



Jemena Gas Networks (NSW) Ltd

Safety Management System

Western Sydney Green Gas Project



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Safety Management System - Western Sydney Green Gas Project

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Acronyms

Acronym	Definition
AU/NZS	Australian Standard / New Zealand Standard
ASPIRE	Zinfrac Internal Incident Management System
CCTV	Closed Circuit TV
DPIE	Department of Planning, Industry and Environment
EGP	Eastern Gas Pipeline
HAZID	Hazard Identification
HAZOP	Hazard and Operability study
HCP	Hazard Control Procedures
HIPAP	Hazardous Industry Planning Advisory Paper
HSE	Health, Safety and Environment
HSEQ	Health, Safety, Environment and Quality
HSR	Health and Safety Representatives
ICAM	Incident Causation Analysis Method
JCARS	Jemena Compliance and Risk System
JGN	Jemena Gas Networks (NSW) Ltd
LGA	Local Government Area
KPI	Key Performance Indicator
NSW	New South Wales
PAF	Zinfrac Purchase Approval Process
PEM	Proton Exchange Membrane
PPE	Personal Protective Equipment
SDS	Safety Data Sheet
SIA	Significant Incident Alerts
SIFR	Significant Incident Frequency Rate
SMS	Safety Management System
SNN	Safety Non-Negotiables
SSD	State Significant Development
SWMS	Safe Work Method Statements
TRIFR	Total Recordable Injury Frequency Rate
TRS	Horsley Park Trunk Receiving Station
WHS	Work Health and Safety
WSGG	Western Sydney Green Gas
YTD	Year to Date

1. Introduction

Jemena Gas Networks (NSW) Limited (Jemena) is undertaking the Western Sydney Green Gas Project (WSGGP) (the Project), which involves trialling Power-to-Gas (P2G) technology by converting purchased green energy from the electricity mains network into hydrogen gas and injecting it into its secondary gas distribution network over a 5-year period. The Project would potentially facilitate ongoing development of commercially viable P2G systems in Jemena's NSW gas network.

The Project is located at the existing Jemena high pressure gas facility in Horsley Park (Horsley Park Facility), located in Western Sydney. The P2G facility will use renewable electricity to generate hydrogen, which can be injected into the natural gas network or used to generate electricity back to the grid by means of a hydrogen-powered micro-turbine.

Jemena is utilising its engineering, maintenance and services company Zinfra (part of the SGSP (Australia) Assets Pty Ltd group of companies that also owns Jemena) for commissioning, operation and ongoing maintenance of the Western Sydney Green Gas Hydrogen Facility (Facility). Zinfra has developed a companywide Safety Management System based upon the requirements and guidance of:

- Hazardous Industry Planning Advisory Paper No 9 – Safety Management
- NSW Work Health and Safety Regulation 2017
- NSW Work Health and Safety Act 2011
- ISO 45001:2018 - Occupational health and safety Standard

For the purpose of this project a Facility specific Safety Management System (SMS) has been developed to be made available for site users and is based on the aims and objectives of Zinfra's Health and Safety Policy. In summary these aims are:

- to provide a safe work environment;
- to comply with applicable statutory obligations;
- to achieve continuous improvement in work health and safety performance through the progressive development of effective management systems and processes; and
- to promote a positive safety culture

This Policy statement is the overarching document of the Zinfra SMS and is provided in **Appendix A**.

1.1 Purpose

The purpose of this Facility SMS document is to detail the management system itself and the core elements of the SMS in compliance with (HIPAP) No 9 – Safety Management. This SMS document has been prepared in accordance with the Department's Hazardous Industry Planning Advisory Paper No. 9, 'Safety Management'.

The Facility SMS sits directly under the Zinfra SMS and Policy and this document provides details of Zinfra's Work Health and Safety (WHS) management system to assist and guide all employees, contractors and workers on the WSGG Facility. It also identifies the health and safety practices and standards that have been set by the Zinfra Senior Management Team to be applied across the entire facility and associated entities. It details the responsibilities and accountabilities, together with the relevant procedures, documents and systems that provide consistency to health and safety across the entire facility.

These standards are the mandatory requirements for health and safety compliance and are applicable to all personnel on the Western Sydney Green Gas facility.

1.2 Project Approvals

The delivery of the Project is facilitated by the Development Consent SSD 10313 approved by the Minister for Planning and Public Spaces, under Part 4, Division 4.7 of the Environmental Planning and Assessment Act 1979 and, in accordance with Section 4.38 (Approval).

This SMS has been developed specifically to address the requirements of Condition B3 (b) of the Development Consent. The requirements of Condition B3 (b) are:

Unless the Secretary agrees otherwise, the Applicant must prepare the following documents at least one month prior to commencing construction of the development to the satisfaction of the Secretary:

(b) a comprehensive Safety Management System, covering all on-site operations and associated transport activities involving hazardous materials. The Safety Management System must:

- consistent with the Department's Hazardous Industry Planning Advisory Paper No. 9, 'Safety Management'; and*
- identify all safety related procedures, responsibilities and policies, along with details of mechanisms for ensuring adherence to the procedures. Records must be kept on-site and must be available for inspection by Secretary upon request.*

2. WSGG Facility

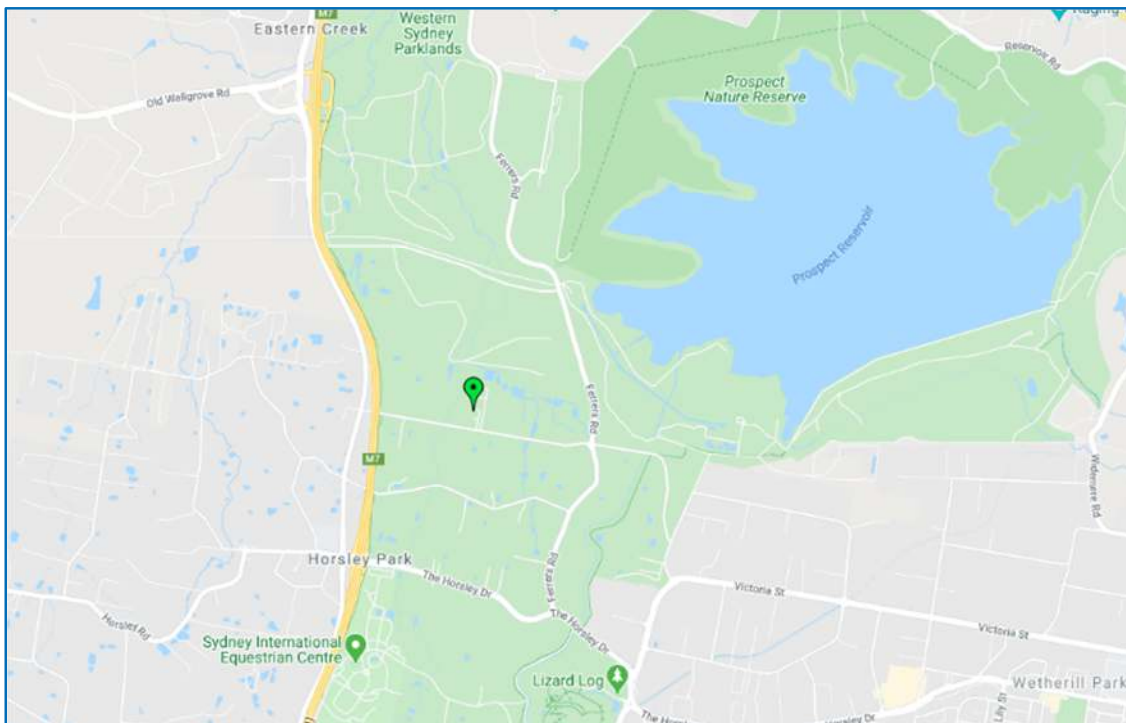
The Western Sydney Green Gas facility is one of the most comprehensive 'renewable' hydrogen trials in Australia. The facility will use renewable electricity to power a 500 kW Proton Exchange Membrane (PEM) electrolyser for the production of hydrogen gas. The electrolyser has the rated capacity to produce a 100 Nm³/h of hydrogen gas. Primarily the hydrogen gas will be injected into the existing natural gas distribution network (co-located with this trial facility) at up to 2% by volume via a dedicated injection control panel.

