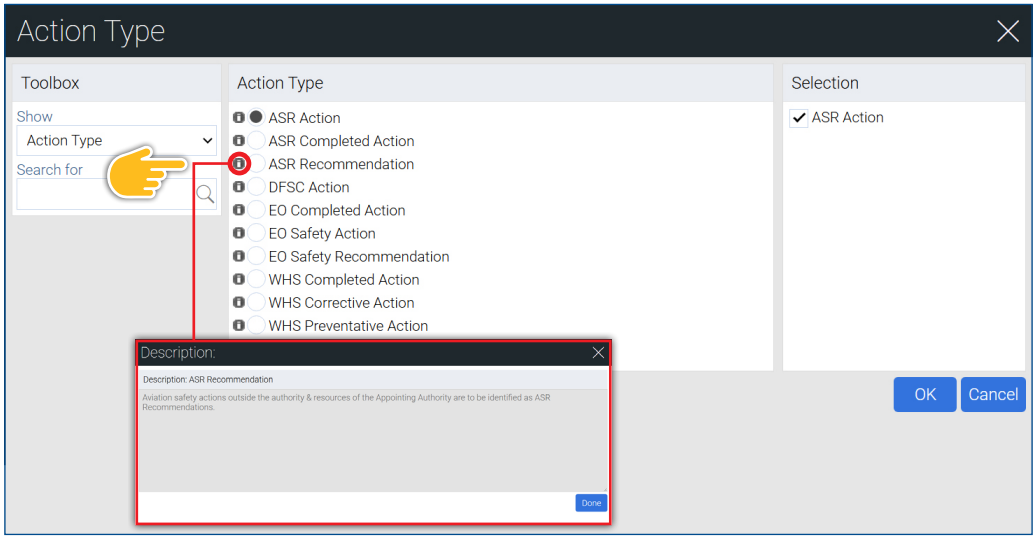

Figure 57: Action type description

Enter the recipient(s) of the action or recommendation. The recipient(s) of the 'To' fields are to **complete** the action or recommendation. For a recommendation, the 'To' recipient should be the HTA representative — WASO for Air Force units; Navy and Army have dedicated administrators to carry out this process.

Note:
It is recommended that only a single recipient be used for actions or recommendations to prevent processing delays. If more than one 'To' recipient is added, the system will default to 'All must complete' — a state where all the recipients must mark the action as 'Complete' before the report can be progressed. It is recommended that the 'All must complete' button is unchecked **(Figure 58)** to avoid the scenario where the report is held up if one or more of the 'To' recipients has not marked the action as complete.

The recipients of the 'CC' field are not required to complete the action, but it is also strongly encouraged that the 'All must complete' button is also deactivated. This is because of a known glitch in the system where the 'CC' recipient(s) is also required to mark the action as complete before the report can progress.

Recipients are added by selecting the 'Add Recipient' button. A recipient can be searched for in the search field (**Figure 58**). The information icon provides more details about the person (e.g. business unit) to assist with the selection.

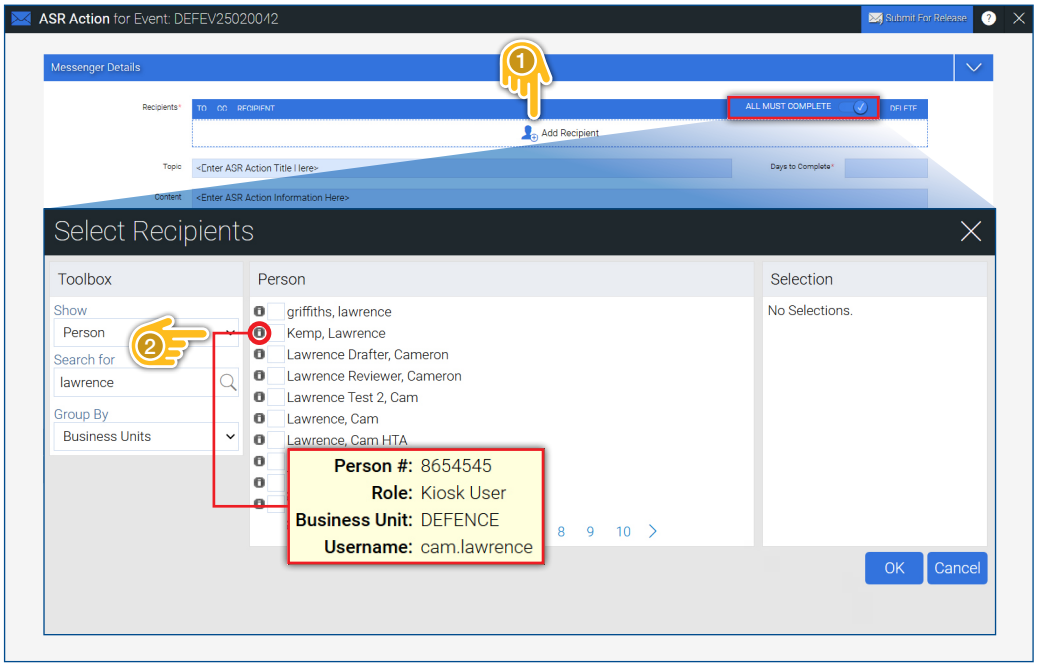

Figure 58: Searching for a recipient

Add a title (topic) and a brief description (content) of the safety action or recommendation. When describing the action or recommendation, keep in mind the principles of effective safety actions and recommendations outlined in **Step 5: Determine effective safety actions and recommendations**.

