SAFETY MANAGEMENT AND MITIGATION PLAN

Territory Generation

CONTROLLED DOCUMENT

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Contents

1   INTRODUCTION

1.1 Purpose

The purpose of this *Safety Management and Mitigation Plan* (**SMMP**) is to present to the Utilities Commission detail of Power Generation Corporation's (Territory Generation) approach to safety, relating specifically to its electrical infrastructure. This plan's aim is to demonstrate that Territory Generation meets its workplace health and safety obligations accountabilities and responsibilities in ensuring the health and safety of all people who enter Territory Generation sites and work on or near electrical infrastructure, whether they are employees, contractors or visitors. (Note: Territory Generation power station sites have restricted access to members of the public see section 5).

1.2 Scope

This document provides information on Territory Generation's safety management systems, policies, procedures and continuous improvement strategies relating to our electrical plant and equipment, which are in place to ensure the health and safety of all persons entering working on or visiting our sites.

This document does not include information on Territory Generation's:

- Approach to workplace health and safety for workers conducting work on plant and equipment not associated with the generation of electricity.

- General business responsibilities relating to the provision of electricity services to people of the Northern Territory.

1.3 Background

Background information on Territory Generation's overall business accountabilities, responsibilities and asset information including the types of generating plant, capacity, availability, output and fuel, can be found in the following references:

- *Territory Generation Statement of Corporate Intent*

- *Territory Generation Annual Reports*

- Territory Generation asset management documentation

These documents can be provided on request.

1.4 Supporting Information

The expression '*good electricity industry practice'* has been agreed between Territory Generationand the UC to mean the elements of the Australian Standard AS 5577 *Electricity Network Safety Management Systems.*

The expression '*around electricity infrastructure'* has been interpreted to mean '*on, near or relatedto*' when referring to Territory Generation's electricity infrastructure assets.

Documents used as source material in preparing this SMMP are listed in Section 17 under relevantsub sections. These documents can be provided for reference if required.

2 TERRITORY GENERATION

2.1 Health Safety and Environment (HSE) Management Plan

Territory Generation is committed to ensuring the health and safety of all employees, contractors working on its sites and visitors. Territory Generation's focus is the promotion of safe behaviours and a positive safety culture in order to achieve a workplace free of incidents and injuries.

This focus is supported by the organisation's *Workplace Health and Safety Policy* commitment to ensure that the operation, maintenance and development of its plant, equipment and property, are always conducted with measures taken to remove or reduce risks to our people's health and safety.

Territory Generation's Health, Safety and Environment (HSE) Management Plan provides the framework for the management of the health and safety of people, assets and property. Its content is aligned to the Work Health and Safety Act 2011 and is referenced to ISO 45001 *Occupational Health and Safety Management Systems.*

The application of a systematic and cyclic approach to managing safety enables Territory Generation as an organisation to meet its obligations under the NT Work Health and Safety (National Uniform Legislation) Act, Regulations, codes of practices.

2.2 Safety Culture

a) Territory Generation's *Stop Unsafe Work* and no blame policies gives the authority and challenges all persons to take the initiative to stop any work that they consider may be unsafe. This information is communicated through site induction, toolbox meetings, intranet and internet information.

b) Territory Generation *Safety Non-Negotiables* are a set of ten key safety rules which have been established as a standard of expected safety behaviour. These key rules target high risk activities, behaviours or processes which have the potential to cause serious injury or fatality if not complied with.

Any incident where there is a non-compliance with a Safety Non Negotiable is treated as a significant safety breach and requires investigation.

The following ten rules apply:

- FITNESS FOR WORK - Never attend site or conduct work if impaired by fatigue, alcohol, drugs or medication.

- POLICIES AND PROCEDURES - Always comply with TGen's safety requirements as documented in all policies, procedures and work instructions.

- PERMIT TO WORK - Never perform any high-risk work without a valid permit and never remove another person's Danger Tag and/or personal lock.

- UNSAFE WORK CONDITIONS - Always STOP THE JOB if there is a risk of harm to people, plant or equipment.

- MANAGE CONTRACTORS - Always ensure contractors under my responsibility are site inducted, monitored and supervised.

- ENERGY SOURCES - Always ensure all isolations are clearly identified, proven, tagged and/or locked to prevent inadvertent operation.

- WORK AT HEIGHTS - Always use fall prevention systems and implement dropped object controls when working at heights.

- CONFINED SPACE -Never enter a confined space without being trained, authorised and issued a permit.

- VEHICLES AND MOBILE PLANT - Never operate TGen vehicles or powered mobile plant without appropriate licencing and authorisation.

- SUSPENDED LOADS - Never enter a lift zone without authorisation and never walk, stand or work under a suspended load.

Underpinning the Safety Non-Negotiables are a series of ten (10) Vital Behaviours which are demonstrative of safety leadership and taking personal responsibility and accountability for safety.

- INCIDENT REPORTING – Always report every incident, hazard and near miss no matter how small.
- MANUAL HANDLING – Always assess anything to be lifted or moved and use mechanical aids if possible.
- HAZARDOUS CHEMICALS – Always check the Safety Data Sheet (SDS) before using, handling and storing chemicals.
- PPE COMPLIANCE – Always wear the correct Personal Protective Equipment (PPE) for the task and comply with mandatory PPE requirements.
- MOBILE PHONES – Never use a mobile phone when operating vehicles and plant or when walking in operational areas.
- SAFETY GUARDING – Never remove safety guards and devices. Do not operate any plant and equipment if these protections have been removed or disabled.
- BARRICADED AREAS – Never enter a barricaded area without first seeking permission from the person in charge.
- RISK MANAGEMENT – Always identify and control hazards prior to commencing work using a Job Safety Environmental Analysis (JSEA) and a Take 5
- LIFTING EQUIPMENT – Always use approved lifting equipment that is tested and tagged and within certification.
- HAND TOOLS AND EQUIPMENT – Always use tolls and equipment which are fit for purpose and appropriate for the task.

Territory Generation's expectation is that all personnel shall demonstrate, promote and comply with these key safety requirements and behaviours at all times.

c) **Safety Conversations program is** used at Territory Generation to support and promote safety culture change, to develop relationships and create a habit of regularly thinking and talking about safety. Line Managers and coordinators are allocated targets to complete as a Key Performance Indicator (KPI) for safety. Other personnel may be allocated targets as part of the Our Plan process.

d) Territory Generation conducts regular external audits on Safety culture in order to assess organisational maturity, the ongoing development of safety culture within the organisation and to identify opportunities for continuous improvement.