The facility also includes a gas-fuelled generator package (microturbine) that will initially be operated on natural gas to generate power for export to the grid. The microturbine will be converted to dual fuel operation using natural gas/hydrogen as the fuel source in late 2021.

2.1 Location

The Horsley Park Facility is located at 194 – 214 Chandos Road, Horsley Park (Lot 1 DP 499001 and Lot 3 DP 1002746) in Western Sydney, NSW (refer to **Figure 2.1**).

Figure 2.1: Site Location

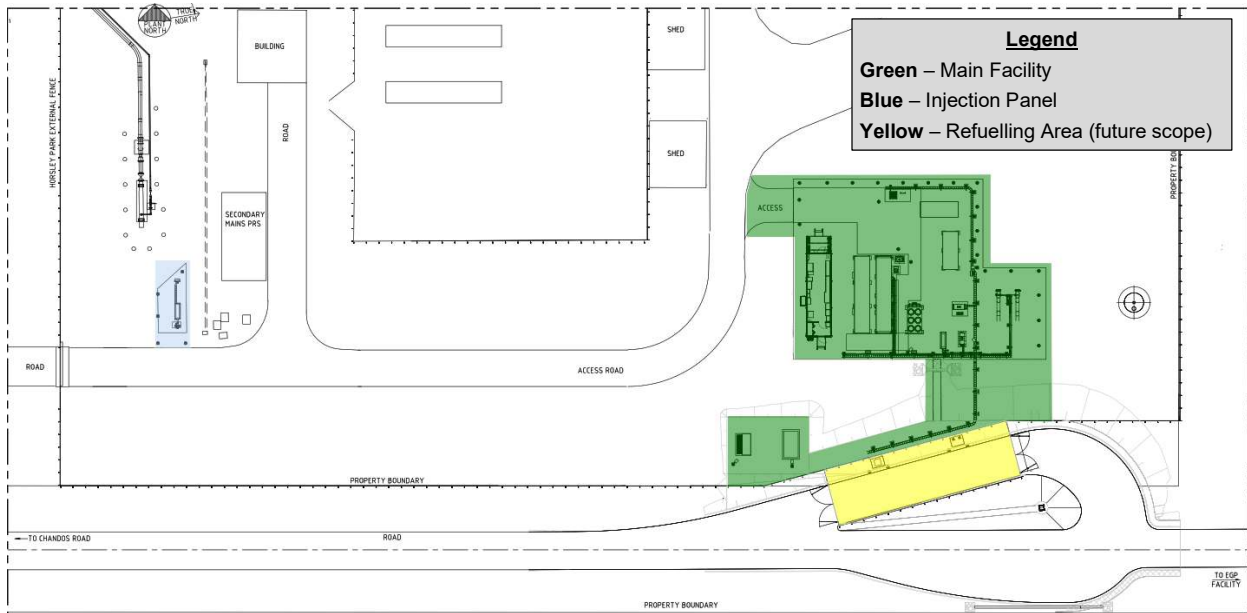


The general layout of the site is shown in Figure 2.2 below and the WSGG Facility layout presented in Figure 2.2 below.

Figure 2.2: General Layout of Development



Figure 2.3: WSGG Facility



2.2 Existing Operations

The hydrogen facility is located within the boundaries of Jemena's Trunk Receiving Station (TRS) High Pressure Gas Facility, located at 204 – 214 Chandos Road, Horsley Park, NSW 2175, Australia, 32 km west of Sydney CBD, which is located on Jemena owned land within the Fairfield City Council Local Government Area (LGA).

The Eastern Gas Pipeline (EGP) Horsley Park Meter Station (194 – 202 Chandos Road, Horsley Park, NSW 2175) is located directly north of the site. The TRS and EGP facilities adjacent to hydrogen facility are operated under NSW regulation and have their own Emergency Management Plans. To minimise any potential conflict, the three plans are consistent and come under the umbrella of the Jemena Emergency Management Framework.

2.3 Surrounding Environment

The site is within the boundaries of the Western Sydney Parklands. Jemena have and continue to engage with the Western Sydney Parklands Trust and they are aware of the hydrogen facility. The Western Sydney Parklands Trust has agreed to inform Jemena of any potential changes to land use that may result from future tenants.

The facility is located 600 m to the east of the Westlink M7 toll road. Eastern Creek runs in a northerly direction in a wooded area between the M7 and the facility. A market garden is located directly east of the site and a quarry is located to the far north.

Private residences are located approximately 250 m to the south of the facility along Chandos Road. The building to the east of the site is a farm shed and the residence for that property is located on Chandos Road.

Other development in Chandos Road can be characterised as 'residential rural, with a collection of small market farms, including farm houses and farm buildings. Current and future possible land uses may include crops, greenhouses, farm sheds, chemical storage sheds or farm gate produce sales.

There are no schools, hospitals or other similar development that are in the vicinity of the facility.

2.4 Facility Primary Function

The facility will perform the following key functions:

