

COAL ASSETS AUSTRALIA

GLENCORE

Regional Asset Finance Standard



Risk Management

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1 Purpose

To pro-actively manage risks within the business including those associated with change, and to meet requirements of legislation and the Glencore Risk Management Framework.

2 Scope

The Risk Management Standard is applicable to Glencore Coal Assets Australia and its operations*. The requirements apply to all personnel, including managers, employees, contractors and visitors, at all levels, unless specifically excluded.

Where additional requirements or obligations are identified by an operation they must be included in their Risk Management System and maintained to an equivalent standard.

Where a Level 4 Risk Assessment is conducted AND the outcome is to be reported directly to Glencore plc, that assessment will refer to the Glencore Corporate Risk Matrix in document [G HSEC POL 0001 VER 2.0 - Glencore Corporate Risk Management Framework](#).



Note

The term 'Glencore Coal Assets Australia and its operations' includes all mines, ports, projects and administrative support services operating as part of Glencore Coal Assets Australia.

3 Risk Management Process

Management must systematically assess, monitor and review risks. An appropriate risk assessment must be performed for relevant business activities and identify controls critical to the achievement of the overall objectives of the relevant activity.

This risk assessment is to be monitored and reviewed on a regular basis to ensure it continually reflects the existing situation with respect to the specific business activity, i.e. the risk profile has been updated if necessary and the existing controls are adequate and effective.

Figure 3-1 shows the overall Risk Management Process outlined by ISO 31000:2009 – Risk Management – Principles and guidelines.

Glencore Coal Assets Australia has adapted the ISO 31000:2009 process for use throughout its operations/projects. Following is a description of the way in which the methodology will be applied and the criteria against which risks will be evaluated. It provides STEP details of the Risk Management Process which encompasses identification, analysis and evaluation of risks including rating and ranking systems, requirements for risk treatment and levels of authority for continued toleration of an existing risk.

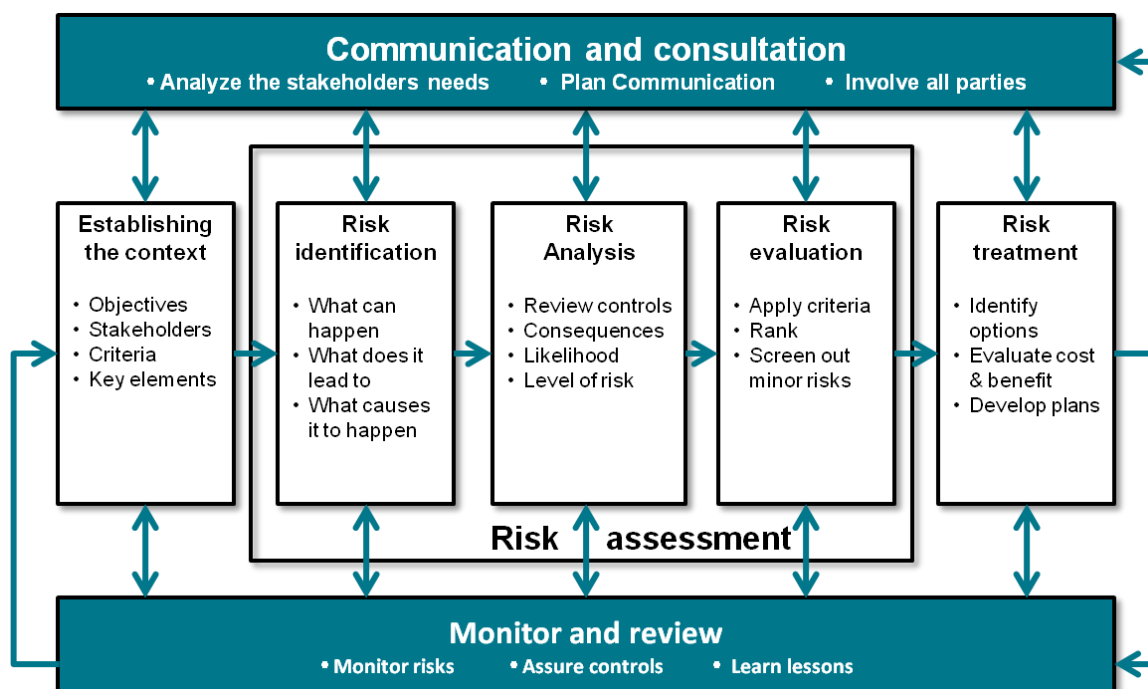


Figure 3-1 – Risk Management Process (adapted from ISO 31000)

3.1 Communication and Consultation

It is vital to communicate and consult with internal and external stakeholders as appropriate at each stage of the risk management process and concerning the process as a whole. It should involve dialogue with stakeholders with efforts focused on consultation, rather than a one-way flow of information from the decision maker to other stakeholders.

Effective internal and external communications are important to ensure that those responsible for implementing risk management, and those with a relevant interest, understand the basis on which decisions are made and why particular actions are required. It is therefore important to develop a Communications and consultation Plan early in the process.

A participative approach is useful:

- a) To help identify risks effectively.
- b) For bringing different areas of expertise together in analysing risks.
- c) For different views to be appropriately considered in evaluating risks.
- d) To gain “ownership” of the risk, the controls and any further treatment by certain stakeholders.

Consultation also facilitates the engagement of stakeholders and the “ownership” of risk issues by managers. It allows those parties to appreciate the benefits of particular controls and the need to endorse and support a risk treatment plan.

Stakeholders are likely to make judgments about risk issues based on their perception of the risk. Since the views of stakeholders can have a significant impact on the decisions made, it is important that their perceptions of risk are identified, recorded and integrated into the decision making process.

3.2 Type of Risk Assessment

Risk assessments appropriate to the context and situation must be undertaken including:

- a) Pre-task risk assessments (Level 1) and where appropriate with the aid of simple tools such as SLAM. Take 5 etc. prior to tasks.

- b) Job Safety Analysis (JSA – Level 2) prior to conducting more complex tasks, or tasks in an unfamiliar environment and/or process, or where there is a substantial change to work conditions (in the absence of an approved Safe Work Procedure – SWP or Safe Work Method Statement - SWMS).
- c) Formal team-based risk assessments (Levels 3 and 4) for:
 - i. Management of change, including but not limited to changes to business, operations or processes.
 - ii. New equipment and processes.
 - iii. Operations, projects and business activities, e.g. business strategy and budgets.
 - iv. Meeting the requirements for risk assessments, as stated within Glencore policies/procedures e.g. Fatal Hazard Protocols, Catastrophic Hazard Management Plans, Crisis Management Plans or legislation.

3.3 Glencore 12 Steps Risk Management Process

The risk management process is set out in the following 12 steps (see **Figure 3-2**).

This process is used for Risk Assessment Type level 3 and 4 (see **Table 3-2**).

