SAILPLANE ACCIDENT & INCIDENT INVESTIGATION MANUAL

A Practical Framework for Occurrence Investigation, Human Factors Analysis, and Safety Improvement

- SYSTEMS THINKING
- HUMAN FACTORS
- JUST CULTURE
- EVIDENCE BASED INVESTIGATION
- SAFETY IMPROVEMENT

Christopher Thorpe

INVESTIGATE | ANALYSE | IMPROVE

May 2026 | Version 1.0

LEARN | UNDERSTAND | PREVENT

About the Author

Christopher Thorpe retired in 2023 as Executive Manager, Operations of the Gliding Federation of Australia following many years of involvement in the recreational aviation sector and Australian gliding operations.

During his time with the Federation, he contributed to the development and implementation of several national operational and safety systems, including the occurrence reporting and investigation framework, the Safety Management System (SMS), and the national tow pilot training system following its devolution by CASA in 2014. He also provided technical oversight and developmental support for the Glider Pilot Certificate (GPC) training syllabus and associated operational training materials.

Christopher continues to contribute actively to the gliding community as a Deputy Chief Flying Instructor, Level 3 Instructor, and Chair of his local aerodrome operations committee. He has assisted in gliding-related legal proceedings and has liaised with the Australian Transport Safety Bureau (ATSB), the New Zealand Transport Accident Investigation Commission (TAIC), State police agencies, and coronial authorities in relation to accident investigation and aviation safety matters.

His professional interests continue to focus on aviation safety, occurrence investigation, Human Factors, Just Culture, and the development of practical, systems-focused approaches to risk management and safety improvement within the gliding community.

May 2026 | Version 1.0

This manual has been developed for use by Gliding Australia as guidance material and is intended to support existing Gliding Australia safety policies, procedures, and systems. It does not, of itself, constitute a Gliding Australia policy or regulatory document unless and until formally adopted through Gliding Australia's governance processes.

Preface

The safety of sailplane and tow-plane operations depends not only upon sound airmanship and technical competence, but also upon the ability of organisations to learn effectively from accidents, incidents, hazards, and operational experience. Effective occurrence investigation is therefore a critical component of aviation safety management and continuous operational improvement.

Designed for use by club officials, instructors, safety officers, Regional Managers, operational leaders, and accredited investigators, this manual provides a practical framework for the consistent, transparent, and methodical investigation of accidents and incidents within Australian gliding operations. It has been developed to support Gliding Australia's role as an Approved Self-Administering Aviation Organisation (ASAO) operating under the Civil Aviation Safety Regulations (CASR) Part 149 framework.

The purpose of this manual is not merely to identify the immediate events preceding an occurrence, but to understand the broader operational, organisational, technical, behavioural, and Human Factors influences that contributed to its development. By examining occurrences in a structured and objective manner, investigators are better able to identify systemic safety issues, develop meaningful findings, and support safety improvements that reduce the likelihood of recurrence.

This manual is founded upon the principles of Just Culture and modern safety management. It emphasises that effective safety investigation depends upon openness, cooperation, fairness, and organisational learning. The purpose of safety investigation is to improve safety through learning, analysis, and systemic improvement rather than through simplistic assignment of blame. At the same time, the manual recognises that professional accountability, sound judgement, and responsible operational conduct remain essential elements of aviation safety.

The guidance contained within this manual reflects contemporary aviation safety investigation principles, including systems thinking, Human Factors analysis, behavioural assessment, organisational influence evaluation, and evidence-based investigative methodology. It is intended to support investigators in moving beyond simplistic conclusions focused solely on individual actions and instead encourage examination of the broader operational environment in which decisions and behaviours occurred.

Whether an occurrence involves a minor operational event or a serious accident, the framework provided in this manual supports the preservation of evidence, structured analysis of technical and operational factors, assessment of Human

Factors and organisational influences, and development of practical, proportionate, and safety-focused recommendations.

This publication has been developed to support Gliding Australia's commitment to continuous safety improvement, effective occurrence reporting, and professional investigation standards across the Australian gliding community. By promoting consistent investigative practices and encouraging open learning from operational experience, the manual contributes to the ongoing development of a safer and more resilient aviation environment for all participants in gliding operations.

This manual is intended as operational guidance material and should be read in conjunction with applicable legislation, CASA regulations, Gliding Australia operational documents, and relevant ATSB and ICAO guidance material. It does not replace statutory investigation requirements or regulatory responsibilities established under Australian law.

Contents

Preface 1

Contents 3

Chapter 1: Introduction and Purpose 11

- The Importance of Accident and Incident Investigation 11
- Purpose of This Manual 12
- Scope of Investigations 13
- Relationship with Other Authorities 13
- Continuous Improvement and Organisational Learning 14

Chapter 2: Just Culture and the No-Blame Philosophy – Foundations of Aviation Safety Investigation 15

- Introduction 15
- What Is a Just Culture? 15
- No-Blame Philosophy: What It Is and Isn't 16
- Comparison: Just Culture vs. Blame Culture 17
- Why Just Culture Matters in Gliding Clubs 19
- Applying Just Culture in Investigations 19
- Distinguishing Between Errors and Misconduct 20
- Examples of Behavioural Categories and Appropriate Safety Responses 21
- Building a Just Culture in Your Club 22
- Case Study: Rigging Error Incident 23
- Conclusion 24

Chapter 3: Managing Conflict of Interest in Sailplane Accident Investigations 25

- Introduction 25
- Defining Conflict of Interest 25
- Why Conflict of Interest Matters 26
- Recognising Conflict of Interest 27
- Perception Matters as Much as Reality 27
- Cognitive Bias and Investigative Objectivity 28
- Strategies for Managing Conflict of Interest 29
- Case Examples 30

Just Culture and Conflict Management 31
Conclusion 31
Chapter 4: Legal and Organisational Framework 33
International Standards: ICAO Annex 13 33
National Oversight: CASA and the ATSB 34
Gliding Australia's Role as an ASAO 35
Role of State Police and Coroners in Fatal Accidents 36
Club Responsibilities and Obligations 37
Just Culture and Legal Responsibilities 38
Conclusion 39
Chapter 5: Timely and Accurate Reporting – The Cornerstone of Safety Investigation 40
Mandatory Reporting Requirements 40
Club and Member Responsibilities 42
Importance of Accurate Reporting 43
Notification Content Requirements 43
Follow-Up Reporting and Investigation Support 45
Reporting Culture and Organisational Learning 45
Conclusion 45
Chapter 6: Initial Response and Site Management – Protecting Life, Preserving Evidence, and Managing the Scene with Discipline and Care 46
Emergency Priorities 46
On-Scene Control and Coordination 48
Safety Lookout 48
Aviation-Specific Hazards 49
Rescuer Safety 49
Site Security and Evidence Preservation 50
Remote Accident Sites and Police Management 50
Recordkeeping and Handover 51
Human Factors Considerations During Initial Response 51
Key Take-Aways 51
Conclusion 52

Chapter 7: Securing and Documenting Evidence to Ensure a Sound Investigation 53
Scene Documentation....53
Physical Evidence....54
Data Recovery....55
Witness Information....56
Working with Police Investigators....56
Human Factors and Evidence Interpretation....57
Conclusion....57
Chapter 8: Conducting a Safe, Structured, and Credible Investigation....59
The Investigation Process....59
Report Preparation and Safety Recommendations....62
Investigator Roles and Responsibilities....63
Cooperation with External Authorities....64
Conclusion....64
Chapter 9: Human and Organisational Factors....65
Human Performance Analysis....65
Communication and Crew Resource Management (CRM)....68
Organisational Factors....69
Human Factors and Just Culture....71
Conclusion....71
Chapter 10: Behavioural Analysis and Just Culture Decision-Making....72
The Importance of Behavioural Analysis....72
Avoiding Hindsight Bias....73
Human Error....74
Violations, Procedural Drift, and Operational Adaptation....75
Safety Compromise and Operational Pressure....75
Reckless Conduct....76
The Substitution Test....77
Organisational Influences on Behaviour....77
Behavioural Decision-Making Framework....78
Appropriate Safety Management Responses....78
Positive Safety Behaviour....79

Conclusion 79

Chapter 11: Technical Investigation – Uncovering Mechanical and Environmental Factors in Accident Causation 81

Aircraft Examination 81

Tow Systems 82

Maintenance History 83

Environmental Conditions 84

Human Factors and Technical Investigation 85

Conclusion 85

Chapter 12: Analysis and Findings – Transforming Evidence into Understanding and Action 87

Data Correlation 87

Root Cause Identification 88

Immediate Causes, Contributing Factors, and Systemic Issues 90

Avoiding Hindsight Bias 90

Identifying Systemic Issues 91

Developing Findings 92

From Findings to Safety Action 92

Conclusion 92

Chapter 13: Safety Recommendations – Translating Findings into Safety Improvements 94

Developing Safety Recommendations 94

Implementation and Follow-Up 96

Monitoring Effectiveness 97

Evaluating Recommendation Effectiveness 98

Human Factors and Safety Recommendations 99

Conclusion 99

Chapter 14: Investigation Reporting – Documenting Investigations with Clarity, Accuracy, and Purpose 101

Purpose of Investigation Reports 101

Use, Disclosure, and External Scrutiny of Investigation Material 102

Practical Treatment of Investigation Material 102

Implications for Report Writing 103

Report Formats 104
ICAO Annex 13 Style – Full Investigation Reports 104
ATSB-Style Short Investigation Reports 105
Short-Form Reports 106
Style and Professional Standards 106
Privacy and Confidentiality 107
Report Distribution 107
Conclusion 107
Chapter 15: Investigator Qualifications and Training – Building and Maintaining a Capable Investigator Workforce 109
Role of the Investigator 109
Required Competencies 109
Training and Development Pathways 111
Maintaining Investigator Competence 113
Investigator Conduct and Professional Standards 113
Psychological Wellbeing and Investigator Support 114
Conclusion 114
Annex A: Glossary of Investigation Terms 115
Annex B: Notification Templates – Sample Phone Scripts and SOAR Entries 120
Annex C: Witness Interview Form – Standardised Template for Capturing Statements 123
Annex D: Site Safety Checklist – A Step-by-Step Field Guide for Initial Responders 126
Annex E: Accident-Site Hazard Advisory for First Responders 130
Annex F: ICAO Final Report Template – Full Format for Structuring Formal Investigations 132
Annex G: ATSB-Style Short Investigation Report Template 137
Annex H: Minor Incident Investigation Report Template 139
Annex I: Legal and Regulatory Reference Summary – CASR Part 149, ICAO Annex 13, and TSI Provisions 141
Purpose 141
CASR Part 149 – Approved Self-Administering Aviation Organisations (ASAOs) 141
ICAO Annex 13 – Aircraft Accident and Incident Investigation 142
Transport Safety Investigation Act 2003 (TSI Act) 143

Interaction with Police and Coroners 144
Relationship Between Organisational and Statutory Investigations 145
Summary of Notification Responsibilities 145
Good Practice for Investigators 146
Key Principle 146
Annex J: Emergency Contact Directory – Key Contacts for Accident and Incident Response 147
Annex K: Human Factors in Sailplane Accident and Incident Investigation – A Sailplane-Focused Introduction 149
Executive Summary for Investigators 149
Purpose of This Annex 149
Human Factors and Sailplane Operations 150
Systems Interaction and the SHELL Model 151
Moving Beyond “Pilot Error” 152
Human Error in Sailplane Operations 153
Systemic and Organisational Influences 154
Human Factors and Just Culture 155
Evidence and Human Factors Analysis 156
Application to Sailplane Accident and Incident Investigation 157
Relationship to Other Chapters 157
Conclusion 158
Annex K-1: Human Factors (HF) Analysis Checklist 159
Annex L: Investigator Wellbeing and Exposure to Traumatic Material 162
Purpose 162
Psychological Risk Exposure in Investigations 162
Hazard Identification – Indicators of Elevated Risk 162
Risk Controls – Support and Debriefing 163
Risk Controls – Managing Exposure and Task Allocation 163
Stepping Back from Investigation Duties 164
Oversight and Leadership Responsibility 164
EM/O and RMO Checklist – Investigator Wellbeing (SMS Context) 164
Key Principle 165

Annex M: Investigation Escalation Criteria....166
Purpose....166
Mandatory Escalation Criteria....166
Escalation Process....167
Independence and Investigation Integrity....168
Relationship to External Authorities....168
Guiding Principles....169
Key Principle....169
Annex N: Investigation Governance Framework....170
Purpose and Scope....170
Authority and Oversight....170
Role of Clubs....170
Role of Level 3 Instructors....171
Role of Regional Managers, Operations....171
Escalation Framework....172
Investigation Conduct and Reporting....172
Interaction with External Authorities....172
Governance Principles....173
Conclusion....173
Annex O: Suggested Approach to Managing Organisational Conflict of Interest in Serious and Fatal Occurrences....175
Purpose....175
Relationship with Other Annexes....176
Organisational Conflict of Interest....176
When an Organisational Conflict Assessment Should Be Considered....177
Guiding Principles....178
Initial Governance Response....179
Who Should Conduct or Endorse the Assessment....180
Suggested Conflict-Management Log....180
Document Preservation....181
Privacy and Data Handling....182
Terms of Reference....182

Independent Review Arrangements 182
Role of the Executive Manager, Operations 184
Role of Legal Advice 184
Consideration of CASA Notification 185
Communication and Reputational Sensitivity 185
Safety Action During an Ongoing Investigation 187
Reporting and Final Review 187
Relationship with Just Culture 188
Illustrative Scenarios 188
Suggested Organisational Conflict Assessment Aid 190
Key Principle 191
Annex P: Behavioural Analysis and Just Culture Decision Aid 192

Chapter 1: Introduction and Purpose

The Importance of Accident and Incident Investigation

The safety of sailplane and tow-plane operations depends not only upon sound airmanship and technical competence, but also upon the aviation community's ability to learn effectively from accidents, incidents, hazards, and operational experience. Effective occurrence investigation is therefore a critical component of aviation safety management and continuous operational improvement.

Accident and incident investigation provides a structured process for understanding how and why occurrences develop within complex operational environments. While the immediate sequence of events is important, modern aviation investigation also recognises the importance of examining the broader operational, technical, environmental, organisational, and Human Factors influences that contribute to safety outcomes. Effective investigation therefore seeks not merely to identify what happened, but to understand the conditions, decisions, behaviours, and system influences that allowed the occurrence to develop.

Modern aviation safety investigation recognises that occurrences rarely arise from a single failure or isolated individual action. Human performance limitations, operational pressures, environmental conditions, supervision, procedural design, communication breakdowns, organisational culture, and local operational practices may all contribute to the development of an occurrence. For this reason, investigations should avoid simplistic conclusions focused solely on individual actions and instead adopt a systems-based approach that examines the broader operational context.

This manual is founded upon the principles of Just Culture and modern safety management. Effective occurrence investigation depends upon openness, cooperation, fairness, and a willingness to learn from operational experience. Investigations should therefore focus on understanding contributing factors and improving safety outcomes rather than pursuing simplistic assignment of blame. At the same time, the manual recognises that professional accountability, sound judgement, and responsible operational conduct remain essential elements of aviation safety.

Investigations conducted within the Australian gliding community may range from minor operational events and procedural deviations through to serious accidents involving injury, fatality, or significant aircraft damage. Regardless of severity, every occurrence provides an opportunity for operational learning and safety improvement. Even minor incidents and hazards may reveal broader systemic issues, emerging operational risks, procedural weaknesses, training deficiencies, or

organisational vulnerabilities that could contribute to more serious outcomes if left unaddressed.

The ultimate purpose of occurrence investigation is not simply to document events, but to strengthen organisational learning, improve operational resilience, and reduce future risk across the aviation system. Effective investigation supports informed decision-making, improved procedures, better training, enhanced supervision, and stronger safety culture throughout the gliding community.

Purpose of This Manual

This manual has been developed to support Gliding Australia's role as an Approved Self-Administering Aviation Organisation (ASAO) operating under the Civil Aviation Safety Regulations (CASR) Part 149 framework. It provides guidance for the consistent, transparent, and methodical investigation of accidents and incidents occurring within Australian gliding operations.

The manual is intended for use by:

- investigators;
- club officials;
- safety officers;
- instructors;
- Regional Managers;
- operational leaders; and
- other personnel involved in occurrence reporting, investigation, and safety management.

It establishes a practical investigative framework aligned with:

- ICAO Annex 13 principles;
- Australian aviation legislation;
- CASA regulatory requirements;
- contemporary Human Factors concepts;
- Just Culture principles; and
- modern Safety Management System (SMS) methodology.

The guidance contained within this manual is intended to assist investigators in:

- responding appropriately to occurrences;
- preserving and documenting evidence;
- conducting interviews;
- analysing technical and Human Factors issues;
- assessing behavioural and organisational influences;
- identifying causal and contributing factors;

- developing meaningful findings;
- producing high-quality investigation reports; and
- generating practical, proportionate, and safety-focused recommendations.

The manual also supports consistency of investigative approach across the Australian gliding community. Consistent investigation standards improve the quality of occurrence analysis, strengthen organisational learning, support trend identification, and assist Gliding Australia in managing systemic operational risk.

Scope of Investigations

Occurrences within gliding operations vary considerably in complexity and severity. Some investigations may involve relatively straightforward operational events with limited consequences, while others may involve serious accidents requiring coordination with emergency services, regulatory authorities, coronial agencies, or the Australian Transport Safety Bureau (ATSB).

The scope and complexity of an investigation should therefore be proportionate to:

- the severity of the occurrence;
- the actual or potential safety consequences;
- the complexity of operational and technical issues involved;
- the likelihood of systemic contributing factors; and
- the potential safety value of further investigation.

This manual recognises that not all investigations require the same level of formality or technical depth. However, all investigations should be conducted systematically, objectively, and professionally to ensure that relevant evidence is identified, preserved, analysed, and documented appropriately.

Relationship with Other Authorities

Gliding Australia investigates occurrences primarily for the purpose of improving safety within the gliding community. Certain occurrences may also involve investigation or oversight by external agencies, including:

- the Australian Transport Safety Bureau (ATSB);
- the Civil Aviation Safety Authority (CASA);
- State police agencies;
- coronial authorities; and
- emergency services.

Nothing within this manual overrides the statutory responsibilities or legal powers of these agencies. Investigators must ensure that occurrence response and evidence

management activities are conducted in cooperation with relevant authorities and in accordance with applicable legislation and regulatory requirements.

Where the ATSB assumes responsibility for an investigation, Gliding Australia personnel should provide appropriate assistance while recognising the ATSB's independent statutory role under the Transport Safety Investigation Act 2003.

Continuous Improvement and Organisational Learning

Safety investigation is a critical element of continuous improvement within aviation operations. The value of an investigation lies not solely in determining what occurred, but in identifying opportunities to improve operational resilience, strengthen organisational systems, and reduce future risk.

The lessons derived from accident and incident investigation should therefore support:

- improved operational procedures;
- enhanced training;
- better supervision;
- stronger safety reporting culture;
- more effective risk management;
- and continual improvement of safety systems throughout the gliding community.

By promoting fair, systematic, and learning-focused investigation practices, this manual supports Gliding Australia's ongoing commitment to maintaining and improving safety within Australian gliding operations.

Chapter 2: Just Culture and the No-Blame Philosophy – Foundations of Aviation Safety Investigation

Introduction

In aviation, safety is not only the product of sound procedures, effective supervision, and reliable equipment, but also of an environment where individuals feel able to report mistakes, hazards, and operational concerns without fear of unfair punishment or retribution. This environment is founded upon the principles of Just Culture, a safety philosophy that encourages openness, learning, fairness, and proportional accountability while recognising the realities of human performance within complex operational systems.

Within sailplane operations, which often rely heavily upon volunteers, peer relationships, informal leadership structures, and community-based operations, a Just Culture is essential to both effective occurrence investigation and long-term safety improvement. Open reporting, honest communication, and constructive learning are critical components of safe gliding operations.

This chapter examines the principles of Just Culture and the No-Blame Philosophy, highlighting their importance within aviation safety investigation and gliding operations. It contrasts the characteristics of Just Culture and Blame Culture, explains the importance of fair and proportionate safety responses, and outlines how these principles support reporting, investigation quality, organisational learning, and operational resilience across the gliding community.

What Is a Just Culture?

A Just Culture is a safety management philosophy that seeks to balance openness, learning, fairness, and accountability within aviation organisations. Under this approach, individuals are:

- expected to operate responsibly and professionally; yet
- not unfairly punished for honest mistakes, system weaknesses, or unintended human error.

The foundation of a Just Culture is the recognition that human error is an unavoidable aspect of aviation operations and must be understood within the broader operational and organisational environment in which it occurs. Rather than focusing solely upon individual actions, a Just Culture encourages organisations to examine the operational conditions, supervision, procedures, environmental

influences, organisational systems, and Human Factors issues that may have contributed to an occurrence.

Modern aviation safety recognises that accidents and incidents rarely arise from a single isolated failure. Operational outcomes are often shaped by interactions between human performance, organisational systems, supervision, procedures, environmental conditions, equipment, communication, and operational culture. Just Culture principles therefore support investigation approaches that examine these interacting influences rather than focusing solely upon individual actions.

In practice, a Just Culture recognises that not all unsafe behaviour arises from the same causes and that organisational responses should therefore remain fair, proportionate, and focused on improving safety outcomes. Most aviation occurrences involve a combination of human performance limitations, operational pressures, environmental conditions, organisational influences, and systemic factors rather than deliberate misconduct.

A Just Culture therefore seeks to balance responsibility, fairness, and learning. It encourages organisations to examine why unsafe actions or decisions occurred, how operational systems and local conditions contributed, and what improvements are necessary to reduce future risk.

Effective reporting systems depend upon personnel having confidence that occurrences will be assessed fairly, consistently, and proportionately. Fear of disproportionate punishment may discourage reporting, conceal emerging hazards, reduce cooperation during investigation, and weaken organisational learning. Just Culture principles therefore support the development of reporting environments in which operational personnel can participate openly and honestly in safety improvement processes.

Just Culture does not remove accountability from aviation operations. Rather, it seeks to ensure that accountability is applied fairly, consistently, and proportionately according to the circumstances involved. Effective safety management depends both upon organisational learning and upon maintaining appropriate professional standards of conduct and operational responsibility.

Further guidance regarding behavioural analysis, procedural drift, unsafe adaptation, and proportional safety management responses is provided in Chapter 10: *Behavioural Analysis and Just Culture Decision-Making*.

No-Blame Philosophy: What It Is and Isn't

The No-Blame Philosophy is frequently misunderstood. It does not mean that individuals are never held responsible for their conduct, nor does it imply that all

behaviour should be treated identically regardless of circumstance. Rather, it reflects the principle that safety investigations are most effective when they focus on understanding contributing factors and improving operational systems instead of simply identifying individuals for punishment.

Within a learning-focused safety environment:

- investigators seek causes and contributing influences rather than culprits;
- mistakes are treated as opportunities for improvement;
- organisational and systemic issues are examined alongside individual actions; and
- reporting and openness are actively encouraged.

By examining organisational influences, operational conditions, training adequacy, supervision, communication, procedural design, and Human Factors issues, investigators are better able to identify safety improvements that reduce the likelihood of recurrence.

A purely punitive approach to occurrence investigation may discourage open reporting, reduce cooperation, distort evidence, and weaken organisational learning. Personnel who fear disproportionate disciplinary action may become reluctant to report hazards, procedural deviations, operational concerns, or errors that could otherwise provide valuable safety information.

For this reason, modern aviation safety systems place strong emphasis upon creating reporting environments in which operational personnel can participate honestly and openly in safety processes while still recognising the importance of professional responsibility and appropriate standards of conduct.

The objective of a learning-focused investigation is therefore not to excuse poor judgement or unsafe conduct, but to understand the broader factors that influenced operational outcomes and to identify practical measures that improve safety resilience across the aviation system.

As frequently observed in aviation safety discussions, disciplinary action alone rarely prevents recurrence. Effective prevention more commonly depends upon improved training, stronger supervision, clearer procedures, better operational support, and stronger organisational awareness of risk.

Comparison: Just Culture vs. Blame Culture

The differences between a Just Culture and a Blame Culture have significant implications for safety reporting, investigation quality, organisational learning, and operational resilience.

Aspect	Just Culture	Blame Culture
Attitude Toward Mistakes	Errors are treated as opportunities to learn and improve operational systems.	Errors are viewed primarily as personal failures deserving punishment.
Response to Human Error	Focuses on understanding contributing factors and supporting improvement.	Focuses primarily on assigning responsibility and sanctions.
Reporting Environment	Encourages open and voluntary reporting of hazards, incidents, and mistakes.	Discourages reporting through fear of punishment or criticism.
Investigation Focus	Examines operational context, training, supervision, organisational influences, and system design.	Seeks primarily to identify who was at fault.
Communication	Open discussion of safety concerns and mistakes is encouraged.	Errors are hidden, minimised, or discussed privately.
Organisational Learning	Shared learning supports continual improvement and stronger safety systems.	Recurring problems persist due to limited transparency and learning.
Accountability	Differentiates between human error, operational adaptation, procedural drift, and reckless conduct.	Tends to treat all errors as punishable acts regardless of context.
Effect on Morale	Builds trust, cooperation, and safety engagement.	Creates fear, distrust, and reduced participation in safety processes.

In a Just Culture, occurrences are treated as opportunities to improve operational systems, training, supervision, procedures, and organisational awareness. In contrast, a Blame Culture discourages openness and may prevent organisations from identifying broader systemic issues until more serious occurrences develop.

Why Just Culture Matters in Gliding Clubs

Within gliding clubs, operations often rely upon volunteers, peer relationships, and relatively informal organisational structures. Instructors, tow pilots, launch crews, and operational leaders frequently work together in close-knit environments where trust and cooperation are essential to safe operations.

In this environment, a Just Culture is particularly important because it:

- promotes honest reporting of hazards, mistakes, and operational concerns;
- improves the quality and openness of occurrence investigation;
- reduces fear of unfair punishment or criticism;
- encourages shared learning across the club and wider gliding community;
- supports constructive safety discussion and mentoring;
- strengthens trust between operational personnel and leadership; and
- improves long-term participation, morale, and safety engagement.

Without a Just Culture, operational personnel may become reluctant to report:

- procedural deviations;
- near misses;
- operational concerns;
- unsafe local practices;
- or emerging hazards.

This may allow unsafe conditions or degraded operational practices to persist undetected until more serious occurrences develop.

A healthy reporting culture is therefore essential to effective safety management within gliding operations.

Applying Just Culture in Investigations

When conducting accident or incident investigations, investigators should apply Just Culture principles consistently throughout the investigative process. This requires investigators to examine not only individual actions, but also the broader operational and organisational environment in which decisions and behaviours occurred.

Investigators should seek to understand:

- the operational context existing at the time;
- the information available to the individual;
- workload, fatigue, environmental pressures, and supervision;
- whether local practices or organisational influences shaped behaviour;
- whether procedures were practical and clearly understood; and

- whether similar conditions had previously existed within the organisation.

Investigators should avoid:

- accusatory or emotional language;
- assumptions regarding motive or intent;
- hindsight bias;
- simplistic attribution of fault;
- and oversimplification of complex operational circumstances.

Rather than assigning blame, investigators should focus upon objective and constructive analysis.

Examples include:

- "The pilot may not have had sufficient information to accurately assess the level of risk."
- "The operational procedures did not provide sufficiently clear guidance for this situation."
- "The behaviour appears consistent with an accepted but degraded operational practice."
- "Operational pressures and local expectations may have influenced decision-making."

The objective of investigation is not merely to identify what happened, but to understand why the occurrence developed and how future risk may be reduced.

Distinguishing Between Errors and Misconduct

A Just Culture does not remove accountability, nor does it suggest that all behaviour should be treated identically. Rather, it recognises that fair and effective safety management depends upon understanding the context in which unsafe behaviour occurred.

Most aviation occurrences involve ordinary human error occurring within complex operational environments. In such cases, safety outcomes are generally improved through learning, supervision, procedural refinement, mentoring, training enhancement, and organisational improvement rather than punitive action alone.

However, aviation organisations must also recognise that some behaviours may involve deliberate non-compliance, conscious disregard of substantial risk, intentional unsafe acts, or repeated unsafe conduct despite prior intervention. Such behaviours may require more serious management, regulatory, or disciplinary responses.

The challenge for investigators and operational leaders is therefore to distinguish fairly between ordinary human error, procedural drift, operational adaptation, culturally normalised deviations, and genuinely reckless conduct.

This assessment should always consider:

- the operational conditions existing at the time;
- the information available to the individual;
- organisational and supervisory influences;
- workload, fatigue, and environmental pressures;
- local operational practices and cultural expectations; and
- whether the behaviour reflected broader systemic deficiencies.

Further guidance on behavioural assessment frameworks and proportional safety management responses is provided in Chapter 10: *Behavioural Analysis and Just Culture Decision-Making*.

Examples of Behavioural Categories and Appropriate Safety Responses

Behaviour Type	Description	Typical Contributing Influences	Typical Safety Management Response
Human Error	Unintentional action, lapse, slip, or mistake occurring during otherwise normal operations.	Workload, distraction, fatigue, inexperience, situational awareness limitations, communication breakdowns.	Learning-focused response, debriefing, mentoring, procedural review, training, supervision, and system improvement.
Operational Adaptation / Procedural Drift	Gradual departure from procedures or accepted standards in response to operational realities or local practices.	Operational demands, time pressure, cultural norms, procedural impracticality, supervision weaknesses.	Review of procedures, operational practices, supervision, organisational culture, training, and local operational expectations.

Routine Violation	Intentional procedural deviation that has become normalised within a group or organisation.	Cultural acceptance, production pressure, inadequate oversight, degraded safety culture.	Organisational corrective action, supervision review, cultural intervention, procedural redesign, and safety leadership action.
Situational Violation	Deviation from procedures due to operational conditions making compliance difficult or impractical.	Environmental conditions, equipment limitations, operational constraints, conflicting priorities.	Assessment of operational design, procedural practicality, workload, risk controls, and operational support systems.
Reckless Conduct	Conscious disregard of substantial and unjustifiable safety risk.	Deliberate risk-taking, wilful non-compliance, repeated unsafe behaviour despite prior intervention.	Formal management action, regulatory involvement, disciplinary response, or authorisation review where appropriate.

The examples above are intended as general guidance only. Behavioural assessment should always consider the operational context, information available at the time, organisational influences, and the specific circumstances of the occurrence. Investigators should avoid rigid or simplistic classification of behaviour and should apply professional judgement consistent with Just Culture principles.

Building a Just Culture in Your Club

Club leaders, instructors, safety officers, and operational personnel all play important roles in developing and maintaining a Just Culture within gliding operations.

Practical measures that support a Just Culture include:

- promoting non-punitive safety reporting;
- encouraging open discussion of operational concerns and lessons learned;
- training instructors and safety officers in Just Culture principles;
- using confidential and accessible reporting systems;

- conducting safety meetings focused on learning and problem-solving rather than blame;
- supporting mentoring and constructive debriefing;
- and demonstrating leadership through openness, professionalism, and fairness.

Leadership behaviour is particularly important. Operational leaders who acknowledge mistakes openly, encourage discussion of safety concerns, and respond fairly to occurrences help create environments in which personnel feel safe to participate honestly in safety processes.

Strong safety culture depends not only upon procedures and rules, but also upon trust, communication, consistency, and organisational behaviour.

Case Study: Rigging Error Incident

Scenario

A solo pilot launched with a disconnected aileron following an incomplete rigging check. The issue was identified shortly after launch and the pilot conducted a safe landing without injury or aircraft damage.

Traditional Response

A blame-focused approach may ask:

- “Who is responsible?”
- “Who failed the check?”
- “Should the pilot be suspended?”

Such responses may discourage openness and fail to identify broader operational issues.

Just Culture Approach

A Just Culture investigation instead examines:

- why the omission occurred;
- whether time pressure or distraction contributed;
- whether procedures and checklists were adequate;
- whether supervision or training deficiencies existed;
- whether similar events or degraded practices had occurred previously;
- and whether the operational environment contributed to the error.

Outcome

As a result of the investigation:

- safety briefings were updated to reinforce rigging procedures;
- checklists were revised and redistributed;
- local supervision arrangements were reviewed;
- and the pilot received additional coaching and support rather than punitive action.

The investigation therefore contributed to broader organisational learning and improved operational safety rather than simply assigning blame to an individual.

Conclusion

Just Culture and the No-Blame Philosophy form an essential foundation for modern aviation safety investigation and Safety Management Systems. By promoting openness, fairness, proportional accountability, and organisational learning, these principles support more effective reporting, more accurate investigation, and stronger long-term safety improvement.

Within gliding operations, effective occurrence investigation depends upon understanding not only what happened, but also how operational conditions, Human Factors, organisational influences, and behavioural factors combined to shape the outcome. Investigations conducted within a Just Culture framework are therefore better positioned to identify meaningful safety improvements and contribute to the ongoing development of a safer and more resilient aviation environment.

Chapter 3: Managing Conflict of Interest in Sailplane Accident Investigations

Introduction

Sailplane accident investigations play a vital role in improving aviation safety by identifying contributing factors, developing safety recommendations, and strengthening the overall safety culture of gliding operations. The effectiveness and credibility of these investigations depend heavily upon the objectivity, independence, and impartiality of those conducting them.

Within the close-knit environment of gliding clubs, conflicts of interest are an unavoidable operational reality. Investigators are often instructors, committee members, operational leaders, coaches, or close colleagues of those involved in an occurrence. Personal relationships, prior involvement in operational decisions, organisational loyalties, or supervisory responsibilities may therefore create actual, perceived, or potential conflicts of interest.