2.3 Organisational structure

Diagram 1: Organisational structure in relation to this plan
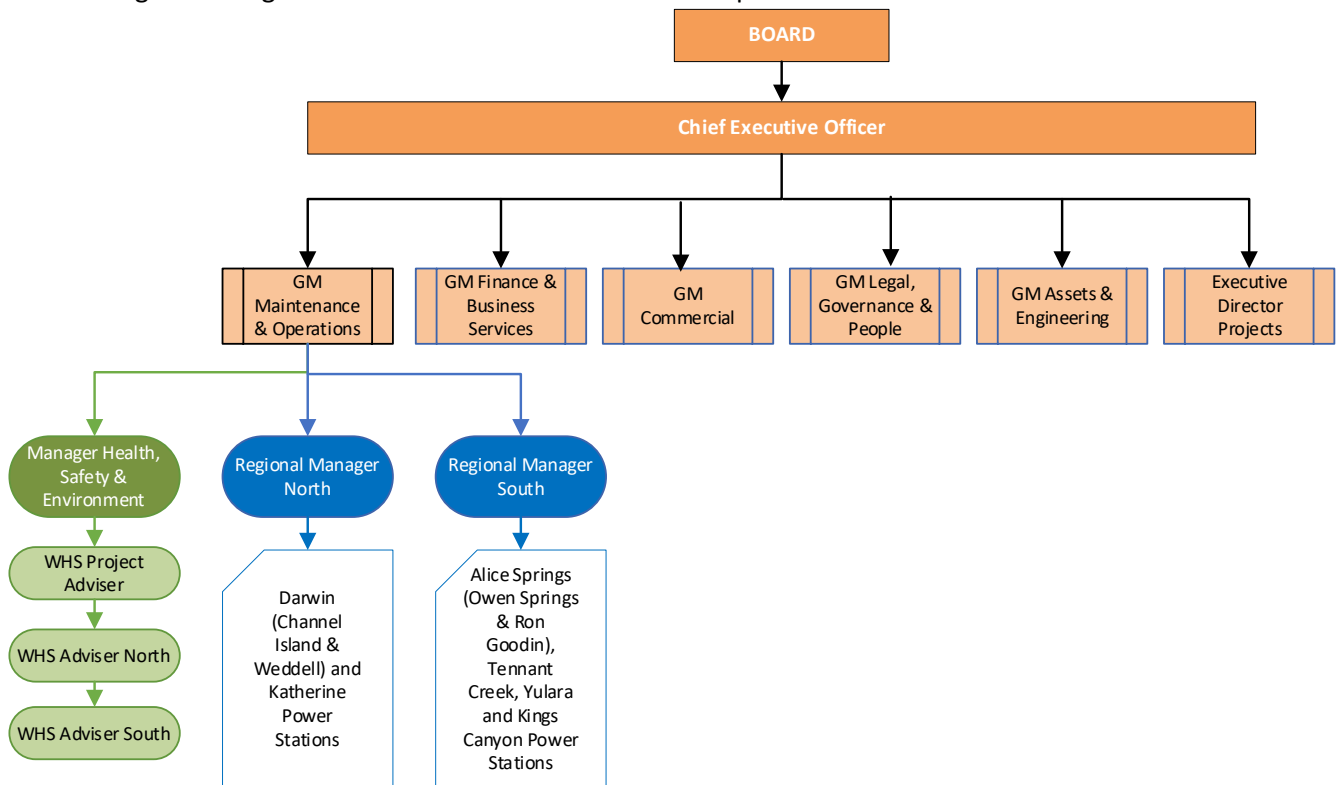
3 PEOPLE SAFETY

3.1 Site Induction and Orientation

No employee, contractor or visitor may enter a Territory Generation site without a valid induction.

Site induction processes are conducted face to face and comprises the following:

Inductee	General induction	Site specific
Employees & Contractors	General induction delivered in classroom	Site specific induction inclusive of site orientation walk around. For contractors the site induction also includes task specific elements
Visitors	n/a	Site specific induction inclusive of site orientation walk around to the level required. Note: Mandatory for visitors to be escorted at all times on operational sites.

Site maps are used as part of the orientation process to highlight specific aspects of each site including but not limited to: emergency assembly areas, locations of first aid rooms (where applicable) and mandatory safety glasses and safety helmet zones.

A site induction checklist is completed for each inductee (Employee, contractor and visitor) checking off that critical safety information and procedural requirements have been covered with each inductee including but not limited to: minimum dress and PPE requirements, access, emergency response, first aid, communications, Permit to Work, incident reporting and investigation, and fitness for work.

Site induction processes are linked with site security access processes (Honeywell system) to ensure the right level of access is allocated to staff, contractors and visitors accessing a site.

Induction status is recorded in the electronic Training Management System (TMS).

3.2 Permit to Work

Territory Generation has a Permit System which defines and documents the rules, requirements and processes on how we access our plant and equipment to safely conduct work. This system is in place to ensure standard, consistent and controlled Permit practices are applied across all TGen sites.

The Permit System is structured to support and ensure that:

- all work is planned, prepared for, reviewed, and approved prior to commencement.
- every scope of work is clearly defined and understood by all persons involved.
- all hazards are identified, risk assessed and controlled effectively.
- high risk work activities such as confined space entry, hot work, excavation, and penetration, working and heights and non-routine lifts have additional planning and controls.
- all workers are appropriately trained and authorised based on defined roles and responsibilities.
- consultation process occurs between stakeholders throughout all workflows.
- all plant and equipment are appropriately isolated using Lock Out /Tag Out processes and all isolations are verified prior to work.
- Permit conditions and work scope are communicated, understood and complied with by all persons involved in the work.
- all work is conducted safely with conditions and controls regularly reviewed.

- on completion of work - plant and equipment is safely restored and a status handover conducted.

Permit to Work training is delivered face to face and on-line with competency assessments before signing off. Records of authorisation are captured in the Training Management System maintained by the Learning & Development Unit. Training prerequisites are checked prior to approval of authorisationto ensure the person is appropriately qualified and licenced, where applicable; for the work being conducted and the allocated level of authorisation.

The electronic Training Management System (TMS) provides the ability to record and monitor that all workers have up to date training when working on or near electricity infrastructure. Territory Generation Permit System has been standardised across all sites*.

- At Channel Island, Weddell and Own Springs Power Stations the Electronic Permit to Work System (Surpass) is operational.

- At the Katherine, Yulara, Kings Canyon and Tennant Creek Power Stations the paper-based alternative of the electronic Permit to Work System is operational and currently under transition to the electronic version.

   *Exception - Ron Goodin Power Station continues to utilise the previous Access to Apparatus rules system.

- The Honeywell site access software is also integrated with the electronic Training Management System (TMS) and the electronic permit to work system (Surpass). Identity cards issued for workers are used for both site access and to swipe-onto the electronic permit to work system, at the sites where this is in operation.

3.3 Electrical Safety Procedure

Territory Generation has a comprehensive Electrical Safety Procedure which documents the processes used in Territory Generation (TGen) for the safety of persons working on electrical plant and equipment and for the prevention of damage to equipment and the environment. It covers the overarching electrical safety requirements for TGen Operators, contractors, electrical workers, engineers, and other workers identified in this procedure.

