Document Cover Sheet

ENSCOPE A QUANTA SERVICES COMPANY *7/50 Oxford Close West Leederville*	**Supplier PO/Contract No:**	4600009229
	Supplier Item Description:	Commissioning Documents
	Equipment/Tag No:	N/A

Project Name:	**Project Marlin**		
Supplier Document Title:	COMMISSIONING HAZID REPORT		
Supplier Document No:		**Supplier Rev No:**	
Jemena Document No:	GAS-599-RP-CS-002	**Jemena Rev No:**	B
		Total No of Pages: (including cover sheet)	35

Document Revision History:

Rev	Issue Date	Key Reason for Issue (as above table)	Approved By/ Signature	Company Name	Notes (if not applicable N/A)
A	21/08/23	Issued for Review			
B	25/08/23	Re-Issued for Review			

Key Reason for Issue:

IFR- Issued for Review	**IFI**- Issued for Information	**IFU**- Issued for Use
IFP- Issued for Purchase	**IFC**- Issued for Construction	**AB**- As Built

PORT KEMBLA PIPELINE COMMISSIONING HAZID

COMMISSIONING HAZID REPORT

GAS-599-RP-CS-002

Revision Number: B

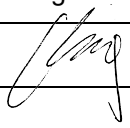
Revision Date: 23/08/2023

AUTHORISATION

PREPARED BY

Name	Job Title	Signature	Date
Nigel Charles	Project Engineer		23/08/2023

REVIEWED BY

Name	Job Title	Signature	Date
Stanley Xu	Project Commissioning Lead		23/08/2023

APPROVED BY

Name	Job Title	Signature	Date
David Young	Project Commissioning Manager		23/08/2023

ENSCOPE
A QUANTA SERVICES COMPANY

Jemena
bringing energy to life

INTERNAL

DOCUMENT HISTORY

Revision	Date	Author	Description of Changes
B	23/08/2023	Nigel Charles	Issued for Use

OWNING FUNCTIONAL GROUP & DEPARTMENT / TEAM

Major Projects: Port Kembla Pipeline Project : Project Management

TABLE OF CONTENTS

1 ABBREVIATIONS AND DEFINITIONS

1.1 ABBREVIATIONS

The following abbreviations and acronyms are used in this document and the Commissioning HAZID Register, GAS-599-RG-CS-001.

Abbreviation / Acronym	Definition
Comm	Commissioning
CWI	Commissioning Work Instruction
E&I	Electrical and Instrumentation
EGP	Eastern Gas Pipeline
ERP	Emergency Response Plan
ESD	Emergency Shutdown
FSRU	Floating Storage and Regasification Unit
HA	Hazardous Area
HAZID	Hazard Identification
HSE	Health Safety Environment
ITP	Inspection Test Plan
ITR	Inspection Test Report
KGMLV	Kembla Grange Main Line Valve
KGMS	Kembla Grange Metering Station
LOTO	Lock Out Tag Out
LTI	Lost Time Injury
MC	Mechanically Complete
MCC	Motor Control Centre
MLV	Main Line Valve
N2	Nitrogen Gas
NAI	No Additional Impact
NAR	No Additional Risks

NOE	Notice of Energisation
P&ID	Piping & Instrumentation Diagram
PKET	Port Kembla Energy Terminal
PKP	Port Kembla Pipeline (Project)
PPE	Personal Protective Equipment
PSV	Pressure Safety Valve
PTW	Permit To Work
QAQC	Quality Assurance Quality Control
R&R	Rest and Recuperation
SFAIRP	So Far As Is Reasonably Practicable
SIMOPS	Simultaneous Operations
SLD	Single Line Diagram
SWMS	Safe Work Method Statement
ToR	Terms of Reference

1.2 TERMS & DEFINITIONS

Term	**Definition**
Client	Jemena
Project	Port Kembla Pipeline Project
Stakeholder	Any person, group or organisation with interests in the project

2 INTRODUCTION

This document describes the scope, methodology and key outcomes of the Commissioning HAZID for the Port Kembla Pipeline Project.

2.1 EXECUTIVE SUMMARY

A risk based commissioning safety hazard identification (HAZID) workshop was held to identify and control Port Kembla Pipeline Project (PKP) Commissioning related Health, Safety, Environmental and property damage hazards.

The completion of a commissioning HAZID satisfies the requirements of the Commissioning Management Plan (GAS-599-PA-CS-001) and Commissioning HSE Management Plan (GAS-599-PA-CS-002).

A detailed commissioning schedule and comprehensive Preliminary Commissioning HAZID Register enabled an in-depth examination of the commissioning work activities and the associated risks.

When the HAZID took place, preparation for commissioning, in the form of procedures, plans, work instructions etc., was at an intermediate stage. The HAZID was conducted under the guidance of the S AS/NZS ISO 31000 Risk management - Principles and guidelines utilising a worksheet to evaluate the risks. The workshop outcome resulting in 18 actions being raised. The majority of hazards identified had existing controls in place. A total of 44 general, 12 pre-commissioning and 9 commissioning specific activities and their relevant hazards were identified and current controls were recognised where applicable for each activity/hazard. Where the risk was not So Far As IS Reasonably Practicable (SFAIRP) additional controls were identified. The associated risk ranking for the activity was then reassessed to determine the new risk level. This process was repeated until the team agreed the risk was SFAIRP.

On conclusion of the risk assessment, it was agreed that all risks were SFAIRP on the condition that all 18 assigned actions be closed out prior to their associated activity commencing.

2.2 PROJECT BACKGROUND

The Eastern Gas Pipeline (EGP) is a key natural gas supply artery between gas fields in Gippsland in Victoria and the major gas markets in NSW and the ACT.

Jemena is executing a project to connect an Import Terminal at Port Kembla, to a new lateral pipeline named the Port Kembla Pipeline (PKP) including the Kembla Grange Metering Station (KGMS) and Kembla Grange Main Line Valve Station modifications, into the EGP.

There is expected to be up to 500 MMSCFD of gas being injected into the EGP from the Floating Storage and Regasification Unit (FSRU) in Port Kembla to be transported to the Victorian and New South Wales gas pipeline networks.

2.3 REFERENCES

The documentation used as references in this HAZID are presented in the table below.

Note: the system boundary drawings listed below contain all relevant commissioning works.

Document Number	Title
GAS-599-DW-CS-002	Commissioning System Boundary Drawings
GAS-599-RP-CS-001	Commissioning HAZID Terms of References
GAS-599-PA-CS-001	Commissioning Management Plan
GAS-599-PA-CS-002	Commissioning HSE Management Plan

3 HAZID

3.1 OBJECTIVE

The Commissioning HAZID is intended to satisfy the requirements of the Commissioning Management Plan (GAS-599-PA-CS-001) and Commissioning HSE Management Plan (GAS-599-PA-CS-002) as well as:

- Ensuring the inclusion of competent cross functional stakeholders;
- Identification of hazards associated with the commissioning of PKP that have the potential to affect personnel, the environment, stakeholders, the community and/or assets;
- Reducing all risks to So Far As Is Reasonably Practicable (SFAIRP);
- Investigate risks that are unacceptable and take action to control them;
- Assess the potential emergency scenarios that might occur;
- Identify the additional emergency response equipment required; and,
- Prepare a report to describe the workshop methodology and outcomes for submission to the relevant stakeholders.

3.2 RESPONSIBILITIES

Facilitator

The Facilitator for this risk workshop was David Young, Project Commissioning Manager.

The Facilitator was responsible for:

- Planning the risk workshop;
- Fulfilling the risk review objectives as specified in the Commissioning HAZID Terms of Reference (ToR) GAS-599-RP-CS-001
- Ensuring the scribe, venue and equipment were suitable;
- Ensuring adequate, current and valid documentation, data and information is available for use in the HAZID workshop;
- Ensure the workshop team comprises representation by all required stakeholders, together with a broad spectrum of experiences relevant to the design, commissioning and operation of pipeline systems.
- Being experienced in facilitating similar style workshops and having suitable personal attributes in order to foster the active participation of all attendees and maintain effective time and resources management;
- Possess adequate and relevant technical knowledge and experience to understand and control discussion and/or facilitate resolution of issues.
- Leading and conducting the HAZID workshop, keeping the group focused and on track;
- Setting a positive tone for discussion, remaining neutral to the issues and encouraging participation by everyone;
- Protecting ideas from attack and creating a safe environment for the free exchange of ideas; and,
- Record, review, approve and distribute the workshop meeting minutes, including a record of all decisions and significant operating / safety concerns.

- Produce a record of all risks considered and actions (based on the assessed risks), mitigating measures and control measures identified detailing various actions nominated in the workshop by the nominated party to complete them.
- Prepare, approve and distribute the HAZID Workshop Report outlining and demonstrating how the purpose and requirements of the ToR are met.
- Provide the necessary recommendations to satisfactorily achieve the purpose and requirements of the ToR in the Workshop Report.
- Review and endorse the adequacy of the action plan (reflecting the criticality of each item, action to be taken, officer or party responsible and the required close-out date) developed by Jemena based on the findings of the Workshop Report.

3.3 SCOPE

The scope of the PKP Project Commissioning HAZID was to;

- Review available design, construction and commissioning documentation to gain an understanding of the project, scope and potential health, safety and environmental hazards and risks associated with commissioning of the pipeline and facilities.
- Use the available information and the knowledge and experience of the workshop participants to list identifiable hazards associated with the commissioning of the pipeline and facilities;
- Evaluate the likelihood of exposure to each hazard.
- Determine the risk and subsequently the acceptability of each hazard;
- Develop and agree on appropriate control measures for each hazard and where required assign specific actions and responsibilities to ensure control measures are in place prior to commencement of commissioning works; and
- Ensure that the controls for each hazard are sufficient to reduce the risk level So Far As Is Reasonably Practicable (SFAIRP) in line with the Jemena Risk Assessment Matrix.
- Document the findings of the HAZID workshop process.

The PKP Project Commissioning HAZID workshop covered all stages of commissioning including,

- General Risks
- Pre-Commissioning
- Gas Commissioning

The PKP Project Commissioning HAZID workshop covered works at the following locations,

- Kembla Grange metering Station (KGMS)
- Port Kembla Energy Terminal (PKET)
- Kembla Grange Main Line Valve (KGMLV)
- Interconnection to Eastern Gas Pipeline (EGP)

The following components are to be commissioned as part of the PKP Project:

- Field equipment room with all internal components
- Control systems (including SCADA, communication with HQ, SIS)
- On-site control room
- Remote control facilities
- Battery room with all internal components (batteries, chargers)
- Earthing systems
- Utility power supply

- Pressure regulating and metering skids
- Kembla Grange Main Line Valve Station

3.4 HAZID TIME AND LOCATION

- The HAZID Workshop was held over two non-consecutive days:
- Location: Online (Microsoft Teams)
- Time: 11:00am – 3:30pm; and, 11:00am – 12:30pm
- Date(s): 7th & 14th August 2023.

3.5 HAZID PARTICIPANTS

Table 1 – Workshop Attendees Day 1

Name	Position	Company
David Young	Project Commissioning Manager	Enscope
Stanley Xu	Project Commissioning Lead	Enscope
Murray Crane	Senior Project Engineer	Enscope
Graeme Begbie	HSE Manager	Enscope
Darrel Foster	E&I Superintendent	Enscope
Daire O'Connell	E&I Technician	Enscope
Brian Teow	E&I Engineer	Enscope
Bas Van Dongen	Pipeline Engineer	Enscope
Nigel Charles	Project Engineer	Enscope
Leon Terenyi	Facilities Project Manager	Jemena
David Hawks	HSE Business Partner	Jemena
Steven Bonnici	Integration Manager	Jemena
Michael Peoples	Engineering Manager	Jemena
Nathan Keyes	E&I Project Engineer	Jemena
Jodi Wood	Stakeholder & Approval Manager	Jemena
Anthony Cook	HSE Business Partner	Jemena

Name	Position	Company
Yogini Vithal	Controls and SCADA Engineer	Jemena
Nathan de Bondt	Graduate Mechanical Engineer	Jemena
Martin Richards	Operations Team Leader (North) - EGP	Jemena
John Tinline	Quality Advisor	Jemena

Table 2 – Workshop Attendees Day 2

Name	Position	Company
David Young	Project Commissioning Manager	Enscope
Stanley Xu	Project Commissioning Lead	Enscope
Graeme Begbie	HSE Manager	Enscope
Brian Teow	E&I Engineer	Enscope
Nigel Charles	Project Engineer	Enscope
Leon Terenyi	Facilities Project Manager	Jemena
David Hawks	HSE Business Partner	Jemena
Steven Bonnici	Integration Manager	Jemena
Michael Peoples	Engineering Manager	Jemena
Jodi Wood	Stakeholder & Approval Manager	Jemena
Martin Richards	Operations Team Leader (North) - EGP	Jemena
Thomas Toleman	Project Engineer	Jemena

3.6 SUPPORTING DOCUMENTATION

Prior to the workshop supporting documentation was prepared for handout/displayed to the workshop attendees. This included:

- Pre-populated HAZID register (displayed);
- Schedule; and,
- Risk Matrix with Consequence Matrix.

