APA Group

Safety and Operating Plan

All Queensland Transmission Facilities

Owned by the following APA Group Companies: Roverton Pty Limited, APT Pipelines (QLD) Pty Limited, APT Petroleum Pipelines Limited and Kogan North Central Gas Processing Facility owned by Energy Infrastructure Investments Pty Ltd.

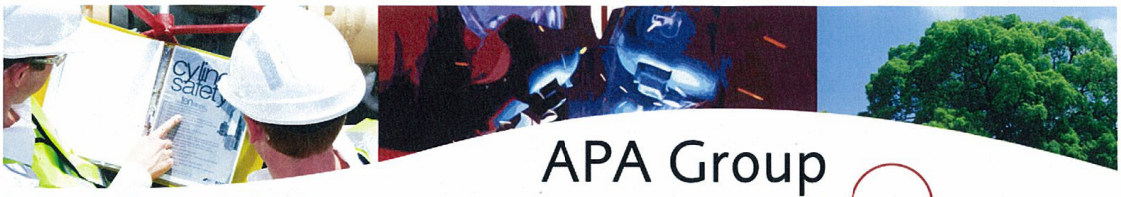
Owner	Transmission Operations Queensland		
Plan Recommended by	Manager Transmission Operations Queensland	K Mallitt	Date 28/3/11
Plan Recommended by	Acting Manager Asset Management and Engineering Queensland	G. Callar	Date 28/3/11
Changes to be approved by	Manager Transmission Operations Queensland and Manager Asset Management and Engineering Queensland.		
Direct questions about this Plan to	Operations and Technical Services Engineer	Plan to be reviewed no later than	**31st March 2012**
Plan Authorised by	Managing Director	M. McCormack	Date 6/4/11

Page 1 of 149

Emergency and other useful contacts list

Emergency Phone Number:	1800 017 000
Dial before you dig	1100
Brisbane Control Centre	(07) 3323 6111
Other useful contacts	
Mick McCormack Managing Director/Chief Executive Officer and Executive Safety Manager APA Group	Phone: 02 9693 0006 Mobile: 0417 769 635 Email: mick.mccormack@apa.com.au
Kerryanne Mallitt Manager Transmission Operations Queensland APA Group	Phone: 07 3323 6070 Mobile: 0422 840 228 Email: kerryanne.mallitt@apa.com.au
Geoff Callar Acting Manager Asset Management & Engineering – Queensland APA Group	Phone: 02 9693 0052 Mobile: 0417 044 866 Email: geoff.caller@apa.com.au
Stephen Matheson Chief Inspector, Petroleum & Gas, Chief Gas Examiner Department of Mines and Energy Regional Contact Details Southern Region Central Region Northern Region Alternate (Head Office)	Phone: 07 3237 1389 Mobile: 0409 260 388 or 000 and ask for Gas Inspectorate Email: stephen.matheson@deedi.qld.gov.au 0419 888 575 0418 888 575 0409 896 861 0417 733 034 Email: gassafe@dme.qld.gov.au
Chris Xavier Acting Petroleum Engineer Department of Mines and Energy	Phone: 07 3238 3739 Email: chris.xavier@dme.qld.gov.au
Eric Coetzee Operations Manager, CGP APA Group	Phone: 07 3323 6156 Mobile: 0437 739 721 Email: eric.coetzee@apa.com.au
Roy Gander Operations Manager, RBP APA Group	Phone: 07 3323 6126 Mobile: 0409 261 687 Email: roy.gander@apa.com.au
David Hutton Operations and Technical Services Engineer APA Group	Phone : 07 3323 6123 Email: david.hutton@apa.com.au
Justin Sunbeam HSE Advisor Transmission Operations QLD APA Group	Phone: 07 3323 6128 Mobile: 0418 819 412 Email: justin.sunbeam@apa.com.au

Health Safety and Environmental Policy



Health, Safety & Environment Policy

APA Group is committed to providing an injury free work environment and a sustainable future by maintaining a positive culture based on continual improvement in health safety and environmental performance and ensuring that all business activities are conducted in a manner that protects all of our people, the environment and greater community with which we interact.

To achieve this APA Group will:

- comply with applicable health, safety & environment legislation and best practice requirements to which APA Group subscribes.
- provide leadership and direction to drive management accountability for the performance of our health, safety & environment management systems.
- assess the risks to health, safety and the environment that may be affected by the groups activities in order to eliminate or minimise that risk.
- provide and maintain safe systems of work and codes of practice.
- provide adequate and appropriate training, supervision and specialist support to health, safety & environment matters.
- proactively reduce the risk of accidents, incidents and near misses. Investigate all reported accidents, incidents and near misses promptly and take appropriate actions to prevent a reoccurrence.
- keep employees, contractors and other relevant parties informed in relation to relevant parties our health, safety & environment systems and processes.
- partner with contractors having the same health safety & environmental standards and values as APA Group.
- regularly monitor our health safety & environmental performance against established internal & external standards.

General Responsibilities for Health, Safety & Environment

Every employee (permanent or temporary) has an obligation to look after their own health and safety, and the safety of those who may be affected by their acts or omissions. They must also comply with the group's HSE policies and procedures. They must report all accidents, incidents and near misses.

All managers and supervisors are responsible for managing HSE in accordance with group policy as an integral and mandatory duty of their position.

Contractors and sub-contractors have an obligation to look after their own health and safety, and the safety of those who may be affected by their acts or omissions. They must also comply with all applicable health, safety and environmental legislation and local site rules and APA has a duty of care to ensure the APA worksites where contractors and sub-contractors are working are safe.

Mick McCormack – Managing Director

This policy statement will be reviewed periodically to ensure that it remains relevant and appropriate to the organisation.
Revised date: August 2010
For Review: August 2012

TABLE OF CONTENTS

1. REFERENCE DOCUMENTS 11

2. DEFINITIONS 13

3. FOREWORD 16

3.1 Safety and Operating Plan Policy Statement 16

3.2 Queensland Facilities 16

4. INTRODUCTION 17

4.1 Responsibility for Safety and Operating Plan 17

5. KEY RESPONSIBILITIES 18

5.1 APA Group 18

5.2 Key Positions 18

5.3 Approval Matrix 19
5.3.1 Approval Deputies 19

5.4 Responsibilities 20
5.4.1 APA Group Responsibilities 20
5.4.2 Contractor Responsibilities 20

5.5 Management Systems 21
5.5.1 Reporting Systems 21
5.5.2 IMS Queensland 23
5.5.3 Engineering Change Management 24

5.6 Risk Management 25
5.6.1 Foreword 25
5.6.2 Pipeline Integrity Management 26
5.6.3 Safety Management Process 27
5.6.3.1 Location Analysis 27
5.6.3.2 Threat and Control Identification 27
5.6.3.3 Failure Analysis and Risk Evaluation 27
5.6.3.4 Risk Evaluation 28
5.6.3.5 Documents 29
5.6.3.6 Safety Management Studies and Location Class Reviews 29
5.6.4 HAZOP 29
5.6.5 HS&E Risk Management Systems 30
5.6.5.1 Health, Safety and Environmental Management System 30
5.6.5.2 Health, Safety and Environmental Management System Committee 31
5.6.5.3 Hazard Alert and Incident Reporting 31
5.6.5.4 Reporting of Significant Incidents 31
5.6.5.5 Job Hazard Analysis 32
5.6.5.6 Permit to Work 32

5.6.5.7 Change Management 33
5.6.6 Environmental Management Plan for Pipeline 33

6. OPERATIONS AND MAINTENANCE 35

6.1 Operations Plan 35
6.1.1 Facility Operation 35
6.1.2 Operating Parameters 35
6.1.3 Monitoring 36
6.1.4 Leakage Surveys 36
6.1.5 Control, SCADA and Communications Systems 36
6.1.6 Corrosion Protection 37
6.1.7 Gas Composition Limits 37
6.1.8 Easement Management and Land Management System 38
6.1.8.1 Geographic Information System (GIS) 38
6.1.8.2 Land Management System 39
6.1.8.3 Landowners Contact 39
6.1.8.4 Gas Awareness 39
6.1.9 Asset Protection 39
6.1.9.1 Third Party Encroachment 40
6.1.9.2 Dial Before You Dig 40
6.1.9.3 Intelligent Pigging 40

6.2 Maintenance Plan 41
6.2.1 Condition Monitoring 41
6.2.2 Preventative Maintenance 41
6.2.2.1 Compression Facilities 44
6.2.2.2 Meter Station 45
6.2.2.3 Pressure Reduction Station 46
6.2.2.4 Auxiliary Generator 46
6.2.2.5 Scraper Stations 46
6.2.2.6 Main Line Valve Sites 47
6.2.2.7 Cathodic Protection System 47
6.2.2.8 Pipeline Surveillance Patrols 47
6.2.2.9 Ground Patrols 48
6.2.2.10 Leakage Surveys 48

6.3 Corrective Maintenance 48

6.4 Non-Routine Work Activity 48

6.5 Training, Awareness and Competency Skills 49
6.5.1 Training Strategy – Overview 49
6.5.2 Management Training 49
6.5.3 Employee Training 49
6.5.4 Induction Training 49
6.5.5 Competency Skills 50

6.6 Management Review and Continual Improvement 50

7. EMERGENCY RESPONSE PLAN 52

7.1 Purpose of the Emergency Response Plan 52

7.2 Scope of the Emergency Response Plan 53

7.3 Definition and Classifications of Emergencies 53

7.4 Emergency Response Actions 53
7.4.1 Initial Report of an Unconfirmed Incident 53
7.4.2 Confirmation of Report 54
7.4.3 Declaration 54

7.5 Emergency Response Operations Group 54
7.5.1 Roles and Responsibilities of Key Personnel 55

7.6 Emergency Response Initial Site Activities 57

7.7 Emergency Response Public Relations / Authorities and Public Utilities 57
7.7.1 Government – Department of Mines and Energy (DME) 57
7.7.2 Notification of Other Parties in an Emergency 57
7.7.3 Notification of Shippers 57

7.8 Emergency Response Official Declaration of Emergency Over 58

7.9 Emergency Response Initial Debrief 58
7.9.1 Investigation 58
7.9.2 Internal Incident Report 58
7.9.3 Internal Investigation 58

7.10 Emergency Response External Investigation 59
7.10.1 Coronial Inquiry 59
7.10.2 Other Government Departments 59
7.10.3 Other External Investigation 59

7.11 Emergency Response Training Preparedness 59

7.12 Review and Improvement of the Emergency Response Plan 60

8. DOCUMENT/RECORDS MANAGEMENT 61

8.1 Overview of Document/Records Management Plan 61

8.2 Records 61
8.2.1 Design, Construction and Commissioning Records 61
8.2.2 Operation and Maintenance Records 62

8.3 Record Retention 63

8.4 Record Storage Methods 63
8.4.1 Engineering, Operations and Maintenance Documents 63

8.5 Review and Audits 64
8.5.1 Update and Review 64
8.5.2 Availability 64
8.5.3 Periodic Audit 64

9. LEGISLATIVE FRAMEWORK 65

9.1 Periodic Reports 65
9.1.1 Petroleum Transmission Report 65
9.1.2 Annual Report for a Petroleum Facility Licence or Pipeline Licence 65
9.1.3 Executive Safety Manager must give Annual Safety Report 66
9.1.4 Safety Management Plans 66
9.1.5 Annual Measurement Report 66

9.2 Prescribed Event/Incident Reporting 66

10. APA GROUP APPROVAL MATRIX 69

11. STATEMENT OF COMPETENCY 79

12. MANAGEMENT STRUCTURE 83

12.1 Senior Management Structure 83

12.2 Operations Management Structure 84

12.3 Queensland Transmission Operations Structure 85

12.4 Queensland Asset Management and Engineering Management Structure 86

13. KEY PERFORMANCE INDICATORS 87

14. APPENDIX A ROMA BRISBANE PIPELINE LICENCE NO.2 89

14.1 Pipeline System Operation 89
14.1.1 Design Life 89
14.1.2 Overview of the Pipeline System 89
14.1.2.1 General Route Map 91
14.1.2.2 Pipeline Schematic RBP 92
14.1.2.3 Pipeline Schematic Metro Area RBP 93
14.1.3 Key Design Features of the Pipeline 94
14.1.4 Maximum Allowable Operating Pressure 95
14.1.5 Above Ground facilities 96
14.1.6 Operations and Maintenance Bases 98
14.1.7 Compressor Stations 98
14.1.8 Meter Stations 98
14.1.9 Corrosion Protection 99

14.2 Operating Parameters 100
14.2.1 Guidelines 100
14.2.2 Scope 100
14.2.3 Operating Parameters 100
14.2.3.1 System Constraints 100
14.2.4 Operating within System Constraints 100
14.2.5 Operating to Maintain Integrity 102

15. APPENDIX B CARPENTARIA GAS PIPELINE LICENCE NO. 41 103

15.1 Pipeline System Operation 103
15.1.1 Design Life 103
15.1.2 Overview of the Pipeline System 103
15.1.2.1 General Route Map 105
15.1.2.2 Pipeline Schematic 106
15.1.3 Key Design Features of the Pipeline 107
15.1.4 Maximum Allowable Operating Pressure 108
15.1.5 Above Ground facilities 108
15.1.6 Operations and Maintenance Bases 109
15.1.7 Compressor stations 109
15.1.8 Meter Stations 109

15.1.9 Corrosion Protection 109

15.2 Operating Parameters 110
15.2.1 Guidelines 110
15.2.2 Scope 110
15.2.3 Operating Parameters 110
15.2.3.1 System Constraints 110
15.2.4 Operating within System Constraints 111
15.2.5 Operating to Maintain Integrity 112

16. APPENDIX C CANNINGTON LATERAL LICENCE NO. 42 113

16.1 Pipeline System Operation 113
16.1.1 Design Life 113
16.1.2 Overview of the Pipeline System 113
16.1.2.1 General Route Map 115
16.1.2.2 Schematic of Pipeline 116
16.1.3 Key Design Features of the Pipeline 117
16.1.4 Maximum Allowable Operating Pressure 118
16.1.5 Above Ground facilities 118
16.1.6 Operations and Maintenance Bases 118
16.1.7 Compressor Stations 119
16.1.8 Meter Stations 119
16.1.9 Corrosion Protection 119

16.2 Operating Parameters 119
16.2.1 Guidelines 119
16.2.2 Scope 119
16.2.3 Operating Parameters 119
16.2.3.1 System Constraints 120
16.2.4 Operating within System Constraints 120
16.2.5 Operating to Maintain integrity 120

17. APPENDIX D MICA CREEK METER STATION LICENCE 50 AND MT ISA LATERAL LICENCE 51 122

17.1 Pipeline System Operation 122
17.1.1 Design Life 122
17.1.2 Overview of the Pipeline System 122
17.1.2.1 General Route Map 124
17.1.3 Key Design Features of the Pipeline 124
17.1.4 Maximum Allowable Operating Pressure 126
17.1.5 Above Ground facilities 126
17.1.6 Operations and Maintenance Bases 127
17.1.7 Compressor Stations 127
17.1.8 Meter Station 127
17.1.9 Corrosion Protection 127

17.2 Operating Parameters 127
17.2.1 Guidelines 128
17.2.2 Scope 128
17.2.3 Operating Parameters 128
17.2.3.1 System Constraints 128
17.2.4 Operating within System Constraints 128
17.2.5 Operating to maintain Integrity 129

18. APPENDIX E PEAT LATERAL LICENCE NO. 74 131

18.1 Pipeline System Operation 131
18.1.1 Design Life 131
18.1.2 Overview of the Pipeline System 131
18.1.2.1 General Route Map 132
18.1.3 Key Design Features of the Pipeline 132
18.1.4 Maximum Allowable Operating Pressure 133
18.1.5 Above Ground facilities 134
18.1.6 Operations and Maintenance Bases 134
18.1.7 Compressor Stations 134
18.1.8 Meter Stations 134
18.1.9 Corrosion Protection 135

18.2 Operating Parameters 135
18.2.1 Guidelines 135
18.2.2 Scope 135
18.2.3 Operating Parameters 135
18.2.3.1 System Constraints 135
18.2.4 Operating within system constraints 136
18.2.5 Operating to Maintain Integrity 137

19. APPENDIX F KOGAN NORTH CENTRAL GAS PROCESSING FACILITY LICENCE NO. 120 138

19.1 Facility System Operation 138
19.1.1 Design Life 138
19.1.2 Overview of the Facility System 138
19.1.2.1 General Location Map 139
19.1.3 Key Design Features of the Facility 140
19.1.4 Maximum Allowable Operating Pressure 140
19.1.5 Above Ground facilities 140
19.1.6 Operations and Maintenance Bases 140
19.1.7 Compressor Stations 141
19.1.8 Meter Stations 141
19.1.9 Corrosion Protection 141

19.2 Operating Parameters 142
19.2.1 Guidelines 142
19.2.2 Scope 142
19.2.3 Operating Parameters 142
19.2.3.1 System Constraints 142
19.2.4 Operating within System Constraints 142
19.2.5 Operating to Maintain Integrity 143

19.3 Specific Features of the Facility 143
19.3.1 Process Description 143
19.3.2 Compression 144
19.3.2.1 Compression Specifications 145
19.3.3 Dehydration 145
19.3.3.1 Dehydration Unit 146
19.3.3.2 TEG Filter Coalescer 146
19.3.3.3 Plant TEG Dehydration System 146
19.3.3.4 Lube Oil Coalescer 147
19.3.4 Inlet Manifold 147
19.3.5 Cold Vent Systems 148
19.3.6 Waste Water Production 148
19.3.7 Pipeline Lateral 149

Version Control

Revision No.	By (Name)	Date	Comments
1.0	APA Group D. Hutton	1/10/2008	Initial Issue
1.1	APA Group D. Hutton	1/5/2009	Update Org Charts. Include Davenport Downs Project
1.2	APA Group D. Hutton	1/7/2009	Argyle Receipt point on RBP –
1.3	APA Group D. Hutton	1/12/2009	SAOP audit points
1.4	APA Group D. Hutton	31/3/2010	Organisational Changes and review.
1.5	APA Group D. Hutton	22/7/2010	Lytton Lateral
1.6	APA Group D. Hutton	15/3/2011	Risk Management, Org Charts, SAOP audit review points

1. Reference Documents

This document may reference the following documents and publications:

Petroleum and Gas (Production and Safety) Act 2004 and Amendments

Petroleum and Gas (Production and Safety) Regulation 2004 and Amendments

Petroleum Act 1923 and amendments

Workplace Health and Safety Act 1997 and Amendments

Australian Pipeline Industry Association (APIA) Code of Environmental Practice-Onshore Pipelines (Part B-Operations), 1998

Risk management, including Health, Safety and Environment (HSE) risk, as per APA Group's corporate policies

APA Group Gas Transportation Agreements

QLD Environmental Protection Agency (EPA) Guidelines for Preparing EMPs

Various plans, procedures and policies for the design, construction, management and operation of transmission assets in Queensland as found in the Integrated Management System (IMS).

AS 2885.0- 2008	Pipelines – Gas and Liquid Petroleum – General Requirements
AS 2885.1-2007	Pipelines – Gas and Liquid Petroleum – Part 1: Design and Construction including Amdt1 - 2009
AS 2885.2-2007	Pipelines - Gas and Liquid Petroleum, Part 2: Welding
AS 2885.3-2010	Pipelines – Gas and Liquid Petroleum – Part 3:– Operations
AS/NZS 2885.5-2002	Pipelines – Gas and Liquid Petroleum – Field Pressure Testing
AS/NZS 2832.1-1998	Cathodic Protection of Metals, Part 1: Pipes and Cables
API 11P	Packaged reciprocating compressors for oil and production service.
API 14C	Overpressure Protection System
API 650	Welded Steel Tanks for Petroleum Storage
API Specification 5L	American Petroleum Institute-Steel Pipe
ASTM A106	Grade B Pipe
API STD 618	Reciprocating compressors for general refinery service
API Standard 6D	Specification for Pipeline Valves, Gate, Plug, Ball and Check Valves (14th Edition) March 1971
AS 1170.4 Loads	Minimum Design Loads on Structures – Earthquake
AS 1210	Pressure Vessels
AS 1418.1	Cranes
AS 1518	External extruded high-density polyethylene coating system for pipes
AS 1657	Fixed platforms, walkways, stairways and ladders
AS 1692	Tanks for Flammable and Combustible liquids

AS 1940	Storage and Handling of Flammable and Combustible Liquids
AS 2159	Piling – Design and Installation
AS 2430.1	Classification of Hazardous Areas
As 3000	SAA Wiring Rules
AS 3184	Industrial and Commercial Gas-fired appliances
AS 3600	Concrete Structures
AS 3862	External fusion-bonded epoxy coating for steel pipes
AS 3920.1	Pressure equipment manufacture
AS 3990	Mechanical Equipment - Steelwork
AS 4041-1998	Pressure Piping
AS 4100	Steel Structures
AS 4343	Pressure Equipment Hazard Levels
AS 4458	Pressure Equipment Manufacture
AS 4564	Specification for general purpose natural gas
MSS-SP44	Specification for Flanges

Note: AS2885 is a mandatory standard for the design, construction, operation and maintenance of transmission pipelines in Queensland under the Petroleum and Gas (Production and Safety) Regulation 2004 and amendments.