Effective management of these conflicts is essential to maintaining trust in the investigation process, supporting Just Culture principles, and ensuring that investigation findings are viewed as fair, objective, and credible. Even where no actual bias exists, the perception of compromised impartiality may undermine confidence in the investigation and discourage openness, cooperation, and reporting.

This chapter examines the importance of recognising and managing conflicts of interest in sailplane accident investigations, outlines practical methods for identifying and mitigating conflicts, and explains how transparency, independence, and procedural fairness contribute to a credible and effective safety culture.

Defining Conflict of Interest

A conflict of interest exists when an investigator's ability to remain objective or impartial may be influenced — or perceived to be influenced — by personal, professional, organisational, or supervisory relationships connected to the occurrence or those involved.

Conflicts of interest may arise in several forms:

- **Actual Conflict:**
  The investigator has a direct personal, professional, organisational, or operational interest in the outcome of the investigation.

- **Perceived Conflict:**
  Others may reasonably believe that the investigator's judgement could be influenced, even if no actual bias exists.
- **Potential Conflict:**
  Circumstances exist that could reasonably develop into a future conflict or compromise investigative independence.

Within gliding operations, conflicts of interest may arise where an investigator:

- is personally involved in the occurrence;
- has close personal relationships with those involved;
- previously trained, supervised, authorised, or assessed the pilot;
- sits on a committee or management group whose decisions may be examined;
- has prior disputes or loyalties connected to the occurrence;
- or may be affected professionally or reputationally by the investigation outcome.

Conflicts of interest are not necessarily evidence of misconduct or intentional bias. However, they must be recognised and managed appropriately to preserve investigative credibility and organisational trust.

Why Conflict of Interest Matters

Conflict of interest is significant because it may undermine confidence in the fairness, integrity, and independence of the investigation process. Even where investigators act professionally and objectively, unresolved conflicts — or the appearance of unresolved conflicts — may weaken trust within the club and wider gliding community.

Unmanaged conflicts may:

- compromise the objectivity of analysis;
- influence investigative decisions or interpretation of evidence;
- discourage witnesses or participants from speaking openly;
- reduce confidence in investigation findings;
- weaken reporting culture;
- and undermine Just Culture principles.

Aviation safety investigation depends heavily upon openness, cooperation, and willingness to share information. If operational personnel believe that investigations are influenced by personal relationships, organisational politics, or reputational concerns, they may become reluctant to:

- report occurrences;

- disclose operational concerns;
- participate honestly in interviews;
- or support investigation outcomes.

For this reason, investigative independence and procedural fairness are essential components of an effective safety culture.

Recognising Conflict of Interest

Conflicts of interest are not always obvious and may arise gradually during the course of an investigation. Investigators and operational leaders should therefore remain alert to indicators that impartiality could reasonably be questioned.

Indicators may include:

- personal involvement in the occurrence or operational activity under review;
- emotional investment in the outcome;
- strong personal loyalties or prior disputes;
- concerns raised by witnesses or participants regarding impartiality;
- supervisory or management responsibilities connected to the occurrence;
- or involvement in operational decisions likely to be examined during the investigation.

Investigative caution is particularly important in close-knit club environments where overlapping roles and longstanding relationships are common.

To support investigative integrity, a conflict-of-interest declaration process should be considered at the commencement of investigations, particularly where:

- serious injury or fatality has occurred;
- facts are disputed;
- organisational decisions may be scrutinised;
- or heightened public, legal, or reputational sensitivity exists.

Early recognition and disclosure allow appropriate steps to be taken before investigative credibility is compromised.

Perception Matters as Much as Reality

In aviation safety investigation, the perception of impartiality is often as important as actual impartiality. Even where investigators believe they can remain objective, others may reasonably perceive that personal relationships, organisational loyalties, or prior involvement could influence the investigation.

For example, if a club instructor investigates an occurrence involving a pilot they trained or supervised, others may perceive that the investigator could be influenced

— consciously or unconsciously — by personal loyalty, reputational concerns, or prior operational involvement.

Such perceptions may:

- reduce trust in the investigation;
- discourage openness during interviews;
- lead participants to question findings;
- or weaken acceptance of corrective action.

Transparency and fairness are therefore essential elements of a Just Culture. Effective investigation depends not only upon actual objectivity, but also upon maintaining confidence that investigative processes are fair, independent, and professionally conducted.

Cognitive Bias and Investigative Objectivity

Conflict of interest does not always arise through deliberate misconduct or intentional favouritism. Human judgement may also be influenced by unconscious cognitive biases that affect interpretation, decision-making, and analysis.

Investigators should remain aware of factors such as:

- confirmation bias;
- familiarity bias;
- reputational protection;
- group loyalty;
- hindsight bias;
- and organisational pressure.

These influences may unintentionally affect:

- evidence interpretation;
- witness assessment;
- interview approach;
- selection of investigative focus;
- or acceptance of operational practices.

Maintaining investigative objectivity therefore requires conscious professional discipline, openness to challenge, and willingness to critically examine assumptions throughout the investigative process.

Further guidance regarding Human Factors and behavioural analysis is provided in:

- *Chapter 9: Human and Organisational Factors;*
- *Chapter 10: Behavioural Analysis and Just Culture Decision-Making;* and

- *Annex K: Human Factors in Sailplane Accident and Incident Investigation – A Sailplane-Focused Introduction.*

Strategies for Managing Conflict of Interest

Several practical measures may assist in managing conflicts of interest and preserving investigative integrity.

Recusal

Where a significant conflict exists, the investigator should step aside from the investigation or from specific aspects of the investigative process. An independent and appropriately qualified investigator should then be appointed.

Recusal is not an admission of wrongdoing. Rather, it reflects professional recognition that investigative credibility must be protected.

Independent Review

In situations where potential or perceived conflicts may exist, involvement of an independent reviewer, co-investigator, or external advisor may strengthen investigative objectivity and public confidence.

Independent review may include:

- review of evidence and findings;
- participation in interviews;
- oversight of analysis;
- or review of draft reports and recommendations.

Transparent Processes

Investigative processes should be transparent and appropriately documented. Organisations should be prepared to explain:

- who conducted the investigation;
- why those individuals were selected;
- what conflict-management measures were applied;
- and how independence and fairness were maintained.

Transparency strengthens trust and supports continued reporting and cooperation.

Training and Policy

Gliding clubs and operational organisations should establish:

- clear conflict-of-interest policies;
- investigator guidance material;

- and training in investigative independence, Human Factors, and cognitive bias awareness.

Particular attention should be given to operational roles involving overlapping supervisory and investigative responsibilities.

Escalation to Gliding Australia

Serious, complex, politically sensitive, or high-profile investigations may require escalation to Gliding Australia for independent oversight or appointment of external investigators.

National-level oversight may assist where:

- local conflicts exist;
- club relationships are complex;
- public scrutiny is significant;
- or impartiality could reasonably be questioned.

Organisational Conflict at Gliding Australia Level

Where the occurrence may raise questions about Gliding Australia's own systems, standards, decisions, oversight, authorisation processes, safety management actions, or prior handling of safety information, investigators and operational leaders should also consider the guidance in *Annex O: Suggested Approach to Managing Organisational Conflict of Interest in Serious and Fatal Occurrences*.

Case Examples

Case 1: Instructor Investigating a Student

Scenario

An instructor is assigned to investigate a rough landing involving a pilot they personally trained and authorised.

Conflict Consideration

Although the instructor may believe they can remain objective, others may reasonably perceive that personal involvement or reputational concerns could influence the investigation.

Appropriate Management

An independent investigator or regional representative conducts the investigation. The instructor may provide operational or training information as a subject-matter resource but does not lead the investigation.

Case 2: Club Committee Under Review

Scenario

An accident highlights concerns regarding enforcement of rigging-check procedures overseen by the club committee.

Conflict Consideration

Committee members involved in establishing or supervising the procedures may face perceived or actual conflicts if they investigate their own organisational decisions.

Appropriate Management

An external investigator or Gliding Australia representative conducts the review to preserve independence and maintain confidence in the investigative process.

Just Culture and Conflict Management

Effective management of conflicts of interest is closely linked to Just Culture principles. Fairness, transparency, openness, and proportionality are fundamental to maintaining confidence in safety investigation systems.

Where conflicts are recognised openly and managed appropriately:

- reporting culture is strengthened;
- trust is maintained;
- investigative credibility improves;
- and organisational learning is supported.

Conversely, failure to manage conflicts appropriately may:

- discourage reporting;
- damage morale;
- weaken confidence in leadership;
- and undermine the effectiveness of safety investigation processes.

Conflict management should therefore be viewed not merely as an administrative requirement, but as an important component of professional safety governance and organisational integrity.

Conclusion

Within gliding operations, where operational roles, personal relationships, and organisational responsibilities frequently overlap, conflicts of interest are an unavoidable reality. Effective investigation therefore depends upon recognising, disclosing, and managing these conflicts fairly, transparently, and professionally.

Maintaining investigative objectivity protects the credibility of findings, supports Just Culture principles, strengthens reporting culture, and promotes organisational learning. By ensuring that investigations remain independent, evidence-based, and procedurally fair, gliding organisations can reinforce trust within the aviation community and contribute meaningfully to safer and more resilient operations.

Chapter 4: Legal and Organisational Framework

Effective management of safety within sailplane and tow-plane operations requires a clear understanding of the legal, regulatory, and organisational framework within which accident and incident investigations occur. This framework includes international investigation standards, Australian aviation legislation, national regulatory and investigative authorities, delegated responsibilities to Gliding Australia, the role of State police and coronial authorities, and the operational responsibilities of gliding clubs.

Each component of this framework performs a distinct but interconnected role in supporting effective safety investigation, organisational learning, and continuous improvement within aviation operations. Modern aviation investigation systems are intended not simply to identify immediate causes of occurrences, but to improve safety through objective analysis, systemic learning, and the development of practical risk-reduction measures.

This chapter outlines the principal legal and organisational structures relevant to sailplane accident and incident investigation within Australia and explains how these systems interact during occurrence response and investigation activities.

International Standards: ICAO Annex 13

At the international level, aviation accident and incident investigation is guided by ICAO Annex 13 – *Aircraft Accident and Incident Investigation*. Annex 13 establishes internationally recognised standards and recommended practices governing the conduct of aviation safety investigations by contracting states of the International Civil Aviation Organization (ICAO).

Annex 13 establishes several fundamental principles that underpin modern aviation safety investigation, including:

- independence of investigation;
- preservation of evidence;
- objective and evidence-based analysis;
- protection of safety information;
- international cooperation;
- and the use of investigation findings for accident prevention and safety improvement.

One of the most important principles contained within Annex 13 is that aviation safety investigations are conducted solely for the purpose of preventing future

accidents and incidents rather than apportioning blame or liability. This principle strongly supports modern Just Culture philosophy and encourages openness, cooperation, and reporting within aviation organisations.

Annex 13 also defines the responsibilities of the State of Occurrence, State of Registry, State of the Operator, State of Design, and State of Manufacture. These responsibilities determine how international cooperation occurs during significant aviation investigations.

For Gliding Australia and affiliated clubs, alignment with Annex 13 principles helps ensure that investigative practices remain consistent with internationally accepted aviation safety standards and contemporary investigation methodology.

National Oversight: CASA and the ATSB

Within Australia, two principal national organisations are relevant to aviation accident and incident investigation: the Civil Aviation Safety Authority (CASA) and the Australian Transport Safety Bureau (ATSB). Although both organisations contribute to aviation safety, their responsibilities differ significantly.

Civil Aviation Safety Authority (CASA)

CASA is Australia's national aviation safety regulator. It is responsible for regulating civil aviation operations and administering the Civil Aviation Safety Regulations (CASR).

Under CASR Part 149, CASA authorises Approved Self-Administering Aviation Organisations (ASAOs), including Gliding Australia, to manage specified operational and safety functions within their aviation sectors.

CASA's responsibilities include regulatory oversight, approval and surveillance of aviation organisations, enforcement of aviation legislation, certification and standards management, and monitoring aviation safety performance.

Although CASA generally does not conduct aviation accident investigations directly, it may monitor occurrence trends, assess regulatory compliance, review safety management effectiveness, and intervene where significant safety concerns or systemic risks are identified.

CASA may also conduct regulatory inquiries or enforcement action separately from safety investigations where breaches of aviation legislation are suspected.

Australian Transport Safety Bureau (ATSB)

The ATSB is Australia's independent national transport safety investigation agency. Its powers and responsibilities are established under the *Transport Safety Investigation Act 2003* and associated regulations.

The ATSB investigates selected aviation, marine, and rail occurrences involving significant safety implications. Its role is independent, non-regulatory, and focused solely upon improving transport safety.

The ATSB's responsibilities include conducting independent safety investigations, identifying contributing safety factors, issuing safety recommendations, analysing national occurrence data, and promoting transport safety awareness.

The ATSB does not investigate every gliding occurrence. However, it maintains oversight of serious aviation accidents and incidents, particularly those involving fatalities, serious injuries, significant aircraft damage, or broader systemic safety concerns.

Where the ATSB assumes responsibility for an investigation, it controls the investigative process and site management activities associated with the occurrence. Gliding Australia investigators and clubs are expected to cooperate fully with ATSB investigators and assist with access to operational records, maintenance documentation, personnel, and relevant safety information.

The ATSB's role is investigative rather than judicial or disciplinary. Its objective is to improve safety through analysis and organisational learning rather than assigning blame or liability.

Gliding Australia's Role as an ASAO

As an Approved Self-Administering Aviation Organisation under CASR Part 149, Gliding Australia holds delegated authority to administer and oversee many operational and safety functions relating to Australian gliding activities.

This includes responsibility for operational standards, pilot authorisations, instructor standards, operational procedures, safety management, occurrence reporting, and accident and incident investigation within the gliding sector.

Gliding Australia's safety responsibilities include operational oversight, Safety Management System administration, investigation and analysis, and organisational learning activities.

Operational Oversight

Gliding Australia establishes and administers operational standards applicable to affiliated clubs, pilots, instructors, and tow operations. These standards are supported through approved manuals, procedures, operational guidance, and safety systems.

Safety Management System (SMS)

Gliding Australia operates a national Safety Management System designed to support hazard identification, occurrence reporting, risk assessment, safety analysis, and continuous improvement.

Accident and incident investigation forms a critical component of this system by providing information that assists in identifying systemic safety issues, operational trends, procedural weaknesses, Human Factors concerns, and emerging risks.

Investigation and Analysis

Gliding Australia conducts or oversees investigations into many accidents and incidents occurring within Australian gliding operations, particularly where ATSB involvement is not required.

These investigations seek to identify contributing factors, understand operational and organisational influences, assess Human Factors issues, support organisational learning, and reduce future risk.

Investigations conducted under Gliding Australia authority should remain objective, evidence-based, and consistent with Just Culture principles, Human Factors methodology, and contemporary aviation safety investigation practices.

Data Collection and Organisational Learning

Occurrence reports and investigation findings provide valuable safety information that assists Gliding Australia in identifying national safety trends, developing safety initiatives, issuing safety communications, improving operational guidance, and strengthening risk management across the gliding community.

Effective occurrence reporting and investigation therefore contribute directly to broader organisational learning and continual improvement within Australian gliding operations.

Role of State Police and Coroners in Fatal Accidents

In fatal aviation accidents, additional legal and investigative responsibilities arise involving State or Territory police agencies and coronial authorities.

State Police Responsibilities

Following a fatal gliding accident, State or Territory police generally assume initial control of the accident site under applicable legal authority.

Police responsibilities may include securing the site, coordinating emergency response activities, preserving evidence, identifying deceased persons, obtaining witness statements, and assessing whether criminal activity may be involved.

Police investigators work in cooperation with aviation investigators to ensure that aviation-specific evidence is appropriately preserved and documented.

Effective coordination between police, ATSB investigators, Gliding Australia investigators, emergency services, and coronial authorities is essential to maintaining site integrity and supporting effective investigation outcomes.

Role of the Coroner

All fatal aviation accidents within Australia are subject to coronial investigation.

The Coroner is responsible for determining the identity of the deceased, the medical cause of death, and the circumstances surrounding the fatality.

Coronial investigations are separate from aviation safety investigations and may involve public hearings, expert evidence, autopsy findings, technical reports, and witness testimony.

Gliding Australia investigators may be required to provide reports, supply operational records, explain technical findings, or provide expert evidence during coronial proceedings.

Careful documentation, evidence preservation, and objective reporting are therefore critically important during fatal accident investigations.

Club Responsibilities and Obligations

Gliding clubs play a central role in the early stages of accident and incident response and are essential participants in the broader safety investigation process.

Although Gliding Australia provides oversight and support, much of the initial occurrence response occurs at club level.

Prompt Reporting

Clubs must ensure that accidents and serious incidents are reported promptly to emergency services where necessary, the ATSB where applicable, and Gliding Australia operational authorities.

Timely reporting supports rapid safety response, evidence preservation, and effective coordination between agencies.

Site Preservation

Careful preservation of the accident site is essential to maintaining investigative integrity.

Unless necessary for rescue, fire suppression, hazard control, or immediate safety reasons, wreckage, equipment, and operational evidence should not be disturbed until authorised by the responsible investigative authority.

Investigator Support

Clubs should provide investigators with access to relevant aircraft documentation, maintenance records, pilot training records, operational procedures, witness information, and local operational data.

Operational cooperation and openness are essential to effective occurrence analysis and organisational learning.

Implementation of Safety Recommendations

Clubs are responsible for considering and implementing relevant safety recommendations or corrective actions arising from local investigations, Gliding Australia reviews, ATSB investigations, or coronial findings.

This may involve procedural changes, training improvements, revised supervision arrangements, operational restrictions, or local safety initiatives.

Safety recommendations are most effective when organisations actively integrate lessons learned into everyday operational practice.

Just Culture and Legal Responsibilities

Modern aviation safety investigation depends upon balancing legal obligations, operational accountability, organisational learning, and fair investigative practice.

Although regulatory, coronial, and disciplinary processes may sometimes operate alongside safety investigations, the primary purpose of aviation safety investigation remains prevention of future accidents and incidents through learning and systemic improvement.

For this reason, organisations should support open reporting, procedural fairness, objective investigation, and proportional safety responses consistent with Just Culture principles.

Fear of unfair punishment or reputational damage may discourage reporting and reduce the effectiveness of organisational safety systems. A strong safety culture therefore depends upon maintaining trust, transparency, and investigative integrity throughout the occurrence management process.

Conclusion

The legal and organisational framework governing sailplane accident and incident investigation involves cooperation between international standards, Australian regulatory authorities, Gliding Australia, coronial agencies, police, and local clubs.

Each organisation performs a distinct role in supporting effective occurrence response, objective investigation, evidence preservation, organisational learning, and long-term safety improvement.

Understanding these responsibilities is essential to maintaining professional investigative standards and supporting a strong safety culture within Australian gliding operations. Through effective cooperation, transparency, and adherence to modern investigation principles, the aviation community is better positioned to learn from operational experience and reduce future risk.

Chapter 5: Timely and Accurate Reporting – The Cornerstone of Safety Investigation

The effectiveness of any accident or incident investigation depends heavily upon how quickly, accurately, and openly the occurrence is reported. Timely reporting allows emergency services to respond appropriately, supports preservation of critical evidence, initiates safety oversight processes, and enables investigators to begin gathering information while operational details and witness recollections remain fresh.

Within gliding operations, clear and consistent reporting processes are essential not only for meeting legal and organisational obligations, but also for supporting organisational learning, hazard identification, and continuous safety improvement. Effective reporting systems contribute directly to the success of Gliding Australia's Safety Management System (SMS) by allowing operational trends, recurring hazards, Human Factors issues, procedural weaknesses, and systemic safety concerns to be identified and addressed before more serious occurrences develop.

A strong reporting culture also forms a critical component of Just Culture. Operational personnel are more likely to report occurrences, hazards, procedural deviations, and safety concerns where they believe reports will be handled fairly, objectively, and constructively. Fear of blame or disproportionate punishment may discourage reporting and reduce the effectiveness of organisational safety systems.

This chapter outlines the mandatory reporting requirements applicable to gliding operations, the responsibilities of clubs and operational personnel, and the essential information that should be included in occurrence notifications and reports.

Mandatory Reporting Requirements

Within Australia, sailplane and tow-plane accidents and incidents are subject to mandatory reporting requirements under the *Transport Safety Investigation Act 2003*, Civil Aviation Safety Regulations (CASR), and Gliding Australia operational and Safety Management System requirements.

Timely reporting is essential to support emergency response, preserve evidence, initiate safety investigation processes, and ensure that significant safety issues are identified promptly.

The following occurrences generally require immediate or prompt notification.

Reporting to the ATSB

The Australian Transport Safety Bureau (ATSB) must be notified as soon as reasonably practicable following certain serious aviation occurrences, including fatalities or serious injuries, significant aircraft damage or destruction, near mid-air collisions, hazardous airspace incursions, or other reportable matters specified under ATSB regulations.

Investigators and operational personnel should refer to the current ATSB reporting requirements and *Transport Safety Investigation Regulations* to determine whether an occurrence is formally reportable.

Urgent notifications are generally made through the ATSB's 24-hour reporting line. Written notification may also be required within prescribed timeframes.

ATSB investigations are conducted independently and focus on identifying safety issues and contributing factors rather than assigning blame or enforcing regulations.

Reporting to CASA

Certain occurrences may also require notification to the Civil Aviation Safety Authority (CASA), particularly where potential regulatory breaches exist, significant operational non-compliance is identified, maintenance irregularities are suspected, or broader safety oversight concerns arise.

CASA may also receive information through ATSB reporting, Gliding Australia notifications, or safety oversight activities.

Where necessary, CASA may initiate regulatory review, surveillance activity, safety audits, or enforcement processes separate from safety investigation activities.

Reporting to Gliding Australia

All significant accidents, incidents, hazards, and operational safety events involving affiliated gliding operations must be reported promptly to Gliding Australia's Executive Manager, Operations (EM/O) or designated operational authority.

Occurrences requiring notification generally include injury events, significant aircraft damage, operational safety breaches, hazardous occurrences, procedural failures, and serious operational irregularities.

Occurrence information is entered into Gliding Australia's Safety Occurrence Analysis and Reporting (SOAR) system for analysis, investigation allocation, trend monitoring, safety review, and organisational learning.

Even where ATSB or CASA involvement does not occur, Gliding Australia must still be notified so that the occurrence can be assessed within the national Safety Management System framework.

Club and Member Responsibilities

Gliding clubs and operational personnel are frequently the first responders to aviation occurrences and therefore play a critical role in effective occurrence management and investigation.

Prompt action, accurate communication, and professional handling of information are essential to supporting both emergency response and subsequent investigation activities.

Emergency Response

In any life-threatening situation, emergency services must take priority.

Where required, club personnel should immediately contact ambulance services, fire services, police, or other emergency responders through the national emergency number (000).

Protection of life and immediate hazard management always take precedence over reporting and investigation requirements.

Immediate Notification to Gliding Australia

Once immediate safety actions have been addressed, the Club Chief Flying Instructor (CFI), Duty Instructor, or senior operational representative should notify Gliding Australia's Executive Manager, Operations as soon as practicable.

Where direct contact is not immediately possible, a voicemail, email, SMS, or other written notification should be sent containing the nature of the occurrence, location, aircraft involved, injuries, and immediate operational concerns.

Early notification assists Gliding Australia in assessing the seriousness of the occurrence, coordinating investigation support, determining regulatory reporting obligations, and initiating safety management processes.

Formal Reporting Through SOAR

Following initial notification, a formal occurrence report should be submitted through the Safety Occurrence Analysis and Reporting (SOAR) system within the required reporting timeframe.

The SOAR system provides a structured mechanism for recording occurrence data, identifying operational trends, allocating investigations, monitoring corrective action, and supporting organisational learning.

Accurate and complete reporting improves the quality of subsequent analysis and safety review activities.

Initial Evidence Preservation and Information Gathering

The Club CFI or delegated operational representative should undertake reasonable steps to preserve evidence, identify ongoing hazards, record preliminary operational information, and capture witness details where appropriate.

This may include photographing the site, preserving aircraft wreckage or equipment, recording weather conditions, securing operational records, and obtaining initial witness accounts.

Investigators should avoid speculative conclusions, assigning blame, or conducting accusatory questioning during initial response activities. Preservation of objective factual information is the priority.

Importance of Accurate Reporting

The quality and completeness of initial reporting directly affect the effectiveness of the investigation process.

Incomplete, delayed, or inaccurate reporting may hinder evidence collection, reduce the accuracy of operational reconstruction, delay identification of safety issues, and weaken organisational learning.

Conversely, accurate reporting supports timely investigative response, more reliable analysis, stronger safety recommendations, trend identification, and improved risk management across the gliding community.

Aviation safety systems depend heavily upon honest, open, and timely reporting of accidents, incidents, hazards, procedural deviations, and operational concerns. For this reason, organisations should actively encourage reporting and support operational environments consistent with Just Culture principles.

Notification Content Requirements

The information provided during initial notification significantly influences the efficiency and accuracy of the investigation process.

All occurrence notifications — whether verbal or written — should include, where possible, the following information.

Date, Time, and Location

Accurate temporal and geographic information assists investigators in reconstructing the sequence of events, assessing environmental conditions, and coordinating response activities.

Aircraft Information

Reports should include aircraft registration, aircraft type and model, operator or club details, and tow aircraft information where applicable.

Occupants and Operational Roles

Reports should identify pilots, passengers, tow pilots, launch crew, and other personnel involved in the operation. Operational roles and supervision arrangements may also be relevant.

Description of the Occurrence

A concise factual summary should describe what occurred, the phase of operation involved, relevant operational conditions, and any known abnormalities or hazards.

At the initial reporting stage, reports should focus on factual information rather than speculation or analysis.

Weather and Environmental Conditions

Relevant environmental information may include wind direction and strength, visibility, turbulence, cloud conditions, thermal activity, runway conditions, and significant weather changes.

Injury Information

Reports should identify the number of injured persons, severity of injuries, and whether emergency medical services attended the scene.

Aircraft Damage

An initial assessment of aircraft damage should be provided where practical, including structural damage, control-system damage, propeller or tow equipment damage, and fire or impact damage.

Immediate Actions Taken

Reports should also include details of emergency response actions, first aid, fire suppression, hazard control, site preservation measures, and operational restrictions implemented following the occurrence.

Follow-Up Reporting and Investigation Support

Initial occurrence reports are often incomplete due to the evolving nature of emergency response and investigation activities. As additional information becomes available, clubs and operational personnel should provide supplementary information where required.

In more serious cases, Gliding Australia may appoint a Regional Manager, operational representative, or experienced investigator to assist the club and support investigation activities.

Cooperation, openness, and accurate information-sharing remain essential throughout the investigative process.

Reporting Culture and Organisational Learning

Occurrence reporting is one of the most important sources of safety information available to aviation organisations. Effective reporting systems allow organisations to identify hazards early, monitor operational trends, assess emerging risks, improve procedures, strengthen training, and enhance organisational resilience.

Many serious accidents are preceded by minor incidents, procedural deviations, operational concerns, or previously unreported hazards. A strong reporting culture therefore contributes directly to accident prevention.

Organisations that support fair, consistent, and learning-focused reporting processes are more likely to encourage openness, improve investigative quality, strengthen safety engagement, and identify systemic issues before more serious outcomes occur.

Conclusion

Timely and accurate reporting forms the foundation of effective aviation safety investigation. Within gliding operations, prompt notification, preservation of evidence, accurate factual reporting, and open cooperation are essential to supporting emergency response, occurrence investigation, and organisational learning.

Effective reporting systems not only assist investigators in understanding what occurred, but also contribute to broader safety improvement by identifying trends, operational risks, procedural weaknesses, and systemic safety concerns.

By promoting fair, transparent, and learning-focused reporting practices consistent with Just Culture principles, Gliding Australia and affiliated clubs strengthen the overall safety and resilience of Australian gliding operations.

Chapter 6: Initial Response and Site Management – Protecting Life, Preserving Evidence, and Managing the Scene with Discipline and Care

The minutes immediately following a sailplane or tow-plane accident are often highly stressful, emotionally charged, and operationally complex. Club members, instructors, tow pilots, emergency responders, and operational personnel may be required to make rapid decisions in unfamiliar and potentially hazardous conditions. During this period, disciplined and coordinated action is essential.

The priorities of the initial response are preservation of life, protection of responders and bystanders, control of immediate hazards, preservation of evidence, and establishment of orderly site management.

Poorly managed initial response actions may place responders at risk, compromise critical evidence, create confusion, or hinder subsequent investigation activities. Conversely, calm and professional site management supports both emergency response effectiveness and the integrity of the investigation process.

This chapter outlines the essential principles and practical procedures for effective initial response and accident-site management within gliding operations. It aligns with Gliding Australia operational requirements, national emergency response practices, Just Culture principles, and contemporary aviation safety investigation methodology.

This chapter should be read in conjunction with:

- *Annex D: Site Safety Checklist – A Step-by-Step Field Guide for Initial Responders*; and
- *Annex E: Accident-Site Hazard Advisory for First Responders*

Together, these resources provide practical guidance for managing hazards, preserving evidence, protecting responders, and supporting safe and professional accident-site management

Emergency Priorities

1. Preserve Life

Preservation of life always takes precedence over protection of aircraft, evidence, or operational assets.

Responders should identify injured persons, provide first aid within the limits of their training, assess immediate medical priorities, and request emergency services without delay where required.

Initial first-aid priorities generally include airway management, breathing assessment, circulation, catastrophic bleeding control, and protection from additional injury.

Emergency services should be contacted immediately through 000 where injuries are suspected, fire risk exists, hazardous materials are involved, or additional emergency support may be required.

When contacting emergency services, responders should provide exact location details, the number of injured persons, the nature of the occurrence, known hazards, and access information where available.

2. Control Immediate Hazards

Aircraft accident sites may contain significant hazards that are not immediately obvious. Responders must remain alert to evolving risks and avoid rushing into unsafe environments.

Potential hazards may include fuel leaks and vapours, unstable wreckage, damaged electrical systems, lithium-ion batteries, ballistic recovery systems (BRS), pressurised oxygen cylinders, composite materials, moving cables or winch equipment, fire, and environmental hazards.

Annex E provides detailed guidance regarding aviation-specific hazards commonly encountered at glider accident sites.

Where safe and appropriate to do so, BRS safety pins should be inserted if clearly visible and safely accessible, exclusion zones should be established around ballistic systems, damaged lithium batteries should be isolated in open-air locations, ignition sources should be controlled around fuel vapour areas, and leaking or damaged cylinders should not be disturbed unnecessarily.

Responders should avoid unnecessary handling of wreckage, exposure to fuel vapours, contact with damaged electrical systems, and inhalation of composite dust or fibres.

Particular attention should also be given to responder safety during deteriorating weather, unstable terrain, fire conditions, or operations in remote environments.

3. Prevent Further Harm

Once immediate life-threatening issues are addressed, responders should take reasonable steps to prevent additional injury or damage.

This may include evacuating bystanders from hazardous areas, isolating fuel or ignition hazards, deploying fire extinguishers where safe, controlling site access, and activating the club Emergency Response Plan (ERP).

Responders should not expose themselves to unnecessary danger in attempting rescue or hazard-control actions. No action should compromise responder safety.

On-Scene Control and Coordination

Early establishment of clear leadership is essential to maintaining safety, coordination, and orderly site management.

As soon as practicable, an On-Scene Commander (OSC) should be identified. This role is typically assumed by the senior instructor present, a club operational leader, the Club Chief Flying Instructor, or another appropriately experienced person.

The OSC is responsible for coordinating the immediate response until relieved by emergency services or investigative authorities.

Key responsibilities of the OSC include coordinating first-aid and emergency response activities, managing responder and bystander safety, allocating operational tasks, maintaining communication with emergency services, identifying hazards, controlling site access, and supporting evidence preservation.

The OSC should also ensure that unnecessary personnel do not interfere with emergency or investigative activities, access routes remain clear, and responder activities remain coordinated and disciplined.

Calm and professional leadership during the early stages of an occurrence can significantly reduce confusion, improve safety, and assist subsequent investigation activities.

Safety Lookout

Where practical, a dedicated Safety Lookout should be appointed during initial response activities.

The Safety Lookout’s role is to monitor for evolving hazards, fire, fuel spread, weather changes, structural instability, moving aircraft components, and responder safety issues.

This role is particularly important during rescue activities, wreckage access, battery management, and fuel hazard control.

The Safety Lookout should remain independent of direct rescue tasks wherever possible.

Aviation-Specific Hazards

Aircraft accident sites present hazards that may differ significantly from those encountered in road or industrial incidents.

Common aviation-specific hazards include:

Hazard	Key Risk	Immediate Action (If Safe)
Ballistic Recovery System (BRS)	Rocket activation, blast, fragmentation	Do not pull activation cables. Insert safety pin if accessible. Establish exclusion zone.
Lithium-Ion Batteries	Thermal runaway, high voltage, reignition	Isolate where possible. Move clear of structures if safe. Monitor continuously.
Fuel and Vapours	Fire, explosion, vapour ignition	Eliminate ignition sources. Establish no-spark zone. Deploy extinguishers if safe.
Pressurised Cylinders	Explosion, projectile hazard	Avoid handling damaged cylinders. Establish exclusion area. Notify emergency services.
Composite Materials	Skin injury, respiratory irritation	Wear gloves and respiratory protection where required. Minimise disturbance.

All hazard-management actions should be recorded as part of the site log and communicated to investigators and emergency services during handover activities.

Rescuer Safety

Responder safety must remain a continuous priority throughout all site-management activities.

Responders should wear high-visibility clothing where appropriate, use gloves, eye protection, and sturdy footwear, avoid entering unstable wreckage unnecessarily,

remain clear of fuel spills and damaged electrical systems, and avoid operating within unsafe areas unless properly trained and equipped.

Unsafe areas should be clearly marked and access restricted until hazards are assessed and controlled.

