Incident Investigation Specification

Health, Safety and Environment

TABLE OF CONTENTS

TABLES

FIGURES

1 Purpose and Scope

The purpose of this document is to provide a specification for investigating incidents, in order to determine ergonomic and multifactorial factors whereby it is easy to understand the incident sufficiently to apply actions and controls to either prevent recurrence or if the incident does happen again, to eliminate or minimise damage or harm to personnel.

This Incident Investigation Specification provides the mandatory requirements to support implementation and conformance with Roy Hill Integrated Management Standard 12 – Incident, Reporting and Investigation.

This specification applies to all persons entering Roy Hill operations, other workplaces or any area where Roy Hill has accountability.

2 Specification Requirements

2.1 Investigation Flowchart

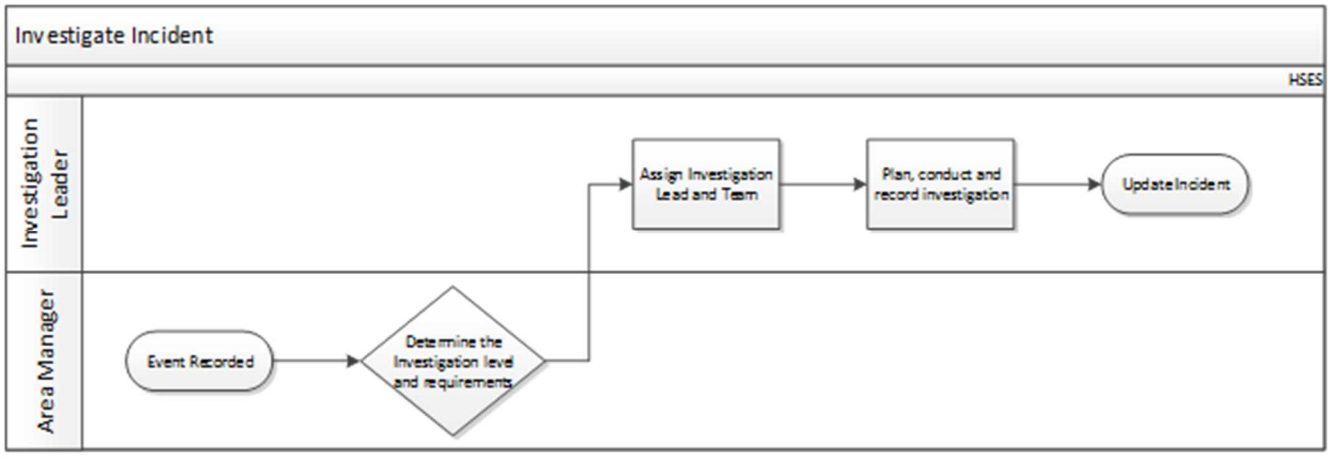

Figure 1 - Investigation Flowchart

2.2 General

- All Roy Hill controlled activities/contracting groups shall have a specification for the management of incidents aligned to the Roy Hill incident management process.
- An incident shall be reported to the area supervisor immediately and relevant personnel on the same work day on which it occurs or is discovered, and initial details recorded in Roy Hill's incident management system (InControl). Depending on the actual consequence and maximum foreseeable loss of the impact(s), the relevant internal and external parties shall be notified in accordance with the required timeframes and/or legislative requirements.
- The Manager responsible for the work area and the Line Manager of a person involved in the incident shall ensure an incident investigation is completed. Personnel involved in completing incident investigations shall be trained in the appropriate process / methodology used.
- Each incident shall have a risk rating, actual severity and maximum foreseeable loss for each impact. If there are multiple impacts then each impact will need to be evaluated independently e.g. safety impact risk rating, environmental risk rating, etc. and the most significant impact forms the main rating for the incident. The Roy Hill risk matrix shall be used to ensure consistency of determining the rating.
- Any incident with an impact type that has an actual severity of major must be reported to the Chief Operating Officer of Roy Hill, the General/ Registered Manager of the area and copied to the Roy Hill GM HSE as soon as practicable.

- The Roy Hill GM HSE is responsible for ensuring lessons learned from significant or high potential incidents are:
  - reviewed for completeness, accuracy and relevance;
  - published;
  - disseminated to relevant stakeholders; and
  - reviewed for trends.

2.3 Immediate Incident Scene Management

The scene of a significant or high potential incident shall not be disturbed and shall be secured, unless it is for the safety of personnel or to prevent further loss or damage. A Supervisor and/or a HSE professional shall inspect the scene to gather evidence prior to any further disturbance. In the event of a significant incident, work shall cease and shall not resume until preventive actions have been taken and authorisation given by the General Manager (GM) or Registered Manager (RM).

