



WHS-57 Risk Management Procedure

Table of Contents

Table of Contents.....	1
1 Purpose.....	3
2 Scope.....	3
3 Roles and Responsibilities.....	3
4 Definitions.....	4
5 References.....	5
6 Records.....	5
7 General requirements.....	5
8 Identification of hazards.....	6
9 Assessing the risk.....	7
10 Controlling the risk.....	9
11 Review effectiveness of controls:.....	12
12 Task based risk assessment.....	13
13 Operational risk assessment.....	13
14 Risk registers.....	14

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1.0	22/05/2014	n/a	Procedure approved and released
1.0	09/09/2014	Rebranding	Rebranding & recoding
1.0	03/02/2015	Section 9.7 page 9	Updated risk matrix table
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1 Purpose

The purpose of this procedure is to outline the risk management process applied by Territory Generation in order to manage work health and safety and environmental risks at Territory Generation maintained sites.

The risk management process applied in Territory Generation shall be a proactive, planned and systematic approach covering all reasonably foreseeable hazards and associated risks to health and safety and be used as a means of achieving continuous improvement.

Note: Strategic, Corporate and higher level Project risk management are not covered by this procedure.

2 Scope

This procedure applies to Territory Generation all.

3 Roles and Responsibilities

Role / Title	Responsibility
Chief Executive Officer	Ensure that : <ul style="list-style-type: none"> • Personnel are aware of requirements of this procedure and its management in sites under Territory Generation control. • Reviews procedure as required.
Manager Territory Generation North and South	<ul style="list-style-type: none"> • Ensure that: • This procedure is put in place at relevant power stations. • Personnel are advised and trained as necessary in the procedure to be followed. • Contractors are informed of and follow the procedure, where applicable. • Contribute to procedure reviews
All Personnel	<ul style="list-style-type: none"> • Ensure that this procedure is followed personally and by contractors and visitors under their control.
Document Owner	<ul style="list-style-type: none"> • The position who prepares, reviews and maintains this document
Document Sponsor	<ul style="list-style-type: none"> • The position responsible for the approval and use of this document.

4 Definitions

Risk	Means the likelihood that harm (death, injury or illness) may occur because of a hazard
Hazard	Means a thing or condition which has the potential to cause injury or harm to health
Risk Management	Means the process of identifying, assessing, controlling, monitoring, reviewing and communicating risks.
Risk Owner	Means the person of suitable authority who is deemed responsible for the management of risks identified within their area of influence
Inherent risk	Means the level of risk that is calculated with no controls in place
Residual risk	Means the level of risk that is calculated with current controls in place
Risk matrix	Means the agreed likelihood and consequence tables used to calculate a risk score to quantify the level of inherent and residual risk.
Risk control	Means taking action to eliminate health and safety risks so far as reasonably practicable, and if that is not possible; minimising the risks so far as reasonably practicable.
As far as reasonable practicable	Means that which is reasonably able to be done to ensure health and safety
As low as reasonably practicable (ALARP)	Means that which is reasonably able to be done to reduce a risk to a lower level of risk
Operational risk assessment	<p>Means a higher level risk assessment process used to manage the risks arising from operational matters involving internal procedures, people and systems. This process is usually conducted by a stakeholder group.</p> <p>Examples when may be used:</p> <ul style="list-style-type: none"> - Specific projects involving the introduction of new plant or equipment - Complex work activities - High risk work activities
Task based risk assessment	Means a lower level risk assessment process used to manage the risks arising from a job or task. This process is usually conducted at the task level by the persons carrying out the work.