For aviation safety actions, enter the number of days the recipient has to complete the action once the action is approved by the AA. The maximum number of days is 365.

For aviation safety recommendations, enter the number of days to accept or reject the recommendation. The maximum number of days is 999.

Leave the 'Sign Off Required By' and the 'Days to Sign Off' sections BLANK **(Figure 59)**. Unless specified as part of a local business process, **DO NOT** add a Sign Off Authority as it may delay processing of the report through Sentinel.

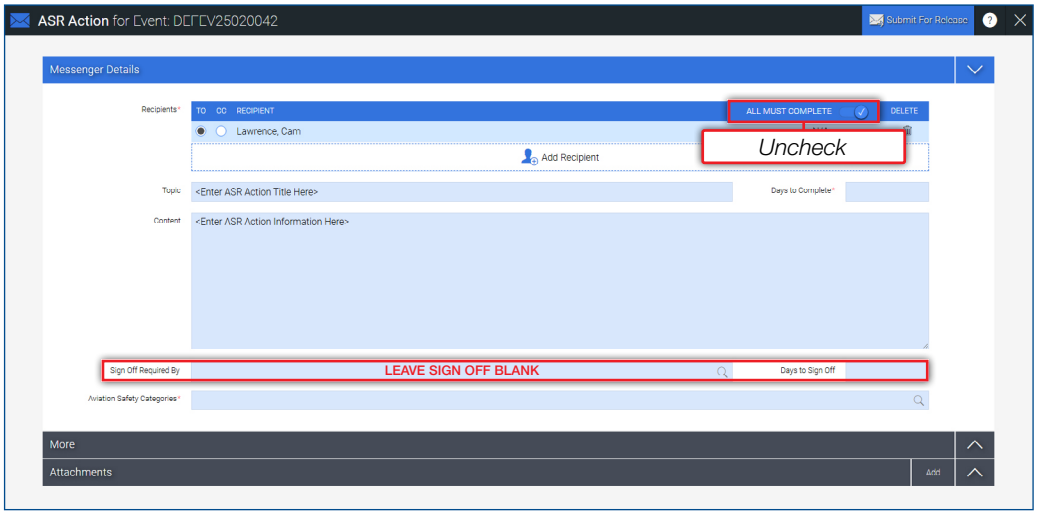

Figure 59: Raising Aviation Safety Action or Recommendation

Next, code the category of aviation action or recommendation in the Aviation Safety Category section. The coding of safety actions and recommendations will allow the later analysis of the types of actions or recommendations that are raised as a result of safety investigations, and the types of actions and recommendations related to event type keywords. The Actions and Recommendations Taxonomy and their definitions is available at Attachment 9 to this Guide and on the DFSB website (DPN only).

Attachments can be added at the bottom of the page. Attachments added here will not be visible via the Attachment tile but will only be available through the associated action or recommendation.

Click on 'Submit For Release' button on the top right of the page. The safety action or recommendation will be sent to the AA to progress. Actions and recommendations must be released by the AA, before they are sent to the recipients.

Recording ASR Completed Actions

To record an aviation action or recommendation already completed, select 'Completed Action' using the search icon **(Figure 56)**. This allows the recording of the completed action as well as who it was actioned by.

Search for and select the actionee per **Figure 58**, then code the Aviation Safety Category for the Completed Action. The coding of safety actions will allow the later analysis of the types of actions that are raised or completed as a result of safety investigations, and the types of actions related event type keywords. The Actions and Recommendations Taxonomy and their definitions is available at Attachment 9 to this Guide and on the DFSB website (DPN only).

Attachments can be added at the bottom of the page. Attachments added here will not be visible via the Attachment tile and will only be available through the associated action or recommendation.

Ensure the Sign off Required By and **Days to Sign off** are left **BLANK**, and click 'Mark as Complete' at the top right corner of the screen **(Figure 60)**.