2.3.1 Initial incident response

Following the occurrence of an incident or near miss, action shall be taken to control the impact of the situation and prevent immediate recurrence as outlined in the Incident, Non-Conformance, and Action Management Procedure.

2.3.2 Scene preservation

Once immediate control of the significant incident scene has been established, the incident scene shall be preserved to allow for incident investigation by internal Roy Hill personnel, key stakeholders and external parties as required.

In the case of incidents classified with an actual severity of slight or minor and with a maximum foreseeable loss (MFL) of less than 60, where long term preservation of the scene is not practicable, every effort shall be made to collect physical evidence from the scene prior to operational activities resuming.

In relation to an incident on a mine causing death or serious injury under the Mines Safety and Inspection Act (1994), the incident scene shall not be disturbed unless:

- It is required with a view to saving life or preventing injury to any person, or
- The permission of the Mines Inspector, or in the case of a fatal accident, the permission of a Coroner and the Western Australian Police has been provided.

Should the Coroner or deputy Coroner or an inspector require a survey to be carried out or a location plan to be prepared of the scene of any fatal accident at a mine, the survey or location plan must be performed by the holder of an authorised mine surveyors certificate.

2.4 Define Investigation Level

2.4.1 Incident classification

All incidents, including near miss events shall be classified using the Roy Hill 5x5 Risk Assessment Matrix according to:

- Actual severity; and
- Maximum foreseeable loss (MFL).

This initial evaluation of the incident's classification shall determine the level and methodology used for the investigation, as well as the requirements for notification of the incident both internal, and externally.

Utilising the risk matrix an incident with either an initial actual severity of moderate or greater; a potential severity of 60 or greater; must complete a formal investigation.

Near miss events must be recorded and investigated in line with Roy Hill Incident Management Process.

The requirements for incident reporting and notification are outlined in the Incident, Non-Conformance, and Action Management Procedure and HSE Incident Notification and Investigation matrix.

2.4.2 Investigation level and methodology

Regardless of the classification of the incident, all incidents shall undergo some degree of investigation, the level of which is based upon the actual severity and MFL of the incident.

Incidents classified with an actual severity of, slight or minor shall be investigated using an the 5 Why's investigation methodology.

All incidents with an actual severity of moderate or greater shall be investigated using Essential Factors™. These incident investigations should be completed within 1 month of the incident occurring.

High Potential Incidents (HiPo's); "an incident with a maximum foreseeable loss risk ranking (MFL) is 60 or greater" shall be investigated; however, Chief Operating Officer and General Managers may apply discretion on the use of Essential Factors™ where there is little perceived value in carrying out an Essential Factor™ analysis.

For Roy Hill, it is preferable to use the Essential Factors™ methodology when investigating incidents with an actual severity of moderate or greater. For incidents that rate less-than-moderate a "5-Whys" analysis is acceptable. (If the Lead Investigator wishes to use Essential Factors methodology for incidents that rate less than moderate this is also acceptable).

Any injury with an actual severity equal or greater than a Medical Treated Case (MTC) requires an Essential Factors investigation.

2.5 8 Steps of Effective Investigation

Figure 2 illustrates the 8Steps™ journey as developed by InterSafe using Essential Factors™ methodology. The 8Steps™ process is broken into two parts;

1. Part A – Understanding Incidents (steps 1 – 4)
2. Part B – Understanding Controls (steps 5 – 8)

Figure 2 - The 8Steps of effective Incident Investigation™ (Intersafe investigation methodology)

2.5.1 Part A – Understanding Incidents

2.5.1.1 Step 1 - Scope and Prepare

2.5.1.1.1 Lead Investigator

All incident investigations shall have a Lead Investigator nominated to lead the investigation. This person shall be trained as competent in incident investigations and in the use of the investigation methodology used.

In nominating a Lead Investigator, the responsible Manager shall consider:

- Skills, operating knowledge and investigation competence
- Authority level
- Technical expertise dependent on the nature of the incident
- Legislative requirements
- Appropriate resources.

Where Essential Factors™ methodology is used, the Lead Investigator shall:

- Have completed Essential Factors™ Incident Investigation Training
- Have as a minimum participated in an investigation using the Essential Factors™ methodology - with a preference to having led an investigation previously using the Essential Factors™ methodology. The higher the significance of the incident (including either the actual severity or potential severity) the greater the experience level required of the Lead Investigator.

For incidents with an actual severity of major or greater, a General Manager from a different Business Function from where the incident occurred shall be appointed as the Lead Investigator by the Chief Operating Officer. Appropriate legal advice shall also be available to the Lead Investigator and investigation team. Consideration will also be given for bringing in an external independent Lead Investigator – to ensure transparency and independence from the people/process/system.