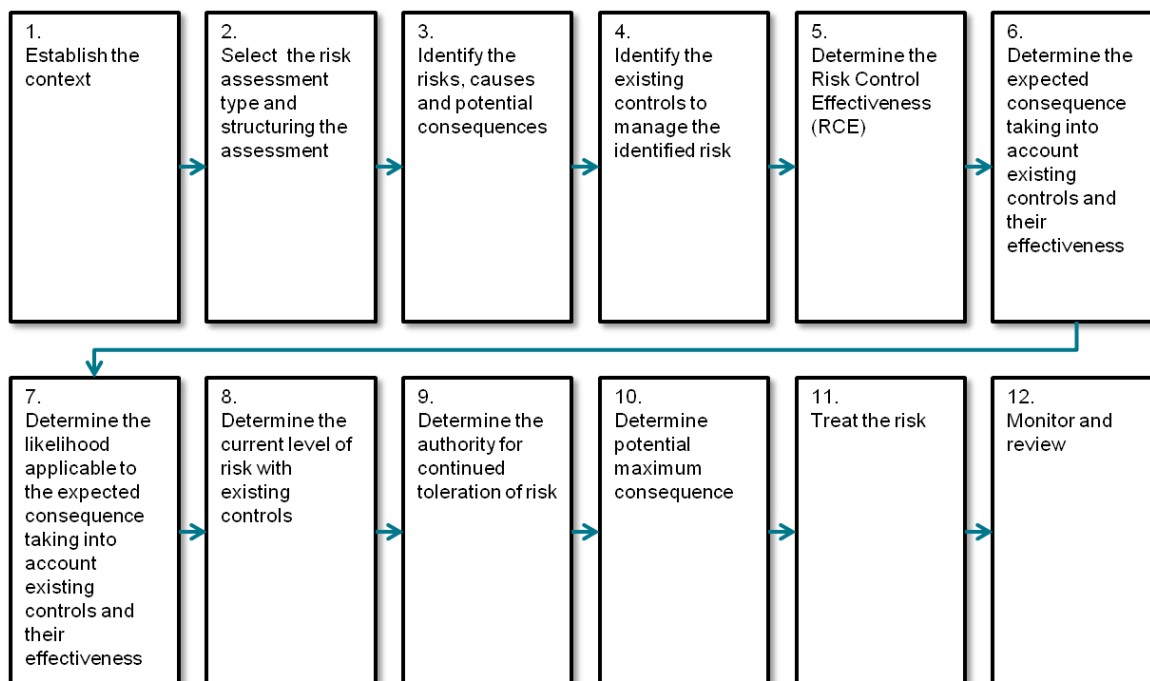


Figure 3-2 – The 12 Steps Risk Management process

3.3.1 STEP 1 - Establishing the Context

Establishing the context defines the parameters within which risks will be managed and sets the scope for the balance of the risk management process. The context includes the financial, operational, health, safety, environmental, community, competitive, political (public perceptions and image), social, client, cultural and legal aspects.

Criteria against which risk will be evaluated should also be established and the structure of the analysis defined.

The starting point for establishing the context is to clearly define the project and its objectives. It should also document the following:

- a) Exclusions - any areas that are not being considered in the risk assessment, and
- b) Assumptions - baseline conditions, existing parameters that are known and not stated within the controls for the risk assessment.

There are three elements (External, Internal and The Risk Based Management Process) to establishing the context as described below.

3.3.1.1 External Context

This defines the environment in which the Division/Department and its Operations operate. The relevant, external stakeholders should be identified, their objectives considered, and their perceptions, values and potential actions taken into account when developing the risk criteria.

3.3.1.2 Internal Context

Before the risk assessment commences it is necessary to understand the internal environment.

Key considerations include:

- a) Glencore culture.
- b) Relevant plans, goals and objectives.
- c) Governance, organisational structure, roles and accountabilities.
- d) Capabilities in terms of available or required resources, e.g. people, systems, processes, financial.
- e) Who is involved and affected.

3.3.1.3 Context for the Risk Management Process

This defines the goals, objectives, responsibilities, scope, methodology and other parameters of the risk management activity. The methods to be used, the resources required and the manner in which the results will be recorded should also be specified.

Setting the scope and boundaries of a risk assessment involves:

- a) Defining the organisational part, project, activity or change and its goals and objectives.
- b) Specifying the nature of the decisions that have to be made based on the risk assessment results.
- c) Defining the extent of the change or activity or function in terms of time and location.
- d) Identifying any scoping studies needed and their scope, objectives and the resources required.
- e) Defining the depth, breadth and rigour of the risk assessment, including specific inclusions and exclusions.

3.3.1.4 Key Elements

To make it comprehensive and effective, the risk assessment should be structured according to “key elements”. These are a set of topics to be considered one by one during risk identification. Each topic is somewhat narrower than the project or activity as a whole, allowing those performing the identification to focus their attention and go into more depth than they would if they tried to deal with broader issues. A well-designed set of key elements will stimulate creativity, and ensure that all the important issues are put before those responsible for identifying risks.

The key element structure depends on the objectives and the key issues of concern to Glencore Coal Assets Australia and its stakeholders. Using an inappropriate structure can lead to significant items being omitted inadvertently, with potentially serious consequences, as well as making the process inefficient.

Table 3-1 provides bases for selection and references for examples of key elements.

Table 3-1 – Examples for selection of key elements

Basis for selecting the elements	Reference for examples of key elements
Major project	Refer to the Project Management System Portal GCAA-625378177-4072 – Approval Gate Guideline
Life of mine	Refer to the Technical Services Portal GCAA-625378177-677 – Life of Mine Risk Assessment Protocol
Safety	Refer to GCAA Framework GCAA-625378177-10524 – HSEC Management Framework
Community	Refer to GCAA Framework GCAA-625378177-9977 – Community and Stakeholder Engagement Standard

3.3.1.5 Defining Risk Criteria

Risk criteria define the terms of reference against which the significance of a risk is evaluated, based on the Business or Operations' objectives and internal and external contexts. These criteria are identified in the various Tables utilised throughout this Standard.

3.3.2 STEP 2 - Selecting the Risk Assessment Type

Risk assessment types can be classified as levels 1 to 4 depending upon such factors as the potential consequence on the business, the level of expenditure, the familiarity with, or complexity of, the operation and reputational issues.

The type of the risk assessment is to be determined in accordance with **Table 3-2** below.

Table 3-2 - Guideline for selecting risk assessment type and type of facilitation

Level	Application	Type of risk assessment	Conducted by
4	Major projects and expenditure requiring Board approval; business plan (budget), life of mine, Broad Brush/Baseline for an operation or project etc, or as mandated by CE/COO.	Team based formal risk assessment often involving both quantitative and qualitative analysis	An approved second party or third party facilitator with stakeholder participants including risk specialist: e.g. financial, mining, health & safety, geology, legal.
3	New or change to equipment, process or operation, material impacts (financial, human, reputation etc.) on operations, development of hazard management plans.	Team based formal risk assessment using a systematic method and qualitative risk analysis	Competent facilitator with stakeholder participants.
2	Complex tasks or work in an unfamiliar environment and/or process, change in work conditions.	Risk assessment using a documented process. e.g.: Job Safety Analysis (JSA), or Work Permit.	Competent person with internal stakeholder participants.
1	Prior to tasks or when the task condition change and may be supported by a simple check sheet	Simple risk assessment. e.g.: pre-task risk assessment (e.g. SLAM).	All employees

The diagram in **Figure 3-3** can also be used as a guide to distinguish between the need to undertake a level 3 - 4 risk assessment as distinct from a level 1 to 2 risk assessment.