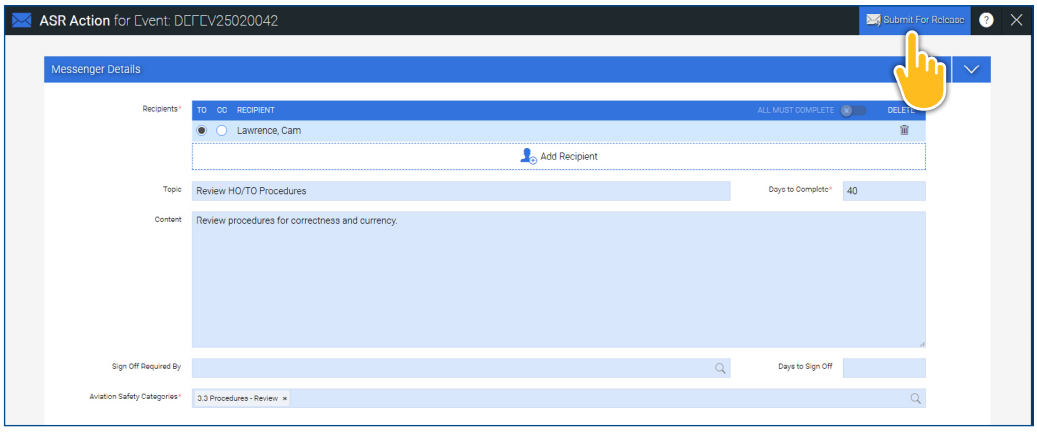

Figure 60: Recording ASR Completed Actions

Investigation Summary

If appropriate, enter a summary of the investigation. Click on the Investigation tile **(Figure 61)**. A summary of the findings and the actions or recommendations raised may be useful to the reader/AA if the investigation was complex. The investigation summary area should only be used to summarise the investigation and should not be the only area where the findings and contributing factors are recorded. Ensure that all findings and contributing factors are recorded into the Analysis page.

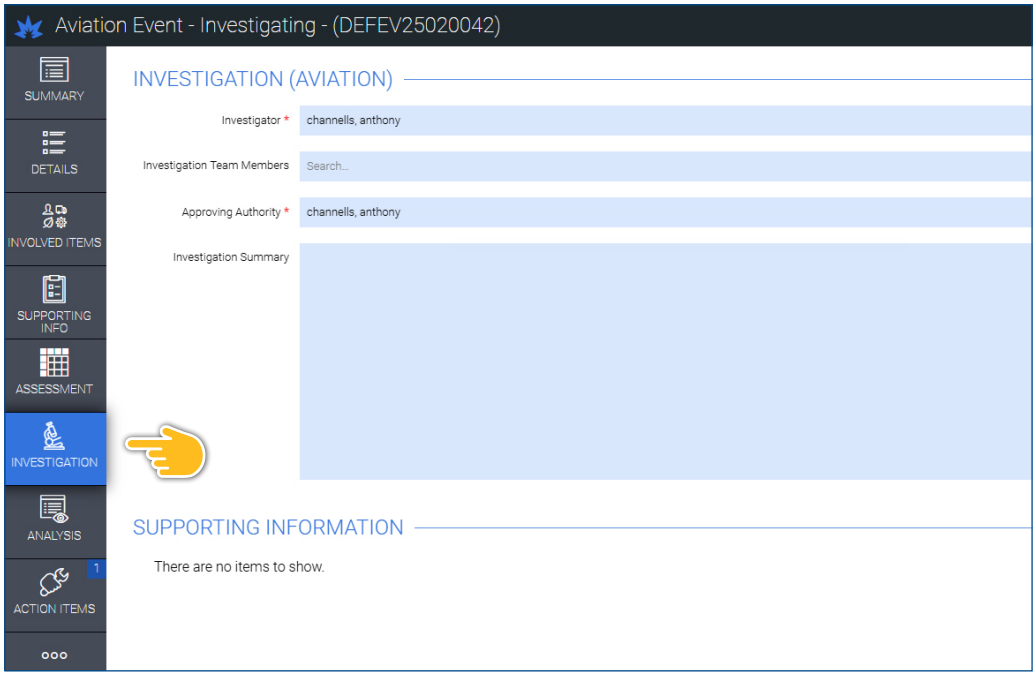

Figure 61: Investigation summary

Add Investigator Comments (checklist item 9)

The investigator(s) can add a comment about the investigation and any actions or recommendations. If required, add a comment **(Figure 62)**. Ensure the correct comment category is selected. Once complete, select the tick icon (☑) to save the comment. Comments added here will be included in the full report (viewable via Sentinel and Salus).

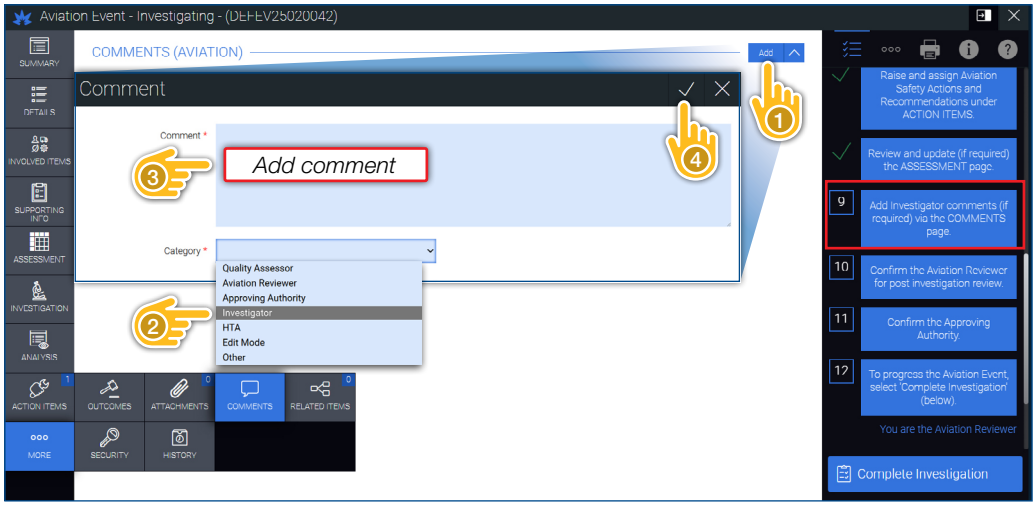

Figure 62: Add Comments page (Investigator)