	Examples when used: - Routine maintenance activities
Risk Register	Means the tool used to record organisational wide risk assessments. It acts as a central repository for all risks identified by organisation and, for each risk, includes information such as the risk owner, risk description, cause, likelihood, consequence, controls and monitoring.
Shall	Mandatory requirement
Should	Advisory requirement

5 References

- NT Work Health and Safety (National Uniform Legislation) Act Jan 2012
- NT Work Health and Safety (National Uniform Legislation) Regulations June 2013
- NT WorkSafe Code of Practice How to Manage Work Health and Safety Risks Jan 2012
- AS ISO 31000:2009 Risk Management Principles and Guidelines
- WHS-30 Operational Risk assessment Template BDOC2013/326
- WHS-11 JSEA Process Work Instruction BDOC2013/353
- WHS-11A JSEA Template BDOC2013/105

6 Records

- Completed JSEA's shall be referenced to the associated job number and stored for a period of five years. It is at the discretion of each site coordinator as to if these records are stored electronically in TRIM or as a filed hard copy.
- Completed operational risk assessments and all other related records shall be saved in TRIM and stored for a period of 5 years.
- Territory Generation Work Health and Safety and Environmental risk registers shall be maintained in GRACE.

7 General requirements

- 7.1 Risk management processes shall be used to ensure that risks are either eliminated or minimised to a level that is considered *as low as reasonable practicable* in order to enable work to be conducted safely.
- 7.2 When determining what is "reasonably practicable" the following shall be taken into account:
- a) The likelihood of the hazard or risk occurring
 - b) The degree of harm (consequence) that might result from the hazard or risk
 - c) Knowledge about the hazard or risk and ways of eliminating or minimising the risk
 - d) The availability and suitability of ways to eliminate or minimise the risk

- e) Assessing the extent or the risk and the available ways to eliminate or reduce it to determine if the cost is grossly disproportionate to the risk.

7.3 The application of the risk management process shall incorporate four key steps:

- a) Identification of hazards – to find out what could cause harm
- b) Assessing the risks – to determine the nature of harm that could be caused by the hazard including likelihood of it happening and the level of consequence
- c) Controlling the risks – implementing the most effective control measures that is reasonably practicable under the circumstances
- d) Reviewing the control measures – to ensure they are working effectively

7.4 Consultation shall occur with workers and Health and Safety Representatives in relation to the risk management processes applied, where it may directly affect them.

7.5 There are three main types of risk assessment processes that shall be used to manage risks to work health, safety and the environment in Territory Generation:

- a) Task based risk assessment (see Section 12)
- b) Operational risk assessment (see Section 13)
- c) Risk Registers (see Section 14)

8 Identification of hazards

8.1 The identification of hazards is a primary element in all risk assessment processes and involves finding things and situations that could potentially cause harm.

8.2 Hazards generally arise from the following aspects of work and their interaction, including:

- a) physical work environment
- b) equipment, materials and substances used
- c) work tasks and how they are performed
- d) work design and management

8.3 Example of common hazards

Hazard	Potential Harm
Manual tasks	Overexertion or repetitive movement can cause muscular strain
Gravity	Falling objects, falls, slips and trips of people can cause fractures, bruises, lacerations, dislocations, concussion, permanent injuries or death
Electricity	Potential ignition source. Exposure to live electrical wires can cause shock, burns or death from electrocution
Machinery and equipment	Being hit by moving vehicles, or being caught by moving parts of machinery can cause fractures, bruises, lacerations, dislocations, permanent injuries or death

Hazardous chemicals	Chemicals (such as acids, hydrocarbons, heavy metals) and dusts (such as asbestos and silica) can cause respiratory illnesses, cancers or dermatitis
Extreme temperatures	Heat can cause burns, heat stroke or fatigue Cold can cause hypothermia or frost bite
Noise	Exposure to loud noise can cause permanent hearing damage
Radiation	Ultra violet, welding arc flashes, micro waves and lasers can cause burns, cancer or blindness
Biological	Micro-organisms can cause hepatitis, legionnaires' disease, Q fever, HIV/AIDS or allergies
Psychosocial hazards	Effects of work-related stress, bullying, violence and work-related fatigue

8.4 Hazards shall be identified through the following processes:

- a) Inspection – Either formal (e.g. scheduled inspections/audits) or informal (e.g. during a site walk around/Safe Act Observations)
- b) Consultation with workers conducting the work
- c) Review of available information from industry specific sources such as the Regulator, industry associations, technical specialists, manufacturers and supplier information and also through analysis of health and safety reports, worker complaints, audit and inspection reports etc.
- d) Facilitation of higher level identification processes such as HAZOP (Hazard Operability); process mapping etc. should also be used, where applicable.