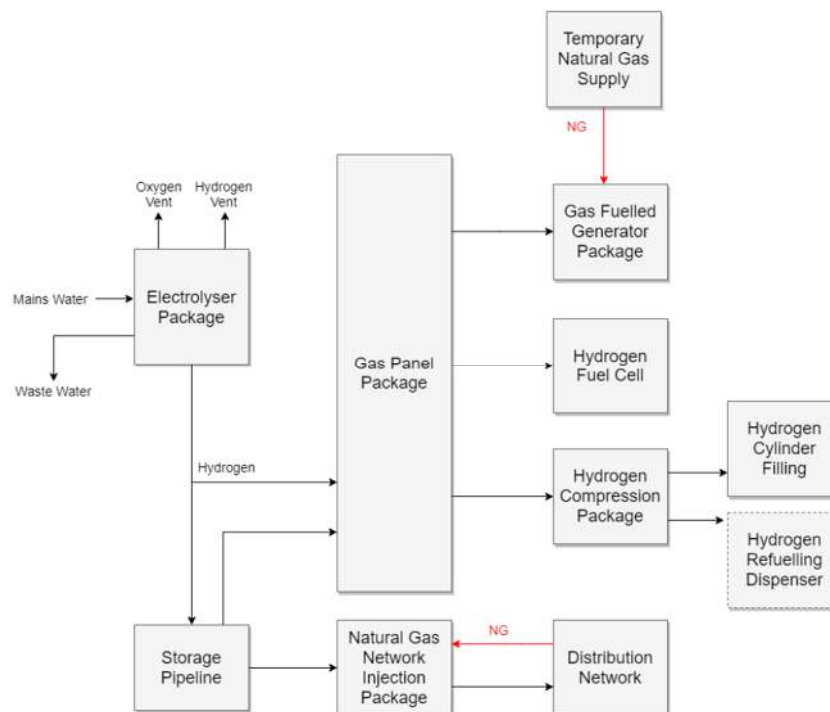
- convert mains water into hydrogen gas using grid (renewable) electricity through electrolysis;
- store hydrogen gas in a buried on-site carbon steel pipeline; this will be used for buffering the various produced hydrogen gas usage options;
- control and safely manage hydrogen gas pressures, temperatures and flow rates for injection into Jemena's Secondary Mains gas pipeline and downstream medium and low pressure network; and
- provide a hydrogen microturbine generator to convert stored hydrogen into electrical energy for supply to the grid.

Additional future proposed key functions include:

- providing a hydrogen fuel cell, to convert stored hydrogen into electrical energy for supply to the grid; and
- providing hydrogen dispensing facilities to allow the filling of transportable hydrogen cylinders.

A general flow diagram of the facility operation is provided in **Figure 2.4** below.

Figure 2.4: Flow Diagram and General Facility



2.5 Key Facility Features

The WSGG facility includes the following plant and infrastructure:

Feature	Details
Electrolyser	<ul style="list-style-type: none"> • Package – Three main packages consisting of electrolyser stack, power container and cooling unit • Production – 100Nm³/h or 100kg hydrogen • Standard Operation – 12 hours per day
Hydrogen buffer storage pipeline	<ul style="list-style-type: none"> • Location – Buried below ground, with two risers located at the facility east • Length – ~340 m • Material – X52 Carbon Steel • Operating Pressure – 3,200 kPag • Maximum Allowable Operating Pressure – 3,800 kPag • Hydrogen Stored – ~100 kg • Emergency Operation – Blowdown vent located on the first riser
Site Control Hut	<ul style="list-style-type: none"> • Purpose: <ul style="list-style-type: none"> ◦ Management of low voltage (LV) supply; ◦ Data and communication between packages and NSW Control Room; ◦ Remote operations and field desk • Criticality – Provides power to the TRS facility through LV to TRS switchboard at the front of site.
Gas Control Panels	<ul style="list-style-type: none"> • Purpose: <ul style="list-style-type: none"> ◦ Hydrogen Panel – Manage hydrogen gas within the facility, multiple controls and valves. ◦ Injection Panel – Injection into the Jemena Gas Network (JGN) Secondary Network. • Monitoring – Active hydrogen monitoring in place at both panels
Hydrogen Microturbine	<ul style="list-style-type: none"> • Production – 60kWh • Operation – 7 am – 7 pm only • Supply – Natural gas until changeover to 100% hydrogen Q4 2021
Transformer	<ul style="list-style-type: none"> • Rating – 2.5 mVA • Criticality – Provides power to the WSGG & TRS facility
Switchgear	<ul style="list-style-type: none"> • Criticality – Provides power to the WSGG & TRS facility

3. Safety Management System

3.1 Objectives and Targets

Zinfra Management Team has established performance objectives and targets using lead and lag indicators as well as a number of specific key initiatives and actions. Key performance indicators (KPIs) are selected and set as short-term targets to drive safety performance improvement throughout Zinfra.

HSE objectives are reviewed each year by the management team and new objectives and targets are set as a result of this review.

The lead and lag indicators and their corresponding targets set are provided in Table 1 below:

Table 1. KPI's and Targets

Lead KPI's	Target
Leadership Commitment Leaders having effective safety interactions with team members	>80%
Risk Action Completion of JCARS (Jemena Compliance and Risk System) HSE Risk Action Plans (Planned vs Actual) <i>12 Month Rolling</i>	>90%
Corrective Actions Completed on Time <i>Monthly</i>	100%
HSE Audits & Inspections Completed vs Planned <i>YTD</i>	100%
Engagement Team led health, safety and wellbeing discussion and action plan (Planned vs Actual)	90%
Lag KPI's	Target
Total Recordable Injury Frequency Rate (TRIFR) <i>12 Month Rolling</i>	4.0
Significant Incident Frequency Rate (SIFR) <i>12 Month Rolling</i>	4.0
HSE Regulatory Notices Issued <i>12 Month Rolling</i>	0

3.2 Safety Policy and Leadership Commitment

The Zinfra Health and Safety Policy is approved and signed by the Managing Director in consultation with Zinfra's senior leadership team. Zinfra communicates its commitment to health and safety through its policy to all employees, contractors, subcontractors and visitors. This is achieved primarily through site induction, noticeboards, and health and safety plans. Other communication mechanisms are used to support these processes such as health and safety committee meetings and toolbox meetings.

The documentation describing the Zinfra's SMS includes:

- The Zinfra SMS;

- Statements of Responsibility & Authority;
- Work Instructions; and
- Safe Work Method Statements

Implementation and ongoing application of the SMS ensures that work, health and safety risks are identified and controlled by the application of safe systems of work across all Zinfra's activities. This document is an integral component of the overall SMS.