During the HAZID, applicable documentation was available and reviewed as required. This included:

- Commissioning Management Plan;
- HSE Management Plan;
- Site layout;
- Full set of P&IDs, SLDs and CBDs marked up with Commissioning Systems;
- Station Functional Specification;

3.7 THE RISK CRITERIA & LEVELS

For this HAZID the standard Jemena Risk Matrix and Consequence Matrix was used, refer to Attachment 1.

3.8 HAZID INTRODUCTIONS

Before commencing the HAZID workshop, the Facilitator communicated to all participants the HAZID overview, scope, safety moment, objectives, responsibilities, methodology and process. As well as all members introducing themselves to the other participants

It was confirmed that the following conditions had been met in order to deliver a valid HAZID:

- Correct competencies;
- Correct information; and,
- Correct documentation and data.

3.9 METHODOLOGY

The risk assessment was conducted using the principles of AS/NZS ISO 31000:2009 Risk management and complied with the requirements of AS2885.

The Team was presented with a preliminary HAZID register that had been developed based on the commissioning sequence in the latest commissioning schedule and it had been pre-populated with the known existing controls.

The HAZID was undertaken in three sections, one for General Risks, one for Pre-Commissioning Risks, and another for Commissioning Risks:

3.9.1 HAZARD IDENTIFICATION

A structured HAZID process was used for the study and consisted of:

- Overview of the Pipeline and Facilities;
- Step through the work breakdown steps in the commissioning schedule;
- A basic introduction by the facilitator to ensure a common understanding of the risk management concept and the HAZID process;
- Confirmation the team contained multi-disciplined personnel with sufficient experience in the operation of the various types of equipment included in the PKP Project;
- Review and assessment of the pre-populated commissioning HAZID Register;
- Identifying additional hazards;

- Documenting the existing safeguards (management control and mitigation systems and procedures);
- Determination of potential consequences;
- Determination of the likelihood of the consequence occurring (taking into consideration the existing safeguards in place);
- Identifying any further actions as required to address the Hazards and reduced the risk SFAIRP; and
- Actions were assigned to the relevant personnel for timely close out

3.9.2 HAZID REGISTER

All identified and assessed hazards were recorded in the HAZID register filled out live during the workshop. All parties were provided the opportunity to ensure that each description fully captures the identified hazards. Refer Attachment 4 for the completed Commissioning HAZID Register.

Note: To remove the repetitive recording of “General Controls” for each and every Activity/Task, all Activities/Tasks were assumed to include the following “General Controls”, even if not directly referred to or listed in the individual controls for each Activity/Task:

- Permit to Work Procedure (PTW)
- Commissioning work areas bunted off via blue flagging
- Commissioning Work Instruction (CWI/WI)
- Commissioning Industions
- Inspection and Test Records (ITR)
- Lock Out & Tag Out Procedure (LOTO)
- Boundary Isolation Procedure
- Notice of Energisation Procedure (NOE)
- Competent Personnel
- Safe Work Method Statement (SWMS)
- Safety Data Sheets (SDS)
- Pre-Start Meeting
- Toolbox Meetings
- Daily Supervisors/Permit Planning Meeting
- Emergency Response Procedure
- Radio communications
- Mandatory PPE (not including task specific in excess of the site mandatory PPE).

3.9.3 RISK ASSESSMENT

The workshop’s participants ranked all the hazards identified, using the Jemena PKP Risk Assessment Matrix. The risk is determined by assessing the likelihood and consequence of the hazard with suitable risk mitigation methods recorded or listed as Corrective Actions and assigned to an appropriate person for rectification and closure.

A list of Hazards and the requirement for Corrective Actions is contained in the Commissioning HAZID Register.

There are several interrelated steps involved in the risk assessment process including:

- Determination of Risk Consequences
- Determination of the Risk Frequency

- Required Action
- Risk Reduction/Mitigation (Control Measures)
- Documentation
- Monitoring and Review
- Approval of Acceptable Risk Levels.

All of these steps are completed in accordance with the Jemena PKP Risk Assessment Matrix.

3.9.4 RISK ACCEPTANCE CRITERIA

Jemena have adopted the risk reduction concept So Far As Is Reasonably Practicable (SFAIRP) for the assessment of the application of risk reduction actions. This concept has been devised to align with the legal concepts related to risk management, and acknowledges the potential for judicial enquiry into site activities, particularly if a low probability, high consequence event occurs.

SFAIRP takes the position that all credible actions that can be taken to reduce or eliminate a risk should be taken, unless each can be demonstrated to be unreasonable. The assessment of what is reasonable takes the approach adopted under common law, which is that it is reasonable if the effort required is justified by the magnitude of the risk reduction obtained.

With this approach, even if a small number of risk reduction steps may reduce a risk to tolerable levels, the process compels the workshop to continue to apply further steps until no more reasonable actions remain. If the risk materialises and an incident occurs, the law will enquire as to whether any further steps existed which were not taken, which may have prevented the risk materialising. If such steps existed, the process and personnel involved risk being found negligent.

3.10 EMERGENCY SCENARIOS

The HAZID was assessed on the basis that the commissioning teams at each site would only provide Emergency Response, contact First Response Teams provided from Port Kembla or Kembla Grange and assist with specialised emergency response services.

4 HAZID RESULTS

4.1 GENERAL COMMISSIONING RISKS

Forty-four general activities were identified in the HAZID register, each considered as being pertinent to all commissioning activities for the Project. Refer to 3 below for a summary, and to the Commissioning HAZID register GAS-599-RG-CS-001 (Attachment A) for the full details.

Table 3 – HAZID Summary of General Commissioning Assessment

Risk Level	Untreated	With Additional Controls
Extreme	0	0
High	2	0
Significant	0	0
Moderate	1	1
Low	1	3

One activities was assessed and considered to have a Moderate residual risk level. Thirty-one activities were noted as being adequately included in the Construction HAZID and so was not further assessed. Ten activities were assessed as being adequately included in other risk assessments and were recorded as N/A Refer to the Commissioning HAZID Comments and Actions worksheet in the Commissioning HAZID Register GAS-599-RG-CS-001 for full details.

4.2 PRE-COMMISSIONING RISKS

Twelve entries were made into the HAZID register that is associated with pre-commissioning activities for the Project, Refer to Table 4 below for summary, and to the Commissioning HAZID register for the full details.

Table 4 – HAZID Summary of Pre-Commissioning Assessment

Risk Level	**With Existing Controls**	**With additional Controls (if any)**
Extreme	0	0
High	2	0
Significant	3	0
Moderate	0	4
Low	1	2

Four activities were assessed and considered to have a Moderate residual risk level. Five activities were assessed as being adequately included in other risk assessments and were recorded as N/A. Refer to the Commissioning HAZID Comments and Actions worksheet in the Commissioning HAZID Register GAS-599-RG-CS-001 for full details.

4.3 COMMISSIONING SPECIFIC RISKS

Nine entries were made into the HAZID register that is associated with commissioning activities for the Project – Refer to Table 5 below for summary, and to the Commissioning HAZID register for the full details.

Table 5 – HAZID Summary of Commissioning Specific Assessment

Risk Level	With Existing Controls	With additional Controls (if any)
Extreme	0	0
High	0	0
Significant	1	0
Moderate	2	1
Low	4	5

One activity was assessed and considered to have a Moderate residual risk level. Refer to the Commissioning HAZID Comments and Actions worksheet in the Commissioning HAZID Register GAS-599-RG-CS-001 for full details.

4.4 ACTIONS

A total of 18 actions / recommendations were recognised during the HAZID. Refer to the Attachment 3 for the Action List and the Commissioning HAZID Comments and Actions worksheet in the Commissioning HAZID Register GAS-599-RG-CS-001 for full details. These must be closed out by the assigned person, as per the required close out action and by the date required.

4.5 NON ASSESSED

The pre-populated risks associated with the commissioning of PKP and additional risks raised during the HAZID (which were added to the register and assessed accordingly) within the scope defined in section 3.3 have been assessed during this HAZID, except for the following:

Three items were assessed and evaluated as not requiring individual risk/impact assessment as they were presenting “No Additional Risks” (NAR), “No Additional Impact” (NAI) as the risks of these items were already assessed by previous items. One activity was not assessed as it was out of scope. In all cases the referred activity is noted in the report.

- Refer to the Commissioning HAZID Comments and Actions worksheet in the Commissioning HAZID Register GAS-599-RG-CS-001 for full details.

5 CONCLUSION

The PKP HAZID Risk Workshop was a successful exercise in identifying the existing risks and the necessary actions to ensure the commissioning process is as safe as possible.

Overall 44 general hazards, 12 pre-commissioning hazards and 9 commissioning hazards were discussed and the relevant risk controls identified for each. It was determined that all were SFAIRP assuming that the 18 Actions raised will be closed in accordance with the Action Close-out Register included in the HAZID Register.

Preparation work for commissioning was well progressed, resulting in many controls already being in place. This resulted in only 18 Actions being raised from the HAZID that must be closed.

At the end of the HAZID workshop, a summary was delivered to the team that included:

- Findings;
- Confirmation by the team that risks have been reduced or mitigated to SFAIRP;
- Confirmation by the team that the HAZID objectives had been met; and
- Confirmation that the HAZID was valid.

6 REFERENCES

Standards Australia. AS 2885.1- 2007 – Pipelines - Gas and liquid petroleum – Design and construction. Sydney: Standards Australia: 2007.

Standards Australia. AS 2885.3-2001 - Pipelines - Gas and liquid petroleum – Operation and maintenance. Sydney: Standards Australia: 2001.

Standards Australia. AS/NZS 3931:1998 - Risk analysis of technological systems - Application guide. Sydney: Standards Australia: 1998.

Standards Australia. AS/NZS ISO 31000 Risk management - Principles and guidelines. Sydney: Standards Australia: 2009.

Standards Australia. HB 436 - 2004 Risk Management Guidelines Companion to AS/NZS 4360:2004 Sydney: Standards Australia: 2004.

Standards Australia. HB 205 - 2004 OHS Risk Management Handbook. Sydney: Standards Australia: 2004.

Standards Australia. HB 203 - 2006 Handbook Environmental risk management - Principles and process. Sydney: Standards Australia: 2004.

ATTACHMENT 1 – HAZID RISK MATRIX & CONTROL EFFECTIVENESS

Risk Matrix

Likelihood	Consequence				
	Minor	Serious	Severe	Major	Catastrophic
Almost Certain	Moderate	High	Extreme	Extreme	Extreme
Likely	Moderate	Significant	High	Extreme	Extreme
Possible	Moderate	Moderate	Significant	High	Extreme
Unlikely	Low	Low	Moderate	Significant	High
Rare	Low	Low	Moderate	Moderate	Significant

Control Effectiveness

Risk	Control Effectiveness
Low	Strong
Moderate	Adequate
Significant	Fair
High	Weak
Extreme	Weak

ATTACHMENT 2 – Attendance List (Online)

7th August 2023			
Name	Role	Company	Signature
David Young	Project Commissioning Manager	Enscope	
Stanley Xu	Project Commissioning Lead	Enscope	
Murray Crane	Senior Project Engineer	Enscope	
Graeme Begbie	HSE Manager	Enscope	
Darrel Foster	E&I Superintendent	Enscope	
Daire O'Connell	E&I Technician	Enscope	
Brian Teow	E&I Engineer	Enscope	
Bas Van Dongen	Pipeline Engineer	Enscope	
Nigel Charles	Project Engineer	Enscope	
Leon Terenyi	Facilities Project Manager	Jemena	
David Hawks	HSE Business Partner	Jemena	
Steven Bonnici	Integration Manager	Jemena	
Michael Peoples	Engineering Manager	Jemena	
Nathan Keyes	E&I Project Engineer	Jemena	
Jodi Wood	Stakeholder & Approval Manager	Jemena	
Anthony Cook	HSE Business Partner	Jemena	
Yogini Vithal	Controls and SCADA Engineer	Jemena	
Nathan de Bondt	Graduate Mechanical Engineer	Jemena	
Martin Richards	Operations Team Leader (North) - EGP	Jemena	
John Tinline	Quality Advisor	Jemena	