9 Assessing the risk

- 9.1 On identification of hazards the risk of harm associated with a hazard shall be assessed in consideration of the consequence of exposure to the hazard and the likelihood of it happening.
- 9.2 Risks shall be analysed in terms of credible worst case scenario for both likelihood and consequence.
- 9.3 Inherent and residual risk shall be calculated when conducting an operational risk assessment.
- 9.4 On determination of required controls the residual risk shall be calculated and deemed acceptable or not acceptable by the risk owner.
- 9.5 Where it is assessed that the risk level is unacceptable the activity shall not proceed until the risk is controlled to an acceptable level.

9.6 The following matrixes shall be applied in Territory Generation to operational risk assessments and risk registers relating to work health and safety and environment:

a) Likelihood

Level	Likelihood
E Almost Certain	Event Is expected to occur on a regular basis. Multiple times a year. Probability of occurring is greater than 90%
D Likely	An event is expected to occur from time to time. At least once per year. Probability of occurring is 60% - 90%
C Possible	An event could occur at some time Once in every 1 - 3 years Probability of occurring is between 40% - 60%
B Unlikely	Event not expected but possible that one could occur. Once every 3 to 9 years Probability of occurring is between 10% and 40%
A Rare	An event will occur only in exceptional circumstances. Once every 10 years or greater Probability of occurring is less than 10%

b) Consequences – Work Health and Safety

Level	Consequences
5 Severe	Fatality; Long term or permanent disabling effects on human health (more than one person)
4 Major	Injuries requiring hospitalisation; Long term or permanent disabling effects on human health (a single person)
3 Moderate	Injury or Illness requiring medical treatment; Short term or reversible disabling effect to human health
2 Minor	Injuries requiring first aid treatment; Minor short term inconvenience or symptoms to human health
1 Insignificant	Incident with or without minor injury. No impact on human health

c) Consequences – Environment

Level	Consequences
5 Severe	Substantial permanent damage to widespread and sensitive areas.
4 Major	Minor permanent damage with long-term effect on environment
3 Moderate	Widespread temporary damage with extended resources to manage. Impact on third parties
2 Minor	Localised low level damage and remedied with minimal resources
1 Insignificant	Contained within controls. No measurable impact.

- 9.7 Risk matrix - The agreed likelihood and consequence values are placed into the matrix to determine the (quantitative) risk ranking.

Almost Certain E	Medium	Medium	Very High	Extreme	Extreme
Likely D	Low	Medium	High	Very High	Extreme
Possible C	Low	Low	Medium	High	Very High
Unlikely B	Low	Low	Medium	High	High
Rare A	Low	Low	Medium	Medium	High
	Insignificant 1	Minor 2	Moderate 3	Major 4	Severe 5

10 Controlling the risk

- 10.1 Control strategies shall be put in place to eliminate or minimise risks associated with the identified hazards.
- 10.2 The hierarchy of control shall be applied with the objective to reduce the risk to a level that is as *low as reasonable practicable* (ALARP).
- 10.3 Control measures shall be considered starting at the top of the hierarchy of control list and work down one step at a time.
- 10.4 The nearer to the top of the list a control measure is, the more effective it will be. Eliminating the hazard entirely is the most effective control measure
- 10.5 PPE is the least effective control measure, as the hazard still exists. PPE should only be selected when there are no other practical control measures available, or for use as an interim measure or to supplement higher level control measures.