3.3 Policy Communication

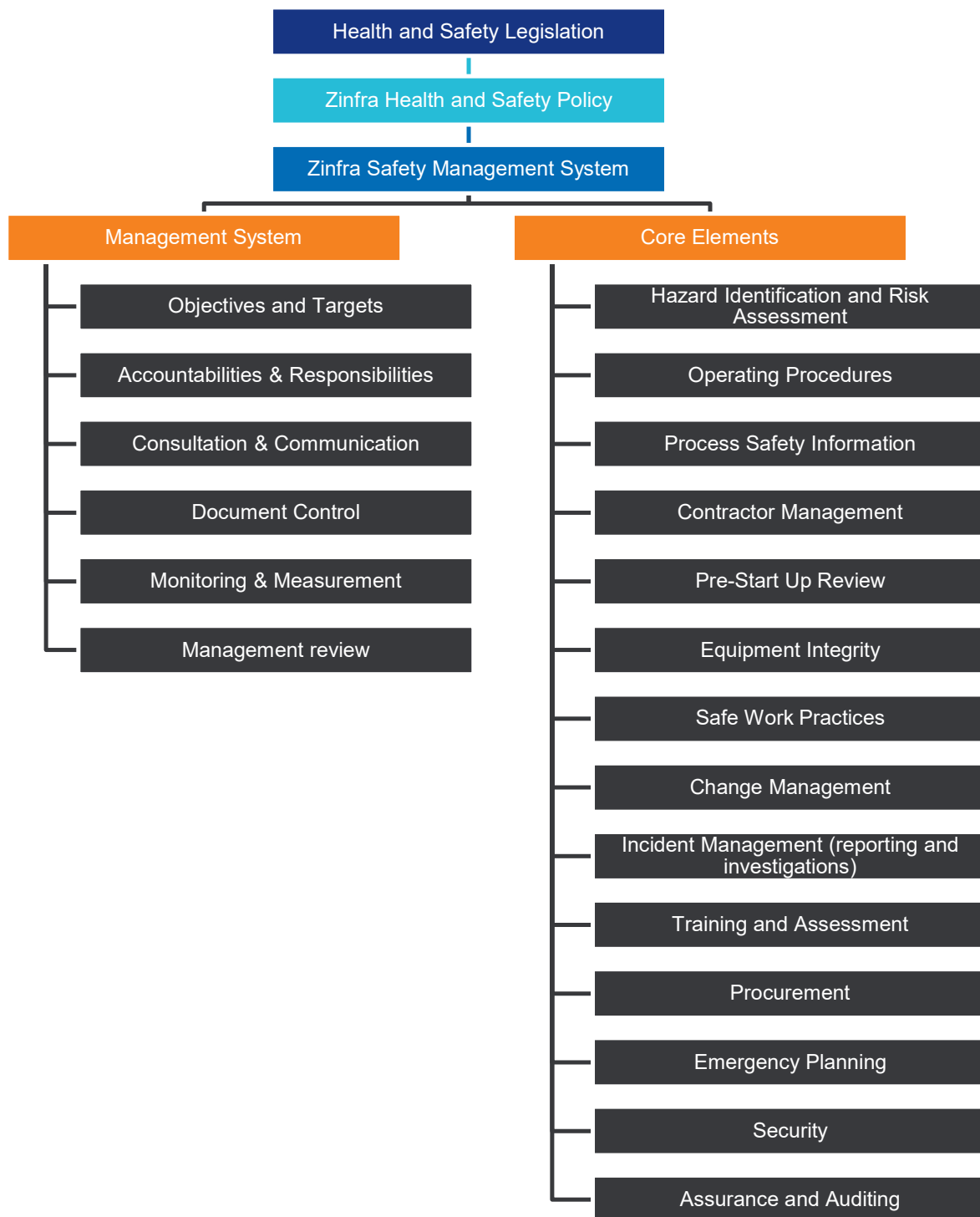
Zinfra believes that effective communication of the safety policy is critical if the intent, vision and goals of the organisation are going to be understood by employees, contractors and external stakeholders alike. The policy is communicated to all employees, contractors and visitors through various mechanisms such as

- HSE Inductions and Training
- Display of Policy Statements on Notice boards
- Intranet
- Toolbox meetings
- HSE Management Plans.

3.4 Safety Management System Structure

The structure of the SMS is illustrated in the Figure 3.1 below.

Figure 3.1: Safety Management System Structure



To emphasise Zinfra's commitment to safety, a set of Safety Non-Negotiables have been developed which, if not complied with, will constitute serious breaches to the SMS System. These Safety Non-Negotiables must be adhered to by all personnel and are detailed in Section 3.12.2 of this document.

The SMS applies to all employees, contractors and others involved in work on the Western Sydney Green Gas Facility and associated business activities. Compliance with this document is mandatory.

This document is to be reviewed every 5 years and updated as necessary and any consequent amendments are to be approved by the Zinfra's Senior Management Team.

The Zinfra SMS defines the systems, processes and procedures that have been developed and have been implemented and used to manage all aspects of safety on the facility. This management system comprises of the following;

- Objectives and Targets;
- Accountabilities and Responsibilities;
- Consultation;
- Communication;
- Document Control;
- Monitoring and Measurement;
- Management review

3.5 Accountabilities and Responsibilities

The New South Wales Work Health and Safety Act 2011 places obligations and duties on both Zinfra and Workers under the Act. This is a shared responsibility to ensure the health, safety and wellbeing of all personnel on the facility, and is a fundamental element of Zinfras SMS.

All managers and workers are accountable and responsible for safety performance in their area of responsibility and are able to call upon the expertise of the HSE Team to assist them in meeting their responsibilities.

3.6 Consultation and Communication

The NSW WHS Act 2011 requires that consultation occurs in the workplace on health and safety related issues (Part 5 Consultation, Representation and Participation). The WHS Act 2011 requires Zinfra to have elected workplace Health and Safety Representatives (HSRs). HSRs are elected to represent workgroups within the workplace. Approved training is required to perform in these roles.

Each workgroup shall have a HSR who is elected for three years. HSRs represent the workers within their workgroup, but can also represent other workgroups if a HSR is not available. HSRs and management representatives regularly consult to ensure consistency of communication and application of health and safety procedures, instructions and processes. Various forums such as toolbox meetings and committee meetings have been established to facilitate effective consultation.

The dissemination of safety information is achieved through open communication links between Management, Health & Safety Representative (HSR) Committee and all personnel across the facility.

Zinfras commitment to health and safety is demonstrated through strong communication using such methods as:

- Company Health and Safety Policy is displayed and communicated throughout the workplace;
- The Health and Safety Policy is reviewed annually;
- Senior management representation at Health Safety Representative Committee Meetings;
- Demonstrating hazard corrective action and rectification as soon as practicable in accordance with established timeframes;

- Where delays in resolution of an identified health and safety hazard are expected, the workplace hazard will be made safe until corrective actions and control measures are implemented. Where this occurs, the progress on the mitigation of the risk or hazard will be communicated to the area's Health and Safety Representative (HSR) for communication to the workforce at regular intervals;
- Management will visibly and by demonstration, support all Work Health Safety policies, plans and procedures and will lead by example;
- Safety will be an agenda item at all prescribed or regular meetings;
- A copy of this document will be made widely available throughout the workplace;
- Regular inductions, toolbox talks, safety observations and workplace inspections will be carried out at all workplaces;
- Distribution of safety alerts, plant notices and other applicable communication aids;
- Incident and Injury reports are completed in a timely manner; and
- Appropriate resources will be allocated to carry out all health and safety practices mentioned and documented in this document.

3.7 Document Control

The development, review, revision and dissemination of health and safety documentation will be controlled. This shall include the use of a standard numbering system ensuring version control. The numbering system shall follow the standard convention.

The controlled copy of this document and related documents shall be maintained in the document control system.

3.8 Monitoring and Measurement

Zinfra shall monitor the effectiveness of plans, procedures and other supporting processes to ensure control measures remain effective. HSE team members along with the maintenance team shall monitor these procedures as they relate to use on the facility. Compliance with the procedures shall be further monitored as part of the internal audit program.

Periodic reviews such as Safety Observations and HSE Audits will be undertaken to ensure adherence to Zinfras policies, procedures and statutory obligations. These reviews will be conducted and administered by HSE personnel. Audits of compliance checks may be conducted by external audit personnel from within Zinfra.

3.9 Management Review

The review of this SMS will be carried out every 5 years by the senior management team.