Content in this procedure includes but is not limited to:

- General electrical safety requirements
- Arc flash guidelines
- Arc flash labels
- Exclusion zones and safe approach distances
- Work in the vicinity of Electrical Apparatus
- Work on or near HV electrical apparatus
- Operations on or near HV apparatus
- Earthing of Electrical Apparatus
- ELV and LV electrical apparatus
- Battery Energy Storage Systems (BESS)

3.4 Training

Territory Generation provides relevant training to ensure our worker's health and safety. Training provided includes legislative requirements, Induction & Permit requirements and specialised training such as High Voltage Operations.

Legislative training requirements are those surrounding licencing, operating certain equipment, including any supporting courses that may be required that supports the licence, example: Low Voltage Rescue training, or forklift training to obtain a High-Risk Licence. These courses are refreshed as per the requirements to ensure that our employees have current skills sets and are

delivered by Registered Training Organisations to a National Unit of Competency.

The electronic Training Management System (TMS) provides a single database for all employee and contractor training records.

This system enables:

- Employees to view and manage their own training requests and records.

- Supervisors to view their personnel's records and approve training requests; and

- The Learning and Development Unit to schedule and record training sessions.

3.5 Alcohol and other drugs

No changes

In alignment with its fitness for work framework, Territory Generation has an alcohol and other drugs program in place. This program's intent is to promote a safe and healthy work environment for all workers, free from the hazards associated with the inappropriate use of alcohol and/or other drugs.

This program includes: random testing protocols inclusive of all sites and all persons (employee, contractor or visitor).

4 CONTRACTOR SAFETY

Territory Generation's Health, Safety and Environment (HSE) Management Plan extends to all contractors who enter and conduct work on our sites.

- The selection and approval of contractors to undertake work on Territory Generation sites includes assessment of safety systems at the tender stage as a standard part of the procurement process.

- Checks verify that the contractor holds all relevant licenses and insurances (public liability, workers compensation).

- Where applicable the Contractor shall submit a Health Safety and Environmental Management Plan to the TGen representative and Safety Unit which shall outline how all aspects of the intended work scope will comply with all relevant HSE legislation, regulations, and codes of practice. This includes policies and procedures for any site-specific requirements on Territory Generation sites.

- The Contractors HSE Management Plan shall demonstrate to TGen that the management of workplace health, safety and environmental will be implemented in a planned, systematic, documented and effective manner.

- Territory Generation provides reasonable assistance to all contractors to support participation under the HSE Management Plan

- Contractor's construction induction (White Card), high risk licences and other qualifications and competency documents are verified by the responsible Territory Generation site contact person and Learning and Development Unit.

- All contractors are required to have relevant permit to work training and comply with all site induction processes.

- Relevant contractor training records are stored in the electronic Training Management System (TMS).

5 PUBLIC SAFETY

No changes

Territory Generation's power station sites are secured from general public access as follows:

- Security gates and perimeter fencing at all sites.

- On site security and/or regular security patrols after hours.

- CCTV monitoring via control rooms and/or security at relevant sites.

- Safety signage posted at all sites to inform of restricted access and where applicable electricalsafety signage is posted for information of the public.

- Site induction materials require visitors to be escorted at all times.

If permitted to enter a power station site, a member of the public is considered to be a visitor andall requirements relating to visitors apply to that person. The person is required to complete a siteaccess induction, appropriate PPE and orientation course, must have a nominated site contact person and must be escorted by that person at all times. Exemptions may be granted on a case by case basis for escorted groups e.g. school tours.

6 ASSET MANAGEMENT

6.1 Location of assets

Territory Generation is responsible for the following power stations:

- Channel Island Power Station (CIPS)
- Weddell Power Station (WPS)
- Katherine Power Station (KPS)
- Tennant Creek Power Station (TCPS)
- Ron Goodin Power Station (RGPS)
- Owen Springs Power Station (OSPS)
- Yulara Power Station (YPS) and
- Kings Canyon Power Station (KCPS).

Territory Generation is responsible for the following battery Energy Storage Systems (BESS) sites:

- Sadadeen Valley – Alice Springs

Diagram 3: Geographic location of Territory Generation assets
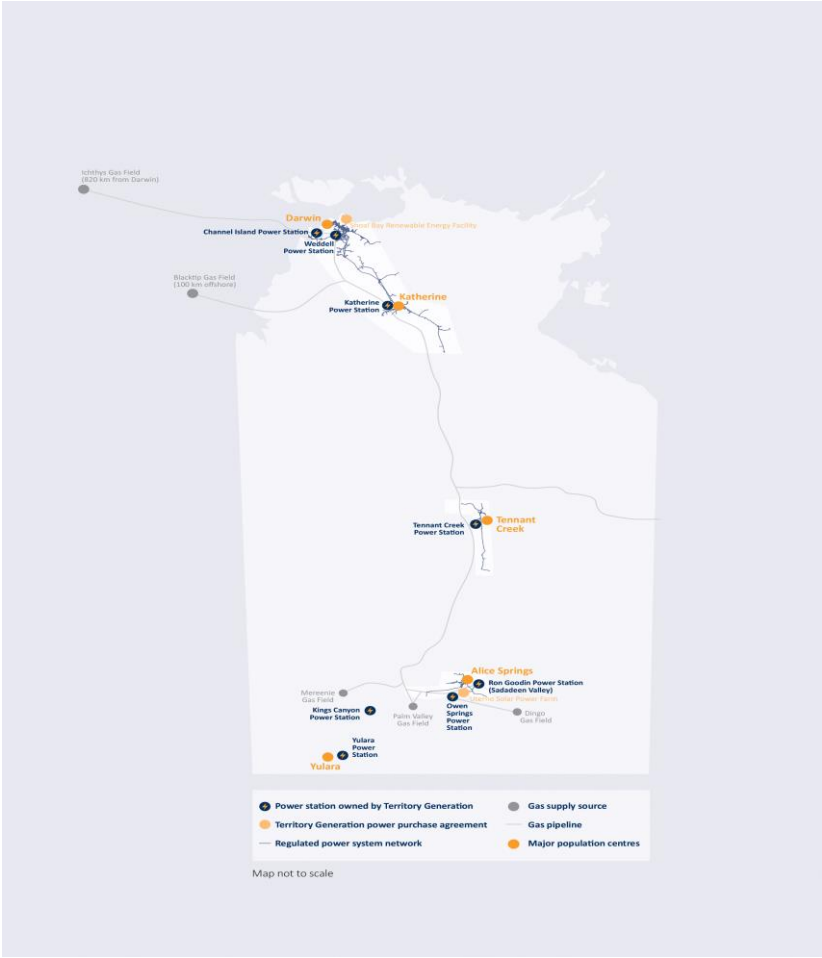
6.2 Formation of assets

All new equipment is required to be designed in accordance with relevant Australian Standards and international standards. The design process usually begins with the preliminary design review. During this stage, the project manager is responsible for ensuring that all the required processes are applied. For example, the preliminary design review includes:

- Project definition and scope review.
- Preliminary design (calculations, concept design, drawings).
- Operability and maintainability review.
- Identification of design standards, regulations and requirements.
- Operational risk assessments.