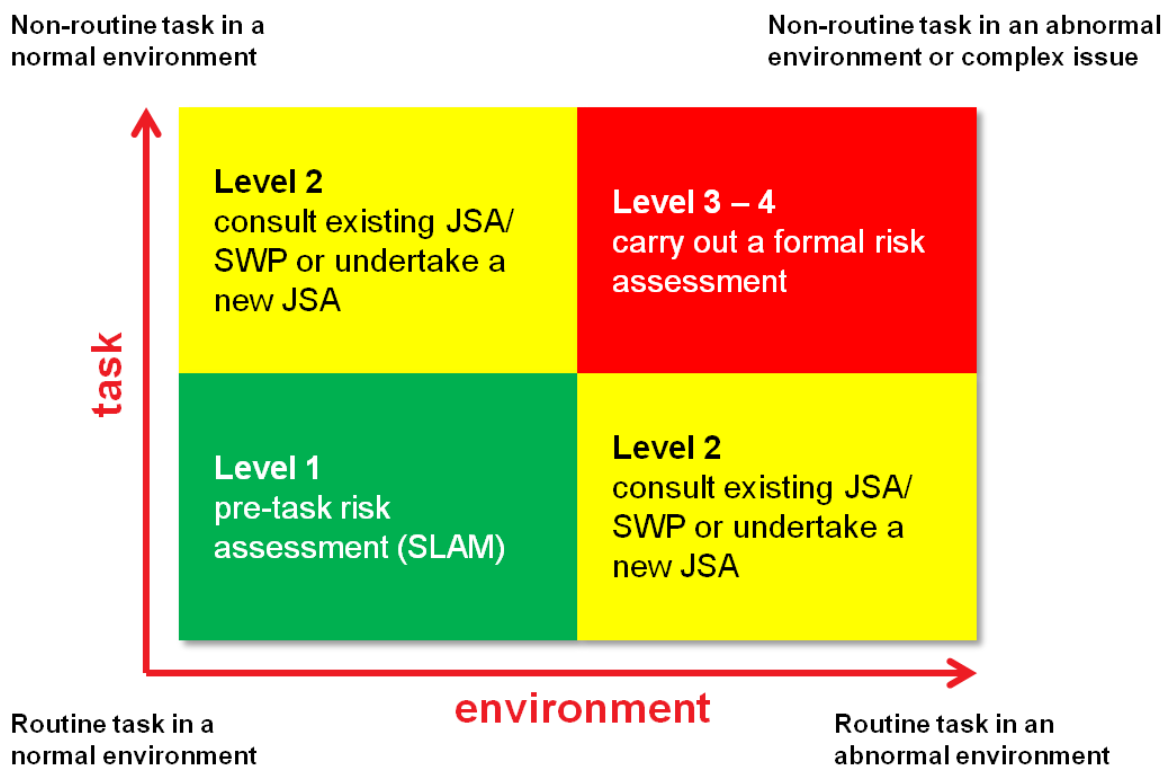


Figure 3-3 – Risk assessment level determination

3.3.3 STEP 3 - Identifying the risks, causes and potential consequences

The aim of this step is to generate a comprehensive list of events or circumstances that might have an impact on the achievement of the objectives identified in STEP 1. It involves the identification of what, where and when events that might create, enhance, prevent, degrade, accelerate or delay the business achieving their objectives.

Having identified what might happen, it is necessary to consider possible causes and understand the consequences if the event happens. Identification should also consider knock-on/indirect effects of particular consequences. All significant causes and consequences should be considered.

Suitably competent and experienced people must be utilised to systematically identify all the risks. Techniques for the identification process include Brainstorming, SWIFT, WRAC, BOWTIE ANALYSIS, HAZOP, FMEA, Fault Tree Analysis, and the like.

Comprehensive identification using a well-structured systematic process is critical, because risks not identified at this stage are excluded from further analysis and treatment. Identification should include risks whether or not they are under the control of the operation.

3.3.4 STEP 4 - Identifying the existing controls

Having considered the range of potential causes and consequences of a risk event in STEP 3, identify the existing controls and their perceived adequacy and effectiveness in modifying consequences and the probability of those events.

Controls should be aligned to causes and/or consequences in order to identify potential gaps in controls. Refer to STEP 11 – Hierarchy of Controls (**Figure 3-4**) for more information.

3.3.5 STEP 5 - Determining the Risk Control Effectiveness

Risk Control Effectiveness (RCE) is a relative assessment of the actual level of control that is currently present and effective compared with what is reasonably achievable for that particular risk. It is a measure of the completeness, relevance and efficiency of those current risk controls to prevent the risk occurring or mitigate the consequences. RCE is an indicator as to whether the existing controls are doing all that they could or should to manage the risk issue.

Where the RCE is less than “satisfactory” a risk treatment plan is required to address the control deficiency.

An assessment must be made of the relative effectiveness of the controls as **Table 3-3** below.

Table 3-3 - Risk Control Effectiveness (RCE)

RCE	Guide
Poor or no existing controls	<ul style="list-style-type: none"> Significant control gaps or no credible control; Either controls do not treat root causes, are non-existent or, if they exist, they are ineffective; Management has no confidence that any degree of control is being achieved due to poor control design; Very limited or no operational effectiveness.
Require improvement	<ul style="list-style-type: none"> Most controls are designed correctly and are in place and effective; Controls may only treat some of the root causes of the risk, and/or are not currently effective and/or there may be an over-reliance on “reactive” controls; Management has doubts about operational effectiveness and reliability; More work is required to improve operating effectiveness.
Satisfactory	<ul style="list-style-type: none"> Controls are well designed and appropriate for the risk; Controls are largely “preventative” and address the root causes; Management believes that they are effective and reliable at all times; Nothing more to be done except review and monitor the existing controls.

Controls that must be effective at all times to preserve human life, licence to operate, access to the market and other aspects essential to the business are referred to as critical controls.

It is important that control monitoring by management review and assurance is focussed on those risks which, if the controls are absent or have failed, the operations would be exposed to high and unacceptable consequences (i.e. critical controls). In those cases assurance activity, such as audit or independent specialist review, provides “assurance” that critical controls are both adequate and effective.

3.3.6 STEP 6 - Determine the Expected Consequence

Having identified the risks, their causes and potential consequences, the existing controls and their adequacy and effectiveness in controlling the risk, determine the expected consequence by referring to the Glencore Coal Assets Australia Risk Matrix shown in **Appendix A - Glencore Coal Assets Australia Risk management Matrix**.

**Note**

Only the approved GCAA Risk Matrix, shown in Appendix A, is to be used to determine consequence and likelihood. No other risk matrix is to be used.

Where the expected consequence is a financial or an investment return impact, consideration should be given to the total financial cost, i.e.: EBIT or NPV lost, legal liability or compensation payments made and any opportunity costs.