3.10 Core Elements

Zinfras Safety Management System for the Western Sydney Green Gas Facility comprises of the following core elements:

- Hazard Identification and Risk Assessment
- Operating Procedures
- Process Safety Information
- Contractor Management
- Pre-Start Up Review
- Equipment Integrity
- Safe Work Practices

- Change Management
- Incident Management (reporting and investigations)
- Training and Assessment
- Procurement
- Emergency Planning
- Security
- Assurance and Auditing

3.11 Hazard Identification and Risk Assessment

3.11.1 Risk Registers

Risks identified in the safety management studies, risk workshops or via Hazard and Operability Studies (HAZOP) and Hazard Identification (HAZID) make up the facility's risk register. The risk register is a living document and any new or changed hazards and risks, along with control measures for their mitigation are added to the risk register as they are identified. Responsibility for the development, implementation and completion of the risk registers are with Zinfras Operations Manager of the facility.

Results of HAZIDs and HAZOPS are stored on the Intranet and Risk Assessments that are either standalone or linked to HAZIDs or HAZOPS are documented.

3.11.2 Hazard Identification

All Zinfra employees and contractors are required to report hazards and unsafe conditions within the workplace. The hazard shall be reported to their team leader or the supervisor responsible for the area so that control measures can be implemented to eliminate the hazard or minimise its risk to personnel or operations.

These hazards shall be entered directly into ASPIRE (Incident Management System) for tracking and closing out the hazards effectively and in a timely manner. These hazards will be reviewed by HSE Team members for trend analysis.

If a person is unsure on the incident reporting requirements they shall refer to their team leader or supervisor for assistance.

All hazards are managed in accordance with the risk management process detailed in the HSE Risk Management procedure G-HS-PR-00040.

3.11.3 Risk Assessment and Control

Zinfras risk management process aligns with AS/NZS ISO 31000: 2009 – Risk management – Principles and guidelines to manage risk across the facility and business. This document deals specifically with the operational and maintenance safety risk management and change management processes. It aims at controlling hazards to an acceptable level or developing appropriate control strategies and measures to minimise the level of risk. Risks shall be managed using a hierarchy of control.

3.11.4 Operational Procedures

Operating procedures are designed to provide a safe system of work by detailing the processes to carry out the work in a safe manner. Control measures are built into the procedures to minimise the risk of injury, illness,

environmental impact, plant damage and potential loss of supplies. These measures are also defined for the application of the task.

The procedures that have been developed outline the minimum standards that need to be applied within all work areas within the facility. The standards meet legislative requirements and those that have been deemed by the management team to be fit for purpose and in line with industry best practice.

All personnel including contractors are required to implement and apply those procedures that are applicable to their areas of responsibility. Where it is determined that additional site specific detail and knowledge is required to safely and effectively complete a task, a work instruction or safe work method statement can be developed to supplement the procedure.

3.11.5 Process Safety Information

Zinfras SMS is supported by accurate and up to date information on materials, processes, equipment and facility. This information is used as the basis of decisions within the SMS and the risks and controls relating to people and the working environment of the facility.

The objective of process safety information is to ensure that relevant personnel have access to relevant and accurate information that will allow them to identify and understand the hazards involved in the process and analyse and manage the risks.

Aspects of process safety information that are covered include:

- Equipment data sheets;
- Dangerous Goods stored and processed;
- Materials used in construction, equipment and piping specifications, relevant design codes and design base of any pressure relief or vent system(s);
- Hazardous area classification;
- Details of 'safety critical equipment';
- Piping and Instrumentation diagrams (P&ID's)

3.11.6 Contractor Management

Since contractors can introduce unsafe conditions, processes, practices, standards, and/or materials they need to be subject to comprehensive safety controls to ensure their practices do not jeopardise facility safety. This being the case, Zinfra has put in place rigorous controls as documented in the HSEQ/CoR Subcontractor Management Procedure G-HS-PR-00634.

Selection and retention of subcontractors are based on the subcontractor's ability to meet the requirements of this Plan. This is managed during the entire subcontractor management process commencing at Pre-Contract to Contract Closure. Effective alignment of the Project and subcontractors' HSEQ objectives and management processes with Zinfra's are an integral part of the HSEQ Subcontractor Management Process.

During Pre-Contract and Contract Formation stages as part of the Purchase Approval (PAF) Process, subcontractor's HSEQ System is assessed to ensure that it meets this Plan and must be conducted and completed prior to works being undertaken on the project.

Prior to mobilisation, a series of reviews are conducted to ensure subcontractors are ready to commence on the Project and have met all requirements. Upon mobilisation, subcontractors are inducted, their licenses and competency are checked and their plant and equipment are inspected.

A Subcontractor HSEQ Monitoring Plan is implemented for each subcontractor to monitor their performance on the Project. Any non-conformance raised is timely addressed.

Plant / Labour Hire, smaller subcontractors or sole traders do not or may not have their own HSEQ management systems, and will need to work exclusively under the Zinfra Management System. This may include using the Zinfra SWMS.

3.11.7 Pre-Start up safety review

Pre Start-up safety reviews used at Zinfra include processes and procedures to ensure that;

- Written procedures, including safety, operating, maintenance and emergency procedures are in place;
- All pre-commissioning procedures, including physical inspections and leak and pressure testing, have been completed and the results have been carried out and documented;
- All agreed measures arising out of HAZOPs and other hazard identification studies, as well as other pre-construction and pre-commissioning safety studies, have been implemented;
- New processes and significant modifications to existing processes have been carried out in accordance with the management of change procedures;
- Employees have been appropriately involved in the review process; and the qualification and training of relevant employees is adequate for safe operation.
- Pre start-up checks and checklists ensure that the control system has not been corrupted or inadvertently modified during shut down, and that temporary bypasses of trips and other safety equipment are all reversed. They also consider relevant issues such as (but not limited to) the following:
 - Isolation/de-isolation of protective equipment;
 - Drain and vent valve positions;
 - Leak checks;
 - Pressure checks;
 - Ventilation checks;
 - Purging requirement checks; and
 - Insulation checks.

3.11.8 Equipment Integrity

The Western Sydney Green Gas facility has a system to monitor and maintain the integrity of the process and all plant and equipment, where failure could contribute to a loss of control, major accident or near-miss. This being the case, an equipment integrity program is followed that focuses on the maintenance of existing plant and equipment as well as ensuring that newly installed equipment meets the design criteria and standards.

The process and equipment integrity systems utilised by Zinfra specifically take into account identified hazards and their associated risks. Elements that are considered in the equipment integrity program include:

- Identification of equipment to be tested/inspected/maintained, such as:
 - pressure vessels;
 - critical piping systems;
 - relief and vent systems and devices;
 - control systems (monitoring devices, sensors, alarms, interlocks); and
 - emergency shutdown systems
- Identification of 'safety critical equipment' and definition of associated monitoring requirements;

- Arrangements for planned maintenance;
- Procedures for undertaking equipment repairs;
- Frequency of inspection and testing;
- Inspection and testing records and documentation;
- Monitoring and reporting of equipment defects, faults and degradation;
- Materials and equipment design specifications.

All critical safety procedures and work instructions are developed specially for the facility.