2. DEFINITIONS

AC	Alternating Current
AGA	Australian Gas Association
ALARP	As Low As Reasonably Practical
APA Group	APA Group
API	American Petroleum Institute
APIA	Australian Pipeline Industry Association
AS	Australian Standard
BWP	Berwyndale Wallumbilla Pipeline
CGP	Carpentaria Gas Pipeline
CMP	Crisis Management Plan (APA Group)
CP	Cathodic Protection
CS	Compressor Station
CSG	Coal Seam Gas
DBYD	Dial Before You Dig
DME	Department of Mines and Energy
DN	Diameter Nominal
EMP	Environmental Management Plan
ESD	Emergency Shutdown
FBE	Fusion Bonded Epoxy
GC	Gas Chromatograph
GIS	Geographical Information System
GJ	Gigajoule i.e. 10^9 Joules
GTA	Gas Transportation Agreement
H	High
HASIF	Hazard and System Improvement Form
HAZOP	Hazard and Operability (study)
HDD	Horizontally Directionally Drilled
HSE	Health, Safety and Environment
HSEQ	Health, Safety, Environment and Quality
I	Intermediate
IJ	Insulation Joint
IMS	Integrated Management System
IS	Inlet Station
JHA	Job Hazard Analysis
KNCGPF	Kogan North Central Gas Processing Facility
KP	Kilometre Post
KPI	Key Performance Indicator
kPa	Kilopascal i.e. 10^3 Pascals

kPag	Kilopascals Gauge
L	Low
LAN	Local Area Network
LTI	Lost Time Injury
MAOP	Maximum Allowable Operating Pressure
MCMS	Mica Creek Meter Station
MEG	Main Earth Grids
MLV	Main Line Valve
MOP	Maximum Operating Pressure
MP	Mile Post
MPa	Megapascal i.e. 10^6 Pascals
MS	Meter Station
MSDS	Material Safety Data Sheets
MTI	Medical Treatment Injury
N	Negligible
OEM	Original Equipment Manufacturer
PCC	Pipeline Control Centre
PIO	Permit Issuing Officer
PJ	Petajoule i.e. 10^{15} Joules
PL	Pipeline Licence
PPE	Personal Protective Equipment
PR	Plant Release
PRS	Pressure Reduction Station
PTW	Permit To Work
QA	Quality Assurance
RBP	Roma Brisbane Pipeline
RMS	Risk Management System
ROW	Right of Way
SAOP	Safety and Operating Plan
SCADA	Supervisory Control & Data Acquisition
SCC	Stress Corrosion Cracking
ScS	Scraper Station
SMP	Safety Management Plan
SMS	Safety Management Systems
SS	Sale Station
SSM	Site Safety Manager
T	Telemetered
TJ	Terajoule i.e. 10^{12} Joules
UT	Ultrasonic Testing
Wobbe Index	Gross Calorific Value / Specific Gravity$^{0.5}$

WMS	Works Management System
YTD	Year to Date

3. FOREWORD

APA Group owns, operates and maintains facilities to the risk assessment, policies, procedures and standards as set out in this Safety and Operating Plan.

This Safety and Operating Plan has been prepared in accordance with the provisions and requirements of AS2885.3, Queensland Legislation and where applicable Australian Legislation and the Queensland Petroleum and Gas Act (Production and Safety) and Regulations of 2004 and as amended and covers all licenced facilities owned by companies outlined in section 3.2 and operated by the APA Group in Queensland.

3.1 SAFETY AND OPERATING PLAN POLICY STATEMENT

The Operating Authority, APA Group (as defined in AS 2885.3), is committed to achieving full compliance with all legislation and regulations to achieve the safe, reliable, efficient operation and maintenance of each facility. To achieve this objective, APA Group has prepared this Safety and Operating Plan (SAOP), which documents the measures to ensure:

- Protection of the facility and associated facilities;
- The safety of the public;
- The safety of personnel working on the facility;
- The safety of contractors;
- Environmental aspects; and
- Effective incident management.

3.2 QUEENSLAND FACILITIES

This Safety and Operating Plan covers the following facilities:

- PL No.2 Roma Brisbane Pipeline;
- PL No.41 Carpentaria Gas Pipeline;
- PL No. 42 Cannington Lateral Gas Pipeline;
- PL No. 50 Mica Creek Meter Station;
- PL No. 51 Mt Isa Lateral;
- PL No. 74 Peat Lateral; and
- PL No. 120 Kogan North Central Gas Processing Facility.

4. INTRODUCTION

This Safety and Operating Plan (SAOP) has been developed in accordance with the provisions of the Petroleum and Gas (Production and Safety) Act 2004 and as amended, the Petroleum and Gas (Production and Safety) Regulations 2004 and as amended, and the requirements of AS2885.3 for the operation and maintenance of the high pressure gas facilities. The SAOP includes all requirements of the Safety Management Plan (SMP) for operating each facility.

Accordingly, as required in Clause 4.2.1 of AS2885.3, the SAOP details the policy of the APA Group relating to personnel, public and environment protection. As identified in risk assessments carried out on each facility items include measures to:

- Protect the facility and associated installations;
- Promote public awareness of the facility;
- Operate and maintain the facility safely;
- Respond to emergencies;
- Prevent and minimize product leakage;
- Conduct facility inspections and assessments in accordance with Clause 5.3 (of AS2885.3);
- Ensure that the plans and procedures continue to comply with the engineering design; and
- Ensure the update of Risk Assessment when change occurs.

4.1 RESPONSIBILITY FOR SAFETY AND OPERATING PLAN

The overall accountability for the development, implementation, maintenance and review of the SAOP rests with the APA Group.

APA Group is responsible for providing the necessary resources (including human and financial) for implementation of the requirements of the Plan including the application of policies, procedures and work instructions.

The Operations and Technical Services Engineer is responsible for ensuring that the plan is monitored, reviewed and updated every two years if significant incremental change occurs and, in any event, when the scope of any single change is significant as defined in AS2885.3. Any comments, suggestions for improvements, errors or omissions should be brought to the attention of the Operations and Technical Services Engineer in the first instance.

This document is controlled within APA Group's Queensland Integrated Management System (IMS) and also the APA Group's MARCIS compliance database.

5. KEY RESPONSIBILITIES

This section provides details of people in APA Group that have an involvement with, and a responsibility to the SAOP of the facilities. It provides a summary of their responsibilities and includes a detailed approvals matrix showing who is responsible for approving various aspects of the modification, operation and maintenance of the facility. Tasks listed in the Approval Matrix (Section 10 of this SAOP) are based on AS2885.3.

5.1 APA GROUP

The APA Group Organisation chart for Senior Management is shown in Section 12.1.

The APA Group Organisation chart for Queensland Transmission Operations is shown in Section 12.2.

The APA Group Organisation chart for Queensland Asset Management and Engineering is shown in Section 12.3.

5.2 KEY POSITIONS

Position descriptions of nominated and/or designated personnel with in the APA Group are articulated below:

Executive Safety Manager

Responsible for the formal appointment of the plant operator and to make, approve and implement this Safety and Operating Plan in a way that manages the risks associated with the plant.

Manager Transmission Operations Queensland

The Manager Transmission Operation is responsible for the daily operational management of the total Queensland Transmission business and the allocation of resources sufficient to implement/complete actions required by this SAOP. This position is the designated Site Safety Manager and designated Operator of all of the facilities.

Manager Asset Management & Engineering Queensland

Responsible for problem solving, plant, compressor performance, engineering change, risk assessment and overseeing all mechanical and electrical engineering associated with the safe operation of all of the facilities and the allocation of engineering resources sufficient to implement/complete actions.

Operations Manager

Responsible for the day to day resource management and leadership of the field staff assigned to the asset. This position is responsible for safe and effective implementation of the agreed work plan as a Permit Issuing Officer (PIO) and is also a designated Site Safety Manager of the facility.

Pipeline Technicians

Responsibilities include: day to day operation and maintenance of the Facility, providing on site inductions as well as ensuring that all personnel on site have been inducted; Issuing Permits to Work as Permit Issuing Officers/ Site Safety Manager and ensuring compliance with the work permit system; ensuring that high standards of safety awareness are maintained; and providing an immediate response if an unsafe situation is identified and reporting the situation.

Pipeline Control Centre

The Pipeline Control Centre is responsible for monitoring the performance and operation of the Facility, and for liaison with the gas suppliers, shippers, asset owners and other parties with an interest in the day-to-day commercial operations of the facility.

Operations and Technical Services Engineer

Responsible for the monitoring and performance of this SAOP and ensuring operations in Queensland complies with all statutory requirements.

State HSE Advisor

The State HSE Advisor reports directly to the Manager Transmission Operations Queensland to ensure health, safety and environment are managed in an efficient and consistent manner across the APA Group.

5.3 APPROVAL MATRIX

An approval matrix showing all the operating approvals and the persons within APA Group who have been delegated to make those approvals is attached in Section 10.

Statement of Competency for each individual with approval authority as per AS2885.3 is attached in Section 11.

5.3.1 APPROVAL DEPUTIES

Deputies for individuals with approval authority will be developed by the individuals and approved by APA Group in accordance with 4.2.2.a of AS2885.3.

Deputies will only be utilised where the approved authority is unable to carry out the duty personally within a suitable timeframe.

All approvals by a deputy will be reconfirmed by the normal approver within 7 days of their return.

5.4 RESPONSIBILITIES

5.4.1 APA GROUP RESPONSIBILITIES

APA Group shall provide a work environment which is safe and promotes good health for all personnel in both field and office locations.

Accident prevention is an integral part of APA Group's management philosophy. A positive attitude towards health and safety by all employees engaged in company activities is vital to the success of this Policy.

APA Group strives for the highest standard of occupational health, safety and welfare. APA Group is aware of its responsibility to provide an occupational environment that fosters the well being of its employees. In particular APA Group shall comply with all relevant legislation, mandatory Australian Standards and codes of practice.

5.4.2 CONTRACTOR RESPONSIBILITIES

Contractors and sub-contractors have a legal obligation to look after their own health and safety, and the safety of those who may be affected by their acts or omissions. They must also comply with all applicable health, safety and environmental legislation and local site rules. In particular the contracting companies will be required to:

- Be fully inducted and on the current preferred contractor list.
- Comply with all APA Group and site safety procedures;
- Exercise due diligence in the review of this SAOP;
- Ensure employees are adequately trained and supervised in procedures as required;
- Provide training in APA Group procedures to ensure that all personnel are familiar with their obligations when accepting a permit to work;
- Provide and maintain personal protective equipment;
- Ensure all sub-contractors comply with this SAOP;
- Except for an approved maintenance or repair procedure, not interfere with, remove, displace or make ineffective any safeguard, safety device, equipment or appliance, provided for safety or health purposes; and
- Watch for possible safety and health risks, take immediate steps to rectify the problem and report the problem to the relevant Operations Manager and the HSE Advisor.

5.5 MANAGEMENT SYSTEMS

APA Group Queensland has a number of Management Systems that are certified to ISO 9001:2000 – Quality Management Systems – Requirements.

5.5.1 REPORTING SYSTEMS

WorkWise is used to capture health and safety related incident data where actual or potential harm to personnel (employees, contractors and/or visitors) has occurred. **WorkWise** stewards the actions that result from subsequent incident investigations allowing reporting and an auditable record of the company's response. **WorkWise** can also capture audit and risk assessment information where the focus is on the potential for harm to personnel.

MARCIS captures incidents of an operational nature including environmental incidents, excluding those captured in **WorkWise**. **MARCIS** stewards the actions that result from the incident investigations.

MARCIS is also used to steward actions arising from regulatory compliance obligations, audits, risk assessments and incident investigations of operational nature. **MARCIS** can be used for actions where document control and external reporting is important.

As a general rule duplication of data capture in **MARCIS** and **WorkWise** is to be avoided. It is possible however, that an incident report could be captured in both **WorkWise** and **MARCIS**, for example a major operational incident which significantly impacted gas supply to customers, and which also had the potential to cause injury to personnel. In these instances it would make sense to use the comment fields in **MARCIS** to note that the duplicate data capture had occurred.

Maintenance Connection is used to steward the completion of all operational activities including actions that were initiated from the **WorkWise** investigations and **MARCIS** investigations requiring field implementation. In these instances work order detail should be provided to each system to cross reference both the origin of the work required and to provide evidence of completion.

This may be summarised:

MARCIS captures information relating to the assets, their management and operation.

WorkWise captures information relating to personnel compliance and safety.

Maintenance Connection captures information relating to the physical condition of the assets.

MARCIS vs WorkWise vs Maintenance Connection

MARCIS		Description/Examples
Audit Actions	Actions identified from operational audits, risk assessments, incident investigations or as otherwise required by management.	**Internal / External Audit Actions:** Recommendations identified by both internal and external technical and compliance audits.
		Risk Assessments: Actions identified when risk assessment have been performed and recommendations identified.
		Incident Investigations: Actions identified when investigating an incident e.g. contaminants in the system impacting customers (dust, liquids, debris, etc)
Regulatory Compliance Actions	Legislative or Regulatory Requirements with which the business must comply.	**Legislative Requirements:** e.g. Obligations under the Gas Act. **Regulatory Compliance:** e.g. Licence Obligations, Annual / Quarterly and Executive Reports to the Regulatory Authority.
Operational and Environmental Incidents	Reports of Operational Incident, Operational Near Miss, Operational Report Only, Environmental Incident, Environmental Near Miss, Environmental Report Only, Encroachment to Pipeline	**Operational/Environmental Incident:** Capture of incident data (outside the scope of **WorkWise**) e.g. Major damage or gas leak on HP pipelines (resulting road closures, electricity shut down, public transport disruption, evacuations, emergency services on site), damage to environment.
WorkWise		**Description/Examples**
Health and Safety	Capture of data where injury or potential injury to employees and/or contractors has occurred within the workplace. e.g. Loss of Life, LTI, Moderate Medical Treatment, Minor Medical Treatment, First Aid, Report Only.	**Loss of Life:** Death resulting from an incident / accident in workplace. **LTI:** Work related injury / illness which results in loss of shift or loss of more than 1 day, derived from performing normal duties and having been issued with a Prescribed Medical Certificate from Medical Practitioner. **Moderate Medical Treatment:** Work related injury / illness which requires attention by a Medical Practitioner and which results in not being able to perform one or more of routine tasks and performing alternative duties. **Minor Medical Treatmen**t: Work related injury / illness which requires attention by Medical Practitioner and results in the management and care of the employee / contractor without loss of shift or task functions. **First Aid:** Injury which requires treatment but not by a professional Medical Practitioner

		(typically conducted by First Aid officer onsite) **Report Only:** Is usually something to which an employee / contractor is bringing attention, but does not relate to any specific incident or event.
	Hazard Reports: Capture of data for Near Miss, Environment, Plant & Equipment, Property Loss or Damage.	**Near Miss:** Workplace incident not resulting in any injury / illness but has the potential to do so. **Environment:** Disturbance to environment caused by company operations e.g. inappropriate disposal of waste (asbestos materials, contaminated soil / solid waste), contamination of water ways, soil, damage to vegetation. **Plant & Equipment:** Equipment that is damaged or in poor condition and has the potential to cause harm to persons. **Property Loss or Damage:** Reports of loss of, or damage to, equipment where potential harm could be caused to persons.
	HS Investigations: capture of information	Record of the investigation of how the event occurred except Environmental information.
	HS Audits: capture of the results of HSE audits	HS audit results, either internal and external except Environmental information
	HS Risk Assessments	Used as library of HS risk assessments conducted by HSE staff except Environmental information.
	Corrective Actions	Actions relating to an incident, audit or risk assessment except Environmental information.
Maintenance Connection		**Description/Examples**
Scheduled Operational Work Orders	Preventative and Corrective Maintenance activities undertaken in the field. Tasks typically undertaken on a routine basis eg assigned frequencies (monthly, annually, bi-yearly) as required by Pipeline Licence obligations, operating plans etc.	**Scheduled Preventative Maintenance Work Order:** e.g. Raised and assigned to individual field staff for maintenance of assets eg vessel inspections, emissions testing and monitoring, PSV testing. **Corrective Maintenance Work Orders** **Procedure Tasks:** e.g. pipeline patrol road, pipeline surveillance aerial, emergency pipeline inspection. CP inspection, pipeline leak survey, weed monitoring.

5.5.2 IMS QUEENSLAND

The IMS incorporates additional requirements from contractual, corporate, legislative and regulatory drivers.

The IMS is based on satisfaction and continuous Improvement. It is described in detail in the Queensland Operational Policy and Management Plan.

All sections described in this document have associated procedures and forms in the IMS, and these are available to all employees from the Queensland intranet site.

A key component of the IMS is the IMS Database, commonly known as the Hazard and System Improvement Form (HASIF) database. This database manages all issues across the Queensland business.

Issues are entered into the database by any APA Group employee, in categories including incidents, near misses, non conformances, client contacts, document changes, maintenance requests, engineering requests or suggested improvements. Relevant issues are transferred into the appropriate corporate systems (MARCIS and WorkWise)."

The system notifies the responsible person of an issue being raised, and allows a Risk Assessment to be completed on the issue. Actions can then be assigned to any person in Queensland for action. All personnel can view their action lists and those of others to ascertain progress.

The statistics from the database are used for measuring system performance Key Performance Indicators (KPIs).

5.5.3 ENGINEERING CHANGE MANAGEMENT

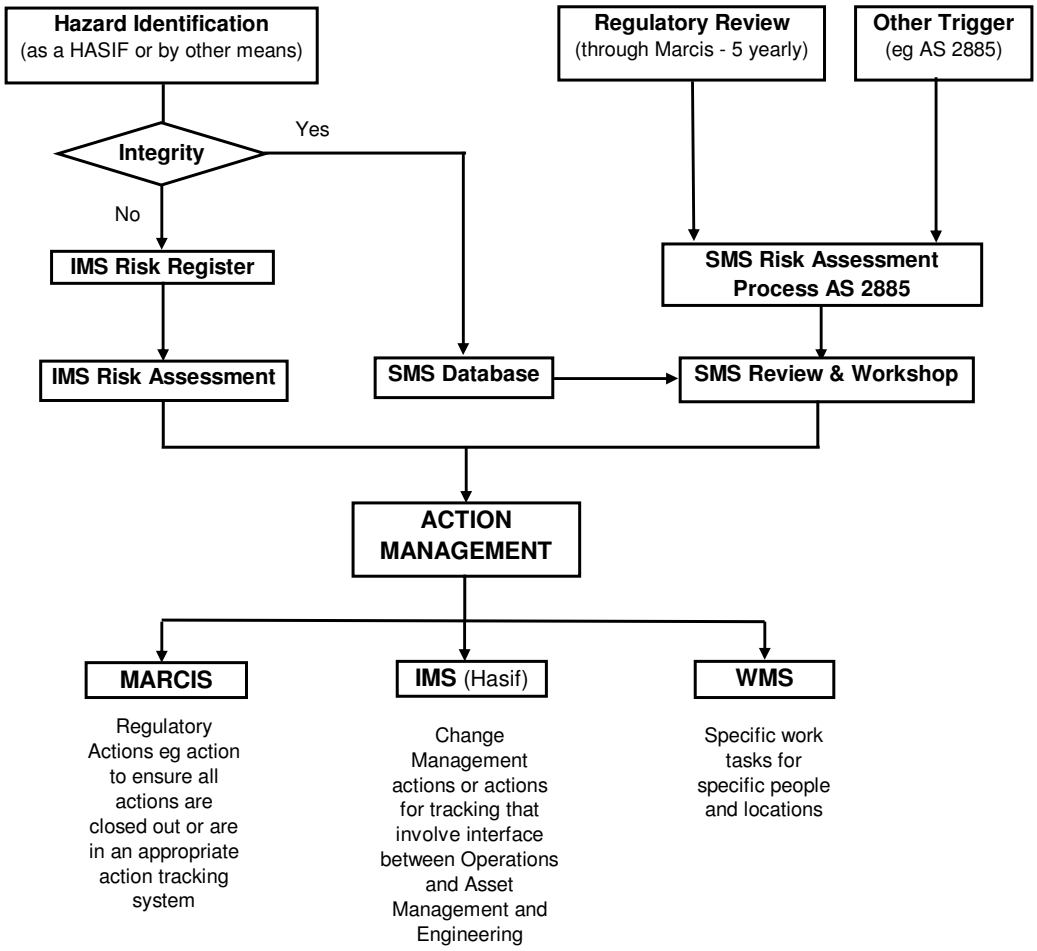
The IMS Database is used to control and track progress of individual engineering change notifications through the system. The control and monitoring of an engineering change shall comply with all relevant key engineering reference material and procedures.