The range of expected consequences for a particular risk should be considered and, in each case, the consequence rating for the expected level should be selected. The risk rating should be based on the worst of these expected consequences.

3.3.7 STEP 7 - Determine the Likelihood

A likelihood rating should be determined on the basis of the probability of the occurrence of the expected consequence according to the Glencore Coal Assets Australia Risk Matrix, shown in **Appendix A - Glencore Coal Assets Australia Risk management Matrix**.

3.3.8 STEP 8 - Determine the Current Level (rank and rating) of Risk

Glencore Coal Assets Australia Risk Matrix must be used to determine the relative level (rank and rate) of the risk by taking the combination of Expected Consequence and its Likelihood of occurrence.

3.3.9 STEP 9 - Determine the Priority for Risk Treatment and the Authority for Continued Toleration of Risk

Utilising the results from STEP 8 determine where the priority for treatment and authority for continued toleration of this level of current risk lies. Once this is understood, and where necessary, take action to implement the required Risk Treatment Plans (STEP 11) according to the timing in **Table 3-4** below.

**Table 3-4 - Priority for risk treatment authority for continued toleration of risk
(applicable for risk assessment level 3 and 4)**

Current risk rank	Action	Timing for authority	Authority for continued toleration of current level of risk
23 to 25	The activity must be stopped immediately until action to reduce the level of risk to less than 23 is undertaken or authority to continue is received.	Immediately to within 24 hours.	COO/CE Notification to CE prior to granting of authority to continue
17 to 22	The activity must be stopped immediately until action to reduce the level of risk to less than 17 is undertaken or authority to continue is received.	Immediately to within 24 hours.	Directors/COO Notification to COO prior to granting of authority to continue
10 to 16	Take action to reduce the level of risk to less than 10 or authority to continue is received.	Within 1 month.	General Managers / Operations Managers / Project Managers
7 to 9	Take action to reduce the level of risk to less than 7 or authority to continue is received.	Within 1 month.	Superintendents/ Managers / Project Team

1 to 6	Tolerable risk unless circumstances change	Ongoing control as part of a management system.	N/A
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Where authority for continued toleration of level of risk is identified (a higher level of approval is required), risk toleration approval is to be completed. Complete GCAA form [GCAA-625378177-2902 – Risk Toleration Approval](#). Refer to GCAA procedure [GCAA-625378177-2901 – Risk Toleration Approval Procedure](#) for additional details.

3.3.10 STEP 10 - Potential Maximum Consequence

Having identified a risk, its causes and potential range of consequences in STEP 3, an individual risk should be assessed for its Potential Maximum Consequence (PMC). PMC is the plausible worst case impact to Glencore Coal Assets Australia and its operations arising from a risk where all active risk controls, including insurance and hedging contracts, are assumed to be ineffective. It does not consider the likelihood of the event occurring. PMC may not be the absolute worst case conceivable.

PMC will be identified as the consequence level in the risk being considered taken from the Consequence Criteria provided in **Appendix A - Glencore Coal Assets Australia Risk management Matrix**.

PMC will be used as the primary measure on which to focus and plan assurance activities including further risk analysis, Internal Audit and independent specialist reviews.

3.3.11 STEP 11 - Treat the Risks

The primary consideration here is whether the risk can be further treated in a way that is reasonable and cost effective. In general this involves considering:

- a) Whether the risk is already at a level that is reasonably achievable or practicable.
- b) Whether it would be cost-effective to further treat the risk.
- c) The Department/Division's willingness to tolerate risks of that type.

It will usually not be cost-effective or even desirable to implement all possible risk treatments. It is, however, necessary to prioritise and implement the most appropriate combination of risk treatments. A Treatment Plan or a combination of Actions are selected by considering factors such as costs and benefits, timeframes for implementation, effectiveness, available technology and other criteria of relevance to Glencore Coal Assets Australia. Factors such as legal, social, political and economic considerations may need to be taken into account.

Development of effective risk treatment requires consideration of three pieces of information that come from the risk identification and analysis steps:

- a) The causes – particularly the “root causes”.
- b) The existing controls and the assessment of their effectiveness.
- c) The relative importance of consequences or likelihood to the risk rating.

Risk treatment options are to be resolved into a number of tasks and these will be allocated to named individuals (task owners) who are accountable for their completion. These tasks are recorded in Risk Treatment Plans which will contain:

- a) The tasks to be completed and the risks they address.
- b) Who has responsibility for implementation of certain tasks.
- c) The timetable for implementation.
- d) Details of the mechanism for and frequency of review of the status of the treatment plan.

3.3.11.1 Treatment Plan Options

The starting point for identifying options is often a review of existing guides for treating that particular type of risk. For example, for many safety, environmental and community risks there are requirements prescribed in relevant legislation, standards, codes and other external requirements.

For many risks, such guides don't exist and treatment options will need to be developed from first principles in order to be effective.

One treatment option available is to avoid the risk entirely i.e. to eliminate it by deciding not to proceed with an activity. This will remove possibilities of harm but will also often eliminate the opportunity. More usually risk treatment involves changing either the likelihood or the consequences of the risk, or both.

Selecting the most appropriate treatment option will involve comparing the cost of implementing each option against the benefits derived from it. Generally the cost of managing risk needs to be commensurate with the benefits obtained.

Decisions must take into account the need to consider carefully, rare but severe risks that may warrant risk treatment actions that are not justifiable on strictly economic grounds. Legal, reputation and community requirements may override simple financial cost benefit analysis and in these cases a qualitative Cost Benefit Analysis should be used.

3.3.11.2 Hierarchy of Treatments

Risk treatment options are not necessarily mutually exclusive or appropriate in all circumstances. The options can include the following:

- a) Avoid the risk by deciding not to start or continue with the activity that gives rise to the risk.
- b) Taking or increasing the risk in order to pursue an opportunity.
- c) Removing the risk source.
- d) Changing the likelihood.
- e) Changing the consequences.
- f) Sharing the risk with another party or parties.
- g) Retaining the risk by informed decision.

Treatment Plans should aim to create controls that prevent or eliminate the cause and/or mitigate the consequences. Controls that eliminate the risk are the most effective. When performing this part of the analysis, certain controls should be identified utilizing the hierarchy of controls presented in **Figure 3-4** below – Hierarchy of Controls. For recording purposes a control may be identified as per this Hierarchy and its criticality to assist with determining effectiveness of controls.