Responders should never place themselves at unacceptable risk in attempting rescue, evidence recovery, or hazard management activities.

Site Security and Evidence Preservation

From the moment an accident occurs, the site may become subject to police control, ATSB investigation authority, coronial investigation, or Gliding Australia investigative processes. Careful preservation of evidence is therefore critically important.

Where practical, a visible perimeter should be established around the site, access points should be controlled, entry and exit activity monitored, and unauthorised persons excluded.

Photographs, sketches, and notes should be obtained before wreckage or equipment is moved where operationally possible. Wreckage, controls, instruments, cables, and ground markings may all provide important investigative information.

Aircraft wreckage or evidence should only be moved where necessary for rescue, fire suppression, hazard control, or protection from immediate danger.

Where movement occurs, responders should record what was moved, why it was moved, who authorised the movement, and the time at which the action occurred.

Remote Accident Sites and Police Management

Accidents occurring away from the airfield may involve additional coordination challenges.

In remote or off-airfield accidents, local police generally assume initial control of the scene, emergency access may be difficult, and aviation investigators may require specialist logistical support.

Gliding Australia representatives attending remote accident sites should identify themselves to police and emergency services, provide technical aviation assistance where requested, respect police authority and site-control arrangements, and avoid disturbing wreckage without authorisation.

The Executive Manager, Operations and relevant Regional Manager should be notified promptly so that appropriate investigative support can be arranged.

In fatal accidents, police and coronial authorities will direct many aspects of subsequent site management and evidence handling. Professional cooperation and disciplined conduct are essential during these activities.

Recordkeeping and Handover

Accurate documentation during the initial response phase may significantly assist subsequent investigation activities.

A running log should be maintained where possible recording times, actions taken, responder attendance, communications, hazard-control actions, and significant observations.

Witness details should also be collected as early as practical using the appropriate witness-information forms.

During handover to police, ATSB investigators, emergency services, or Gliding Australia investigators, all relevant information should be provided, including photographs, witness details, hazard-management information, logs, and records of any wreckage movement.

Accurate factual documentation supports investigative integrity and reduces the risk of later confusion or loss of critical information.

Human Factors Considerations During Initial Response

Initial responders may experience stress, emotional shock, cognitive overload, confusion, and strong emotional reactions during accident response activities.

These factors may affect decision-making, communication, situational awareness, and memory recall.

Investigators should recognise that early witness recollections may be influenced by stress and should avoid aggressive or accusatory questioning during the immediate aftermath of an occurrence.

Calm leadership, structured communication, and disciplined task allocation may significantly improve both responder safety and operational effectiveness during initial response activities.

Key Take-Aways

1. Preservation of life always takes priority over evidence preservation.
2. Responders must remain alert to aviation-specific hazards.
3. Clear leadership and disciplined coordination are essential.
4. Evidence should only be disturbed where necessary for safety or rescue.

5. Accurate recordkeeping supports both investigation quality and organisational learning.
6. Calm, professional site management contributes directly to responder safety and investigative integrity.

Conclusion

Effective initial response and disciplined site management are critical components of aviation safety investigation. The actions taken during the first minutes and hours following an occurrence may significantly influence survival outcomes, responder safety, evidence preservation, and the quality of the subsequent investigation.

Within gliding operations, professional and well-coordinated response procedures support not only emergency management, but also broader organisational learning and long-term safety improvement. Through effective preparation, disciplined leadership, and adherence to established procedures, Gliding Australia personnel can respond to accidents safely, professionally, and in a manner consistent with the highest standards of aviation safety and investigative integrity.

Chapter 7: Securing and Documenting Evidence to Ensure a Sound Investigation

In the aftermath of a sailplane or tow-plane accident, the accuracy and credibility of the investigation depend heavily upon the quality and integrity of the evidence collected. Early actions taken by club officials, safety officers, first responders, or investigators may either preserve critical information or unintentionally compromise it beyond recovery. Evidence that is disturbed, altered, contaminated, or poorly documented during the early stages of an occurrence may significantly hinder later analysis and reduce the effectiveness of the investigation.

Within gliding operations, evidence is often fragile and easily affected by weather conditions, recovery activity, movement of personnel and vehicles, well-intentioned attempts to assist, or the emotional and operational pressures present immediately after an accident.

For this reason, disciplined and methodical evidence management is essential. Evidence preservation supports not only technical analysis, but also Human Factors assessment, organisational learning, coronial processes, regulatory review, and the development of meaningful safety recommendations.

This chapter provides practical guidance regarding the preservation, documentation, recovery, and management of evidence in accordance with recognised aviation investigation practices and contemporary safety investigation principles.

Scene Documentation

Comprehensive documentation of the accident scene is one of the foundational elements of any credible investigation. Before wreckage, controls, equipment, or surrounding evidence are moved or disturbed, the scene should be recorded in as much detail as operationally practical.

Photographic evidence should be obtained systematically. Initial photographs should establish the broader context of the occurrence by capturing surrounding terrain, runway or launch area relationships, tree lines or obstacles, weather conditions where observable, and the overall orientation of the aircraft and wreckage.

Once overall context has been recorded, investigators should progressively document aircraft damage, debris distribution, impact marks, cockpit condition, detached components, and any unusual or significant evidence.

Close-up photographs may later prove critically important in understanding control continuity, structural failure, restraint-system performance, or cockpit configuration

at impact. Relevant items such as tow ropes, parachutes, trailers, damaged structures, or ground scars should also be documented carefully.

Photographs alone are rarely sufficient. Sketch diagrams and written notes should complement photographic evidence by recording the spatial relationship between wreckage, impact points, obstacles, runway references, and terrain features.

Although diagrams prepared during the early response phase do not need to be technically precise, they should be clear, labelled, dated, and understandable to investigators reviewing the material later.

Particular care should also be taken to document the aircraft's configuration before controls or systems are disturbed. This may include recording trim position, flap settings, spoiler or airbrake deployment, switch selections, canopy status, tow-release position, and instrument indications.

Even apparently minor details may later assist investigators in reconstructing operational sequence or assessing pilot actions and aircraft condition.

Where rescue or hazard-control activities require movement of wreckage, documentation should be completed beforehand wherever practical.

Physical Evidence

Handling of wreckage and physical evidence must be conducted carefully and systematically to avoid contamination, loss, or misinterpretation. Aircraft wreckage may provide important information regarding impact sequence, structural failure, control-system continuity, maintenance condition, and operational configuration.

Detached parts and loose components should be identified and labelled before removal wherever possible. Investigators should record what the item is, where it was located, its apparent condition, and whether it appears connected to the occurrence sequence.

Examples may include wing sections, fairings, tow ropes, instruments, batteries, damaged fittings, or cockpit components.

Where evidence is removed from the site, appropriate storage arrangements should be established to protect it from weather, accidental damage, tampering, or unauthorised access.

Particular attention should be given to preserving the original condition of wreckage and components. Aircraft parts should not be cleaned, repaired, reassembled, adjusted, or modified without proper authorisation.

Even well-intentioned actions may unintentionally destroy important evidence relating to structural overload, impact forces, restraint performance, or system malfunction.

Where ATSB, police, or coronial authorities become involved, evidence preservation requirements may become subject to formal legal and investigative controls. Investigators and club personnel should therefore ensure that all evidence is handled with appropriate care and professional discipline.

Data Recovery

Modern sailplanes and tow aircraft frequently contain electronic devices capable of providing valuable operational information. These may include GPS loggers, FLARM units, variometers, flight computers, engine monitoring systems, and mobile electronic flight applications.

Data recovered from these devices may assist investigators in reconstructing flight path, altitude profile, aircraft performance, speed, operational decisions, and sequence of events.

Electronic devices should be recovered carefully to avoid physical or electrical damage and to prevent accidental overwriting of stored information. Investigators should document the device type, serial numbers where available, location within the aircraft, and the method used to recover the device.

Downloaded data should always be preserved in original, unaltered form. Duplicate copies should be created for analysis purposes, and records maintained identifying who performed the recovery, when the data was downloaded, the software or tools used, and how the files were stored.

Careful time synchronisation is particularly important when comparing electronic data with witness statements, radio transmissions, weather observations, or other operational records.

In situations where flight loggers or onboard recording devices are damaged during an accident or incident, it may be appropriate to seek technical assistance from the Australian Transport Safety Bureau (ATSB). The ATSB possesses specialised capabilities and facilities that may enable recovery and analysis of data from damaged, compromised, or partially functional devices. Such information may be critical in reconstructing the sequence of events and identifying operational, technical, or Human Factors contributors to the occurrence.

Witness Information

Witness information often provides valuable operational context that complements physical evidence and technical analysis. In many gliding occurrences, witness observations may help investigators understand aircraft behaviour, environmental conditions, operational sequence, unusual sounds, or visible abnormalities prior to the accident.

However, investigators must also recognise that human memory is inherently fallible and may be affected by stress, emotional shock, discussion with others, media exposure, or hindsight bias.

Witnesses should therefore be interviewed as soon as reasonably practical while recollections remain fresh. Where possible, witnesses should provide independent accounts before extensive group discussion occurs.

Interviews should be conducted calmly, respectfully, and without accusation or confrontation. Investigators should avoid leading questions, assumptions regarding cause, or attempts to force agreement between differing accounts.

Standardised interview forms may assist in ensuring consistency and completeness of information gathering. Relevant topics may include witness location, weather and visibility, aircraft attitude, observed manoeuvres, sounds, smoke or fire, and sequence of events.

Differences between witness accounts are common and should not automatically be interpreted as unreliability or dishonesty. Variations may arise from differing viewpoints, visibility limitations, timing uncertainty, or the effects of stress.

Investigators should therefore treat witness information as one component of the broader evidence picture rather than relying solely upon individual recollections.

Working with Police Investigators

In many serious gliding accidents, particularly those involving injury or fatality, State or Territory Police will assume initial control of the site. Police responsibilities may include site security, public safety, witness identification, evidence preservation, and support for coronial investigation.

Gliding Australia investigators and club officials must work cooperatively and professionally with police authorities throughout the investigative process.

Once police assume control of the accident site, access to wreckage, documentation, or operational personnel may be restricted. Investigators should respect police

authority and avoid disturbing evidence or entering restricted areas without approval.

Police investigators may not possess specialist knowledge relating to sailplane systems, launch operations, or gliding procedures. Gliding Australia investigators may therefore assist by providing technical explanations, operational context, aircraft-system identification, and aviation-specific guidance.

Such assistance should remain objective, factual, and professionally neutral.

Where appropriate and legally permissible, factual information collected by clubs, Gliding Australia investigators, ATSB investigators, and police may be shared to support effective investigation and safety analysis.

Clear communication and professional cooperation help ensure that safety investigations, coronial inquiries, and regulatory processes can proceed efficiently and without unnecessary conflict or duplication.

Human Factors and Evidence Interpretation

Evidence should not be viewed solely as a means of identifying failure or assigning responsibility. Modern aviation investigation recognises that evidence must also assist investigators in understanding operational context, Human Factors influences, workload, supervision, communication, procedural design, organisational conditions, and behavioural influences.

Investigators should therefore approach evidence analysis objectively and avoid hindsight bias, premature conclusions, confirmation bias, or simplistic attribution of blame.

The purpose of evidence analysis is not merely to determine what failed, but to understand how operational conditions, decisions, technical factors, and organisational influences combined to shape the outcome.

Further guidance regarding Human Factors and behavioural analysis is provided in:

- *Chapter 9: Human and Organisational Factors*;
- *Chapter 10: Behavioural Analysis and Just Culture Decision-Making*; and
- *Annex K: Human Factors in Sailplane Accident and Incident Investigation – A Sailplane-Focused Introduction.*

Conclusion

Effective evidence management is fundamental to credible aviation safety investigation. Careful preservation, accurate documentation, disciplined handling of physical evidence, professional witness interviewing, and cooperative engagement

with investigative authorities all contribute directly to the quality and integrity of the investigation process.

Within gliding operations, the actions taken during the early stages of an occurrence may significantly influence the ability to understand how the accident developed and what safety improvements are necessary to reduce future risk.

By treating evidence carefully, documenting it systematically, and maintaining professional investigative discipline, Gliding Australia investigators and operational personnel contribute not only to effective investigation outcomes, but also to broader organisational learning and long-term aviation safety improvement.

Chapter 8: Conducting a Safe, Structured, and Credible Investigation

The investigation of sailplane and tow-plane accidents and incidents is a disciplined and methodical process guided by established investigative principles, legal and organisational requirements, Human Factors methodology, and a commitment to fairness, transparency, and safety improvement.

The purpose of an investigation is not merely to determine what happened, but to understand how operational, technical, environmental, organisational, and behavioural influences combined to produce the occurrence. Effective investigation seeks to identify opportunities for safety improvement and reduce the likelihood of recurrence through learning and systemic improvement rather than simplistic assignment of blame.

Within gliding operations, investigations may range from relatively straightforward operational events through to complex fatal accidents involving multiple agencies, technical examination, and coronial oversight. Regardless of complexity, all investigations should be conducted systematically, objectively, and professionally to ensure that findings and recommendations are supported by reliable evidence and sound analysis.

This chapter outlines the principal phases of the investigation process, explains the responsibilities of investigators, and describes how Gliding Australia coordinates investigative activities with external authorities and operational stakeholders.

The Investigation Process

An effective investigation follows a structured sequence of activities, with each phase building upon the previous one to support accurate analysis and credible findings.

Although the scale and complexity of investigations may vary considerably, most investigations involve notification, initial response, evidence collection, analysis, and report preparation. The quality and professionalism applied during each phase significantly influence the effectiveness of the overall investigation.

Notification

The investigation process begins with ensuring that the appropriate authorities and organisational personnel are notified promptly following an occurrence.

Depending upon the nature and seriousness of the event, notifications may include emergency services, the Australian Transport Safety Bureau (ATSB), the Civil Aviation Safety Authority (CASA), and Gliding Australia's Executive Manager, Operations.

Timely notification is essential because it supports emergency response, enables early preservation of evidence, allows appropriate oversight and investigative resources to be deployed, and ensures compliance with regulatory and organisational obligations.

Within Gliding Australia, occurrence notification also supports the Safety Management System by enabling early hazard assessment, risk review, occurrence tracking, and organisational awareness of emerging safety issues.

Initial Response

Once immediate emergency response activities are complete and the site has been stabilised, the initial response phase begins.

This phase establishes the foundation upon which the remainder of the investigation depends. Early actions should therefore focus upon preserving evidence, documenting operational conditions, identifying witnesses, controlling hazards, and maintaining orderly site management.

Even apparently minor details may later prove highly significant in reconstructing operational sequence, aircraft configuration, environmental conditions, or Human Factors influences.

During this phase, clubs may undertake immediate fact-gathering and operational safety actions. However, formal authority for investigation appointment, escalation decisions, and overall investigative oversight rests with Gliding Australia's Executive Manager, Operations.

Further guidance regarding accident-site management, hazard control, and evidence preservation is provided in:

- *Chapter 6: Initial Response and Site Management – Protecting Life, Preserving Evidence, and Managing the Scene with Discipline and Care* and
- *Chapter 7: Securing and Documenting Evidence to Ensure a Sound Investigation*.

Evidence Collection

Evidence collection is one of the most important phases of the investigation process. The purpose of evidence collection is to establish a reliable and objective factual foundation from which meaningful analysis can later be conducted.

Investigators should seek to obtain evidence relating to aircraft condition, operational procedures, environmental influences, organisational factors, Human Factors, supervision, training, and operational decision-making.

Evidence may include wreckage examination, aircraft documentation, maintenance records, pilot qualifications, GPS data, FLARM traces, radio communications, photographs, weather information, and witness accounts.

Witness interviews should be conducted in a calm, structured, and professional manner. Investigators should avoid leading questions, assumptions regarding causation, or emotionally confrontational interview techniques.

The objective is to understand operational circumstances and decision-making processes rather than to seek admissions of fault.

All evidence should be documented carefully and stored securely to preserve its integrity and support subsequent review, analysis, or external investigation requirements.

Analysis

Analysis is the phase during which investigators seek to understand not only what occurred, but why the occurrence developed.

This phase requires investigators to reconstruct the operational sequence, assess the interaction of contributing influences, identify systemic safety issues, and evaluate how operational, technical, environmental, organisational, and Human Factors elements combined to shape the outcome.

The investigative objective is not merely to identify a single “cause,” but to understand the broader context and contributing conditions that allowed the occurrence to develop.

Analysis may involve reconstruction of flight path and timeline, examination of aircraft performance, review of operational procedures, assessment of environmental influences, evaluation of supervision and training, and consideration of Human Factors and organisational influences.

Investigators should avoid simplistic conclusions focused solely upon individual actions or hindsight interpretation of events. Decisions and behaviours must be assessed according to the information available at the time, operational pressures present, environmental conditions, organisational context, and the practical realities of the operation.

Behavioural and organisational influences should also be assessed using the principles outlined in *Chapter 10: Behavioural Analysis and Just Culture Decision-*

Making. Particular attention should be given to distinguishing between ordinary human error, operational adaptation, procedural drift, culturally normalised practices, and genuinely reckless conduct.

Behavioural assessment should support organisational learning, systemic safety improvement, and fair, proportionate safety responses rather than simplistic attribution of blame.

Investigators may also apply recognised analytical frameworks such as the Swiss Cheese Model, Human Factors Analysis and Classification System (HFACS), or systems-based risk-analysis approaches where appropriate to assist in identifying contributing influences and organisational vulnerabilities.

Further guidance regarding Human Factors and behavioural analysis is provided in:

- *Chapter 9: Human and Organisational Factors*;
- *Chapter 10: Behavioural Analysis and Just Culture Decision-Making*; and
- *Annex K: Human Factors in Sailplane Accident and Incident Investigation – A Sailplane-Focused Introduction.*

Report Preparation and Safety Recommendations

The final phase of the investigation process involves preparation of the formal investigation report and development of appropriate safety recommendations.

The purpose of the report is to document factual information, explain investigative findings, communicate analysis clearly, and support practical safety improvement.

A well-prepared investigation report should present information logically, objectively, and without unnecessary speculation or emotionally charged language.

Most reports will generally include a factual narrative of the occurrence, evidence summaries, analysis of contributing influences, findings, and safety recommendations.

Findings should distinguish clearly between factual information, analytical interpretation, contributing factors, and identified safety issues.

Safety recommendations should be practical, proportionate, evidence-based, and clearly linked to identified safety concerns.

Recommendations may involve procedural improvement, training enhancement, supervision, operational guidance, equipment, organisational systems, or broader safety-management measures.

Investigators should avoid recommendations based solely upon retraining or individual correction where broader organisational or systemic influences are also relevant.

Supporting materials such as diagrams, photographs, maps, witness summaries, or technical appendices may also be attached where appropriate.

The completed report should be distributed in accordance with Gliding Australia procedures and, where required, provided to ATSB investigators, coronial authorities, police, CASA, or other authorised stakeholders.

Investigator Roles and Responsibilities

Investigations conducted under Gliding Australia authority are generally coordinated by qualified personnel appointed according to the nature and complexity of the occurrence.

The Executive Manager, Operations retains overall responsibility for investigative oversight, investigator appointment, escalation decisions, and ensuring compliance with Gliding Australia policies and procedures.

Regional Managers, Operations may provide regional coordination, operational assistance, supervisory oversight, and support for investigators operating within their area.

Club-based personnel such as Chief Flying Instructors, Level 3 Instructors, or Safety Officers may assist with initial response, local evidence gathering, witness coordination, and operational support activities where appropriately authorised.

Investigators must remain objective, independent, professionally disciplined, and free from significant conflicts of interest.

Particular care should therefore be taken where investigators have personal involvement in the occurrence, supervisory relationships, or organisational interests that may affect investigative independence.

Confidentiality must also be maintained throughout the investigative process. Sensitive information should be handled carefully and disclosed only through appropriate organisational, legal, or investigative channels.

Investigator wellbeing and psychological risk management are addressed further in Annex L and should be considered during task allocation, exposure management, and ongoing investigative oversight.

Criteria for escalation of investigations beyond club level are provided in Annex M.

Cooperation with External Authorities

Many gliding accidents and serious incidents involve cooperation with the ATSB, CASA, police, coronial authorities, and emergency services.

Effective cooperation with these organisations is essential to ensuring efficient investigation, evidence preservation, legal compliance, and consistent safety outcomes.

Where ATSB investigators are involved, Gliding Australia investigators must provide appropriate access to accident sites, aircraft documentation, operational records, technical information, and personnel.

Joint technical discussions or debriefings may occur to support information sharing, technical understanding, and coordinated safety analysis.

In fatal accidents, police generally retain statutory control of the accident site until released through the appropriate legal process. Gliding Australia investigators must therefore liaise closely with police and coronial personnel before accessing wreckage, removing evidence, or conducting detailed investigative activities.

All interaction with external authorities should remain professional, respectful, objective, and consistent with legal obligations and Just Culture principles.

Conclusion

Effective aviation safety investigation is a disciplined and structured process focused upon understanding how and why occurrences develop within complex operational environments. The purpose of investigation is not simply to assign responsibility, but to improve safety through objective analysis, organisational learning, and practical risk reduction.

By conducting investigations systematically, preserving evidence carefully, analysing operational and Human Factors influences objectively, and maintaining professional cooperation with external authorities, Gliding Australia investigators contribute directly to safer operations, stronger organisational resilience, and continual improvement across the Australian gliding community.

Well-conducted investigations therefore play a critical role not only in understanding accidents and incidents, but also in strengthening the long-term safety and professionalism of gliding operations as a whole.

Chapter 9: Human and Organisational Factors

Investigators should refer to *Annex K: Human Factors in Sailplane Accident and Incident Investigation – A Sailplane-Focused Introduction* for the conceptual principles that underpin the Human Factors analysis described in this chapter. Annex K explains the nature of human error, the influence of systemic and organisational factors, and the Just Culture framework that supports learning-focused, non-punitive investigation.

This chapter applies those principles by examining how human performance, communication, supervision, operational pressures, and organisational influences contribute to accidents and incidents within gliding operations.

In aviation, accidents and serious incidents rarely arise from a single isolated failure. Instead, they typically develop through a complex interaction between human performance limitations, environmental conditions, communication breakdowns, operational demands, supervision, organisational influences, and systemic weaknesses.

Modern aviation safety investigation therefore requires investigators to move beyond simplistic explanations focused solely upon individual actions. Investigators should instead seek to understand the broader operational context in which decisions and behaviours occurred.

The purpose of Human Factors analysis is not to excuse unsafe conduct or avoid accountability. Rather, it is to understand how ordinary human limitations, operational pressures, organisational systems, and local practices may interact to shape operational outcomes. This approach supports more accurate analysis, stronger organisational learning, and more effective long-term safety improvement.

Human Performance Analysis

Human performance is influenced by a broad combination of physical, psychological, operational, environmental, and organisational factors. These influences may significantly affect situational awareness, judgement, decision-making, communication, workload management, and overall operational performance.

When examining human performance, investigators should consider not only what actions occurred, but also why those actions may have appeared reasonable, understandable, or operationally normal to the individuals involved at the time.

Decision-Making

Decision-making is one of the most important elements of Human Factors analysis. Investigators should assess whether decisions were appropriate in light of the

information available at the time, operational pressures, environmental conditions, training and experience, and the operational expectations surrounding the flight.

Poor outcomes do not necessarily imply poor decision-making. Investigators should therefore avoid hindsight bias and should assess decisions according to the circumstances existing before the occurrence developed rather than solely according to the eventual result.

Operational judgement may be influenced by incomplete information, time pressure, weather deterioration, perceived expectations, competition pressure, confidence based upon previous experience, or gradual acceptance of elevated operational risk.

For example, a pilot may continue a flight into deteriorating weather because previous flights under similar conditions were completed successfully, operational pressure encouraged continuation, or the developing risk was not fully recognised at the time.

Understanding why decisions appeared reasonable to the individual involved is often more valuable than merely identifying that the decision ultimately proved unsuccessful.

Alertness and Fatigue

Fatigue may significantly impair attention, situational awareness, reaction time, memory, communication, and judgement. Investigators should therefore consider whether fatigue or reduced alertness may have affected operational performance.

Relevant considerations may include recent flying activity, cumulative workload, sleep quality, duration of duty, environmental heat, dehydration, travel, stress, and the physical demands of the operational environment.

Fatigue-related performance degradation is not always obvious to the individual experiencing it. Pilots, instructors, tow pilots, and ground personnel may underestimate the extent to which fatigue affects concentration, information processing, and decision-making.

Within gliding operations, prolonged flying days, competition operations, repetitive launch sequences, and high-temperature environments may all contribute to cumulative fatigue effects.

Workload and Distraction

Gliding operations frequently involve periods of elevated workload, particularly during launch, thermalling in congested airspace, circuit operations, final glide, cross-country navigation, and abnormal or emergency situations.

High workload may reduce a pilot's ability to process information effectively, prioritise tasks, maintain situational awareness, and recognise emerging hazards.

Distraction may also contribute significantly to operational error. Distractions may arise from radio communications, cockpit equipment, interpersonal interaction, traffic monitoring, weather concerns, or unexpected operational events.

Investigators should consider whether the individual may have experienced task saturation, attentional narrowing, interruption of normal routines, or loss of situational awareness during critical phases of operation.

For example, distraction during launch or circuit operations may result in missed checklist items, degraded lookout, incorrect configuration, or delayed response to changing operational conditions.

Stress and Operational Pressure

Stress may influence operational behaviour in subtle but important ways. Both external and internal pressures may affect judgement, communication, coordination, workload tolerance, and risk perception.

Sources of stress may include competition pressure, interpersonal conflict, weather concerns, operational expectations, fatigue, performance anxiety, time pressure, or personal circumstances unrelated to flying.

Operational pressure does not always arise through direct instruction or overt coercion. In many cases, pressure may be self-imposed, culturally reinforced, or shaped by perceived expectations within the organisation or peer group.

For example, a pilot may feel reluctant to cancel a launch, abandon a task, discontinue a competition flight, or request assistance because of perceived expectations from instructors, peers, or club culture.

Investigators should therefore consider whether operational behaviour may have been influenced by subtle social or organisational pressures rather than deliberate risk-taking alone.

Training, Qualifications, and Recency

Human performance cannot be assessed in isolation from the training and operational support systems that shape pilot capability.

Investigators should therefore review whether personnel held appropriate qualifications, maintained required recency, received suitable supervision, and had adequate preparation for the operational task being undertaken.

Areas requiring examination may include emergency procedure training, type conversion, instructor supervision, launch method experience, cross-country preparation, and recent operational exposure.

Operational deficiencies may arise where training was incomplete, supervision was inadequate, operational progression occurred too rapidly, or recency standards were not effectively maintained.

The objective of this analysis is not merely to identify technical non-compliance, but to understand whether the training system itself adequately prepared the individual for the operational demands encountered.

Procedural Adherence and Operational Practice

Standard operating procedures are intended to provide consistency, structure, and risk control within aviation operations. However, investigators should recognise that operational practice may sometimes differ from formally documented procedures.

In some environments, gradual procedural drift or operational adaptation may develop over time in response to workload, operational convenience, local custom, environmental conditions, or perceived operational efficiency. Such practices may become culturally normalised even where they involve increased operational risk.

Investigators should therefore examine not only whether procedures were followed, but also whether procedures were practical and clearly understood, whether local deviations had become accepted practice, and whether organisational oversight effectively identified and corrected degraded operational behaviour.

Further guidance regarding behavioural assessment, operational adaptation, and Just Culture analysis is provided in *Chapter 10: Behavioural Analysis and Just Culture Decision-Making*.

Communication and Crew Resource Management (CRM)

Effective communication is essential to safe gliding operations. Launch operations, instructional flights, aerotow coordination, ground handling, and emergency response all depend upon clear communication, accurate information exchange, shared situational awareness, and effective coordination between operational personnel.

Communication failures are often subtle and may involve incomplete information, ambiguous wording, incorrect assumptions, missed transmissions, poor timing, or differing expectations between individuals.

Investigators should examine not only what was communicated, but also how the communication was interpreted, whether operational assumptions differed, and whether all participants shared the same understanding of the situation.

Communication Clarity and Timing

Standard phraseology and established operational signals are intended to reduce ambiguity and improve coordination during gliding operations.

Investigators should assess whether standard terminology was used correctly, communications were timely, operational intentions were clearly understood, and important information was communicated to all relevant personnel.

Misunderstanding may occur even where communications appear technically correct. Factors such as noise, stress, workload, radio congestion, distraction, or expectation bias may all influence how information is interpreted.

Crew Coordination and Teamwork

Although many sailplane operations involve a single pilot, gliding activities frequently depend upon coordinated interaction between tow pilots, instructors, launch crews, retrieve crews, airfield personnel, and other pilots.

Investigators should assess whether roles and responsibilities were clearly understood, operational expectations were aligned, and coordination remained effective during critical phases of operation.

Breakdowns in teamwork may contribute to:

- launch incidents;
- runway incursions;
- airspace conflicts;
- procedural confusion;
- or delayed response during abnormal situations.

Particular attention should be given to situations involving instructional flights, unfamiliar personnel, high workload, or rapidly changing operational conditions.

Organisational Factors

The organisational environment within a gliding club or operational group significantly influences operational behaviour and safety outcomes.

Organisational factors may shape attitudes toward risk, procedural compliance, reporting culture, supervision standards, communication, and operational decision-making. Investigators should therefore consider how broader organisational conditions may have contributed to the occurrence.

Safety Culture

A strong safety culture encourages open reporting, procedural discipline, continuous learning, effective supervision, and constructive discussion of operational risk.

Conversely, weak safety culture may contribute to:

- normalisation of unsafe practices;
- reluctance to report concerns;
- inadequate supervision;
- procedural drift;
- or tolerance of degraded operational behaviour.

Investigators should examine whether the organisation actively supported risk management, open communication, and fair, learning-focused safety processes consistent with Just Culture principles.

Leadership and Supervision

Leadership and supervision play critical roles in shaping operational behaviour.

Investigators should consider whether operational oversight was effective, briefings were adequate, instructors and supervisors were appropriately current, standards were applied consistently, and operational concerns were addressed promptly and professionally.

Weak supervision may allow unsafe local practices, degraded discipline, inadequate preparation, or procedural non-compliance to become normalised over time.

Organisational Systems and Operational Oversight

Human performance is strongly influenced by the systems within which operational personnel work.

Investigators should therefore examine whether organisational systems relating to training, recency management, operational control, documentation, supervision, and risk management were functioning effectively.

Particular attention should be given to whether identified hazards were acted upon, previous occurrences were learned from, safety concerns were openly discussed, and corrective actions were effectively implemented.

Operational problems often develop gradually through organisational drift, weakened oversight, informal shortcuts, or cumulative acceptance of elevated operational risk. Understanding these broader influences is essential to meaningful safety improvement.

Human Factors and Just Culture

Human Factors analysis assists investigators in understanding how performance limitations, communication breakdowns, supervision, workload, operational pressures, and organisational conditions contribute to occurrences.

However, Human Factors analysis should always occur within a fair and balanced Just Culture framework.

Investigators must distinguish carefully between:

- ordinary human error;
- operational adaptation;
- culturally normalised practices;
- intentional procedural deviation;
- and genuinely reckless conduct.

The objective is not to avoid accountability, but to ensure that behavioural assessment remains fair, proportionate, evidence-based, and focused upon improving safety rather than simply assigning blame.

These principles are examined further in *Chapter 10: Behavioural Analysis and Just Culture Decision-Making*.

Conclusion

Understanding Human and Organisational Factors is essential to effective sailplane accident and incident investigation. By examining how human performance, communication, supervision, operational pressures, organisational culture, and systemic influences interact within complex operational environments, investigators are better able to identify meaningful opportunities for safety improvement.

This approach supports stronger organisational learning, improved operational resilience, better training and supervision, and more effective Safety Management Systems.

Modern aviation safety investigation therefore seeks not merely to identify what went wrong, but to understand how operational conditions, human performance, and organisational influences combined to shape the outcome. Through objective, evidence-based, and learning-focused investigation, the gliding community is better positioned to reduce future risk and strengthen long-term operational safety.

Chapter 10: Behavioural Analysis and Just Culture Decision-Making

Effective accident and incident investigation requires more than simply identifying what happened. Investigators must also understand why individuals acted as they did within the operational environment that existed at the time. Human behaviour in aviation is rarely shaped by a single factor. Decisions and actions are influenced by knowledge, experience, task demands, supervisory expectations, fatigue, procedural design, organisational culture, and the practical realities of flight operations.

Without a structured framework for analysing behaviour, investigations can easily drift toward hindsight bias, oversimplification, or unfair assignment of blame. Actions that appear unreasonable after an occurrence often become more understandable when examined within the context of the information, pressures, and conditions that existed at the time. Equally, some behaviours may involve conscious disregard for safety standards and therefore require a different organisational and safety response.

For these reasons, behavioural analysis forms an important component of modern aviation safety investigation. It assists investigators in distinguishing between ordinary human error, operationally driven behavioural drift, culturally accepted deviations, and genuinely reckless conduct. It also supports the principles of Just Culture by promoting fairness, proportionality, and system-focused learning rather than simplistic blame allocation.

The purpose of behavioural analysis is not to normalise unsafe conduct or remove accountability. Rather, it is to ensure that unsafe acts are properly understood so that effective and sustainable safety improvements can be implemented.

This chapter should be read in conjunction with *Chapter 2: Just Culture and the No-Blame Philosophy – Foundations of Aviation Safety Investigation, Chapter 9: Human and Organisational Factors,* and *Annex K: Human Factors in Sailplane Accident and Incident Investigation – A Sailplane-Focused Introduction*.

The Importance of Behavioural Analysis

In many accidents and incidents, the final unsafe act immediately preceding the occurrence may appear obvious. A pilot omitted a checklist item, continued into deteriorating weather, mismanaged an approach, or bypassed a required procedure. However, identifying the final operational error alone rarely explains why the occurrence developed.