Table 1: Levels within the hierarchy of control

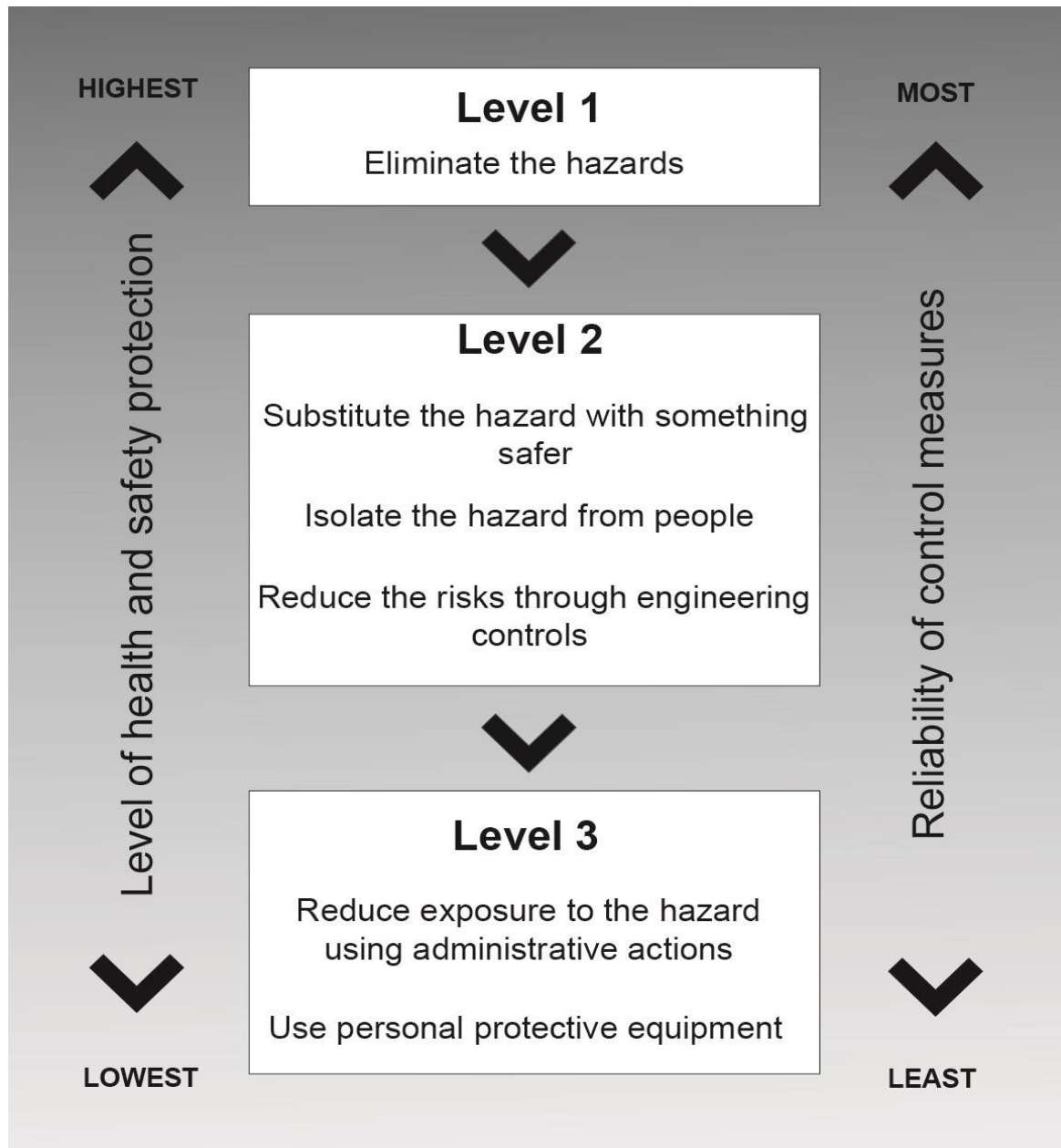


Table 2: Control descriptions and examples:

Control	Description	Examples
Elimination	Removing the hazard or hazardous work practice from the workplace. NOTE: Elimination is the most effective control measure	<ul style="list-style-type: none"> ➤ Installation of exhaust extraction to remove pollutants. ➤ Acoustic panels to reduce noise exposure
Substitution	Substituting or replacing the hazard or hazardous work practice with a less hazardous one.	<ul style="list-style-type: none"> ➤ Change a chemical being used to a less hazardous one ➤ Use pumps for chemical dosing instead of decanting.
Isolation	Isolating or separating the hazard or hazardous work practice from persons at the workplace or the general work area.	<ul style="list-style-type: none"> ➤ Install physical barriers such as tapes or locks ➤ Machine guarding.
Engineering	Engineering the hazard out to reduce the risk.	<ul style="list-style-type: none"> ➤ Modifications to tools or equipment ➤ Mechanical ventilation ➤ Automating processes.
Administrative	Introducing policies, and changes in work practice and procedures that reduce the risk.	<ul style="list-style-type: none"> ➤ Limiting the time employees are exposed to the hazard, ➤ Reducing the number of employees exposed, rotating jobs, ➤ Lockout or tag-out procedures
Personal Protective Equipment (PPE)	The risk control application of providing personal protective equipment should be considered only: <ul style="list-style-type: none"> ➤ When other control measures are not practicable. ➤ When used in conjunction with other methods to provide a greater measure of protection. ➤ Where specified by legislation as a basic requirement. NOTE: PPE is the last and least effective means of control as the hazard still exists.	<ul style="list-style-type: none"> ➤ Ear muffs, face masks, high visibility clothing, gloves etc...