3.12 Safe Work Practices

Zinfra has developed several tools and processes that provide safe systems of work when performing work activities. The tools and processes used vary depending on the level risk that apply to each of the risk categories.

3.12.1 HSEQ Management System Standards

The Zinfra fourteen (14) HSEQ Management Standards contain the performance requirements to meet the objectives, which are:

- G-HS-ST-00010 HSEQ Management Commitment Standard
- G-HS-ST-00011 HSEQ Performance Monitoring, Reporting and Improvement
- G-HS-ST-00012 HSEQ Compliance
- G-HS-ST-00013 HSEQ Risk and Change Management
- G-HS-ST-00014 HSEQ Incident, Emergency and Crisis Management
- G-HS-ST-00015 HSEQ Communication, Consultation and Coordination
- G-QM-ST-00016 HSEQ Product Realisation and Control
- G-HS-ST-00017 HSEQ Supplier, Subcontractor and Service Provider Management
- G-QM-ST-00018 HSEQ Document, Content and Data Control
- G-QM-ST-00019 HSEQ Records Management
- G-HS-ST-00020 HSEQ Management of Plant, Equipment and Facilities
- G-QM-ST-00021 HSEQ Client Requirements and Satisfaction
- G-HS-ST-00022 HSEQ Learning and Development
- G-QM-ST-00023 HSEQ Design Management

3.12.2 Safety Non-Negotiables

Zinfra has implemented 10 Safety Non-Negotiables (SNN), which are group-wide minimum and mandatory requirements to mitigate the risks associated with the 10 key critical hazards common across its operations in line with HSEQ Regulations and industry code of practices. They include:

1. G-HS-ST-00736 Confined Space Entry
2. G-HS-ST-00737 Working in or near Live Traffic
3. G-HS-ST-00738 Crane Lifting
4. G-HS-ST-00739 Working at Height
5. G-HS-ST-00740 Excavations and Trenches
6. G-HS-ST-00741 Working with and around High Risk Plant

7. G-HS-ST-00742 Hazardous Area
8. G-HS-ST-00743 Electrical Hazards
9. G-HS-ST-00744 Working near Underground Services
10. G-HS-ST-00745 Working with Live Electricity

To support the implementation of SNN, a corresponding Hazard Control Procedures (HCP) has been developed to support the risk assessment process. A series of training packs and factsheets have also been developed to support their implementation.

3.12.3 HSEQ Management Procedures

These standards are supported by Zinfra wide procedures applicable to all operations in the business. These procedures are classified in two broad categories, System Management Procedures and HSEQ Risk Control Procedures, which includes Hazard Control Procedures and Environmental Aspect and Impact Control Procedure.

3.12.4 Permit To Work

All unproven equipment must initially be in a de-energised state and prohibited from use by the attachment of lockout devices & safety tags, until proven safe for use.

Jemena Safe Work Systems shall be implemented for any works involving hydrogen including the production of hydrogen and energisation of the electrolyser. Hydrogen purging and hydrogen pressurisation of the pipeline shall be carried out under a Hot Work Permit issued by a Hydrogen Permit to Work Issuer authorised by Jemena.

Where access to work on or near plant, equipment or systems with the potential to be energised is required, the following controls shall be implemented:

- Safety Non-Negotiables G-HS-ST-00743 Electrical hazards and G-HS-ST00745 Working with Live Electricity;
- Zinfras G-HS-PR-00755 Permit to work Procedure
- Zinfras G-HS-PR-00756 Equipment Isolations procedure
- Specific Safe Work Method Statements e.g. Testing and Energisation of Equipment.

3.12.5 Safe Work Method Statements (SWMS)

Safe Work Method Statement (SWMS) are to be undertaken for all high risk work. The SWMS aims to eliminate or minimise risk as far as is reasonably practicable, by quantifying the risk and requiring the most effective controls practicable to reduce that risk. The requirement for a SWMS will be determined based on the scope and content of the HSE Risk Register and the relevant SNN.

A SWMS must be developed for any activity that involves defined high risk construction work; or has a raw/initial risk rating of “High” or above according to the Zinfra HSE Risk matrix. The SWMS must be prepared to cover all high risk work activities relevant to the scope of work.

The SWMS should be developed utilising the content of the relevant Hazard Control Procedures.

All SWMS's must be reviewed and approved by an authorised person prior to their use on site, including subcontractors. Each SWMS must have a documented G-HS-FM-00687 SWMS Review and Approval checklist attached.

3.13 Change Management

A formal system for the management of change has been implemented at Zinfra to ensure that changes are not introduced which could inadvertently compromise the safety of the plant and impact on employees, the community, and the environment.

Mechanisms have been established to ensure that proposed technological, facility or organisational changes are reviewed and implemented following strict procedures for identifying the impact on safety, assessing the risk, and taking the necessary action to manage that risk.

Systematic and critical examination of any proposed changes are undertaken to ensure understanding of the process safety implications. Changes could be organisational, procedural or technical, temporary or permanent. Changes in technology may include process or equipment, introduction of new materials, changes in operating conditions, procedural changes through to adjustments in the order of addition of materials.

3.14 Management of Change Process and Procedures

Formal, written management of change procedures have been implemented that include a clear description of the type and magnitude of changes that will cause the procedures to be invoked.

For each type of change the procedures define:

- Overall responsibilities for management of change;
 - Documentation requirements for the proposed change, including:
 - A description of the proposed change and its need;
 - Whether the modification is temporary, and if so, its duration, or permanent;
 - The technical, procedural and organisational basis for the change, including the design basis for the change;
 - Employee consultation in formulating the proposed change;
 - The identified impact of the change and the basis on which those impacts have been assessed (e.g. HAZOP, formal risk assessment, review of human factors, etc.); and
 - Any necessary procedural and documentation changes;
- The evaluation and authorisation levels for the various types of change;
- Safety reviews which must be carried out before and after the change;
- Construction safety;
- Procedures for informing/training employees about the change. The training should include:
 - The principles of change management
 - Risk assessment processes
 - Zinfra specific change management system and procedures, including authorisation procedures.
- Mechanisms for updating the Process Safety Information before implementation, including updating Process Flow drawings and Piping and Instrument diagrams, as applicable;
- Mechanisms for updating the operating procedures before implementation;
- Mechanisms for updating emergency plans and procedures before implementation;
- Mechanisms for pre-start-up safety review after the change; and
- Mechanisms for keeping up-to-date with legal requirements, new Standards, new technology and industry best practice.

3.15 Subcontractor Management

Selection and retention of subcontractors are based on the subcontractor's ability to meet the requirements of this Plan. This is managed during the entire subcontractor management process commencing at Pre-Contract to Contract Closure. Effective alignment of the Project and subcontractors' HSEQ objectives and management processes with Zinfras are an integral part of the HSEQ Subcontractor Management Process

During Pre-Contract and Contract Formation stages as part of the Purchase Approval Process, subcontractor's HSEQ System is assessed to ensure that it meets this Plan and must be conducted and completed prior to works being undertaken on the project.

Prior to mobilisation, a series of reviews are conducted to ensure subcontractors are ready to commence on the Project and have met all requirements. Upon mobilisation, subcontractors are inducted, their licenses and competency are checked and their plant and equipment are inspected.