14th August 2023			
Name	Role	Company	Signature
David Young	Project Commissioning Manager	Enscope	
Stanley Xu	Project Commissioning Lead	Enscope	
Graeme Begbie	HSE Manager	Enscope	
Brian Teow	E&I Engineer	Enscope	
Nigel Charles	Project Engineer	Enscope	
Leon Terenyi	Facilities Project Manager	Jemena	
David Hawks	HSE Business Partner	Jemena	
Steven Bonnici	Integration Manager	Jemena	
Michael Peoples	Engineering Manager	Jemena	
Jodi Wood	Stakeholder & Approval Manager	Jemena	
Martin Richards	Operations Team Leader (North) - EGP	Jemena	
Thomas Toleman	Project Engineer	Jemena	

ATTACHMENT 3 – HAZID Action List

Item No. (1)	Action / Recommendation	Responsible Party (2)
1.02	Consider whether or not an Enscope traffic management plan is required, and advise Enscope.	LT
1.04	Enscope to review the integrity of locks on existing containers to ensure access to the asset is safe and reliable.	SXX
1.24	Overhead powerline on site. Consider access limitation for truck entering.	LT
1.26	Enscope to advise personnel histogram for crib requirements.	SXX
1.36	Enscope to review commissioning schedule and confirm whether or not 5.5 day per week is sufficient.	SXX
1.42	Evaluate the availability of construction PI for commissioning phase	SXX, LT
2.07	Confirm whether or not vessels on site are registered pressure vessel.	SXX, LT
2.08	Confirm possibility of N2 being injected into EGP.	MP
2.11	Consider using hard tubing to partially replace N2 hoses	SXX
2.11	Consider the orientation and location of the burst disc.	BVD
2.11	Consider re-scale the pressure transmitter for test to smaller range for better accuracy in pipeline inerting. Consider the pressure instrument sensor model suitability.	SXX, NK
2.11	CWI to be developed considering the procedure for test equipment pack up for overnight testing.	SXX
3.01	Project team to develop a dossier of information to carry forward to future project work	LT, SXX
3.02	Schedule to be altered to include date change for nitrogen inerting	NC, SXX
3.02	Check that Gap Inspection Gauges to be used to confirm swagelok fittings are swaged and installed correctly	LT
3.03	Each individual vent point to be assessed prior to completing the task to ensure the risk is mitigated SFAIRP	NC, DSY
3.04	Assess if noise level meet guidelines	JW, DSY
3.08	Finalisation of scope for individual training sessions to be completed	SXX

Notes:

1. Refers to the HAZID Register line item and sequential alpha item in the report.
2. Names are used. This party responsible for the action and advice to the HAZID Facilitator to appropriately close out the Action item.

ATTACHMENT 4 – Commissioning HAZID Register

Port Kembla Pipeline Project

Commissioning HAZID Register & Closeout

Client:	**Jemena**				
Project:	**Port Kembla Pipeline Project**				
Document Title:	**Commissioning HAZID Register & Closeout**				
Doc#:	GAS-599-RG-CS-001	Rev:	B	Date: 23/08/23	Enscope Job #: ES1402

Notes:

1 None

Document Revision History

REV	DESCRIPTION	BY	CHK'D	APP'D	DATE
B	Issued for Review	NC	SXX	DSY	23/08/23
A	Issued for Review	NC	SXX	DSY	14/08/23
Draft	Issued for Review	NC	DSY	DSY	25/07/23

Port Kembla Pipeline Project

Risk & Control Effectiveness Matrices

Risk Matrix

Likelihood	Consequence				
	Minor	Serious	Severe	Major	Catastrophic
Almost Certain	Moderate	High	Extreme	Extreme	Extreme
Likely	Moderate	Significant	High	Extreme	Extreme
Possible	Moderate	Moderate	Significant	High	Extreme
Unlikely	Low	Low	Moderate	Significant	High
Rare	Low	Low	Moderate	Moderate	Significant

Control Effectiveness

Risk	Control Effectiveness
Low	Strong
Moderate	Adequate
Significant	Fair
High	Weak
Extreme	Weak

Port Kembla Pipeline Project

Risk & Control Effectiveness Matrices

Risk Ratings Matrix

Likelihood		Consequence				
		1	2	3	4	5
		Minor	Serious	Severe	Major	Catastrophic
5	Almost Certain	Moderate	High	Extreme	Extreme	Extreme
4	Likely	Moderate	Significant	High	Extreme	Extreme
3	Possible	Moderate	Moderate	Significant	High	Extreme
2	Unlikely	Low	Low	Moderate	Significant	High
1	Rare	Low	Low	Moderate	Moderate	Significant

Control Effectiveness

Risk	Control Effectiveness
Low	Strong
Moderate	Adequate
Significant	Fair
High	Weak
Extreme	Weak

Consequence Materiality Table

Rating	Description[1]	Financial		Operational	Health, Safety & Environment	Employee	Regulatory & Compliance	Brand / Reputation / Stakeholders
		EBITDA / Cashflow	Recoverable Value[3]					
Catastrophic	Potential disastrous impact on SGSPAA strategies or operational activities. Widespread stakeholder concern / interest.	> 6% of EBITDA[2] (> $50M).[3] Imminent liquidity / cash flow problem – 100% utilisation of undrawn credit facilities & cash at bank.	*> 5% or $500M of Recoverable Value of SGSPAA's Assets*	Loss of electricity supply to 2 Zone Substations >24 Hrs or >15% Customers (49,000) >24 Hrs. Loss of gas supply to > 20% Customers (220,000). Business interruption for > 30 days (network / pipelines).	1 or more fatalities or total permanent disabilities (SGSPAA personnel). 1 or more fatalities of member(s) of the public. Significant destruction of key internal asset or third party property. Harm to the natural environment and/or cultural heritage that cannot be remediated .	Skill set/ capability of >35% of business critical roles lost within a 6 month period	Major regulatory restrictions and/or govt. interventions. Possible loss of licence to operate. Frequent regulatory or policy violations / breaches Major litigation, with a possibility of punitive damages. Significant fines, prosecutions and jail terms possible.	Sustained and hostile public campaign. Reputation impacted with majority of key stakeholders. Sustained stakeholder critical stakeholder attention.
Major	Significant impact on SGSPAA strategies or operational activities. Significant stakeholder concern / interest.	3-6% of EBITDA (> $30M). Liquidity / cash flow may be adversely affected – 100% utilisation of undrawn credit facilities.	*3-5% or $300 - $500M of Recoverable Value of SGSPAA's Assets*	Loss of electricity supply to > 2 % Customers (6,500) >24 Hrs. Loss of gas supply to > 1% Customers (11,000). Business interruption for 7 - 30 days (network / pipelines / offices).	Total permanent disability (staff or contractors). Multiple hospitalisations, permanent disability and/or life threatening injuries affecting member(s) of the public. Significant damage to internal assets or third party property. Harm to the natural environment and/or cultural heritage with remediation difficult (multi-year management).	Skill set/ capability of 20 – 35% % of business critical roles lost within a 6 month	Regulatory investigations or govt. review. Some regulatory or policy violations / breaches. Litigation involving significant senior management time. Major fines or penalties and prosecutions possible.	Significant adverse public attention and/or heightened concern from stakeholders. Reputation impacted with significant number of stakeholders. Significant stakeholder criticism / negativity.
Severe	Moderate impact on SGSPAA strategies or operational activities. Moderate stakeholder concern / interest.	1-3% of EBITDA (> $10M). Liquidity / cash flow may be affected – 50% utilisation of undrawn credit facilities.	*1-3% or $100-$300M of Recoverable Value of SGSPAA's Assets*	Loss of electricity supply > 1% Customers (3, 200) > 24 Hrs. Loss of gas supply to > 0.1% Customers (1, 100). Business interruption for 1 - 7 days (network / pipelines / offices).	Single permanent partial disability (staff or contractors). Medical aid required for member(s) of the public. Some loss of or damage to third party property. Harm to the natural environment and/or cultural heritage than can be remediated (<1 year management).	Skill set/ capability of 10-20% of business critical roles lost within a 6 month period	Regulator requires formal explanations & remedial action plans. Fines or penalties from legal issues, breaches / non-compliances.	Persistent public scrutiny. Reputation impacted with some stakeholders. Some stakeholder concern / negativity.
Serious	No material impact on SGSPAA, issues are dealt with internally.	0.1-1% of EBITDA (> $1M). Liquidity / cash flow impact absorbed under normal operating conditions – 25% utilisation of undrawn credit facilities.	*0.1-1% or $10-$100M of Recoverable Value of SGSPAA's Assets*	Loss of electricity supply to > 1% Customers (3, 200) > 6 Hrs. Loss of gas supply to > 100 Customers or any contract customer. Business interruption for 1 day (network / pipelines / offices).	Medical treatment injury or lost time injury (staff or contractors). On-site first aid to a small number of member(s) of the public, lost time. Harm to the natural environment and/or cultural heritage than can be remediated (at the time of impact).	Skill set/ capability of 5 – 10% of business critical roles lost within a 6 month period	Isolated regulatory or policy violations / breaches. Fines or penalties possible.	Sporadic, adverse media / public attention. Limited adverse reputational impact. Minor stakeholder complaints.
Minor	Negligible impact on SGSPAA, issues are routinely dealt with by operational areas.	< 0.1% of EBITDA (< $1M). Negligible impact on liquidity / cash flow.	*< 0.1% or $10M of Recoverable Value of SGSPAA's Assets*	Loss of electricity supply to <1,000 Customers up to 6 Hrs. Loss of gas supply to > 5 residential customers. Business interruption for a few hours (offices only).	Minimal impact on health & safety (SGSPAA personnel or member(s) of the public). Harm to the natural environment and/or cultural heritage requiring no active remediation and/or able to self-remediate.	Skill set/ capability of <5% of business critical roles lost within a 6 month period	General regulatory queries. No violations / breaches, fines or penalties.	Negligible media / public attention, reputational impact and/or little to no stakeholder interest.

1 "Consequence description" is likely to over-ride the defined loss limits, where loss can occur unexpectedly over a short time.
2 EBITDA refers to the budgeted or forecast Group Earnings Before Interest, Taxes, Depreciation and Amortisation for the relevant period.
3 Use this measure for risk events with recurring / multi-year and potential asset valuation impacts, where the EBITDA impact for a given year is not appropriate.
4 Examples of damage that cannot be remediated may involve loss of biodiversity or the destruction/desecration of cultural heritage items.

Risk Likelihood Table

Rating	Description	Measures
5 Almost Certain	Event is **expected** to occur in most circumstances	· Expected to occur once (or more) within 1 year, or · > 75% probability of occurrence, or · Has occurred recently and likely to occur again.
4 Likely	Event will **probably** occur in most circumstances	· Will probably occur at some time within the next 2 years, or · 51% - 75% probability of occurrence or · Has a history of occurrence or difficult to control due to external influences.
3 Possible	Event **should** occur at some time	· Might occur at some time within the next 5 years, or · 26% - 50% probability of occurrence.
2 Unlikely	Event **could** occur at some time	· Could occur at some time within the next 10 years, or · 5% - 25% probability of occurrence.
1 Rare	Event **may** occur only in exceptional circumstances	· Improbable occurrence only in exceptional circumstances (i.e. may only occur in more than 10 years), or · < 5% probability of occurrence.