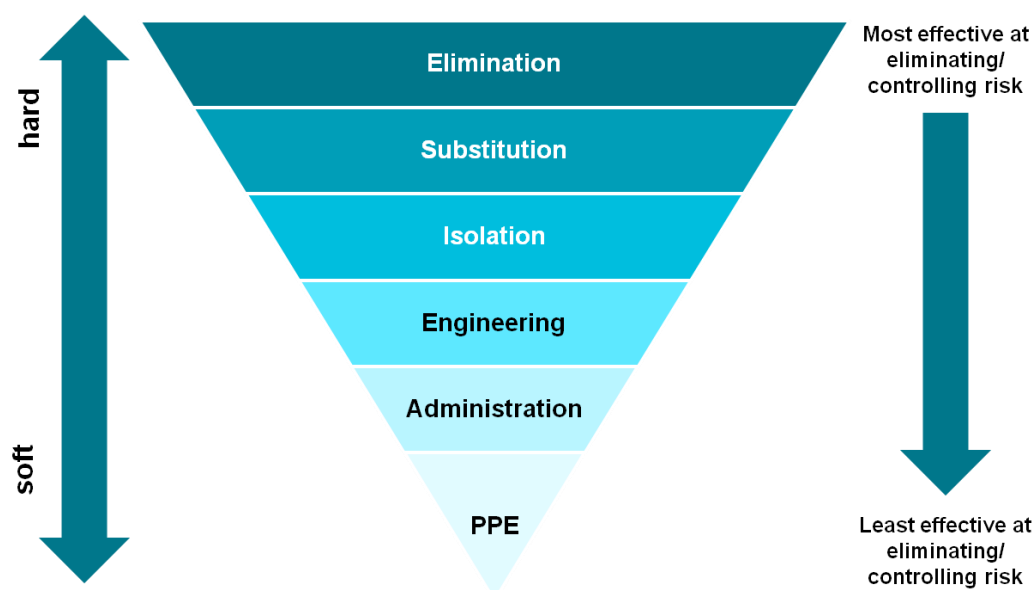


Figure 3-4 – Hierarchy of control

The Control Design Effectiveness Method (CDEM), shown in **Appendix B - Considering the Design of Controls when Evaluating the Effectiveness of Risk Treatment Plans**, may be used to further analyse risk treatment plans and resulting controls for certain control types.

3.3.12 STEP 12 - Monitor and Review

3.3.12.1 Assurance and Monitoring

To provide for an effective risk management process, it is essential that ongoing monitoring and review of the risk management plan occurs. Changing global and market conditions and significant changes to processes can affect the likelihood and consequence of risks resulting in regular reviews of existing controls and updates to risks. In addition lessons learnt from the risk management process need to be incorporated into existing risk management plans.

This will be provided by a planned schedule of:

- a) Monitoring & reviewing risks, e.g. within a regular management team meeting.
- b) Assuring controls, e.g. Critical Control assurance processes.
- c) Learning lessons and communicating relevant information, e.g. sharing of Glencore and industry fatality or other serious event investigation outcomes.

Comprehensive annual risk reviews should form part of the Budget and Planning process, Life of Mine Planning and individual Project phases. They are required in response to any significant planned or unplanned change. As a result, risk management becomes dynamic and changes as the organisation changes. Systems to monitor and review risks require careful selection, targeting and planning. They should target high risks and credible failure of treatment strategies that would result in high or frequent consequences.

Monitoring and review practices will be of three types:

- a) **Continuous monitoring** through routinely measuring or checking particular parameters to provide ongoing assurance that risk treatments are effective.
- b) **Control self-assessment** involving regular review of risks and their treatments to ensure that new risks have not arisen and treatment strategies are effective and appropriate.

- c) **Auditing** utilising both internal and external audit staff. Audits should, as much as practical, test systems rather than conditions, be selective in scope and lower in frequency than the first two measures. Generally the audit process will provide assurance that the systems and processes are working however findings of audits may indicate systemic weakness and therefore the response should focus on remedying the systemic issues, not just the symptoms.

3.3.12.2 Performance Indicators

Performance indicators are a measure of the level of performance of a given item or activity. They need to be measurable and appropriate to Glencore Coal Assets Australia and hold individuals accountable while forming the basis for continuous improvement. They should reflect a range of key objectives defined when the context is established at the start of the risk management process and apply greatest effort and focus to:

- a) The highest risks.
- b) The most critical treatments or other processes.
- c) Those treatments or processes with the greatest potential for improvements in efficiency.

Some examples of useful risk management performance indicators are:

- a) Progress towards a specific objective.
- b) The extent to which recommendations for risk treatment are implemented.

3.3.12.3 Post-event Analysis

Reviews of causes of successes, failures and near misses are important for every area of Glencore Coal Assets Australia to gain insight into the risk management process and how it can be improved. The lessons learnt from these reviews should be recorded and actions taken to ensure that the causes are treated such that subsequent failures are prevented and successes are repeated.

When analysing successes and failures the following questions need answers:

- a) Was the risk involved previously identified and analysed?
- b) Were the actual causes identified in risk identification process?
- c) Were the risks and controls rated and assessed correctly?
- d) Did the controls operate as intended?
- e) Were the treatment plans effective?
- f) If not, where could improvements be made?
- g) Were the monitoring and review processes effective?
- h) How could the risk management process in general be improved?
- i) Who needs to know about these learning's and should they be disseminated to ensure learning's are most effective?
- j) What should be done to ensure that failure events are not repeated but that successes are?

3.3.12.4 Recording and Reporting

The outputs of the risk management process should be recorded to:

- a) Preserve the results of the discussions, agreements analyses and conclusions.
- b) Provide the basis for the allocation and tracking of further risk treatment.
- c) Provide the basis for control assurance.
- d) Satisfy corporate governance requirements.

The following information for each risk identified will be kept in a risk register:

- a) A description of the risk.
- b) The name of the risk owner.
- c) The causes; the nature and extent of the potential consequences associated with the risk, normally in terms of the objectives affected.
- d) The existing preventative and / or mitigative controls.
- e) The name(s) of the control owner(s).
- f) The Risk Control Effectiveness.
- g) The likelihood of the event occurring with that consequence, considering existing controls and their effectiveness.
- h) The current risk rating taking account of existing controls.
- i) The Potential Maximum Consequence.
- j) Additional treatment actions required to further control risk to an acceptable level, task owner and due date.

To capture the results of the risk assessment workshop facilitators can use either CURA, or an appropriate MS Excel spreadsheet risk register or MS Word table.

Ultimately, all risk information for risk assessment level 4 will be stored in the Glencore Coal Assets Australia Risk Register.

Governance reporting of all significant risks is required regularly:

- a) Risk Management Plan and Progress.
- b) Outstanding Risk Treatment Plans.
- c) Performance against specified performance measures.
- d) Risk Assurance Profile.
- e) Significant changes to risks and details of tasks completed and outstanding since the last report.

Reports are to be forwarded as requested from the Internal Audit or Health, Safety, Environment and Community Departments.

3.4 Risk Management Plans

Each operation must develop, implement and maintain a suitable Risk Management Plan.

A Risk Management Plan must include:

- a) Specific actions, tasks and measures to be adopted that will further risk management within the business, operation or project concerned.
- b) A timetable for implementation.
- c) Details of the mechanism for and frequency of review of the status of the Risk Management Plan.
- d) Risk management database can be used for this purpose.

3.5 Management of Change

Management of change is addressed as part of the Health, Safety, Environment and Community Standard Management System, refer to GCAA Standard [GCAA-625378177-9979 – Change](#).