Complete Investigation (checklist item 12)

Once all the checklist items are completed, select 'Complete Investigation'. The report is then sent to the Aviation Reviewer for review. An error message will appear if all mandatory tasks have not been completed **(Figure 63)**. Clicking on the error message will take the investigator to the section of the report that requires completion.

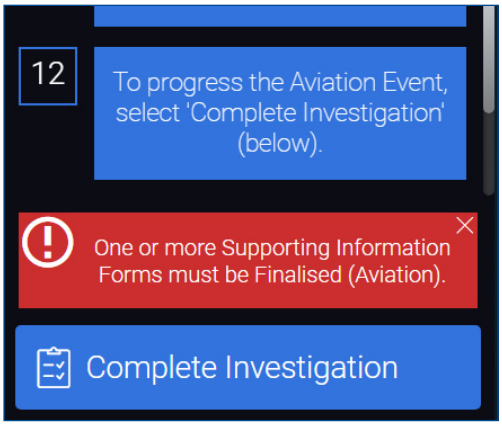

Figure 63: Complete investigation

PART FOUR:

Aviation Reviewer (S1) and Approving Authority (S2)

Sequence 1 (S1) Review

When the investigation has been completed, the fields are locked (greyed out) and the report is sent to the Aviation Reviewer (for S1 Review), refer **Figure 64**. The Aviation Reviewer performs the following tasks:

- reviews Actions/Recommendations (edits, or creates new Actions/Recommendations if needed)
- enters comments via the Comments page
- progresses the report (submits the report to the Approving Authority (AA) (for S2 Review) or re-opens the investigation and sends the report back to the investigator).

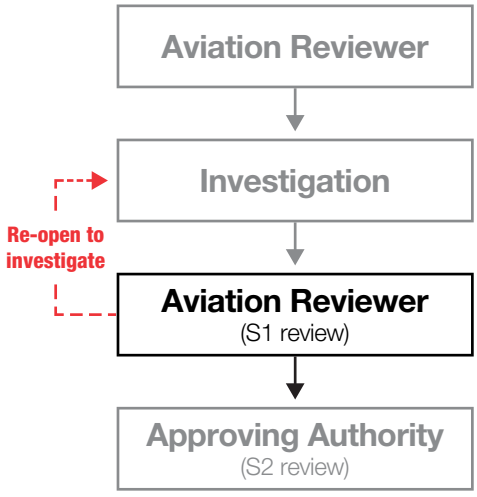

Figure 64: S1 Review workflow

Aviation Reviewer (S1) Checklist

The Aviation Reviewer will be presented with a checklist which lists the tasks to be completed to progress the report to the next stage of the workflow. Each checklist item directs the reviewer to the corresponding area of the Sentinel event, refer **Figure 65**.

Note:
All mandatory tasks in the S1 Review checklist must be completed before the review can be marked as complete and progressed to the next stage of the workflow. An error message will display if the reviewer attempts to progress past the S1 Review stage and a mandatory task has not been completed. By clicking on the error message, the reviewer will be taken to the relevant area to be completed.