Investigators must therefore move beyond superficial conclusions such as “pilot error” and examine the broader operational and organisational context surrounding the event. Questions of causation should not be limited to what the individual did, but should also consider why the action or decision made sense to the individual at the time.

For example, investigators may need to examine why a checklist was omitted, why a procedure was bypassed, why multiple people failed to recognise a developing hazard, or why procedural shortcuts had gradually become accepted within the operational environment. Such questions often reveal underlying influences involving workload, fatigue, supervision, training, operational pressure, or normalised deviance.

Behavioural analysis recognises that normal people operating within imperfect systems can make poor operational decisions or commit errors, particularly when exposed to distraction, stress, fatigue, ambiguity, time pressure, or poorly designed procedures. In many cases, procedural drift reflects the interaction between ordinary human limitations and broader system influences rather than isolated incompetence or negligence.

Understanding these interactions is essential if investigations are to produce meaningful safety outcomes.

Avoiding Hindsight Bias

One of the greatest dangers in behavioural analysis is hindsight bias.

Once investigators know the outcome of an event, actions that may have appeared reasonable or understandable at the time can later appear obviously flawed or inappropriate. This can distort analysis and encourage unfair conclusions that overemphasise individual failings while overlooking systemic contributors.

Hindsight bias often leads investigators to ask inappropriate questions such as, “Why didn’t the pilot realise what was going to happen?” or “Why would anyone make that decision?” Such questions assume that the risks and consequences were as obvious before the event as they became afterward.

A more appropriate investigative approach is to examine what information was available to the individual at the time, what operational pressures existed, what cues or indications influenced decision-making, and what a reasonably competent person may have perceived in the same circumstances.

This approach does not remove accountability. Rather, it promotes fairer and more accurate analysis by ensuring that decisions are examined within their operational context rather than solely through the lens of the final outcome.

Investigative caution is particularly important when assessing decisions that may appear unreasonable only after the final outcome is known. Behavioural analysis must focus on understanding how individuals interpreted and responded to the situation as it existed at the time.

Human Error

Most aviation occurrences involve some form of human error. Errors are unintended actions or decisions that fail to achieve the desired outcome despite the individual generally intending to operate safely and appropriately.

In aviation safety investigation, errors should normally be examined primarily as human performance and system issues rather than disciplinary matters. Errors often reveal weaknesses in procedures, supervision, training, workload management, or operational design.

Some errors occur during the execution of familiar or routine tasks. These are commonly referred to as slips. In such cases, the correct action is intended, but the wrong action is inadvertently performed. Examples may include operating the wrong control, selecting an incorrect radio frequency, unintentionally omitting a checklist item, or misidentifying a cable attachment point during rigging. Slips frequently occur in environments involving distraction, interruption, repetitive activity, fatigue, or elevated workload.

Other errors involve failures of memory rather than incorrect physical actions. These are generally referred to as lapses. A pilot may forget to complete a required check, omit a radio call, fail to reconnect a control system after interruption, or lose track of task progression during periods of high workload. Such lapses are commonly associated with fatigue, stress, interruption, task saturation, or poorly designed checklist systems.

In contrast, mistakes occur when the intended action itself is inappropriate for the circumstances. The individual performs the action as planned, but the underlying judgement, assessment, or understanding is flawed. A pilot may continue into deteriorating weather, select an unsuitable landing area, apply an inappropriate recovery technique, or misinterpret airspace boundaries. These situations often reflect limitations in situational awareness, knowledge, training, or risk assessment rather than simple carelessness.

Some mistakes involve the incorrect application of otherwise valid procedures or rules. Others arise when the individual lacks sufficient knowledge or experience to make an appropriate decision in unfamiliar circumstances. In either case, investigators should examine not only the individual decision itself but also the adequacy of training, supervision, operational guidance, and organisational support.

Violations, Procedural Drift, and Operational Adaptation

Violations differ from errors because the individual intentionally departs from procedures, rules, or accepted practices. However, intentional deviation does not automatically imply recklessness or poor intent.

In many operational environments, individuals adapt procedures in response to workload, operational pressure, equipment limitations, environmental conditions, or cultural expectations. It is important that investigators examine not only the deviation itself, but also the operational and cultural conditions that allowed it to develop.

Some violations occur because operational conditions make strict procedural compliance difficult or impractical. A pilot or instructor may bypass a cumbersome procedure in order to maintain launch operations during high workload periods or adapt standard practices because of equipment limitations or staffing shortages. These situational violations often indicate underlying organisational or procedural deficiencies rather than deliberate disregard for safety.

Other violations occur in unusual or emergency circumstances where individuals depart from normal procedures in an attempt to manage an immediate threat or abnormal situation. A pilot may disregard part of a checklist during an emergency response or deviate from standard procedures to avoid terrain or collision risk. In such situations, behaviour may represent adaptive decision-making under rapidly evolving conditions rather than unsafe intent.

Particularly significant are routine violations — unsafe deviations that gradually become normalised within an organisation or operational group. In some clubs or operational environments, abbreviated checks, informal procedural shortcuts, non-standard radio practices, or habitual low-level manoeuvring may slowly become culturally accepted. Over time, individuals may cease to perceive these practices as unsafe because they become embedded within normal operations.

Routine violations are especially important in safety investigation because they often indicate deeper organisational and cultural problems rather than isolated individual failings. Investigators should therefore carefully examine whether unsafe practices had become tolerated, encouraged, or inadequately supervised within the operational environment.

Safety Compromise and Operational Pressure

Unsafe behaviour sometimes develops because individuals consciously compromise safety in pursuit of another objective. This process is often referred to as unsafe optimisation.

In some cases, individuals compromise safety in an attempt to improve operational efficiency or satisfy perceived organisational expectations. Launch operations may be rushed to maintain operational tempo, flights may continue despite deteriorating conditions to avoid delays, or procedures may be bypassed to preserve competition schedules. Instructors, tow pilots, or operational personnel may feel pressure — whether explicit or implied — to continue operations despite increasing risk.

These behaviours frequently reflect broader cultural, supervisory, or operational expectations rather than isolated poor judgement by individuals.

In other situations, unsafe optimisation may arise from personal motivations rather than organisational pressures. Individuals may shortcut inspections to save time, engage in unnecessary low flying, bypass procedures for convenience, or display complacency arising from familiarity and routine exposure to risk.

Investigators should recognise that operational pressures are often subtle and may not be formally acknowledged within the organisation. Individuals may perceive expectations that are never explicitly stated. Consequently, behavioural analysis should include careful examination of club culture, supervision, workload, operational tempo, and informal behavioural norms.

Reckless Conduct

While most unsafe behaviour in aviation involves ordinary human error or unsafe adaptation, some conduct may involve conscious disregard of substantial and unjustifiable risk.

Reckless conduct differs fundamentally from ordinary error because the individual either recognises the risk and deliberately disregards it or demonstrates profound indifference toward obvious safety obligations.

Examples may include knowingly operating an unairworthy aircraft, deliberate disregard of critical safety procedures, repeated unsafe conduct despite prior intervention, or wilful disregard of operational limitations.

At the extreme end of behavioural analysis are actions involving deliberate intent to cause harm or wilful sabotage. Such actions fall outside normal Just Culture protections and may require criminal investigation or regulatory enforcement. Fortunately, such cases are exceptionally rare in gliding operations.

It is important that investigators avoid equating serious consequences with reckless intent. Serious consequences do not automatically imply recklessness. Behaviour must be assessed according to the information available, the circumstances existing at the time, and the decision-making processes involved that existed before the occurrence developed.

The Substitution Test

One useful analytical tool in behavioural analysis is the substitution test.

This approach asks whether another reasonably competent individual, possessing similar qualifications and experience and operating within the same operational environment, may have acted similarly under the same circumstances.

The substitution test assists investigators in distinguishing between system-induced error and genuinely reckless conduct. If many similarly trained individuals may reasonably have behaved in a similar manner under the same conditions, the occurrence is more likely to reflect deficiencies involving training, procedures, organisational influences, operational pressures, or system design.

Conversely, if the behaviour clearly falls outside what a reasonably competent individual would likely do in comparable circumstances, more serious accountability concerns may exist.

Special attention should also be given to the influence of local operational practices and supervisory expectations. It is an analytical aid rather than a substitute for professional judgement. Its value lies primarily in encouraging investigators to consider operational context, systemic influences, and the realities of human performance rather than relying solely on hindsight-based conclusions.

Organisational Influences on Behaviour

Unsafe behaviour rarely develops in isolation. Organisational and cultural influences frequently shape operational decisions, risk tolerance, and behavioural norms long before an occurrence takes place.

Particular attention should therefore be given to whether local practices, supervisory factors, or broader organisational conditions contributed to the development of unsafe behaviour. These influences may include operational pressure, inadequate supervision, inconsistent standards, ineffective training, unclear procedures, insufficient staffing, poor communication, fatigue, weak safety culture, or reluctance to challenge unsafe practices.

In some cases, unsafe practices may have been known within the organisation but gradually accepted because they had not yet resulted in an accident. This process of normalised deviance can significantly erode safety margins over time while creating a false sense of operational acceptability.

A further issue requiring examination is whether procedures were realistic and workable, whether similar events had previously occurred, whether concerns had

been raised but left unresolved, and whether supervisors or operational leaders were aware of procedural deviations.

Particular attention should be given to organisational attitudes toward reporting, supervision, mentoring, and operational discipline. Investigators should avoid focusing exclusively on frontline operators while overlooking broader systemic contributors.

Behavioural Decision-Making Framework

Behavioural analysis should follow a structured and consistent process.

The first stage of behavioural analysis is identifying the unsafe act, decision, or behavioural pattern relevant to the occurrence. This should be followed by assessment of whether the behaviour was intended or unintended, examine the operational and organisational influences that may have contributed, and determine whether similar behaviour had become normalised within the operational environment.

The substitution test may then assist in determining whether the behaviour was understandable within the operational context in order to assess whether the behaviour was understandable within the circumstances or whether it fell outside acceptable operational expectations.

Finally, investigators should determine whether the behaviour primarily reflects ordinary error, unsafe adaptation, procedural violation, unsafe optimisation, or reckless conduct, and whether broader systemic corrective actions are required.

The objective of this framework is not merely to classify blame, but to improve understanding of why unsafe behaviour developed and how recurrence can be prevented.

A simplified Behavioural Analysis Decision Aid is provided in Annex P.

Appropriate Safety Management Responses

The purpose of behavioural analysis is not punishment, but the development of fair and proportionate safety responses aimed at reducing recurrence and strengthening operational safety.

In many cases, unsafe behaviour often reflects ordinary human limitations interacting with workload, operational pressure, fatigue, distraction, or imperfect procedures. Appropriate responses in such circumstances are therefore commonly focused on learning and system improvement rather than disciplinary action. These

responses may include debriefing, coaching, mentoring, procedural review, supervision, training enhancement, or broader organisational corrective action.

Where investigations identify evidence of operational shortcuts, routine violations, or culturally normalised deviations, investigators should consider whether broader organisational or supervisory interventions are required. In such cases, corrective actions may need to address operational pressures, procedural design, staffing, supervision, or local safety culture rather than focusing solely on individual behaviour.

More serious management intervention may become necessary where behaviour involves conscious disregard of substantial risk, repeated unsafe conduct despite prior intervention, deliberate non-compliance, or intentional unsafe acts. Such cases may require escalation to Gliding Australia management, CASA, or other authorities.

It is important that investigators and operational leaders recognise that excessively punitive responses to ordinary human error may discourage reporting, reduce openness, conceal hazards, and weaken long-term organisational learning. Safety management responses should therefore remain consistent with the principles of Just Culture and proportionate to both the behaviour involved and the surrounding operational context.

Positive Safety Behaviour

Strong safety cultures are strengthened not only by learning from failures, but also by recognising positive safety behaviour.

Investigators, CFIs, RMOs, and club leaders should actively encourage proactive hazard reporting, constructive intervention when unsafe behaviour is observed, mentoring, open discussion of mistakes, responsible decision-making, and identification of procedural weaknesses.

Recognition of positive safety actions reinforces organisational values and encourages continued reporting and engagement. Examples may include a pilot discontinuing a flight due to deteriorating conditions, a crew member identifying and correcting a rigging defect, a tow pilot intervening to prevent unsafe launch conditions, or a club member raising concerns regarding unsafe operational practices.

Such behaviours should be recognised as indicators of a healthy and mature safety culture.

Conclusion

Behavioural analysis is a critical component of modern aviation safety investigation.

By applying a structured, fair, and system-focused framework, investigators can better understand why unsafe acts occurred, distinguish between error and recklessness, identify organisational contributors, avoid hindsight bias, and develop more effective safety recommendations.

In most cases, unsafe behaviour reflects the interaction between normal human limitations and imperfect operational systems. Understanding that interaction is essential to improving safety within gliding operations and strengthening the long-term resilience of the aviation safety system.

Chapter 11: Technical Investigation – Uncovering Mechanical and Environmental Factors in Accident Causation

Technical investigation forms a critical component of sailplane and tow-plane accident analysis. While gliding aircraft are generally simple, lightweight, and mechanically reliable, technical defects, maintenance deficiencies, equipment failures, environmental influences, or aircraft-system interactions may still contribute significantly to accidents and incidents. Even relatively minor technical abnormalities may have serious operational consequences during high-workload phases such as launch, thermalling, circuit operations, or landing.

The purpose of technical investigation is not merely to identify component failures, but to understand how aircraft condition, maintenance practices, operational configuration, environmental influences, and human interaction with aircraft systems contributed to the occurrence.

Technical investigation therefore requires investigators to examine aircraft condition, maintenance history, launch systems, environmental influences, operational configuration, and the interaction between technical and Human Factors issues.

Investigators should approach technical analysis methodically, objectively, and without premature assumptions regarding causation. Apparent technical abnormalities may sometimes result from impact damage rather than pre-existing defects, while operational or Human Factors issues may initially appear mechanical in nature.

Careful evidence preservation, systematic examination, and close coordination with appropriately qualified technical personnel are therefore essential throughout the technical investigation process.

Aircraft Examination

Detailed examination of the aircraft is often one of the first steps in determining whether technical factors contributed to the occurrence. This examination should consider not only obvious structural damage, but also aircraft configuration, maintenance status, control-system integrity, rigging, restraint systems, and evidence of pre-impact defects or failures.

Investigators should first confirm the aircraft's maintenance release and airworthiness status at the time of the flight. This includes reviewing maintenance-

release validity, deferred defects, operational limitations, conditional-release items, and compliance with Gliding Australia or CASA-approved maintenance procedures.

The aircraft structure should then be examined carefully for signs of pre-impact fracture, fatigue cracking, delamination in composite structures, corrosion, loose fittings, or deformation inconsistent with impact forces.

Particular care should be taken when assessing gliders that have been recently rigged or derigged. Mis-rigging, incomplete control connections, incorrect locking arrangements, or rigging-security issues may not always be immediately obvious following impact damage.

Flight-control systems should be examined systematically to verify continuity, freedom of movement, correct connection, and absence of interference or jamming. Investigators should inspect pushrods, cables, bellcranks, control linkages, automatic control connections, and attachment fittings for signs of disconnection, wear, misalignment, impact separation, or foreign-object interference.

Particular attention should also be given to occupant protection systems, including seat belts, shoulder harnesses, parachutes, canopy locking mechanisms, and cockpit restraint attachments. Investigators should determine whether these systems were correctly installed, properly secured, serviceable, and functioning as intended at the time of impact.

The aircraft's post-accident condition should be documented carefully through photographs, sketches, measurements, and written notes, particularly where investigators may later need to distinguish between pre-impact failures, operational abnormalities, and impact-induced damage.

Tow Systems

The safety of launch operations depends heavily upon the integrity and correct operation of the towing system, whether involving aero-tow, winch launch, or automotive launch systems.

Accidents occurring during launch often involve rapid and complex interaction between the glider, launch equipment, tow pilot or winch operator, environmental conditions, and pilot response. Technical investigation of launch-related occurrences should therefore examine both equipment condition and operational interaction.

Tow hooks fitted to gliders, tow-planes, or launch equipment should be inspected for secure attachment, wear, cracking, corrosion, freedom of operation, and compliance with manufacturer specifications. Investigators should confirm that tow hooks formed part of the aircraft or equipment's scheduled inspection and maintenance programme and that appropriate functional checks had been conducted.

Tow ropes and cables should also be examined carefully for evidence of fraying, overstretching, UV degradation, damage, contamination, or incorrect configuration. The investigation should confirm that the correct rope or cable type was used, weak links were properly fitted and rated, and launch equipment complied with operational requirements and manufacturer guidance.

Release systems on both the glider and launch equipment should be assessed for smooth operation, correct rigging, excessive resistance, partial engagement, or evidence of jamming. Where practical, release systems should be tested under controlled conditions to determine whether they operated reliably.

In aero-tow operations, investigators should also examine the tow-plane's engine performance, propeller condition, fuel and oil systems, brake condition, flight controls, and general airworthiness status. Tow pilot qualifications, recency, and operational experience should be reviewed together with relevant operational procedures and maintenance records.

In winch-launch operations, investigators should examine winch mechanical condition, engine performance, cable-drum function, braking systems, tension-control systems, emergency-stop arrangements, and operator controls. Winch operator qualifications, currency, and operational supervision should also be reviewed.

Because launch accidents frequently involve a combination of technical factors, operational interaction, environmental conditions, and human performance, investigators should avoid focusing solely upon isolated equipment defects without considering the broader operational context.

Maintenance History

Examination of the aircraft's maintenance history may provide important insight into recurring technical problems, deferred defects, maintenance quality, operational pressures, or systemic weaknesses within maintenance oversight processes.

Investigators should review recent daily inspection sheets, maintenance releases, defect reports, scheduled maintenance records, and technical log entries.

Particular attention should be given to deferred defects, repetitive faults, unusual handling reports, vibration complaints, intermittent equipment failures, and maintenance actions occurring shortly before the occurrence.

Maintenance records should also be reviewed to confirm compliance with scheduled inspections, airworthiness directives, life-limited component requirements, manufacturer maintenance instructions, and Gliding Australia maintenance procedures.

Service bulletins and aircraft modifications should be examined carefully to determine whether required actions were completed, whether repairs were correctly documented, and whether modifications may have introduced unintended consequences or new failure modes.

Investigators should work closely with appropriately qualified maintenance personnel, including Licensed Aircraft Maintenance Engineers (LAMEs), Gliding Australia maintenance authorities, or technical specialists where clarification or specialist interpretation is required.

A well-maintained and accurately documented maintenance system may strongly support assessment of aircraft serviceability, while gaps, inconsistencies, or poor recordkeeping may themselves indicate broader organisational or technical issues requiring examination.

Environmental Conditions

Environmental influences are frequently significant contributors to gliding accidents and incidents. Weather, terrain, atmospheric conditions, visibility, and environmental workload may all affect aircraft performance, pilot decision-making, launch safety, navigation, and operational risk.

Investigators should therefore gather and analyse all relevant environmental information associated with the flight. This may include METARs, TAFs, radar imagery, weather forecasts, pilot weather briefings, and observations from other pilots operating in the area.

Relevant environmental considerations may include visibility, cloud base, wind direction and strength, turbulence, thermal activity, wind shear, temperature, wave or rotor activity, and rapidly changing weather conditions.

Within soaring operations, local environmental effects may be particularly important. Investigators should consider whether strong sink, turbulence, convergence, terrain-induced airflow, or local weather phenomena may have influenced aircraft performance or pilot workload.

Terrain and obstacle assessment should also form part of the technical investigation. Trees, rising terrain, powerlines, fences, restricted landing areas, or airspace constraints may significantly influence flight path decisions, circuit planning, field-selection options, and operational workload.

Sun angle and glare should not be overlooked. Low sun angles may interfere with lookout, depth perception, circuit judgement, and visual acquisition of traffic or terrain.

Maps, photographs, satellite imagery, digital elevation data, GPS traces, and flight-recorder information may all assist investigators in reconstructing the operational environment and understanding how environmental conditions influenced the occurrence sequence.

Human Factors and Technical Investigation

Technical investigation should not occur in isolation from Human Factors analysis. Mechanical systems, operational procedures, maintenance practices, cockpit ergonomics, and aircraft design all interact closely with human performance.

Investigators should therefore consider whether cockpit layout contributed to error, whether controls or instruments may have been confusing or difficult to interpret, whether maintenance practices created opportunities for procedural error, or whether technical defects increased pilot workload or reduced situational awareness.

Similarly, investigators should avoid assuming that all abnormal technical findings represent primary causal factors. Some apparent technical issues may result from impact damage, post-accident handling, or misinterpretation of evidence.

Technical findings should therefore be interpreted within the broader operational and organisational context of the occurrence.

Further guidance regarding Human Factors and behavioural analysis is provided in:

- *Chapter 9: Human and Organisational Factors;*
- *Chapter 10: Behavioural Analysis and Just Culture Decision-Making* and
- *Annex K: Human Factors in Sailplane Accident and Incident Investigation – A Sailplane-Focused Introduction.*

Conclusion

Technical investigation requires methodical attention to detail, sound technical knowledge, disciplined evidence handling, and an objective investigative approach. By carefully examining aircraft condition, launch systems, maintenance history, environmental influences, and aircraft-system interaction, investigators are better able to determine whether technical or environmental factors contributed to the occurrence.

However, technical investigation should always remain integrated with broader operational and Human Factors analysis. Effective accident investigation depends not simply upon identifying failed components or technical abnormalities, but upon understanding how aircraft systems, operational conditions, human performance, and organisational influences combined to shape the outcome.

Through careful technical analysis and evidence-based investigation, Gliding Australia investigators contribute directly to stronger maintenance practices, improved operational safety, and long-term organisational learning across the gliding community.

Chapter 12: Analysis and Findings – Transforming Evidence into Understanding and Action

In the aftermath of an aviation accident or serious incident, the process of analysis is where evidence is transformed into understanding and actionable safety outcomes. This critical phase involves integrating diverse sources of information, identifying patterns, assessing operational context, and determining how technical, environmental, human, and organisational influences combined to produce the occurrence.

Within sailplane operations, as with all aviation activity, analysis must be conducted objectively, methodically, and with a commitment to organisational learning. The purpose of the investigation is not to assign blame, but to understand the mechanisms — both immediate and systemic — that contributed to the occurrence so that future risk can be reduced.

By applying disciplined, evidence-based analytical methods, investigators can ensure that their findings are credible, proportionate, and capable of supporting meaningful improvements in operational procedures, training, supervision, and safety management.

This chapter examines the process of analysis and findings, outlines commonly used analytical tools and frameworks, and emphasises the importance of recognising both immediate causes and broader systemic influences.

Data Correlation

The first stage of meaningful analysis is the correlation of the diverse strands of evidence gathered throughout the investigation.

Information collected during an investigation may originate from multiple sources, each contributing a different perspective on the occurrence. Investigators must therefore integrate and compare the available evidence to establish a coherent understanding of the sequence of events.

Evidence may include physical wreckage examination, aircraft documentation, electronic flight data, weather information, witness statements, operational records, maintenance history, and Human Factors information.

Physical evidence such as wreckage condition, control positions, ground scars, and aircraft-system damage may assist investigators in understanding impact sequence,

aircraft configuration, and operational behaviour immediately prior to the occurrence.

Electronic data obtained from GPS loggers, FLARM traces, variometers, flight computers, and other recording devices may provide valuable time-stamped information relating to flight path, speed, altitude, aircraft performance, and pilot inputs.

Environmental information, including METAR reports, forecasts, thermal conditions, wind strength, visibility, and terrain effects, may assist investigators in understanding how external conditions influenced operational decisions and aircraft performance.

Witness information may also provide important contextual detail relating to communication, operational behaviour, aircraft attitude, unusual sounds, or visible abnormalities prior to the occurrence.

The task of data correlation involves establishing a logical and evidence-based sequence of events from the commencement of the flight through to the point of impact or event resolution.

Investigators should compare and cross-reference all available information carefully. This may include correlating flight tracks with weather conditions, comparing witness accounts with electronic data, assessing consistency between physical evidence and operational sequence, and identifying gaps, inconsistencies, or conflicting information.

Where evidence is incomplete or inconclusive, investigators should avoid speculation. The limits of available evidence should be acknowledged clearly, and conclusions should remain proportionate to the reliability and quality of the information available.

Root Cause Identification

Once the operational sequence has been established, investigators must determine why the occurrence developed.

This phase requires analytical reasoning together with structured examination of operational, technical, environmental, Human Factors, and organisational influences.

Modern aviation investigation recognises that accidents rarely arise from a single isolated cause. Instead, occurrences generally develop through a combination of active failures, latent conditions, operational pressures, system weaknesses, and degraded defences.

Investigators should therefore examine not only what failed, but also how operational systems, environmental conditions, equipment, supervision, communication, and organisational influences interacted to shape the outcome.

One useful framework for examining these interactions is the SHELL model, which considers the relationship between:

- Software (procedures, manuals, rules, and checklists);
- Hardware (aircraft, controls, equipment, and tools);
- Environment (weather, terrain, operational conditions, and organisational climate); and
- Liveware (the human operator and interactions with other personnel).

Some investigators may also apply expanded variants such as the SHEL(L) or CSHELL models, which place greater emphasis on communication, culture, and interactions between operational personnel.

These models assist investigators in identifying mismatches, degraded interfaces, or operational conditions that may have contributed to error, reduced situational awareness, increased workload, or unsafe operational outcomes.

Several additional analytical frameworks may also assist investigators in understanding how contributing influences interacted within the broader operational system.

Human Factors Analysis and Classification System (HFACS)

The Human Factors Analysis and Classification System (HFACS) assists investigators in identifying contributing Human Factors across multiple organisational levels.

HFACS examines unsafe acts, preconditions for unsafe acts, supervisory influences, and organisational factors. This framework helps investigators move beyond simplistic pilot-error explanations and examine how broader operational and organisational conditions contributed to the occurrence.

Swiss Cheese Model

The Swiss Cheese Model illustrates how accidents may occur when weaknesses or failures within multiple layers of defence align simultaneously.

These layers may include training, operational procedures, supervision, maintenance systems, operational oversight, and organisational culture. The model emphasises that accidents are often the product of multiple interacting weaknesses rather than a single isolated mistake.

Bowtie Analysis

Bowtie Analysis provides a structured method for examining hazards, threats, preventive controls, recovery controls, and potential consequences.

This approach assists investigators in identifying where existing safety barriers failed, were absent, or proved ineffective during the occurrence sequence.

Immediate Causes, Contributing Factors, and Systemic Issues

Investigators should distinguish carefully between immediate causes, contributing factors, and broader systemic issues.

Immediate causes are the final events or conditions directly associated with the occurrence outcome. Examples may include aerodynamic stall, loss of control, structural failure, collision, or tow-rope failure.

Contributing factors are conditions or influences that increased the likelihood of the immediate cause developing. These may include weather conditions, distraction, operational pressure, inadequate briefing, fatigue, equipment malfunction, or degraded situational awareness.

Systemic issues are broader organisational, cultural, supervisory, or procedural weaknesses that allowed the occurrence conditions to develop or remain uncorrected. Examples may include inadequate supervision, ineffective training systems, poor operational oversight, weak safety culture, or normalisation of degraded operational practices.

Investigators should avoid oversimplifying complex occurrences by focusing solely upon the final event or individual action. Effective investigation requires understanding how multiple influences interacted within the broader operational system.

Avoiding Hindsight Bias

Investigators must exercise considerable caution when assessing operational decisions and human performance.

Hindsight bias may lead investigators to judge actions according to information known after the event rather than according to the information reasonably available to the individuals involved at the time.

Operational decisions should therefore be assessed within their actual operational context, including environmental conditions, workload, operational expectations, time pressure, communication, available information, and organisational influences.

The fact that a decision produced an adverse outcome does not necessarily mean that the decision appeared unreasonable at the time it was made.

Further guidance regarding Human Factors and behavioural assessment is provided in:

- *Chapter 9: Human and Organisational Factors*;
- *Chapter 10: Behavioural Analysis and Just Culture Decision-Making*; and
- *Annex K: Human Factors in Sailplane Accident and Incident Investigation – A Sailplane-Focused Introduction*.

Identifying Systemic Issues

A meaningful safety investigation extends beyond identification of individual error to examine the broader organisational and operational environment in which the occurrence developed.

Repeatedly within aviation, accidents have demonstrated that organisational and systemic influences often create the conditions that allow technical failures or human error to result in serious outcomes.

Investigators should therefore examine whether broader organisational factors contributed to the occurrence.

Areas requiring examination may include recurring occurrence patterns, supervision and oversight, operational culture, training systems, procedural clarity, communication, risk management, and implementation of previous safety actions.

For example, repeated launch accidents at a particular operation may indicate inconsistent procedures, degraded supervision, inadequate training continuity, or local acceptance of unsafe operational practices.

Similarly, investigators should examine whether organisational culture discouraged reporting, questioning of unsafe behaviour, discussion of operational concerns, or effective challenge of degraded practices.

Training systems and operational documentation should also be reviewed carefully. Investigators should assess whether procedures were accessible and practical, pilots were adequately prepared, instructors and supervisors applied standards consistently, and operational guidance reflected actual operational practice.

Addressing systemic issues significantly increases the long-term value of an investigation because it supports broader organisational learning and more effective risk reduction.

Developing Findings

Investigation findings should be evidence-based, objective, proportionate, and clearly supported by analysis.

Findings should distinguish carefully between established facts, analytical interpretation, contributing influences, and identified safety issues.

Investigators should avoid emotionally charged language, speculation, or unsupported conclusions.

Findings should also reflect the complexity of aviation operations and recognise the interaction between technical factors, environmental conditions, operational context, Human Factors, and organisational influences.

Where uncertainty exists, investigators should state this clearly rather than overstating confidence in the available evidence.

From Findings to Safety Action

The ultimate value of an investigation lies not merely in understanding the occurrence, but in translating that understanding into meaningful safety improvement.

Analysis should therefore support practical safety recommendations, procedural improvement, training enhancement, improved supervision, stronger risk controls, and broader organisational learning.

Well-supported findings provide organisations with the opportunity to strengthen operational resilience and reduce the likelihood of similar occurrences in the future.

Investigations that focus solely upon individual blame rarely produce meaningful long-term safety outcomes. In contrast, investigations that identify systemic vulnerabilities and operational influences are far more likely to contribute to sustained safety improvement across the gliding community.

Conclusion

The process of analysis and findings is the stage where evidence is transformed into understanding, and understanding becomes action.

Through careful data correlation, disciplined analytical reasoning, identification of contributing influences, and examination of broader systemic issues, investigators are able to develop findings that support meaningful safety improvement rather than simplistic attribution of blame.

Effective analysis requires investigators to remain objective, evidence-based, and conscious of the operational realities in which decisions and behaviours occurred.

By identifying both immediate causes and deeper organisational influences, Gliding Australia investigators contribute directly to stronger operational resilience, improved safety management, enhanced training and supervision, and a safer future for the Australian gliding community.

Chapter 13: Safety Recommendations – Translating Findings into Safety Improvements

The ultimate objective of any accident or incident investigation is to prevent recurrence through practical safety improvement rather than assignment of blame. Safety recommendations play a central role in achieving this objective. They are the mechanism through which investigations transition from analysis to meaningful operational action.

Well-developed recommendations are clear, evidence-based, proportionate, and directed toward reducing risk within the operational system. Effective recommendations address deficiencies in procedures, supervision, training, equipment, communication, maintenance, organisational oversight, or broader safety-management processes.

This chapter outlines the principles for developing, communicating, implementing, and monitoring safety recommendations within the gliding environment.

Developing Safety Recommendations

Effective safety recommendations are not simply a list of desirable outcomes or general observations. They should represent practical, achievable actions that arise directly from the investigation findings and are capable of reducing identified operational risk.

Recommendations should therefore be clear and actionable, proportionate to the identified risk, linked directly to investigation findings, feasible to implement, and capable of being monitored or assessed.

Recommendations that are vague, unrealistic, excessively broad, or unsupported by evidence are unlikely to produce meaningful safety improvement.

Clear and Actionable Recommendations

Recommendations should describe clearly what action is required and who is expected to undertake it.

Vague statements such as “improve pilot training” or “increase safety awareness” provide little practical guidance and may result in inconsistent interpretation or ineffective implementation.

More effective recommendations identify specific actions such as revising briefing procedures, updating training material, introducing operational checks, clarifying supervision responsibilities, or reviewing local operational practices.

Clear recommendations assist clubs and operational personnel in understanding precisely what safety issue has been identified and how the risk may be reduced.

Proportionate and Evidence-Based Responses

Safety recommendations should remain proportionate to the operational risk identified during the investigation.

Investigators should avoid excessive or unnecessarily burdensome responses to isolated low-risk events, while also ensuring that significant systemic risks are addressed appropriately.

For example, a minor procedural oversight may justify revision of a checklist or briefing process rather than major restructuring of operational systems.

Recommendations should always arise logically from the investigation findings. Each recommendation should be traceable to an identified safety issue, contributing factor, or systemic weakness established during the investigation process.

Feasibility and Practicality

Recommendations should be realistic, achievable, and practical within the operational environment in which they will be applied.

Investigators should consider operational practicality, cost and resource implications, club capability, supervision requirements, and the likelihood of sustained implementation.

Recommendations that are overly complex, impractical, or operationally unrealistic are unlikely to achieve long-term compliance or meaningful safety improvement.

Simple, well-targeted actions are often more effective than extensive procedural changes that create unnecessary administrative burden without materially reducing risk.

Learning-Focused Safety Improvement

Recommendations should support organisational learning and safety improvement rather than criticism or punitive response.

Clubs and operational personnel are generally more likely to engage positively with recommendations that are constructive, respectful, and clearly focused upon improving operational safety.