5.6 RISK MANAGEMENT

5.6.1 FOREWORD

APA Group recognises that risk management is an integral part of good management and that managing risk is a fundamental part of its business so that actions and activities do not unduly expose the asset, its personnel or the public or the environment to unacceptable risks.

The risk management process consists of well-defined steps which, taken in sequence, support better decision-making by contributing to a greater insight into risks and their impacts. The risk management process can be applied at many levels within APA Group and can be applied to specific projects, to assist with specific decisions or to manage specific recognised risk areas. APA Group recognises that risk management is a multi faceted process, which is often best carried out by a multi-disciplinary team with an intimate knowledge of the Pipeline.



Actions recorded within the various recording systems require completion dates and when these dates are not met, a reminder is sent to the person to whom the action was delegated. Should no action be recorded within the system within the specified time frame, the person's supervisor is notified.

5.6.2 PIPELINE INTEGRITY MANAGEMENT

The risk management process is a critical input for successful integrity management of a pipeline which is a whole of life process. The engineering standards and specifications used in the design and construction of pipelines, combined with non-destructive testing and pre-commissioning hydrostatic test ensure the pipeline is fit for purpose and the eradication of any critical defects at that time.

After the pipeline is commissioned, the integrity is maintained by defined operation and maintenance activities. These include preventative maintenance, monitoring programs and rectification maintenance or programs.

APA Group has an established Pipeline Integrity Management Plan which documents the Integrity Management Program.

In general, pipeline integrity is maintained by:

- Protecting the pipeline against third party damage;
- Protecting the pipelines against corrosion;
- Ensuring the pipeline is not adversely affected by natural events/forces;
- Ensuring the pipeline is not adversely affected by ground movement either natural or man-made;
- Ensuring that any modifications, maintenance and repair of the pipeline are carried out in a manner that maintains pipeline integrity; and
- Ensuring the pipeline is not adversely affected by mechanical stresses from operation, e.g. fatigue or overpressure by the use of pressure control and pressure management systems.

APA Group has developed and established operating policies and procedures as well as maintenance programs to mitigate and address integrity threats.

The QLD Pipeline Integrity Management Plans have strategies and processes in place to mitigate corrosion and integrity threats to the pipelines. The plans include inspection programs, data evaluation processes, field validation and rectification programs as required.

APA Group risk management processes, which are described in greater detail below, align with the requirements of Pipeline Integrity Management as defined by AS 2885.3 comprise the following components:

- Safety Management Study as per AS2885;
- Facilities HAZOPs;
- HS&E risk management as per Company's corporate policies;
- Environmental Management Plan as per APIA Code of Environmental Practice; and

- Pipeline Integrity Management Plans

5.6.3 SAFETY MANAGEMENT PROCESS

Safety Management Studies (formerly called risk assessments) for the pipelines have been conducted on a non-location specific basis and on a metre by metre basis in accordance with AS2885.1.

The studies are reviewed at a maximum interval of 5 years or as required in the course of operation, and provide the rationale for the ongoing or routine maintenance and operations activities. These studies, and measures flowing from them, are outlined in the following sections within the confines of applying AS2885 retrospectively to an established pipeline. This retrospective application of later Standards is carried out at the routine review.

On-going analysis is carried out at specific locations or projects for any changes or developments, which may impact on the pipeline. The pipeline safety management study is updated to reflect these on-going changes and also considers the latest requirements of AS 2885.1 2007 at those opportunities.

5.6.3.1 Location Analysis

APA Group carries out a location analysis review for pipelines and facilities in accordance with the AS2885.3 schedule.

On-going location analysis is carried out at specific locations or projects for any changes, which may have impact on the location class. Alignment sheets are also updated for any change.

Location class is recorded in the GIS and SMS database.

5.6.3.2 Threat and Control Identification

The intent of the threat identification process is to identify all possible threats to the pipeline at all locations along the pipeline. Most of the threats are location specific. However, some threats are non-location specific. All identified threats are identified through a risk evaluation process.

Threats cover a range of issues including external interference, corrosion, natural events, operations and maintenance, materials/design/construction defects, intentional damage etc.

The majority of threats are mitigated by existing controls including installations or procedures, or by additional actions identified in the safety management study.

5.6.3.3 Failure Analysis and Risk Evaluation

Failure analysis is carried out on residual threats deemed to be uncontrolled. Analysis is carried out to determine the mode of failure, the likelihood and consequence based on AS2885.1.

The risk evaluation is conducted for the residual threats based on AS2885.1 with risk ranking either Extreme, High, Intermediate, Low or Negligible.

Threats with Low or Negligible risk ranking are taken to be of an acceptable risk level as per AS 2885.1. Intermediate risks are higher than desired and actions are required to reduce the risk to at least ALARP. An ALARP analysis is undertaken either as part of the SMS workshop or as a separate study. High or Extreme risks are considered intolerable and have to be reduced to intermediate or lower.

5.6.3.4 Risk Evaluation

Determination of the actions to be implemented to manage the threats (hazardous events) based on their risk ranking are as follows: These actions include but are not limited to:

- Engineering design and modifications either physical or procedural;
    - New maintenance or procedural activities;
    - Frequency or scope change to existing maintenance plan; and
    - Preparation of management plan, modification of work scopes and implementation of changes to the planned maintenance scheduled.

- Extreme
    - Any practical immediate action to eliminate, isolate or reduce the risk is implemented;
    - In-service pipeline risk must be reduced immediately;
    - Pipeline Control takes immediate action;
    - Transmission Operations Manager QLD to be advised immediately; and
    - Transmission Operations Manager QLD to modify the threat, the frequency or the consequence.

- High
    - Any practical immediate action to eliminate, isolate or reduce the risk is implemented;
    - Notify the threat to the Manager Asset Management and Engineering QLD and Transmission Operations manager QLD;
    - Manager Asset Management and Engineering QLD to promptly review with appropriate personnel and determine validity and confirm the ranking of the threat; and
    - Determine actions to be implemented to reduce the risk to Intermediate or lower.

- Intermediate

- Manager Asset Management and Engineering QLD to review with appropriate personnel and determine validity and confirm the ranking of the threat and;
- Determine the actions to be implemented to reduce to Low where practical.

- Low or negligible
  - Record in risk assessment for future review; and
  - Provide risk assessment information to relevant maintenance personnel for monitoring changes.

5.6.3.5 Documents

The following documents are utilised in the risk assessment process:

- Pipeline route drawings, GIS and alignment sheets;
- Aerial photographs (where relevant);
- Pipeline as-built records;
- The operating and maintenance plan;
- Information on supply obligations, regulatory requirements, environmental requirements and details of other obligations which are imposed by third parties;
- The previous risk assessment or the previous revision;
- Incident reports; and
- Pipeline inspection data.

Relevant operating personnel and engineering groups are involved with risk assessment.

5.6.3.6 Safety Management Studies and Location Class Reviews

The SMS for each asset is stored in a separate database on the network drive in Upper Mount Gravatt. The SMS is isolated from the IMS and is managed by engineering team.

5.6.4 HAZOP

HAZOPs are carried out on facilities, sites and equipment where significant design or other changes have been or are planned to be made that will effect the operation of the site. Further to this, during design stage, a HAZOP is carried out to ensure the hazards are identified, assessed and controlled.

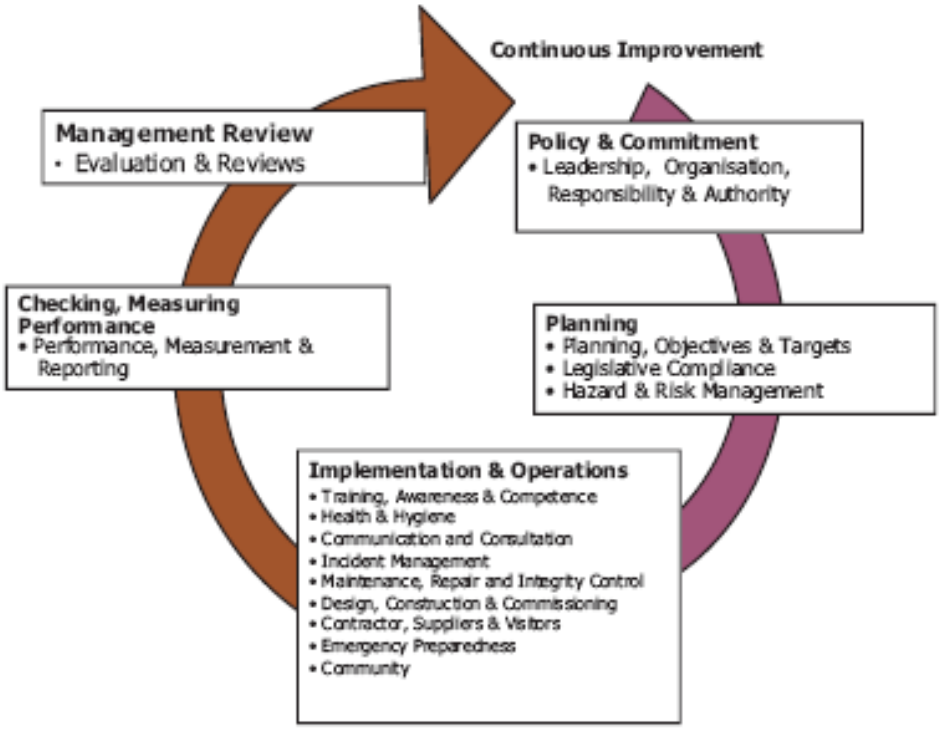
5.6.5 HS&E RISK MANAGEMENT SYSTEMS

APA Group has an integrated, company wide management system for health, safety and the environment. The Management System adopts a risk management approach to identify exposure to injury, illness, environmental harm, property damage and other types of accidental loss and to provide management a measurement of health, safety and environmental issues.

The main risk management systems that are implemented at the field level are the Job Hazard Analysis (JHA) and Permit to Work (PTW) systems. These systems cover the identification of HS&E risks for all parties involved in the work activities and the implementation of appropriate control measures for all work carried out on the pipeline, which is not considered to be negligible risk.

5.6.5.1 Health, Safety and Environmental Management System

The APA Group's Health, Safety and Environment Management System has been developed to establish and document a framework or requirements, policies, standards, guidelines and management practices for consistent and continuous improvement in health, safety and environment performance. The system is outlined in detail in the Health, Safety and Environmental Management System manual, which can be accessed through the Company's intranet system. The Health, Safety and Environmental Management System framework consists of the following elements as shown in the following page:



5.6.5.2 Health, Safety and Environmental Management System Committee

The Health, Safety and Environmental Management System Committee supports the HS&E continual improvement process. It is responsible for:

- Investigating, discussing and making recommendations about health, safety and environment hazards and incidents;
- Assisting in the identification of any work place risks and advising leaders;
- Monitoring all identified work place risks to ensure remedial action is taken, and guiding and supporting colleagues in HS&E matters; and
- Helping leaders to make the workplace safe and to minimise harm to the environment.

5.6.5.3 Hazard Alert and Incident Reporting

The Health, Safety and Environmental Management System ensures that the Company is alerted to hazards and potential hazards in the work place and that these are recorded and acted upon. By reporting all hazards and potential accidents, the likelihood of loss through personal injury, illness, property damage, process loss and environmental pollution is reduced. By reporting the rectification, the contributing circumstances will be identified and others alerted to them.

All employees and contract staff are required under the Health, Safety and Environmental Management System loss control program to report all hazardous situations and circumstances which includes 'near hits' and property damage to their supervisor.

All staff have certain responsibilities in regard to the occurrence of hazards. Briefly, for colleagues, responsibilities are to report the hazard and to fix the hazard if it is safe to do so, leaders should ensure that hazards are fixed and reported to the Health, Safety and Environmental Management System Coordinator.

APA Group has implemented the incident reporting requirements to ensure incident reporting and data capture occurs. Incidents such as workplace hazards, accidents and regulatory non conformance require action from responsible staff prior to close out.

Incidents are reviewed at operational monthly meetings and Asset Management may adjust maintenance practices to reduce the risk of a re-occurrence.

5.6.5.4 Reporting of Significant Incidents

The Company requires fast reporting for significant incidents involving dangerous situations or injuries to personnel that could result in a Lost Time Injury. These reports must reach the General Manager of the division, through

which the employee or contractor report, as soon as possible, but always within 24 hours.

5.6.5.5 Job Hazard Analysis

Job Hazard Analysis (JHA) is a process where hazards associated with each step of a job are identified and analysed and control measures are applied to eliminate or minimise the risk to people, equipment, the environment and processes.

There are two types of JHA utilised within the QLD pipeline systems:

Formal JHA. Where the work is of a non routine nature or of a significant scope or incorporates a number of different groups working together a formal JHA is developed. This is usually developed prior to mobilising to site to enable control measures to be included in job planning.

Day to Day JHA. This JHA is carried out on routine jobs and is performed at site with the work party in conjunction with a Permit to Work.

5.6.5.6 Permit to Work

APA Group operates a national Permit To Work (PTW) system which is administered within the Works Management System (WMS) being the Maintenance Connection application.

Essentially there are three classes of permits to cover the following work classes:

- Cold Work
- Hot Work
- Confined Space Work

The PTW workflow process requires that a valid Work Order (WO) has been raised within the WMS and assigned to a competent Permit Issuing Officer (PIO) by a superior before a PTW will be issued by the Pipeline Permit Authority (PPA) who is located in the Brisbane Control Centre.

The WMS records an Open PTW register which details whom the PTW has been granted to (PIO); the PTW form number, the WO number; the location of the works and who is on the work party itself. For historical reason, the WMS also records a Closed PTW register.

Maintenance of equipment (eg compressors, meter stations and similar) connected to the pipeline require a Plant Release (PR) to be obtained from PCC before any work may commence on these assets. The PR is generally requested 45 days before the targeted date of the work with the exception of emergency repairs.

The PTW system is a process that facilitates communication of hazards and specific job requirements between all parties associated with the work. The

PTW form also ensures relevant legislative and Company requirements are met and recorded.

All relevant personnel are trained and assessed as competent in PTW and Job Hazard Analysis (JHA). Part of the training includes identifying where relevant type of PTW is to be used. PTW also requires the PIO to record equipment isolations, tagging and atmospheric testing as may be required by the work.

Note the JHA information is also contained on the PTW form.

5.6.5.7 Change Management

APA Group regards change management as an integral part of asset and personnel safety. Where changes are required that could affect safety a formal procedure is followed and specific control documentation authorised.

Where change affects items listed in AS 2885 as requiring formal approval, the Manager Asset Management and Engineering QLD will forward the documentation to the officer detailed in the Approval Matrix for final approval. No change will be implemented without that approval.

5.6.6 Environmental Management Plan for Pipeline

APA Group has developed an Environmental Management Plan (EMP) for all pipeline systems which sets out the strategy to manage potential environmental impacts that may occur as a result of operational and maintenance activities on the pipelines.

The Environmental Management Plan (EMP) aims to assist the Company to achieve the following key environmental objectives:

- To operate and maintain the pipeline in a safe manner;
- To operate and maintain the pipeline corridor in a manner that minimises potential impacts to the environment, land use, and third parties; and
- To conduct maintenance and repair activities consistent with the Australian Pipeline Industry Association (APIA) Code of Environmental Practice-Revision 1 2005 Part B Onshore Pipelines Operations.

The EMP addresses the following issues:

- Pipeline corridor management;
- Easement Management
- Access
- Soil and Ground Stability
- Vegetation and Weed Management
- Control of Diseases
- Earthworks and Land use
- Bushfire Prevention
- Air Emissions
- Noise Emissions

- Heritage – Natural and Built Environments
- Water Management
- Management of Pipeline Facilities
- Waste Management
- Pipeline Spill Prevention
- Fuel and Chemical Storage

6. OPERATIONS AND MAINTENANCE

This chapter of the Safety and Operating Plan provides a summary of the Company's operational and maintenance plans and procedures that prescribe the operation and maintenance activities on a facility.

These operation and maintenance activities have incorporated those measures required to mitigate the threats identified in the risk assessment to acceptable levels.

6.1 OPERATIONS PLAN

Operation of a facility is designed to maintain all equipment in a fit-for-purpose state by operating within the equipment's structural integrity parameters.

6.1.1 FACILITY OPERATION

In summary, the operational objectives are to:

- Supply gas to meet customers' demands in accordance with contractual arrangements in a safe and efficient manner;
- Ensure that during normal operation, the operating pressure at any point in the facility does not exceed the MAOP or rated pressure, and that transient pressure does not exceed 110% of the MAOP or rated pressure. It should be noted that as part of the QA process all plant pipework and pressure vessels have been subject to a hydrostatic pressure test of 1 ½ times design pressure;
- Maintain major critical equipment as per the recommendations provided by the Original Equipment Manufacturer (OEM);
- Ensure that the operating temperatures comply with all design limits; and
- Monitor Gas Quality to AS 4564:2003 as required by the Petroleum and Gas (Production and Safety) Regulation 2004 and amendments and Gas Transport Agreement (GTA) specifications via SCADA. It is essential that gas quality be monitored not only for end users but also for the integrity of pipeline internal corrosion and the integrity of the major installed equipment such as valves, compressors, and meter stations.

6.1.2 OPERATING PARAMETERS

Because the operation of all facilities sometimes creates a complex and highly interactive environment, procedures for operation are in the form of guidelines and mandatory constraints called Operating Parameters. These parameters assist experienced controllers in making appropriate decisions as the demands and dynamics or the system change.

6.1.3 MONITORING

The main requirements for monitoring are that the Plant Operators carry out regular checks of the facilities to confirm that major equipment is operating within equipment parameters. The checks have been prepared from OEM guidelines.

Continuous facility condition monitoring and risk mitigation for security of supply and overpressure is achieved by the SCADA system monitoring at key points. The key parameters monitored include gas quality, gas pressure and temperature at set points, site security, facility operating parameters against manufacturer's recommendations and gas flow volumes. The SCADA alarm system identifies any monitoring point not being within normal operating limits. Further risk mitigation is also achieved by adherence to the specified operational parameters for the facility.

6.1.4 LEAKAGE SURVEYS

Due to low risk of leakage of a Pipeline, leak surveys are only carried out if there are indications that such a leakage survey is warranted. See section 6.2.2.10 for specific detail of pipeline leakage surveys. Above ground facilities are leak surveyed annually as part of routine maintenance.

6.1.5 CONTROL, SCADA AND COMMUNICATIONS SYSTEMS

All compressor stations, scraper stations, metering stations and other specific equipment are connected by the SCADA system to the Brisbane Control Centre and monitored 24 hours per day and 7 days per week by Pipeline Controllers. SCADA data from the facilities is returned to the Control Centre via dedicated landlines, Telstra Next G network and satellite links.

Pipeline Controllers continually review data from all sites to ensure each site is operating in conjunction within the specific operational parameters required by APA Group's Gas Transportation Agreements, manufacturer's recommendations and the licences.

Further risk mitigation is achieved by adherence to the specified operational parameters for the facility. It is expected that the only time these operational requirements will not be achieved is during an unplanned incident involving the loss of supply of natural gas to the facility or an incident on any portion of the facility or on major equipment installed on the facility.