2.5.1.1.2 Investigation team composition.

For lower-level incidents 1 or 2 people is an acceptable size for the investigation team. For more significant incidents the ideal number on the Incident Investigation Team is no more than 5 personnel (including Lead Investigator). Other personnel may be involved for appropriate technical expertise (at various stages of the investigation) but the ideal team composition is no more than 5 personnel.

2.5.1.1.3 Investigation team membership

Following appointment of the Lead Investigator, an Incident Investigation Team should be identified based upon the following criteria:

- Skills, experience, operational knowledge and incident investigation competency
- Senior Management as required
- Health, Safety and/or Environment Specialist/s dependent on the type and level of the investigation
- Safety and Health and/or Environmental representative for the area depending on incident impacts
- Technical expertise dependent on the nature of the incident

2.5.1.1.4 Role of the Investigation Team

Every investigation team member must be clear on the "investigation purpose" and their "role". The purpose of an investigation is to "understand" an incident sufficiently to make effective recommendations (for actions) that will either prevent it from happening again (or if it does happen again to eliminate or minimise damage or harm to people). This reference is useful in that the team must seek to "learn for the future" rather than "blame from the past" (the purpose of an investigation is not to determine disciplinary action against people involved).

The investigator is foremost "an observer". Observations can be made of people, equipment, work environment or systems (the elements).

2.5.1.1.5 Electrical incidents

The Appointed Electrical Supervisor for the area shall be a member of the investigation team for electrical incidents, electrical fires and dangerous occurrences involving electricity.

2.5.1.1.6 Rail incidents

Where the incident under investigation is rail safety related, the investigation shall be conducted applying a specific rail safety incident investigation procedure. If required further clarity to this shall be sourced from the Roy Hill Rail Safeworking team.

2.5.1.1.7 Aviation incidents

Where the incident under investigation is an aviation incident with an actual or potential severity risk of major or greater, the investigation team shall include an approved Aviation Safety Consultant. The details of this person can be obtained from Roy Hill's Emergency and Security Manager.

The Aviation Safety Consultant used for the investigation shall be independent of any audits conducted on the aviation company involved in the incident.

2.5.1.1.8 Confirm the Client

It is essential that the investigation team establish who the 'client' is. The client is the person that the Lead Investigator is working for (in conducting the investigation). It may be reasonable that the higher severity the incident (actual/potential) the higher level the client would be (e.g. Manager, General Manager, Chief Operating Officer, Chief Executive Officer, etc.).

2.5.1.1.9 Define Scope

Prior to conducting the investigation agreement shall be gained between the Client and the Lead Investigator on defining the investigation, this would be completed before completing the final selection of the investigation team.

Defining the scope will assist in determining the depth of information or data required as well as the start and end point for the development of the sequence of factors. To understand the incident and identify controls the following need to identified;

- Purpose of investigation,
- Consequence of interest,
- Time frame for analysis,
- People of interest,
- Geographical boundaries that are to be included/ excluded,

- Activities of interest, and
- Methodology to be used.

It is useful to establish the parameters of the investigation and the "method" by which the investigation will be conducted (and also the ground rules in respect of what will "not" be done). For particular investigations this can include:

- All investigation team members must be clear on "their purpose", the "scope" and who the "client" is.
- only the investigation team members are to have access within the investigation room assigned to them (all other personnel will be requested (either for interview or to provide particular assistance);
- all investigation team members must agree on appropriate levels of privacy/security and sensitivity in respect of the investigation (and the personnel involved);
- All interviews should be conducted with respect given to the interviewee, conducted individually away from other personnel, and with strictly no-more-than 2 interviewers.

NOTE: there are particular investigation methodologies (such as TapRoot®, ICAM and others) that suggest that it is reasonable to bring all relevant involved persons/stakeholders/leaders into a room to capture a snapchart / timeline to establish a common or "agreeable" conclusion in respect of what occurred – it is suggested that this not occur (for various reasons) in respect of incident investigation process or methodology for Roy Hill. Group discussion and agreement from involved persons, stakeholder and leaders does not provide effective investigation outcomes (as multiple hypotheses are generally NOT identified, explored or tested).

2.5.1.1.10 Investigation tools and equipment

To aid in the collection of data relevant to the investigation, the investigation team may take equipment and tools to the incident scene/site. The Investigation Preparation Checklist may be used to identify the tools and equipment to gather prior to attending an incident scene for data collection purposes.

For more significant (higher-level) incidents, the investigation team should be provided a secure suitable room/facility to conduct the investigation (with a preference that this room could be locked if access controlled if needed over multiple days). The room should not be susceptible to interruption/disruption and should have a controlled means of access, along with a level of privacy (covered windows) and security. Ideally the room should have sufficient equipment (whiteboard/s, tables, chairs, power source, internet connectivity, access to photocopier) and appropriate privacy/security and limited access to investigation team members).