Item #	Project SOW	Activity/Task	Hazard/Risk	Impact	Inherent (Untreated Risk)			Existing/Planned controls	Residual (Treated) Risk			Control Effectiveness	SFAIRP (Y/N)	Additional Actions	Action Responsibility	Due Date	Status	Target Risk			Comments & Assumptions
					Consequence	Likelihood	Risk		Consequence	Likelihood	Risk							Consequence	Likelihood	Risk	
	General	Generic Controls	Where highlighted in green, the corresponding hazard/risk is considered in the Wasco work sheets, refer sheets 4 for details.					The following generic controls are assumed to be available as Existing Controls for all Activity/Tasks, they are listed here so that they need not be listed in all activities assessed: o Permit to Work Procedure (PTW) o Commissioning work areas bunted off via blue flagging o Commissioning Work Instructions (CWI/WI) o Commissioning Inductions - General induction/PTW training/IOG Induction o Inspection and Test Records (ITR) o Lock Out & Tag Out Procedure (LOTO) o Boundary Isolation Procedure o Notice of Energisation Procedure (NOE) o Competent Personnel o Safe Work Method Statement (SWMS) o Safety Data Sheets (SDS) o Pre-Start Meeting o Toolbox Meetings o Daily Supervisors/Permit Planning Meeting o Emergency Response Procedure o Radio communications o Mandatory PPE (not including task specific in excess of the site [illegible] PPE)									
1.01	General	Daily commuting	Refer Construction HazID				#N/A	15-30min daily commute. 2-4 hrs mobilisation commute time (Metro dring only). Low risk			#N/A	#N/A									
1.02	General	Small vehicle and personnel movement on site	Refer Construction HazID				#N/A	Adopt the WASCO traffic management plan to manage this risk for commissioning phase			#N/A	#N/A		Consider whether or not an Enscope traffic management plan is required, and advise Enscope.	LT						
1.03	General	Access / Egress	Refer Construction HazID				#N/A				#N/A	#N/A									
1.04	General	Unauthorized 3rd Party Access	Refer Construction HazID				#N/A	Fence and security system expect to be in place before cut over to commissioning phase. Good security practise, house keeping Wilson security (vendor)			#N/A	#N/A		Enscope to review the integrity of locks on existing containers to ensure access to the asset is safe and reliable.	SXX						
1.05	General	Walking around site, walk downs, Inspections etc.	Refer Construction HazID				#N/A				#N/A	#N/A									
1.06	General	Storage and handling of compressed gas cylinders (nitrogen / flammable gases) and fire extinguishers / suppressant (Excluding pipeline N2 purging activities Refer 2.11 for specific HazID for this activity)	Refer Construction HazID				#N/A				#N/A	#N/A									
1.07	General	Chemical / Hazardous Substances storage, handling and use	Refer Construction HazID				#N/A				#N/A	#N/A									
1.08	General	Interaction with Fauna	Refer Construction HazID	Snake may become active on site. This risk is covered in the WASCO construction HAZID			#N/A				#N/A	#N/A									
1.09	General	Waste disposal	Refer Construction HazID				#N/A				#N/A	#N/A									
1.10	General	Disposal of Hazardous Waste	Refer Construction HazID	N/A			#N/A				#N/A	#N/A									
1.11	General	Diesel Storage Tanks / Trailer	Refer Construction HazID	Small diesel generator only			#N/A				#N/A	#N/A									
1.12	General	Adverse Weather Conditions	Refer Construction HazID	High rain fall area. Rain fall may impact project schedule.			#N/A				#N/A	#N/A									
1.13	General	Fatigue/Fitness for Work leading to an incident/accident	Refer Construction HazID				#N/A				#N/A	#N/A									
1.14	General	Housekeeping	Refer Construction HazID				#N/A				#N/A	#N/A									
1.15	General	Working whilst dark/low light conditions	Activity not planned.				#N/A				#N/A	#N/A									
1.16	General	Nightshift	Activity not planned.				#N/A				#N/A	#N/A									
1.17	General	Set-up of work front	Refer Construction HazID	Position of container, position of pressurised N2/gas storage			#N/A				#N/A	#N/A									
1.18	General	Manual Handling	Refer Construction HazID				#N/A				#N/A	#N/A									
1.19	General	Standard and power hand tools	Refer Construction HazID																		
1.20	General	General Hot Works, including welding/grinding etc.	Refer Construction HazID	No welding/grinding. However hot work permit will be required			#N/A				#N/A	#N/A									
1.21	General	Mechanical Checks / Repairs / Maintenance of Temporary Equipment	Refer Construction HazID				#N/A				#N/A	#N/A									
1.22	General	General Pipework/equipment removal/Installation and Flange Bolt-Ups	Refer Construction HazID				#N/A				#N/A	#N/A									
1.23	General	General Lifting with equipment including loads which are not high risk	Refer Construction HazID				#N/A	two-way cranes (prefered supplier)			#N/A	#N/A									
1.24	General	Loading/Unloading of trucks/trailer, material handling with forklift/telehandler/franna, Access / Egress from trucks and trailers for transportation of freight, plant and equipment	Refer Construction HazID	Largest truck to attend site will be a semi-detached truck. Additional attention shall be in place at truck arrival.			#N/A				#N/A	#N/A		Overhead powerline on site. Consider access limitation for truck entering.	LT						
1.25	General	High Risk Lift: Lifting over live plant / equipment Lifting excess of 80% lifting capacity Dual Crane Lift.	Not applicable to scope	No dual crane lifts.			#N/A	Separate risk assessment to be perform should high risk lifts are reuiqred. Not expect to require high risk lifts during commissioning.			#N/A	#N/A									
1.26	General	Supply, storage & use of Potable Water.	Refer Construction HazID	No permenant water supply.			#N/A				#N/A	#N/A		Enscope to advise personnel histogram for crib requirements.	SXX						
1.27	General	Communication	Refer Construction HazID	Operational facility - brown field area.			#N/A	HA requirements to be followed.			#N/A	#N/A									
1.28	General	Emergency preparedness and response	Lack of preparedness for emergency, incorrect or inadequate response	Injury / fatality Project delays - Authority approvals of ERP prior instroduction of gas			#N/A	Detailed Emergency Reponce Plan to be issued prior to mobilisation			#N/A	#N/A									
1.29	General	Pre-start inspections of plant and equipment	Refer Construction HazID				#N/A				#N/A	#N/A									
1.30	General	Working at heights	Refer Construction HazID	No working at heights			#N/A				#N/A	#N/A									
1.31	General	Scaffolding: Erect / Dismantle / Modification of Scaffolding and Work Platforms	Refer Construction HazID	No scaffolding			#N/A				#N/A	#N/A									
1.32	General	Elevated Work Platforms (EWPs) and Scissor Lifts	Refer Construction HazID	Seesaw and swivel pole for lighting - reducing elevated work interface requirements.			#N/A				#N/A	#N/A									
1.33	General	Working in Confined Spaces	Access to compressor skirts. Flare combustion area. Vessels / reboiler. Entry to confined space and controls / rescue requirements.	No Confined space entry activities			#N/A				#N/A	#N/A									
1.34	General	Grid Mesh / Handrail Removal	Falls with fatal consequence	No grid mesh or handrail removal required.			#N/A				#N/A	#N/A									

Item #	Project SOW	Activity/Task	Hazard/Risk	Impact	Inherent (Untreated Risk)			Existing/Planned controls	Residual (Treated) Risk			Control Effectiveness	SFAIRP (Y/N)	Additional Actions	Action Responsibility	Due Date	Status	Target Risk			Comments & Assumptions
					Consequence	Likelihood	Risk		Consequence	Likelihood	Risk							Consequence	Likelihood	Risk	
1.35	General	Working alone, unaccompanied, out of line of sight	Refer pipeline HazID	Not expecting lone working scenario			#N/A				#N/A	#N/A									
1.36	General	Tasks generate or resulting in exposure to excessive noise (Excluding pipeline N2 purging activities Refer 2.11 for specific HazID for this activity)	Refer Construction HazID				#N/A				#N/A	#N/A		Enscope to review commissioning schedule and confirm whether or not 5.5 day per week is sufficient.	SXX						
1.37	General	Compressed Air Use	Refer Construction HazID	No compressed air used. (N2 and instrument gas only)			#N/A				#N/A	#N/A									
1.38	General	N2 Gas (Asphyxiation) (Excluding pipeline N2 purging activities Refer 2.11 for specific HazID for this activity)	High pressure Asphyxiant (Refer: 1.07 Chemical / Hazardous Substances) Asphyxiation while venting.	High pressure N2 hoses, stored energy. Exposure to Hazardous Materials	Serious	Possible	**Moderate**	Use of whip-checks PPE (hearing protection / double hearing protection) Correct handling practice Selection of smaller cylinder as fit for purpose testing (no large inventory required)	Serious	Unlikely	**Low**	**Strong**									
1.39	General	SIMOPS	Poor communication Unauthorised entry into commissioning/construction work area(s) (Refer: 1.03 Access / Egress) Insufficient Demarcation (Refer: 1.03 Access / Egress) Unwanted vehicle / equipment / pedestrian interactions (Refer 1.02 Personnel Movement) Transfer of (potential) energy from commissioning to construction/pre-comm areas/activities Commissioning activities impacting other commissioning work groups Commissioning impacting efficiency of non-commissioning activities Commissioning activities impacting (brown field) operation	Injury / fatality by electrocution Process interruption Collision Equipment damage Project Delay	Catastrophic	Unlikely	**High**	Boundary isolation procedure NoE Test before touch PTW & SWMS daily commissioning meeting for activity planning Pre-start meeting RCD protection in place	Severe	Unlikely	**Moderate**	**Adequate**	Y								
1.39B	General	SIMOPS	Poor communication Unauthorised entry into commissioning/construction work area(s) (Refer: 1.03 Access / Egress) Insufficient Demarcation (Refer: 1.03 Access / Egress) Unwanted vehicle / equipment / pedestrian interactions (Refer 1.02 Personnel Movement) Transfer of (potential) energy from commissioning to construction/pre-comm areas/activities Commissioning activities impacting other commissioning work groups Commissioning impacting efficiency of non-commissioning activities Commissioning activities impacting (brown field) operation	Injury / fatality by stored energy / high pressure natural gas. Process interruption Collision Equipment damage Project Delay	Catastrophic	Unlikely	**High**	Boundary isolation procedure NoE PTW & SWMS daily commissioning meeting for activity planning Pre-start meeting SIMOPs scenario could only happen before introduction of gas. DIB in place / positive isolation in place.	Serious	Unlikely	**Low**	**Strong**								
1.40	General	Commissioning planning	Insufficient Spares, Tools & Consumables, resources and Personnel (Key Personnel, PIO etc.)	Schedule delay (worst scenario delay of hot tap) Equipment Damage Personnel Injury	Minor	Unlikely	**Low**	Tooling plan ahead. Procurement before mobilisation	Minor	Unlikely	**Low**	**Strong**									
1.41	General	Training and Competency.	Refer: 1.40 Commissioning Planning NAR				#N/A				#N/A	#N/A									
1.42	General	Availability of Permit Issuing Officers during commissioning.	Refer: 1.40 Commissioning Planning NAR				#N/A				#N/A	#N/A		Evaluate the availability of construction PI for commissioning phase	SXX						
1.43	General	Loss or unavailability of key resources/personnel.	Refer: 1.40 Commissioning Planning NAR				#N/A				#N/A	#N/A									
1.44	General	Interfacing with 3rd party operational systems	Refer 3.0 Gas Commissioning				#N/A				#N/A	#N/A									

Port Kembla Pipeline Project

Commissioning HAZID Register - Pre-Commissioning

ENSCOPE
A QUANTA SERVICES COMPANY

Residual Control Effectiveness

Weak	Fair	Adequate	Strong
0	0	4	2

Effectiveness of Controls

Risk Rank	Extreme	High	Significant	Moderate	Low
Residual	0	0	0	4	2
Target	0	0	0	0	0

Action Status Summary

Open	In Progress	Closed
0	0	0

Note: Existing controls assumed to include standard items such as PPE, Competent Operators, PTW / LOTO System, SWMS, Signage / Label