Data collected from the various sensing devices at the telemetered sites is monitored and stored on disk and back-up tapes.

The satellite / telephone voice communications systems and mobile to mobile UHF radios form an integral part of the protection of the safety of staff that are travelling along or performing maintenance on the system.

Initial response to alarm conditions monitored by the SCADA system is handled by PCC and "on call" staff while major equipment failures or third party encounters are managed as per the Emergency Response Plan from the Brisbane office.

6.1.6 CORROSION PROTECTION

All pipelines have an external coating, and an impressed current or a sacrificial anode based cathodic protection (CP) system applied to mitigate corrosion.

All above ground pipework and steelwork is painted with a high quality paint system to resist corrosion. This applies to all above ground pipework at line valves and scraper stations.

The CP system is designed in accordance with AS 2832.1 to protect the pipeline. CP unit spacing vary depending on the need in an area, which is dependant upon such things as ground composition, and pipeline coating condition.

Test points are spaced strategically apart to ensure protection of the pipeline is being achieved. The Structural Integrity Plan and APA Group's maintenance procedures address mitigation activities. Drawings of each unit are updated as each site is serviced.

Separate impressed current systems or sacrificial anodes protect buried metallic structures in scraper stations and other facilities. Insulation Joints (IJ) are used to electrically isolate the buried pipeline from above ground facilities. This ensures that the impressed electrical current and galvanic systems used for CP of the buried pipeline does not leak back into the Main Earth Grids (MEG) located at above ground facilities reducing the effectiveness of the CP system.

Lightning protection is carried out via surge protectors connected between the pipeline, above ground facilities and the MEG at the facilities. Surge protectors are placed across insulation joints in order to facilitate the dispersion of any lightning strike energy through the MEG.

The location of the ground beds, CP Units and CP Unit test-points, potential measurements and current measurement test points are all shown on the GIS.

6.1.7 GAS COMPOSITION LIMITS

The following is a copy of a typical gas composition limits specified in a GTA, and is provided for reference. In all cases, refer to individual GTAs for more details or clarification.

A typical quality of Gas as referred to in a GTA requires that:

- It must not contain more than 0.2% by volume of oxygen;
- It must not contain more than 50 milligrams per Cubic Metre of total sulphur;
- It must not contain more than 7 milligrams per Cubic Metre of hydrogen sulphide;

- It must not contain more than 15 milligrams per Cubic Metre of mercaptans;
- The hydrocarbon dew point of the Gas will be a maximum of 10 degrees Celsius between the pressures of 1000 kPag and 10,000 kPag;
- It must not contain more than 65 milligrams per Cubic Metre of water vapour;
- It must not contain more than 3% by volume of carbon dioxide;
- It must not contain more than 6% by volume of inert gases;
- If the Gas contains more than 4.0 per cent by volume of inerts, then the Gas shall have a Gross Heating Value of not less than 37.9 MJ per Cubic Metre of Gas and not more than 42.3 MJ per Cubic Metre of Gas on a dry basis and if the Gas contains less than or equal to 4.0 per cent by volume of inerts, then the Gas shall have Gross Heating Value of not less than 35 MJ per Cubic Metre of Gas and not more than 43 MJ per Cubic Metre of Gas;
- The Wobbe Index of the Gas shall be not less than 47 and not more than 52;
- The Gas shall be reasonably free from dust, gums, gum forming constituents or other liquid or solid matter which might cause injury to, or interference with, proper operation of pipeline regulators, meters or other appliances through which it flows or which may interfere with the commercial utilisation of the Gas by the Shipper; and
- It must be at a temperature which is not less than 0°C and not higher than the greater of:
  - 50°C; or
  - the ambient temperature plus 12°C but in any event not to exceed 60°C.

6.1.8 EASEMENT MANAGEMENT AND LAND MANAGEMENT SYSTEM

6.1.8.1 Geographic Information System (GIS)

APA Group Queensland has a GIS which is a valuable tool that supports pipeline asset management. The GIS links data by using a common location of information, therefore creating a shared database. This allows users to benefit from data collected during the life of the asset, combining layers of current and historical information about the facility in a format that is easy to understand and present.

The GIS is a browser-based mapping and data management system that enables users to select the required layers to provide information for specific queries via a standard web browser.

The GIS contains spatial data for a corridor along the entire length of a pipeline. Property details for the corridor are obtained on a quarterly basis direct from the Lands Titles Office. This information, together with surveyed positioning of a pipeline and its associated facilities including easements, road easements, property parcels, metering & sales stations, main line valves, anode beds, and other pertinent information provide the foundation of the GIS.

6.1.8.2 Land Management System

The Land Management System has been incorporated as a part of the GIS linked directly to individual properties and road reserves dissected by each pipeline. Property identifiers such as Lot and Plan number support the link where a sub-set of information is housed within folders. Landholder information such as easements documents, copies of title searching, survey plans, file notes, photos and relevant correspondence are all readily accessible.

The ability to access information immediately can save valuable resources especially in the case of emergency, pipeline crossings by third parties, landowner inquiries or dealings with other utility providers and local governments.

6.1.8.3 Landowners Contact

APA Group maintains a comprehensive landowner liaison program that includes:

- Visiting the landowners from time to time on an as need basis (otherwise all reasonable efforts are made to visit at least once a year); and
- Maintaining a landowner database along a pipeline easement.

Landowners are encouraged to phone APA Group if they wish to ask any questions with regard what to do and what not to do on the pipeline easement.

Local Councils and Contractors to major projects are also contacted at least once a year and are encouraged to contact APA Group if any developments are occurring in the vicinity of the pipeline easement.

6.1.8.4 Gas Awareness

APA Group runs, approximately every two years or as required, Gas Awareness presentations for local emergency services, Housing Developers, Earthmoving Contractors, Councils, and Electricity Authorities located near any facility. Local councils and landowners also attend the presentation. The courses are to familiarise the attending personnel with the location of an asset and the possible effects of an event occurring on or near the facility and what precautions should be taken.

6.1.9 ASSET PROTECTION

APA Group has implemented a number of systems to ensure that threats to pipeline integrity identified in the risk assessment are adequately addressed to reduce the level of risk to ALARP. The effectiveness of the physical and procedural measures implemented to mitigate identified risks is reviewed.

6.1.9.1 Third Party Encroachment

APA Group offers an engineering assessment service to all parties where planned development may encroach upon the ROW. This service assesses the potential impact on the asset and approves methods to ensure the asset's integrity and functionality is maintained.

APA Group also provides an on-site supervisory service for third parties intending excavating within prescribes distances to the pipeline.

6.1.9.2 Dial Before You Dig

APA Group has registered all assets with a One-Call provider "Dial Before You Dig". This service requires all parties working on or near a pipeline to make contact with the "Dial Before You Dig" service. Advice is then returned to the parties if this pipeline is in the vicinity of where they will be working, the service arranges contact for pipeline location and supervision as required.

6.1.9.3 Intelligent Pigging

Intelligent pigging is one of the many integrity management tools used and, where available, intelligent pigging results are considered when assessing pipeline integrity.

The need for intelligent pigging is determined after careful evaluation of the following information:

- Risk assessment result;
- Past reliability of the pipeline;
- The past history of each section of the pipeline;
- The current knowledge of the condition of each pipeline section;
- Statutory requirement;
- The future surveys will be based on the Pipeline Integrity Plan and statutory requirements for strategic pipelines named in schedule 5 of the Petroleum and Gas (Production and Safety) Regulation 2004 and amendments;
- Strategic pipelines must be inspected within 7 years after the pipeline first becomes operational; and at least once in every 10 year period after the end of the first 7 year period; and
- Refer s80 of the Petroleum and Gas (Production and Safety) Regulation 2004 and amendments.

6.2 MAINTENANCE PLAN

Maintenance on a facility is designed to maintain the long-term integrity and functionality of the asset and the operating capability of the system. Assets that are at greater risk of a certain type of failure have a higher frequency of maintenance designed to prevent that type of failure (e.g. areas subject to third party encroachment may have a higher frequency of patrols).

Referencing risk assessments, HAZOPs, manufacturers' information, historical information and prudent industry practices determines the maintenance frequencies and scopes defined in this maintenance plan.

The planned maintenance activities that are periodic are placed into the computerised maintenance planning and scheduling program, Works Management System (WMS). WMS is a web based system that was adapted by APA Group and is accessible via APA Group Local Area Network (LAN) at all maintenance locations. WMS issues Work Orders and records the status or completion of work. These Work Orders may be automatically generated (e.g. as per the items' preventive maintenance schedule) or manually created (e.g. for corrective work).

Planned Maintenance includes any maintenance activities identified as part of the Risk Assessment and takes into account manufacturers recommendations and the use and age of the plant. It also includes inspection and patrol work required by the HSE Management System and the Risk Assessment.

The local Leading Hand consolidates forecast scheduled work with known corrective work and develops a work plan based on priorities, resources and maintenance windows available. The Leading Hand then allocates the work plan to field crews for action and completion.

6.2.1 CONDITION MONITORING

In addition to planned maintenance the major rotating equipment assets at a facility shall be subject to condition monitoring through non destructive techniques, which may include:

- Vibration analysis;
- Oil sample analysis;
- Ultrasonic thickness (UT) testing; and
- Run Hours

Vibration and oil analysis are used to assess the condition of the compressor and gas engine equipment in the compressor packages while pressure vessel metal loss is tracked using UT testing. The results of the condition monitoring indicate equipment problems that may affect operation and require scheduling of maintenance outside of the planned maintenance interval.

6.2.2 PREVENTATIVE MAINTENANCE

A summary list of current general preventative maintenance procedures is attached in Table below, covering the following main areas:

- Mechanical and electrical maintenance;

- Corrosion control; and
- Integrity maintenance.

As an integral component of ensuring work is carried out safely to specified requirements documented in the operation and maintenance procedures, the PTW system is utilised for all facility maintenance activities.

Activity	Description	Frequency
A07 Inspect Fire Extinguisher	Inspection and tagging of fire extinguishers to verify serviceability.	6 Monthly
A08 Inspect First Aid Kit	Inspections of First Aid Kits to ensure contents are useable and appropriate.	6 Monthly
A10 CP Multimeter Check	Calibration of the Digital Multimeters used for testing Cathodic Protection.	1 Year (Field) or 3 Year (Master)
A11 Electrical Appliance Testing	Inspection and tagging of all 240V electrical equipment.	6 Monthly (Field) or Annually (Store) or 5 Yearly (Office)
B01 Pipeline Surveillance Aerial	Aerial patrols to detect encroachment, 3rd party activity, erosion and pipeline maintenance that may be required. The utilisation of aircraft for this role enables greater distances and accessibility on these remote pipelines.	2 Monthly for CGP and Peat Lateral
B02 Pipeline Patrol Road	Vehicle patrols to detect encroachment, 3rd party activity, erosion and pipeline maintenance that may be required. Also includes an operational check of the CP Units.	From Daily to 2 Weekly & 2 Monthly
B03 Planned Inspections	Inspections conducted by leaders, or Engineering or HSE to ensure a safe working environment and to identify any environmental or integrity issues such as subsidence, erosion, gas leaks or site run-off. Includes inspection of Emergency Response Pipe.	6 Monthly
B16 Site Pest Control Service	Pest control services are used to reduce spider and insect numbers.	6 Monthly to Annually
B69 Gas Leak Survey	Gas leak survey of all facilities and high risk buried pipeline sections on the pipeline.	Annual
B70 CP Annual Audit	Complete survey of the cathodic protection systems on the pipeline.	Annually
B71 CP Test Point Patrols (CP Reads)	Checks of the pipeline and station piping potentials at nominated points to ensure the effectiveness of the cathodic protection systems, and to make any adjustments as necessary.	Monthly
B73 CP T/R Circuit Checks	Reading of T/R (Transformer Rectifier) units to ensure correct operation.	Monthly
B80 Watering in of Buried CP Systems	Watering in of the buried CP systems and general checks to maintain effectiveness.	6 Monthly (nominal)
C03 Compressor Station Inspection	Routine inspections to ensure the main systems are functioning correctly. If the station is not on line the systems will be inspected for readiness.	Weekly
C04 Compressor Station Electrical Inspection	Electrical checks including transmitters, shutdowns, filters, oil & air systems, fuel gas, switches, timers, surge control, control systems, motors & pumps and compressor actuator	Annually

Activity	Description	Frequency
	solenoids.	
C07 Compressor Vibration Survey	Vibration survey of the compressors to monitor their condition.	Monthly (only checked when running)
C08 Aftercooler Cleaning and Inspection	Aftercooler cleaning and inspection to maintain efficiency of units and to detect any defects.	Annually
C20 Compressor Station Service	Electrical checks to verify transmitters, check shutdowns and filters. Mechanical check of filters, air & oil systems, bearings, turbine alignment, control valves, gauges and heat exchangers.	4,000 hr (Mechanical) & 6 months (Electrical)
C29 Compressor Test Run	Test run of the compressor to detect hidden failures – performed if the machine has not been operated in the past month.	Monthly if required
H29 CP Internal / External: Corrosion Probe Inspection	Routine measurement of probes to check corrosion rates.	3 Monthly
N01- Valve Service Minor	Operational testing and inspection of valves. These services will be carried out on an alternate 2 yearly basis with the N02 Major Valve service. Plug valves will be serviced on a 6 monthly basis.	Yearly (Plug Valve) or 2 Yearly (Others)
N02 Valve Service Major	Operational check and service of valves and gearboxes to ensure effective sealing and to maintain service life. These services will be carried out on an alternate 2 yearly basis with the N01 Minor Valve service. Plug valves will be serviced on a 6 monthly basis.	Yearly (Plug Valve) or 2 Yearly (Others)
N10 Scraper Minor Service	General cleaning and inspection of pigging equipment. Alternates with N11 Scraper Major Service	2 Yearly
N11 Scraper Major Service	Maintenance to ensure all equipment at the station is functional when a pigging program occurs. Alternates with N10 Scraper Minor Service	2 Yearly
N20 MS Control System Check	Routine maintenance of the station control systems to ensure correct operation.	Weekly or 2 Weekly
N21 Meter / Regulator Station Instrument & Electrical Check	Electrical checks are carried out on station safety systems and control valves. The non-fiscal instrumentation is also calibrated.	Annually
S14 Auxiliary Battery Power Supply Service	Inspection and testing of batteries to check performance.	3 Monthly (Compressor Stations / CP) or 6 Monthly (Meter Stations)
S16 Filter Inspection	Inspection and where necessary, replacement /cleaning of filter elements to maintain performance.	6 Monthly (Filters) or 5 Yearly (Strainers)
S19 Pressure Vessel Inspection - Internal	Internal inspection of station pressure vessels to check for all types of defects	4 Yearly
S20 Pressure Vessel	External inspection of station pressure vessels to check for defects e.g. corrosion, cracking, leaks,	2 Yearly

Activity	Description	Frequency
Inspection - External	etc.	
S30 Vehicle Inspections	In addition to pre-start checks, vehicle presentation, operation of lights & wipers, tools & equipment, condition of tyres, fluid levels, etc	3 Monthly
S44 Painting Above Ground Pipes & Structures	Cleaning and painting of above ground pipe work to protect from weather.	5 Yearly
S47 Inspect Orifice Plate	Orifice plate inspection to ensure compliance to AGA3.	Monthly
S51 Planned Meter Change	Removal of an existing meter and replacement with a certified meter. This includes updating the flow computer with the new meter error curve details and a meter validation following exchange. This maintenance procedure is performed on all positive displacement and turbine meters.	3 Yearly
S53 Gas Chromatograph Inspection / Calibration	Validation to ensure the GC measures the correct composition of the gas and from these results computes the Real Relative Density, (SG), Higher Heating Value, Gas Density and Wobbe Index.	Monthly Inspection / 2 Yearly Calibration
S54 Routine Gas Quality Testing	GTA testing of the natural gas flowing into the pipeline to ensure that it is within specification.	6 Monthly
S60 RTU/FC Backup Battery Change	Ensure security of programs by changing the backup battery in all Remote Telemetry Units, Flow Computers and other instruments using backup batteries.	3 Yearly
S61 Meter Tube Metrology Audit	A Meter Tube Metrology Audit by an approved testing company in accordance with AGA3. If non-conformances are found, repairs to the meter tubes are performed.	3 Yearly on RBP and 2 Yearly on CGP
S62 Meter Station Validation	Checking of all meter system equipment according to the measurement schedule in the Gas Transportation Agreements.	Monthly to Annually
S64 Moisture Analyser Calibration	Calibration of the Moisture Analyser as per the manufacturer's specifications or instructions.	Monthly or 6 Monthly
S85 Relief Valve Servicing	Removal and overhaul if found defective during the S86 Relief Valve Inspection.	As required by S86
S86 Relief Valve Inspection	Inspection and function testing to verify correct operation	All 6 Monthly except 4 Yearly for Yuleba and Condamine Mainline Valves

6.2.2.1 Compression Facilities

Preventative maintenance & inspection activities for all Compression Sites include:

- General site maintenance and inspection;
- Scheduled service of Engines as per Manufacturer's requirements;
- Scheduled service of Compressors as per Manufacturer's requirements;

- Lubricating oil monitoring;
- Vibration monitoring;
- Gas cooler maintenance and inspection;
- Shutdown valve service, overhaul and functional tests;
- Inspection and replacement of filters;
- Back-up Generator set service;
- Pressure vessel visual inspection
- Air Compressor Service;
- Application of condition monitoring techniques to make an assessment of equipment status/condition;
- Check system operation and calibrate fire, gas, and unit ESD;
- Block and recycle valve service, overhaul and functional tests;
- Station mechanical maintenance, inspection and calibration;
- Station electrical maintenance, inspection and calibration;
- Piping inspection;
- Regulator and relief valve maintenance;
- Site specific CP survey of buried pipework; and
- Meters for gas used by compressors are maintained to the same standard as at custody transfer stations.

The scope of work to be completed is to be in compliance with OEM requirements.

6.2.2.2 Meter Station

The following preventative maintenance and inspection is conducted for meter stations on this Pipeline:

- General site inspection and maintenance;
- Station mechanical maintenance, inspection and calibration;
- Station electrical maintenance, inspection and calibration;
- Station scrubber/filter maintenance & inspection;
- Battery bank service;
- Block valve service, overhaul and functional tests;
- Pressure vessel inspection;
- Fire extinguisher check, service and calibration;
- Station emergency shutdown check, service and inspection;
- Above ground piping and paintwork inspection; and
- Site specific CP survey for buried pipework;
- General station inspection and maintenance;
- Control system check;
- Meter validation;
- Moisture analyser calibration;

- Witness test of meters;
- Piping inspection;
- Calibration of reliefs; and
- Inspection and replacement of filters.

6.2.2.3 Pressure Reduction Station

The following preventative maintenance and inspection is conducted for pressure reduction stations on this Pipeline:

- General site maintenance & inspection;
- Station mechanical maintenance, inspection and calibration;
- Station electrical maintenance, inspection and calibration;
- Station scrubber/filter maintenance & inspection;
- Battery bank service;
- Block valve service, overhaul and functional tests;
- Pressure vessel inspection;
- Fire extinguisher check, service and calibration;
- Station emergency shutdown check, service and inspection;
- Above ground piping and paintwork inspection; and
- Site specific CP survey for buried pipework;
- General station inspection and maintenance;
- Control system check;
- Piping inspection; and
- Calibration of reliefs.

6.2.2.4 Auxiliary Generator

Preventative inspection and maintenance activities for auxiliary generator include:

- Mechanical service and tuning;
- Electrical service and tuning;
- Major service on engine as per Manufacturer's requirements; and
- Check system operation with local ESD.

6.2.2.5 Scraper Stations

The following preventative maintenance and inspection is conducted for scraper stations on this Pipeline:

- General station inspection;

- Block valve inspection;
- Launcher and receiver inspection both internal and external;
- Above ground piping inspection; and
- Site specific CP survey for buried pipework.

6.2.2.6 Main Line Valve Sites

A preventative inspection and maintenance activity for line valve sites includes:

- General station inspection;
- Block valve service; and
- Electrical inspections and calibrations.

6.2.2.7 Cathodic Protection System

Preventative inspection and maintenance activities for cathodic protection of the pipeline include:

- CP survey;
- CP protection circuit check;
- CP coupon check;
- solar panel check (for some sites);
- ground bed check; and
- CP telemetry check and calibration (where installed).