The detailed design is usually contracted to a company with the expertise to produce "For Construction" or "For Tender" drawings and technical specifications based on the preliminary design. All drawings and specifications are reviewed by the project engineer to ensure that the design is safe and is fit for purpose based on functional requirements and site conditions.

For example, the design verification process involves:

- Ensuring that all electrical plant/equipment has an adequate level of electrical protection during fault conditions.
- All plant and equipment are sized and specified appropriately based on the applications.
- Electrical earthing is applied and meets the required step and touch potentials.
- Drawings and plant are allocated the correct numbering based on the numbering system.
- A design risk assessment to identify potential safety risks and hazards to operation and maintenance personnel (e.g. HAZOP).
- All plant/equipment can be isolated and secured both electrically and mechanically for repair and maintenance purposes.

One key feature of the project development is the recognition of the need for formal hazard studies at different phases of the project. A structured and systematic examination of both planned and existing process or operations enable Territory Generation to identify and evaluate problems that may represent risks to personnel or equipment, or prevent safe, reliable and efficient operation in the design, construction, commissioning and operating phase. This includes when changes are proposed to existing operations.

All plant and equipment (mechanical, electrical and gas) installed on Territory Generation sites are tested and commissioned by qualified personnel to ensure that they meet all requirements specified in the detailed design and any regulatory compliance. The project manager is responsible for ensuring that all testing and commissioning is conducted thoroughly and methodically by checking the inspection and test plans.Any issue or defects identified during testing are documented and are either rectified immediately or as a punch list item.

6.3 Operation of assets

i.   *General*

The operation of electricity assets is undertaken in accordance with Australian Standards relevant Acts and regulations, including standard operating procedures at all Territory Generation sites. The essential training requirements for operation of electricity assets include:
- Current as required licenses and or relevant training competencies.
- All mandatory compliance training completed prior to operation of electricity assets.
- Training in HV operating practices.
- Training in operation of the specific apparatus.

- Training competencies evidenced for Local conditions: precise apparatus / equipment identification signs, apparatus / equipmentsafety interlocks, ON /OFF indicators.
- Remote operation of the apparatus / equipment from control panels wherever possible; if not report to Station Manager and Manager Safety, Health and Risk.
- Personal Protective Equipment (PPE) for the person performing the operation.
- Management and supervisory review of on the job performance via safety engagements.

Territory Generation requires all its HV operators to meet these essential requirements before they are accredited.

ii.   *Remote Operations Centre (ROC)*

The Remote Operations Centre provides the business with accurate, real-time control of generation assets. Connected by a high speed fibre optic data network, and protected by robust security and system redundancy, the ROC monitor real-time data relating to the operation of Territory Generation's gas, diesel and battery power generation options.

The ROC is located at Channel Island Power Station control room and Territory Generation Head Office located in Berrimah. As part of built in redundancy and system security, from late 2018 a back-up centre can be activated at the Owen Springs Power Station, to take over in the event of a cyclone or other disaster affecting Darwin. Territory Generation's new internal high-speed fibre communication and server network link the ROC to all Territory Generation work sites and generation assets.

Remote operations have been commissioned in six power stations with the ROC having the ability to remotely control them. In addition, the Ron Goodin power station is fully monitored from the ROC.

The ROC includes an Operator Training Simulator (OTS) for training the Generation Controllers (GCs) based at the ROC and managing Territory Generation's generation portfolio. The OTS has been deployed for all the commissioned power stations, excluding Ron Goodin.

The GCs Shift Roster is specifically structured to maximise a mix of both Northern Region and Southern Region experienced GCs on shift and to further support the knowledge transfer and development of all GCs in the operation of all generating units.

Full Operation of the ROC requires well documented sets of responsibilities with the System Controller in the regulated networks especially with the introduction of Independent Power Producers in the regions where Territory Generation operates.

Key documents include the following:
- Risk Assessment (per power station)
- Site Acceptance Plan (per power station)
- Principles of Operation
- Operations Guides and Procedures
- OTS Instructor and User Guides.

6.4 Maintenance of assets

All work on or near electricity infrastructure is performed in accordance with Territory Generation's Permit to Work (PTW) processes.
- The essential requirements for maintenance of electricity assets include: All training requirements are completed, sign off and recorded prior to any scope of maintenance of assets works are performed by employees. The appropriate training and competency of workers inclusive of PTW and mandatorycompliance training completed sign off and recorded.
- Safe systems of work procedures including but not limited to: PTW procedures, relevant SWMS, SWI JHSA ETC to be sign-off and recorded.
- Locks on High Voltage (HV) isolation and earthing switchgear to prevent the accidental change in position of that switchgear.

- Lock box and tagging processes.
- Pre-approved Plant Maintenance Manuals prescribing conditions of the work / equipment.
- Hard and Soft Barriers to control access to the HV work area.
- Receipt of a PTW prior to any member of the team undertaking work.
- Specific prerequisites to obtain Permits.
- Development of Preventive Maintenance schedules and job plans.
- Use of the Asset Management System.
- Assessment of equipment spares and holdings.
- Safety Interactions to enable positive safety discussions on observed work activities.
- Provision of suitable Personal Protective Equipment (PPE) and instruction in its use.
- On site task based risk assessment using Take 5 and Job Safety Environmental Analysis (JSEA).
- Higher level hazard assessment via Operational Risk Assessment Template if required.

The electronic permitting system has been effectively implemented at Channel Island, Weddell and Owen Springs Power Stations.

Electrical and Maintenance engineering capability has been added to the regional teams charged with the task of operating and maintaining the assets with each region. These engineering positions provide the day to day trouble shooting and oversight of operational events.

Guidance and oversight of the maintenance and operating activities are the responsibility of the Asset Management Team. This team has been established to provide engineering expertise and advice across the various asset classes operated by Territory Generation.

Asset Engineers are allocated to the following:
- Control System
- Balance of Plant & Gas
- Larger Industrial gas turbines & steam plant
- Aero derivative gas turbines
- Reciprocating Engines
- Smaller industrial gas turbines.

Plant failure events are captured in the MyHub database and a full root cause analysis is conducted as required.

The following strategies have been identified to improve operational safety practices:
- Procedures for testing and commissioning have been implemented with continuous improvement updates on going.
- Drawings and tagging at sites are being reviewed and replaced with as built standards.

6.5 Safety systems and strategies

Asset condition data is currently collected via the PRONTO Asset Management System.

PRONTO is an Enterprise Management System; the Asset Management System is populated by the fixed asset register for financial data and the Maintenance Management module for maintenance history and scheduling of preventative maintenance.