Item #	Project SOW	Activity/Task	Hazard/Risk	Impact	Inherent (Untreated Risk)			Existing/Planned controls	Residual (Treated) Risk			Control Effectiveness	SFAIRP (Y/N)	Additional Actions	Action Responsibility	Due Date	Status	Target Risk			Comments & Assumptions
					Consequence	Likelihood	Risk		Consequence	Likelihood	Risk							Consequence	Likelihood	Risk	
General Activities																					
2.01	PKP	Complete ITR's & Walk downs.	Refer: 1.03 Access/Egress, 1.05 Walking around site, walk downs, Inspections etc.				#N/A				#N/A	#N/A									
2.02	PKP	Pre-Commissioning and Construction activities occurring in parallel / simultaneously.	Refer: 1.39 SIMOPs				#N/A				#N/A	#N/A									
2.03	PKP	Introduction of energy (stored, electrical, chemicals) to systems whilst construction contractor remains on site.	Refer: Working with stored energy 1.07 Chemical / Hazardous Substances storage, handling and use 1.39B SIMOPs				#N/A				#N/A	#N/A									
Electrical Energisation, Inspections																					
2.04	PKP	Low Voltage Pre-commissioning Initial energisation of electrical equipment - Distribution board (DB)/ Pole mount Mains connection / Generator (DEA/GEA). Access to and inspection of low voltage equipment and devices. Testing of low voltage and extra low voltage circuits and protection devices. Fault finding of low voltage and extra low voltage circuits and protection devices.	Electric Shock Equipment damage Short circuit of electrical circuits Inadvertent energisation of equipment outside of Commissioning Area (Refer 1.39 SIMOPS) Unexpected operation Fire/explosion caused by Equipment Failure Incorrect equipment operation	Personnel injury / fatality Damage to Equipment Schedule Delay	Catastrophic	Unlikely	**High**	PTW & LOTO Procedure Boundary isolation procedure NOE procedure ITP / ITRs RCD protection in place	Severe	Unlikely	**Moderate**	**Adequate**	Y								
Instrumentation & Controls Checks																					
2.05	PKP	Extra Low Voltage Pre-commissioning Initial energisation of instrumentation/control systems - FIP and SCP panels, Loops, SCADA and communication systems. Testing and fault finding of extra low voltage circuits and instrument devices. Introduction of N2/hydraulic fluids for instrument and end device pre-commissioning.	Inadvertent operation / energisation of equipment Unexpected remote operation Introduction of fluids to system, contamination Draining of fluids from system Lack of awareness of Tests Refer 1.38 Use of N2 Gas	Delay to schedule Equipment damage Personal injury Environmental damage - spills	Minor	Unlikely	**Low**	Refer 1.38 N2; 1.0 General	Minor	Unlikely	**Low**	**Strong**									
Electrical Device Checks																					
2.06	PKP	Lighting circuits, UPS, Backup Generator	Eclectic shock	Personnel injury / fatality Equipment damage	Catastrophic	Unlikely	**High**	PTW & LOTO Procedure Boundary isolation procedure NOE procedure ITP / ITRs RCD protection in place	Severe	Unlikely	**Moderate**	**Adequate**	Y								
Mechanical Device/Package Checks																					
2.07	PKP	Mechanical equipment inspections Piping installation inspections Vessel inspections Mechanical pre-commissioning, lubrication, flange management Vendor Package Installation Checks (GC and gas sampling, control valve package)	Inadequate communication between commissioning work groups resulting in activities being conducted incorrectly or out of sequence Equipment failure - lifting devices on equipment. Incorrect hydraulic toque wrench use	Personnel Injury - pinch point Equipment Damage Release of stored energy (oil / N2)	Severe	Possible	**Significant**	ITP / ITR Use of whip- check PTW & LOTO Experience personnel Following vendor IOM / SAT procedures	Severe	Unlikely	**Moderate**	**Adequate**	Y	Confirm whether or not vessels on site are registered pressure vessel.	SXX						
Using N2 for cleanliness checks, and operational leak checks																					
2.08	PKP	Use of N2 from manpack to pressurise for testing (simulation of process) for KGMS pipe work and systems pressure testing in preparation for introduction of hydrocarbons	Refer: 1.39 SIMOPs , 2.07 Mechanical equipment inspections Projectiles Release of stored energy Noise Equipment/Piping over pressure Contaminants / Water Over pressurisation of lower design pressure equipment (only consider creditable if downstream gas panel is connected)	Personnel injury Noise Damage to pipework/equipment	Severe	Possible	**Significant**	ITP / ITR Use of whip- check PTW & LOTO Experience personnel Use of rated hoses & regulators. Commissioning activity with close monitoring. N2 injection in suitable location / point in system	Serious	Unlikely	**Low**	**Strong**		Confirm possibility of N2 being injected into EGP.	MP						
Using Nitrogen for purge of systems, leak test and operational checks																					
2.09	PKP	Use of Nitrogen for purge, Inerting, leak testing, operational checks and testing of KGMS facility (open air release)	Refer: 2.08 Use of N2 manpack for facility pressureisation, 1.38 Use of N2 Gas				#N/A				#N/A	#N/A									
Utilities - Instrument Gas System (temporary N2)																					
2.10	PKP	Use of Nitrogen bottles to provide gas for valve testing	Refer 2.09 Use of N2 gas for purging.	No significant new impacts identified			#N/A				#N/A	#N/A									
Nitrogen Inerting Pipeline																					
2.11	PKP	Pipeline Nitrogen Inerting and pressurisation to 100 kPag. Re-positioning of manpacks around site, via use of telehandler.	Refer 1.39 SIMOPS Overpressure - particularly of small volume systems Mobile equipment / plant Burst disc rupture due to overpressure and LOC (N2) Preservation of equipment for overnight testing.	Overpressure of Pipework/Equipment Personal Injury	Major	Unlikely	**Significant**	ITP / ITR Use of whip- check PTW & LOTO Experience personnel Use of rated hoses & regulators. Commissioning activity with close monitoring. N2 injection in suitable location / point in system Layout plan for N2 moving logistic in commissioning work instruction	Major	Rare	**Moderate**	**Adequate**		1. Consider using hard tubing to partially replace N2 hoses 2. Consider the orientation and location of the burst disc. 3. Consider re-scale the pressure transmitter for test to smaller range for better accuracy in pipeline inerting. Consider the pressure instrument sensor model suitability. 4. CWI to be developed considering the procedure for test equipment pack up for overnight testing.	1. SXX 2. BVD 3. SXX, NK 4. SXX							
Pipe Line Receiver/Launcher Stations																					

Port Kembla Pipeline Project

Commissioning HAZID Register - Pre-Commissioning

Effectiveness of Controls

Residual Control Effectiveness			
Weak	Fair	Adequate	Strong
0	0	4	2

Risk Rank	Extreme	High	Significant	Moderate	Low
Residual	0	0	0	4	2
Target	0	0	0	0	0

Action Status Summary		
Open	In Progress	Closed
0	0	0

Note: Existing controls assumed to include standard items such as PPE, Competent Operators, PTW / LOTO System, SWMS, Signage / Label

Item #	Project SOW	Activity/Task	Hazard/Risk	Impact	Inherent (Untreated Risk)			Existing/Planned controls	Residual (Treated) Risk)			Control Effectiveness	SFAIRP (Y/N)	Additional Actions	Action Responsibility	Due Date	Status	Target Risk			Comments & Assumptions
					Consequence	Likelihood	Risk		Consequence	Likelihood	Risk							Consequence	Likelihood	Risk	
2.12	PKP	CP system set-up, testing, energisation and checking functionality and remote indication	Out of scope.				#N/A														

Port Kembla Pipeline Project

Commissioning HAZID Register - Gas Commissioning

ENSCOPE
A QUANTA SERVICES COMPANY

Effectiveness of Controls

Residual Control Effectiveness			
Weak	Fair	Adequate	Strong
0	0	1	5

Risk Rank	Extreme	High	Significant	Moderate	Low
Residual	0	0	0	1	5
Target	0	0	0	0	0

Action Status Summary		
Open	In Progress	Closed
0	0	0

Note: Existing controls assumed to include standard items such as PPE, Competent Operators, PTW / LOTO System, SWMS, Signage / Label

Item #	Project SOW	Activity/Task	Hazard/Risk	Impact	Inherent (Untreated Risk)			Existing/Planned controls	Residual (Treated) Risk			Control Effectiveness	SFAIRP (Y/N)	Additional Actions	Action Responsibility	Due Date	Status	Target Risk			Comments & Assumptions
					Consequence	Likelihood	Risk		Consequence	Likelihood	Risk							Consequence	Likelihood	Risk	
First Introduction of Gas & Leak Testing Activities																					
3.01	PKP	Prepare for Introduction of Gas	Schedule pressure resulting in lack of preparedness for sign-off of Gate 5 Certificate	Potential oversight of project requirements resulting in delay to Introduction of Gas	Minor	Unlikely	**Low**	Early Planning being undertaken	Minor	Unlikely	**Low**	**Strong**		Project team to develop a dossier of information to carry forward to future project work	LT, SXX						
3.02	PKP	Introduce Gas, Gas purge, pressurization & snoop tests (Relevant to both stages)	Gas leak Local venting of natural gas Incorrect purging leading to flammable air/gas mixture Unauthorised/ untrained personnel entry into facility permit area with non Ex rated devices - Test gear, radio , laptop, camera , 2 way radio, mobile phone Release of stored energy (high pressure) -Tube fitting rupture.	Fire/Explosion leading to Personnel injury Equipment damage Uncontrolled release of gas Project delay	Severe	Possible	**Significant**	Staged purge, pressurisation and leak testing (Snoop testing), team to be aware of risk associated with tubing failures and to ensure no personnell are in within line of fire Only essential personnell in the area during introduction of gas All tube fittings on the project shall be swagelock and correctly rated and leak testing of fittings, use of gauges for fittings Tubing to be suitably supported as per Jemena spec.	Severe	Unlikely	**Moderate**	**Adequate**	Y	Schedule to be altered to include date change for nitrogen inerting Check that Gap Inspection Gauges to be used to confirm swagelok fittings are swaged and installed correctly	NC,SXX LT						
3.03	PKP	Confirm functionality/sealing of SDVs (Valves on the critical safety device register or used as part of an isolation) by blowing down cavity Adjusting valve travel stops, inject sealant as required. (Relevant to both stages)	Refer: 2.07 Mechanical equipment inspections, 1.36 Noise Local venting of gas Inability to achieve adequate seal Thrust from vent may cause damage (from an elbow, may cause damage to tubing/equipment)	Personnel injury Schedule delay	Serious	Possible	**Moderate**	Refer to 3.02 Competent personnel Limit personnel in the area	Serious	Unlikely	**Low**	**Strong**		Each individual vent point to be assessed prior to completing the task to ensure the risk is mitigated SFAIRP	NC, DSY						
Pipeline Purging & Pressurisation																					
3.04	PKP	Pipeline purging with gas venting at Port Kembla New Energy Terminal (All future stages)	Refer: 1.02 Driving along Pipeline, 1.36 Noise (operator and nearby personnel), 1.35 Working alone, unaccompanied, out of line of sight Dust (operator and nearby personnel) Venting of natural gas flammable mixture Exceeding the hoop stress strength of pipe work due to low temperatures Affect to Commissioning/Construction personnel on site.	Fire/Explosion leading to Personnel injury Uncontrolled release of gas Local receptor impact Schedule Delay (interruption of gas supply) Equipment damage Low Temperature	Serious	Unlikely	**Low**	Pipeline is going to be Nitrogen Inerted Notification of applicable stakeholders Boundary isolation to be implented and exclusions zones Joint commissioning of activities to be managed by Jemena and Squadron Continuos monitoring of pipework temperatures during purging and pressurisation	Serious	Unlikely	**Low**	**Strong**		Assess if noise level meet guidelines	JW, DSY						
3.05	PKP	Pressurisation and leak testing of pipeline	Refer: 3.04 Pipeline Purging with Gas Venting 3.02 Introduction of Gas , 1.35 Working alone, unaccompanied, out of line of sight NAR Flange leakage at elavated pressures	Fire/Explosion leading to Personnel injury Uncontrolled release of gas Local receptor impact Schedule Delay Equipment damage Low Temperature	Serious	Unlikely	**Low**	Staged purge, pressurisation and leak testing (Snoop testing), team to be aware of risk associated with flange leakage Only essential personnel in the area during introduction of gas	Serious	Unlikely	**Low**	**Strong**									
Performance Testing																					
3.06	PKP	Pipeline flow test @ nameplate capacity	High flow test of pipeline- Noise, Vibration (FIV), exceedance of design pressures or temperatures Including performace testing of the PCV-64106	Public Complaints, Damage to equipment	Serious	Possible	**Moderate**	Competent personnel to inspect works Notify stakeholders Staged increase in flowrates (works to stop if FIV is observed)	Serious	Unlikely	**Low**	**Strong**									
Operations Establishment & Handover																					
3.07	PKP	Operations Establishment - Operational Spares & Tools	Lack of suitable spares and tools on Handover to Operations	Failure to meet availability requirements Inability to maintain facility/safely operate leading to commercial impact.	Minor	Unlikely	**Low**				#N/A	#N/A									
3.08	PKP	Operations Establishment - Operator Training (Gas controllers and field operators)	Inadequate training provided to Operations personnel	Lack of ability to operate plant Project delay due to inability to handover to operations			#N/A				#N/A	#N/A		Finalisation of scope for individual training sessions to be completed							
3.09	PKP	Operations Establishment - Handover Period	Inadequate handover of documentation to Operations Group	Delay to Handover Insufficient documentation to operate plant.			#N/A	Gate 6 checklist to be completed			#N/A	#N/A									