6.2.2.8 Pipeline Surveillance Patrols

The main requirements for pipeline surveillance (as set out in the Surveillance Procedure) are that ground (vehicle/foot) and aerial patrols will examine for, and report on, the following:

- Variations of surface conditions such as erosion or earth movement;
- Indications of leaks such as dead vegetation or evidence of liquid;
- Construction activity, or evidence of construction activity, on or near the ROW;
- Impediments to access to the route, VS, CS, CP sites and communication installations;
- Deteriorating condition, visibility, adequacy and correctness of route markers and signs installed in accordance with the relevant requirements of AS 2885.3;
- Security of sites and evidence of unauthorised entry;
- Any specific action identified in the Risk Assessment; and
- Any other factors affecting safety of the pipeline.

6.2.2.9 Ground Patrols

Ground surveys are carried out as part of normal work schedules. Specific inspections are scheduled as a result of landowners, council or third party contacts, air surveillance reports and/or work crew report.

6.2.2.10 Leakage Surveys

Due to low risk of leakage of a Pipeline, leak surveys are only carried out if there are indications that such a leakage survey is warranted. Above ground facilities are surveyed annually as part of routine maintenance.

The RBP from Wallambilla to Bellbird Park and Ellen Grove Gate Stations is surveyed once every 5 years while the metropolitan section from Ellen Grove and Bellbird Park to Gibson Island Meter Station and the Lytton Meter Station is surveyed annually.

6.3 CORRECTIVE MAINTENANCE

The reporting of faults and items requiring attention usually occurs by two methods, either by the SCADA, or when scheduled maintenance or inspection has occurred and a problem is noticed. If the fault is noticed during scheduled preventative maintenance it may be fixed at the time. Otherwise the problem will be reported for a planned repair. The response time for action relating to problems on the facility will be dependent upon the problem itself.

All corrective maintenance is tracked via work orders in the WMS and can be raised as a follow on work order from a PM or as a stand alone corrective maintenance work order.

Significant faults and items requiring attention are placed into the IMS database for action. They are prioritised by risk and assigned for action by the Operations Manager through the WMS.

6.4 NON-ROUTINE WORK ACTIVITY

For any non-routine work activity, procedures are developed as required e.g. intelligent pigging of the pipeline. Many of these procedures are based on existing procedures. All work is issued to the field via the WMS and a work order is opened and completed in the WMS to aid in traceability.

6.5 TRAINING, AWARENESS AND COMPETENCY SKILLS

6.5.1 TRAINING STRATEGY – OVERVIEW

APA Group has developed and maintains a training program so staff and visitors are appropriately trained. As part of the development of the training strategy and program, APA Group undertakes a training needs analysis to determine what training is appropriate and applicable for all levels of personnel.

APA Group has developed procedures so that:

- All training takes account of differing levels of ability and literacy;
- All training is carried out by persons with appropriate skills, experience and qualifications;
- Facilities and resources are suitable to enable effective training to take place;
- Training undertaken is documented;
- Electronic and/or hardcopy records of all training are kept; and
- Training is reviewed regularly to ensure its relevance, effectiveness, and compliance to statutory requirements and training standards.

6.5.2 MANAGEMENT TRAINING

Members of APA Group's executive and senior management participate in appropriate training or briefings, which explain legal obligations and sound HSE management principles and practices. This includes training in the IMS procedures.

Managers and supervisors receive training (and re-fresher courses) appropriate to their role and responsibilities to enable them to perform their tasks without risks to health and safety.

6.5.3 EMPLOYEE TRAINING

APA Group is committed to providing appropriate training to all employees including new and transferred personnel to enable them to perform their tasks without risks to health and safety. Training is provided to affected personnel when there are changes to plant or processes in the workplace and refresher training is provided to all personnel as appropriate.

All operating and maintenance personnel are required to be suitably qualified, trained and experienced to accepted natural gas industry competency.

6.5.4 INDUCTION TRAINING

APA Group provides appropriate induction for all personnel, contractors and visitors. The induction program incorporates instruction in APA Group's HSE

policy and procedures in order to ensure their health and safety and the health and safety of all personnel.

6.5.5 COMPETENCY SKILLS

APA Group maintains an employee competency database[1] in which the skills, training records, plans and competencies of each employee are recorded. These records are in electronic and hard copy form and are updated regularly. Regular reports are generated for the Operations Managers indicating the training status of field staff.

APA Group field personnel who are PIO's are registered with PIO currency status. This status is recorded in the PCC database and WMS database which is used to control permits being issued by referencing expiry dates and the types of permits allowed to be issued by individuals.

Staff training provided by APA Group is aligned with national competency standards, UEG20106, 30106 and 40206 as well as PMA20202, 30202 and 40102 and a Registered Training Organisation (RTO) has been engaged to deliver parts of the programs.

As part of its contractor management process, for major contractors working at the facility, APA Group has set up a database, which similarly lists each contractor's licence and insurance details. Minor contractors, most of which work infrequently with APA Group, are directly supervised and controlled under the JHA and PTW systems.

6.6 MANAGEMENT REVIEW AND CONTINUAL IMPROVEMENT

APA Group recognises that management review is a cornerstone of the management system, providing an opportunity for senior management to regularly review the operation of the system and its continuing suitability and to make adjustments to build upon and improve its effectiveness.

APA Group has developed and implemented a whole of business compliance framework, which tracks all legislative and contractual requirements, and how those requirements are complied with, under Queensland procedures and processes. It also identifies areas for improvement, and areas in which changes have occurred with any of those requirements. Actions derived from this process are added to the IMS database.

APA Group is therefore committed to regularly reviewing and continually improving performance. The scope of the review is comprehensive. The Transmission Operations Queensland Management Team meets, where possible monthly, to review the following:

IMS Database activity, including all requests, complaints and internal problems, suggested improvements, hazards, incidents, near misses and document changes;

- Actions raised from the previous meetings;

[1] Training records are maintained securely on servers in Queensland administered by APA Group.

- Review of internal audits undertaken in the previous month;
- Outstanding actions from the previous audits;
- Operation's KPIs; and
- HSE Statistics.

The Transmission Operations Queensland Management Team meets annually and reviews:

- Scheduling of audits;
- The reports and results of internal audits;
- Relevant Health and Safety statistics, trends and reports;
- Significant incidents, accidents and issues within the review period; and
- Concerns of relevant interested parties.

Middle management reviews are conducted at monthly team meetings and include reviewing:

- Non-conformance reports;
- Hazard alerts;
- Completed permits and JHA's;
- On-going validation of the SAOP;
- Safety performance and HSE issues;
- The results of internal or external audits; and
- Planned inspections.

7. EMERGENCY RESPONSE PLAN

The Emergency Response Plan for the APA Group is designed to provide an efficient, safe, effective and co-ordinated operational plan to deal with an emergency and to maintain and restore normal business operations as quickly and safely as possible. It is the responsibility of each of the Operations Manager to ensure that their workforce is conversant with the emergency response requirements and to ensure that their team is competent in carrying out emergency procedures and using emergency equipment. All incidents and situations with the potential to develop into an emergency shall be reported to Pipeline Control Centre in the first instance.

The current version of the Emergency Response Plan is located in APA Group's IMS database and is accessible by the majority of staff. Uncontrolled hard copies of this plan can be printed by key personnel involved in emergency management and one copy is kept in the Emergency Room. The format of the Emergency Plan allows for key positions to have access to specialised roles. These are grouped under the "**EMERGENCY**" button on the APA Group Queensland intranet web site.

7.1 PURPOSE OF THE EMERGENCY RESPONSE PLAN

The purpose of the Emergency Response Plan:

- Is designed to provide a framework for the management of emergencies for transmission assets in Queensland;
- Defines the emergency organisation to be established for different levels of emergency and defines the roles, responsibilities and participants in the emergency response organisation;
- Provides guidelines for response to various types of emergency situations which may arise;
- Contains lists of the resources and equipment to be used in the emergency response and initial repairs; and
- Provides a basis for training requirements for emergency response preparedness.

The plan contains the following information:

- Emergency Response Plan;
- Emergency Contacts. – All contact phone numbers;
- Emergency Communications;
- Emergency - Key Responsibilities;
- Safety in Emergencies;
- Site First Response Emergency Procedures; and

- Specific Forms.

7.2 SCOPE OF THE EMERGENCY RESPONSE PLAN

The Emergency Response Plan for the APA Group is maintained to provide an efficient, safe, effective co-ordinated operational plan to deal with the emergency and to maintain and restore normal operations as quickly and safely as possible. It does not attempt to distinguish between the possible causes of an emergency or resulting consequences such as impact events, fire, rupture, leak/spill and natural events, but takes the same approach to manage them as most of the consequences could occur at the same time.

7.3 DEFINITION AND CLASSIFICATIONS OF EMERGENCIES

"An emergency", as defined within APA Group's Emergency Response Plan, "is any incident or occurrence, not forming part of the normal operations and maintenance of the pipeline and its facilities, which causes or has the potential to cause a reduction or cessation of gas supply to one or more delivery points and/or has potential to cause significant harm to persons, property, or the environment."

There are several broad categories of emergencies that can occur and the response procedures will vary depending on the circumstances.

7.4 EMERGENCY RESPONSE ACTIONS

7.4.1 INITIAL REPORT OF AN UNCONFIRMED INCIDENT

The initial report or detection of an unconfirmed incident may at any time be reported by the public, another utility operator, detected on SCADA, and/or during site inspection or normal operations. The initial report of a pipeline event may include reports of a strike on the pipeline by third parties, reports of a leak, a customer complaint of loss of delivery pressure, alarm of equipment status, over/under pressure or other abnormal events. Other reports of incidents may include vehicle accidents, missing personnel or serious personal injury. All reports and events/incidents are to be directed to the Pipeline Control Centre.

The Duty Pipeline Controller calls the "on call" field operator to go to the site of the reported incident (except in the case where a company employee reports the incident from site) for confirmation of the incident. This person then becomes the Temporary Site Controller.

The Duty Pipeline Controller then informs the Operations Manager of a report of an unconfirmed incident. The Duty Pipeline Controller starts the Pipeline Control Centre's Permit Travel Event Log (PTE) and the emergency events logger located on the Qld Web. The Duty Pipeline Controller shall then assess the situation with report details from the Temporary Site Controller to determine if this is a pipeline incident and monitor any changing conditions on the pipeline that may affect transportation services. I.e. gas supply to customers.

The Temporary Site Controller secures the site if it is safe to do so, commences the Events Log and completes the form Initial Emergency Assessment. Refer to Site Action form for details of what to do if first to site. The Temporary Site Controller reports back to the Duty Pipeline Controller as soon as possible with all relevant details about the site and the nature of the reported incident.

7.4.2 CONFIRMATION OF REPORT

If possible the report of the potential emergency should be confirmed by a secondary source. A suitably qualified representative may be required to make an initial on site assessment of the reported incident. Based on the information provided by the representative and relevant system data, the Pipeline Controller will make an assessment based on the following:

- The nature of the response required;
- How best to implement the response;
- The resources required for the response; and
- How long the response is likely to take.

7.4.3 DECLARATION

An Emergency can be declared at any time by the Manager Transmission Operations Queensland or the delegated representative in response to an incident or event that is consistent with the Emergency Response Plan.

The declaration of an emergency is to be notified immediately to the APA Group Operations' executives and/or the Managing Director. In the event of a major incident the Managing Director (MD) or Group Manager Operations is responsible for invoking the Crisis Management Plan. As a higher level of response is called for, the Managing Director or the Group Manager Operations is to deal directly with the major stakeholders, as well as the media, extended community and government interests.

7.5 EMERGENCY RESPONSE OPERATIONS GROUP

The Declaration of an Emergency requires:

The appointment of the Emergency Manager and the formation of an Emergency Response Team which may consist of or all of the following:

- Emergency Manager;

- Communications Officer;
- Site Controller;
- Site Communications Officer;
- Resource Officer;
- Repair Manager;
- Commercial Manager; and
- Operations Manager, Control Centre & Gas Contracts.

Emergency Declaration Communication

The appointment of this team is then responsible for:

- Business notification;
- Customer notification;
- Emergency Services notification;
- Community notification; and
- Regulatory notification.

7.5.1 ROLES AND RESPONSIBILITIES OF KEY PERSONNEL

Once an emergency has been declared the Emergency Manager allocates staff to fill the required roles. Emergency roles are to have backup personnel designated within 4 hours of the emergency being declared.

The following key roles and responsibilities have been identified as being necessary to effectively manage an emergency.

Emergency Manager

The Emergency Manager is the person designated as having prime responsibility for the coordination of the emergency response. Also has primary communications role between company executives and with the media on a state basis.

Emergency Management Group

The Emergency Management Group is the group of people in APA Group who have a defined role within an emergency situation and have the organizational accountabilities for managing an emergency response.

Communications Officer

The Communications Officer will be the conduit and recorder of all communication between the Emergency Management Team and the Site Controller. Regular communication updates from the Emergency Controller will be required to be communicated to these stakeholders. This position is responsible for all communication of the emergency to all relevant stakeholders including Emergency Services, land owners, public enquiries and a secondary communications role with the media.

Commercial Manager

The Commercial Manager is responsible for high level liaison and formal communications with customers and suppliers. This person makes the commercial and contractual decisions e.g. Force majeure.

Site Controller

The Site Controller is the person in charge at the site of an emergency. This person has authority to control all company activities and staff on site and liaise with emergency services. This person is accountable directly to the Emergency Controller.

Emergency Pipeline Controller (On duty shift controller)

The Emergency Pipeline Controller may be the person responsible for initiating the first steps of a potential emergency response and recording actions and communications regarding the incident. They will need to continue to run the normal day to day operations and contact the normal Shippers, Customers and Emergency Services. They will also have the responsibility to hand over control of the incident to the Emergency Manager. They will also keep updated any Qld APA Group staff not directly involved with the emergency.

Site Communications Officer

The Site Communications Officer is the person assisting the Site Controller at the emergency scene during an emergency. This position is responsible for relaying communications to and from the Site Controller and Emergency Manager and for recording communications and actions taken. This position will also keep contact with block valve and blow down crews and direct such activity when asked to do so by the Site Controller.

Pipeline Technicians

Pipeline Technicians are responsible for effecting the repair at the site and to man selected sites as required. When on site they will be directed by the Site Controller at all times. They will need to keep the Site Communications Officer informed of their movements (other than on site) at all times.

Repair Manager (Engineering Team)

The Repair Manager is responsible for all engineering procedures and activities to effect a safe repair. The role is to advise the Emergency Manager and effect approved repairs on site as directed.

Resource Officer

The Resource Officer is responsible for managing all logistical arrangements. This position will lead a team of people who will be able to fully resource the emergency response as directed by the Emergency Manager. This will include arranging all logistics, relief staffing and all resources required to sustain a lengthy emergency repair program.

Media

Media statements involving APA Group staff will only be made by approved persons within APA Group. Any media statements about APA Group assets will be made by APA Group.

Competencies required to fill the above positions shall be stated in Position Descriptions and individual training plans.

The Emergency Response Plan contains checklists and manifests for all emergency roles mentioned above to assist them in their actions.

7.6 EMERGENCY RESPONSE INITIAL SITE ACTIVITIES

The Queensland Police Service is responsible for any evacuation requirements. If the Site Controller arrives before the Civil Authorities the Site Controller can initiate an evacuation.

For initial site preparation, the Site Controller shall direct personnel to:

- Erect safety barriers and signs;
- Set up a site communications base;
- Assemble and prepare equipment;
- Set up trucks, trailers and mobile equipment in suitable positions; and
- Set up lighting plants.

7.7 EMERGENCY RESPONSE PUBLIC RELATIONS / AUTHORITIES AND PUBLIC UTILITIES

The more severe types of emergencies, in particular those affecting property or personnel may cause government departments, the media and the public in general to be on site all seemingly after different information. Although each situation will be different the following guidelines are applicable to the emergency policy.

7.7.1 GOVERNMENT – DEPARTMENT OF MINES AND ENERGY (DME)

- DME – The Chief Inspector, Petroleum and Gas Inspectorate, DME shall be informed immediately in the event of any emergency causing death or severe disablement to personnel, major property damage or major damage to the gas pipeline and its operational facilities.
- DOE - shall be informed immediately in the event of any emergency causing major damage to the gas pipeline and its operational facilities.
- Offsite DME and other government departments will be contacted through the Manager Transmission Operations Queensland and onsite should be initially directed to the Site Controller.

7.7.2 NOTIFICATION OF OTHER PARTIES IN AN EMERGENCY

Police, Fire, Ambulance shall be notified immediately by the Duty Pipeline Controller. In the event of a high level emergency, the Police may assume total control for the emergency area delegating responsibilities where appropriate.

7.7.3 NOTIFICATION OF SHIPPERS

The Pipeline Control Centre will advise and keep customers updated on the emergency progress through the Commercial Group.

7.8 EMERGENCY RESPONSE OFFICIAL DECLARATION OF EMERGENCY OVER

The Emergency Manager will declare the incident over when normal operation is resumed or the incident terminated when all is under control and a risk assessment has been carried out to achieve a risk level As Low As Reasonably Practical (ALARP). It could be months before normal operations are resumed after e.g. a plant explosion.

A note to ensure that all affected staff is advised of Emergency Over shall be issued by the Emergency Manager.

7.9 EMERGENCY RESPONSE INITIAL DEBRIEF

A debriefing of all personnel involved in the incident will be carried out as soon as practical after the cessation of the incident and will be used to prepare a report on the incident.

7.9.1 INVESTIGATION

Various forms of investigation may follow a declared incident. At a minimum an internal report must be prepared.

7.9.2 INTERNAL INCIDENT REPORT

APA Group Technical Compliance Officer shall upon closure of an incident review the Petroleum and Gas Act and Regulations, other appropriate legislation and give guidance to the company of the company's obligations under the various pieces of legislation.

Immediately after the incident is over, the Manager Transmission Operations Queensland will arrange for an investigation and written report. This report will be completed within 30 days. The report will include a detailed review of the sequence of events, communications and actions taken immediately prior to, during and after the incident. Where available, computer records and logs will be examined carefully and retained. In most cases, photographs taken immediately during and after the incident will be of value to the investigators. The report will include a review of the Emergency Response Manual and any recommended changes. If required, the report will be made available to relevant government departments.

7.9.3 INTERNAL INVESTIGATION

Depending on the internal incident report and if it is deemed necessary a committee may be appointed to carry out a detailed investigation as to the cause of the incident. The terms of reference for any such investigation will be at the discretion of the Management Team and depend on the type of incident.

7.10 EMERGENCY RESPONSE EXTERNAL INVESTIGATION

Even though all incidents will be investigated internally, some incidents, dependant on the severity of the incident, may also be investigated by external authorities.

7.10.1 CORONIAL INQUIRY

A Coronial inquiry will be held in the case of any fatality and may be held if fire is involved in the incident. In these cases, preservation of evidence is extremely important. The Police will manage all aspects of a Coronial inquiry. The Site Controller must ensure no interference with the scene or with evidence that may be used in the inquiry and no unnecessary cleaning up, repairs or movement of bodies (apart from that necessary to control the incident and to reinstate operation) without approval of the Senior Police Officer on site.

7.10.2 OTHER GOVERNMENT DEPARTMENTS

Other relevant government authorities may decide to investigate an incident. It is essential that these visitors are escorted to and around the site of the incident but only when safe conditions exist or hazards have been identified and noted.

7.10.3 OTHER EXTERNAL INVESTIGATION

APA Group may decide to have an independent investigation of an incident. It is essential that the independent investigators are escorted to and around the site of the incident but only when safe conditions exist or hazards have been identified and noted.

7.11 EMERGENCY RESPONSE TRAINING PREPAREDNESS

All personnel are required to undergo emergency response training according to their individual training plans.

Emergency response training for all personnel commences with a generic "Emergency Response Training" module that must be completed within twelve months of commencing work. Thereafter, all personnel must complete

emergency response refresher training annually. The training required will depend on the designated role of the employee and will be set out as per their individual training plan developed by their leader.

The regular use of simulated exercises is a key resource for emergency training.

Areas addressed through this type of training are:

- Individual response to the emergency, their reporting techniques, review of personal protective equipment, condition and evacuation techniques;
- Supervisory actions through controlling and monitoring the emergency situation, handling issues that arise from the emergency and implementing control procedures;
- Team response through controlling and handling repair and isolating procedures;
- Control centre actions and response through communications and supply notifications; and
- All clear and reinstatement procedures.