4 Definitions

4.1 ISO 31000:2009 definitions

Terms/abbreviations	Definitions
Risk	<p>The effect of uncertainty on objectives:</p> <ul style="list-style-type: none"> • An effect is a deviation from the expected – positive and / or negative. • Objectives can have different aspects (such as financial, health and safety, and environmental goals) and can apply at different levels (such as strategic, organisation-wide, project, product and process). • Risk is often characterised by reference to potential events and consequences, or a combination of these. • Risk is often expressed in terms of a combination of the consequences of an event (including changes in circumstances) and the associated likelihood of occurrence. • Uncertainty is the state, even partial, of deficiency of information related to understanding or knowledge of an event, its consequence, or likelihood
Event	<p>Occurrence or change of a particular set of circumstances:</p> <ul style="list-style-type: none"> • An event can be one or more occurrences, and have several causes. • An event can consist in nothing happening. • An event can sometimes be referred to as an “incident”. • An event without consequences can also be referred to as a “near miss”, “incident”, “near hit” or “close call”.
Consequence	<p>Outcome of an event affecting objectives:</p> <ul style="list-style-type: none"> • An event can lead to a range of consequences. • A consequence can be certain or uncertain, and can have positive or negative effects on objectives. • Consequences can be expressed qualitatively or quantitatively. • Initial consequences can escalate through knock-on effects.
Likelihood	<p>Chance of something happening:</p> <ul style="list-style-type: none"> • In risk management terminology, the word “likelihood” is used to refer to the chance of something happening, whether defined, measured or determined objectively or subjectively, qualitatively or quantitatively, and described using general terms or mathematically (such as a probability or a frequency over a given time period). • The English term “likelihood” does not have a direct equivalent in some languages; instead, the equivalent of the term “probability” is often used. However, in English, “probability” is often narrowly interpreted as a mathematical term. Therefore, in risk management terminology, “likelihood” is used with the intent that it should have the same broad interpretation as the term “probability” has in many languages other than English.
Level of risk	<p>Magnitude of a risk or combination of risks, expressed in terms of the combination of consequences and their likelihood.</p>

4.2 Glencore Definitions

Terms/abbreviations	Definitions
Catastrophic Hazard	A potential source of harm or a situation with a potential negative impact (PMC) of Category 5.
Control	An act, object (engineered) or system (combination of act and object) intended to prevent or mitigate an unwanted event.
Critical Control	A control that is crucial to preventing the event or mitigating the consequences of the event. The absence or failure of a critical control would significantly increase the risk despite the existence of the other controls. In addition, a control that prevents more than one unwanted event or mitigates more than one consequence is normally classified as critical
Fatal Hazard	A potential source of harm or a situation with a potential negative impact (health and safety) PMC of Category 4.
Hazard	A potential source of harm or a situation with a potential negative impact.
Incident	Any event that causes, or has the potential to cause, damage or loss. <ul style="list-style-type: none"> These include, but are not limited to, events impacting on people, business, property, environment, stakeholders and the community. Near misses are included as incidents.
High Potential Risk Incident (HPRI)	Incidents that could have likely resulted in a Catastrophic (5) or Major (4) outcome.
Near Miss Risk Incident (NMRI)	Incidents that could have likely resulted in Moderate (3), Minor (2) or Negligible (1) outcomes.
Potential Maximum Consequence (PMC)	The plausible worst-case consequence where all active / existing risk controls are assumed ineffective.

4.3 Glencore Coal Assets Australia Definitions

Terms/abbreviations	Definitions
ALARA	As Low As Reasonably Achievable.
ALARP	As Low As Reasonably Practicable.
Assurance	Refer to HSEC Definitions and Terms.
Broad Brush Risk Assessment (BBRA)	Refer to HSEC Definitions and Terms.
Bowtie Analysis	Refer to HSEC Definitions and Terms.
Cause	Refer to HSEC Definitions and Terms.
Control owner	Refer to HSEC Definitions and Terms.
Control Self-Assessment	Refer to HSEC Definitions and Terms.
Cost	Refer to HSEC Definitions and Terms.
Cost Benefit Analysis	Refer to HSEC Definitions and Terms.
Expected Consequence	Refer to HSEC Definitions and Terms.

Terms/abbreviations	Definitions
FMEA	Failure Mode and Effects Analysis. Refer to HSEC Definitions and Terms.
HAZOP	HAZard and OPerability study. Refer to HSEC Definitions and Terms.
Material impact	Significant change with $\geq 10\%$ effect on the financial impact or investment return or a consequence rating of 4 or above according to the Glencore Corporate Risk Management Matrix. Where the effect of the significant change is between 5% and 10% of the financial impact or investment return, a subjective assessment of the significant change should be made to determine if it is a material impact.
Monitor	Refer to HSEC Definitions and Terms.
Potential Maximum Consequence (PMC)	The total plausible maximum impact on a Department/Division or its operations/ projects arising from a risk without regard to controls.
Residual risk	Refer to HSEC Definitions and Terms.
Risk analysis	Refer to HSEC Definitions and Terms.
Risk assessment	Refer to HSEC Definitions and Terms.
RCE	Risk Control Effectiveness
Risk criteria	Refer to HSEC Definitions and Terms.
Risk evaluation	Refer to HSEC Definitions and Terms.
Risk identification	Refer to HSEC Definitions and Terms.
Risk management	Refer to HSEC Definitions and Terms.
Risk management database	The database operated by the Division/Department that holds risk management information including risk registers, risk treatment plans and risk management plans.
Risk Management Plan	The scheme that specifies the approach, the management components and resources to be applied to satisfy the requirements of G HSEC POL 0001 VER 2.0 - Glencore Corporate Risk Management Framework
Risk owner	Refer to HSEC Definitions and Terms.
Risk register	Refer to HSEC Definitions and Terms.
Risk treatment	Refer to HSEC Definitions and Terms.
Risk Treatment Plan	Refer to HSEC Definitions and Terms.
Root cause	Refer to HSEC Definitions and Terms.
Root cause analysis	Refer to HSEC Definitions and Terms.
Significant decision, change or event	Refer to HSEC Definitions and Terms.
SLAM	Stop, Look, Assess, Manage
SWIFT	Structured What-IF. A form of advanced facilitated risk identification study.
Task owner	Refer to HSEC Definitions and Terms.
WRAC	Workplace Risk Assessment and Control