2.5.1.2 Step 2 Collect Information/ Data

2.5.1.2.1 Incident scene inspection

The investigation team should, where possible inspect the incident scene as soon as practicable after the incident. If not already completed, the incident site should, where possible, be secured to prevent potential injury to other persons and protect the evidence.

Note: The Police may have authority over all other parties in the incident and can impound evidence (and can disturb an incident scene prior to the arrival of the investigation team). The Lead Investigator should strive to ensure that information is not lost (e.g. physical items, equipment being moved before recording of parameters).

A Take 5 shall be conducted and controls implemented prior to the incident scene inspection. The Lead Investigator shall ensure the investigation team is appropriately escorted if required, and all team members comply with the personal protective equipment (PPE) requirements for the area.

If possible, the scene should be inspected under similar conditions present at the time of the incident.

2.5.1.2.2 Information/Data to be collected during scene inspection

The types of information/data that should be collected during the incident scene inspection may include but is not limited to:

- Photographs – It is not possible to take too many photographs. An investigation team member should be encouraged to take photos to assist in the incident investigation. The investigation team should also identify and source any other photos of the incident scene/equipment etc. that have been taken (for example, from a work area Supervisor of H&S team member if they attended the incident location). Photographs are taken of evidence types at the incident scene and details of the photograph number, time, date and subject should be recorded on the Roy Hill's Investigation Photograph Log.
  - Take shots from at least two directions 90 degrees apart
  - A photograph from up high looking down is helpful
  - Photographs close up and then at stages further away (i.e. every 2-3 metres) allow good demonstration of where items fit in the scene.
  - Photograph the full extent of the damage.

Photographs of injured personnel should not be taken without the injured person's written consent.

- Videos - Video images are taken of information/data types at the incident scene incorporating commentary on what is being captured. Details of the video recording should be recorded on the Investigation Photograph Log.
- Samples – samples are taken from physical sources such as damaged plant or spillages, equipment etc.
- Physical Environment – recording (via measurement) all of the relevant parameters (for example, temperature, lighting, weather conditions, ventilation, noise, surface angles, slopes/gradient, velocities, weight, distance, length, height, light levels, friction coefficient etc. At this stage it is useful to consider blind spots, obstructions, protrusions, spatial arrangement, colour/contrast, clearances and identification of any issues with alarms being audible or visible. For any observation (including information from an interview) a reference measure is required to communicate accurately. People are not competent at judging absolute values (of weight, height, distance, length, speed, lighting levels, etc.).
- Incident site diagram/map – sketches, maps or survey pick up of the incident site to provide a record of relative positions of plant and equipment involved in the incident. This should include relevant dimensions, measurements or be drawn to scale. The incident site diagram/map should indicate as relevant:
  - A north point
  - Physical landmarks including buildings, barricades, pit walls, roads, windrows, signage etc.
  - Relative locations of personnel, equipment and plant
  - Location of debris
  - Unconfined product (spills)
  - Tyre marks, scratches, tracks, surface irregularities, safety devices and equipment
  - Dial, valve and switch settings
  - Witness/people/equipment/other objects positions.

2.5.1.2.3 Other information/data

Additional information may be required during the course of the investigation. This information may include and is not limited to the following:

- Witness Incident Statements – A witness or involved person is asked a series of questions related to the incident and their responses recorded and confirmed with the witness before being established as an item of evidence. Witness statements should be recorded on the Witness Statement Form
- Analysis/Testing of equipment, parts and materials – involved items of plant and machinery should undergo analysis and testing for performance to standards and to determine failure modes functionality to design specification relevant.
- Examinations of records and procedures – includes collection and examination of site systems including but not limited to:
  - Policies and Standards
  - Procedures / Work Instructions (WINs)
  - Original Equipment Manufacturer (OEM) manuals
  - Inspection and maintenance records
  - Contract specifications/details
  - Organisational charts/structures
  - Training and assessment records including relevant licences
  - Pre-task hazard assessments – JHA, Take 5
  - Recorded radio communications
  - Written or verbal instructions
  - Reports of previous incidents, hazard observations and iCare Conversations.

2.5.1.2.4 Interviewing personnel

Witness interviews should be conducted as soon as possible after the incident, with all persons involved in the incident being interviewed individually. Strictly no more than 2 interviewers should conduct an interview with a person (this is to assist their “comfort” levels to attempt to minimise any potential stress in the interview).

A list of potential personnel to interview should be developed at the commencement of the investigation and may be added to as new information is discovered during the investigation.