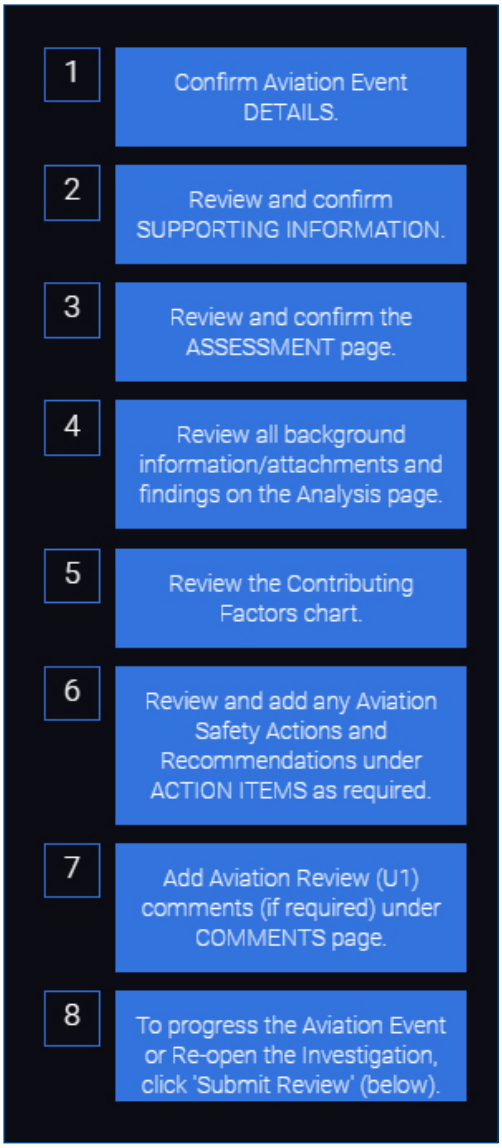

Figure 65: S1 Review Checklist

Checklist items 1, 2, 3, 4 and 5 direct the reviewer to review the description, time, location, involved aircraft, other equipment information, supporting information (eg event taxonomy keyword selection), investigation analysis, findings and contributing factors.

Complete checklist items 1, 2 and 3, as per the instructions given in **Aviation Event – Aviation Reviewer Checklist**.

Complete checklist items 4 and 5, as per the instructions given in the **Investigator Checklist**.

Note:
If changes are required to be made to locked (greyed out) fields, the investigation will need to be re-opened to incorporate a change. Alternatively, contact DFSB for edit support (asr.servicedesk@defence.gov.au).

The following sections provide detailed information on completing checklist items 6, 7 and 8.

Review, Edit, Add Actions and Recommendations (checklist item 6)

Access the Investigation Actions and Recommendations via the checklist task #6 or via the Action Items tile **(Figure 66)**. The S1 Reviewer can edit or delete actions or recommendations previously raised from the investigation. All edits are recorded in the change history of the event.

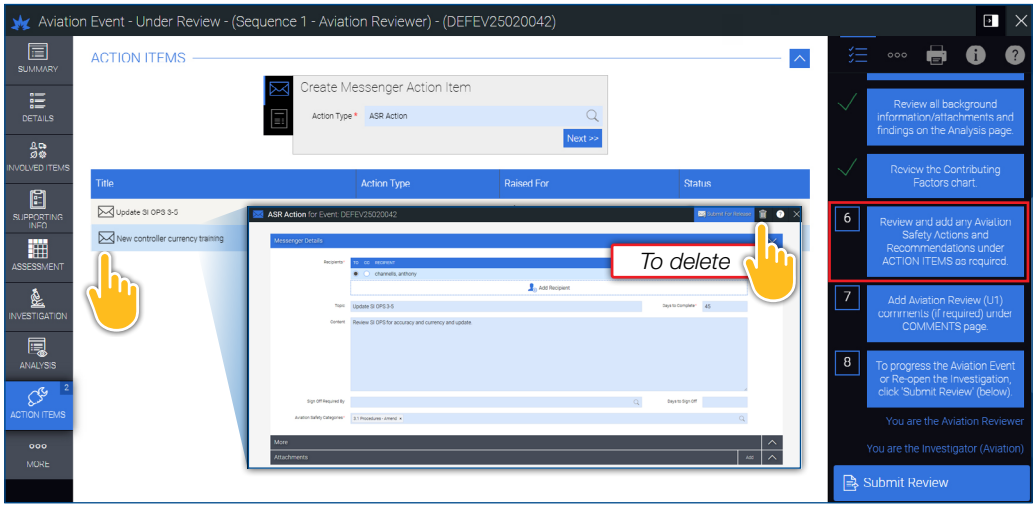

Figure 66: Action Items page

The S1 Reviewer can add actions or recommendations. All actions/recommendations should conform to the SMARTER format and be derived from the investigation findings (refer **Step 5: Determine effective safety actions and recommendations**).

Note:
Actions and recommendations will not be sent to the addressee(s) until after they are 'Released' by the AA.

Add Aviation Reviewer (S1) Comments (checklist item 7)

The S1 Reviewer is to review the existing comments and to add their own comments. The S1 Reviewer can also edit or delete existing comments to define the final record of the event.

If required, add a comment **(Figure 67)**. Ensure the correct comment category is selected. Once complete, select the tick icon (☑) to save the comment.
All edits are recorded in the change history of the event.

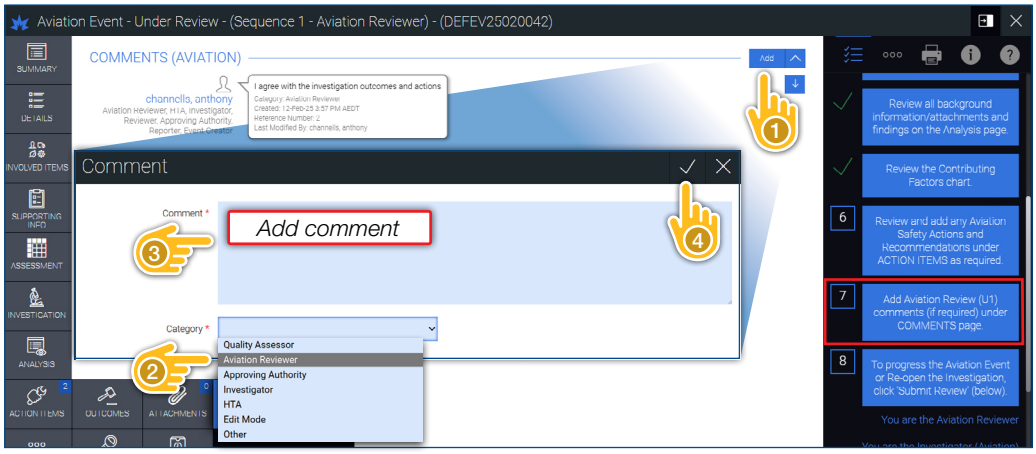

Figure 67: Add Comments page (S1 Review)