5 Accountabilities

Table 5-1 – Accountabilities

Role	Accountabilities for this document
Chief Operating Officer	<ul style="list-style-type: none"> • Lead the development of Risk Management plans to align with the Glencore Risk Management Framework; • Provide strategic leadership and facilitation of optimal outcomes in achievement of objectives for business planning processes through effective risk management; • Monitor and evaluate risk reporting on the implementation of the Risk Management Standard and governance; • Resource the business to meet the Risk Management Plan; and • Report to the Chief Executive, HSEC and the Internal Audit Committees on key strategic risks.
Directors	<ul style="list-style-type: none"> • Implement and maintain the Risk Management Standard within their various areas of responsibility; • Monitor the effectiveness of the Risk/Control Management and treatment plans to see accurate and effective reporting of risk issues; and • Report to the COO on key risk issues.
All General Managers	<ul style="list-style-type: none"> • Implement and maintain the Risk Management Standard within their various areas of responsibility; • Monitor the effectiveness of the Risk/Control Management and treatment plans to see accurate and effective reporting of risk issues; and • Report to the COO on key risk issues.
Group Risk Champion	<ul style="list-style-type: none"> • Assist with development, implementation and maintenance of a risk management system which promotes timely identification, proper understanding and effective management of significant risks and accurate and meaningful reporting of Risk/control Management status within the business; • Co-ordination of risk management related reporting to the Leadership Team, and Audit Committee; • Facilitation of risk assessment workshops; • Guiding management in driving and embedding risk management practices; • Facilitating relevant training in risk management processes and the use of related tools; • Engaging with operation/project risk champions to ensure continual progress on the Risk Management Plan and advise on issues as and when required
Operation Risk Champion	<ul style="list-style-type: none"> • Assist with development, implementation and maintenance of a project risk management system which promotes timely identification, proper understanding and effective management of significant risks and accurate and meaningful reporting of Risk/control management status within the global coal business; • Facilitation of risk assessment workshops; • Assisting Group Risk Champion in driving and embedding project risk management practices; and • Facilitating relevant training in project risk management processes and the use of related tools.

6 Document Information

Relevant legislation, standards and other reference information must be regularly reviewed and monitored for updates and should be included in the site management system. Related documents and reference information in this section provides the linkage and source to develop and maintain site compliance information.

6.1 Related Documents

Related documents, listed in **Table 6-1** below, are internal documents directly related to or referenced from this document.

Number	Title
G HSEC POL 0001 VER 2.0	Glencore Corporate Risk Management Framework
GCAA-625378177-9977	10.0 Community and Stakeholder Engagement Standard
GCAA-625378177-9979	12.0 Change
GCAA-625378177-4072	Project Approval Gate Guideline
GCAA-625378177-10063	HSEC Definitions and Terms
GCAA-625378177-677	Life of Mine Risk Assessment Protocol
GCAA-625378177-2901	Risk Toleration Approval Procedure
GCAA-625378177-2902	Risk Toleration Approval Form
GCAA-625378177-10524	HSEC Management Framework
TEMPLATES	Risk Assessment Template-excel
TEMPLATES	Risk Assessment Report (MDG1010 compliant) Template-word

Table 6-1 – Related documents

6.2 Reference information

Reference information, listed in **Table 6-2** below, is information that is directly related to the development of this document or referenced from within this document.

Reference	Title
	ISO 31000: 2009 – Risk Management – Principles and guidelines.

Table 6-2 – Reference information

6.3 Change information

Full details of the document history are recorded in the document control register, by version. A summary of the current change is provided in **Table 6-3** below.

Version	Date	Change Details
1.0	27/08/2014	Implementation of Glencore Corporate Risk Management Framework
2.0	26/09/2014	Added reference for Approval Gate Guidelines. Moved figure 3-2 to before STEP 1. Changed reference to Health, Safety, Environment and Community from Sustainability. Referred definitions to GCAA-625378177-10063 – HSEC Definitions and Terms
3.0	9/11/2016	Updated table due to error in Table 3-4 – Timing for Authority for 17-22 changed to Immediately to within 24 hours
4.0	2/05/2017	Section 3.2 - Added Take 5 as a Risk Assessment example. Section 3.3.12.4 – Added preventative and/or mitigative controls. Section 4 – Added table for definitions. Updated document reference's after migration to new DMS system.
5.0	22/05/2017	Updated Appendix A - GLENORE COAL ASSETS AUSTRALIA RISK MATRIX to align with Glencore PLC.

Table 6-3 – Change information

Appendix A - Glencore Coal Assets Australia Risk management Matrix

GLENCORE COAL ASSETS AUSTRALIA RISK MATRIX

CONSEQUENCE [potential foreseeable outcome of the event]					LIKELIHOOD [of the event occurring with that consequence]					
Health & Safety	Environment	Financial Impact	Image & Reputation / Community	Legal & Compliance	Basis of Rating	E - Rare	D - Unlikely	C - Possible	B - Likely	A - Almost Certain
<ul style="list-style-type: none"> Multiple fatalities (5 or more fatalities in a single incident) Multiple cases (5 or more) of Permanent Damage Injuries or Diseases that result in permanent disabilities in a single incident 	<ul style="list-style-type: none"> Unconfined and widespread Environmental damage or effect (permanent; >10 years) Requires major remediation 	<ul style="list-style-type: none"> >\$600M investment return >\$100M operating profit >\$20M property damage 	<ul style="list-style-type: none"> Loss of multiple major customers or large proportion of sales contracts Sustained campaign by one or more international NGOs resulting in physical impact on the assets or loss of ability to operate Security incident resulting in multiple fatalities or major equipment damage Formal expression of significant dissatisfaction by government Grievance from internal or external stakeholder alleging human rights violation resulting in multiple fatalities 	<ul style="list-style-type: none"> Major litigation / prosecution at Glencore corporate level Nationalisation / loss of licence to operate 	LIFETIME OR PROJECT OR TRIAL OR FIXED TIME PERIOD OR NEW PROCESS / PLANT / R&D	Unlikely to occur during a lifetime OR Very unlikely to occur OR No known occurrences in broader worldwide industry	Could occur about once during a lifetime OR More likely <u>NOT</u> to occur than to occur OR Has occurred at least once in broader worldwide industry	Could occur more than once during a lifetime OR As likely to occur as not to occur OR Has occurred at least once in the mining / commodities trading industries	May occur about once per year OR More likely to occur than not occur OR Has occurred at least once within Glencore	May occur several times per year OR Expected to occur OR Has occurred several times within Glencore
5 Catastrophic					5 Catastrophic	15 (M)	19 (H)	22 (H)	24 (H)	25 (H)
<ul style="list-style-type: none"> Single incident resulting in: Less than 5 Fatalities Permanent Damage Injury or Disease that results in a permanent disability- less than 5 cases in a single incident 	<ul style="list-style-type: none"> Long-term (2 to 10 years) impact Requires significant remediation 	<ul style="list-style-type: none"> \$60-600M investment return \$20-100M operating profit \$2-20M property damage 	<ul style="list-style-type: none"> Security/ stakeholder incident resulting in single loss of life or equipment damage Grievance from internal or external stakeholder alleging human rights violation resulting in single fatality or serious injuries Topic of broad societal concern and criticism Negative media coverage at international level resulting in a Corporate statement within 24 hours Investigation from government and/ or international (or high-profile) NGOs Complaints from multiple "final" customers Loss of major customer Negative impact on share price 	<ul style="list-style-type: none"> Major litigation / prosecution at Department level 	4 Major	10 (M)	14 (M)	18 (H)	21 (H)	23 (H)
<ul style="list-style-type: none"> Lost Time Injury (LTI) Lost Time Disease (LTD) Permanent Disabling Injury (PDI) Permanent Disabling Disease (PDD) Single incident that results in multiple medical treatments 	<ul style="list-style-type: none"> Medium-term (<2 years) impact (typically within a year) Requires moderate remediation 	<ul style="list-style-type: none"> \$6-60M investment return \$2-20M operating profit \$200K-2M property damage 	<ul style="list-style-type: none"> Negative media coverage at national level over more than one day Complaint from a "final" customer Off-spec product Local Stakeholder action resulting in national societal scrutiny 	<ul style="list-style-type: none"> Major litigation / prosecution at Operation level 	3 Moderate	6 (L)	9 (M)	13 (M)	17 (H)	20 (H)
<ul style="list-style-type: none"> Medical Treatment Injury (MTI) Medical Treatment Disease (MTD) Restricted Work Injury (RWI) Restricted Work Disease (RWD) 	<ul style="list-style-type: none"> Near source Short-term impact (typically <week) Requires minor remediation 	<ul style="list-style-type: none"> \$600K-6M investment return \$200K-2M operating profit \$10-200K property damage 	<ul style="list-style-type: none"> Negative local/ regional media coverage Complaint received from an internal or external stakeholder 	<ul style="list-style-type: none"> Regulation breaches resulting in fine or litigation 	2 Minor	3 (L)	5 (L)	8 (M)	12 (M)	16 (M)
<ul style="list-style-type: none"> First Aid Injury (FAI) or illness (not considered disease or disorder) 	<ul style="list-style-type: none"> Near source and confined No lasting environmental damage or effect (typically <day) Requires minor or no remediation 	<ul style="list-style-type: none"> <\$600K investment return <\$200K operating profit <\$10K property damage 	<ul style="list-style-type: none"> Negligible media interest 	<ul style="list-style-type: none"> Regulation breaches without fine or litigation 	1 Negligible	1 (L)	2 (L)	4 (L)	7 (M)	11 (M)