Wasco Australia Pty Ltd

CONSTRUCTION RISK REGISTER

Functional Area: 2211 - Marlin KGMS Facilities Project

Item Number	Activity / Product / Task / Process	Task/Risk/ Hazard	Major Effect	Impact / Consequence	Risk			Control measures	Residual Risk					Residual Risk				Comments
					L	C	R		L	C	RR	ALARP		L	C	RR	ALARP	
1	Site Establishment General Site Work	Driving	Health & Safety	Motor vehicle accident resulting in personal and or property damage	C	4	H	- 2211-HSS-PLN-005 A Travel Management Plan to be implemented. - Only use registered, roadworthy and correctly maintained vehicles.	D	4	M	Yes				0		
2	Site Establishment General Site Work	Driving	Community, Stakeholder and Reputation	Community complaints poor reflection on the project	B	3	H	- Speed limits to be adhered to. - Only use registered, roadworthy and correctly maintained vehicles. - Licenced drivers with suitable class of drivers licence. - Use of small buses to transport the bulk of the workforce to site to minimise the number of drivers and vehicles on the road. - Only project nominated drivers to drive project vehicles. - Project fatigue management and fitness for work procedures to be followed. - Drivers and passengers are to be courteous at all times to fellow road users and pedestrians.	D	3	M	Yes				0		Add slide into induction for driving NOTE: Communicate with cemetery processions to give them right of way when needed
3	Site Establishment General Site Work	Driving	Business, Financial	Motor vehicle accident resulting in personal and or property damage	C	4	H	- 2211-HSS-PLN-005 A Travel Management Plan to be implemented. - Speed limits to be adhered to.	D	2	L	Yes				0		
4	Site Establishment General Site Work	Unloading/Loading plant, equipment or materials from trucks/transport HRCW (High Risk Construction Work due to "Work in an area with movement of powered plant")	Health & Safety	Personal Injury - struck by, caught by moving plant. Rushing, Complacency, unplanned movement, eyes not on task, loss of balance/traction/grip, unsuitable ground conditions resulting in injury or death to personnel	C	4	H	- Maintain a dedicated area for loading / unloading wherever practicable. - Trucks to be switched off during task, - Transport loading and unloading of equipment and materials use a Take 5 to identify hazards and control risks.	D	4	M	Yes	- No standing on the back of the truck - SWMS to be followed for unloading/loading trucks			0		NOTE: Deliveries to KGMS not KGMLV
5	Site Establishment General Site Work	Unloading/Loading plant, equipment or materials from trucks/transport	Environmental	Introducution of weeds and/or weed seeds and disease	C	3	H	- Procurement to ensure this is made clear to delivery contractors prior to ordering / organising transport	D	2	L	Yes				0		
6	Site Establishment General Site Work	Faulty Plant HRCW (High Risk Construction Work due to "Work in an area with movement of powered	Health & Safety	Personal injury caused by faulty plant	C	4	H	- All plant to be maintained as per the OEM or equivalent. - All plant to have a daily pre start check done by the operator each shift and	D	4	M	Yes				0		
7	Site Establishment General Site Work	Interaction with venomous snakes	Health & Safety	Snake bite	C	3	H	- First aid trained personnel on site. - Snake bite kits at the site office	D	3	M	Yes				0		
8	Site Establishment General Site Work	Interaction with fauna	Environmental	Damage to fauna	C	2	M	- Personnel not to attempt to interact with all fauna and are to report all sightings to supervisor and/or HSE advisor.	D	2	L	Yes				0		NOTE: Feral Deer in area
9	Site Establishment General Site Work	Climate exposure/overexposure	Health & Safety	Heat illness ranging from insignificant to life threatening	B	4	H	- Adequate fresh cool water available at all times for the work site. - Suitable first aid facilities	D	4	M	Yes	- Frost in the morning, adequate clothing			0		
10	Site Establishment General Site Work	Interaction with Landholder	Community, Stakeholder and Reputation	Poor communication/interaction with affected landholder	C	4	H	- Only authorised personnel to interact with the landholder/s. If approached all unauthorised personnel must be courteous and polite and	D	2	L	Yes				0		
11	Site Establishment General Site Work	Fitness for work	Health & Safety	Personnel unable to safely undertake their work duties resulting in possible damage to the affected person or third parties	B	4	H	- Ensure WASCO Fit For Work policy is followed. - 100% alcohol testing of the work force prior to starting work each day. (I	D	4	M	Yes				0		
12	Site Establishment General Site Work	Fatigue On site work in excess of 21 days	Health & Safety	Personnel unable to safely undertake their work duties resulting in possible damage to the affected person or third parties	C	4	H	- Ensure compliance with the WASCO Fatigue Management Plan (WAPL-HSS-PLN-003)	D	4	M	Yes				0		
13	Site Establishment General Site Work	Poor Communication	Environmental	Instructions/direction not clear resulting in a diversion from the Construction Environment management Plan and a possible environmental incident	C	3	H	- Ensure all work/task Instructions/directions are clear and concise. - Ensure communication between all work crews is maintained (SMOPS).	D	3	M	Yes				0		
14	Site Establishment General Site Work	Poor Communication	Community, Stakeholder and Reputation	Instructions/direction not clear resulting in an incident involving project personnel and a member of the public	C	3	H	- All project personnel are to be courteous and polite to any land holder or member of the public.	D	3	M	Yes	- Inductions to include permitted access areas between			0		
15	Site Establishment General Site Work	Interaction with plant/other personnel HRCW (High Risk Construction Work due to "Work in an area with movement of powered	Health & Safety	Plant/Plant or Plant/Personnel interaction resulting in personal or plant damage	C	4	H	- Restricted access work areas to be set up/defined around working plant. - Breach of a restricted access work area shall result in disciplinary action	D	4	M	Yes				0		
16	Site Establishment General Site Work	Interaction with plant/other personnel	Community, Stakeholder and Reputation	Plant/private vehicle/machinery or Plant/Personnel interaction resulting in personal or private vehicle/plant damage to a third party	C	3	H	- Ensure that site is secured from the public and any unauthorised entry. - Should any unauthorised entry occur stop work until the unauthorised	D	3	M	Yes				0		
17	Site Establishment General Site Work	Interaction with existing gas/electrical/telecommunications/water infrastructure HRCW (High Risk Construction Work due to "Work on or near energised electrical installations or services and/or work on or near pressurised gas mains or piping")	Health & Safety	Damage to existing infrastructure resulting in personal damage to personnel	C	5	E	- Dial before you dig and site inspection reveals that there is no existing infrastructure within the greenfield construction site. - Survey to clearly mark all known services - All underground services to be located using NDD - Jemena permit to work to be in place	E	5	M	Yes				0		NOTE: Check highest delivery in relations to overhead powerlines
18	Site Establishment General Site Work	Interaction with existing gas/electrical/telecommunications/water infrastructure	Community, Stakeholder and Reputation	Damage to existing infrastructure resulting in inconvenience to the affected asset holder and the community serviced by the infrastructure	C	4	H	- Dial before you dig and site inspection reveals that there is no existing infrastructure within the greenfield construction site.	D	3	M	Yes	- Keep drainage operational			0		
19	Site Establishment General Site Work	Interaction with existing gas/electrical/telecommunications/water infrastructure	Business, Financial	Damage to existing infrastructure resulting in economic loss to the affected asset holder and possible legal action.	C	3	H	- Dial before you dig and site inspection reveals that there is no existing infrastructure within the greenfield construction site.	D	3	M	Yes				0		
20	Site Establishment General Site Work	Working at heights (including EWP and fall arrest and fall restraint systems and machinery platforms and edge protection along with scaffolding installation and removal)	Health & Safety	Possible fall from height resulting in permanent injury or death	C	5	E	- Plant and machinery to have suitable edge protection in place to access the elevated area for operation or general maintenance. Where not viable	D	3	M	Yes				0		
21	Site Establishment General Site Work	Work requiring Permit to Work HRCW (High Risk Construction Work due to various high risk tasks as defined in the legislation)	Health & Safety	No Permit in Place Work not in accordance with Wasco/Jemena PTW Procedure	C	4	H	- All works within Jemena operation site (brownfields) under a Jemena permit to work system - Wasco permit to work system for all Greenfields works - Fire ban days may need further controls and consultation with the local CFA	D	4	M	Yes				0		NOTE: Follow up critical lifts to ensure permit officer is adequate
22	Site Establishment General Site Work	Slips/trips and falls	Health & Safety	Possible serious injury	C	3	H	- Ensure walkways are clear and stable. - Ensure good housekeeping	C	2	M	Yes				0		
23	Site Establishment General Site Work	Dirty/dusty or muddy work conditions	Health & Safety	Personnel working in muddy, dirty conditions being impacted by loose dirt/dust (Exposure to silica) or mud	C	2	M	- Dust suppression to be implemented e.g. Use of water cart to supress dust. Machinery with controlled environment cabins to be used where	D	2	L	Yes				0		
24	Site Establishment General Site Work	Uncontrolled construction waste disposal	Community, Stakeholder and Reputation	Rubbish being poorly managed on site resulting in neighbouring landholder complaints from "escaped rubbish/packaging/left over materials".	C	2	M	- WASCO to ensure that adequate waste bins are available at all times on site. - Change out of full bins as required. - Covers (shade cloth or the like) for windy conditions if required on light general waste bins. - Any rubbish not contained in a suitable receptacle to be picked up and placed into the relevant waste bin.	D	2	L	Yes				0		RSE: REG-001_A_Construction
25	Site Establishment General Site Work	Poor construction site security and construction site open to public	Community, Stakeholder and Reputation	Possible injury to member of the public by construction activities.	C	3	H	- Ensure that site is secured from the public. Should any unauthorised entry occur stop work until the unauthorised person is removed to a position of safety.	E	3	L	Yes				0		NOTE: Evolution - Safety barrier around excavation and road
26	Site Establishment General Site Work	Crush injuries HRCW (High Risk Construction Work due to "Work in an area with movement of powered	Health & Safety	Possible serious injury or death	C	5	E	- No person to be under a suspended load. - No persons to be in the operational range of operation plant	E	5	M	Yes				0		
27	Site Establishment General Site Work	Poor manual handling	Health & Safety	Possible serious injury or long term chronic injury	C	4	H	- Use mechanical aids wherever practicable. - Use correct lifting techniques	D	4	M	Yes				0		
28	Site Establishment General Site Work	Equipment damage	Business, Financial	Possible delays to the project, expensive equipment repairs	C	3	H	- Only approved plant and equipment to be allowed to operate on site. - Only approved competent and suitably trained, form nick licenced (where	D	2	L	Yes				0		
29	Site Establishment General Site Work	Equipment damage HRCW (High Risk Construction Work due to "Work in an area with movement of powered	Health & Safety	Damage causing failure of Equipment and resulting in injury to personnel	C	4	H	- Only approved plant and equipment to be allowed to operate on site. - Only approved competent and suitably trained, form nick licenced (where	D	2	L	Yes				0		
30	Site Establishment General Site Work	Use of electrically powered equipment/power tools	Health & Safety	Possible injury or death from faulty equipment causing electric shock or electrocution	C	5	E	- All electrical equipment must be tested and tagged (RuCERT System) and in good order	E	5	M	Yes	- All personnel to have a gas detector			0		
31	Site Establishment General Site Work	Failure of emergency response	Health & Safety	Lack of Emergency preparedness. Lack of Emergency resources / equipment. Untrained personnel. Poor or inadequate communications. Insufficient first aid equipment, emergency response Procedures. Complacency. Untested protocols in the event of an Emergency, unable to suitably deploy sufficient	C	4	H	- Follow Wasco project Emergency response plan and Jemena ERP plan. - Regularly review site first aid kits (6 monthly). Maintain Fire extinguisher	D	3	M	Yes				0		
32	Site Establishment General Site Work	Handling Dangerous Goods or Hazardous Substances	Health & Safety	Personal injury - inhalation, ingestion, skin contact, splash to eyes	C	3	H	- Storage of DG and hazardous substances as per relevant standards and codes of Practice. SDS register	D	3	M	Yes				0		
33	Site Establishment General Site Work	Handling Dangerous Goods or Hazardous Substances	Environmental	Environmental leaks, poor disposal of substances	C	4	H	- Storage of DG and hazardous substances as per relevant standards and codes of Practice. SDS register	D	2	L	Yes				0		
34	Site Establishment General Site Work	Use of Compressed air (Compressors) and air tools	Health & Safety	Air injection, personal damage from whipping hose and fittings. Noise/hearing damage	C	3	H	- All air compressors to be serviced and maintained in accordance with the OEM	D	3	M	Yes				0		
35	Earthworks / Piling	Impact with existing infrastructure/services	Community, Stakeholder and Reputation	Damage to existing infrastructure/services through/within the construction site.	C	3	H	- Dial before you dig and site inspection reveals that there is no existing infrastructure within the greenfield construction site.	E	1	L	Yes	- Use caution for works near existing			0		
36	Earthworks / Piling	Disturbance/work outside of defined work area (co-ords)	Environmental	Breach of environmental Approval	C	3	H	- Ensure that boundary survey is complete and boundaries are clearly marked before commencing on site request distribution	E	2	L	Yes				0		
37	Earthworks / Piling	Interaction of plant or equipment with third party property or personnel. HRCW (High Risk Construction Work due to "Work in an area with movement of powered	Health & Safety	Possible damage to plant or personnel	C	4	H	- Restricted access work areas to be set up/defined around working plant. - Breach of a restricted access work area shall result in disciplinary action	D	4	M	Yes				0		
38	Earthworks / Piling	Interaction of plant or equipment with third party property or personnel.	Community, Stakeholder and Reputation	Possible damage to plant or personnel	C	3	H	- Ensure that site is secured from the public. Should any unauthorised entry occur stop work until the unauthorised person or animal is removed to a	E	3	L	Yes				0		
39	Earthworks / Piling	Interaction of plant or equipment with third party infrastructure or personnel.	Business, Financial	Possible damage to plant or personnel	C	3	H	- Ensure that site is secured from the public. Should any unauthorised entry occur stop work until the unauthorised person or animal is removed to a	E	2	L	Yes				0		
40	Earthworks / Piling	Plant and personnel interaction HRCW (High Risk Construction Work due to "Work in an area with movement of powered plant")	Health & Safety	Possible plant strike on personnel	C	4	H	- Maintain a dedicated area for loading/unloading wherever practicable. - Trucks to be switched off during task, - Transport loading and unloading of equipment and materials use a Take 5 to identify hazards and control risks. - Crueage SWMS to be used if using cranage. - Checking load shift had not occurred during transit - check with driver who will assess and release load binders.	D	4	M	Yes				0		NOTE: SIMOPs for pipeline contractor to have separate risk assessment for works in KGMS
41	Earthworks / Piling	Excavation, trenching and drilling HRCW (High Risk Construction Work due to "Work in or near a shaft or trench deeper than 1.5m or a tunnel")	Health & Safety	Possible trench collapse and engulfment, equipment roll over, unsuitable access points, trenches not correctly protected, adverse weather conditions affecting the integrity of the trench/excavation. Falling into excavation	C	4	H	- When any personnel creating an excavation over 1.5 metre deep it must be benched, battered or shored and all conditions imposed. - No vehicles or plant/equipment are to be placed in the zone of influence of the trench. - No person to enter an excavation while working alone. - Worksafe notification for any excavation over 1.5 metres - Safe means for access entering or exiting - Emergency response and rescue plan - SWMS in place	D	4	M	Yes	- Ensure any boreholes are covered			0		ACTION: Leon - Consult with Jodi Woods about cut-off for landfill area around eastern side of site. Possibility of previous landfill contaminants/gas etc. Geotech has found no contaminants/gas.
42	Earthworks / Piling	Excavation and trenching	Business, Financial	Earthworks not meeting the Quality requirements for the project	C	3	H	- Ensure all earthworks Quality checks are completed and recorded. - Ensure an ITP in place to control the earthworks. Ensure all testing	D	2	L	Yes				0		
43	Earthworks / Piling	Excavation and trenching	Environmental	Fauna trapped or injured in an open excavation/trench	C	2	M	- Open trenches/excavations to be protected/identified as required with either an earth bund or hurdles or other suitable method (e.g. A cover over a	D	2	L	Yes						
44	Earthworks / Piling	Cranage/lifting HRCW (High Risk Construction Work due to "Work in an area with movement of powered	Health & Safety	Possible crush injuries, dropped loads, pinch points, overturned cranes (Plant used in crane mode), unstable crane pad, underground services, overhead structures/services, crane failure	C	4	H	- A SWMS to be developed in conjunction and consultation with the workforce involved for general site cranage	D	4	M	Yes				0		
45	Earthworks / Piling	Noise Control	Environmental	Excessive noise and out of hours works from plant & equipment	C	2	M	- Reference the EPA guidelines	D	2	L	Yes						NOTE: Potential Driven piles - time of day notification of locals
46	Earthworks / Piling	Management of excavation material	Environmental	Possible spreading of weeds, uncontrolled movement of sediment or breach of environmental Permit, contaminated waste	C	2	M	- All plant to be free of weed seeds prior to entry to site (Weed and Seed declaration to be with all plant and vehicles)	D	2	L	Yes						
47	Concrete works	Slips/trips and falls	Health & Safety	Possible injury including sprains, strains or broken bones	C	2	M	- Ensure walkways are clear and stable. - Ensure good housekeeping	D	2	L	Yes	- Ensure proper access when working at heights and down into			0		
48	Concrete works	Concrete slurry contact with eyes/skin	Health & Safety	Possible eye injury or skin irritation or dermatitis	C	2	M	- Use appropriate PPE (Glasses) and gloves. Ensure an adequate supply of eye wash is on site from mobilisation onwards. - If contact occurs use eyewash to irrigate the affected eye and wash other affected body part with clean running water. - Any eye injury requires a medical investigation to ensure no damage to the eye. - Medical investigation as a precaution only and NOT a medically treated	D	2	L	Yes				0		ACTION: Check for definitions of MTI compared to first aid treatment in HS plan
49	Concrete works	Release of stored energy HRCW (High Risk Construction Work due to "Work in an area with movement of powered	Health & Safety	Damage to personnel by escaped high pressure hydraulic oil/compressed air and possible oil/air injection injury. Crush injury from raised implements/ suspended loads	C	4	H	- Ensure that all plant is maintained in accordance with the OEM or equivalent	D	4	M	Yes				0		
50	Concrete Works	Use of concrete pumps/trucks HRCW (High Risk Construction Work due to "Work in an area with movement of powered plant")	Health & Safety	Collapse of concrete pump, line blockage resulting in possible plant property and personal damage	C	4	H	- All concrete pumps to be maintained in accordance with the OEM. - Concrete pump log book to be available at all times the pump is on site. - The log book must be current and up to date. Only suitably qualified and trained personnel (High Risk Licensed as required) to operate concrete pumps and concrete trucks. - Concrete pumps to be set up on the plant hard stand (Known bearing	D	4	M	Yes	- Brownfields works under permit			0		NOTE: Pours inside brownfields will have plans and layout for exclusion zones