7.12 REVIEW AND IMPROVEMENT OF THE EMERGENCY RESPONSE PLAN

The APA Group's Transmission Operations Queensland Emergency Response Plan, including all resources and any incident reports are to be reviewed on a two yearly basis.

The findings of simulations and audits are used to improve the plan and ensure the procedural correctness of the strategy and that personnel understand their respective roles in an incident.

The Emergency Plan will also be updated when:

- A risk assessment identifies that a change to the Emergency Plan is required; or
- Changes are made to Legislative or Australian Standards relating to the Emergency Plan : or
- There are issues identified by actual incidents and simulated exercises.

8. DOCUMENT/RECORDS MANAGEMENT

8.1 OVERVIEW OF DOCUMENT/RECORDS MANAGEMENT PLAN

APA Group has developed a Document/Records Management Plan as per AS2885.3 to obtain and maintain document/records that are necessary to safely operate and maintain the facility and to determine the fitness-for-purpose of the asset at any stage of its operating life.

The Document/Records Management Plan includes:

- Identification of document/records to be maintained in accordance with legislative requirements;
- Retention requirements for those document/records;
- Outline of appropriate storage methods to preserve required document/records; and
- Record maintenance procedures so that obsolete records and procedures are removed from circulation.

In the event of a missing document/record or a non-complying record, a risk assessment will be undertaken and an appropriate strategy determined to ensure the fitness-for-purpose of the facility at any stage of the asset's operating life.

8.2 RECORDS

As per AS 2885.3, APA Group's Document/Records Management Plan includes the following:

- Design, construction and commissioning documents;
- Operation and maintenance records; and will include
- Abandonment records if facilities are abandoned.

8.2.1 DESIGN, CONSTRUCTION AND COMMISSIONING RECORDS

These include:

- The design criteria;
- Risk assessments conducted in accordance with AS 2885.1;
- Hazard and operability study;
- The traceability of all materials and components including all test results and inspection reports;
- All tests and inspections that are required to verify the integrity of the asset in accordance with AS 2885.1 or AS 2885.2 or applicable code at the time of construction;

- The MAOP that is required by AS 2885.3 Section 8;
- All drawings, as built and alignment sheets relating to the assets and facilities;
- Charts and maps showing the location of cathodically protected pipelines, CP equipment and structures affected by or affecting the CP system;
- CP potential readings, CP unit outputs and interference current readings;
- The condition of the internal and external surfaces;
- A list of the authorities that have granted easement rights or other operating permits, and land-holders through whose land the asset passes, including contact history and title information;
- A list of other easements (especially easements in gross for other pipelines, power lines and communications cables) through which the asset passes, their contact details and other relevant information;
- Records of pipeline sections or components identified as potentially high risk in an emergency;
- Commissioning documents/records;
- QA records and traceability;
- Safety and environment records; and
- Approvals and correspondence with regulatory authorities.

8.2.2 Operation and Maintenance Records

These include:

- Any approved change to operating conditions, engineering investigations and any work carried out in connection with any changes to operating conditions;
- Any modifications to the maps, charts, plans, drawings and procedures that are required to allow the procedures to be properly administered (e.g. exposure to the public, changes in design and operating conditions);
- Details of any corrosion;
- Details of the CP system as required to be recorded by AS 2832.1;
- Details of any leaks, ruptures and other damage;
- Routine inspections and inspections and testing carried out when cutting a pipeline or making hot taps;
- Repairs and maintenance work to pipelines and stations;
- Details of inspections of internal or external pipeline condition;
- Details of any coating inspections and repairs;
- Correspondence with statutory and regulatory authorities;
- Risk assessment reviews;
- Incidents and subsequent preventative actions;
- Operation and maintenance personnel competency details.

- MAOP review documents;
- Location class review documents;
- Reports on landholder and third party liaison and the information given; and
- Records of emergency response exercises, the actions arising and the completion of those actions.

8.3 RECORD RETENTION

The Document/Records Management Plan indicates the disposal time for each identified document/record. This disposal time indicates the minimum retention period for the item, which can be:

- Destroy when the pipeline is abandoned;
- Destroy when the pipeline is removed;
- Destroy if created prior to a certain date when the pipeline is abandoned / removed;
- Destroy after certain years after the end of the defects liability period;
- Destroy when equipment is taken out of service; and
- Destroy certain years after creation; or
- Retain permanently.

In addition, APA Group will continue to retain for a minimum of 5 years the following:

- Necessary operational data; and
- Surveillance patrols.

8.4 RECORD STORAGE METHODS

The Document/Records Management Plan indicates the existing format and location of the identified document/records. Most of these are currently stored at the Brisbane office as:

- Hard Copies
- Electronic data; or
- Photographs.

Some may be stored off-site by a commercial document storage service.

8.4.1 ENGINEERING, OPERATIONS AND MAINTENANCE DOCUMENTS

Copies of drawings and alignment sheets giving details of the facilities are held at the Brisbane Office of APA Group, together with a hard copy of available design and construction papers. Employees may gain access to location and other information on facilities from within the Intranet sites.

Pipeline maintenance documents are maintained on APA Group's WMS system, a maintenance management system. Hard copies of maintenance reports for the RBP system are filed in Brisbane, while records for the CGP system are filed in Mt. Isa.

The results of CP surveys are also kept at the Brisbane office; some are in hard copy and others are on a database for the life of the asset in accordance with licence and AS2885 requirements.

8.5 REVIEW AND AUDITS

8.5.1 UPDATE AND REVIEW

The SAOP will be monitored, reviewed and updated every two years. If significant incremental change occurs, and when the scope of any single change is significant as defined in AS2885.3, an update and review will be triggered. The findings of the periodic audit will be used to improve the SAOP. The SAOP will also to be updated when:

- A risk assessment identifies a significant hazard; and
- Legislative or Australian Standards relating to the operation and safety of the pipeline have changed.

8.5.2 AVAILABILITY

APA Group, as the Operating Authority will:

- Keep a signed original hard copy of the SAOP at its office; and
- Require that APA Group makes available copies of the SAOP electronically to persons involved in the implementation of the plan.

8.5.3 PERIODIC AUDIT

The periodic audit of this Safety and Operating Plan will be conducted on a biennial basis. The audits will be performed by appropriately qualified, experienced, independent and external personnel. Written reports on the findings of the audit will be provided to APA Group Senior Management and reviewed to ensure the continual improvement of the SAOP and the Risk Management System. APA Group will implement appropriate measures to rectify any non-compliance and to ensure continuing pipeline integrity.

9. LEGISLATIVE FRAMEWORK

The construction, operation and maintenance of transmission pipelines in Queensland are regulated primarily under the Petroleum and Gas (Production and Safety) Act and Regulations 2004 and the Environmental Protection Act and Regulations 1994. The operation and maintenance of the pipelines is impacted by other legislation and standards. APA Group, being the Operating Authority, has the responsibility to ensure full compliance with the regulatory obligations. This includes:

- Maintaining regular liaison with the relevant regulators in relation to technical regulatory compliance;
- Participating in the development and review of new legislation;
- Developing management tools in accordance with the technical regulatory requirements; and
- Developing management tools to ensure full compliance with existing legislation.

APA Group as the licensee has external reporting requirements in accordance with the Petroleum and Gas (Production and Safety) Act 2004 and amendments and the Petroleum and Gas (Production and Safety) Regulations 2004 and amendments.

9.1 PERIODIC REPORTS

9.1.1 PETROLEUM TRANSMISSION REPORT

(1) The holder of a pipeline licence for a transmission pipeline must, within 20 business days after the last day of each 6-month period for the licence, lodge a petroleum transmission report for the period.

(2) The report must contain each of the following in a form acceptable to the chief executive -

- The type and volume of any petroleum component transported through the pipeline during the period;
- For an impurity, including, for example, carbon dioxide or inert gases, transported through the pipeline during the period -
  - The volume of the impurity; or
  - The volume by weight of the impurity; or
  - The concentration by volume of the impurity in the petroleum component.

9.1.2 ANNUAL REPORT FOR A PETROLEUM FACILITY LICENCE OR PIPELINE LICENCE

For section 552(1) of the Act, the following information must be contained in an annual report for a petroleum facility licence or pipeline licence -

- The authorised activities for the licence carried out during the reporting period; and
- A statement of the authorised activities proposed to be carried out under the licence for the next 12 month period.

9.1.3 Executive Safety Manager must give Annual Safety Report

The Executive Safety Manager for an operating plant must, on or before 1 September each year, lodge a safety report for all assets in relation to the preceding financial year that complies with section 690 of the Petroleum and Gas Act 2004 and amendments.

9.1.4 Safety Management Plans

APA Group as the licensee, has safety requirements in accordance with the Petroleum and Gas (Production and Safety) Act 2004 and amendments, the Petroleum and Gas (Production and Safety) Regulations 2004 and amendments.

The operator of an operating plant must –

- For each stage of the plant, make a safety management plan that complies with section 675; and
- Implement and maintain the plan.

9.1.5 Annual Measurement Report

The controller of a meter must, on or before 1 September each year, lodge a measurement report about its measurement scheme for the preceding financial year that complies with section 651 of the Petroleum and Gas (Production and Safety) Act 2004 and amendments.

9.2 Prescribed Event/Incident Reporting

Under the Petroleum and Gas (Production and Safety) Act and Regulations certain events and incidents must be reported to the administering authority within strict timeframes. The administering authority's staff in each region operate an emergency response roster with a designated emergency number for each region. If an emergency occurs outside working hours, 000 should be called. Emergency Services has the emergency numbers and will contact the on-call inspector rostered on at that time. A listing of the duty inspector's

mobile phone is available in the front of this document and also below this section.

The following is an excerpt from the Petroleum and Gas (Production and Safety) Regulations showing timeframes and methods of communications.

The Inspectorate staff in each region operate an emergency response roster with a designated emergency number for each region. If an emergency occurs outside working hours, 000 should be called. Emergency Services has the emergency numbers and will contact the on-call inspector rostered on at that time. A listing of the duty inspector's mobile phone is available in the front of this document and also below this section.

Event/Incident	Communication Method	Timeframe
An event/incident involving death of a person	By telephone	Immediately
	In writing	As soon as practicable
An event/incident involving injury to a person requiring medical treatment	By telephone	Immediately
	In writing, if a written report is requested by an inspector	As soon as practicable
An emergency, including an emergency alarm activation other than as part of a routine test, at an operating plant that is a major hazard facility under the Dangerous Goods Act	By telephone	Immediately
	In writing	As soon as practicable
A fire at an operating plant	By telephone	Immediately
	In writing	As soon as practicable
An uncontrolled oil or gas leak attended by emergency services	By telephone	Immediately
	In writing	As soon as practicable
An event/incident with the potential to cause a general shortage of fuel gas in Queensland or an area of Queensland	By telephone	Immediately
	In writing	As soon as practicable

An event/incident involving damage to property that substantially increases the risk of damage to plant or equipment or injury to persons	By telephone	Immediately
	In writing	As soon as practicable
Event/Incident	**Communication Method**	**Timeframe**
An event/incident at an operating plant to which the *Workplace Health and Safety Act 1995* does not apply, if the event/incident is not otherwise mentioned in this schedule.	In writing	As soon as practicable after the end of the month during which the event/incident occurs
An event/incident that had the potential to, but did not, cause the death of, or injury to, a person or damage to plant or equipment	In writing	As soon as practicable after the end of the month during which the event/incident occurs
A work related illness of a person at an operating plant to which the *Workplace Health and Safety Act 1995* does not apply	In writing	As soon as practicable after the end of the month during which the operator of the operating plant becomes aware of the illness

In writing includes the use of Electronic Transactions as per the Electronic Transactions Act.

Petroleum and Gas Inspectorate – contact details

The following contacts must be used for reporting of incidents:
Immediately by telephone
(24 hour Emergency Contact numbers) for each Region:
Southern 0419 888 575
Central 0418 888 575
Northern: 0409 896 861
Alternate 0417 733 034 (Head Office) Emergency
In writing, as soon as practicable to:
Email: gassafe@dme.qld.gov.au

10. APA GROUP APPROVAL MATRIX

No.	Task	AS2885.3-2001 Reference	List of Approval Requirements as in-	Approval by
	Scope and general	**Section 1**	**Appendix C**	**QLD**
1	Application Operating authorities, which operate and maintain pipelines that are not designed and constructed in accordance with AS2885.1, and where it is not feasible to physically modify the pipeline, may apply this Standard provided the areas of non-compliance with AS2885.1 are documented and are subject to risk assessment. Any actions required to mitigate risk shall be approved in the safety and operating plan.	1.3.(b)	Non-compliance with AS2885.1	Manager Asset Management & Engineering Queensland
	Preparation for Operation	**Section 2**		
2	General With the preparation completed and with approval given to start operation, the filling of the pipeline can occur and the pipeline can then put into operation.	2.1		Manager Asset Management & Engineering Queensland
3	Plans and Procedures The Operating Authority shall ensure that the following plans and procedures have been prepared and approved as appropriate, and that personnel have been properly trained in their application:	2.2		
	A Safety and Operating Plan including an emergency plan.	2.2.a	Safety and Operating Plan including Emergency Plan.	Manager Transmission Operations Queensland
	Operating procedures	2.2.b	Operating procedures	Manager Transmission Operations Queensland
	Maintenance and Repair procedures	2.2.b	Maintenance and Repair procedures	Manager Asset Management & Engineering Queensland
	An environmental code of practice to deal with possible pipeline leaks and ruptures. (Implementation)	2.2.c	Environmental code of practice to deal with possible pipeline leaks	HELM Manger Queensland

4	Readiness for operation The welds of tie-ins to existing facilities, that have not been subjected to testing in accordance with Clause (b), have been inspected by an approved non-destructive examination method and are considered to comply with AS2885.2	2.4.d	Matters relating to safety, engineering design, materials, testing and inspection Tie-ins to existing facilities	Manager Asset Management & Engineering Queensland
5	Initial operation may be approved before completion of the field work, provided that the incomplete work does not directly affect the safety of the pipeline, the public, or the operating personnel.	2.4 Note 2		Manager Asset Management & Engineering Queensland
6	Purging and filling of pipeline-Procedures An approved procedure is developed specific to the pipeline and the nature of the fluid being purged, filled or commissioned; and	2.6.1. (c)	Purging and filling pipelines (commissioning)	Manager Asset Management & Engineering Queensland
7	Filling a gas pipeline A direct purge with gas may be used provided the approved procedures meet the conditions and requirements of AGA Operating Section Report Purging Principles and Practice, catalogue No. XK0775 as amended. Where the above conditions can not be met or controlled for the duration of the purge, then the operating authority shall ensure that the approved procedure, using an alternative technique, purges the pipeline in a safe manner.	2.6.2	Purging and filling pipelines (commissioning)	Manager Asset Management & Engineering Queensland
	Pipeline Integrity Management	**Section 3**		
8	General The operating authority shall ensure that approved actions, as a result of the risk assessment, and any other risk management assessments associated with operation and maintenance activities are documented and implemented. *(implementation section)*	3.2	Risk assessment actions and measures	Manager Asset Management & Engineering Queensland (Engineering issues) Manager Transmission Operations Queensland (Safety issues)
9	Pipeline Structural Integrity Procedures shall be developed to ensure structural integrity of pipeline infrastructure including compressor and pump stations, regulator stations, and metering facilities are retained during operation and maintenance activities. The procedures shall be approved.	3.3	Matters relating to safety, engineering design, materials, testing and inspection	Manager Asset Management & Engineering Queensland

10	Threat mitigation General To adequately manage risk, the operating authority shall develop, implement and monitor the threat mitigation measures and risk management procedures that have been identified in risk assessment, and documented and approved in the safety and operating plan.	3.4.1	Matters relating to safety, engineering design, materials, testing and inspection	Manager Asset Management & Engineering Queensland (Engineering issues) Manager Transmission Operations Queensland (Safety issues)
	Plans and Procedures	**Section 4**		
11	Safety and Operating Plan A Safety and Operating Plan shall be written and it shall be approved.	4.2.1	Safety and Operating Plan including Emergency Plan Review intervals	Manager Transmission Operations Queensland with Manager Asset Management & Engineering Queensland Final Approval Managing Director/CEO
12	Safety and Operating Plan requirements and responsibilities of key positions including the positions with approval authority for the procedures and plans	4.2.2.a	The authorities and organisational structure	Manager Transmission Operations Queensland ,
13	Emergency Plans Emergency Plans shall be reviewed periodically at periods not in excess of 2 years and, if necessary, shall be revised and approved.	4.3	Safety and Operating Plan including Emergency Plan Review intervals	Manager Transmission Operations Queensland ,
14	Procedures The Operating Authority shall- have written procedures (controlled document) which shall be approved and reviewed at nominated intervals, (controlled document) for the operation and maintenance of the pipeline and any associated systems, including those necessary for the control of corrosion in accordance with this Standard.	4.4.a	Review intervals Operating, maintenance and repair procedures	Manager Transmission Operations Queensland or Designated Operations Manager
	Pipeline Structural Integrity	**Section 5**		
15	Pipeline Inspection and Assessment—General The inspection shall be carried out by approved and appropriately trained and experienced personnel.	5.3.1	Personnel and contractors training and experience to perform tasks	Manager Transmission Operations Queensland ,

16	Frequency of inspection assessment The frequency of inspection and assessment should be documented and approved and based on ……. (refer Australian Standard)	5.3.2	Pipeline and coating assessment intervals, techniques, and plans	Manager Asset Management & Engineering Queensland
17	Safety Precautions Prior to the commencement of any activity an approved plan shall be prepared *(permit to work, JHA etc.)*	5.4.2.2	Matters relating to safety, engineering design, materials, testing and inspection	Manager Transmission Operations Queensland or Designated Operations Manager
18	Assessment of Corroded pipework The assessment Required by Clause 5.4.2.1 shall be made by one of the following methods……. Other approved method (refer Australian Standard)	5.4.3.1.d	Matters relating to safety, engineering design, materials, testing and inspection	Manager Asset Management & Engineering Queensland
19	Assessment by Pressure Testing Where the original design included an allowance (G) and it can be shown that the original allowance is not required for the corroded section of the pipe, a revised value for G may be used in the re-calculation of MAOP. The revised value shall be approved.	5.4.3.2		Manager Asset Management & Engineering Queensland
20	Coating repairs Surface preparation, application and testing of the coating shall be subject to an approved quality control programme.	5.5.3	Pipeline and coating assessment intervals, techniques, and plans	Manager Asset Management & Engineering Queensland
21	CP –Personnel The parties responsible for the monitoring, survey, inspection, testing and maintenance of the CP system shall have the requisite experience and qualifications in CP as approved by the Operating Authority.	5.6.2	CP surveys Personnel and contractors training and experience to perform tasks	Manager Asset Management & Engineering Queensland
22	Measuring equipment Only approved measuring equipment and techniques in accordance with the requirements of AS2832.1 shall be used.	5.6.5	Measuring equipment for corrosion protection assessment	Manager Asset Management & Engineering Queensland
23	Internal Surfaces-Personnel The parties responsible for the monitoring, testing and maintenance of the internal corrosion mitigation system shall have the requisite experience and qualifications as approved by the Operating Authority.	5.7.2	Personnel and contractors training and experience to perform tasks	Manager Asset Management & Engineering Queensland

24	Structure A structure housing equipment containing hydrocarbons, such as compressor, pumps, valve/regulator/meter pits or buildings, instrument rooms and laboratories shall be inspected at approved intervals and shall be maintained in a safe condition.	5.8.4		Manager Asset Management & Engineering Queensland (Define frequency) Manager Transmission Operations Queensland (Responsible for inspections)
25	Ancillary equipment Valves and actuators -should be inspected at approved intervals… (refer Australian Standard)	5.9.2		Manager Asset Management & Engineering Queensland (Define frequency) Manager Transmission Operations Queensland (Responsible for inspections)
26	Pipe Supports All pipe supports, for above-ground portions of lines, shall be inspected at approved intervals.	5.9.3		Manager Asset Management & Engineering Queensland (Define frequency) Manager Transmission Operations Queensland (Responsible for inspections)
27	Pig trap inspection and maintenance Maintenance of all components of pig traps (including end closure seals, bleed locks, electrical bonds, locking rings, pig signallers and fasteners) should be undertaken just prior to use, after painting or at approved intervals.	5.9.5		Manager Transmission Operations Queensland
28	Tunnels, shafts and valve pits Tunnels and shafts shall be inspected at approved intervals… (refer Australian Standard)	5.9.7		Manager Asset Management & Engineering Queensland (Define frequency) Manager Transmission Operations Queensland (Responsible for inspections)