Consequence Category	Consequence Type	Ownership	Action
Cat. 5	Catastrophic Hazard	Department / Functional / Operational / Asset Leadership	<ul style="list-style-type: none"> Quantitative or semi-quantitative risk assessment required. Capital expenditure will be justified to achieve ALARP ('As Low As Reasonably Practicable'). Catastrophic Hazard Management Plans (CHMP) must be implemented where practical, Crisis Management Plans (CMP) tested and Catastrophic Event Recovery Plans (CERP) developed.
Cat. 4 (Health & Safety consequence)	Fatal Hazard	Department / Functional / Operational / Asset Leadership	<ul style="list-style-type: none"> Glencore SafeCoal Fatal Hazard Protocols or appropriate management plans must be applied. Capital expenditure will be justified to achieve ALARP.
Risk Rank	Risk Rating	Ownership	Action

17 to 25	High Risk	Department / Functional / Operational / Asset Leadership	<ul style="list-style-type: none"> Install additional HARD and SOFT controls to achieve ALARP. Capital expenditure will be justified to achieve ALARP.
7 to 16	Medium Risk	Operational / Asset Leadership	<ul style="list-style-type: none"> install additional HARD and SOFT controls if necessary to achieve ALARP. Capital expenditure may be justified.
1 to 6	Low Risk	Operational / Asset Leadership	<ul style="list-style-type: none"> Install additional controls if necessary to achieve ALARP. Capital expenditure is not usually justified.

Appendix B - Considering the Design of Controls when Evaluating the Effectiveness of Risk Treatment Plans

When implementing the controls as part of Risk Treatment Plans either the controls are effective or they can reduce the level of risk to ALARP or ALARA. In addition, a cost benefit analysis is performed as the organisation may be better served by discontinuing the action.

Using the Control Design Effectiveness Method (CDEM) the effectiveness of a proposed control is determined by the following steps:

1. Assess the quality of the control by estimating the overall impact of the control:
 - i. A: 80-100% of the time;
 - ii. B: 50-80% of the time;
 - iii. C: 30-50% of the time; or
 - iv. D: less than 30% of the time
- Against
- v. Availability;
 - vi. Reliability; and
 - vii. Effectiveness.

The overall impact (average score) represents the overall quality of the safety control as shown in Figure B1 below:

Developing Control Effectiveness Calculation

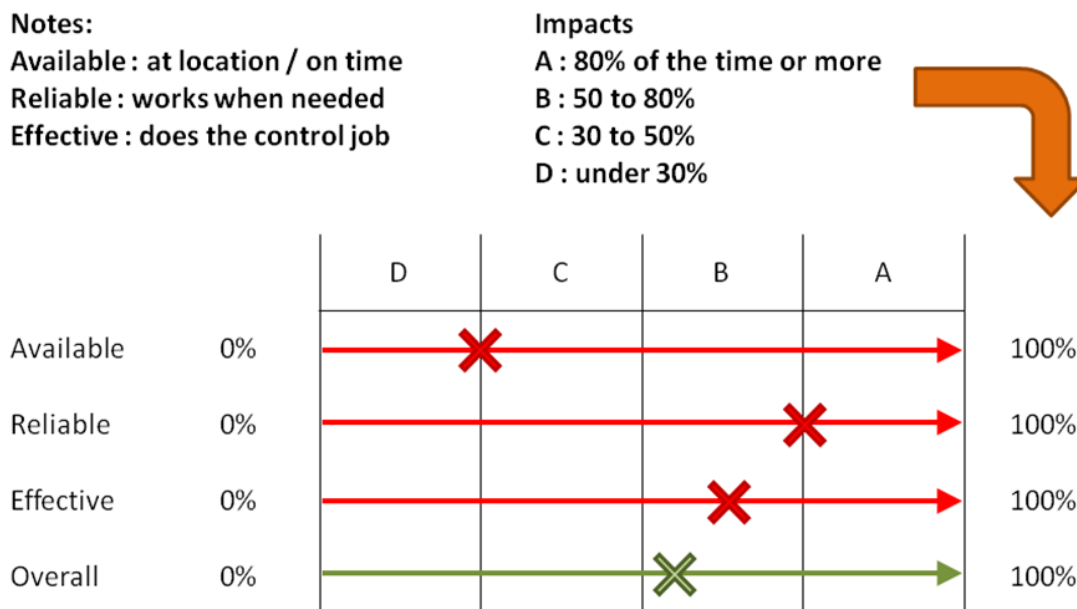


Figure B1 – Control design effectiveness calculation

2. Identify the type of control based on the hierarchy of controls, shown in Figure 3-4- Hierarchy of Control, and plot the overall quality from STEP 1 against the type of safety control giving a colour based ranking as shown in *Figure B2* below.
3. The more “green” controls the better. The absence of green controls means that there is a need to review the controls that are proposed and seek to improve them by changing the type of control or its effectiveness.

		Overall Impact			
		A ≥80%	B 50-80%	C 30-50%	D <30
Type of Control	1 Elimination		N/A	N/A	N/A
	2 Substitution				
	3 Isolation				
	4 Engineering				
	5 Administration –Procedures				
	6 Administration –Training				
	7 PPE				

Quality
The control will meet requirements:
A: equal or greater than 80% of time
B: 50 to 80% of time
C: 30 to 50% of time
D: less than 30% of time

Legend

	Control design: likely appropriate
	Control design: may require enhancement
	Control design: likely to require enhancement

Figure B2 – Control design effectiveness matrix