Submit Review (checklist item 8)

The final checklist task for the S1 Review is to 'Submit Review' **(Figure 68)**. The Reviewer must enter a workflow comment and either 'Send to Next' or re-open the investigation. Workflow comments are comments for the next user in the workflow and are not included in the final report.

- 'Send to Next' sends the report to the AA for review and final Sign Off.
- 'Reopen Investigation' sends the report back to the Investigation stage.

The reviewer can also re-open the investigation via the 'More' button ( ).

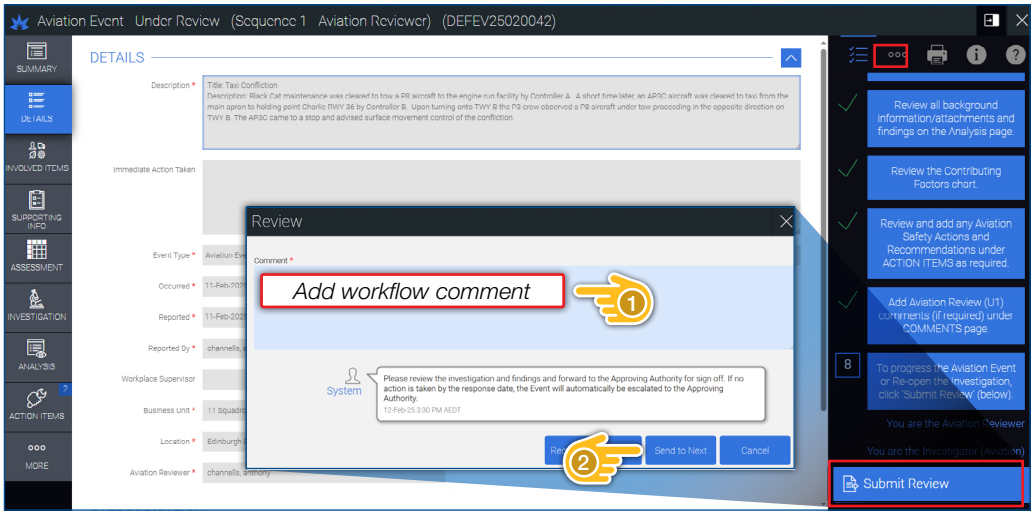

Figure 68: Submit Review (S1)

Sequence 2 (S2) Review

The AA role is normally performed by the CO or equivalent. When the S1 Review is completed, or the investigation is bypassed, the fields are locked (greyed out)

and the report is sent to the AA (for S2 Review), refer **Figure 69**. The AA performs the following tasks:

- reviews Actions/Recommendations (edits, or creates new Actions/Recommendations if needed)
- releases Actions/Recommendations to the addressees
- reviews previously entered comments
- enters comments via the Comments page
- progresses the report (Signs off the report or re-opens the investigation and sends the report back to the investigator).

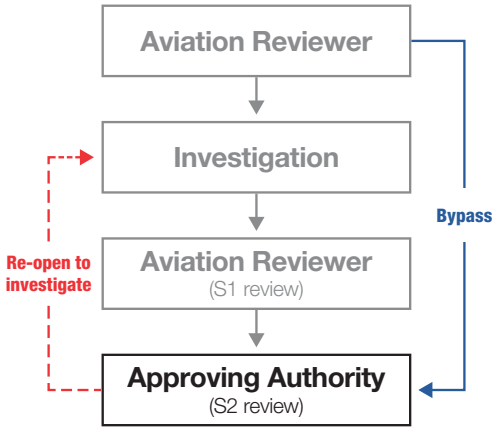

Figure 69: S2 Review workflow

Approving Authority (S2) Checklist

The AA will be presented with a checklist which lists the tasks to be completed to progress the report to the next stage of the workflow. Each checklist item directs the reviewer to the corresponding area of the Sentinel event, refer to **Figure 70**.

Checklist items 1, 2, 3, 4 and 5 direct the reviewer to review the description, time, location, involved aircraft, other equipment information, supporting information (eg event taxonomy keyword selection), investigation analysis, findings and contributing factors.

Note:
All mandatory tasks in the S2 Review checklist must be completed before the review can be marked as complete and progressed to the next stage of the workflow. An error message will display if the reviewer attempts to progress past the S2 Review stage and a mandatory task has not been completed. By clicking on the error message, the reviewer will be taken to the relevant area to be completed.