The data is stored in HPE Records Manager and can be linked to the work order. Asset history is maintained in the individual Asset Plans for the critical assets:
- From the maintenance records of equipment
- By specific condition monitoring of nominated equipment
- By the logging of work orders; and
- As an outcome of events logged in our incident or audit register system.

The formal introduction of Root Cause Analysis (RCA) techniques has been identified and programmed into Territory Generation's development program. This strategy is to ensure a formal methodology is embedded within the organisation and trained facilitators are available to enable a

RCA based culture with the corporation.

The following strategies have been identified to improve safety practices:

- Develop an optimised preventative maintenance program, and a formal change management system.
- Developing Preventative Maintenance (PM) and subsequent work order (WO) cost estimate codes.
- Improving PM tasks.
- Increasing amount of stock items linked to Plant items consumables year scope plan

6.6 Mitigation activities, including decommissioning

a) Asset Management Plans

The Asset Management System (AMS) enables Territory Generation to balance the cost, risk and performance of assets. An asset management plan has been approved for all Territory Generation power stations; these documents define the overarching strategies for the management of the power stations assets.

Continuous improvement measurers include changing technology, safety standards, and personnel development needs as well as recommendations from inspections, incident investigations and operational experience. The implementation of continuous improvement principles improves asset management programs and operational and maintenance safety outcomes.

b) Corrective maintenance

Territory Generation uses the PRONTO asset management system to enable management of corrective maintenance.

Corrective maintenance can be identified by any person on site who can then raise a Work Request in PRONTO. Maintenance personnel at all sites review the work requests regularly and convert them into Work Orders.

Work is scheduled in order of priority and availability of access to plant.

Corrective Work that is regarded as significant work requires additional approvals to proceed and may be run as a project (CAPEX or OPEX).

c) Corrective and Preventative actions:

Corrective and preventative actions arising from investigations, audits, reports and safety interactions maybe either immediately initiated as work orders or managed through action plans raised in the Incident Management System (IMS).

Actions are assigned to a responsible person with the time frame for completion allocated by the assigning officer. Actions can be monitored through the My Tasks/ My Staff's Task functions in the IMS. Reports can also be generated from the IMS to monitor timely and appropriate closure.

d) Review of plant performance and condition:

Specialist contractors are engaged from time to time to conduct external audits of equipment and practices. Examples include inspection of pressure vessels, Heat Recovery Steam Generators (HRSG), Gas systems, fire systems. In addition, there are a number of links to Original Equipment Manufacturers (OEMs) through arrangements such long term service agreements, user group membership and provision of remote monitoring. This ensures that Territory Generation keeps up to date with the user base experience of similar equipment.

Roles within Territory Generation provide coordination and analysis of plant reliability and performance including control systems. Regular ongoing condition monitoring (including vibration monitoring, oil analysis, thermography etc.) are carried out and/or organized by the Reliability and Performance team. Plant performance is reported monthly.

e) Replacement of assets:

The Asset Management Plans forecast the end of life for each critical asset. In addition to this regular ongoing inspection and monitoring, aged plant is also assessed for its suitability for continued operation or retirement based on safety, operability, reliability, efficientoperational and maintenance costing, and compliance with current standards.

Assessment is carried out by the Territory Generation Asset group using forecasts from Asset Management Plans, feedback from operations and maintenance personnel and on data collected from sources such as: maintenance documentation, OEM recommendations, industry bodies / associations and any product service bulletin.

Based on collected data a decision to overhaul or replace is made. In some instances (for example if it is a significant work, a project is created to carry out replacement or overhaul work.

f) Decommissioning of assets:

Plant and equipment at the end of its economic life is removed from service. Prior to itsremoval, it goes through a decommissioning process. As part of that process, the plant and equipment are physically disconnected from all energy sources.

7   CORPORATE COMPLIANCE

Territory Generation's compliance with relevant laws, regulations, industry codes of practice and acceptable ethical standards is important in reducing organisational risk and avoiding the potential significant consequences associated with non-compliance. WHS compliance obligations are identified, recorded and managed under Territory Generation's Compliance Framework.

Diagram 4: Governance, risk and compliance framework
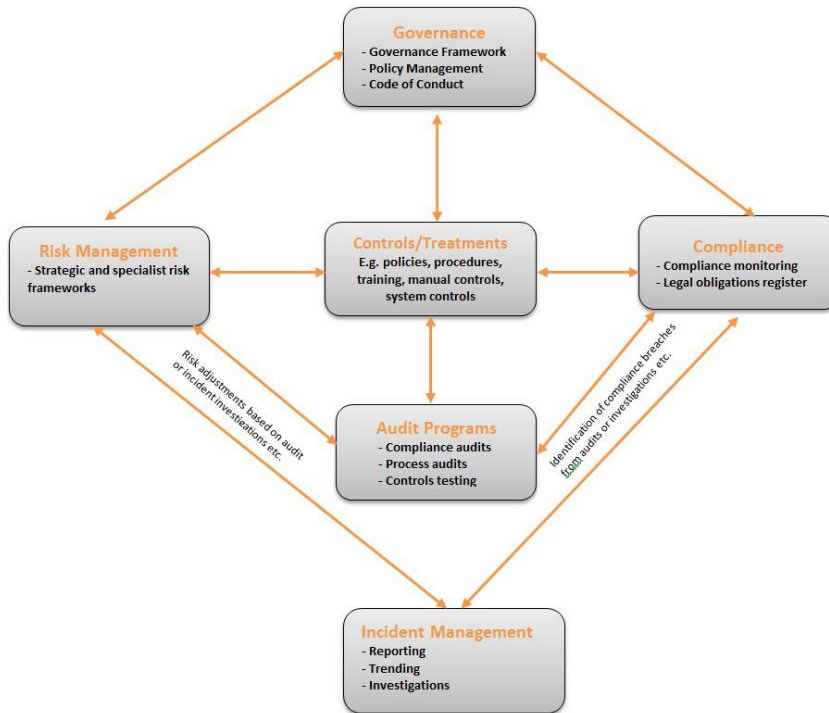
8   CORPORATE RISK MANAGEMENT

Territory Generation recognises that risk is an integral component of our business and corporate governance. The Corporation fosters a risk-aware corporate culture in decision making through the application of high quality, integrated risk analysis and management. Territory Generation is committed to managing all risks in a proactive and effective manner through standardised methodologies and processes based on the Standard AS/NZS ISO 31000: 2018 *Risk Management Principles and Guidelines,* together with AS/NZS ISO 45001 OHS, ISO 14001 EMS, and ISO 9001 QMS alignment.

The Corporation has an enterprise-wide risk framework that covers all strategic risks of the corporation and which summarises these into six (6) categories: Health & Safety, Environment & Sustainability, Financial, Legal/Regulation, People & Culture and Reputation & Service Delivery.