It may be necessary to interview:

- Injured persons – as soon as available dependent on physical and emotional state
- Witnesses
- Co-workers
- Emergency Personnel
- Medical Personnel
- Supervisors and Managers
- Support roles (e.g. trainers)
- Technical Experts / Equipment suppliers/manufacturers

Witness interviews should be conducted in a comfortable, private and non-threatening location. Interviewers must ensure they are sensitive to the emotional state of the person being interviewed. The emotional/mental well-being and physical state of the involved person shall be taken into consideration when conducting an interview and appropriate sensitivity applied. Witnesses may request the presence of a representative at the interview if desired.

It is important to interview people in a situation which is conducive to people giving their best quality statement. For some people this will be at the incident scene where pointing and play-acting is possible, for others, it will be back at their normal work situation, or in a private/secure interview room. At this point it is important to establish clearly what;

- The person saw directly, and
- They have inferred from their observations

The four primary questions the investigation team are interested in from each involved person from the interview are;

1. What do you think happened? (this is a Hypothesis)
2. Why do you think that? (this is supportive information)
3. Is there anything that does not make sense? (this is the rejecting information) And
4. How do you think we can prevent this from happening ever again? (This is potential recommendations for consideration).

Where possible read a summary to the interviewee before he/she leaves the room, getting a related agreement on what has been said. This will clarify your understanding. Personnel may wish to draw diagrams/maps or write (and this should be encouraged to provide clarity).

Note: A witness's description of an incident is a 'hypothesis' only. It is the role of the investigation team to use this information to help understand what happened.

Witness statements should be recorded on the Witness Statement Form and be reviewed and signed by the witness prior to being considered as evidence.

2.5.1.2.5 Confidentiality

The privacy of injured / ill individual's shall be respected during the investigation process and when recording the investigation details into the Roy Hill Incident Management System. Medical records shall not be disclosed without written authorisation and medical details shall remain confidential amongst the incident investigation team.

2.5.1.2.6 Analyse Data

2.5.1.2.6.1 *Incident analysis process*

Following the collection of information/data related to the incident, analysis should occur to determine the essential and contributory factors within the incident. Any "value judgements" must be avoided in any description, observation, element or factor. Investigators should be encouraged to use "Is/Is Not" scientific thinking rather than "safe/unsafe" value judgements. The Essential Factors ergonomic model rejects the notion of "cause/effect", "safe/unsafe", and "human error" and focusses on value-free multi-factorial "is" thinking.

For all levels of incident investigation, a systematic process should be followed regardless of the investigation analysis tool employed. The specific steps and processes to follow in undertaking the investigation will be dependent on the methodology utilised. The basic elements that need to be considered in all levels of investigations are the planning, people, equipment and environment elements which can also include organisational factors where relevant. The investigation team may define and explore relevant time zones in respect of the incident sequence to assist in analysing the incident (the analysis of any relevant time zone must be within the scope of the investigation as set by the client).

2.5.1.2.6.2 Develop sequence of factors

The sequence of factors should be developed using information from the incident description and gathered information/data, describing in an objective and factual manner the events that occurred at each point in time leading up to and after the incident event. The length of the sequence of factors will be governed by the investigation scope that has been defined.

The use of a white board or post it notes make reviewing and altering of the sequence factors simple when additional information needs to be included.

Additional information may be included in the sequence of factors to describe an event (or events) related to each factor, and how actions were performed and what the equipment response was. This might include neutral or contributory factors related to the planning, people, equipment, environment elements within the incident sequence.

2.5.1.2.6.3 Identify and gather missing information

The development of the sequence of factors assists in highlighting missing and/or unconfirmed information. Information/data that still needs to be gathered or confirmed shall be identified and allocated for investigation team members to follow up.

As further information is gathered (or unconfirmed information verified) it should be added to the sequence of factors until the investigation team is satisfied that all required information has been incorporated. A reasonable question for all investigation team members to ask is: "*What have we missed – or what do we need that we do not have to make an informed decision?*"

2.5.1.3 Step 3 – Form and Test Hypothesis

Hypothesis forming and testing is a critical aspect of quality incident investigation. A description of an incident is a hypothesis. A hypothesis is a "testable proposition". The investigation team must test the hypothesis from the information gained through the investigation process (to determine what is "supportive" of the hypothesis, what is "rejecting" of the hypothesis, and what is "neutral" or "requiring more information" to make a determination of the relevance before a decision can be made. It is reasonable (and considered normal) that within an investigation there could be multiple hypotheses for the one single incident. An investigation team may be able to provide sufficient analysis to propose one single hypothesis – based on the observations that "support" and "reject" any other hypothesis (**Note:** the investigation team must be aware of an avoid "self-fulfilling hypotheses" – in that observations are made that support one hypothesis without considering rejecting observations for that hypothesis).