	Threat Mitigation	Section 6		
29	Patrol of route The route shall be patrolled and inspected in (1) an approved manner (2) at approved intervals as detailed in the Safety and Operating Plan *(based on risk assessment)*	6.2.2	Patrol frequency and techniques Pipeline and coating assessment intervals, techniques, and plans	Manager Transmission Operations Queensland
30	External Interference Prevention-General Operating authority staff visits, at approved intervals, to provide landowners and other occupiers of land through which the pipeline passes with information to ensure that their activities do not endanger the pipeline and its appurtenances	6.4.1.c	Review intervals	Manager Transmission Operations Queensland
31	Prohibition of buildings near the pipelines Where a pipeline easement exists, no building or structure shall be allowed on the easement without approval of the Operating Authority and the authority administering the easement.	6.4.3	External interference	Manager Asset Management & Engineering Queensland
32	Vegetation on and near the pipeline Unless approved, vegetation is to be restricted to allow free passage along the pipeline route.	6.4.4		Manager Transmission Operations Queensland
33	Controlling activities near pipeline Where third party works are to be conducted in the proximity of a pipeline so that the integrity of the pipeline is potentially under threat, the site shall be inspected, and where determined necessary, a work plan shall be specified and approved.	6.5.1.(b)	External interference	Manager Asset Management & Engineering Queensland
34	No mechanical equipment shall be used within 1 m of the pipeline in any radial direction, even after the pipeline location has been proven, except when approved by, and under explicit “on-site” direction from the Operating Authority’s inspector.	6.5.1.d		Manager Asset Management & Engineering Queensland
35	Where boring is to take place under or over a pipeline, approved measures shall be employed to ensure that the pipeline or its coating will not be damaged and a separation of at least 0.3 m between the pipe and the bore is maintained.	6.5.1.(h)		Manager Asset Management & Engineering Queensland
36	Addition of fill on or near the pipeline If fill must be added, the depth and quality is to be advised prior to placement for agreement by the Operating Authority.	6.5.2		Manager Asset Management & Engineering Queensland

37	Power and telegraph poles, fencing, seismic and agricultural activities The following activities need operating authority approval: The location of proposed new or replacement power and communication services poles and fencing across or along the easement or pipeline route. Land disturbance activities deeper than 300 mm such as deep ripping and the installation of drainage systems on the pipeline easement, or when no easement exists, a minimum of 3 m (but preferably 6 m) each side of the pipeline. Any Seismic activities near the pipeline need to be planned and crossing designed to ensure that these activities do not affect the pipeline.	 6.5.3 a, 6.5.3.b 6.5.3.c		 Manager Asset Management & Engineering Queensland Manager Asset Management & Engineering Queensland Manager Asset Management & Engineering Queensland
38	Explosives The Operating Authority should ensure adequate liaison so that any person intending to use explosives does not do so within 30 m of the pipeline without prior approval of the Operating Authority.	6.5.4		Manager Asset Management & Engineering Queensland
	Safety and Environment	**Section 7**		
39	Purging procedures-General Any purging of pipelines shall be in accordance with an approved procedure developed in accordance with the relevant requirements of Clause 2.6.1	7.4.1	Venting and purging of pipelines	Manager Asset Management & Engineering Queensland
40	Purging procedure-Gas Where the above conditions can not be met or controlled for the duration of the purge, the operating authority shall ensure that the approved procedure is suitable for the task.	7.4.2	Venting and purging of pipelines	Manager Asset Management & Engineering Queensland
41	SCADA Any changes to the system design shall be approved.	7.6	Modifications and changes to design criteria	SCADA Engineer Operations Manager, Control Centre and Gas Contracts
42	Pipeline facility control Any changes to the system design shall be approved.	7.7	Modifications and changes to design criteria	Manager Asset Management & Engineering Queensland

43	Environment The Operating Authority shall establish an approved environmental management system in accordance with regulatory requirements.	7.9	Environment management system	HELM Manger Queensland
	Operating Condition Changes	**Section 8**		
44	Design condition changes The changes may require the modification and re-approval of operating, maintenance and emergency procedures and to the MAOP and design life.	8.1	Modifications and changes to design criteria	Manager Asset Management & Engineering Queensland
45	Design condition changes Results of the investigation shall be used as the basis for the confirmation of or the need to review the MAOP, and shall be documented and approved.	8.1	Modifications and changes to design criteria	Manager Asset Management & Engineering Queensland
46	Pipeline modifications Where a pipeline is modified and the modifications may result in change to the MAOP, the MAOP of the modified pipeline shall be determined in accordance with AS2885.1 and approved.	8.3	Modifications and changes to design criteria	Manager Asset Management & Engineering Queensland
47	Review of pressure control and over pressure protection system Any changes to pressure control and over pressure protection systems shall be approved. Suitability of systems shall be reviewed at approved intervals and in conjunction with changes to supply capacity.	8.4	Modifications and changes to design criteria Review intervals	Manager Asset Management & Engineering Queensland Manager Asset Management & Engineering Queensland
48	Review of design life The pipeline shall only be operated under the conditions and the limits so established and approved.	8.5	Modifications and changes to design criteria	General Manager Asset Management & Engineering
49	Review of MAOP The MAOP of each pipeline shall be reviewed at approved intervals not exceeding 5 years, if necessary, amended whenever there are changes (including corrosion or damage) that could adversely affect the safety of the public, the operating personnel or the integrity of the pipeline.	8.6	Modifications and changes to design criteria	Manager Asset Management & Engineering Queensland

50	Review of location classes At approved intervals not exceeding 5 years and at any time when patrolling indicates the possibility of a need to change classification of a location…..	8.7	Review intervals Modifications and changes to design criteria	Manager Asset Management & Engineering Queensland
51	Operation of a suspended pipeline The suspension of a pipeline shall be approved and subject to an annual review to determine if the pipeline should be abandoned.	8.9	Venting and purging of pipelines. Suspension, abandonment plan and rehabilitation plan	General Manager Asset Management & Engineering
52	Abandoning a pipeline-General When a pipeline is to be abandoned, an abandonment plan, including an environmental rehabilitation plan, shall be compiled and approved.	8.10.1	Suspension, abandonment plan and rehabilitation plan	Manager Asset Management & Engineering Queensland
53	Abandonment in Place When abandonment in place is approved,	8.10.2		General Manager Asset Management & Engineering
54	Abandonment by Removal When abandonment by removal is approved,	8.10.3		General Manager Asset Management & Engineering
	Pipeline Repairs	**Section 9**		
55	Construction Safety A construction or repair safety plan, including a job hazard analysis, shall be prepared and approved.	9.4.3	Construction or repair safety plan	Manager Transmission Operations Queensland or Designated Operations Manager
56	Construction Safety Approved fire protection shall be provided and local bush fire and other fire regulations shall be observed.	9.4.3.a	Required	Manager Transmission Operations Queensland
57	Precaution to prevent an explosion The work area shall be monitored, using approved and correctly calibrated and tested flammable gas detectors prior to and during the work, to determine the presence and concentration of flammable gas.	9.4.4.a		Manager Transmission Operations Queensland
58	Repair strategy-permanent repair The use of mechanical devices other than full-encirclement welded sleeves to repair pipeline defects shall have the type, installation and pressure rating approved, operators installing such devices have been trained and approved to conduct such work	9.5.4.h	Other mechanical repair devices Personnel and contractors training and experience to perform tasks Other mechanical repair devices	Manager Asset Management & Engineering Queensland

59	Welding onto an in-service pipeline- Monitoring of operating conditions The operating authority shall ensure that the welding procedures are appropriate for the task and the required operating conditions and controls are defined in the approved procedures.	9.6.2	Hot tapping, welding and repair procedures	Manager Asset Management & Engineering Queensland
60	Hot-tapping Operations- General Any hot-tapping operation shall be carried out by trained and experienced persons and in accordance with an approved procedure that incorporates the appropriate job hazard analysis, emergency procedures and safety precautions.	9.7	Tie-ins to existing facilities Hot-tapping, welding, and repair procedures	Manager Asset Management & Engineering Queensland
	Records	**Section 10**		
61	Operations and maintenance records The Operating Authority shall prepare a records management plan which will detail the records to be obtained, retained, storage method and procedures to maintain currency, until the abandonment of or removal of the pipeline. This Plan shall be approved.	10.3	Records management plan	Manager Asset Management & Engineering Queensland

- *AS2885.3 requires that the Operating Authority provide approval to many aspects of pipeline operations and maintenance, including approval of procedures, training and competencies of staff, integrity management policies, repair techniques and records management. The authorities have been delegated by the licensed operator of the pipeline to those persons deemed competent, which has been documented in this approval matrix as per AS2885.3. It is the responsibility of the delegated authority to act in accordance with the requirements of standards, legislation and good industry practice when providing such approvals.*
- *Approval authorities will be automatically transferred to the person replacing the designated officer in the event of transfer or resignation only when that person is appropriately qualified and experienced. A signed statement of competency must accompany an approval for such a replacement. If the person replacing the designated officer is not appropriately qualified and experienced the Operating Authority, APA Group, shall be the approving authority.*
- *Procedures approved by a previous holder of the delegated authority shall remain approved until they are next reviewed.*
- *It is the responsibility of all personnel involved in pipeline operation and maintenance to understand the requirements of AS2885.3, and to seek approval from the delegated Operating Authority for those aspects of pipeline operations and maintenance as listed in this approval matrix as per AS2885.3.*

11. STATEMENT OF COMPETENCY

Name:	Mick McCormack
Current Position:	Managing Director/ Chief Executive Officer
Qualifications:	BSurv, GradDipEng MBA FAICD
Relevant Experience:	Mr McCormack has extensive senior management experience in the energy transmission sector in Australia, with particular focus on gas transmission pipelines, where he has worked on the development of new and existing pipelines across Australia. Mr McCormack's entire career has been based in the energy transmission business and prior to joining APA on its float in 2000; he spent 13 years with AGL where he held a range of senior management positions within its pipeline business. Mr McCormack is the Chairman of a range of APA subsidiary companies.

Name:	Kerryanne Mallitt
Current Position:	Manager Transmission Operations Qld
Qualifications:	BBus (Acc), CPA, MBA.
Relevant Experience:	Over 11 years experience in APA's high pressure transmission and low pressure distribution businesses. Experience in leading functions including pipeline control centre and gas contracts management, health safety and environment; quality management systems and compliance; training services; IT and communications; inventory and stores; and finance and business services.

Name:	Geoff Callar
Current Position:	Acting Manager Asset Management & Engineering Queensland
Qualifications:	Ordinary National Certificate – Mechanical Engineering (Worthing) Bachelor of Science (Hons) – Natural Gas Engineering (Salford) Diploma in Management Studies (Kingston) Member of the Institution of Gas Engineers and Managers (London) Chartered Engineer (UK)
Relevant Experience:	Over 35 years gas industry experience including 12 years with the Moomba to Sydney pipeline network.

Name:	Mark Fothergill
Current Position:	General Manager Asset Management & Engineering
Qualifications:	B. Eng (Chem Hons) Grad Dip Computing Studies
Relevant Experience:	Over 20 years experience in the gas pipeline industry. Responsible for the technical performance of APA's pipeline assets. This includes primary responsibility for asset management strategy, development, technical regulation management, research initiatives and provision of engineering services for all of the group's pipeline and related assets.

Name:	Eric Coetzee
Current Position:	Operations Manager CGP
Qualifications:	BTECH (Electrical) Registered Gas Distribution Professional with GTI – USA
Relevant Experience:	Over 15 years experience in the high pressure gas transmission pipeline asset management and engineering, primarily focused on pipeline integrity management including: integrity management planning, policy development, engineering assessment and risk management activities.

Name:	Roy Gander
Current Position:	Operations Manager RBP
Qualifications:	Certificate 4 In Business Management (Frontline Management)
Relevant Experience:	Over 17 years experience in the operation of high pressure gas transmission pipelines. Field technician for the Brisbane region for 14yrs. Delivered services under the PMA to APA Group, including capital and additional service projects. Delivered third party external revenue projects. Established and controlled the area budgets, coached / trained staff in all operational duties on the gas pipeline. Also acted as Engineering Manager for 6 months, while continuing as the area Operation Manager.

Name:

Current Position: Operations Manager Control Centre

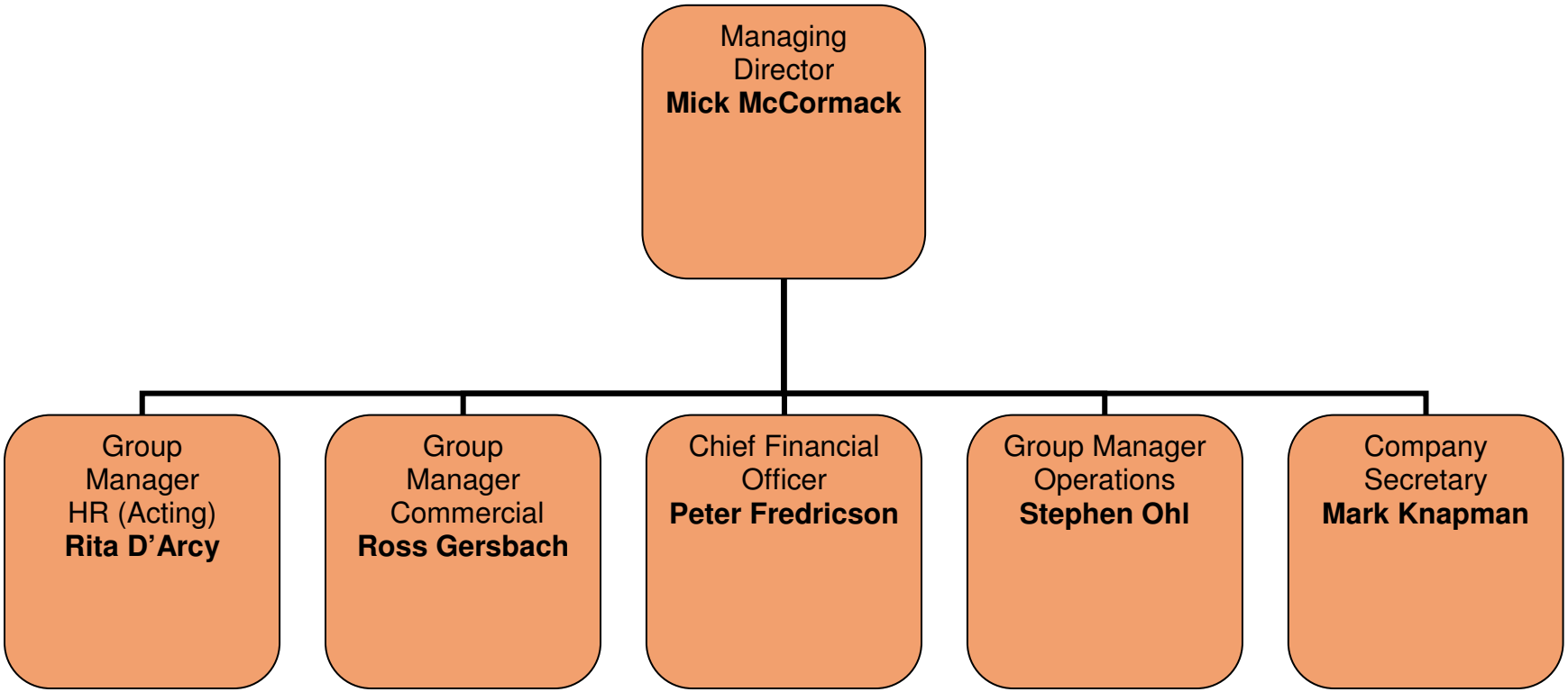
Qualifications:

Relevant Experience:

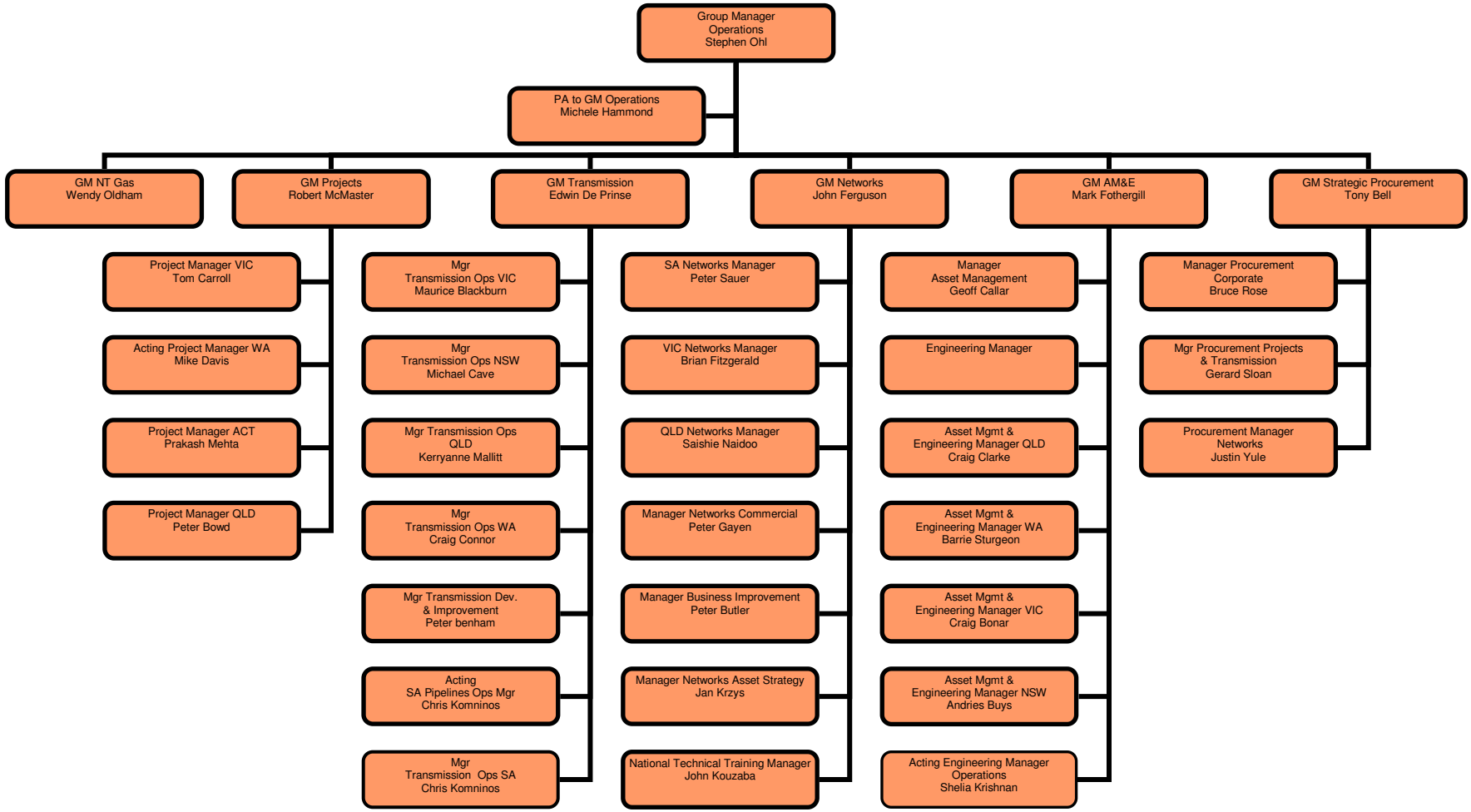
Name:	Neil Weatherly
Current Position:	Lands Manager Queensland
Qualifications:	Certificate in Real Estate Sales 1990 Panorama TAFE Certificate in Real Estate Agency 1993 - Panorama TAFE
Relevant Experience:	Over 5Years as Lands Manager for the RBP & CGP. 4 Years commercial land access experience for Gas Pipelines and Telecommunications. 10 Years residential real estate sales and land management.