Corporate safety risks are recorded on a *Corporate Risk Register* which is managed by Territory Generation's Risk and Compliance team. Safety risks are allocated to relevant *Risk Owners* to monitor, review and manage. New safety risks may be identified and added to the *Corporate Risk Register* as per processes outlined in the Corporate Risk Management Framework.

9 HAZARD IDENTIFICATION & OPERATIONAL RISK MANAGEMENT

Territory Generation uses a proactive, planned and systematic approach to hazard identification and risk management to cover all reasonably foreseeable hazards and associated risks to health and safety.

Hazards are identified and managed via MyHub incident management systems using the following processes:

- Task based risk assessment using real time tools such as Job Safety Environmental Analysis (JSEA) and Take 5 or equivalent.

- Operational risk assessment for complex or high-risk work activities / outages.

- Project risk assessment and risk registers including the use of safety management plans and safe work method statements for high-risk construction work activities.

- Completion of any specific risk assessments which may be required under legislation or codes of practice for high-risk activities such as confined space entry, working with hazardous chemicals, or the conduct of hazardous manual tasks etc.

Hazard identification and subsequent management also occurs through the following processes:

- Topics raised with Health and Safety Representatives (HSRs) or at Health and Safety Committee meetings,

- Workplace inspection – Either formal (e.g., scheduled inspections/field audits) or informal (e.g.,during a site walk around),

- Safety Conversations which are promoted at all levels throughout the organisation,

- Consultation with workers conducting the work,

- Having the hazard present as an incident / or where there is a Near Miss associated with a hazard reported in MyHub Incident Management System (IMS),

- Direct reporting of hazards (without incident) in the MyHub IMS.

- Review of available information from industry specific sources such as industry associations, technical specialists, manufacturers and supplier information and through analysis of healthand safety reports, worker complaints, audit and inspection reports etc., and

- Facilitation of higher-level identification processes such as HAZOP (Hazard Operability); processmapping etc. where applicable.

A Corporate risk matrix is used to determine likelihood and consequence in the calculation of risk. The Hierarchy of Controls is used to select the most effective control possible.

Any person who implements a control measure is required to ensure that the control measure is effective and is maintained so that it remains effective. Implemented controls are reviewed and as necessary revised so as to maintain, so far as is reasonably practicable, a work environment that is without risks to health or safety. Stop work and reporting escalation processes are in place should any residual safety risk be calculated as high, very high or extreme.

10 INCIDENT MANAGEMENT

Territory Generation has an electronic Incident Management System (IMS) which is used to support proactive incidentreporting, investigations and action management.

This system enables employees to record incidentnotifications, initiate and record incident investigations and manage actions.

Incident reporting is critical in supporting the development of a positive safety culture and a safer workplace. Active reporting is encouraged at all times at all levels of the organisation.

Incidents to be reported and managed in this system include:

- Hazard
- Near miss
- Injury/Illness
- Environmental
- Damage, failure or loss (Safety Related)
- Production (Plant failure)

Territory Generation has embedded the use of the Incident Cause Analysis Method (ICAM) for all Safety incident investigations. The primary focus of incident investigations is the identification of the root cause to identify and rectify safety issues via corrective actions in order to ensure learning (continuous improvement) and the prevention of reoccurrence learnings/findings communicated throughout the business.

Territory Generation also has processes in place for the reporting and investigation of plant failures to comply with System Control Technical Code, Network Technical Code and TGen requirements. Production (plant failure) incidents are to be reported include:

- Any time a generating unit becomes unavailable (whether online or not).

- Significant generating unit capability reductions. The loss of unit capability due to failure or non-performance of a component e.g., burner spreads, vibration, temperature alarms, trips, failure to start etc.

- Any station plant failure including BOP, auxiliary and standby plant failure.

- Network initiated UFLS, whether station is impacted on not, to record impact on station. (Nil or otherwise)

    Note: Reduction in unit performance due to ambient temperature conditions is not to be reported. Planned outages are not considered unavailable for reporting purposes.

Production incidents are reviewed and investigated by Assets and Engineering personnel.

The addition of this function enables the centralisation of records relating to these incidents.

11 MANAGEMENT REPORTING

The management reporting process consists of regularly providing reports on the status of the Safety to the CEO, Executive Leadership Team (ELT) and the Board.

Territory Generation applies transparent processes so all monthly WHS reports are distributed to all persons by email and summaries are displayed on site safety boards.

Reports contain information on reporting against agreed WHS measurement objectives and targets as well as matters that relate to HSE Management Plan conformance or its enhancement as identified from incident assessments, reviews and audits.

WHS measurement objectives and targets have been formed for the assessment of health and safety performance.

This includes, but is not limited to, the following measures:
Positive performance (Lead indicators):

- Safety Conversations completed vs allocated target
- Take 5
- Hazard and Near Miss reporting

Injury statistics (Lag indicators):
- Lost time injury (LTI) and Lost Time Injury Frequency Rate (LTIFR)
- Medically treated injuries
- First aid treated injuries.
- Incident reporting in system within 24 hours of the incident occurring
- Incident investigations and actions closed by allocated due date

Notifiable incidents:

- Incidents notifiable to NT WorkSafe

- Environmental incidents reportable as per EPA guidelines

WHS Summary Reports are tabled at scheduled senior management meetings. WHS reports on measurable objectives, targets and recommendations/actions, summary reports on notifiable/high risk incidents are presented to the Board on a monthly basis.

The People and Safety Board Subcommittee meet on a quarterly basis and review all WHS reports to provide overview and governance.

12 CONTINUOUS IMPROVEMENT

Territory Generation ensures continuous improvement via a cyclic process of auditing, communication, implementation inspections and reviews as follows:

- Field reviews of real-time work practices associated with scheduled work.

- Safety Conversations program at all sites.

- Regular workplace inspections to ensure a safe working environment is maintained.

- The risk framework is reviewed on a regular basis to ensure that it remains effective in the ongoing identification and management of risks.

- Compliance is monitored through self-assessments, audits and reviews.

- The audit framework consists of: External Audit –annual financial audit and specialist audits conducted by the Auditor General, Utilities Commission and other regulatory bodies and Internal Audit - system (frameworks), process and compliance audits conducted by Territory

Generation's Internal Auditor.

- The Internal Audit program is drawn up via consultation with the Board, Executive Leadership Team and Management, consideration of Territory Generation's Statement of Corporate Intent, Corporate Strategy, risk profile and changes to the operating environment. The scope of work to be undertaken is approved by the Territory Generation's Board.

- Monthly reporting includes trending reports enabling identification of areas requiring initiatives to improve safety outcomes. Reports are reviewed at various forums including senior management meetings, WHS committee meetings, ELT meetings and Board meetings. Various trending reports are also reviewed by executive management.

- Incident management system improvement has a real time dashboard.