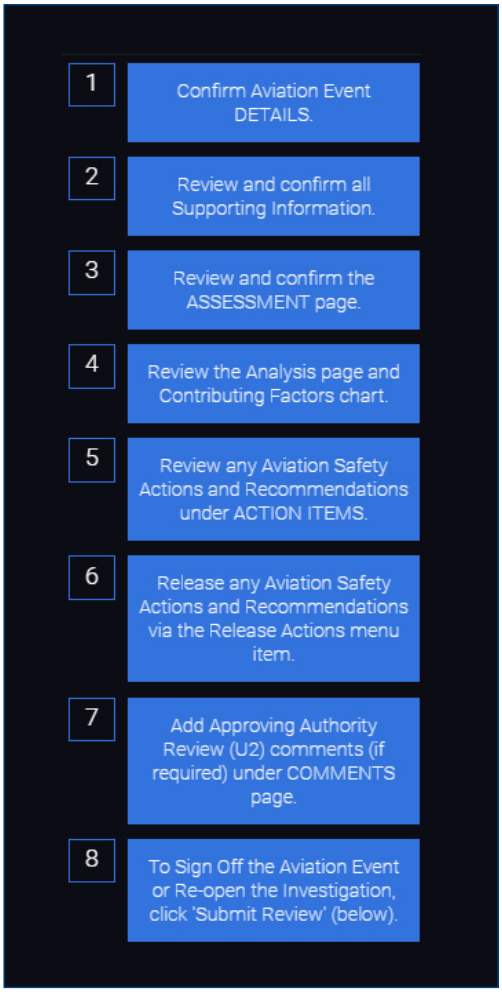

Figure 70: S2 Review Checklist

Complete checklist items 4 and 5, as per the instructions given in the **Investigator Checklist**.

> **Note:**
> If changes are required to be made to locked (greyed out) fields, the investigation will need to be re-opened to incorporate a change. Alternatively, contact DFSB for edit support (asr.servicedesk@defence.gov.au).

The following sections provide detailed information on completing checklist items 6, 7 and 8.

Release Actions and Recommendations (checklist item 6)

Open the additional menu options via the 'More' button (•••) and select 'Release Actions' **(Figure 71)**.

Figure 71: Release Actions and Recommendations

Once released, the status of Actions and Recommendations changes from 'Awaiting Release' to 'Pending' and the Actions and Recommendations are sent to the addressees **(Figure 72)**.

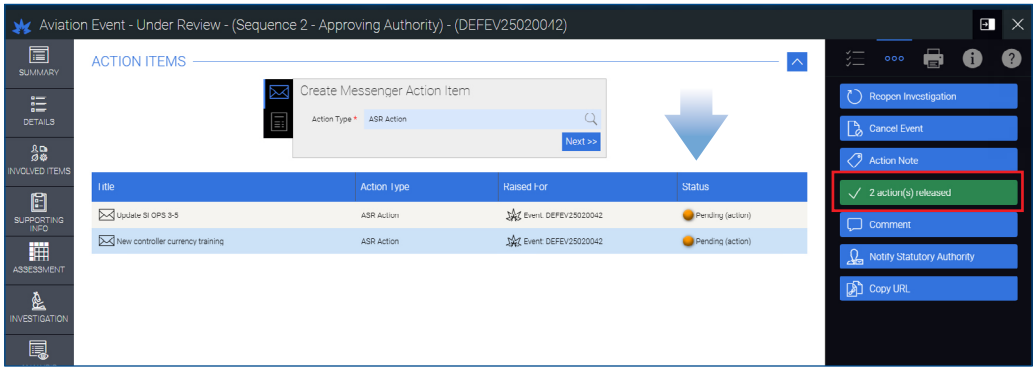

Figure 72: Released Actions and Recommendations.

Note:
The AA must release the Actions and Recommendations to send them to the actionees.

Review Comments, add AA Comment (checklist item 7)

Review the existing comments and add AA comments as per the instructions for S1 Review, Add **Aviation Reviewer (S1) comments (checklist item 7)**.

Submit Review (checklist item 8)

The final checklist task for the S2 Review is to 'Submit Review' **(Figure 73)**. The Reviewer must enter a workflow comment and either 'Sign Off', 'Send to Previous' or re-open the investigation. Workflow comments are comments for the next user in the workflow and are not included in the final report.

- Selecting 'Sign Off' locks all fields and the status of the report changes to 'Signed Off'.
- 'Send to Previous' sends the report back to the S1 Review stage.
- 'Reopen Investigation' sends the report back to the investigation stage.

The Reviewer can also reopen the investigation via the 'More' button (•••).