2.5.1.4 Step 4 - Write Incident description

The objective of writing an incident description is to understand the sequence of factors. There are some simple rules when completing an incident description;

- Identify the elements i.e. Planning, People, Equipment and Environment
- Refer to all elements involved in the incident sequence,
- Establish the sequence,
- Detail the context,
- Describe the damage and how damage occurred in detail,
- Quantify parameters of length, weight etc., and
- Draw sketch/include photo

2.5.2 Part B: Analysis and Identifying Controls

2.5.2.1 Step 5 – Conduct Essential Factors™ Analysis

2.5.2.1.1 Define essential, contributory and neutral factors

The process for determining neutral, contributory and identifying essential factors will vary dependent on the investigation methodology used. Generally, from the information gained from the completion of the sequence of factors - list the people, equipment and environment elements which are to be the subject of the Essential Factor™ analysis.

There are various “focussing questions” to be applied to the “people”, “equipment” and “environment” elements are:

People – What did the person DO or NOT DO that was essential to the continuation of the incident sequence?

People – What did the person KNOW or NOT KNOW that was essential to the continuation of the incident sequence?

People – What skills to the person HAVE or NOT HAVE that was essential to the continuation of the incident sequence?

Equipment – What features of the equipment were PRESENT or ABSENT (and essential to the continuation of the incident sequence)?

Environment – What features of the environment were PRESENT or ABSENT (and essential to the continuation of the incident sequence)?

Once listed the investigation team will then categorise each factor according to:

- Essential Factor™ is one which if it had not occurred (or been added to an incident sequence) would have prevented or interrupted the incident sequence;
- A contributory factor is one which increases the likelihood that the sequence of factors will continue (but is not considered essential to the final damage); and
- A neutral factor is one which plays no part in continuation of the incident sequence.

2.5.2.1.2 Equal contribution

No essential factor is more important than any other in terms of allowing the incident to unfold or develop. The differences between essential factors are:

- Where they occur in time;
- Whether they arise from Planning, People, Equipment or Environment elements; and
- The ease or difficulty with which they can be managed for the future.

With respect to your final hypothesis every observation finally becomes:

- Essential;
- Contributory; or
- Neutral.

2.5.2.2 Step 6 – Identify and Short List Controllable Factors

For each essential and contributory factor identify which ones are a potential "point of control" (POC). It will be these POC factors that are assessed to identify further predisposing factors and also the possible control measures (action) that can be recommended to change future incident sequences.

2.5.2.3 Step 7 - Identify Controllable Predisposing Factors

This step provides opportunity for identifying organisational, culture, human error, procedural and other factors that were essential to and predisposed the immediate circumstances of the event. So for each factor identify predisposing factors that allowed the Essential Factor™ to be present in the immediate circumstances of the incident.

2.5.2.4 Step 8 – Identify Recommendations

Recommendations (of corrective actions) are made by the investigation team to the client. It is important to understand that not every essential factor requires a corrective action (or recommendation). It is the challenge of the investigation team to find the right balance of recommendations to ensure the incident sequence is interrupted/broken to a point which:

- eliminates the event from happening again, or that
- the probability of the incident recurring is significantly reduced to a level which is acceptable to the client, and/or
- if the incident could not be prevented from occurring again – to apply actions such that the damage to a person will be eliminated, mitigated or significantly reduced.

Recommendations (of corrective actions) should be developed for the effective removal of an essential factor (to interrupt the incident sequence). Initial criteria for recommendations are that it is:

- Specific;
- Measurable;
- Accountable;
- Reasonable/Realistic;
- Timely/Time-based;
- Effective; and
- Reviewed.

Effectiveness of recommendations should consider various criteria including:

- Are any recommendations specific to immediate circumstances of the incident?
- Are any recommendations specific to cultural, systemic, industry norms or engineering norms relevant to the incident?
- Are the recommendations sustainable outcomes or actions (over time)?
- Are the recommendations strongly administrative (or higher level on the hierarchy of controls)?
- Will the recommendations/actions/controls still be implemented and effective in the future?
- Are recommendations addressing both damage prevention and damage mitigation?
- Do the recommendations satisfy the V.A.A.C.S™. criteria:
  - Viable – practical and does not create a new unacceptable level of risk
  - Achievable – achievable within the constraints of capital/cash flow/business viability
  - Acceptable – accepted/owned by end-users and owners
  - Compatible – compatible with the risk (or event) being managed
  - Sustainable – sustainable over time

The investigation report shall include the various action recommendations for client/management consideration, which are reviewed and the defining corrective and preventative actions shall be signed off by the accountable leader or client (then entered into INX). The actions shall be:

- Appropriate to the scale and nature of the problem and impacts encountered;
- Corrective and/or preventative and/or mitigate (e.g. damage reduction);
- Designed to avoid recurrence;
- Prioritised according to the criticality of the risk and resourcing required; and
- Inclusive of accountabilities and appropriate timeframes for completion.