51	Concrete Works	Concrete truck/pump wash out	Environmental	Contamination of area with uncontrolled wash out of concrete trucks/pumps	B	2	M	-Wasco to install and maintain a designated wash out area for the concrete delivery trucks and concrete pumps	E	2	L	Yes			0		
52	Concrete Works	Crane/lifting HRCW (High Risk Construction Work due to "Work in an area with movement of powered	Health & Safety	Possible crush injuries, dropped loads, pinch points, overturned cranes (Plant used in crane mode), unstable crane pad, underground services, overhead structures/services, crane failure	C	4	H	- A SWMS to be developed in conjunction and consultation with the workforce involved for general site cranage.	D	4	M	Yes	- Any lifts over live assets classified as critical lift, Jemena Permit to be			0		
53	Concrete Works	Impact to underground services	Business, Financial	Possible strike of installed services causing rework, added costs and possible delays to programme	D	3	M	- Ensure that survey clearly identify services "as built" and they are marked up on the drawings. Clearly mark where services are located where there is a need to return to that location for future excavation work or operate machinery in close proximity. - Ensure "as built" drawings are referenced before any excavation in an area where services have been installed. - Use spotters when operating close to installed services.	E	3	L	Yes	- Jemena PTW for brownfield works			0		NOTE: Nathan to ensure KGMLV underground as builts are transmitted to Wasco
54	Concrete Works	Debris left on hard stand and not cleaned up/placed into appropriate skip bins	Community, Stakeholder and Reputation	Reputation, environmental regulations regarding clean ups	C	2	M	- Wasco to ensure that adequate waste bins are available at all times on site.	D	2	L	Yes			0		
55	Concrete Works	Debris left on hard stand and not cleaned up/placed into appropriate skip bins	Business, Financial	Reputation, environmental regulations regarding clean ups, Paying for disposal of waste when it may be removed at no cost/ reduced cost for recycling.	C	2	M	- Wasco to ensure that adequate waste bins are available at all times on site.	D	2	L	Yes			0		
56	Concrete Works	Use of cutting tools (Grinder, ony set, cut off saw, etc.)	Health & Safety	Personal Damage (Including burns, trauma from shattered discs, physical damage/cuts/abrasions etc from uncontrolled movement of grinder, failure of oxy set/hoses)	C	4	H	- Use flash back arrestors on both gauge and hand piece ends of oxy set - Guarding to be in place with grinders cut off saws	D	4	M	Yes	- No use of 9" grinder			0		
57	Concrete Works	Entanglement in rotating equipment HRCW (High Risk Construction Work due to "Work in an area with movement of powered	Health & Safety	Personal damage including possible degloving etc.	C	4	H	- Ensure no loose clothing worn when working on or near rotating equipment	D	4	M	Yes	- Exclusion zones when boring/drilling			0		
58	Concrete Works	Working with electricity (electrical tools, gen sets, etc.)	Health & Safety	Possible electric shock or electrocution	C	5	E	- Where practicable use low voltage (Battery powered hand tools); - Do repairs ensure RCDs fitted and test and tagged (Bi-QBV system) and	D	3	M	Yes			0		
59	Concrete Works	Concrete cutting/scabbling/grouting	Health & Safety	Exposure to silica, respiratory illness	C	3	H	- Dust suppression to be implemented e.g. Wet cutting. - SWMS to introduce the PPE required for dust	E	3	L	Yes			0		
60	Structural, Mechanical and Piping	Use of cutting tools (Grinder, ony set, cut off saw, etc.)	Health & Safety	Personal Damage (Including burns, trauma from shattered discs, physical damage/cuts/abrasions etc from uncontrolled movement of grinder, failure of oxy set/hoses)	C	4	H	- Use flash back arrestors on both gauge and hand piece ends of oxy set - Guarding to be in place with grinders cut off saws	D	4	M	Yes	- Containment of sparks/flammable materials			0		
61	Structural, Mechanical and Piping	Painting/protective coating	Health & Safety	Personal damage to personnel due to hazardous nature of required coatings	C	2	M	- Only experienced personnel to be used to apply protective coatings. - All applications and preparation of the surface to be protected to be in	D	2	L	Yes			0		
62	Structural, Mechanical and Piping	Painting/protective coating Abrasive Blasting - Compressed Air - Personal Injury	Health & Safety	Air injection, personal damage from whipping hose and fittings. Noise/hearing damage	C	3	H	- Only suitable trained personnel to utilise the equipment. - Blasting nozzel material is appropriately contained as such to not cont	D	3	M	Yes			0		
63	Structural, Mechanical and Piping	Painting/protective coating	Business, Financial	Use of incorrect products , work not done to standard, work not done in accordance with the specifications, QA not captured (Incorrectly or not certified personnel/inspectors) resulting in rework and possible delays to programme	C	2	M	- Only experienced personnel to be used to apply protective coatings. - All applications and preparation of the surface to be protected to be in	E	2	L	Yes			0		
64	Structural, Mechanical and Piping	Painting/protective coating	Environmental	Incorrect disposal of hazardous substances. Escape of hazardous substances to the environment	C	2	M	- Ensure all hazardous products are stored correctly (i.e. Haz Substances Container) and all empty/used containers are disposed of in accordance	D	2	L	Yes			0		
65	Structural, Mechanical and Piping	NDT testing	Health & Safety	Potential for radiation exposure to work crew and others in the work area.	C	4	H	- Exclusion zones during onsite testing - Trained and experienced/qualified testing crew. Testing times scheduled to eliminate excess workers on site: i.e. at lunch breaks, out of normal hours, etc. - A specific SWMS for all NDT - A specific SWMS for radiography and other forms of NDT. - SWMS must be developed in conjunction with the work crew. - Clear communication with all other personnel who are to remain working on the construction site during any of the NDT processes. - Formal notification to all work parties to be distributed - Radiation management plan to be implemented	E	4	M	Yes			0		ACTION: Leon to discuss with Jodi Wood about exclusion zones NDT/Hydro that exceed fence line. Is there need for council/road limited access
66	Structural, Mechanical and Piping	Failure to ensure structural items secured correctly HRCW (High Risk Construction Work due to "Work in an area with movement of powered plant")	Health & Safety	Potential for collapse and injury to personnel	C	4	H	- All structural work to be conducted in accordance with the SWMS. - Ensure structural items are secured in accordance with the design drawings. - Ensure all bolts are positively identified when tightened to specification. - Use only high risk licenced crane operator and rigger/dogmen. - Dogman/rigger to ensure that the structural items are correctly secured before removing the rigging from the load (Positive communication with the	D	4	M	Yes			0		NOTE: Ensure when Wilson modifying poles are following procedure/checked by Wasco
67	Structural, Mechanical and Piping	Welding flash/burns etc	Health & Safety	Potential eye injuries, burns etc.	C	3	H	- Use correct PPE for the task, (Welding masks, welding gloves, etc.)	D	3	M	Yes	- Jemena PTW to be in place for any Brownfield welding			0		
68	Structural, Mechanical and Piping	Hydro testing	Health & Safety	Potential for personal damage to work crew and others in the work area through the sudden/unsuspected release of stored energy	C	5	E	- Use welding screens and/or welding bays appropriate for the specific task - Exclusion zones during onsite testing	D	3	M	Yes			0		
69	Structural, Mechanical and Piping	Hydro testing	Environmental	Potential for contaminated water to be released to the environment	C	2	M	- Trained and experienced/qualified hydro testing crew. - All hydro water to be captured and where possible reused.	D	2	L	Yes			0		
70	Structural, Mechanical and Piping	Plant/personnel interactions HRCW (High Risk Construction Work due to "Work in an area with movement of powered	Health & Safety	Possible plant strike on personnel	C	4	H	- All hydro water to be released or used in another way as to meet the - No personnel to work inside the work zone of plant where practicable. - A hard barrier to be installed between plant and personnel where	D	4	M	Yes	- Brownfields Jemena PTW to be in place			0		
71	Structural, Mechanical and Piping	Earthworks - Excavation HRCW (High Risk Construction Work due to "Work in an area with movement of powered	Health & Safety	Plant, machine, Crane or lifted load strikes infrastructure causing damage to infrastructure or bad and possible damage to crew working in vicinity	C	3	H	- Use spotters when working close to above ground assets (Dogman /Rigger and other as required)	D	3	M	Yes	- Jemena PTW in Brownfields - Jemena Critical lift PTW as			0		
72	Structural, Mechanical and Piping	Initial Pipework - Flange / flange management HRCW (High Risk Construction Work due to "Work in an area with movement of powered	Health & Safety	Congestion within the work area, rushing, complacency, hand injuries. Pipe rolling on stands or supports. Manual handling. Torque multiplier/tensioner manual handling injury	C	4	H	- Only those personnel required for the task to be in the work area to reduce - Ensure all personnel are fit for work - Site access approval and relevant inductions completed - Trained and competent personnel to complete scope of works	D	4	M	Yes	- Pipe on pipe stands adequately supported/tied down			0		
73	Electrical and instrumentation	Electrical Stripping, Glanding and termination (Strip cables, crimp cables Install cables into switchboard) and instrumentation cabinets	Health & Safety	Hand injuries, Crushes/Pinch points Slips, trips, Manual handling. Plant shutdown Manual handling	C	3	H	- Appropriate tools and equipment available and relevant to task	D	3	M	Yes			0		Note: Metal shavings potential to cause shorting
74	Electrical and instrumentation	Electrical Installation of cableways and conduits Use of Ladder	Health & Safety	- Falling, Unserviceable or not fit for purpose equipment, Cuts and abrasions, Uncontrolled movement, Work area access, Unprotected edges, Noise, Hot work, Strains and Sprains, poisoning from glue. Pinch points and unstable ground	C	4	H	- Use all terrain EWP as first option where practicable - platform type ladder	D	4	M	Yes			0		
75	Electrical and instrumentation	Electrical Installation of cable Setup cable onto cable stands. Installing cables on cable tray. Cable tie cables in place.	Health & Safety	Slips, trips, pinch points, manual handling, cable drum falling, Restricted access, Damage to cables	C	3	H	- Practice safe lifting technique - Check for sharp edges along cable route, use cable rollers where required	D	3	M	Yes			0		
76	Electrical and instrumentation	Electrical Equipment installation Mounting of electrical equipment	Health & Safety	Injury from items dropped from height Pinch point injuries, crushing injuries Hand injuries Sprains and strains Trips and slips	C	3	H	- Ensure all persons conducting activity are trained, competent correctly licenced to perform task. Wear appropriate PPE to perform task	D	3	M	Yes			0		
77	Electrical and instrumentation	Instrument tubing and instrument panels laying instrument tubing. Cutting of tubing, attachment of tubing to devices	Health & Safety	Crushing injuries from tube bending, Incorrect installation of tubing into device causing pressure release, hand injuries from sharp edges, exposure to energy sources	C	3	H	- Ensure all persons conducting activity are trained, competent correctly licenced to perform task	D	3	M	Yes			0		
78	Electrical and instrumentation	Electrical & Instrumentation Cable Testing Use of Meters, hand tools, ladder, radios, PPE, EWP	Health & Safety	Faulty power tools, faulty drawings, working at heights/falls from height, energised sources, LOTO not in place	C	4	H	- Fit for purpose tools, correct test and tag and in good condition. - Ensure test equipment is calibrated	D	4	M	Yes			0		
79	Electrical and instrumentation	Connect Earthing Grid	Health & Safety	Equipment not fit for purpose / suitably maintained, sharp edges, incorrect drawings/installations, manual handling, other activities (CAD welding), vehicle movements, faulty power tools, faulty drawings, Hot surfaces completion of task. Connection to existing grid	C	4	H	- Correct PPE, site supervision within work area, control of access to work area/signage, access good housekeeping, compacted surface, toolbox meeting, audible alarms, level work surface, correct/suitable edge protection, separation of vehicles and pedestrians, fit for purpose tools, correct test and tag and in good condition. - CAD welding to have SWMS and control measures in place - Personnel to be trained	D	4	M	Yes			0		Note: Connection to existing grid impact & additional control Follow up by Jemena
C 80	Electrical and instrumentation	Live work on LV Boards	Health & Safety	Brown fields or greenfields energised boards Electric shock, electrocution, fire	C	5	E	- PTW / LOTO (test for dead) - No work on energise boards without further risk assessment workshop - Competent and licenced workers - LV rescue kits and process - Delib and first aid trained personnel - SWMS - 24 VDC works allowed only - no 240V works allowed - Double lock process connected to metring panel prior to live testing	D	4	M	Yes					**Action - Jemena to review cathodic protection scope with pipeline team**
81	Pre commissioning Commissioning	Operating on live infrastructure. Failure of isolation HRCW- High Risk Construction Work	Health & Safety	Personal injury, electric shock, electrocution, explosion, exposure to gasses (Nitrogen etc.)	C	5	E					No			0		A SEPARATE RISK WORKSHOP (Location and date to be determined) SHALL BE CONDUCTED BEFORE ANY PRE COMMISSIONING OR COMMISSIONING ACTIVITIES ARE UNDERTAKEN ON SITE.