10.6 The implementation of risk controls shall consider the following:

WHS-57 Risk Management Procedure

- a) Who will be affected,
 - b) Any relevant training, information and instruction that may be required including changes to induction or training programs,
 - c) The timeframe for successful implementation,
 - d) The cost of successful implementation,
 - e) The ability to monitor and measure the effectiveness of the control, and;
 - f) The impact on internal and external stakeholders as a result of successful implementation.
- 10.7 Where appropriate risk controls shall be supported by an action plan which shall include defined steps including action(s) required, responsible person, timeframes for completion and any other information that may be required.
- 10.8 For accountability purposes formal actions arising out of risk assessment processes should be entered in GRACE Action Manager to ensure they are monitored, completed within the scheduled time frame by the nominated action officer and approved by the relevant Manager.
- 10.9 Actions to be taken based on evaluation of the residual level of risk:

	Low	Medium	High	Very High	Extreme
Escalation (new risk or reassessment)	Reported to supervisor or coordinator within 5 working days	Reported to supervisor or coordinator within 2 working days	Reported to Regional Manager or ELT member within 2 working days	To be reported to ELT member within 1 day	Reported to Chief Executive Officer ASAP
Reporting to ARC	To be reported to ARC through risk review process	To be reported to ARC through risk review process	To be reported to ARC on an annual basis	To be reported to ARC on an annual basis	To be reported at each ARC meeting
Risk Monitoring	Supervisors and Coordinators	Regional Manager and ELT member	ELT Member	ELT Member	Chief Executive Officer
Tolerance	Tolerable unless otherwise determined by management	Tolerable unless otherwise determined by management	Tolerance to be determined by ELT member	Tolerance to be determined by Chief Executive Officer	Tolerance to be determined by the Board
Treatment Plan Approval	ELT member	ELT member	ELT member	Chief Executive Officer	Board
Treatment Plan Monitoring	Reporting frequency to be determined by Regional Manager/ELT member	Reporting frequency to be determined by Regional Manager/ELT member	Status to be reported to the Chief Executive on a quarterly basis	Status to be reported to the Chief Executive Officer on a monthly basis	Status reported to each ARC meeting

11 Review effectiveness of controls:

- 11.1 The control measures put in place to manage risks shall be reviewed regularly to make sure they work as planned and are effective.
- 11.2 A review shall be undertaken:
- a) When the control measure is not effective in controlling the risk
 - b) Before a change at the workplace that is likely to give rise to a new or different health and safety risk that the control measure may not effectively control
 - c) If a new hazard or risk is identified
 - d) If the results of consultation indicate that a review is necessary
 - e) If a Health and Safety Representative requests a review.
- 11.3 A number of processes may be used to review the effectiveness of controls. These include but are not limited to:
- a) Auditing
 - b) Safe Act Observations
 - c) Asset, equipment or workplace inspections
 - d) Calibration programs

- e) Training or awareness programs
- f) Contract planning, monitoring and review
- g) Incident investigations
- h) Regulatory compliance monitoring
- i) Emergency exercises.