Investigators should therefore frame recommendations in a manner consistent with Just Culture principles and avoid language that appears accusatory, judgemental, or disciplinary in tone.

Further guidance regarding behavioural assessment and Just Culture principles is provided in:

- *Chapter 10: Behavioural Analysis and Just Culture Decision-Making; and*
- *Annex P: Behavioural Analysis and Just Culture Decision Aid.*

Implementation and Follow-Up

The value of a safety recommendation depends not simply upon its publication, but upon its implementation and effectiveness.

Once recommendations are developed, they should be communicated appropriately, actioned within a reasonable timeframe, and monitored to determine whether the intended safety improvement has been achieved.

Dissemination of Recommendations

Safety recommendations should be distributed to the individuals, clubs, operational personnel, or organisational bodies responsible for managing the identified risk.

Recommendations may also be provided to Gliding Australia operational and safety personnel, relevant club committees, instructors or operational managers, maintenance authorities, CASA, ATSB, or coronial authorities where appropriate.

Wider dissemination may assist in identifying broader operational trends or systemic issues affecting multiple clubs or operational environments.

Operational Response

Implementation of recommendations may involve revision of Standard Operating Procedures (SOPs), changes to local operational practices, additional training activities, revised supervision arrangements, equipment modification, maintenance improvements, or updates to risk-management processes.

Examples may include revised launch procedures, additional instructor standardisation, enhanced briefing requirements, updated maintenance inspection processes, improved operational signage, or strengthened recency-management systems.

Investigators should recognise that operational change may require coordination between instructors, maintenance personnel, committees, operational managers, and Gliding Australia oversight personnel.

Monitoring Implementation

Recommendations should be monitored to determine whether they have been accepted, implemented, deferred, modified, or rejected.

Where recommendations are not implemented, the reasons should be documented clearly.

Monitoring may involve review of implementation progress, operational observation, safety audits, follow-up discussion with clubs, or examination of occurrence trends following implementation.

Gliding Australia's Executive Manager, Operations or Regional Manager, Operations may provide assistance or oversight where additional support is required.

Documentation and Tracking

Safety recommendations and associated corrective actions should be documented within the Gliding Australia Safety Management System, including SOAR or other approved tracking systems.

Maintaining a central record of recommendations supports organisational learning, trend monitoring, oversight of corrective actions, and identification of recurring operational issues.

Good recordkeeping also assists future investigators in determining whether previously identified safety concerns were addressed effectively.

Monitoring Effectiveness

Implementation alone does not guarantee improved safety. Investigators and operational organisations must also assess whether recommendations are producing the intended operational outcomes.

Monitoring effectiveness allows organisations to determine whether risks have genuinely been reduced or whether additional action may be necessary.

Corrective Action Monitoring

Corrective-action logs may be used to record implementation status, assigned responsibilities, due dates, review outcomes, and evidence of completion.

These systems assist organisations in ensuring that identified safety actions remain visible and appropriately managed.

Audits and Operational Review

Operational audits, spot checks, and supervision activities may assist in verifying whether revised procedures, training changes, or operational controls are being applied consistently.

Examples may include review of launch procedures, examination of briefing practices, verification of rigging checks, or confirmation of instructor standardisation activities.

Monitoring should focus not only upon procedural compliance, but also upon whether operational behaviour and risk management have genuinely improved.

Feedback and Organisational Learning

Feedback from pilots, instructors, launch crews, maintenance personnel, and operational staff may provide valuable insight into whether implemented changes are practical, effective, and operationally sustainable.

Investigators and operational managers should remain alert to unintended consequences, operational confusion, increased workload, or resistance to poorly understood procedural changes.

Constructive feedback supports refinement of safety measures and strengthens broader organisational learning.

Data and Trend Monitoring

Safety data and occurrence trends should be monitored over time to determine whether similar events continue to occur following implementation of recommendations.

For example, where recommendations were introduced to address launch incidents, final-turn stalls, airspace conflicts, or rigging errors, subsequent occurrence data may help determine whether operational risk has reduced.

Trend monitoring assists organisations in identifying persistent hazards, ineffective controls, or emerging operational risks requiring additional attention.

Evaluating Recommendation Effectiveness

The effectiveness of safety recommendations should be reviewed periodically to determine whether the intended safety improvement has been achieved.

Indicators of successful implementation may include reduction in recurrence of similar events, improved procedural compliance, positive operational feedback, improved reporting culture, and evidence that revised practices have become embedded within normal operations.

Conversely, recurring incidents, poor compliance, operational confusion, or continued procedural drift may indicate that recommendations have not addressed the underlying safety issue effectively.

Where recommendations fail to produce the intended improvement, investigators and operational managers should reassess whether the original causal analysis was accurate, whether the recommendation was sufficiently clear, whether implementation was effective, and whether broader organisational or cultural influences remain unresolved.

Persistent or significant unresolved safety issues may require escalation to Gliding Australia operational leadership for further review or intervention.

Human Factors and Safety Recommendations

Effective safety recommendations should recognise that operational behaviour is strongly influenced by organisational systems, workload, supervision, communication, environmental conditions, and local operational culture.

Recommendations focused solely upon individual retraining or disciplinary response may fail to address broader systemic influences contributing to the occurrence.

Investigators should therefore consider whether recommendations should also address supervision, operational procedures, workload management, communication systems, safety culture, organisational oversight, or procedural practicality.

This systems-based approach is more consistent with contemporary aviation safety investigation principles and generally produces more sustainable long-term safety improvement.

Further guidance regarding Human Factors and systems analysis is provided in:

- *Chapter 9: Human and Organisational Factors;*
- *Chapter 10: Behavioural Analysis and Just Culture Decision-Making;* and
- *Annex K: Human Factors in Sailplane Accident and Incident Investigation – A Sailplane-Focused Introduction*.

Conclusion

Safety recommendations represent the practical outcome of the investigation process and provide the clearest opportunity to translate learning into meaningful operational improvement.

Well-developed recommendations are evidence-based, proportionate, achievable, and focused upon reducing operational risk through improved procedures, supervision, training, communication, maintenance, and organisational systems.

However, recommendations achieve value only when they are implemented effectively, monitored carefully, and reviewed to ensure that meaningful safety improvement has occurred.

By developing practical and learning-focused safety recommendations consistent with Just Culture principles and modern systems-based investigation methodology, Gliding Australia investigators contribute directly to stronger operational resilience, improved organisational learning, and safer gliding operations across the Australian aviation community.

Chapter 14: Investigation Reporting – Documenting Investigations with Clarity, Accuracy, and Purpose

The final report is the central product of any accident or incident investigation. It serves as a formal and enduring record that brings together the relevant evidence, analytical findings, conclusions, and safety recommendations arising from the investigation process.

The primary purpose of the report is to enhance safety by identifying the factors contributing to the occurrence and supporting practical measures to reduce future risk. A well-structured and clearly written report promotes transparency, supports organisational learning, facilitates safety improvement across the gliding community, and reinforces confidence in the integrity and professionalism of the investigation process.

Investigators must prepare reports with the understanding that investigation material may be reviewed beyond the immediate safety context. Factual accuracy, disciplined reasoning, professional language, and clear separation between factual information and analytical interpretation are therefore essential.

Under Gliding Australia's authority, several reporting formats are used depending upon the nature, seriousness, and complexity of the occurrence. These range from comprehensive ICAO-style reports for serious accidents through to concise short-form reports for lower-risk operational events. This chapter provides guidance regarding the structure, preparation, handling, and distribution of investigation reports to ensure consistency, clarity, and effectiveness in communicating safety outcomes.

Purpose of Investigation Reports

Investigation reports serve several important safety and organisational functions. They document the occurrence and investigative process, record factual information and evidence, explain the analysis and reasoning behind findings, identify contributing factors and systemic issues, communicate safety lessons, support corrective action, and contribute to broader organisational learning.

A well-prepared report should allow readers to understand what occurred, how the occurrence developed, why the outcome became possible, and what safety improvements may reduce future risk.

Reports should therefore remain clear, objective, evidence-based, professionally written, and proportionate to the seriousness and complexity of the occurrence.

Use, Disclosure, and External Scrutiny of Investigation Material

Investigators must recognise that material generated during organisational safety investigations is not automatically protected from disclosure within the Australian legal system.

Except where investigations are conducted under specific statutory protections — most notably formal ATSB investigations — investigation material may become subject to compulsory production during coronial proceedings, judicial review, regulatory action, or other legal processes.

Investigators should therefore prepare reports, notes, emails, draft material, and supporting documentation on the assumption that they may later be reviewed externally.

Professional, disciplined, and evidence-based reporting practices are therefore essential not only for safety purposes, but also for maintaining investigative credibility under external scrutiny.

Practical Treatment of Investigation Material

For practical purposes, investigation material may be considered in several broad categories reflecting how such information is commonly treated within safety-management and legal processes.

Confidential Internal Investigation Material

Some investigation material is managed confidentially within Gliding Australia as part of organisational safety-management and Just Culture processes.

This may include investigator working notes, draft analyses, draft safety recommendations, internal deliberations, and witness statements collected primarily for safety purposes.

Such material supports open reporting, honest discussion, and effective organisational learning and should not normally be used for punitive or disciplinary purposes as a matter of organisational policy.

However, investigators must recognise that such material may still become subject to compulsory disclosure through legal or coronial processes.

Factual Information

Factual material should always be prepared on the basis that it may be reviewed externally.

This includes dates and times, aircraft information, maintenance records, operational documentation, weather information, photographs, flight data, and documented observations.

Factual sections of reports should remain neutral, accurate, and clearly separated from analytical interpretation or opinion.

Material Subject to Compulsory Disclosure

Courts, coroners, police, and statutory authorities may compel production of investigation material including notes, draft reports, internal communications, witness statements, and electronic records.

Whether such material is ultimately relied upon or admitted into evidence is determined by the relevant authority rather than by the investigator.

Investigators should therefore maintain professional discipline throughout all written communication associated with the investigation.

Implications for Report Writing

Because investigation material may be reviewed externally, investigators must ensure that reports are prepared carefully and professionally.

Investigators should clearly separate factual information from analysis and conclusions, avoid emotive, speculative, or judgemental language, record observations rather than unsupported opinions, ensure conclusions are evidence-based, and assume that all written material may ultimately be subject to external review.

Professional and disciplined reporting protects the integrity of the investigation process, supports credible safety outcomes, and helps ensure that investigations remain focused upon learning and prevention.

Where organisational conflict controls have been applied, investigators should consider including a brief governance statement explaining how independence, evidence preservation, review arrangements, and external coordination were managed. Further guidance is provided in Annex O: Suggested Approach to Managing Organisational Conflict of Interest in Serious and Fatal Occurrences.

Report Formats

Gliding Australia uses several reporting formats depending upon the seriousness, complexity, and safety significance of the occurrence.

Report Type	Purpose	Typical Application
ICAO Annex 13 Style – Full Investigation Report	Comprehensive formal investigation	Fatal accidents, serious injury events, major damage, significant systemic issues
ATSB-Style Short Investigation Report	Concise analytical investigation summary	Moderate-complexity accidents or incidents with broader safety value
Short-Form Report	Brief operational investigation summary	Minor operational events with limited scope and obvious contributing factors

ICAO Annex 13 Style – Full Investigation Reports

Gliding Australia adopts the ICAO Annex 13 reporting structure for major investigations requiring comprehensive analysis and formal documentation.

This format aligns with internationally recognised aviation investigation practices and is appropriate for fatal accidents, serious injuries, significant aircraft damage, major operational failures, or occurrences involving substantial organisational or systemic learning value.

Report Structure

1. Title and Synopsis

The report should clearly identify the nature of the occurrence, aircraft involved, location, date, and operational outcome.

The synopsis should provide a concise summary of the occurrence and principal safety issues identified.

2. Factual Information

This section should provide a chronological and evidence-based account of the occurrence.

Relevant information may include operational sequence, weather conditions, aircraft configuration, pilot qualifications and recency, maintenance status, operational procedures, communications, environmental conditions, and technical data.

Speculation, analysis, or conclusions should not appear within the factual section.

3. Analysis

The analysis section explains how the evidence supports the investigation findings.

Investigators should examine operational sequence, technical factors, Human Factors influences, environmental conditions, supervision, organisational influences, and systemic issues.

Analysis should demonstrate clearly how contributing factors interacted to produce the occurrence outcome.

4. Conclusions

The conclusions section should present the investigation findings clearly and logically.

Investigators should distinguish between immediate causes, contributing factors, systemic influences, and other relevant observations.

5. Safety Recommendations

Safety recommendations should propose practical and proportionate actions designed to reduce future operational risk.

Each recommendation should be linked clearly to identified findings or safety issues and should identify the appropriate responsible organisation or operational area where possible.

6. Annexes and Supporting Material

Supporting material may include maps, diagrams, technical photographs, FLARM traces, maintenance documentation, witness summaries, weather information, and operational records.

Annexes should support understanding of the investigation findings without unnecessarily overloading the main report body.

ATSB-Style Short Investigation Reports

For occurrences of moderate complexity or broader safety relevance, Gliding Australia may use a shorter analytical report format modelled upon ATSB summary reports.

These reports provide concise but structured investigation outcomes while retaining analytical rigour and safety focus.

This format may be appropriate for non-fatal accidents, operational incidents with identifiable safety lessons, or events not requiring full Annex 13 treatment.

Typical Structure

An ATSB-style short report will generally include a title and event summary, occurrence description, relevant pilot and aircraft information, analysis and contributing factors, safety actions or recommendations, occurrence classification where appropriate, and a short safety-purpose disclaimer.

These reports should remain concise, factual, and focused upon operational learning.

Short-Form Reports

Short-form reports are intended for lower-risk operational events involving limited damage, no injuries, minimal complexity, and no significant systemic issues.

Examples may include minor runway excursions, low-consequence outlandings, minor ground-handling damage, or isolated procedural errors with obvious contributing factors.

These reports are generally brief and operationally focused and may use Annex H: *Minor Incident Investigation Report Template*.

Suggested Content

Short-form reports will typically include a brief summary of the event, basic operational information, factual description of what occurred, identified contributing factors, safety actions taken, and recommendations where appropriate.

Supporting photographs or flight traces may be attached where useful.

Short-form reports should generally remain concise and focused upon immediate operational learning.

Style and Professional Standards

Regardless of report type, investigators must maintain a professional, disciplined, and objective reporting style.

Reports should use factual and neutral language, avoid emotionally charged or accusatory wording, distinguish clearly between fact and analysis, acknowledge limitations in the available evidence, and present conclusions that are proportionate to the quality of the evidence available.

Clear structure, logical headings, concise language, and appropriate use of diagrams or tables may significantly improve readability and comprehension.

Privacy and Confidentiality

Personal privacy should be respected throughout the reporting process.

Individuals should generally be referred to by operational role rather than by name unless identification is operationally necessary or legally required.

Draft reports, witness statements, photographs, recordings, and sensitive operational information should be stored securely and access limited to authorised personnel.

Investigators should nevertheless remain aware that confidentiality within organisational investigations may not prevent later legal disclosure where compelled by lawful authority.

Report Distribution

Investigation reports must be distributed in accordance with Gliding Australia safety-governance and data-management requirements.

Formal and short-form reports should generally be submitted to the Executive Manager, Operations, the Gliding Australia Safety Manager, and other authorised operational personnel as appropriate.

Where ATSB reporting thresholds apply, relevant information or summaries must also be provided in accordance with applicable reporting requirements.

Relevant clubs should receive copies of final reports and associated safety recommendations to support local organisational learning and safety improvement.

Completed reports, supporting material, and investigation records should be archived within approved Gliding Australia systems including SOAR or other authorised record-management systems.

Conclusion

Investigation reports are one of the most important outputs of the aviation safety investigation process. They provide the formal mechanism through which evidence, analysis, findings, and safety recommendations are documented and communicated to the broader aviation community.

Whether prepared as a comprehensive Annex 13 report or a concise operational summary, reports should always remain clear, objective, evidence-based, and focused upon safety improvement.

By preparing reports with professional discipline, careful analytical reasoning, and awareness of potential external scrutiny, investigators strengthen the credibility of

the investigation process and contribute directly to safer and more resilient gliding operations throughout Australia.

Chapter 15: Investigator Qualifications and Training – Building and Maintaining a Capable Investigator Workforce

Accident and incident investigations within the gliding community demand a unique combination of skills, including sound aviation knowledge, strong analytical ability, effective communication, technical understanding, and an appreciation of Human Factors and organisational influences. Investigators must be capable of interpreting complex operational situations, engaging professionally and respectfully with people involved in traumatic events, and developing evidence-based conclusions free from bias or assumption.

As the recognised safety oversight body for gliding in Australia, Gliding Australia relies upon a network of competent, impartial, and well-prepared investigators to ensure that investigations are conducted with integrity, credibility, and a clear focus on learning and prevention.

This chapter defines the core competencies expected of investigators and outlines the training pathways, mentoring arrangements, and ongoing development processes used to support investigator capability within Gliding Australia.

Role of the Investigator

Gliding Australia investigators may include Regional Managers, Operations (RMOs), club-level safety officers, senior instructors, operational specialists, or other suitably qualified personnel appointed by the Executive Manager, Operations.

Regardless of background or operational role, investigators are expected to approach all investigations objectively, professionally, and consistently with Just Culture principles and modern aviation safety investigation methodology.

The investigator's role is not to assign blame or determine liability, but to establish the facts, understand how and why the occurrence developed, identify contributing influences and systemic issues, and support practical safety improvement across the organisation.

To fulfil this role effectively, investigators must possess both technical competence and sound professional judgement.

Required Competencies

Effective investigation requires a broad range of operational, analytical, interpersonal, and organisational skills.

Understanding of Aviation Operations and Glider-Specific Factors

Investigators must possess a sound understanding of gliding operations and the operational realities within which pilots, instructors, clubs, and tow operations function.

This includes familiarity with sailplane handling, performance, and operational limitations, together with launch methods such as aero-tow, winch launch, and self-launch operations. Investigators should also understand tow-plane operations and tug–glider interaction, local club procedures and training environments, competition operations and associated operational pressures, and the practical realities of operational decision-making within the gliding environment.

This operational knowledge allows investigators to assess actions and decisions within the real-world context in which they occurred rather than through hindsight or unrealistic expectations.

Structured Interviews and Evidence Documentation

Effective evidence gathering depends heavily upon the investigator's ability to obtain reliable information in a calm, organised, and professional manner.

Investigators must therefore be capable of conducting fair, respectful, and structured interviews with witnesses, pilots, instructors, operational personnel, and other involved parties.

Investigators should also be proficient in using standard forms and investigation templates, documenting witness statements accurately, recording physical evidence methodically, taking photographs and sketches, maintaining accurate field notes, and preserving evidentiary integrity throughout the investigation process.

Because many investigations occur in emotionally difficult circumstances, investigators must also recognise the effects of trauma, stress, grief, and emotional shock upon individuals involved in the occurrence.

Professionalism, empathy, patience, and respectful communication are therefore essential investigator attributes.

Human Factors and Technical Knowledge

Modern aviation investigation requires investigators to understand not only technical failures and operational procedures, but also the broader Human Factors and organisational influences affecting operational performance.

Investigators should therefore understand the influence of fatigue, stress, distraction, workload, and situational awareness on human performance, together

with systems-based safety concepts, organisational influences, communication issues, supervisory influences, and behavioural or cultural factors within operational environments.

Investigators should also possess sufficient technical understanding to recognise signs of possible pre-impact failure, maintenance deficiencies, control-system abnormalities, rigging issues, or aircraft-system malfunction affecting gliders and tow aircraft.

This broader understanding allows investigators to move beyond simplistic pilot-error explanations and develop a more complete understanding of how accidents and incidents develop within operational systems.

Further guidance regarding Human Factors and behavioural analysis is provided in:

- *Chapter 9: Human and Organisational Factors;*
- *Chapter 10: Behavioural Analysis and Just Culture Decision-Making;* and
- *Annex K: Human Factors in Sailplane Accident and Incident Investigation – A Sailplane-Focused Introduction.*

Report Writing and Analytical Skills

A credible investigation depends heavily upon the quality of the final report.

Investigators must therefore be capable of preparing reports that are factually accurate, logically structured, professionally written, and clearly supported by evidence and analysis.

Reports should remain neutral in tone and avoid speculation, emotionally charged language, or unsupported conclusions.

Investigators must also understand how to distinguish clearly between factual information, analytical interpretation, contributing influences, findings, and safety recommendations.

Confidentiality, privacy obligations, and appropriate handling of sensitive information are also essential components of professional investigative practice.

Training and Development Pathways

Investigator competence develops progressively through a combination of formal instruction, operational exposure, mentoring, self-development, and practical investigative experience.

Gliding Australia supports investigator development through several complementary pathways.

Gliding Australia Investigator Training

Gliding Australia periodically conducts investigator training workshops and development activities tailored specifically to the operational environment of Australian gliding.

These programmes may include investigation principles and methodology, site management and evidence preservation, interviewing techniques, report writing, Human Factors and systems thinking, Just Culture principles, behavioural analysis, and organisational safety management.

Training may be delivered by experienced Regional Managers, Operations, senior investigators, external aviation safety specialists, or other appropriately qualified personnel.

The aim is to ensure that investigators apply consistent methodology and maintain common professional standards across the organisation.

Mentoring and On-the-Job Development

Practical investigative competence is developed significantly through participation in real investigations under the guidance of experienced investigators.

Less experienced investigators should therefore, where possible, work alongside senior investigators during occurrence response, evidence collection, analysis, and report preparation activities.

Mentoring provides valuable exposure to investigative judgement, evidence interpretation, interview management, analytical reasoning, report preparation, and interaction with external authorities.

This process also assists investigators in developing confidence, consistency, and practical operational understanding.

Learning from Previous Investigations

Review of previous accidents and incidents forms an important component of investigator development.

Investigators are encouraged to review past Gliding Australia investigation reports, ATSB investigations, safety summaries, and operational case studies to strengthen their understanding of accident causation, systems safety, Human Factors influences, and effective safety recommendations.

Participation in debriefings, safety discussions, and case-study review sessions may also assist investigators in understanding how conclusions were developed and how safety outcomes were achieved.

Anonymised operational scenarios may additionally be used during instructor development activities, club safety meetings, or Regional Manager workshops to support ongoing learning and discussion.

External Training and Professional Development

Where practical, investigators may also participate in external aviation safety or investigation training programmes conducted by the ATSB, CASA, aviation industry organisations, universities, or specialist safety-training providers.

Such training may include Human Factors analysis, systems safety, risk management, interview techniques, accident reconstruction, or aviation safety-management methodologies.

External professional development assists investigators in maintaining awareness of contemporary investigation practices and emerging safety concepts.

Maintaining Investigator Competence

Investigator competence must be maintained over time through continued participation in investigation activities, recurrent training, ongoing professional development, and operational engagement within the gliding environment.

Investigators who remain actively involved in operational flying, instruction, club management, or safety oversight are often better positioned to understand the practical operational realities affecting pilots and organisations.

Periodic refresher training, peer review, mentoring, and participation in safety discussions also help maintain consistency and investigative quality across the organisation.

Investigators should additionally remain familiar with changes to aviation legislation, Gliding Australia operational procedures, investigation methodology, Human Factors concepts, and Safety Management System processes.

Investigator Conduct and Professional Standards

Investigators must conduct themselves professionally at all times.

This includes maintaining objectivity and impartiality, confidentiality, procedural fairness, respectful communication, and disciplined evidence-based analysis.

Investigators should avoid conflicts of interest and must not allow personal relationships, operational disagreements, reputational concerns, or organisational pressures to compromise investigative integrity.

Professional conduct is particularly important during interactions with injured parties, families, witnesses, club personnel, police, ATSB investigators, and coronial authorities.

Calm, respectful, and professional behaviour supports both investigative effectiveness and organisational trust.

Psychological Wellbeing and Investigator Support

Exposure to serious accidents, fatalities, traumatic scenes, and emotionally difficult interviews may affect investigators psychologically.

Gliding Australia should therefore recognise the importance of psychological wellbeing and peer support for investigators involved in difficult or prolonged investigations.

Investigators should be encouraged to seek support where required and should not be exposed unnecessarily to cumulative operational stress or traumatic material without appropriate oversight and support.

Further guidance regarding investigator wellbeing is provided in Annex L.

Conclusion

Investigator competence is fundamental to the integrity, credibility, and effectiveness of Gliding Australia's safety system.

By developing and maintaining a network of trained, experienced, and professionally supported investigators, Gliding Australia strengthens both its compliance with CASR Part 149 and its broader commitment to continuous safety improvement.

Through structured training, mentoring, operational experience, and ongoing professional development, investigators are better equipped to conduct fair, objective, and learning-focused investigations that contribute directly to safer and more resilient gliding operations throughout Australia.

Annex A: Glossary of Investigation Terms

This Glossary provides standard definitions for technical, operational, behavioural, and regulatory terms used throughout this manual. Consistent terminology is essential for clarity, fairness, and analytical accuracy in accident and incident investigation. These definitions are aligned with ICAO Annex 13, the Civil Aviation Safety Regulations (CASR), the Transport Safety Investigation Act 2003, contemporary Human Factors principles, and Gliding Australia's Safety Management System (SMS) framework. Investigators, club safety officers, instructors, and operational personnel should refer to this glossary to ensure consistent understanding when preparing reports, analysing occurrences, developing findings, and implementing safety improvements.

Term	Description
Accident	An occurrence associated with the operation of an aircraft in which a person is fatally or seriously injured, the aircraft sustains substantial damage, or the aircraft is missing or inaccessible.
Annex 13	Annex 13 to the Convention on International Civil Aviation establishes the international standards and recommended practices for aircraft accident and incident investigation. It defines principles relating to notification, investigation, reporting, evidence protection, and safety recommendation development.
ASAO (Approved Self-Administering Aviation Organisation)	An organisation approved under CASR Part 149 to administer specified aviation activities, including safety oversight, pilot authorisations, operational standards, and occurrence reporting within a defined sector of Australian aviation.
ATSB (Australian Transport Safety Bureau)	Australia's independent national transport safety investigation agency responsible for investigating selected aviation, marine, and rail occurrences and issuing safety recommendations aimed at improving transport safety.
Behavioural Analysis	A structured process used to examine human actions, decisions, and organisational influences contributing to an occurrence in order to understand why behaviour

Term	Description
	developed within the operational context existing at the time.
Bias	A cognitive tendency or pre-existing assumption that may distort objective judgement, decision-making, or investigation analysis.
Confirmation Bias	The tendency to favour evidence that supports existing assumptions, expectations, or hypotheses while overlooking contradictory information.
Hindsight Bias	The tendency to perceive past events as having been more predictable or obvious after the outcome is known.
CASR (Civil Aviation Safety Regulations)	The body of Australian civil aviation regulations administered by CASA governing licensing, operational standards, airworthiness, maintenance, safety management, and aviation safety compliance.
Causal Factor	An event, condition, action, or omission that directly resulted in the occurrence. Removal or alteration of the factor would likely have prevented the event.
Contributing Factor	A condition, circumstance, action, or omission that increased the likelihood, severity, or consequences of an occurrence but was not the sole direct cause.
Debriefing	A structured review process conducted following an operation, occurrence, or investigation to examine performance, identify lessons, reinforce learning, and support safety improvement.
Human Error	An unintended action or decision that fails to achieve the desired outcome despite the individual generally intending to operate safely and appropriately.
Human Factors	The environmental, organisational, physiological, psychological, and cognitive influences affecting human performance, decision-making, and behaviour within aviation operations.

Term	Description
Incident	An occurrence, other than an accident, associated with the operation of an aircraft that affects or could affect the safety of operations.
Investigation	A formal and systematic process conducted to determine the facts, contributing factors, and safety issues associated with an occurrence for the purpose of improving safety through learning, analysis, and systemic improvement rather than assigning blame or punishment.
Just Culture	A safety management philosophy that promotes openness, learning, and fair accountability by encouraging reporting and cooperation while distinguishing between ordinary human error, unsafe adaptation, and reckless conduct.
Knowledge-Based Mistake	A mistake arising when an individual lacks sufficient knowledge, experience, or understanding to make an appropriate decision in unfamiliar or complex circumstances.
Lapse	A memory-related human error involving omission of an intended action or loss of task progression.
Maintenance Release	A formal certification that an aircraft has been inspected and maintained in accordance with applicable airworthiness and maintenance requirements and is considered fit for return to service.
Mistake	A human error in which the intended action itself is inappropriate for the circumstances due to flawed judgement, assumptions, situational awareness, or knowledge.
Normalised Deviance	The gradual acceptance of degraded practices or procedural deviations as normal operational behaviour within an organisation or operational environment.
Occurrence	Any accident, incident, serious incident, or other aviation safety-related event that presents actual or potential risk to aviation operations.

Term	Description
On-Scene Commander	The individual responsible for coordinating the immediate response at an accident or incident site, including site safety, evidence protection, and liaison with emergency services and investigators.
Operational Pressure	Real or perceived pressure arising from operational demands, scheduling expectations, workload, competition, organisational culture, or external influences that may affect decision-making and safety margins.
Organisational Influence	Any cultural, supervisory, procedural, managerial, or systemic factor within an organisation that affects operational behaviour and safety outcomes.
Procedural Drift	The gradual deviation from formally approved procedures or standards over time, often arising through operational adaptation, familiarity, efficiency pressures, or normalisation of non-standard practices.
Reckless Conduct	Behaviour involving conscious disregard of substantial and unjustifiable safety risk.
Root Cause	The underlying systemic, organisational, technical, or operational issue that allowed an occurrence to develop.
Routine Violation	An intentional procedural deviation that has become accepted or normalised within an operational group or organisation.
Safety Management System (SMS)	A formal, systematic approach to managing safety that includes organisational structures, policies, responsibilities, risk management processes, assurance activities, and safety promotion mechanisms.
Safety Recommendation	A formal proposal arising from an investigation intended to reduce risk, address identified safety issues, or prevent recurrence of similar occurrences.
Serious Incident	An incident involving circumstances indicating a high probability that an accident nearly occurred.

Term	Description
Situational Awareness	Accurate perception and understanding of operational conditions, environmental factors, aircraft status, and future developments relevant to safe decision-making and aircraft operation.
Situational Violation	A procedural deviation occurring because operational conditions make compliance difficult, impractical, or perceived as incompatible with operational demands.
Slip	An execution error in which the intended action is correct but the wrong action is inadvertently performed.
Substitution Test	An analytical tool used to assess whether another reasonably competent individual, operating under similar circumstances, may have acted similarly.
Systems Thinking	An analytical approach that examines how organisational, operational, technical, environmental, and human factors interact within a broader safety system rather than viewing occurrences as isolated individual failures.
TSI Act (Transport Safety Investigation Act 2003)	Australian federal legislation governing the conduct of transport safety investigations and the powers of the ATSB.
Unsafe Adaptation	Adaptation of procedures or operational practices in response to workload, environmental conditions, operational demands, or perceived practical necessity.
Unsafe Optimisation	Intentional compromise of safety in order to achieve another operational or personal objective such as efficiency, convenience, schedule maintenance, or reduced workload.

Annex B: Notification Templates – Sample Phone Scripts and SOAR Entries

This annex provides standardised templates to assist club members, instructors, and safety officers in making timely, accurate, and professional notifications following an accident or incident. Clear communication with emergency services, Gliding Australia, and regulatory bodies is essential to ensure a coordinated response and proper documentation of the occurrence.

Templates include:

- Sample phone scripts for emergency and regulatory notification.
- Key details to include during initial calls.
- Sample SOAR (Safety Occurrence and Analysis Reporting) entry format.

1. Emergency Services Notification (000)

When to use:
Immediately after an accident involving injury, fire, or entrapment.

Phone Script Example:

> *"This is [Your Name] calling from [Club Name] at [Location / Airfield].*
> *We have had a glider accident.*
> *There are [number of] people involved.*
> *The aircraft is [on fire / off the runway / in a paddock / other location].*
> *We need [ambulance / fire / police] assistance.*
> *The nearest access point is [describe access road or gate].*
> *I will stay on the line if needed."*

Tips:

- Stay calm and speak clearly.
- Give a precise location or GPS coordinates if the site is remote.
- If possible, designate another person to meet emergency services and guide them in.

2. Notification to Gliding Australia (Executive Manager, Operations)

When to use:
Immediately following any accident or serious incident.

Phone Script Example:

> *"Hello, this is [Your Name] from [Club Name].*
> *I'm calling to report an accident that occurred at [Location] at approximately [Time].*
> *The aircraft involved is a [Glider/Tow Plane, Make and Model], registration [VH-___].*
> *There were [number of] persons on board.*
> *[Describe injuries, if any, or confirm none.]*
> *The aircraft is [damaged / destroyed / undamaged].*
> *Emergency services are [on site / en route / not required].*
> *We are preserving the site and will enter a SOAR report within 72 hours."*

Who to notify:

- **Executive Manager, Operations** – phone number as listed in the Gliding Australia Emergency Directory.
- Your Regional Manager, Operations (RMO).

3. Notification to ATSB (if applicable)

When to use:
Immediately if the event involves:

- Death or serious injury.
- Substantial aircraft damage.
- Near mid-air collision or other serious risk to safety.

Phone Script Example:

> *"This is [Your Name], calling from [Club Name] at [Location].*
> *We have had a glider accident involving [details of aircraft and people involved].*
> *There has been [describe injury or damage].*
> *I understand this may be a reportable matter under the TSI Act.*
> *I am providing preliminary details and will cooperate with any further investigation."*

Contact: ATSB 24-hour Notification Line: **1800 011 034**

4. Sample SOAR Entry Template

When to use:
Within 72 hours of any reportable occurrence, using the online Gliding Australia SOAR portal.