4. Incident Management

HSE incidents are to be identified, reported and thoroughly investigated, and where appropriate, corrective actions carried out to prevent any recurrences of the incident.

All incidents must be reported immediately to the Team Leader.

The Team Leader must ensure all incidents are documented and entered into ASPIRE to allow actions to be monitored and an effective method of follow up to occur. All incidents, no matter how insignificant, must be reported and investigated to prevent further occurrence as per G-HS-PR-000153 Incident Management.

Investigations must take place as soon as possible after the incident has occurred. All incident investigations are to focus on identifying the causes of the incident so that appropriate remedial and preventative control measures can be identified and implemented. The Zinfra prescribed incident investigation method is ICAM (Incident Causation Analysis Method) and an alignment to ensure the Client's investigation method requirements are complied with must occur.

The level of investigation and reporting required must be in accordance with Zinfra's requirements. The depth of the investigation, the composition of the investigation team and the reporting requirements will vary subject to an assessment of the actual and the potential consequences. The level of investigation must be driven by the potential consequences.

Upon the completion of the investigation, the findings and recommendations must be distributed to the relevant work groups for discussion at a toolbox meeting. All incidents and the results of the subsequent investigation are to be tabled and reviewed at the next management review meeting.

The level of the investigation must match the level of the actual or potential risk of the incident.

Whenever an incident occurs and there is a possibility of legal action by a regulatory authority, these matters must be raised immediately to the Project Manager.

Upon completion of an investigation, the findings and recommendations which are permitted to be released into the public domain shall be distributed to the relevant work crews for discussion at Toolbox meetings.

4.1 Significant Incident Alert and Lessons Learned

In line with Zinfra's culture of being a learning organisation, Significant Incident Alerts (SIA) and Lessons Learnt will be shared in order to encourage a high level of safety awareness across Zinfra. All personnel must comply with Zinfra's procedures on development and dissemination of SIA and Lessons Learnt.

For Potential and Actual Level 4 and 5 incidents, the Operations team must prepare a Significant Incident Alert and submit it to the Business HSEQ Manager to record and raise awareness of the incidents occurrence. This also aids in eliminating the potential of a similar scenarios arising in another part of the organisation. Upon receiving a SIA and Lessons Learnt, the Operations team will review the alert, determine its relevancy and take any preventative actions and communication deemed necessary.

4.2 Injury Management

In the event of injury or ill health, arrangements shall be made for the person to receive appropriate first aid and/or medical treatment.

As a minimum, one person at the facility shall hold a current Advanced First Aid qualification and shall be present at all times while work is in progress. Additional personnel on the facility shall hold a current Senior First Aid qualification. Where the assessment of a workplace location has identified increased risk, additional trained personnel shall be assigned as appropriate.

Sufficient first aid kits will be available on the facility and one first aid kit shall be provided in each vehicle used on Site. The contents of the first aid kit shall be appropriate for the nature of the work being undertaken and inspected weekly.

First aid facilities / cabinets, details of first aiders and the location of first aid facilities will be included in the induction program. Names and images of first aiders will be posted on the facility and made known to all personnel.

4.3 Emergency Management

The emergency response process shall be in accordance with the requirements of the Emergency Plan submitted to DPIE in accordance with *NSW Planning Department's Hazardous Industry Planning Advisory Paper No. 1, 'Emergency Planning'*.

4.4 Hazardous Substance Management

All hazardous substances shall be stored and handled appropriately according to their Safety Data Sheet (SDS). Any Dangerous Goods are to be stored in a suitably bunded Dangerous Goods container, with goods segregated as per Dangerous Goods regulations.

PRIOR to any Dangerous Goods being planned for transport to the facility, an SDS must be supplied and approval to bring the Goods to site is sought from the HSE Manager and the Commissioning Manager.

The HSE Advisor is responsible for maintaining registers of the chemicals brought onto the Project. Appropriate PPE for the handling of all chemicals on site shall be made available at all times.

All hazardous substances that are used on site shall be in accordance with G-EN-PR-50244 Hazardous Substance Management Procedure.

4.5 Communication and Reporting

Regular meetings will be undertaken and attended by all interfacing parties to report, brief, discuss and plan forthcoming commissioning works. Regular reports will be developed by the Commissioning Manager to the Project Manager. The details of the frequency and the content of the meetings and reports are provided in the Commissioning Management Plan P2G-2099-PA-CS-001.

4.6 Review of Operational Safeguards

It is not uncommon on projects for conditions to change (scope, environment etc.) that may impact established safeguards. It is critical that operational safeguards be reviewed and revised to suit these changing conditions. The Project Manager shall manage these situations in accordance with the Zinfra's HSEQ Change Management Procedure G-HS-PR-50113.

4.7 Non-Conformance and Corrective Action

Non-conformances relate to any departure from a requirement stipulated on this Management System, or any activity that has the potential to breach a regulatory requirement.

Non-conformances can be either potential or actual and are detected through such processes as monitoring, inspections/audits, incidents and receiving of complaints from stakeholders (e.g. residents). This mechanism also allows for opportunities for improvement to be identified and acted upon.

There are two types of non-conformances; minor and major. Minor non-conformances occur when isolated discrepancies are found between what has/is required and what has/is occurring. A minor non-conformance does not have the potential to cause significant adverse effects to safety. A major non-conformance occurs when the ability to control the process or product has been significantly reduced.

Corrective actions raised in relation to incidents and near misses are entered, tracked and closed out through the ASPIRE system.

5. Quality Assurance

For a facility to operate safely (in accordance with the risk levels estimated as part of the hazard analysis process) it is essential that it be built and commissioned according to design intent and to the required level of quality. Incorrect commissioning may account for a significant incident.

Note: Safety and Quality assurance relating to construction activities are covered in the Construction Safety Study Report and the Commissioning Safety Study Report.

5.1 Document Management

All procedures, work instructions, SWMS, training records, authorisations and inspection/certification reports will be maintained on site during the commissioning activities. All documentation necessary for safe operation and maintenance will be provided to the relevant personnel. For example, operators will be supplied with operating manuals; and recommended maintenance schedules and procedures will be passed on to maintenance personnel.

All documentation, particularly certification documents, shall be held on site and be available for inspection by auditors during the operating life of the plant.

5.2 Critical Verifications / Safety Reviews

Critical verifications which are required before further work is undertaken shall be carried out as per Commissioning Management Plan.

Pre-startup safety review will be conducted to ensure that all elements of the safety system are in place prior to commissioning, including hardware and software and emergency response equipment. Operating personnel shall familiarise with the plant and all relevant procedures.

5.3 Training and Assessment

A high level of safety awareness is a reflection of the level of competency of Zinfra employees and the training they have been provided.

All Zinfra employees must participate in training and be assessed as competent to perform their duties. This is achieved through internal training and via nationally recognised and accredited training organisations.

5.3.1 Training Needs Analysis

A training needs analysis shall be coordinated annually to ensure training goals are met and the competency requirements are current for employees across the site. The employee health and training matrix is managed by the Learning and Development Manager and is input and stored on the online database.