12 Task based risk assessment

- 12.1 Task based risk assessment is the process to be applied for the management of day-to-day work health safety and environmental risks.
- 12.2 Task based risk assessment process shall be applied and completed by workers conducting routine work activities on Territory Generation maintained sites
- 12.3 The Territory Generation *Job Safety Environmental Analysis (JSEA) Template* or equivalent shall be used to record task based risk assessments (see [WHS-11A JSEA Template](#))
- 12.4 Persons in control of Contractors planning to conduct work on Territory Generation maintained sites shall review the contractors JSEA process or equivalent. If the Contractor process does not meet or exceed Territory Generation JSEA requirements then the Contractor shall be instructed in and use the Territory Generation JSEA process as outlined in work instruction [WHS-11 JSEA Process Work Instruction](#)
- 12.5 The task based risk assessment process shall take into account health, safety and environmental risks that need to be immediately controlled prior to work commencing.
- 12.6 Where the worker identifying the hazards considers the risk too high for work to commence they shall either:
 - a) Reduce the risk to a level that is acceptable as far as reasonably practicable; by implementing further appropriate controls, or
 - b) Report the risk to their line Supervisor for further review and assessment.
- 12.7 Where it is deemed that the task based risk assessment process is insufficient to demonstrate the management of risks associated with a work activity, a higher level operational risk assessment shall be applied to quantify the residual risk and assess if the work can be completed safely.

13 Operational risk assessment

- 13.1 Operational risk assessment is the process to be applied for the management of risks arising from operational matters involving internal procedures, people and systems.
- 13.2 Operational risk assessment process shall be applied when identified as appropriate; by key stakeholders* conducting complex work activities/projects/introduction of new plant or equipment etc. on Territory Generation maintained sites. *Note: Workers engaged in the work activity shall be included in the stakeholder group.
- 13.3 Persons in control of Contractors planning to conduct work on Territory Generation maintained sites shall review Contractors operational risk assessments (or equivalent processes); to ensure that they meet or exceed Territory Generation risk management requirements in demonstrating that all hazards have been identified, assessed and controlled as far as reasonable practicable to manage the risk.

- 13.4 The Territory Generation *Operational Risk Assessment Template* and associated matrixes (or contractor equivalent); shall be used to record operational risk assessments (see [WHS-30 Operational Risk Assessment Template](#))
- 13.5 The risk assessment matrixes in point 9.6 shall be applied in Territory Generation to operational risk assessments relating to work health and safety and environment:
- 14 Risk registers**
- 14.1 Risk registers are a tool used to record organisational wide risk assessments.
- 14.2 Risk registers for the recording of work health and safety and environmental risks identified by the organisation shall be established in the GRACE Compliance module
- 14.3 The details recorded in the risk register shall be at minimum for each risk:
- The risk owner
 - Risk description
 - Risk cause
 - Inherent risk assessment score
 - Residual risk assessment score
 - Details of controls and monitoring processes in place
- 14.4 Where applicable the outcomes of operational risk assessments shall be recorded in the relevant risk register
- 14.5 Task based risk assessments are not included in the risk register unless the risk has been escalated to an operational risk assessment.
- 14.6 The risk assessment matrixes in point 9.6 shall be applied in Territory Generation to risk registers relating to work health and safety and environment:
- 14.7 Risk registers shall be reviewed and/or updated as required. Examples of when a risk register shall be reviewed include:
- When a new hazard is identified,
 - As an outcome of an operational risk assessment,
 - Following an incident or as an outcome of an investigation
 - Following changes to legal or other compliance requirements
 - Where audits have identified gaps
 - When changes to business operations occur
 - On the introduction of new plant/equipment and/or processes.
- 14.8 A risk review shall determine:
- The accuracy of the risk description;
 - The relevance of the risk information in relation to the scope and context of Territory Generation operations;

- The adequacy and effectiveness of existing controls (including the addition of implemented risk treatments);
 - Whether the agreed target risk has been achieved;
 - The new residual risk ranking based on the success of the implemented risk treatments;
 - Whether the level of risk is considered to be acceptable;
 - Any new risk treatments if the risk is not acceptable, and;
 - A revised target risk based on the additional risk treatments identified.
- 14.9 The review shall ensure that successfully implemented risk treatments are classified as existing controls on the relevant risk register and that these controls are being monitored for effectiveness.
- 14.10 Risk registers shall be formally reviewed by Territory Generation senior management and worker representatives annually
- 14.11 The Territory Generation WHS Group shall facilitate all risk register updates in GRACE as the document owner.