Sample Entry Fields and Example Text:

Field	Example Entry
Event Type	Accident – Winch Launch
Date and Time	2025-06-08, 14:15
Location	South Hill Gliding Club, RWY 34
Aircraft Type	SZD-50 Puchacz
Registration	VH-Gliding Australia
Operation Type	Dual Training Flight
Description	During the initial stage of a winch launch, the glider veered left and struck a boundary fence. The launch was immediately terminated. Minor injuries were sustained by the instructor. The aircraft sustained nose and undercarriage damage. Emergency services were not required. Site secured and RMO informed.
Injuries	Minor – Instructor (bruising); Student – Nil
Weather Conditions	Light crosswind from 250°, 5–8 kt. Visibility good, temperature 27°C.
Immediate Actions Taken	First aid administered. Site preserved. Gliding Australia EM/O notified. Investigation pending.

---

5. Tips for Effective Notification and Recording

- **Be timely** – early notification helps coordinate response and preserves evidence.
- **Be factual** – avoid speculation or assumptions during initial reporting.
- **Use plain language** – especially when communicating with emergency responders.
- **Keep a log** – record the time and content of all notifications made.

Annex C: Witness Interview Form – Standardised Template for Capturing Statements

This form is designed to help investigators systematically gather consistent, factual, and useful information from witnesses to sailplane or tow-plane accidents and incidents. It ensures completeness, supports fair analysis, and reduces the risk of oversight. Completed forms should be retained as part of the investigation file and treated as confidential records under Gliding Australia's data policies.

Witness Interview Form

CONFIDENTIAL – SAFETY INVESTIGATION USE ONLY
Do not disclose this form or its contents without authorisation from the lead investigator or Gliding Australia's Executive Manager, Operations.

Section A: Interview Details

Item	Entry
Interviewer Name	
Interview Date	
Interview Time	
Interview Location (if in person)	
Method (circle one)	In-person / Phone / Video / Written / Other: _____
Audio/video recording used?	Yes / No (circle one)

Section B: Witness Information

Item	Entry
Full Name	
Contact Number / Email	
Affiliation (Club / Role)	
Were you an occupant of an aircraft involved?	Yes / No (circle one)
If yes, specify aircraft & seat	
Were you injured?	Yes / No (circle one)

Section C: Witness Account

Please describe what you saw, heard, or experienced related to the occurrence. Include as much detail as possible, especially the sequence of events, aircraft involved, position or location, any communications heard, weather conditions, and actions taken.

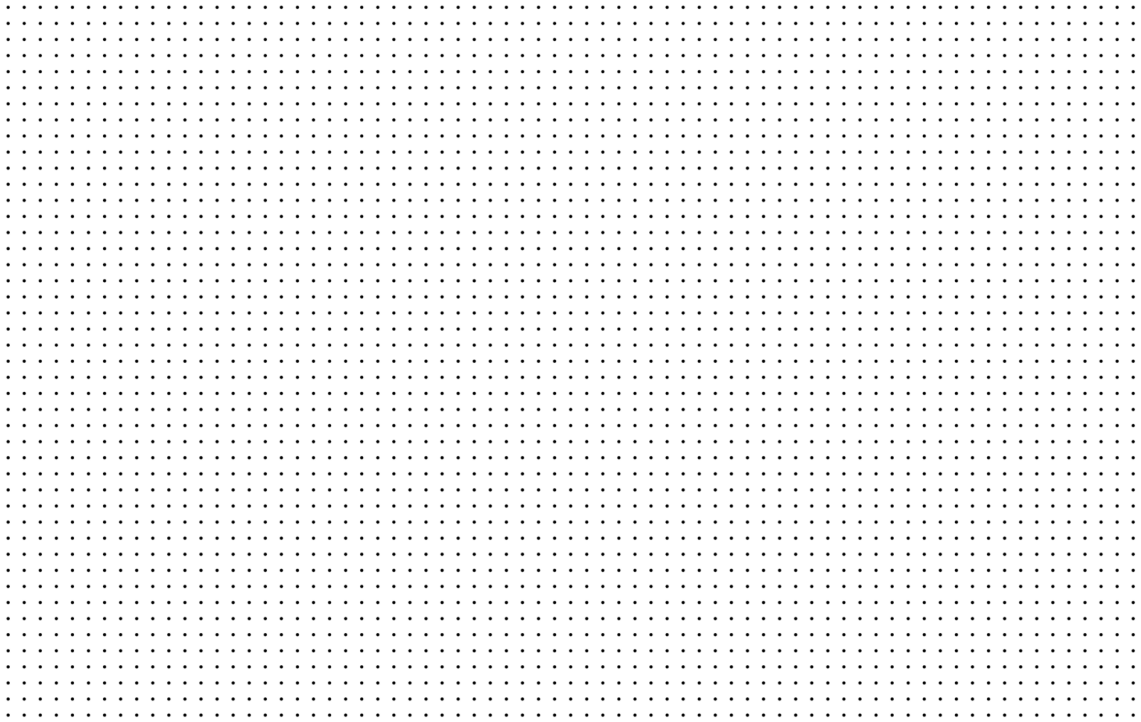
(Use additional pages if required; encourage the witness to write in their own words if possible.)

Section D: Contextual Information

Item	Entry
Approximate distance from occurrence	
Location relative to site (e.g., "North of launch point")	
Lighting conditions	Daylight / Dusk / Night / Other: _____
Weather observed	_____
Any relevant sounds (e.g., engine tone, release noise)	_____ _____
Did you speak to anyone else about the incident before this interview?	Yes / No
If yes, who?	_____

Section E: Diagram (Optional)

Use this space to sketch the positions of aircraft, people, or relevant objects.



(Attach additional sheets if necessary.)

Section F: Declaration

I confirm that the information provided above is a true and accurate account to the best of my knowledge and recollection. I understand this interview is conducted for the purpose of aviation safety and not for disciplinary or legal proceedings.

Signature of Witness _____

Date _____

Investigator Notes (For Official Use Only):

_____

_____

_____

_____

Annex D: Site Safety Checklist – A Step-by-Step Field Guide for Initial Responders

This checklist provides a structured guide for initial responders—typically instructors, club safety officers, or senior members—who arrive at the scene of a sailplane or tow-plane accident. It supports a safe, coordinated response that protects life, preserves evidence, and complies with Gliding Australia procedures and Australian law. The checklist should be printed, laminated, and stored in the club's Emergency Response Kit.

For detailed hazard-handling instructions, see Annex E: Accident-Site Hazard Advisory for First Responders *(attached immediately after this checklist).*

✅ **Immediate Actions – Life Safety First**

Step	Action	Done?
1	**Assess scene safety before approaching.** Look for fuel, fire, unstable wreckage **and aviation-specific hazards** (ballistic parachute rockets, lithium batteries, pressurised cylinders). **Appoint a Safety Lookout** to watch for changing risks.	☐
2	Call emergency services (000) if there are injuries, fire, or entrapment.	☐
3	Render first aid within your level of training. Prioritise life-threatening injuries.	☐
4	**Control or isolate critical hazards** per Annex E: insert BRS safety pin if safe, mark a 15 m exclusion zone, quarantine smoking batteries, keep ignition sources 20 m from fuel vapours.	☐
5	Evacuate others from danger (e.g. fuel leaks, rough terrain). Ensure rescuer safety.	☐
6	Activate the club's Emergency Response Plan (ERP).	☐

🚧 Secure the Site – Prevent Further Harm

Step	Action	Done?
7	Appoint an On-Scene Commander to coordinate club actions.	☐
8	Prevent secondary accidents – restrict access to spinning propellers, sharp composites, BRS rocket zone, quarantined batteries, etc.	☐
9	Establish a safe perimeter using bunting, tape, cones, or club members.	☐
10	Stop unnecessary movement of wreckage or debris unless essential for rescue or safety.	☐
11	Note the time of the accident and first arrival on site.	☐

📞 Notify Authorities

Step	Action	Done?
12	Notify Gliding Australia Executive Manager, Operations as soon as practicable.	☐
13	Notify the Regional Manager, Operations (RMO) or club CFI.	☐
14	If required, notify the ATSB (1800 011 034) and CASA, especially for serious events.	☐
15	Log the names and contact numbers of any emergency-services personnel who attend.	☐

📸 Preserve Evidence (Only if Safe)

Step	Action	Done?
16	Take wide-angle and close-up photographs of the scene from multiple angles.	☐
17	Sketch or map the scene, noting aircraft orientation, ground marks, and wreckage location.	☐

18	Do not clean, move, or remove parts unless required to save life or prevent further damage.	☐
19	Secure GPS units, FLARM logs, flight instruments, and any digital devices found.	☐

🗣️ Manage People and Information

Step	Action	Done?
20	Identify and record names of witnesses. Ask them to stay on-site if safe to do so.	☐
21	Do not allow club members or bystanders to speculate or speak to media.	☐
22	Assign one person to communicate with families of those involved, via the CFI or club lead.	☐
23	Prepare for police arrival. In fatal accidents, they will take control of the site.	☐

📝 Recordkeeping and Handover

Step	Action	Done?
24	Keep a written timeline of all events, actions taken, and communications made.	☐
25	Document names of all responders and personnel involved in rescue or recovery.	☐
26	Ensure witness statements are taken using the standard form (see Annex C).	☐
27	Complete SOAR report within 72 hours and submit to Gliding Australia via the online portal.	☐
28	Cooperate with any investigation by Gliding Australia, ATSB, police, or coroner.	☐

⚠️ Notes for Remote Sites

- **If police are managing the scene:**
  - ➤ Follow their directions.
  - ➤ Offer to assist and identify yourself as a Gliding Australia representative.
  - ➤ Advise them that the site may require preservation for aviation-safety investigation.
  - ➤ Await Gliding Australia or ATSB arrival before disturbing evidence.

📜 Final Checklist Sign-Off

Initial Responder Name _____

Signature _____

Date/Time Completed _____

Annex E: Accident-Site Hazard Advisory for First Responders

Annex E provides concise, hazard-specific guidance so first responders can recognise and manage modern sailplane/tow-plane wreckage risks without endangering themselves or destroying evidence. It should be printed back-to-back with Annex D and kept in every club ERP kit.

Purpose

To highlight critical hazards unique to aviation accidents—such as ballistic recovery rockets, high-voltage batteries, fuel vapours, composite dust, and pressurised cylinders—and to outline first-responder actions that maximise safety and preserve evidence.

Scope

Applies to all Gliding Australia-affiliated operations and accident sites, including competitions and out-land retrieves. Complements, but does not replace, local Emergency Response Plans or directions from emergency services.

Hazard Recognition and Control

Hazard	Why It's Dangerous	First-Responder Actions	Minimum PPE & Stand-Off
Ballistic Recovery System (BRS)	Rocket can fire if cable or handle is snagged; blast radius ≈ 15 m; hot exhaust & shrapnel	• Do **not** touch activation cables. • If safety pin is visible **and easily accessible**, insert it. • Mark a 15 m exclusion arc in the deployment direction. • Advise arriving fire/ambulance crews.	Eye & head protection; ≥ 15 m unless pin installed
Lithium-ion / HV battery packs	> 100 V DC; impact can trigger thermal runaway fire that re-ignites after 24 h	• Treat smoking/hissing batteries as *active fire*. • Use large fire blankets or water	Gloves rated to 1 kV, goggles, P2 respirator; 5 m

		fog if trained; otherwise, isolate. • Quarantine packs upright, ≥ 5 m outdoors.	
Fuel & vapours (Avgas, Mogas, Jet A-1, diesel)	Flash point varies; invisible vapour spreads downhill / down-wind	• Prohibit smoking and vehicle engines within 20 m. • Lay dry-chem or AFFF extinguishers ready. • Spark-proof tools only.	Cotton clothing, gloves, goggles; 20 m
Pressurised O_2/CO_2 cylinders	Cylinders can rocket if valve breaks; oxygen feeds fire	• Check for leaks (hissing/frost). • Secure cylinders so they cannot roll. • Keep away from heat sources.	Eye protection; 3 m
Composite-fibre dust & splinters	Cuts; lung/eye irritation; carbon fibre conducts electricity	• Wet fractured areas before handling. • Use disposable coveralls & P2 mask.	Coveralls, nitrile gloves, P2/P3 mask

Safe Scene Management (summary)

1. **Life first, evidence second** – follow 'Annex D Immediate Actions' before attempting hazard control.
2. **Assign a Safety Lookout** to monitor fire, traffic, and shifting wreckage.
3. **If unsure, create distance** – isolate, mark, and wait for specialist responders.
4. **Log every hazard action** on the Annex D checklist for investigator reference.

5 Training & Dissemination

• Brief duty pilots, instructors, and safety officers annually.
• Store a laminated copy of this annex with extinguishers, fire blankets, and the Site Safety Checklist at launch points and retrieve vehicles.

Annex F: ICAO Final Report Template – Full Format for Structuring Formal Investigations

Annex F provides a structured template for investigators preparing a full investigation report under **ICAO Annex 13** and **Gliding Australia** procedures. It ensures consistency, clarity, and compliance with national and international expectations. The report format is applicable for serious accidents and complex incidents requiring detailed documentation.

ICAO Final Report Template

Confidential Draft – For Safety Investigation Use Only

1. Title Page

- **Occurrence Title** (e.g., "Hard Landing During Aero-Tow Launch")
- Location of Occurrence
- Date and Time
- **Aircraft Involved** (type, registration)
- Operator / Club
- **Investigating Organisation** (e.g., Gliding Australia)
- Report Reference Number
- Date of Report Publication
- **Prepared By** (Investigator name/s)

2. Synopsis

- A brief summary of the occurrence, the investigation conducted, the main findings, and any safety recommendations issued.
- Include a statement about the purpose of the investigation (i.e., for prevention, not blame or liability).
- Mention if other agencies (ATSB, CASA, Police, Coroner) were involved.

3. Factual Information

3.1. History of the Flight

Describe the full sequence of events before, during, and after the occurrence. Use a neutral, chronological narrative.

3.2. Injuries to Persons

Occupants	Fatal	Serious	Minor	None
Crew (Tow or Glider)				
Passengers				
Ground Personnel				

3.3. Damage to Aircraft

Provide an assessment of the damage to the glider, tow-plane, or other aircraft involved.

3.4. Other Damage

Describe any ground damage, environmental impact, or third-party property affected.

3.5. Personnel Information

- Glider pilot: licence, experience, medical status, currency
- Tow pilot (if relevant)
- Ground crew roles (winch operator, wing runner, etc.)

3.6. Aircraft Information

- Aircraft type, registration, serial number
- Configuration at time of occurrence
- Maintenance history and release status

3.7. Meteorological Information

- Wind, temperature, visibility, thermal activity, turbulence, sun position
- Source (e.g., METAR, club observation)

3.8. Aids to Navigation

- GPS, FLARM, variometers, or other devices used
- Whether data was recovered and used in the investigation

3.9. Communications

- Radio communications (or absence) between pilots, ground crew, ATC
- Quality, content, and effectiveness

3.10. Aerodrome Information

- Airfield layout, surface condition, obstacles, traffic
- Launch type and direction (winch/aerotow/self-launch)

3.11. Flight Recorders

- Availability and status of FLARM, GPS, or data loggers
- Data extracted and used

3.12. Wreckage and Impact Information

- Location and orientation of wreckage
- Ground marks, debris trail, impact angles

3.13. Medical and Pathological Information

- Any relevant findings (e.g., fatigue, pre-existing conditions, substance use)
- Do not disclose personal medical data beyond what is necessary.

3.14. Fire

- Presence or absence of fire, its origin, and extinguishment if applicable

3.15. Survival Aspects

- Occupant restraint systems, egress, emergency response time
- Factors affecting survivability

3.16. Tests and Research

- Lab testing, equipment examination, simulator re-creation if performed

3.17. Organisational and Management Information

- Club SMS implementation
- SOP adherence, safety culture, training, oversight

3.18. Additional Information

- Witness statements
- Photographs or diagrams not included elsewhere
- Relevant history or context

3.19. Useful or Effective Investigation Techniques

- Describe any special methods or technologies used that aided the investigation

4. Analysis

Interpret the facts and explore how and why the occurrence happened. Discuss:

- Chain of events and timeline
- Contributing human, technical, and organisational factors
- Weather or environmental influences
- Inconsistencies or conflicts in evidence
  Support assertions with facts and reference specific findings.

5. Conclusions

Summarise key findings in clear bullet points or numbered items. Divide into:

- **Findings** – confirmed facts relevant to the event
- **Causal Factors** – direct triggers of the accident/incident
- **Contributing Factors** – elements that made the occurrence more likely or more severe

6. Safety Recommendations

For each recommendation:

- Describe the issue identified
- Propose an action to reduce the risk
- Identify the party responsible (e.g. club, Gliding Australia, maintenance provider)
  Number and format recommendations clearly.

7. Appendices

Include supporting materials:

- Maps, diagrams, photos
- Witness interview summaries
- Extracts from SOPs, logbooks, weather reports
- FLARM or GPS flight traces
- Technical reports or testing documentation

Notes on Confidentiality

In accordance with ICAO Annex 13 and Gliding Australia policy:

- Do not include names or personally identifying information unless authorised.
- Maintain the privacy of individuals involved.
- Avoid any content that implies blame or legal responsibility.

Annex G: ATSB-Style Short Investigation Report Template

This template is for documenting sailplane and tow-plane accidents or incidents where a concise summary is sufficient.

1. **Title and Event Summary**

   - Occurrence Type:
   - Location:
   - Date:
   - Aircraft Type and Registration:
   - Operator (Club):

   Example: Hard Landing on Crosswind Final – VH-GFN, Jan 2025, Glen Ridge Gliding Club

2. **Occurrence Details**

   Provide a plain-English narrative of the event:

   - Flight phase
   - Pilot's intentions
   - Description of what occurred
   - Immediate outcome (e.g., damage, injuries)

3. **Pilot and Aircraft Information (Optional)**

   - Pilot experience and qualifications:
   - Recency and currency:
   - Medical certification:
   - Aircraft maintenance release status:

4. **Analysis and Contributing Factors**

   Summarise the most likely causes or contributing factors:

   - Human factors (e.g., inexperience, distraction, misjudgement)
   - Technical issues (e.g., mechanical failure)
   - Environmental conditions (e.g., wind, visibility)

   Avoid attributing blame—focus on safety insights.

5. Safety Actions or Recommendations

List actions taken or recommended:

- Club-level measures (e.g., briefings, SOP updates)
- Instructor or pilot follow-up (e.g., targeted training)
- Gliding Australia involvement (if applicable)

6. Occurrence Classification (Optional)

- **Classification:** Accident / Incident / Serious Incident
- **Sub-category:** (e.g., Rope Break, Ground Loop, Runway Excursion)

7. Reporting and Confidentiality Notes

This report is issued for safety improvement purposes and is intended to support learning and prevention. It is not intended to attribute blame or liability.

- **SOAR Report ID:** [Enter ID if applicable]

8. Attachments (Optional)

- Photographs
- Sketches or diagrams
- FLARM traces
- Witness statements

Annex H: Minor Incident Investigation Report Template

This template is designed for investigating and documenting minor sailplane and tow-plane incidents that do not require a full investigation or detailed technical analysis. It is suitable for occurrences involving minimal or no damage, no injuries, and straightforward causes.

1. What Happened

Provide a clear and brief narrative description of the incident:

- Date and location of the incident
- Type of activity (e.g., training flight, aerotow, landing)
- Aircraft involved (type and registration)
- Individuals involved (roles only: pilot, instructor, ground crew)
- Summary of the event and the outcome (e.g., ground loop, miscommunication, late launch signal)

Example: On 12 April 2025, during a local training flight at River Valley Gliding Club, a student delayed release from tow at the normal height. The tow pilot initiated radio contact and release occurred at 2,200 ft AGL. No damage occurred.

2. Why It Happened

Identify and explain the likely contributing factors:

- Human factors (e.g., inexperience, distraction, misunderstanding)
- Environmental conditions (e.g., strong crosswind, low visibility)
- Equipment or procedural issues (e.g., radio malfunction, non-standard signals)

Avoid assigning blame. Focus on the conditions and decisions that led to the occurrence.

Example: The student was unclear about the appropriate release point and unsure of the pre-briefed plan. The instructor did not reinforce this during the pre-flight briefing.

3. Lessons Learned

Summarise the safety insights and potential improvements:

- Any immediate corrective actions taken
- Recommendations for preventing recurrence

- Training, SOP, or briefing updates

Example: Instructors reminded to clearly brief tow release expectations prior to flight. A club safety bulletin was issued covering standard tow release altitudes and emergency procedures.

Optional Attachments

- Relevant photos or diagrams (if any)
- Witness comments (if applicable)
- SOAR incident report number

Note: This report is for internal safety learning and should be submitted to the club CFI and Gliding Australia as required. It is not intended to assign fault or liability.

Annex I: Legal and Regulatory Reference Summary – CASR Part 149, ICAO Annex 13, and TSI Provisions

Purpose

This Annex provides a summary of the principal legal and regulatory frameworks governing sailplane and tow-plane accident and incident investigations within Australia.

It outlines the respective roles, responsibilities, and reporting obligations applicable to Gliding Australia, its members, clubs, and investigators, and explains how organisational investigations interact with statutory authorities including CASA, the ATSB, Police, and coronial agencies.

Understanding these frameworks is essential to ensuring that investigations are conducted lawfully, professionally, transparently, and in a manner consistent with both aviation safety objectives and external legal requirements.

CASR Part 149 – Approved Self-Administering Aviation Organisations (ASAOs)

Overview

Part 149 of the Civil Aviation Safety Regulations 1998 (CASR Part 149) establishes the regulatory framework under which organisations such as Gliding Australia operate as Approved Self-Administering Aviation Organisations (ASAOs).

Under this framework, CASA authorises Gliding Australia to administer specified aviation activities associated with gliding operations, including operational oversight, pilot qualifications, maintenance oversight, safety reporting, and investigation activities conducted within the organisation's Safety Management System (SMS).

CASR Part 149 requires Gliding Australia to maintain documented systems and procedures supporting safety reporting, occurrence investigation, risk management, corrective action, and continuous safety improvement.

Investigations conducted under this framework are intended to support aviation safety and prevention of recurrence rather than disciplinary or punitive outcomes.

Investigator Responsibilities under CASR Part 149

Investigators operating under Gliding Australia authority are expected to act within Gliding Australia's approved systems and procedures, maintain objectivity and

procedural fairness, avoid actual or perceived conflicts of interest, conduct investigations consistent with Just Culture principles, and support evidence-based safety improvement.

Where serious regulatory non-compliance, reckless conduct, or significant breaches of aviation legislation are identified, relevant matters may require referral or notification to CASA in accordance with applicable reporting obligations and organisational procedures.

Further guidance regarding governance, escalation, and investigator authority is provided in:

- *Annex M: Investigation Escalation Criteria;*
- *Annex N: Investigation Governance Framework, and*
- *Annex O: Suggested Approach to Managing Organisational Conflict of Interest in Serious and Fatal Occurrences*

ICAO Annex 13 – Aircraft Accident and Incident Investigation

Overview

ICAO Annex 13 is the internationally recognised standard governing aircraft accident and incident investigation within member states of the International Civil Aviation Organization (ICAO), including Australia.

Annex 13 establishes internationally accepted principles relating to the purpose of safety investigation, notification requirements, evidence preservation, investigative independence, report structure, and development of safety recommendations.

Although Annex 13 applies primarily to state investigation authorities such as the Australian Transport Safety Bureau (ATSB), Gliding Australia adopts its principles and methodology as the basis for its own organisational investigation processes in order to align with recognised international aviation safety practice.

Core Principles of Annex 13

The central principle of Annex 13 is that the sole objective of accident and incident investigation is the prevention of future accidents and incidents rather than the apportioning of blame or determination of liability.

Annex 13 also establishes structured investigative processes including occurrence notification, evidence collection and preservation, factual analysis, identification of contributing factors, development of safety recommendations, and preparation of final reports.

The Annex further emphasises investigative objectivity, independence, factual accuracy, and protection of safety information where appropriate.

Gliding Australia investigation reports, particularly formal investigations involving serious accidents or fatalities, may adopt the ICAO Annex 13 report structure in order to support consistency, professionalism, and compatibility with broader aviation investigation practice.

Further guidance regarding investigation reporting formats is provided in *Chapter 14: Investigation Reporting – Documenting Investigations with Clarity, Accuracy, and Purpose*.

Transport Safety Investigation Act 2003 (TSI Act)

Overview

The Transport Safety Investigation Act 2003 (TSI Act) establishes the Australian Transport Safety Bureau (ATSB) as Australia's independent national transport safety investigation authority.

The ATSB is responsible for investigating significant aviation, marine, and rail occurrences in accordance with statutory authority established under the TSI Act and associated regulations.

The Act provides the ATSB with powers relating to occurrence notification, evidence collection, site access, witness interviews, compulsory production of information, and control of investigation processes.

Reportable Matters and ATSB Notification

Certain aviation occurrences must be reported directly to the ATSB in accordance with applicable reporting requirements.

These generally include accidents involving fatalities or serious injuries, substantial aircraft damage, near mid-air collisions or serious loss-of-separation events, and other significant operational occurrences affecting aviation safety.

Where reportable matters occur, notification to the ATSB should occur as soon as reasonably practicable using approved reporting channels.

At the time of publication, urgent ATSB notifications may be made via the ATSB notification service, including the emergency reporting number 1800 011 034.

Investigators and clubs should ensure they remain familiar with current ATSB reporting requirements and notification procedures, as these may change over time.

Preservation of Evidence and Site Management

Where the ATSB is involved, investigators and clubs must preserve evidence and avoid disturbing the accident site except where necessary for rescue or medical assistance, protection of life, prevention of further damage or hazard, or where directed by Police or emergency services.

Evidence preservation may include protection of wreckage, flight-recording devices, documentation, photographs, witness information, and electronic records.

Once the ATSB assumes control of an investigation or site, Gliding Australia personnel must cooperate fully and comply with lawful directions relating to evidence handling and site management.

Further guidance regarding site preservation and evidence handling is provided in *Chapter 6: Initial Response and Site Management – Protecting Life, Preserving Evidence, and Managing the Scene with Discipline and Care*.

Interaction with Police and Coroners

In the event of a fatal accident, Police generally assume immediate control of the site on behalf of the relevant State or Territory Coroner.

Gliding Australia investigators must cooperate respectfully with Police, emergency services, coronial personnel, and other statutory authorities while avoiding interference with lawful investigative processes.

Organisational investigators may continue to conduct safety-related investigation activities where permitted, but must recognise that statutory authorities maintain primary legal control over the site and associated evidence.

Gliding Australia investigation reports or factual material may also be requested by coronial authorities during subsequent legal or coronial proceedings.

Investigators should therefore prepare reports and supporting documentation on the basis that investigation material may later become subject to external scrutiny or compulsory disclosure.

Further guidance regarding external review and legal disclosure is provided in *Chapter 14: Investigation Reporting – Documenting Investigations with Clarity, Accuracy, and Purpose.*

Relationship Between Organisational and Statutory Investigations

Gliding Australia investigations conducted under CASR Part 149 do not replace or override statutory investigations conducted by the ATSB, Police, CASA, or coronial authorities.

Rather, organisational investigations operate alongside statutory processes and focus primarily upon operational learning, systemic improvement, and prevention of recurrence within the gliding community.

Where multiple agencies are involved, effective coordination, professional communication, and clear understanding of authority and responsibility are essential to maintaining investigation integrity and avoiding unnecessary conflict or duplication.

Summary of Notification Responsibilities

Organisation	Primary Role	Typical Notification Requirement
CASA	National aviation safety regulator	Notification where significant regulatory breaches or safety concerns are identified
ATSB	Independent national transport safety investigation authority	Immediate notification following reportable serious incidents, substantial damage, or fatalities
Gliding Australia Executive Manager, Operations (EM/O)	Organisational investigation oversight and coordination	Notification as soon as practicable following accidents or significant incidents
State or Territory Police	Emergency response and coronial coordination	Immediate notification in fatal accidents or where emergency response is required

Investigators and clubs should ensure that notification obligations are fulfilled promptly and that uncertainty regarding reporting thresholds is resolved conservatively through early consultation where necessary.

Good Practice for Investigators

Investigators should operate within the scope of Gliding Australia's authority under CASR Part 149 and apply the principles of ICAO Annex 13, including objectivity, impartiality, and prevention-focused investigation.

They should also recognise the ATSB, Police, and coronial authorities as lead agencies during statutory investigations, maintain accurate and comprehensive documentation, cooperate fully with lawful directions from statutory authorities, and ensure that investigations remain focused upon safety improvement and organisational learning.

Professionalism, procedural fairness, disciplined evidence handling, and accurate reporting are essential to maintaining the credibility and integrity of both Gliding Australia's investigation framework and the broader aviation safety system.

Key Principle

Gliding Australia investigations are conducted within a broader national and international aviation safety framework that emphasises lawful process, independent investigation, professional cooperation, and prevention of future accidents and incidents.

Understanding the interaction between organisational investigation responsibilities, CASA oversight, ATSB statutory authority, and coronial processes is essential to ensuring that investigations remain credible, defensible, and effective in supporting aviation safety improvement across the Australian gliding community.

Annex J: Emergency Contact Directory – Key Contacts for Accident and Incident Response

This annex provides a quick-reference contact list for use during and immediately after a sailplane or tow-plane accident or serious incident. It should be printed, laminated, and placed in club safety folders, emergency kits, launch point boxes, and flight briefing rooms. Each club must review and update the contact details annually to ensure they remain accurate and ready for immediate use.

🚨 1. Emergency Services (Police, Fire, Ambulance)

Service	Contact Number
National Emergency	000
State Emergency Services (SES)	**132 500** (non-life-threatening emergencies)

📞 2. Gliding Australia – Safety and Operations

Role	Contact
Executive Manager, Operations	[Insert name] – [Insert phone] – [Insert email]
National Safety Manager	[Insert name] – [Insert phone] – [Insert email]
Regional Manager, Operations (RMO) – [Region Name]	[Insert name] – [Insert phone] – [Insert email]
Gliding Australia Head Office	(03) 9359 1613 – admin@glidingaustralia.org

✈️ 3. Australian Transport Safety Bureau (ATSB)

Purpose	Contact
24-Hour Accident Reporting Hotline	1800 011 034
General Inquiries	(02) 6257 4150
ATSB Email (Initial Reports or Follow-up)	notifications@atsb.gov.au
ATSB Website (Reporting Portal)	www.atsb.gov.au

🛩️ 4. Civil Aviation Safety Authority (CASA)

Purpose	Contact
CASA Safety Reporting – AvSafety Hotline	131 757 or (07) 3144 7400
CASA Aviation Complaints & Incidents	aviationcomplaints@casa.gov.au
CASA General Enquiries	131 757
CASA Website	www.casa.gov.au

🧭 5. Local Emergency and Club Contacts (To Be Completed by Each Club)

Role / Contact Name Phone Email

Club Chief Flying Instructor (CFI)

Club Safety Officer

Club President / Duty Officer

Nearest Hospital / Emergency Department

Local Police Station

Airfield Operator / Owner

> **Tip:** Clubs should pre-fill and print this table for use in emergencies. Consider adding GPS coordinates for field access gates or paddock retrievals.

📋 Reminder: After an Accident or Serious Incident

1. Call 000 if there are injuries or danger.
2. Notify the Gliding Australia EM/O and your RMO immediately.
3. Call ATSB if the occurrence is reportable.
4. Secure the site and begin documentation.
5. Complete a SOAR report within 72 hours.

Annex K: Human Factors in Sailplane Accident and Incident Investigation – A Sailplane-Focused Introduction

Executive Summary for Investigators

Annex K provides the conceptual foundation for applying Human Factors analysis in sailplane accident and incident investigations. It explains how and why human actions, decisions, and behaviours arise within the operational, environmental, and organisational systems that characterise gliding operations.

It reinforces that most sailplane accidents and incidents do not result from a single unsafe act or technical failure, but from the interaction of human performance limitations, contextual pressures, and systemic weaknesses. Identifying “pilot error” alone is therefore insufficient; effective investigation requires understanding why actions made sense at the time, given the information available, the expectations present, and the constraints under which decisions were made.

A Just Culture, learning-focused investigative approach is supported by distinguishing between human error, at-risk behaviour, and reckless behaviour, and by directing attention toward system improvement rather than individual blame for honest mistakes. Guidance is also provided on reasoning from indirect evidence, applying disciplined Human Factors analysis, and articulating findings based on reasonable probability while acknowledging uncertainty where it exists.

Used alongside *Chapter 9: Human and Organisational Factors* and *Annex K-1: Human Factors (HF) Analysis Checklist,* this material assists investigators to analyse Human Factors consistently and defensibly, identify systemic and organisational contributors, develop proportionate and effective safety recommendations, and support safety learning without undermining accountability.

No new investigative procedures are introduced. Instead, the quality, clarity, and consistency of investigations are strengthened by explaining the principles that underpin Human Factors analysis within Gliding Australia’s accident and incident investigation framework.

Purpose of This Annex

This Annex establishes a structured, sailplane-specific framework for understanding and applying Human Factors in the investigation of accidents and incidents within Australian gliding operations. It provides investigators, instructors, safety officers, and operational managers with a clear explanation of how human actions, decisions,

and behaviours arise, and how those actions interact with technical systems, environmental conditions, operational demands, and organisational influences.

It is intended to support consistent, high-quality analysis by moving investigations beyond surface descriptions of error and toward a deeper understanding of why events unfolded as they did. Sailplane operations place unique cognitive and decision-making demands on pilots and support personnel, often in environments characterised by limited external control, variable conditions, informal coordination, and high reliance on individual judgement. Human Factors analysis provides the tools to examine these demands systematically and objectively.

The framework applies to the full range of sailplane operations, including instructional flying, recreational and cross-country soaring, competition operations, and associated launch and ground activities. It is equally relevant to minor incidents and serious accidents, recognising that early identification of human and organisational contributors is essential to preventing recurrence and strengthening the overall safety system.