13 CONSULTATION AND COMMUNICATION

Territory Generation utilises the following formal WHS committee structure to steer, monitor, resolve and report on safety:

Diagram 5: Safety committee structure
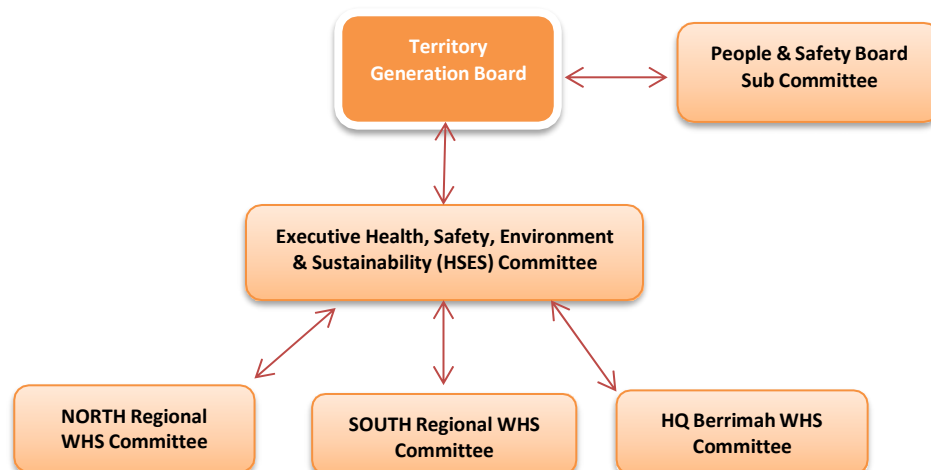
- All WHS Committee meetings (with exception of the Board subcommittee) are held monthly, or more frequently as required.

- People & Safety Board subcommittee meetings are held quarterly.

- All committees have clear terms of reference, established reporting and escalation processes.

- Other additional subcommittees reporting to either the Executive HSES Committee or regional WHS Committees may be established as required to address specific issues or projects.

- Territory Generation currently has a total of ten elected Health and Safety Representatives (HSRs); eight Deputy HSRs and ten (10) established workgroups. The formation of additional work groups is actively encouraged.

- Internal Communications are facilitated by various means including but not limited to all of organisation site videoconferencing, Microsoft Teams, intranet, email, toolbox talks, WHS Committees, posting of notices and flyers to site safety boards and forums.

- Safety bulletins released cover information such as incidents, actions, incident investigation findings etc. and these may be sent to all Territory Generation employees or to targeted sites; where relevant.

- Industry/ manufacturer's safety advice bulletins and NT WorkSafe bulletins are also distributed where applicable.

14 CHANGE MANAGEMENT

The Territory Generation Change Management Policy and Procedure establish a framework for the control and assurance of changes being made including stakeholder consultation, people, process changes (hardware, software and process control/process conditions changes) as well as policies, procedural and organisational changes. Industries often refer to these as the 3P's, People, Policies and Procedures.

The change management process is critical in meeting business objectives including asset integrity, HSE (including process safety), safe systems of work, compliance to relevant Acts Regs CoP, production objectives and targets, quality, contract schedules, and capture the associated costs.

Changes made through this process that affect a large part of the organisation require stakeholder consultation which could include but not limited to the ELT, GCC, Combined WHS Committees, HSR committees, video conferencing, power point presentations, toolbox, pre-start, inductions   a paper presented and approved by the ELT.

The Territory Generation Change Management Policy and Procedure apply to operational changes (assets, hardware, software and materials, process control and process conditions changes), procedural, policy and organisational changes that are the responsibility of Territory Generation.

An appropriate level of risk oversight is provided for by ensuring that the organisation's risk matrix is used to gauge the risk rating. It ensures that changes are recorded, and any modifications are subject to appropriate review control and monitoring.

15 CRISIS MANAGEMENT

Territory Generation has implemented crisis and emergency management processes.

- Territory Generation utilises a hierarchy of plans to ensure the appropriate content and level of emergency response for any level of incident.

- The Corporate Emergency Management Plan CONTROL0318 provides a comprehensive framework within which senior management can manage a crisis, creates clear and defined objectives for recovery.

- North Region Cyclone Preparation Response Recovery Procedure CONTROL0093 and Katherine Power Station Flood Action Plan CONTROL0442 have been developed to interface with Power and Water and Northern Territory Government (NTG) emergency management and response processes (Public Utilities Group).

- Site specific emergency plans have been developed for all manned sites and cover the of emergency categories that may affect each site. duplication delete. Site emergency exercises are conducted at least every six (6) months to assess the effectiveness of emergency response and debriefing records are saved in Records Manager. Personnel involved in emergency preparedness and response receive appropriate training to conduct their role such as Warden training, first aid and first response fire. Table Site emergency plan codes and descriptors:

Colour Code and category	Descriptors relevant to this site
CODE ORANGE: Evacuation	➢ Evacuation
CODE RED: Fire	➢ Fire/smoke/explosion
CODE YELLOW: Internal emergency	Failure or a threat to essential services: ➢ Chemical spill ➢ Natural gas leak ➢ Hydrocarbon or oil spill ➢ Civil disorder & Illegal occupancy
CODE PURPLE: Bomb/biological threat	➢ Bomb threat ➢ Biological threat
CODE BLACK: Personal threat	➢ Personal threat ➢ Hostage threat
CODE BLUE: Medical emergency	Medical emergency: ➢ Serious personal injury ➢ Hospital admission ➢ Respiratory or cardiac arrest
CODE BROWN: External emergency	Natural disaster: ➢ Cyclone /Flood/ Bushfire

16 DOCUMENT MANAGEMENT

Territory Generations WHS document hierarchy provides an overarching view of all safety related documents.

Diagram 6: WHS Document Hierarchy

Workplace Health & Safety (WHS) Document Hierarchy with document links as at 10th Aug 2023