Issue Date	Jemena Doc No.	Wasco Doc No.	Revision No.	Description of Issue	Prepared by	Approved by Project Manager / Site Construction Superintendent / General Manager
17/02/2023	GAS-599-RG-RM-003	2211-HSE-REG-001	A	Issued for Review	Craig Ostler	Andrew Freeman
10/03/2023	GAS-599-RG-RM-003	2211-HSE-REG-001	B	Issued for Review	Craig Ostler	Andrew Freeman
24/03/2023	GAS-599-RG-RM-003	2211-HSE-REG-001	0	Issued for Use	Craig Ostler	Andrew Freeman

Line No	Action Register	Comments	Closed Out
41	ACTION: Leon - Consult with Jodi Woods about cut-off for landfill area around eastern side of site. Possibility of previous landfill contaminants/gas etc. Geotech has found no contaminants/gas.	No information from the landholder. Understanding is that the whole site is made from a slag heap so assumption is that the slag heap extends to the bottom of the battars. The combined Geotech reports will provide the most detail.	Closed
48	ACTION: Check for definitions of MTI compared to first aid treatment in HS plan	Added to CSMP	Closed
65	ACTION: Leon to discuss with Jodi Wood about exclusion zones NDT/Hydro that exceed fence line. Is there need for council/road limited access	If the exclusion zones extend outside the temp construction area into Landwide property, we'd need to let the landholder know. We wouldn't necessarily need to barricade them, will depend in the activity. For the most, if there was any exclusion zones. Wasco would need to contact council for a road permit and traffic control.	Closed

Port Kembla Pipeline Project

Commissioning HAZID Register - Comments and Actions

Line #	HAZID Comments / Actions	Action by	Required Close Out Action	Date Required	Comments	Status	Responsible Party	Comments
1.0 General								
1.02	Consider whether or not an Enscope traffic management plan is required, and advise Enscope.	LT	Leon will discuss internally in Jemena whether an Enscope Traffic Management plan is required and will inform Enscope. If not required, no further action. If required, Enscope to generate Traffic Management Plan					
1.04	Enscope to review the integrity of locks on existing containers to ensure access to the asset is safe and reliable.	SXX	Stanley will check that the locks on the Commissioning Container is suitable for securing the asset. If secure, no further action. If locks are deficient then a suitable replacement will need to be sourced					
1.24	Overhead powerline on site. Consider access limitation for truck entering.	LT	Leon will confirm that truck and other vehicles entering site does not have a maximum height above or close to existing powerlines. Should consider entering close to power poles as the line is least effected by sag there.Need to be ensured that vehicles utilised are no risk to powerlines					
1.26	Enscope to advise personnel histogram for crib requirements.	SXX	Stanley will generate histogram and submit to Jemena for review and confirmation					
1.36	Enscope to review commissioning schedule and confirm whether or not 5.5 day per week is sufficient.	SXX	Enscope will update schedule to reflect 5.5 days work week if it is found to be sufficient. If not sufficient, Enscope will apply to be allowed to work on Sundays for critical activities					
1.42	Evaluate the availability of construction PI for commissioning phase	SXX, LT	Stanley and Leon will ensure Construction PI is available for Commissioning stage, if not, the schedule will need to be altered to match availability or a replacement will be required					
2.0 Pre-Commissioning								
2.07	Confirm whether or not vessels on site are registered pressure vessel.	SXX, LT	Stanley and Leon will evaluate Vessels on site, if found to be registered pressure vessels then docuemnts will need to be updated to reflect this.					
2.08	Confirm possibility of N2 being injected into EGP.	MP	Michael will check whether there is a possibility N2 will get into EGP, and whther this will have repercussions. If no repercussions then no further action required. If this will cause issues then measures will need to be put in place to stop or limit N2 entering EGP					
2.11	Consider using hard tubing to partially replace N2 hoses	SXX	Stanley will confirm in the relevant Commissioning Work Instruction that hard tubing and supported where required/possible.					
2.11	Consider the orientation and location of the burst disc.	BVD	Bas will analyse the burst disclocation and orientation, if found to be suitable then no action required. If found to be unsuitable then a change will be required or necessary measure will need to be added to ensure a safe and efficient process.					
2.11	Consider re-scale the pressure transmitter for test to smaller range for better accuracy in pipeline inerting. Consider the pressure instrument sensor model suitability.	SXX, NK	Stanley and Nathan will discuss together regarding pressure transmitter re-scaling and pressure instrument model suitability. If a change is required, this will be implemented. As a minimum a SCADA alarm for 557-PIT-064006 shall be set to an appropriate set point and Jemena control room shall be notified this alarm configuration.					
2.11	CWI to be developed considering the procedure for test equipment pack up for overnight testing.	SXX	Stanley will create the CWIs with these points in mind					
3.0 Gas Commissioning								
3.01	Project team to develop a dossier of information to carry forward to future project work	LT, SXX	Enscope will create the commissioning dossier with planning of future project work in mind, this will be transmitted to Jemena at to the project completion					
3.02	Schedule to be altered to include date change for nitrogen inerting	NC, SXX	Stanley and Nigel to plan the nitrogen inerting dates with minimum Simops on site.					

Port Kembla Pipeline Project

Commissioning HAZID Register - Comments and Actions

Line #	HAZID Comments / Actions	Action by	Required Close Out Action	Date Required	Comments	Status	Responsible Party	Comments
3.02	Check that Gap Inspection Gauges to be used to confirm swagelok fittings are swaged and installed correctly	LT	Leon will request evidence in the contruction ITR for swagelock fittings, that fittings are inspected with use of the suitable gap inspection gauge to ensure proper installation of process tubings.					
3.03	Each individual vent point to be assessed prior to completing the task to ensure the risk is mitigated SFAIRP	NC, DSY	Nigel working with David will assess each individual vent point to ensure risk is mitigated SFAIRP. If changes to the a vent point is required then this will be recommeded to Jemena					
3.04	Assess if noise level meet guidelines	JW, DSY	Jodi working with David will assses noise level on site, if deemed to be acceptable according to state legislation then no further action is required. If deemed unacceptable then measures will need to be in place so that the noiselevel is below unacceptability treshold or special exemption is given from state legislators					
3.08	Finalisation of scope for individual training sessions to be completed	SXX	Stanley to propose the facility training requirements to Jemena at a later stage.					