Where the essential factor and / or contributing factor is determined to be an ongoing hazard or risk that requires ongoing control, risk mitigating action plans shall be developed and implemented using the hierarchy of controls and other minimum requirements described in the

Recording and management of corrective actions arising from an e in INX shall be completed in accordance with the requirements of in the Roy Hill Incident, Non Conformance and Action Management procedure

2.6 Record and Report Investigation Findings

Following finalisation of the incident investigation, the following information shall be entered into INX event record:

- Lead Investigator and Investigation team members names
- A summary statement of the incident including essential and contributory factors against the Lead Investigator. This is the statement that will be published in reports if appropriate. Avoid using individual's names, company names and confidential information.
- Additional involved personnel; witnesses, supervisor etc.
- If authorities (external governing bodies) are involved in the incident investigation, the 'statement' area of the involved person will be used to collate all communications with the authority.

- Populate essential / contributory factor results within the investigation report.
- Actual severity and MFL (Maximum Foreseeable Loss) recorded using the Roy Hill Risk Assessment Matrix for all selected impacts based on the investigation findings and outcomes. This shall be done in consultation with the relevant site Health, Safety, and Environment professionals.
- Impact type specific information such as:
  - Alcohol or other drug test conducted
  - Emergency services were called
  - Members of the public were injured
  - Equipment was involved
  - Included property damage
  - Linked to a road event
  - Linked to a rail event
  - Incident production impact/ delays
  - Attaching any supporting documentation such as: investigation reports, photos, drawing, procedures, witness statements etc. Only non-sensitive / non-confidential information shall be attached to INX incidents. Sensitive / confidential information, such as witness statements, shall be securely stored according to the record and data management schedule as maintained by the IT information management team. The preference is for all documentation to be stored in DMS and a URL saved in the event record in INX.
- All corrective actions arising from the investigation.

Where required, on completion of the investigation, a formal incident investigation report may be written, providing:

- Details of the Incident Investigation Team leader and investigation team members
- Accurate and complete information related to the incident
- Clear and complete description of the sequence of events leading to the incident
- Identification of the contributory factors and essential factors associated with the incident
- Recommended corrective actions to eliminate or reduce the likelihood of recurrence of the incident, and identified improvements to the management system

Once the report is compiled it shall be delivered to relevant key stakeholders, at a minimum the relevant business function owner, Regional HS Manager, Area General Manager and Registered Manager, and Environment team where applicable.

2.7 Review of Controls Post Implementation.

Corrective actions shall be reviewed post implementation to ensure that they are adequate and effective, and do not pose greater threat of harm or damage as per the Incident Non Conformance and Action Management Procedure.

2.8 Incident Investigation Training

Individuals holding the following business roles should be trained in incident investigation techniques:

- Leaders including Supervisors, Superintendents, Managers and General Managers
- Safety and Health Representatives,
- Appointed Electrical Supervisors
- Health, Safety and Environment Professionals
- Individuals required to undertake a Lead Investigator role as nominated.

Individuals holding the following business roles should be trained in the Essential Factors™ methodology:

- General Managers
- Managers
- Health, Safety and Environment Leaders including Advisors, Specialists, Superintendents and Managers
- Individuals required to undertake a Lead Investigator role for significant incidents as nominated
- Other personnel nominated and approved (by their General Manager)

All personnel who are required to manage and maintain incidents in iSMS as a part of their role shall be trained to do so.

3 Abbreviations

Abbreviation	Definition
HiPo	High Potential Incident
SI	Significant Incident
WIN	Work Instruction
MRO	Maximum Reasonable Outcome
MRS	Maximum Reasonable Severity
OEM	Original Equipment Manufacturer
POC	Points of Control