Governance & Compliance	Culture & Relationship	Risk Management	Incident Management	Facilities & Amenities	Working Safely	Human Health	Fitness for Work	Induction & Training
WHS Policy Statement **CONTROL0314**	WHS Workgroups & HSR Procedure **CONTROL0347**	Hazard Identification & Risk Management Procedure **CONTROL0335**	Incident Management Procedure **CONTROL0066**	Safe Workplaces Procedure **CONTROL0036**	Plant & Equipment Procedure **CONTROL0521**	Dress Code & PPE Procedure **CONTROL0520**	Fitness for Work Procedure **CONTROL0537**	Site Induction Procedure **CONTROL0376**
HSE Management Plan **CONTROL0659**	WHS Committee Procedure **CONTROL0348**	Operational Risk Assessment Procedure **CONTROL0333**	Incident Investigation Procedure **CONTROL0343**	Workplace Inspection Generic Template **CONTROL0037**	Powered Mobile Plant Procedure **CONTROL0502**	Noise Management Procedure **CONTROL0090**	Fatigue Management Procedure **CONTROL0054**	CIPS E & C Site Induction **CONTROL0105**
HSE Management System Internal Audit Checklist **CONTROL0650**	Safety Communications Procedure **CONTROL0346**	Operational Risk Assessment Template **CONTROL0334**	ICAM Data Collection Form **CONTROL0349**	First Aid Procedure **CONTROL0367**	ScaffoldS & Scaffolding Work Procedure **CONTROL0524**	Electric Shock Procedure **CONTROL0368**	Alcohol & Other Drugs Procedure **CONTROL0341**	CIPS Visitor Site Induction **CONTROL0106**
Safety Management & Mitigation Plan (SMMP) Procedure **CONTROL0087**	Safety Non Negotiables Procedure **CONTROL0356**	JSEA Procedure **CONTROL0332**	ICAM Witness Statement **CONTROL0350**	Safe Travel Procedure **CONTROL0384**	Chemical Management Procedure **CONTROL0643**	Heat Management Procedure **CONTROL0523**		WPS E & C Site Induction **CONTROL0117**
Safety Planning, Objectives and Targets Procedure **CONTROL0551**	Stop Unsafe Work Procedure **CONTROL0345**	JSEA Template **CONTROL0331**	ICAM Investigation Template **CONTROL0351**	Vehicle Inspection Checklist **CONTROL0385**	Working in Isolation Procedure **CONTROL0383**	Legionella Health Risk Management Procedure **CONTROL0501**		WPS Visitor Site Induction **CONTROL0118**
Safety Auditing Procedure **CONTROL0092**	Safety Conversation Procedure **CONTROL0355**	Take 5 Procedure **CONTROL0065**	MyHub CEO User Guide **CONTROL0048**	Road Travel Plan Template **CONTROL0386**	Man Down Emergency Radio Procedure **CONTROL0400**	Hazardous Manual Tasks Procedure **CONTROL0357**		KPS E & C Site Induction **CONTROL0109**
WHS & Permit System Standard Terms & Definitions (excel working version) **TGD2022/30664**		Take 5 Book V3 (Stores stock item)	MyHub Incident Reporting User Guide **CONTROL0046**	Asbestos Management Procedure - Buildings & Structures **CONTROL0293**	Storm Safety Procedure **CONTROL0067**	Computer Workstation Self Assessment Checklist (word) **CONTROL0697**		KPS Visitor Site Induction **CONTROL0110**
			MyHub Validation User Guide **CONTROL0047**		Asbestos Management Procedure – Plant encapsulated **CONTROL0294**	Computer Workstation Setup Guideline **CONTROL0696**		OSPS E & C Site Induction **CONTROL0111**
			MyHub Investigation User Guide **CONTROL0049**			Working From Home Agreement & Assessment Form **CONTROL0410**		OSPS Visitor Site Induction **CONTROL0112**
			MyHub Action Manager User Guide **CONTROL0404**					RGPS E & C Site Induction **CONTROL0113**
								RGPS Visitor Site Induction **CONTROL0114**
								Sad. BESS E & C Site Induction **CONTROL0377**
								Sad. BESS Visitor Site Induction **CONTROL0378**
								TCPS E & C Site Induction **CONTROL0115**
								TCPS Visitor Site Induction **CONTROL0116**
								YPS E & C Site Induction **CONTROL0119**
								YPS Visitor Site Induction **CONTROL0120**
								KCPS E & C Site Induction **CONTROL0107**
								KCPS Visitor Site Induction **CONTROL0108**
								Berrimah Site Induction **CONTROL0058**

KEY

- STREAMS
- WHS Policy
- HSE Management Plan
- SMMP
- Procedures
- Forms/templates/ guides, checklists etc.

Document Owner: Manager Health and Safety
Last reviewed 09/08/2023
TGD2023/58643

NOTE:
- For Permit System Procedures including High Risk Work Activity procedures refer to: Intranet - Business Units - Operations - Permit to Work
- For AAR Permit Procedures applicable to RGPS only refer to: Intranet - Business Units - Operations - AAR RGPS only
- For Site Emergency Plans refer to: Intranet - Controlled Document Database
- For Site Confined Space Registers: refer to: Intranet - Controlled Document Database
- For Site Asbestos Registers refer to: Intranet – Business Units – Operations – Asbestos Registers
- For Site Risk Registers refer to: Intranet – Business Units - Legal, Governance & People – Risk and Compliance – Risk Management& Risk Register

Territory Generation controlled document process ensures personnel have access to current documents in a standardised and quality controlled format. Once printed become un-controlled documentation. All controlled documents have a nominated Responsible Officer who is responsible for the documents' preparation and review and a Document Owner responsible for the documents' final approval and release. Approved controlled documents are published in a Document Database linked to the documents' original location in Records Manager as a central access portal.

All Safety Documents are considered live documents and are updated as required to ensure their ongoing currency and relevance.

17 GLOSSARIES

The following Glossary is provided to assist the reader in understanding the unique words and acronymsthat are used within Territory Generation in regard to safety process and practices.

Acronym	Meaning
CIPS	Channel Island Power Station
WPS	Weddell Power Station
KPS	Katherine Power Station
RGPS	Ron Goodin Power Station
OSPS	Owen Springs Power Station
TCPS	Tennant Creek Power Station
YPS	Yulara Power Station
KCPS	Kings Canyon Power Station
PTW	Permit to Work
MyHub	The portal to access Incident Management, Action Management and Training Management systems
HAZOP	Hazard and Operability Study
JSEA	Job Safety Environmental Analysis
Take 5	Personal pre task risk assessment
PPE	Personal Protective Equipment
HSE	Health, Safety and Environment
TMS	Training Management System
HV/LV/DC	High Voltage/Low Voltage/Direct Current

18 Roles and Responsibilities

Role / Title	Responsibility
• CEO	• The sponsor of this plan.
• GM Operations and Maintenance • Manager Health and Safety	• Responsible for preparing this plan and liaising with key stakeholders to review and update this document.
• General Manager Legal, Governance & People and Company Secretary	• Liaison with Utilities Commission.
Key stakeholders	
• GM Legal, Governance & People and Company Secretary • GM Assets and Engineering • Learning and Development Supervisor • Manager Risk, Compliance and Assurance • Information and Records Management Specialist	• Participated in the review of this plan.

19 Records

Information from this plan is captured, stored and managed in the TGen Electronic Document and Records Management System and controlled in the Controlled Document Register

20 Review

This plan will be reviewed annually.

21 Document History

Date of Issue	Version	Prepared By	Description of Changes
01/02/2020	8.0	Manager Safety	Document review and update Feb 2020 in preparation for submission.
01/10/2021	9.0	Manager Health, Safety & Risk	Document review and up-date October 2021 in preparation for submission to the Utilities Commission.
17/12/2021	9.0	Approved by Utilities Commission	Published in controlled document DB
10/11/2022	10.0	Approved by the Utilities Commission	As per the changes in the document.
31/10/2023	11.0	WHS Project Advisor	Document review and up-date in preparation for submission to the Utilities Commission.