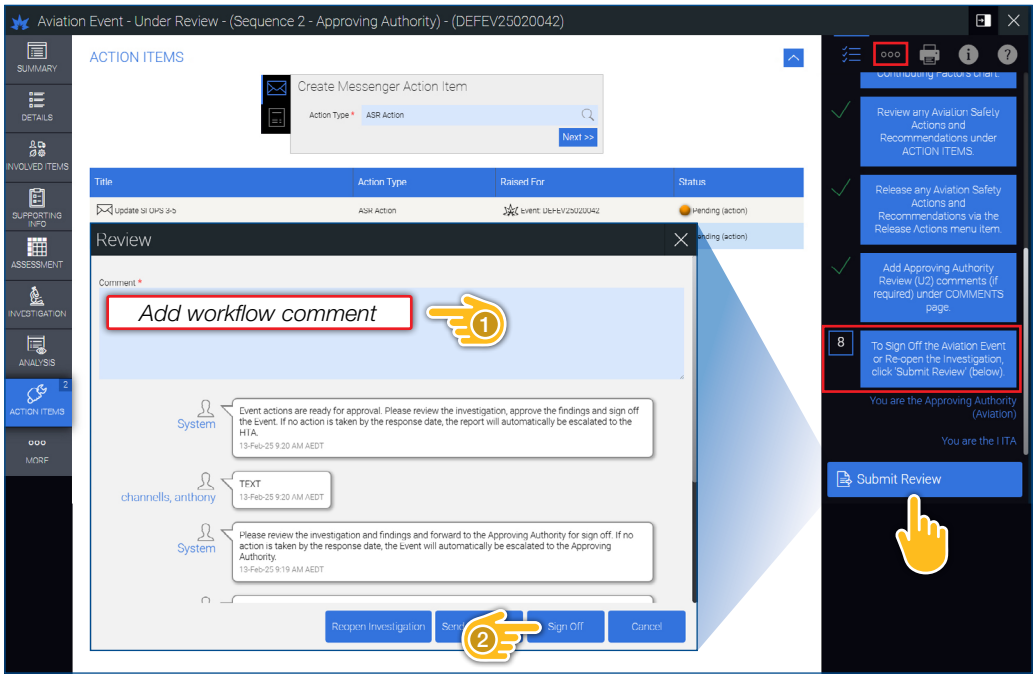

Figure 73: Submit Review (S2)

When ‘Sign Off’ is selected, the ‘Send Mercury Message’ pop-up will appear **(Figure 74)**.

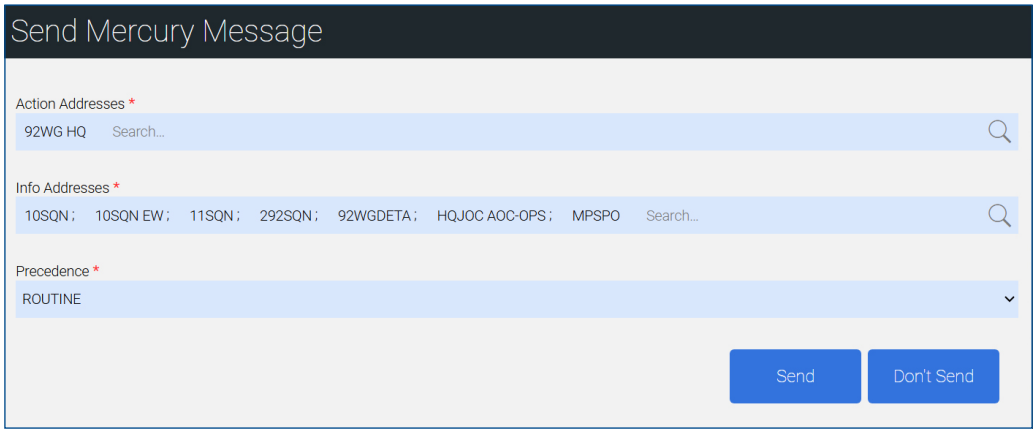

Figure 74: Mercury Message pop-up

The AA should consult with their senior aviation safety representative on the requirement to send the Mercury Message.

- If a message is not required to be sent, select ‘Don’t Send’.
- If a message is required to be sent, populate the required fields then select ‘Send’.

Note:
Mercury Message addressees can be added or removed as needed. If an update to the Mercury Message is required, the senior aviation safety representative should send a request for amendment to the ASR Service Desk (asr.servicedesk@defence.gov.au).

ANNEX A:

List of Attachments

Attachment	Title
Attachment 1	Event Keyword Taxonomy
Attachment 2	Classification of Aviation Safety Events – Flight Operations
Attachment 3	Classification of Aviation Safety Events – UAS Operations
Attachment 4	Classification of Aviation Safety Events – Airworthiness
Attachment 5	Classification of Aviation Safety Events – Aviation Services & Facilities
Attachment 6	Interviewing Techniques – Guide for Investigators
Attachment 7	Safety Analysis Worksheet
Attachment 8	Contributing Factors Taxonomy - Defence Safety Analysis Model (SAM)
Attachment 9	Actions and Recommendations Taxonomy

All attachments are embedded within the e-copy of this Guidebook. Use the keyboard shortcut F4 to view and open the attachments. The attachments may also be downloaded separately from the DFSB website (DPN only).

Aviation Safety Reporting (ASR) Support

ASR.Servicedesk@defence.gov.au

OR

02 6128 7476