This material does not replace or duplicate the investigative procedures set out in *Chapter 9: Human and Organisational Factors*. Rather, it provides the conceptual foundation upon which that chapter is based, explaining the principles that underpin Human Factors analysis, including the nature of human error, the influence of context and system design, and the role of organisational and cultural factors in shaping behaviour.

By articulating these principles explicitly, the Annex supports Gliding Australia's Just Culture and non-punitive, systems-based investigative approach, consistent with ICAO Annex 13 and the organisation's Safety Management System. Investigators are encouraged to use it as a reference when conducting Human Factors analysis, framing findings, and developing safety recommendations, ensuring that conclusions are evidence-based, proportionate, and focused on improving safety across the gliding community.

Human Factors and Sailplane Operations

Human Factors is the discipline concerned with understanding how people interact with aircraft, equipment, procedures, operational environments, and organisational structures, and how those interactions influence safety outcomes. Within sailplane operations, Human Factors plays a particularly critical role because safe performance depends less on automated systems and external controls, and more on human judgement, anticipation, and adaptation in dynamic and often unforgiving environments.

Gliding places a high degree of responsibility on individuals to assess risk, manage energy, and make timely decisions with limited information. Key characteristics of sailplane operations that elevate the importance of Human Factors include individual judgement and decision-making, often exercised without immediate oversight during cross-country and competition flying; continuous self-management of risk; informal coordination between pilots, instructors, tow pilots, ground crew, and competition officials; and the interpretation of subtle or rapidly changing environmental cues such as thermal strength, wind gradients, terrain effects, and traffic awareness.

Unlike many powered aviation operations, sailplane flying typically occurs in environments with limited external control, minimal automation, and high variability in operating conditions. Pilots must integrate multiple streams of visual, cognitive, and experiential information while managing workload across extended flight durations. As a result, the safety of sailplane operations is highly sensitive to human performance limitations including fatigue, distraction, expectation bias, and workload saturation.

Consequently, most sailplane accidents and incidents arise not from structural or mechanical failure alone, but from human performance within a complex operational system. This system includes not only the pilot and aircraft, but also training pathways, club procedures, supervision practices, cultural norms, competition pressures, and organisational decision-making. These elements interact to shape behaviour, sometimes in ways that unintentionally increase risk.

Human Factors analysis recognises that pilots, instructors, tow pilots, and club officials generally act with the intention of achieving safe outcomes, based on their understanding of the situation at the time. When accidents or incidents occur, the role of the investigator is therefore not to assess intent or assign moral judgement, but to understand how and why the system permitted the outcome to occur, and what conditions, influences, or defences failed to prevent it.

By examining human actions within their full operational and organisational context, Human Factors analysis enables investigators to identify meaningful safety lessons and develop recommendations that strengthen the system as a whole, rather than focusing narrowly on individual actions or isolated errors.

Systems Interaction and the SHELL Model

Human performance in aviation is shaped not only by the actions of individuals, but by the interaction between people, equipment, procedures, operational environments, and organisational systems. Human Factors analysis therefore requires investigators to examine how these elements interacted during the

occurrence and whether mismatches, degraded interfaces, or conflicting demands contributed to unsafe outcomes.

One of the most widely used frameworks for examining these interactions is the SHELL model. Originally developed for aviation Human Factors analysis, the model provides a structured method for examining the interfaces between:

- Software — procedures, manuals, rules, checklists, operational guidance, and training systems;
- Hardware — aircraft, controls, instruments, equipment, and tools;
- Environment — weather, terrain, operational conditions, organisational climate, and external pressures; and
- Liveware — the human operator, including interactions with other personnel.

The model recognises that accidents and incidents often arise not from failure within a single element, but from incompatibilities or weaknesses at the interfaces between them. Examples within sailplane operations may include:

- procedures that are unclear or inconsistent with operational reality;
- equipment design that increases workload or promotes error;
- environmental conditions that exceed pilot capability or reduce situational awareness;
- or communication breakdowns between instructors, tow pilots, launch crews, and pilots.

Expanded forms of the model, including SHEL(L) and CSHELL, place additional emphasis on communication, organisational culture, and interactions between operational personnel. These variants are particularly relevant within gliding operations, where informal coordination, shared assumptions, and local operating culture often influence decision-making and risk management.

The SHELL framework assists investigators in moving beyond simplistic explanations of pilot error and toward a broader understanding of how operational systems shaped human performance during the occurrence. Used appropriately, it supports more balanced analysis, stronger identification of systemic contributors, and more effective safety recommendations.

Moving Beyond “Pilot Error”

Historically, sailplane accidents and incidents were frequently explained using simplified labels such as *pilot error*, *poor judgement*, or *loss of control*. While such terms may describe the immediate action or outcome observed, they provide little insight into the causal mechanisms that led to the event and therefore offer limited value in preventing recurrence.

Labels of this nature tend to focus narrowly on the final link in the chain of events rather than examining the broader operational context in which decisions were made. In doing so, they obscure important questions concerning why the pilot's decision appeared reasonable at the time, what information was available or missing, what operational pressures or expectations shaped behaviour, and what organisational or cultural influences framed the operating environment.

The term *pilot error* is therefore descriptive rather than explanatory. It identifies who was involved at the point of failure, but not why the failure occurred or how the system allowed it to develop. Used in isolation, it risks prematurely terminating the investigation process and diverting attention away from contributory factors that may remain unaddressed.

Modern aviation safety investigation practice requires investigators to move beyond surface descriptions and undertake a structured examination of underlying contributory influences. This includes human performance limitations, environmental conditions, task demands, training adequacy, supervision, and organisational context.

Human Factors analysis reframes the fundamental investigative question from:

> "What did the pilot do wrong?"

to:

> "Why did this action or decision occur in this context, and how can the system be improved to reduce the likelihood of recurrence?"

This reframing is central to effective safety investigation. It enables investigators to identify meaningful safety lessons, develop proportionate and targeted recommendations, and strengthen the defences that support safe performance across sailplane operations.

Human Error in Sailplane Operations

Human error is a normal and unavoidable aspect of human performance. It is not, in itself, a moral failing, a character flaw, or evidence of incompetence. Even highly experienced, conscientious, and well-trained sailplane pilots are susceptible to error, particularly when operating in complex and dynamic environments.

Human Factors analysis begins from the premise that error is expected, and that safety depends on how effectively systems anticipate, detect, and mitigate its consequences.

In sailplane operations, errors most commonly arise from the interaction between human cognitive limitations and operational demands. These may include slips and lapses during familiar tasks, mistakes in planning or judgement, at-risk behaviours that become normalised over time, and procedural violations arising from perceived necessity, operational pressure, or accepted local practice.

Human error is frequently influenced by performance-shaping factors such as fatigue, workload, distraction, stress, expectation bias, over-confidence, and degraded situational awareness. Within gliding operations, these influences may develop gradually over long flight durations, repeated launches, prolonged decision-making in marginal conditions, or sustained operational pressure during competitions or instructional activity.

It is important to recognise that many errors occur in situations that feel routine or manageable to the individual at the time. Familiarity with an aircraft, location, or operation can reduce perceived risk and increase tolerance for deviation, particularly where previous outcomes have been benign.

In accident and incident investigation, identification of an error should never be treated as the conclusion of analysis. Rather, it marks the starting point for a deeper examination of why the error occurred, what conditions influenced it, and what defences failed to prevent or correct it.

Investigators should therefore seek to understand:

- what made the error possible or likely in that context;
- why it was not detected or corrected earlier; and
- whether similar errors could reasonably occur again.

By analysing errors in this manner, investigators can move beyond individual actions to identify systemic vulnerabilities and develop recommendations that strengthen the overall operating system rather than focusing solely on individual performance.

Systemic and Organisational Influences

Modern Human Factors recognises that accidents and serious incidents are rarely the result of a single failure or unsafe act. Instead, they emerge from the interaction of multiple contributory factors across different levels of the operational system.

In sailplane operations, these interacting levels commonly include pilots and instructors, launch crews and tow pilots, club procedures and supervision, training systems, competition structures and cultural norms, and organisational governance and safety oversight.

Weaknesses or gaps may exist at any of these levels. Examples include ambiguous procedures, inconsistent supervision, informal workarounds, inadequate feedback from previous incidents, or cultural acceptance of marginal practices. While such weaknesses may not cause immediate harm, they can create latent conditions that increase vulnerability to error.

This systemic view of accident causation is often illustrated by the “Swiss Cheese” model, in which layers of defence — such as training, procedures, supervision, and organisational oversight — contain inherent imperfections or “holes”. An accident occurs when these holes temporarily align, allowing hazards to pass through multiple layers without being detected or mitigated.

For investigators, this means that analysis must extend beyond the actions immediately preceding the occurrence. While understanding what the pilot or crew did is essential, it is equally important to examine what organisational decisions or omissions shaped the operating environment, whether procedures and supervision were adequate, how cultural norms influenced behaviour, and whether known risks were tolerated or normalised.

By examining systemic and organisational influences, investigators can identify root causes that are amenable to meaningful intervention rather than focusing solely upon individual actions that may be difficult to control or sustain through retraining alone.

Human Factors and Just Culture

Human Factors analysis is inseparable from the principles of Just Culture, as both are grounded in an understanding of how humans actually perform within complex operational environments.

A Just Culture recognises that safe outcomes depend not on the absence of error, but on the presence of systems that anticipate, detect, and manage error effectively. Within this framework, individuals are expected to act responsibly, while organisations are expected to create conditions that support safe performance.

A Just Culture is founded upon several important principles:

- human error is inevitable;
- most unsafe acts are unintentional;
- and learning requires openness and trust.

Within this framework, it is essential to distinguish between human error, at-risk behaviour, and reckless behaviour because these categories require different organisational responses.

Human error calls for consolation and system improvement. At-risk behaviour may require coaching, supervision, or procedural review. Reckless behaviour, involving conscious and unjustifiable disregard for substantial risk, may warrant disciplinary or administrative action.

Investigations conducted within a Just Culture framework therefore focus on improving systems rather than assigning blame for honest mistakes. Investigators are expected to examine how organisational structures, procedures, training, supervision, and cultural norms influenced behaviour rather than concentrating solely upon individual actions.

Language used in findings and reports should remain neutral, factual, and focused on contributory influences rather than emotionally charged or accusatory conclusions.

By integrating Human Factors analysis with Just Culture principles, investigations support accurate reporting, encourage cooperation, and produce findings that lead to meaningful and sustainable safety improvements.

Evidence and Human Factors Analysis

Human Factors evidence is often indirect and inferential in nature. Unlike technical failures, which may leave clear physical traces, Human Factors contributors such as fatigue, distraction, stress, or cognitive bias rarely produce definitive or measurable proof.

As a result, investigators must rely upon structured analysis, disciplined reasoning, and careful correlation of multiple sources of information to develop well-founded conclusions.

In sailplane accident and incident investigations, Human Factors conclusions are typically derived from corroborated witness accounts, established knowledge of human performance limitations, observed behavioural patterns, and alignment with the environmental and operational context surrounding the occurrence.

Because Human Factors analysis relies heavily upon inference rather than direct measurement, investigators must guard carefully against speculation. Conclusions should not be based upon assumptions regarding what an individual *must* have been thinking or should have known, but upon what can reasonably be inferred from the available evidence and recognised characteristics of human performance.

Findings relating to Human Factors should therefore:

- remain logically connected to the evidence presented;
- consider alternative explanations where relevant;
- use precise and neutral language;

- and clearly acknowledge the limits of available evidence.

Where evidence is incomplete or insufficient to support a firm conclusion, uncertainty should be acknowledged explicitly. This does not weaken the investigation; rather, it strengthens credibility and transparency.

By applying disciplined reasoning and clearly articulating how conclusions have been reached, investigators ensure that Human Factors findings remain defensible, credible, and useful in supporting meaningful safety improvement.

Application to Sailplane Accident and Incident Investigation

When applied correctly, Human Factors analysis provides investigators with a structured and defensible method for examining accidents and incidents beyond immediate actions or rule compliance.

In practical terms, Human Factors analysis assists investigators to:

- understand why actions and decisions occurred within their operational context;
- identify systemic and organisational weaknesses;
- develop effective and proportionate safety recommendations;
- and support learning without undermining accountability.

Human Factors thinking strengthens the investigative process by ensuring that findings address root causes rather than symptoms. While immediate actions may explain what happened, Human Factors analysis explains why those actions occurred and how similar circumstances might arise again.

Within sailplane operations, where reliance on individual judgement and informal coordination is high, Human Factors analysis helps investigators recognise patterns that may not be apparent when focusing narrowly on compliance or technical performance.

By integrating Human Factors analysis throughout the investigation process — from evidence collection and analysis through to findings and recommendations — investigators produce reports that are more credible, informative, and useful to the broader gliding community.

Relationship to Other Chapters

This Annex functions as a foundational reference for the application of Human Factors analysis throughout the *Sailplane Accident & Incident Investigation Manual*. It provides the conceptual framework that supports, informs, and strengthens the investigative guidance contained in several key chapters of the Manual.

In particular, this Annex underpins:

- *Chapter 2: Just Culture and the No-Blame Philosophy – Foundations of Aviation Safety Investigation;*
- *Chapter 9: Human and Organisational Factors;*
- *Chapter 10: Behavioural Analysis and Just Culture Decision-Making;*
- *Chapter 12: Analysis and Findings – Transforming Evidence into Understanding and Action;* and
- *Chapter 13: Safety Recommendations – Translating Findings into Safety Improvements.*

Investigators are encouraged to refer to this Annex when conducting Human Factors analysis, framing findings, selecting appropriate language, and developing safety recommendations.

Used consistently, this Annex helps ensure that investigations across sailplane operations are conducted in a coherent, defensible, and learning-focused manner aligned with contemporary aviation safety principles.

Conclusion

Human Factors is central to understanding sailplane accidents and incidents and to achieving meaningful, lasting improvements in safety. It provides investigators with the conceptual tools required to move beyond simplistic explanations and assignment of blame toward a deeper understanding of how and why adverse outcomes occur within complex operational systems.

By recognising that human error is normal, that context matters, and that systems shape behaviour, investigators are better equipped to analyse events in a balanced, objective, and defensible manner.

Applied consistently, Human Factors analysis enables investigators to identify root causes rather than symptoms, distinguish fairly between error and misconduct, and develop safety recommendations that strengthen system defences rather than relying upon individual perfection.

This Annex therefore forms a foundational reference for the application of Human Factors analysis within Gliding Australia's accident and incident investigation framework. It underpins the Manual's Just Culture philosophy, supports evidence-based investigation, and reinforces the organisation's commitment to a mature, transparent, and learning-focused safety culture across Australian sailplane operations.

Annex K-1: Human Factors (HF) Analysis Checklist

Purpose

This checklist supports structured, consistent Human Factors analysis in sailplane accident and incident investigations. It is designed to assist investigators to move beyond surface descriptions and identify relevant **contextual, human, and systemic contributors**, in line with Just Culture principles.

Use

This checklist is not exhaustive. Investigators should document **relevant factors only** and avoid speculation or unsupported inference. Where uncertainty exists, it should be stated explicitly.

Operational Context

☐ What phase of flight was involved (launch, climb, cruise, circuit, landing)?
☐ What environmental conditions existed (weather, terrain, visibility, traffic)?
☐ Was the operation routine, instructional, cross-country, or competitive?
☐ Were time pressures, expectations, or external constraints present?
☐ Did the pilot(s) have realistic alternatives available at the time?

Notes:
.....

Actions and Decisions – "Why It Made Sense"

☐ What decisions or actions were taken immediately prior to the occurrence?
☐ What information was available to the pilot(s) at the time?
☐ What information was missing, misleading, or misinterpreted?
☐ Did the action align with the pilot's training, experience, or expectations?
☐ Would the decision have appeared reasonable to others in similar circumstances?

Notes:
.....

Human Error Classification

☐ Was an error involved?

If yes, classify as one or more of the following (as applicable):

☐ Slip or lapse (execution failure)
☐ Mistake (planning or judgement error)
☐ At-risk behaviour (normalised deviation)
☐ Reckless behaviour (conscious disregard for safety)

☐ Is this behaviour consistent with known human performance limitations?
☐ Is there evidence of similar behaviour occurring previously?

Notes:

.....

Human Performance Influences

Consider whether any of the following were present or relevant:

☐ Fatigue or reduced alertness
☐ Task saturation or high workload
☐ Distraction or divided attention
☐ Stress (operational, competitive, or personal)
☐ Expectation bias or plan-continuation bias
☐ Reduced situational awareness
☐ Skill, experience, or recency factors

☐ Are conclusions supported by evidence rather than assumption?

Notes:

.....

Systemic and Organisational Factors

☐ Were club procedures clear, current, and practical?
☐ Was supervision or oversight appropriate for the activity?
☐ Were training standards, currency, or progression factors relevant?
☐ Did informal practices or cultural norms influence behaviour?
☐ Were known risks accepted, normalised, or unmanaged?
☐ Did organisational decisions or omissions contribute indirectly?

Notes:

.....

Just Culture Considerations

☐ Has behaviour been fairly classified (human error vs at-risk vs reckless)?
☐ Is analysis focused on learning rather than blame?
☐ Are findings expressed in neutral, factual language?
☐ Would this analysis encourage future reporting if shared publicly?
☐ Are accountability and safety improvement appropriately balanced?

Notes:
.....

Evidence Quality and Reasoning

☐ Are Human Factors conclusions supported by corroborated evidence?
☐ Have alternative explanations been considered and addressed where relevant?
☐ Are probabilistic judgements clearly identified as such?
☐ Is uncertainty explicitly acknowledged where evidence is limited?

Notes:
.....

Link to Findings and Safety Recommendations

☐ Have Human Factors contributors been clearly linked to investigation findings?
☐ Do safety recommendations address **system weaknesses**, not just individual actions?
☐ Are recommendations realistic, proportionate, and actionable?
☐ Is there a clear line of sight from Human Factors analysis to recommendations?

Notes:
.....

Checklist Completion

☐ Human Factors analysis completed and reviewed
☐ Findings consistent with Annex K principles
☐ Language reviewed for neutrality and clarity

Investigator: _____
Date: _____

Annex L: Investigator Wellbeing and Exposure to Traumatic Material

Purpose

Accident and incident investigation is a safety-critical activity conducted within Gliding Australia's Safety Management System (SMS). Investigators may be exposed to distressing scenes, traumatic material, prolonged operational stress, and sustained emotional load during the course of their duties. If unmanaged, such exposure may affect cognitive performance, analytical judgement, communication, decision-making, and investigative objectivity, thereby creating operational risk to investigation quality and safety outcomes.

This Annex establishes guidance for identifying, managing, and mitigating psychological risks associated with investigation activities in order to support safe, effective, and sustainable investigation capability within Gliding Australia.

Psychological Risk Exposure in Investigations

Investigation activities may expose personnel to psychologically demanding or distressing material, particularly during investigations involving fatalities, serious injuries, traumatic scenes, or prolonged external scrutiny.

Potential sources of psychological stress may include exposure to graphic wreckage or injury outcomes, repeated review of photographs, video, or technical reconstructions, interviews with distressed witnesses or family members, participation in coronial hearings or legal proceedings, and extended investigations involving significant organisational, regulatory, or public attention.

These exposures may contribute to cumulative stress, emotional fatigue, or vicarious trauma and should therefore be considered as part of normal investigation risk assessment and workload management.

Hazard Identification – Indicators of Elevated Risk

Investigators and those responsible for investigation oversight should remain alert to indicators that psychological risk may be increasing.

Such indicators may include reduced concentration, impaired analytical judgement, emotional withdrawal, irritability, reduced communication, avoidance of investigation tasks or evidence review, sleep disturbance, intrusive recollections, persistent fatigue, or stress-related physical symptoms.

The presence of such indicators does not imply weakness or unsuitability for investigation duties. Rather, they should be recognised as normal indicators that additional support, workload adjustment, or risk-mitigation measures may be appropriate.

Early recognition and intervention are important in reducing cumulative psychological risk and maintaining investigation effectiveness.

Risk Controls – Support and Debriefing

For investigations involving fatalities, serious injury, or elevated emotional load, appropriate support and debriefing processes should be considered as part of normal investigation management.

Operational debriefing following significant investigation phases — such as completion of site activities or finalisation of reports — may assist investigators in managing workload, operational stress, and exposure to distressing material.

Debriefing should focus primarily upon operational demands, workload management, exposure, and lessons identified rather than assessment of personal resilience or individual performance.

Investigators should also be encouraged to access peer support or external support services where appropriate. Use of support mechanisms is consistent with effective operational risk management and professional investigative practice.

Risk Controls – Managing Exposure and Task Allocation

Psychological risk may be reduced through appropriate management of exposure and workload allocation.

Exposure to graphic or distressing material should be limited to what is operationally necessary for effective investigation. Where practical, investigation tasks should be shared or rotated to reduce cumulative exposure, particularly during prolonged or complex investigations.

Consideration should also be given to avoiding repeated allocation of the same investigator to multiple traumatic events in close succession where alternative qualified personnel are available.

These controls should form part of normal investigation planning, supervision, and resource allocation processes.

Stepping Back from Investigation Duties

Investigators may request to pause, reduce, or withdraw from investigation duties at any stage where psychological load, cumulative stress, or personal circumstances may affect wellbeing, objectivity, judgement, or investigative performance.

Such requests should be managed confidentially, professionally, and without stigma or adverse consequence.

Where necessary, alternative or additional investigators should be assigned to ensure continuity of the investigation while appropriately managing operational risk and investigator wellbeing.

The ability to recognise and report reduced operational effectiveness should be viewed as a professional and responsible safety action consistent with mature Safety Management System principles.

Oversight and Leadership Responsibility

The Executive Manager, Operations (EM/O) and Regional Managers, Operations (RMO) are responsible for considering investigator wellbeing as part of investigation risk assessment and workload management.

This includes monitoring cumulative exposure across investigation activities, ensuring appropriate support and debriefing arrangements are available, maintaining realistic investigation timelines and workload expectations, and taking early action where elevated psychological risk is identified.

Management of investigator wellbeing forms part of maintaining a safe, effective, and sustainable investigation capability within Gliding Australia's Safety Management System.

EM/O and RMO Checklist – Investigator Wellbeing (SMS Context)

For investigations involving fatalities, serious injury, or elevated emotional load, confirm that:

☐ Psychological risk has been considered during investigation planning
☐ Investigator workload and cumulative exposure have been reviewed
☐ Appropriate operational debriefing is planned or completed
☐ Investigators understand they may step back without adverse consequence
☐ Investigation timelines and expectations remain realistic
☐ Additional or replacement investigator resources are available if required

Key Principle

Managing investigator wellbeing is an operational safety risk control that supports sound judgement, objective analysis, credible investigation outcomes, and the long-term sustainability of Gliding Australia's investigation capability.

A professional investigation system depends not only upon technical competence and procedural rigour, but also upon maintaining the psychological readiness and operational effectiveness of those conducting the investigation.

Annex M: Investigation Escalation Criteria

Purpose

Most sailplane accidents and incidents can be investigated effectively at club level using the procedures and guidance contained within this Manual. However, some occurrences require escalation to ensure appropriate independence, expertise, consistency, organisational oversight, or coordination with external authorities.

This Annex establishes the criteria for escalation of investigations within Gliding Australia's Safety Management System (SMS). Where any escalation criterion is met, the matter must be referred to the Executive Manager, Operations (EM/O), who will determine the appropriate level of investigation and allocate a suitably qualified investigator.

Escalation is an operational safety-management process intended to support investigation quality, independence, and organisational learning. It should not be interpreted as criticism of club capability, local management, or operational performance.

Mandatory Escalation Criteria

The following occurrences require escalation beyond routine club-level investigation.

Trigger	Reason for Escalation
Fatality	Coronial, legal, organisational, and public significance
Serious injury, including hospitalisation or life-threatening injury	High-consequence event with likely external scrutiny
Injury to third parties or bystanders	Increased public exposure and legal sensitivity
Significant aircraft damage or destruction	Technical complexity and broader fleet-learning potential
Media interest or likely public attention	Reputational considerations and need for consistent organisational management
Novel, unusual, or unexplained technical failure	Requirement for specialist expertise and wider risk assessment

Repeated similar incidents or recurring operational events	Potential indication of emerging systemic risk
Allegations of significant procedural non-compliance	Requirement for independence, procedural fairness, and objective review
Conflict of interest at club level	Protection of investigation integrity and credibility
Possible organisational conflict at Gliding Australia level	Requirement for additional governance controls, independent review consideration, document preservation, and external credibility
Incidents involving instructors, check pilots, senior officials, or operational managers	Governance, oversight, and perceived-independence considerations
Dispute regarding investigation findings or safety recommendations	Independent review and organisational consistency
Request by ATSB, CASA, Police, or Coroner	Statutory coordination and external oversight requirements

Escalation Process

Where any escalation criterion is identified, the Club Chief Flying Instructor (CFI), Safety Officer, or senior operational representative must notify the Executive Manager, Operations as soon as reasonably practicable.

Following notification, the Executive Manager, Operations will determine the appropriate level of investigation, which may include:

- a club-supported investigation;
- a Regional Manager, Operations-led investigation;
- or a nationally coordinated investigation involving additional specialist support.

The Executive Manager, Operations will also appoint a suitably qualified and appropriately independent investigator and establish investigation roles, responsibilities, reporting arrangements, and oversight requirements.

Clubs remain expected to cooperate fully with the investigation process by providing operational support, access to records, witness coordination, and local assistance unless otherwise directed.

Independence and Investigation Integrity

One of the principal purposes of escalation is to ensure investigative independence where actual or perceived conflicts of interest may exist.

This is particularly important where occurrences involve:

- instructors or operational supervisors;
- senior club personnel;
- longstanding local operational practices;
- disputes regarding safety findings or organisational response; or
- possible organisational conflict at Gliding Australia level.

Independent oversight assists in maintaining confidence in the fairness, objectivity, and credibility of the investigation process and supports consistency across the organisation.

Where the potential conflict may involve Gliding Australia's own systems, decisions, oversight, authorisation processes, or prior handling of safety information, Annex O provides additional guidance on managing organisational conflict at Gliding Australia level.

Escalation may also provide access to investigators with specialist technical knowledge, broader investigative experience, or additional Human Factors expertise where required.

Relationship to External Authorities

Some escalated investigations may involve coordination with external agencies including:

- the Australian Transport Safety Bureau (ATSB);
- the Civil Aviation Safety Authority (CASA);
- State or Territory Police;
- emergency services;
- or coronial authorities.

Where external agencies assume statutory responsibility for aspects of the investigation, Gliding Australia investigators and clubs must cooperate fully and comply with all lawful directions relating to site access, evidence preservation, records management, and reporting.

Escalation assists in ensuring that such coordination occurs consistently and that organisational communication and investigative management remain appropriately controlled.

Guiding Principles

The following principles apply to escalation decisions and investigation allocation:

- Escalate early where criteria are met. Early escalation may later be reduced if appropriate, whereas delayed escalation may compromise evidence preservation, investigation quality, or organisational oversight.
- Escalation supports investigation quality, consistency, and credibility through access to appropriate expertise, independence, and organisational coordination.
- Escalation is not disciplinary in nature and should not be interpreted as an adverse judgement regarding club operations or individual performance.
- Investigation allocation authority rests solely with the Executive Manager, Operations to ensure consistency and appropriate organisational oversight.

Key Principle

Escalation decisions are based upon operational risk, consequence, complexity, independence requirements, and organisational impact rather than perceived individual blame or error.

Appropriate escalation strengthens investigative integrity, supports organisational learning, and helps ensure that significant occurrences are examined with the level of oversight, expertise, and independence necessary to support effective safety outcomes across Australian gliding operations.

Annex N: Investigation Governance Framework

Purpose and Scope

This Annex summarises the governance framework under which Gliding Australia conducts sailplane accident and incident investigations. It provides clarity regarding authority, escalation, oversight, delegation, and interaction with external authorities.

Investigations are conducted for the purpose of improving aviation safety, supporting organisational learning, and preventing recurrence. They are not conducted for the purpose of assigning blame or determining liability.

This framework supports consistent, proportionate, and professionally managed investigations aligned with Gliding Australia's Safety Management System (SMS), Just Culture philosophy, and modern aviation safety investigation principles.

Authority and Oversight

The Executive Manager, Operations (EM/O) is the single point of authority for accident and incident investigation governance within Gliding Australia.

The EM/O is responsible for receiving notifications of accidents and incidents, determining whether escalation is required, establishing the appropriate level and structure of investigation, appointing and delegating investigators, and coordinating with external authorities where necessary.

All decisions regarding escalation, investigator appointment, investigation scope, and organisational oversight rest with the EM/O, unless an actual, perceived, or potential conflict of interest requires additional governance consideration.

This centralised authority ensures consistency of investigative standards, proportionality of response, independence where required, and appropriate organisational oversight across investigations.

Where the EM/O has actual, perceived, or potential prior involvement in a matter under review, or where the occurrence may raise questions about Gliding Australia's own systems, decisions, oversight, authorisation processes, safety management actions, or prior handling of safety information, the additional organisational conflict guidance in Annex O should be considered.

Role of Clubs

Clubs remain responsible for immediate response activities including site safety, initial fact gathering, preservation of evidence where practicable, implementation of

immediate safety actions, and cooperation with investigators and Gliding Australia operational personnel.

Clubs are also responsible for investigating occurrences that do not meet the escalation criteria established within this Manual. Such investigations must be conducted using the approved club-level or short-form investigation procedures and reported through Gliding Australia's approved online reporting system.

Where an occurrence is initially assessed as not meeting escalation criteria but later indicates increased risk, complexity, organisational significance, or external sensitivity, the matter must be referred to the EM/O without delay.

Clubs remain actively involved in investigations unless otherwise directed and are expected to provide operational assistance, records access, witness coordination, and local support where required.

Role of Level 3 Instructors

Level 3 Instructors may be formally delegated by the EM/O to conduct accident or incident investigations appropriate to their experience, qualifications, and the complexity of the occurrence.

When delegated, they may gather evidence, conduct interviews, analyse contributing factors, develop findings, and prepare investigation reports in accordance with the investigation framework established by Gliding Australia.

All delegated investigations remain subject to the authority, oversight, reporting standards, and escalation requirements established by the EM/O.

Level 3 Instructors do not independently determine escalation thresholds or appoint other investigators.

Role of Regional Managers, Operations

Regional Managers, Operations (RMOs) provide regional coordination and operational support as delegated by the EM/O.

This may include assisting investigators during investigations, facilitating access to records or personnel, coordinating local operational support, assisting with communication and logistics, and supporting implementation of investigation recommendations or corrective actions.

RMOs do not independently determine escalation thresholds or allocate investigators unless specifically authorised by the EM/O.

Escalation Framework

Mandatory escalation criteria are defined elsewhere within this Manual. Where any escalation criterion is met, the matter must be referred to the EM/O.

Escalation triggers may include fatalities or serious injuries, significant aircraft damage or destruction, injury to third parties, media interest or likely public attention, novel or unusual technical failures, repeated similar events suggesting systemic risk, conflicts of interest at club level, or requests from statutory authorities.

Escalation is an operational support mechanism intended to ensure appropriate independence, consistency, expertise, and organisational oversight. It is not disciplinary or punitive in nature and should not be interpreted as an adverse judgement regarding club operations or individual performance.

Further guidance regarding escalation thresholds and processes is provided in Annex M: *Investigation Escalation Criteria*.

Investigation Conduct and Reporting

Investigations are conducted using reporting formats proportionate to the nature, consequence, and complexity of the occurrence.

Depending upon the event, this may include comprehensive formal investigation reports, ATSB-style short investigation reports, or short-form reports for lower-risk operational events.

Investigators are expected to prepare all documentation on the basis that investigation material may later be subject to external review or compulsory disclosure. Reports should therefore maintain factual accuracy, objective analysis, disciplined reasoning, and clear separation between facts, analysis, conclusions, and recommendations.

All investigations conducted under Gliding Australia authority are expected to comply with the principles, procedures, and reporting standards established within this Manual.

Interaction with External Authorities

Gliding Australia cooperates fully with statutory and external authorities including the Australian Transport Safety Bureau (ATSB), the Civil Aviation Safety Authority (CASA), Police, emergency services, and coronial authorities.

Internal investigations do not replace or override statutory investigations conducted under external legal authority.

Where required, the EM/O manages organisational correspondence, coordination, and interaction with external authorities. Investigators may provide factual information, technical assistance, operational expertise, or evidence in accordance with applicable legal requirements.

Investigators and operational personnel should also recognise that internal confidentiality arrangements do not limit the authority of courts, coroners, or statutory agencies to compel production of investigation material or evidence.

Professional cooperation with external authorities forms an essential component of maintaining investigation credibility, organisational integrity, and effective safety outcomes.

Governance Principles

Accident and incident investigations conducted within Gliding Australia are guided by the following principles:

- **Centralised authority** — escalation decisions and investigator allocation are managed through the EM/O to ensure consistency and appropriate oversight.
- **Delegated investigative authority** — appropriately qualified personnel may be delegated investigative responsibilities consistent with their competence and experience.
- **Independence** — investigators should be appointed on the basis of competence, objectivity, and absence of significant conflicts of interest.
- **Proportionality** — investigation depth and complexity should reflect operational risk, consequence, and organisational significance.
- **Professional and defensible documentation** — investigation material should remain factual, objective, and capable of withstanding external scrutiny.
- **Just Culture** — investigations should focus on learning, systemic improvement, and effective risk management rather than attribution of blame.

These principles support a mature and credible investigative framework consistent with contemporary aviation safety-management practice.

Conclusion

This governance framework ensures that sailplane accident and incident investigations conducted by Gliding Australia are consistent, credible, proportionate, and capable of withstanding regulatory, coronial, and public scrutiny while remaining focused on improving aviation safety.