5.3.2 Training & Competency

Zinfra ensures that any person under its control who performs tasks and operates equipment that may impact on WHS, is competent on the basis of appropriate education, training, or experience. Zinfra identifies training and competency requirements associated with the work being undertaken and risks associated with that work and is documented within the competencies required for the position.

5.3.3 Training Schedule

Zinfra has developed a training schedule where specific competencies that require refresher training or periodic renewal of licences and recertification, are identified in the facility's training schedule and training register. Expiring licences and certifications are escalated via emails and reports at predefined dates prior to the expiration.

5.3.4 Statutory Training

Certain positions and tasks that are performed throughout Zinfra require a minimum level of training prescribed under legislation. Compliance with statutory training is a key performance measure for Work Health and Safety. This training must be conducted by a Registered Training Organisation.

5.3.5 Inductions

Safety inductions and/or specific work inductions shall be undertaken by all employees, contractors and visitors before commencing work or on upon entering the facility. All Zinfra employees and contractors are to receive an employee induction into Zinfras health, safety and environmental requirements. This induction is valid for 1 year from the induction date.

5.4 Procurement

Safety considerations are incorporated into the Zinfra procurement procedures and contracts to ensure safety risks associated with the procurement of goods and services are minimised.

Considerations for the procurement of goods will include:

- Compliance – such as Australian Standards conformance, and plant registration;
- Design safety risks, e.g. - noise, vibration, dust emissions and control;
- Information, e.g. - operating instructions, inspections and maintenance of plant and equipment;
- Human factor risks, e.g. – operational or maintenance complexity and product / packaging weights;
- Inherent product risk, e.g. - dangerous good, material / product data sheets and safety data sheets (SDS); and
- Miscellaneous risks such as storage requirements, lead times for critical spares and calibration.

Health and safety considerations will also be incorporated into the process for engaging contract personnel and professional service providers. This will be commensurate with the safety risks provided, the scope of the works and the length of the contract under management.

5.5 Security

Zinfra has systems in place to monitor and control security and legitimate access to the facility. Electronic access control systems control access by a combination of CCTV systems, access control cards and card readers on perimeter entry using slide for vehicular access. Anyone entering the facility will have to ring and notify the Control Room to gain access. Basic security requirements that are undertaken by Zinfra include:

- Site fence;
- Vehicle access control;
- Remote infrared and CCTV systems; and
- Security system inspections and audits.

5.6 Monitoring and Evaluation

5.6.1 Procedural Monitoring

Zinfra shall monitor the effectiveness of plans, procedures and other supporting processes to ensure control measures remain effective. HSE team members shall monitor these procedures as they relate to use on the facility.

Compliance with the procedures shall be further monitored as part of the internal audit program.

5.6.2 Task Observations

This process is designed to monitor the compliance to SWMS in working environment through a physical observation. The main outcome of observations must need to be communicated to the relevant personnel.

Any improvement identified by Zinfra personnel during the task observation must be recorded on the task observation form and incorporated into the risk assessment. Any follow up action must be entered into and managed in ASPIRE.

5.6.3 Inspections and Audits

To ensure compliance with both the regulatory and HSE requirements stated in this SMS, the Maintenance Management team will conduct risk-based physical inspections of all its activities to ensure effective implementation of risk controls, and task observations to ensure compliance to safe systems of work particularly on all relevant Safety Non-Negotiables. The development of inspection schedule must consider the facility's HSE risk register focusing on high risks, subcontractor HSEQ surveillance and performance requirements. Any corrective actions identified during inspections and observations are to be communicated to relevant personnel and recorded in the ASPIRE and tracked to their closed-out.

Note: If any dangerous acts or situations are observed, they will be stopped immediately and corrected before work resumes. The reasons will be explained to the person(s) responsible. If a serious breach of procedures has occurred, an incident investigation will be conducted.

Workplace inspections may involve workers and/or their safety representatives, subcontractors and external personnel such as Zinfra senior managers. These inspections must be conducted in accordance with the Monthly Schedule.

All workplace inspections conducted by Zinfra personnel and its associated corrective actions must be entered into ASPIRE.

HSE Audit to verify the effectiveness of implementation of this SMS shall be conducted annually.

6. References

6.1 Internal

P2G-2099-PA-PM-001 - Project Management Plan

P2G-2099-PA-CS-001 – Commissioning Management Plan

Safety Non-Negotiables

G-HS-ST-00743 - Electrical hazards and

G-HS-ST00745 - Working with Live Electricity;

G-HS-PR-00755 - Permit to work Procedure

G-HS-PR-00756 - Equipment Isolations procedure

G-HS-PR-00040 - Health Safety and Environment (HSE) Risk Management Procedure

G-EN-PR-50244 - Hazardous Substance Management Procedure.

G-HS-PR-00153 - Incident Management procedure.

G-HS-PR-50113 - HSEQ Change Management Procedure

6.2 External

Hazardous Industry Planning Advisory Paper No 9, '*Safety Management*'

NSW Work Health and Safety Regulation 2017

NSW Work Health and Safety Act 2011

ISO 45001:2018 - Occupational health and safety Standard

Appendix A – Zinfra Health and Safety Policy Statement



Health and Safety Policy

To be the leading service provider to the utility industry and adjacent infrastructure markets, Zinfra is committed to providing a Healthy and Safe work environment to protect our employees, subcontractors, visitors and the public who may be affected by our services.

To achieve our vision, Zinfra is committed to creating a culture through leadership, participation, training and development that ensures health and safety always comes first. Our vision will be effectively communicated, understood and implemented consistently via our Health and Safety Management Systems.

Zinfra recognises a safe work environment can be established and sustained through a united effort by management, employees and subcontractors and the active participation of all is required.

Zinfra is committed to achieving this by:

- **Developing, implementing and continuously improving** the effectiveness and efficiency of our Health and Safety Management Systems in conformance with AS/NZS 4801
- **Complying with applicable statutory obligations**, standards, codes of practices and other regulatory requirements relevant to the services we provide
- **Ensuring health and safety** is an integral part of our management and employee accountability
- **Ensuring work activities are carried out by competent, suitably trained people** that are equipped with the most appropriate tools required to deliver safe outcomes
- **Assessing health and safety risks** to employees or others who may be affected by our services by identifying and eliminating or minimising the risk as far as reasonably practicable
- **Consulting with employees** and others as required to ensure that their concerns and issues about health and safety are addressed
- **Establishing health and safety performance targets** and measures at all levels of our business
- **Reporting, evaluating and acting upon health and safety performance** to facilitate continuous improvement aimed at eliminating work related injury and illness
- **Communicating and sharing health and safety performance** and lessons learnt with employees and stakeholders
- **Actively identifying and implementing opportunities** to improve health and safety outcomes and promoting positive safety behaviour
- **Management will empower and support all employees** and subcontractors to understand that they have a responsibility and the right to stop work or refuse to work in situations that may cause HSE harm, and to immediately report these situations to the attention of those at risk and to management

Peter Iancov
Managing Director
March 2019

Zinfra believes all incidents are preventable and the health and well-being of employees is the highest priority. No business objective will take priority over Health and Safety.