Table 1 – Abbreviations

4 Definitions

Term	Definition
Action	Act to eliminate the cause of a detected non-conformity or other undesirable situation. Actions are tasks that are identified following another activity that are assigned to people to implement controls on an identified risk/situation or as an improvement.
Actual Severity	The actual severity of an incident on the person(s), plant/equipment, business reputation and compliance, process, community, security or the environment. The actual severity is classified as near miss, Slight (Level I), Minor (Level II), Moderate (Level III), Major (Level IV), Severe (Level V), Critical (Class VI) or Catastrophic (Level VII).
Contributory factor	A contributory factor is one which increases the likelihood that the sequence of factors will continue but is not considered essential to the final damage.
Equal Contribution	No essential factor is more important than any other in terms of allowing the incident to unfold or develop.
Equipment	The equipment with which people are working at the time of the incident. The equipment may be fixed, mobile or portable.
Essential Factor	An observation is 'Essential' to the incident sequence if when 'removed from' or 'added to' an incident sequence will interrupt the incident sequence. Essential Factor™ is an Intersafe investigation methodology.
High Potential Incident (HiPo)	Where the maximum reasonable risk ranking (MFL) is 60 or greater.
Impact	The harm that has or could occur if the controls are absent or fail. **Safety impact:** An injury that has occurred, or has the potential to occur; and/or damage or potential damage to equipment and property (e.g. burn, pinch, graze, crush, fire, deformity etc.). **Health impact:** Occupational health concern / illness that has occurred, or has the potential to occur, due to exposure over a period of time (e.g. sunburn, noise induced hearing loss, musculoskeletal damage, respiratory reaction to inhalation of fumes, unexpected OEL exceedance, etc.). **Environmental impact:** harm that has occurred, or has the potential to occur, to the surroundings in which an organisation operates, including air, water, land, natural resources, flora and fauna (e.g. dust, pollution, spills, non-compliance to license requirements etc.). **Community impact:** harm that has occurred, or has the potential to occur, to those people generally inhabiting or with land connections in the immediate or surrounding areas in which an organisation operates. This includes harm to the people themselves, sites or items of cultural significance as well as disruption to their normal lifestyle and interactions (e.g. smell, dust, vibration, noise, etc.). **Quality impact:** an event which has occurred, or has the potential to occur, and result in interruption to, or a reduction in, the quality of a product (including service) to meet customer expectations. Note: Quality is measured against a set of external specifications. Quality control is the detection of a non-conforming product. This impact does not include customer complaints for specific sales.

	Security impact: security breach that occurred, or has the potential to occur (e.g. theft, unauthorised access, etc.). **Process impact:** Any event which causes, or may cause, a process failure with potential for loss of product (e.g. release, engulfment, overtopping, explosion), production interruption (e.g. loss or delay), or loss of business continuity (e.g. contractual dispute, failure to pay).
Incident	A single event or continuous/repetitive series of events that because of an interaction of Essential and Contributory Factors result or have the potential to result in a negative impact on people (employees, contractors and visitors), the environment, operational integrity, assets, community, process, product, legal liability and or reputation. It is evaluated both by its actual severity and its Maximum Foreseeable Loss for each area of impact.
Incident Investigation	A process, often involving multiple people, with the intent to determine incident Essential and Contributory factors.
Leader	Someone responsible for one or more persons.
Likelihood	The most realistic or credible chance that a particular event will occur, resulting in the 'maximum reasonable severity', expressed as a qualitative or quantitative description of probability or frequency.
Maximum Reasonable Severity (MRS)	The largest realistic or credible severity from an event, considering the location of and population encountering the event as well as the credible failure of current controls.
Maximum Foreseeable Loss (MFL)	The Maximum Foreseeable Loss for an incident or risk, based on its severity potential and likelihood applying the Roy Hill Qualitative Risk Assessment Matrix. The Maximum Foreseeable Loss is classified as numerical value calculated by multiplying potential severity by the potential likelihood.
Near Miss	An incident that has actually happened and in which no actual injuries, illnesses, environment or property damage has occurred.
Neutral Factor	Is one which plays no part in the continuing the incident sequence.
Predisposing Factors	Factors that relate to the essential and contributory factors
Serious Injury	An injury as defined in section 76 of the Mines Safety and Inspection Act 1994 that: Results in the injured person being disabled from following his or her ordinary occupation for a period of two weeks or more Involves unconsciousness arising from inhalation of fumes or poisonous gases, or asphyxiation due to lack of oxygen or displacement of oxygen by an inert gas Results from an accident, including fuming, arising from the use of explosives or blasting agents.
Significant Incident	Any occurrence that has actually resulted in or had the potential to result in outcomes classified as moderate or a Maximum Reasonable Outcome classified as 60 or higher, in accordance with the Roy Hill Risk Matrix.
Taxonomy	A scheme of classification
Working Environment	The location in which the incident occurs

Work Instruction (WIN)	A procedure written at the task level, clearly describing the sequential steps that result in the best known way to complete a task with the goal of zero harm to our people, environment, equipment and processes. It does not contain complex decision making.

Table 2 – Definitions

5 References

Document number	Title
[000RH-0000-HS-CHK-0002]	Investigation Preparation Checklist
[000RH-0000-HS-FOR-0038]	Investigation Photograph Log
[050RH-0000-HS-FOR-0007]	Witness Statement Form
CO-PRO-00038	Risk Management Procedure
[000RH-0000-HS-PRO-0043]	Incident, Non Conformance and Action Management Procedure
CO-GUI-00006	Roy Hill Risk Assessment Matrix (5x5)

Table 3 – References

6 Review

Reviews are to examine the appropriateness of the specification, taking into consideration corporate, system and compliance requirements and legislative changes since the last review was undertaken.