The framework also supports Gliding Australia's Just Culture philosophy by ensuring that investigations remain focused on learning, systemic improvement, and credible safety outcomes rather than attribution of blame.

Annex O: Suggested Approach to Managing Organisational Conflict of Interest in Serious and Fatal Occurrences

Purpose

This Annex provides guidance on how Gliding Australia may manage organisational conflict of interest where a serious or fatal occurrence may require examination of its own systems, decisions, oversight, training standards, authorisation processes, safety management actions, or prior handling of safety information.

It is intended to supplement the guidance in Chapter 3: Managing Conflict of Interest in Sailplane Accident Investigations, Annex M: Investigation Escalation Criteria, and Annex N: Investigation Governance Framework.

The purpose of this Annex is not to prescribe a fixed policy response for every circumstance. Rather, it offers a structured and proportionate approach that may assist Gliding Australia to manage organisational conflict transparently, fairly, and in a way that preserves safety learning.

The issue addressed in this Annex is the tension that may arise when Gliding Australia is both:

- a source of technical expertise for clubs, police, coroners, CASA, the ATSB where involved, and other authorities; and
- a body whose own systems, standards, decisions, oversight or prior actions may need to be examined.

This is an inherent governance challenge for Gliding Australia as a self-administering aviation organisation. In Australia, the ATSB may not investigate every serious or fatal gliding or recreational aviation occurrence, and CASA is not generally the accident investigator. State police and coroners may therefore require technical assistance from Gliding Australia. At the same time, Gliding Australia may need to conduct its own safety-focused review for the purpose of organisational learning and risk reduction.

The existence of this type of conflict is not, of itself, evidence of misconduct or failure. However, it should be recognised early, managed transparently, and documented appropriately so that safety learning is not compromised by real or perceived organisational self-protection.

Relationship with Other Annexes

This Annex should be read as a conflict-management overlay to the broader investigation escalation and governance framework.

Annex M: Investigation Escalation Criteria identifies the types of occurrences that may require escalation beyond routine club-level handling because of severity, complexity, independence requirements, external scrutiny, or systemic safety significance.

Annex N: Investigation Governance Framework describes the authority, oversight, delegation, reporting, and external coordination arrangements for investigations conducted under Gliding Australia authority.

This Annex applies where an occurrence may raise questions about Gliding Australia's own systems, standards, personnel, authorisation processes, safety management arrangements, oversight, or prior handling of safety information. It does not replace Annex M or Annex N. It adds further guidance on how to preserve credibility where Gliding Australia itself may be within the scope of review.

Organisational Conflict of Interest

An organisational conflict of interest may arise when Gliding Australia has a legitimate role in supporting, reviewing, or investigating an occurrence, but the occurrence may also raise questions about Gliding Australia's own systems, standards, decisions, oversight, or prior actions.

This differs from ordinary club-level conflict of interest. A club-level conflict may involve local relationships, instructors, committee members, club officers, or local operational decisions. Organisational conflict at Gliding Australia level may involve the national body itself, including its policies, delegated officers, training systems, safety management processes, surveillance activities, authorisation decisions, or previous responses to known safety concerns.

An organisational conflict of interest may be actual, perceived, or potential.

An actual organisational conflict exists where Gliding Australia's own actions, omissions, systems, policies, decisions, or personnel are directly relevant to the occurrence under review.

A perceived organisational conflict exists where members, external authorities, families, the public, or other interested parties could reasonably believe that Gliding Australia may be reviewing its own conduct or protecting its own reputation.

A potential organisational conflict exists where early facts suggest that Gliding Australia's systems or decisions may later become relevant, even if this is not yet established.

The important point is that conflict does not need to be improper to require management. In a self-administering system, perceived independence can be almost as important as actual independence. A review may be technically sound, but if reasonable observers believe that organisational interests influenced the scope, evidence, findings, or recommendations, confidence in the process may be damaged.

When an Organisational Conflict Assessment Should Be Considered

An organisational conflict assessment should be considered for any fatal accident, serious injury occurrence, significant aircraft destruction, or high-profile event where one or more of the following may be relevant:

- Gliding Australia training standards, syllabi, manuals, procedures, or guidance material;
- the issue, renewal, suspension, or continuation of pilot certificates, ratings, endorsements, instructor authorisations, coach privileges, tow pilot authorisations, or operational approvals;
- the actions or decisions of Gliding Australia officers, Regional Managers, Operations, Level 3 Instructors, authorised investigators, national panel members, or other delegated personnel;
- prior SOAR reports, safety concerns, complaints, close calls, audit findings, or occurrence trends relevant to the pilot, club, aircraft type, operation, or local practice;
- adequacy of club oversight, regional surveillance, instructor supervision, operational review, or previous safety intervention;
- national policy, manual, syllabus, or procedural ambiguity;
- potential failure to escalate, investigate, act upon, or document prior safety concerns;
- a dispute about previous Gliding Australia decisions or advice;
- significant media, coronial, regulatory, legal, or public interest;
- potential reputational sensitivity for Gliding Australia;
- any situation where a reasonable person could question whether Gliding Australia is capable of reviewing the occurrence entirely independently.

Where uncertainty exists, the safer course is to record that a potential organisational conflict has been considered and to apply proportionate conflict-management controls.

Guiding Principles

The following principles may assist in managing organisational conflict at Gliding Australia level.

1. Recognise and declare the issue early

Potential organisational conflict should be identified and recorded as early as practicable. Recording the issue should not be treated as an admission of fault. It is a governance control intended to protect the credibility of the review and the integrity of the safety management system.

2. Preserve evidence before analysis

Relevant documents, records, data, and communications should be preserved before conclusions are formed. Preservation should occur broadly and promptly, particularly where training, authorisation, oversight, audit, prior reporting, or organisational decision-making may be relevant.

3. Keep safety learning separate from organisational self-protection

The safety review should remain focused on understanding what happened, why it happened, what system defences failed, and how recurrence can be prevented. It should not be shaped by concern for organisational embarrassment, reputational exposure, legal sensitivity, or discomfort with potential findings.

4. Keep safety review separate from disciplinary or authorisation processes

Safety investigation and accountability processes should remain distinct. The safety review should identify safety issues, contributing factors, organisational influences, and recommendations. Any disciplinary, authorisation, or standards action should be managed through the appropriate governance process and should not distort the safety analysis.

5. Keep safety analysis separate from legal defence

Legal advice may be necessary after serious or fatal occurrences. It may assist with process, disclosure obligations, procedural fairness, privacy, coronial engagement, communications, and organisational rights. However, legal advice should not determine safety findings, suppress relevant safety issues, or prevent the identification of evidence-based recommendations.

6. Use independent review where appropriate

Where Gliding Australia's own systems, officers, policies, or prior decisions may be relevant, some form of independent review should be considered. The level of independent involvement should be proportionate to the seriousness of the occurrence, the nature of the potential conflict, and the likely degree of external scrutiny.

7. Cooperate with external authorities

Internal Gliding Australia reviews do not replace statutory investigations or coronial processes. Gliding Australia personnel should cooperate professionally with police, coroners, CASA, the ATSB where involved, emergency services, and other lawful authorities.

8. Document the conflict-management process

The investigation record should identify what potential conflicts were considered, what controls were applied, who made the relevant decisions, and how independence, fairness, and objectivity were maintained.

Initial Governance Response

Where a serious or fatal occurrence may involve organisational conflict at Gliding Australia level, an organisational conflict assessment should be initiated as soon as practicable.

The assessment should consider:

- whether Gliding Australia systems, standards, personnel, or decisions may be relevant;
- whether any Gliding Australia officer or investigator has prior involvement that could affect independence or perceived independence;
- whether an independent investigator, independent reviewer, external adviser, or review panel should be appointed;
- whether CASA should be notified that the occurrence may raise organisational safety assurance issues;
- whether document preservation instructions should be issued;
- whether written terms of reference are required;
- whether communication with the club, family, police, coroner, CASA, ATSB, media, or members requires central coordination;
- whether immediate safety action is required before the investigation is complete.

The assessment should be recorded, even if the conclusion is that ordinary escalation controls are sufficient.

Who Should Conduct or Endorse the Assessment

In ordinary circumstances, the Executive Manager, Operations may be the appropriate person to initiate and record the organisational conflict assessment, given that role's responsibility for investigation governance.

Where the Executive Manager, Operations is not personally conflicted, the EM/O may conduct and record the initial assessment. If the assessment concludes that ordinary escalation controls are sufficient, the reasons should be documented.

Where the EM/O has actual, perceived, or potential prior involvement in the matter under review, the assessment should be referred to the Chief Executive Officer, Board Safety Committee, or another appropriately independent governance authority within Gliding Australia.

Where the occurrence involves potential national-level organisational exposure, it may be appropriate for the completed conflict assessment to be endorsed by the CEO, Board Safety Committee, or other designated senior governance authority.

The purpose of endorsement is not to influence the safety review. It is to confirm that conflict-management controls have been considered, documented, and applied at an appropriate level.

Suggested Conflict-Management Log

For any occurrence requiring organisational conflict assessment, a simple conflict-management log should be considered.

The log may record:

- the date the potential conflict was first identified;
- the person who identified or reported the potential conflict;
- the nature of the actual, perceived, or potential conflict;
- whether the conflict is club-level, regional-level, Gliding Australia-level, or mixed;
- personnel excluded from particular roles because of prior involvement or perceived conflict;
- the investigator, reviewer, or review panel appointed;
- the reasons for selecting the investigator or reviewer;
- document preservation actions taken;
- CASA, ATSB, police, coronial, or other external notifications considered or made;

- legal advice sought, if any, and the purpose for which it was sought;
- communication controls applied;
- interim safety actions considered or implemented;
- review points and sign-off decisions.

The conflict-management log should be factual, concise, and maintained as part of the investigation governance record. It should be prepared on the assumption that it may later be reviewed by CASA, a coroner, a court, or another external authority.

Document Preservation

For serious or fatal occurrences involving possible organisational conflict at Gliding Australia level, a document preservation instruction should be considered as soon as practicable.

The preservation instruction should apply to relevant material held by Gliding Australia, regional officers, clubs, instructors, investigators, and other personnel where applicable.

Material to be preserved may include:

- SOAR reports and related records;
- training records, progress notes, check flight records, assessment records, and logbook information;
- pilot certificates, ratings, endorsements, authorisations, approvals, renewals, suspensions, or restrictions;
- instructor, coach, examiner, tow pilot, or operational approval records;
- aircraft maintenance, airworthiness, registration, defect, and operational records;
- relevant emails, text messages, electronic messages, file notes, meeting notes, and internal correspondence;
- prior occurrence reports, complaints, safety concerns, audit findings, surveillance records, or operational reviews;
- club committee minutes, safety meeting minutes, operational meeting records, and relevant local procedures;
- Gliding Australia manuals, procedures, guidance material, syllabus documents, and policy documents in force at the relevant time;
- draft reports, investigator notes, photographs, diagrams, flight traces, audio recordings, witness summaries, and analysis material.

Document preservation does not mean that all preserved material will necessarily be relevant or disclosed. It ensures that potentially relevant material is not lost, altered, deleted, or selectively retained before relevance can be assessed.

Privacy and Data Handling

Investigation material may contain sensitive personal, medical, operational, disciplinary, or organisational information. Where document preservation, independent review, external notification, or disclosure is required, personal and sensitive information should be handled in accordance with applicable privacy obligations, procedural fairness requirements, and organisational policy.

Privacy should not be used as a reason to conceal relevant safety information from lawful authorities or properly appointed investigators. However, access to sensitive information should be limited to those with a legitimate safety, governance, legal, or statutory need to know.

Terms of Reference

Where organisational conflict at Gliding Australia level may exist, written terms of reference should be considered for the investigation or safety review.

The terms of reference may define:

- the purpose of the investigation or review;
- the scope of factual, technical, operational, human factors, training, organisational, and governance issues to be considered;
- the authority under which the investigation is being conducted;
- the investigator, investigation team, independent reviewer, or review panel appointed;
- any known or potential conflicts of interest and the controls applied;
- the relationship between the Gliding Australia review and any police, coronial, CASA, ATSB, insurance, or legal process;
- document preservation and records management requirements;
- communication and reporting arrangements;
- arrangements for review of draft findings and recommendations;
- responsibility for tracking safety actions arising from the review.

The terms of reference should be sufficiently broad to allow uncomfortable organisational issues to be examined. They should not be framed so narrowly that relevant systemic issues are excluded.

Independent Review Arrangements

Independent review may assist where ordinary internal oversight is insufficient to maintain confidence in the objectivity or credibility of the investigation.

Depending on the circumstances, independent review may involve:

- an investigator from outside the affected club and region;
- an independent senior gliding investigator not involved in the relevant operational decisions;
- an external aviation safety investigator;
- a human factors specialist;
- an airworthiness or technical specialist;
- a governance or safety management specialist;
- an independent chair for a review panel;
- an observer appointed to review process integrity.

Independent review should be strongly considered where:

- a fatal accident may involve Gliding Australia training standards, authorisation processes, instructor standards, operational oversight, safety management processes, or prior safety actions;
- a serious injury or high-consequence occurrence may involve Gliding Australia systems, decisions, or delegated personnel;
- the EM/O, an RMO, Level 3 Instructor, authorised investigator, national officer, or other delegated Gliding Australia personnel had prior involvement in a decision, authorisation, review, safety action, or oversight activity that may be examined;
- prior SOAR reports, safety concerns, complaints, audit findings, or occurrence trends relating to the same pilot, club, operation, aircraft type, instructor, procedure, or hazard may be relevant;
- the occurrence may raise questions about the adequacy of a national syllabus, manual, operational procedure, safety bulletin, training pathway, or authorisation standard;
- there is significant coronial, CASA, police, media, legal, or public interest;
- there is a reasonable likelihood that Gliding Australia's independence may be questioned by members, families, external authorities, or the wider aviation community.

The independent reviewer or panel may be asked to:

- review the scope of the investigation;
- review evidence collection and preservation;
- participate in interviews where appropriate;
- examine whether organisational factors have been adequately considered;
- review draft findings and recommendations;
- advise whether the investigation has remained evidence-based, balanced, and procedurally fair;
- confirm whether conflict-management controls have been adequate.

The appointment of an independent reviewer does not remove Gliding Australia's responsibility for safety learning or organisational improvement. It strengthens the credibility of the process by ensuring that the organisation is not seen to be reviewing its own systems without external challenge.

Role of the Executive Manager, Operations

The Executive Manager, Operations remains responsible for investigation governance under Gliding Australia's Safety Management System. However, where organisational conflict may exist at Gliding Australia level, the EM/O should consider whether additional safeguards are required.

These may include:

- recording the organisational conflict assessment;
- initiating document preservation;
- establishing written terms of reference;
- appointing an independent investigator, reviewer, or review panel;
- ensuring that any Gliding Australia personnel with direct prior involvement are not placed in roles that could compromise perceived independence;
- coordinating with CASA, police, coronial authorities, ATSB where involved, and other external agencies;
- ensuring that immediate safety actions are considered;
- ensuring that findings and recommendations are tracked to completion;
- ensuring that safety analysis is not subordinated to reputational, legal, political, or organisational concerns.

Where the EM/O has direct prior involvement in matters under review, the conflict should be declared and alternative governance arrangements should be considered. This may include referral to the Chief Executive Officer, Board Safety Committee, an independent review panel, or another appropriately independent authority within Gliding Australia's governance structure.

Role of Legal Advice

Legal advice may be necessary after serious or fatal occurrences. It may assist Gliding Australia to understand legal obligations, coronial processes, disclosure requirements, procedural fairness, privacy, communications, and organisational rights.

However, legal advice should not determine safety findings.

- A useful distinction is:

- legal advisers may advise on process, privilege, disclosure, procedural fairness, and lawful communication;
- investigators and safety reviewers should control evidence analysis, safety findings, contributing factor assessment, and safety recommendations;
- governance leaders should ensure that legal considerations do not prevent safety issues from being properly identified, documented, and addressed.

Legal sensitivity should not be allowed to suppress safety learning. Where facts reveal a safety issue, the organisation should address it openly and professionally.

Consideration of CASA Notification

Where a serious or fatal occurrence may raise questions about Gliding Australia's Part 149 systems, training standards, authorisation processes, safety management effectiveness, or organisational oversight, notification to CASA should be considered in accordance with applicable reporting obligations and organisational procedures.

Such notification does not imply that CASA is conducting the accident investigation. It recognises CASA's role as the regulator responsible for oversight of Gliding Australia as an ASAO.

Notification may be appropriate where the occurrence may involve:

- national training standards;
- authorisation or endorsement processes;
- instructor or operational supervision;
- systemic reporting or audit issues;
- repeated similar occurrences;
- prior unresolved safety concerns;
- significant governance or procedural deficiencies;
- any issue that may affect Gliding Australia's ability to discharge its Part 149 responsibilities.

The timing, content, and form of CASA notification should be managed by the EM/O or other authorised senior officer, with appropriate regard to accuracy, procedural fairness, and external investigation processes.

Communication and Reputational Sensitivity

Serious and fatal occurrences may create strong pressure for early explanation, reassurance, or reputation protection. Communication should therefore be carefully managed.

Public, member, media, or family communications should:

- be factual and restrained;
- avoid speculation;
- avoid premature conclusions;
- acknowledge cooperation with external authorities;
- avoid implying blame or exoneration before evidence is assessed;
- preserve privacy and dignity;
- avoid statements that could later conflict with investigation findings;
- recognise the seriousness of the occurrence and the organisation's commitment to safety learning.

Communication should be guided by compassion, accuracy, restraint, and integrity.

As a general guide, communication should:

- acknowledge the occurrence respectfully;
- express concern for those affected;
- state that the matter is being handled through established safety and governance processes;
- confirm cooperation with police, coronial authorities, CASA, ATSB where involved, and other relevant agencies;
- distinguish confirmed facts from matters still under investigation;
- advise that safety action will be taken where evidence indicates it is required.

Communication should avoid:

- speculation about cause;
- implication of blame or exoneration;
- minimising the seriousness of the occurrence;
- suggesting that systemic issues have already been ruled out before the review is complete;
- statements primarily designed to protect reputation;
- unauthorised disclosure of sensitive personal information;
- criticism of external authorities, witnesses, family members, clubs, pilots, instructors, or investigators;
- public statements that may later conflict with evidence-based findings.

Reputation is best protected by integrity, not defensiveness. Attempts to minimise, obscure, delay, or selectively present relevant safety information may damage organisational trust and undermine the safety purpose of the investigation.

Safety Action During an Ongoing Investigation

Where an investigation identifies an immediate or plausible safety risk, Gliding Australia may need to consider safety action before the final report is complete.

Interim safety action may include:

- temporary operational limitations;
- safety alerts or bulletins;
- targeted instructor guidance;
- temporary suspension or review of a procedure;
- preservation or review of training records;
- additional inspection or technical checks;
- interim restrictions on particular operations;
- review of authorisations, training pathways, or club procedures;
- targeted communication to affected clubs or operational personnel.

Interim safety action should be evidence-informed and proportionate. It should not be framed as blame or final judgement. The purpose is risk control while the investigation continues.

Reporting and Final Review

Where organisational conflict controls have been applied, the final report or internal safety review should consider including a brief governance statement explaining:

- that potential organisational conflict was considered;
- what independence or review controls were applied;
- whether external authorities were involved or notified;
- how documents and evidence were preserved;
- how factual analysis, safety findings, and recommendations were reviewed;
- how implementation of recommendations will be tracked.

The report should clearly distinguish between:

- factual information;
- analysis;
- findings;
- contributing factors;
- organisational or systemic issues;
- safety recommendations;
- immediate safety actions already taken;
- matters outside the scope of the review.

Where findings relate to Gliding Australia systems or decisions, they should be stated plainly, fairly, and in evidence-based language. Organisational self-criticism, when justified by evidence, is not a failure of governance. It is evidence that the safety management system is functioning honestly.

Relationship with Just Culture

Managing organisational conflict of interest is part of Just Culture.

A Just Culture requires fairness to individuals, but it also requires honesty about organisational influences. It is inconsistent with Just Culture to examine individual behaviour in detail while avoiding scrutiny of training systems, supervision, authorisation processes, policy design, reporting culture, or organisational decision-making.

Just Culture does not mean protecting the organisation from embarrassment. It means creating conditions in which people can report, cooperate, and learn because they trust that the process is fair, evidence-based, and not driven by blame or self-protection.

Effective management of organisational conflict strengthens Just Culture by demonstrating that accountability applies not only to pilots and instructors, but also to systems, processes, leadership, and governance.

Illustrative Scenarios

Scenario 1: Fatal accident involving prior safety reports

A pilot is fatally injured during a cross-country flight. After the accident, it emerges that previous SOAR reports and informal club concerns had identified repeated low-level decision-making issues. The local club had counselled the pilot, but no formal restrictions or structured review were applied.

The organisational conflict issue is that the review may need to examine not only the pilot's decisions and club supervision, but also whether prior reports were appropriately reviewed, escalated, trended, and acted upon through Gliding Australia's safety management system.

In this situation, an organisational conflict assessment should be considered. Relevant SOAR records, club correspondence, safety meeting notes, previous advice, and any regional or national review records should be preserved. Independent review should be considered if Gliding Australia's prior handling of those reports may be examined.

Scenario 2: Training accident involving a senior instructor

A serious training accident occurs during advanced instruction. The instructor involved is a Level 3 Instructor who also performs regional operational duties and has previously contributed to relevant training guidance material.

The organisational conflict issue is that the occurrence may raise questions about instructor judgement, training standards, oversight, syllabus clarity, and prior authorisation or supervision of the instructor.

In this situation, the instructor and any directly involved regional personnel should not lead the investigation. The EM/O should assess whether independent review is appropriate. The terms of reference should include training design, instructor supervision, authorisation processes, and any relevant prior concerns.

Scenario 3: Coronial scrutiny of a national training pathway

A fatal accident occurs during an operation for which the pilot had recently received an authorisation. During the coronial process, questions arise about whether the national training pathway adequately addressed the relevant hazards.

The organisational conflict issue is that Gliding Australia may be required to provide technical assistance to the coroner while also reviewing whether its own syllabus, standards, guidance material, or authorisation criteria were adequate.

In this situation, an independent review panel should be considered. The panel may include suitable operational, instructional, human factors, and governance expertise. The terms of reference should explicitly include the adequacy of the relevant training pathway and the process by which the pilot was authorised.

Scenario 4: Serious occurrence involving disputed investigation findings

A serious incident is investigated at club level. The club concludes that the occurrence was primarily pilot error. Several members dispute the finding and allege that local procedures, supervision, and prior warnings were ignored.

The organisational conflict issue is that, if Gliding Australia previously reviewed or accepted the club's procedures, or if regional personnel were aware of unresolved concerns, the matter may extend beyond ordinary club-level conflict.

In this situation, escalation and independent review should be considered. Relevant prior reports, meeting records, correspondence, and operational guidance should be preserved. The review should examine whether the original investigation gave adequate attention to organisational and systemic factors.

Suggested Organisational Conflict Assessment Aid

The following questions may assist in determining whether organisational conflict controls are appropriate.

Initial screening

- Has there been a fatality, serious injury, significant aircraft damage, or likely external scrutiny?
- Are instructors, coaches, check pilots, RMOs, Level 3 Instructors, authorised investigators, or senior officials involved?
- Are there prior SOAR reports, safety concerns, complaints, audits, or trends relevant to the same issue?
- Could Gliding Australia training standards, authorisations, procedures, safety management, oversight, or previous intervention be examined?
- Is there a dispute about investigation findings, recommendations, or organisational response?
- Is there any other reason why Gliding Australia's independence may reasonably be questioned?

Nature of the potential conflict

- Is the conflict club-level, regional-level, Gliding Australia-level, or mixed?
- Is it actual, perceived, or potential?
- Who may have prior involvement in relevant decisions, authorisations, training, supervision, investigation, safety reporting, or governance action?

Systems potentially within scope

- Training syllabus or standards;
- pilot certificates, ratings, endorsements, or authorisations;
- instructor, coach, check pilot, or tow pilot authorisation;
- operational manuals, procedures, or guidance material;
- previous SOAR reports or trend analysis;
- previous audit, surveillance, or review activity;
- club or regional oversight;
- previous safety intervention or lack of intervention;
- national policy or governance decisions.

Controls to consider

- Recusal of conflicted personnel;
- appointment of an independent investigator;
- appointment of an independent reviewer;
- appointment of an independent review panel;

- engagement of an external subject-matter expert;
- written terms of reference;
- document preservation instruction;
- CASA notification;
- confirmation of ATSB involvement or non-involvement;
- police or coroner coordination;
- legal advice for process and procedural fairness;
- communication controls;
- interim safety action.

Assessment outcome

The assessment should identify whether:

- ordinary club-level investigation appears sufficient;
- escalated investigation is appropriate;
- organisational conflict controls should be applied;
- independent review should be used;
- an independent review panel should be considered.

The reasons for the assessment should be recorded.

Key Principle

Organisational conflict at Gliding Australia level is not a reason for Gliding Australia to withdraw from safety learning. Nor is it a reason to conceal, narrow, or defensively manage a review.

It is a reason to apply stronger governance.

Where Gliding Australia's own systems, decisions, oversight, personnel, or prior actions may be relevant, the organisation may still need to provide technical expertise, support external authorities, and conduct safety analysis. However, it should do so under declared conflict controls, preserved records, independent review where appropriate, clear terms of reference, disciplined communication, and cooperation with lawful external processes.

In a self-administering aviation system, trust depends not on the absence of conflict, but on the maturity, transparency, and integrity with which conflict is managed.

Annex P: Behavioural Analysis and Just Culture Decision Aid

Purpose

This annex provides investigators with a practical framework for assessing human behaviour during accident and incident investigations. It is intended to support consistent, fair, and system-focused analysis in accordance with the principles of Just Culture.

The decision aid is not intended to remove professional judgement or replace detailed analysis. Rather, it provides a structured approach to understanding unsafe behaviour, identifying organisational influences, and distinguishing between ordinary human error, unsafe adaptation, and genuinely reckless conduct.

Investigators should apply this framework alongside:

- Chapter 2: *Just Culture and the No-Blame Philosophy*;
- Chapter 9: *Human and Organisational Factors*;
- Chapter 10: *Behavioural Analysis and Just Culture Decision-Making*; and
- Annex K: *Human Factors in Sailplane Accident and Incident Investigation*.

Core Principles

When applying behavioural analysis, investigators should remember the following principles:

- The purpose of safety investigation is prevention, not punishment.
- Human error is a normal feature of complex operational environments.
- Unsafe behaviour often reflects interaction between people, systems, procedures, and organisational culture.
- Serious outcomes do not automatically imply recklessness.
- Behaviour must be assessed according to the circumstances and information available at the time — not solely by the eventual outcome.
- Operational context and organisational influences are critical to understanding behaviour fairly.

Behavioural Analysis Process

Investigators should work systematically through the following questions.

Step 1 — Identify the Unsafe Act or Decision

Clearly identify:

- the relevant behaviour;
- the unsafe act;
- the omission;
- the decision; or
- the procedural deviation.

Examples may include:

- omitted checklist item;
- continuation into deteriorating weather;
- low-level manoeuvring;
- incomplete rigging inspection;
- procedural shortcut;
- non-standard launch operation.

Investigators should define the behaviour factually and avoid emotionally loaded language.

Prefer:

> "The pilot continued the flight below the forecast weather minima."

Avoid:

> "The pilot recklessly ignored the weather."

Step 2 — Determine Whether the Behaviour Was Intended or Unintended

Investigators should determine whether:

- the unsafe outcome resulted from unintended error; or
- the individual consciously chose to depart from procedures or accepted practice.

Important distinction:

- Errors are unintended.
- Violations involve intentional deviation.
- Recklessness involves conscious disregard of substantial risk.

This distinction is fundamental to fair analysis.

Step 3 — Examine Operational Context

Investigators should assess the operational environment existing at the time.

Important considerations may include:

- workload;
- fatigue;
- distraction;
- interruption;
- operational tempo;
- time pressure;
- weather conditions;
- task complexity;
- supervision;
- staffing levels;
- training adequacy;
- equipment limitations;
- communication effectiveness.

Key question:

> "Why did the behaviour make sense to the individual at the time?"

Step 4 — Assess Organisational and Cultural Influences

Investigators should determine whether broader organisational influences contributed to the behaviour.

Consider:

- Were procedures practical and workable?
- Had similar deviations become normalised?
- Were operational pressures present?
- Had previous concerns been raised?
- Was unsafe behaviour tacitly accepted?
- Were supervisors aware of procedural shortcuts?
- Was there pressure to continue operations?
- Did the club culture discourage challenge or reporting?

Investigators should remain alert to evidence of:

- normalised deviance;
- weak supervision;
- inconsistent standards;
- poor safety culture;
- inadequate mentoring;
- ineffective training.

Step 5 — Apply the Substitution Test

Investigators should consider:

> "Would another reasonably competent individual, with similar training and experience, operating in the same circumstances, have been likely to act similarly?"

If the answer is potentially yes, the occurrence is more likely to reflect:

- system weaknesses;
- procedural design issues;
- training deficiencies;
- organisational influences; or
- operational pressures.

If the behaviour clearly falls outside what a reasonably competent individual would likely do, more serious accountability concerns may exist.

The substitution test is an analytical aid only and must not replace professional judgement.

Behaviour Classification Guide

Human Error

Slips

An execution failure during a familiar task where the intended action was correct, but the wrong action was performed unintentionally.

Typical characteristics:

- distraction;
- interruption;
- high workload;
- fatigue;
- repetitive activity.

Examples:

- selecting the wrong control;
- omitting a checklist item unintentionally;
- incorrect radio frequency selection.

Lapses

A memory-related failure involving omission or loss of task progression.

Typical characteristics:

- interruption;
- stress;
- task saturation;
- fatigue.

Examples:

- forgetting to reconnect controls after interruption;
- omitted radio calls;
- incomplete pre-flight checks.

Mistakes

The intended action itself was inappropriate for the circumstances.

Typical characteristics:

- flawed judgement;
- incorrect assumptions;
- inadequate knowledge;
- poor situational awareness.

Examples:

- unsuitable landing selection;
- continuation into unsafe weather;
- incorrect recovery technique.

Violations

Intentional departures from procedures or accepted practice.

Investigators must determine:

- why the deviation occurred;
- whether it was culturally accepted;
- whether operational pressures contributed.

<u>Situational Violations</u>

Departures driven by operational constraints or practical difficulty.

Examples:

- procedural shortcuts under high workload;
- bypassing cumbersome launch procedures.

Exceptional Violations

Isolated departures occurring during abnormal or emergency situations.

Examples:

- deviation from procedures during collision avoidance;
- abbreviated emergency response actions.

Routine Violations

Unsafe practices that have become normalised.

Examples:

- routinely abbreviated checks;
- accepted non-standard procedures;
- habitual low-level manoeuvring.

Routine violations often indicate deeper cultural or supervisory issues.

Unsafe Optimisation

Intentional compromise of safety in pursuit of another objective.

Organisational Optimisation

Safety compromised to improve operational efficiency or meet perceived expectations.

Examples:

- rushing launches;
- continuing operations despite deteriorating conditions;
- procedural shortcuts to maintain schedules.

Personal Optimisation

Safety compromised for personal convenience, enjoyment, or reduced effort.

Examples:

- shortcutting inspections;
- thrill-seeking behaviour;

- complacency arising from familiarity.

Reckless Conduct

Conscious disregard of substantial and unjustifiable safety risk.

Indicators may include:

- deliberate disregard of critical procedures;
- repeated unsafe conduct despite intervention;
- knowingly operating unairworthy equipment;
- wilful disregard of operational limitations.

Recklessness should not be inferred solely from severe outcomes.

Safety Management Response Guide

Behavioural classification should guide proportionate safety responses.

Ordinary Human Error

Appropriate responses may include:

- debriefing;
- coaching;
- mentoring;
- training improvement;
- checklist redesign;
- supervision enhancement;
- procedural review.

Disciplinary action is generally inappropriate.

Unsafe Adaptation or Routine Violations

Appropriate responses may include:

- procedural review;
- operational redesign;
- increased supervision;
- cultural intervention;
- leadership engagement;
- targeted safety communication;
- workload management improvements.

Focus should remain primarily on organisational learning and system correction.

Reckless Conduct

More serious management action may be required where behaviour involves:

- conscious disregard of major risk;
- repeated unsafe behaviour despite intervention;
- deliberate non-compliance;
- intentional unsafe conduct.

Possible responses may include:

- operational restriction;
- formal review;
- escalation to Gliding Australia management;
- CASA notification;
- disciplinary action where appropriate.

Investigator Cautions

Investigators should avoid:

- hindsight bias;
- emotionally loaded language;
- simplistic “pilot error” conclusions;
- assuming bad intent without evidence;
- focusing solely on frontline operators while ignoring systemic contributors.

Investigators should instead:

- examine operational realities;
- consider human performance limitations;
- assess organisational influences;
- support openness and reporting;
- reinforce Just Culture principles.

Positive Safety Behaviour

Investigators and operational leaders should also recognise positive safety behaviour.

Examples include:

- discontinuing operations due to deteriorating conditions;
- identifying and correcting rigging defects;
- intervening to prevent degraded or high-risk operations;
- proactive hazard reporting;

- constructive challenge of unsafe practices.

Recognition of positive behaviour strengthens safety culture and supports ongoing engagement with safety systems.

Final Consideration

The objective of behavioural analysis is not to determine who to blame, but to understand how operational and organisational conditions shaped the behaviours involved and how future occurrences can be prevented.

Fair, balanced, and system-focused behavioural analysis strengthens:

- safety culture;
- reporting openness;
- organisational learning; and
- long-term operational safety within gliding operations.