12. MANAGEMENT STRUCTURE

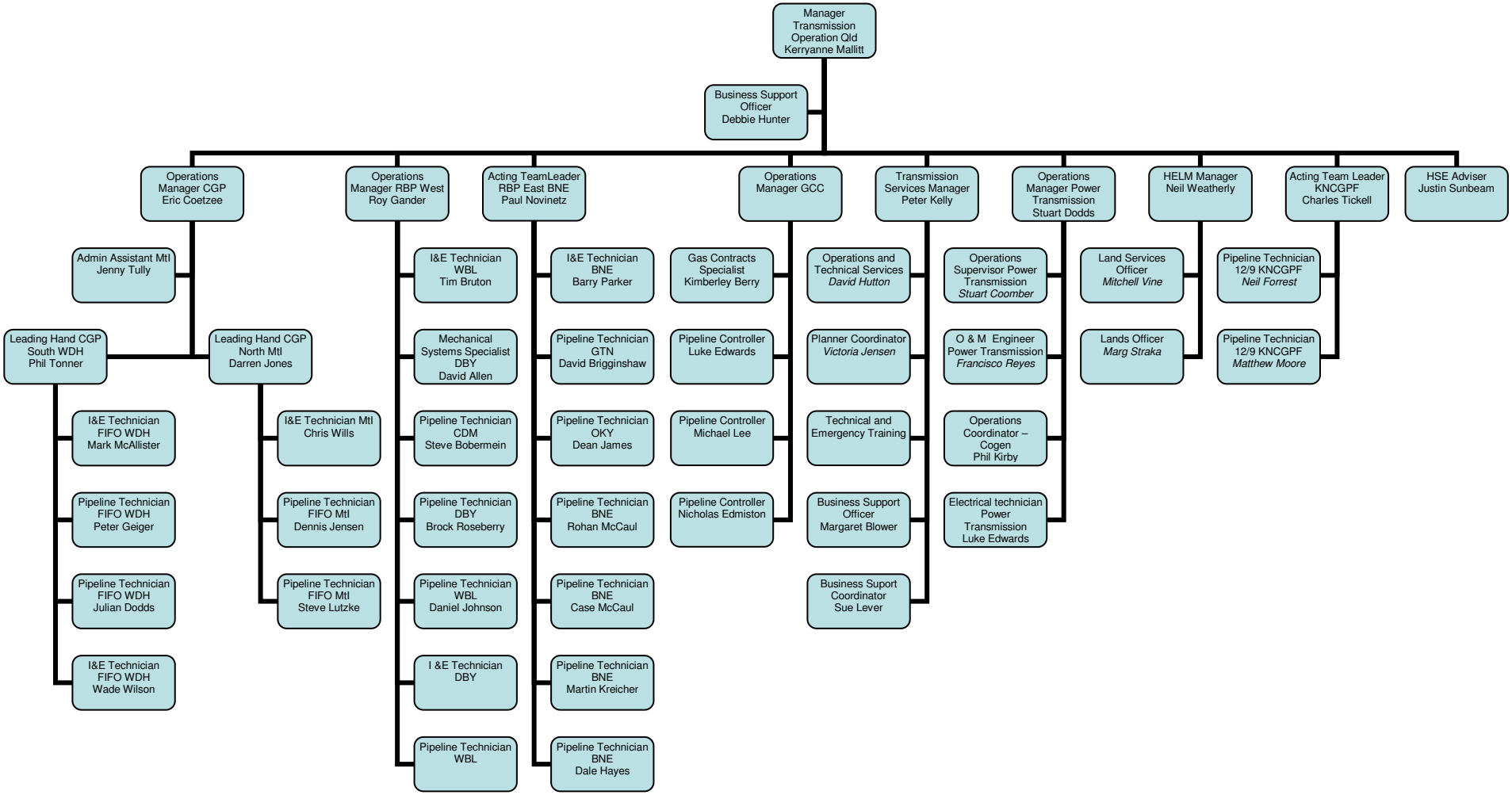
12.1 SENIOR MANAGEMENT STRUCTURE



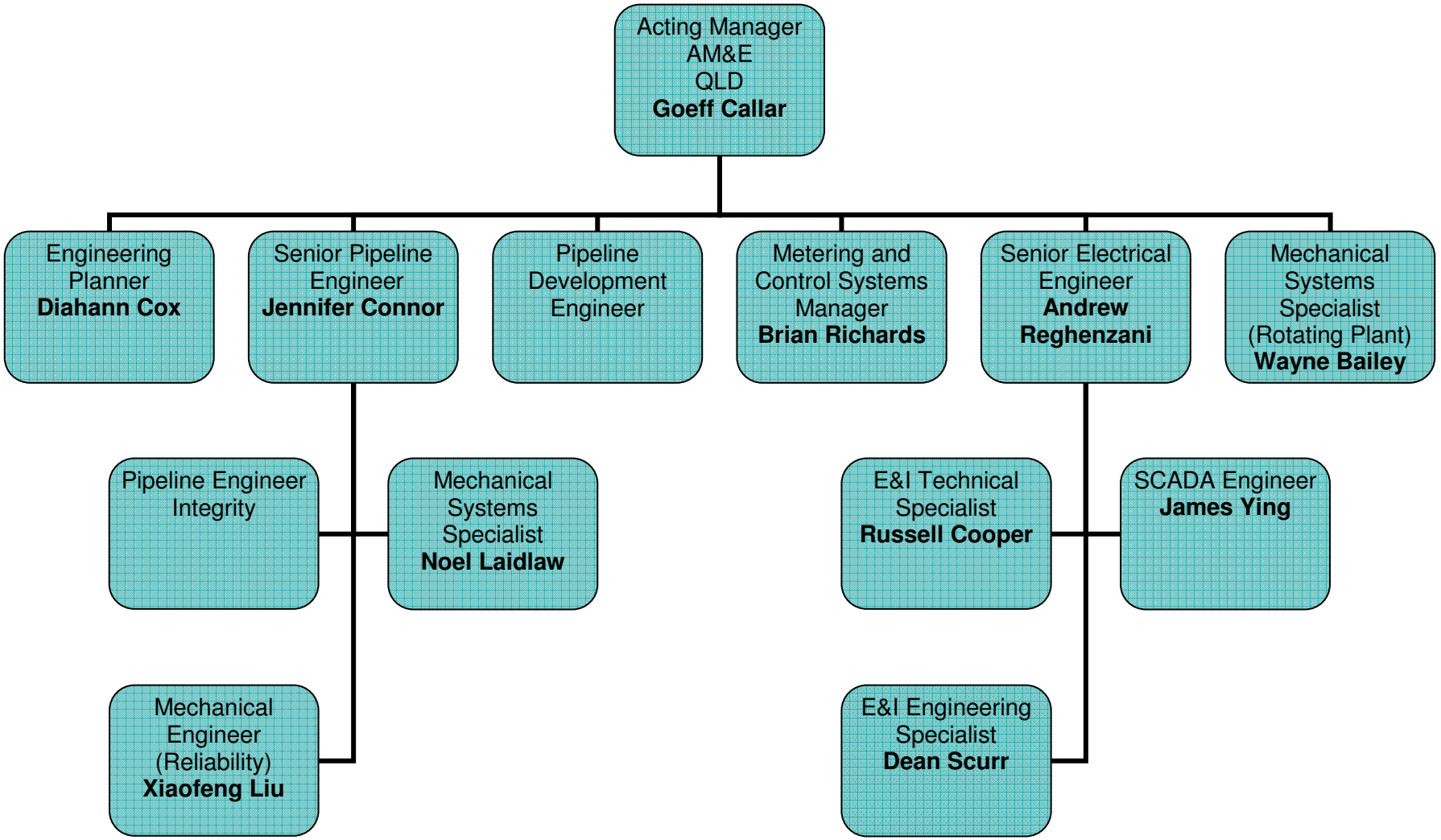
12.2 OPERATIONS MANAGEMENT STRUCTURE



12.3 QUEENSLAND TRANSMISSION OPERATIONS STRUCTURE



12.4 QUEENSLAND ASSET MANAGEMENT AND ENGINEERING MANAGEMENT STRUCTURE



13. KEY PERFORMANCE INDICATORS

The following list shows some of the key operational and HSE KPIs used to manage the APA Group Transmission Operations Queensland. The KPIs have been selected to measure outcomes of critical activities and the emphasis of their measurement is prevention and improvement. Data from "trailing" type indicators enables the establishment of "leading" indicators that facilitate a pro-active approach to management.

The validity of the KPIs is reviewed on an ongoing basis.

Health and Safety

- Number of Lost Time Injuries (YTD);
- Number of Medical Treatment Injuries (YTD);
- Number of Motor Vehicle Incidents (YTD);
- Number of HSE HASIFs Raised (month); and
- Number of Contractor Incidents (YTD).

Public Safety

- Number of Type A Incidents - incidents resulting in damage to the pipe (month);
- Number of Type B Encroachments – unauthorised encroachment into the easement (month);
- Number of Third Party Awareness sessions provided (YTD);
- Number of Landowners and Residents contacted (YTD);
- Number of Dial Before You Dig (DBYD) enquiries (month);
- Number of Crossings Supervised – from DBYD enquiries & other sources (month); and
- Number of Emergency Exercises Conducted (YTD).

Environment

- Number of Environmental Incidents (month);
- CO_2 equivalent Emitted (tonnes); and
- Electricity Usage by Asset (kWh).

Asset Reliability/Maintenance Plan

- YTD Scheduled Maintenance (PM) Completion (%);
- Compressor Availability (YTD & Month %);
- Compressor Reliability (YTD & Month %);
- Number of Corrective Maintenance Actions as % of Preventative Maintenance Actions (YTD & Month %);
- Number of Interruptions (or reduction in capacity) to supply caused by O&M;
- CP Reliability (%); and
- Number of Call Outs & Call Outs Exceeding 2 hr Response Time (month).

Regulatory Compliance

- Number of Fees paid on time (YTD);
- Number of Periodic reports submitted on time (YTD); and
- Number of Incidents reported within prescribed times (YTD).

Quality

- Number of Overdue HASIFs (month);
- Number of expired documents (month);
- Number of internal audits – HSE & compliance (YTD);
- Management Review meetings conducted; and
- SAOP Review meetings conducted.

14. APPENDIX A ROMA BRISBANE PIPELINE LICENCE NO.2

14.1 PIPELINE SYSTEM OPERATION

This section describes the RBP Pipeline Licence No. 2 and above ground facilities, important features of the design, and measures included in the design that enhances the security of the system. Pipeline Licence No. 2 states that the pipeline licence is for an indefinite licensed period.

14.1.1 DESIGN LIFE

A design life for the original RBP mainline, which encompasses the DN200, DN250 and DN300 sections of PL2, has been unknown due to the limitation of records available from the early design. It is estimated that the original pipeline design life could have been in the order of 30 to 35 years, which indicates that the pipeline design life is close to being (or has) expired.

A design life review of the original RBP mainline (DN 200, DN250 and DN300) was conducted in 2009 and utilised information from the 2007 version of AS2885.3 Risk Reviews and the intelligent pigging survey of the DN250 conducted during 2008.

The design life review involved a complete engineering investigation in accordance with the criteria in AS2885.3 Section 8.5. As this section makes a generic reference to AS2885.1, there were additional scope items to be included in this review, to take into account the recent revision of AS2885.1 (2007).

The asset scope of the design life review included all items that directly affected the integrity of the original pipeline, which included non-replaceable components such as Main Line Valves (MLVs). The design life review did not cover replaceable components such as Compressor Stations, but only those aspects of the station that contribute to the pipeline's integrity (i.e. over-pressure protection systems).

The required coverage in a design life review may be by inclusion of the material in the review or by reference to appropriate material in other current documents such as a current MAOP review. Replacement schedules may be in the design life review, this SAOP or in an asset management plan. A letter has been sent to the administering authority requesting a new design life of a further 30 years from 9th March 2009.

14.1.2 OVERVIEW OF THE PIPELINE SYSTEM

The Roma to Brisbane natural gas pipeline system consists of:

- Two independent parallel pipelines; one running from Wallumbilla to Bellbird Park which is approximately 396.8 km long DN250, and one

running from Wallumbilla to Swanbank Power Station approximately 405.55 km long DN400.

- Six compressor stations with scraper facilities were commissioned from 1981 to 1986. These have been reconfigured and separated so three compression facilities service each of the two independent pipelines. Yuleba, Kogan and Oakey service the DN250 pipeline and Condamine, Dalby and Gatton service the DN400 pipeline.
- The Wallumbilla to Bellbird Park pipeline extends to Gibson Island. This section is approximately 40.2 km long, has an operating pressure of up to 4,600 kPag, and consists of 37.6 km of DN300 and 2.6 km of DN200. The section of the DN300 from the MLV at Mt Gravatt and the DN200 has a MAOP of only 4,200kPa. A 5.4 km, DN200 extension from the end of the DN300 at the SEA Block Valve to the Caltex Refinery was installed and commissioned in 2010.
- The Swanbank lateral forms part of the RBP DN400 mainline constructed from Redbank Meter Station to Swanbank Power Station at a length of 8.75 km.
- The DN400 lateral pipeline running from Collingwood Drive Inlet Station to Ellengrove Gate Station is approximately 9.5 km long. The pipeline easement passes though a power line easement with the pipeline running parallel to an existing power line easement. It then passes through five private properties, and areas of state reserve.
- 59 isolation valves along the length of the pipelines. These are strategically located to shut down and de-pressurise the pipeline in the event of emergency.
- 16 Sale Stations (SS) and 5 Inlet Stations (IS) at various points along the pipeline.

There was no Australian Standard specifically for high pressure hydrocarbon pipelines at the time of design and construction of the original pipeline, i.e. DN250mm, DN300 and DN200, American Standard ANSI B31.8 – 1967 was used. Subsequent additions, repairs or modifications have been designed to the pipeline standards at the time, i.e. AS1697 and AS2885.

The Pipeline is currently operated in accordance with AS2885.3.

The Pipeline is regulated under the Petroleum and Gas (Production and Safety) Act and Regulation 2004 and amendments, under the instrument of Pipeline Licence (PL) No.2. PL No.2 is named as a strategic pipeline in Schedule 5 of the Petroleum and Gas (Production and Safety) Regulation 2004 and amendments.

From Wallumbilla to Brisbane the Pipeline is contained within a 15 metre wide easement or right-of-way in rural areas and a 6 wide metre easement in metropolitan areas or road reserve. Easements are shown on Registered Plans, at the Land Titles Office, Brisbane (Qld).

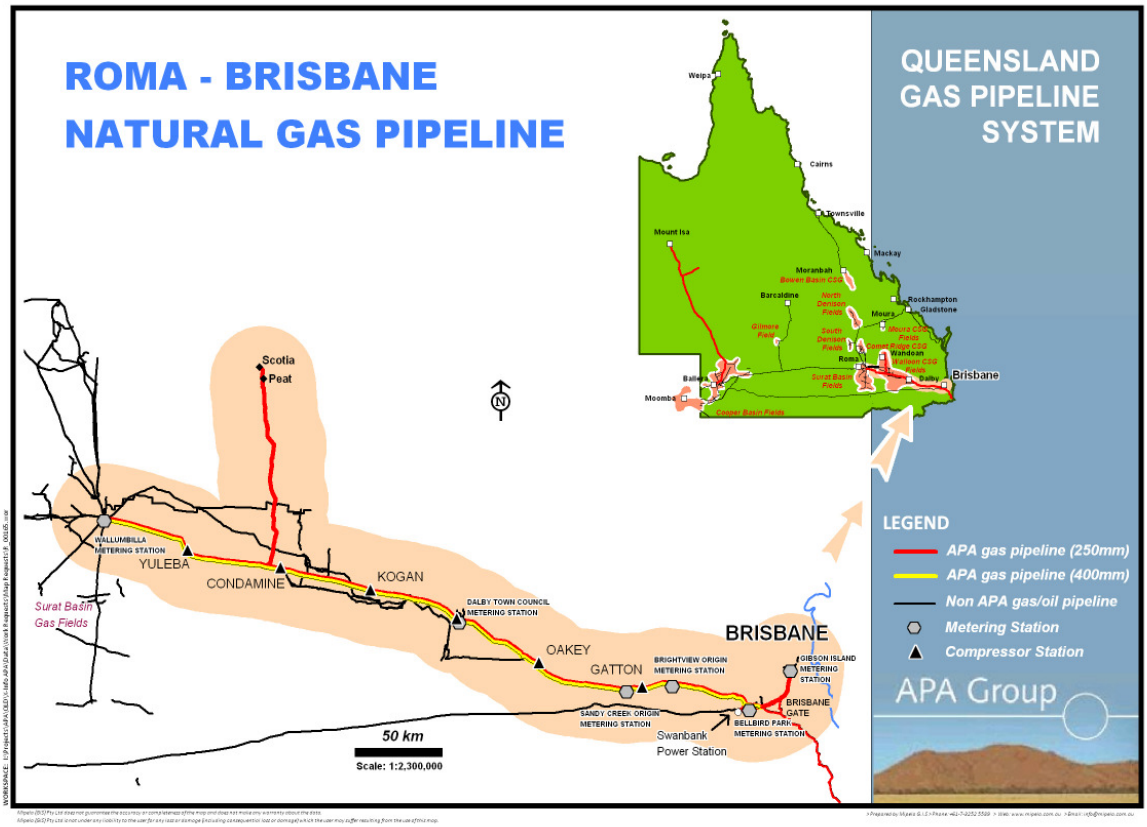
Refer to 14.1.2.1 for a general route map of the Pipeline.

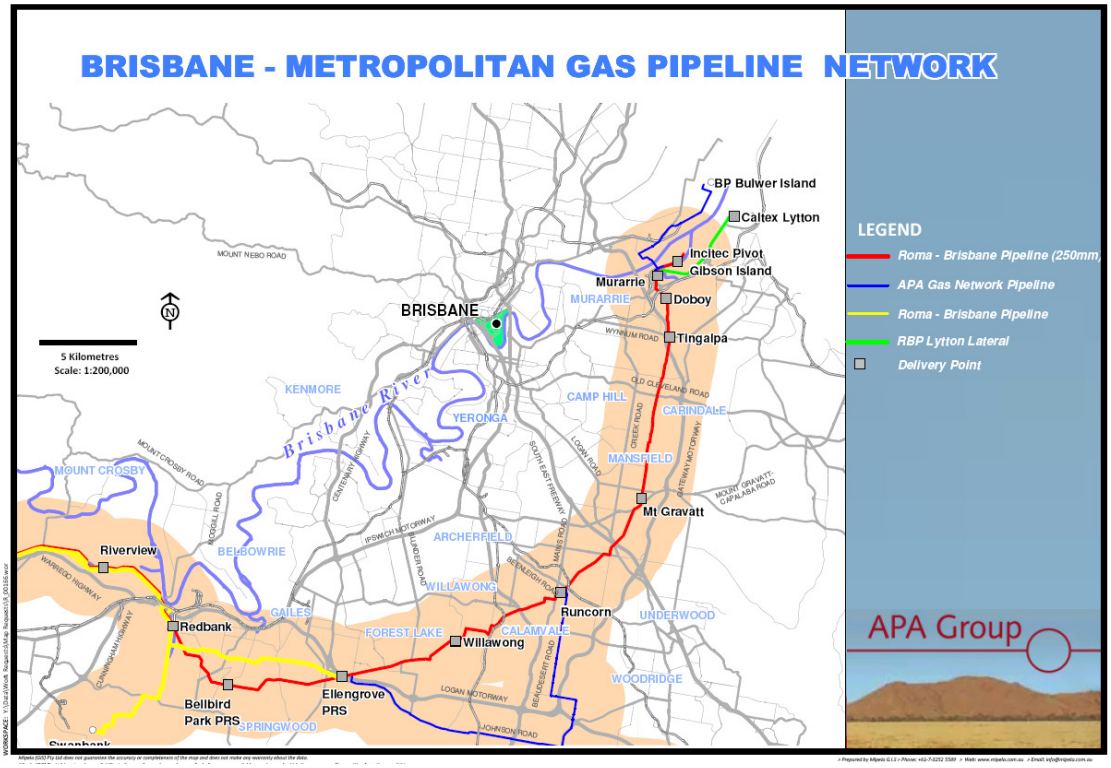
Refer to 14.1.2.2 for a schematic diagram showing major item details of the Pipeline.

The Pipeline is operated from a control room located at the Brisbane Control Centre. In accordance with AS 2885.3 the control room has been provided with an un-interruptible power supply that has sufficient capacity to ensure continuous operation through a reasonable power outage. The Brisbane

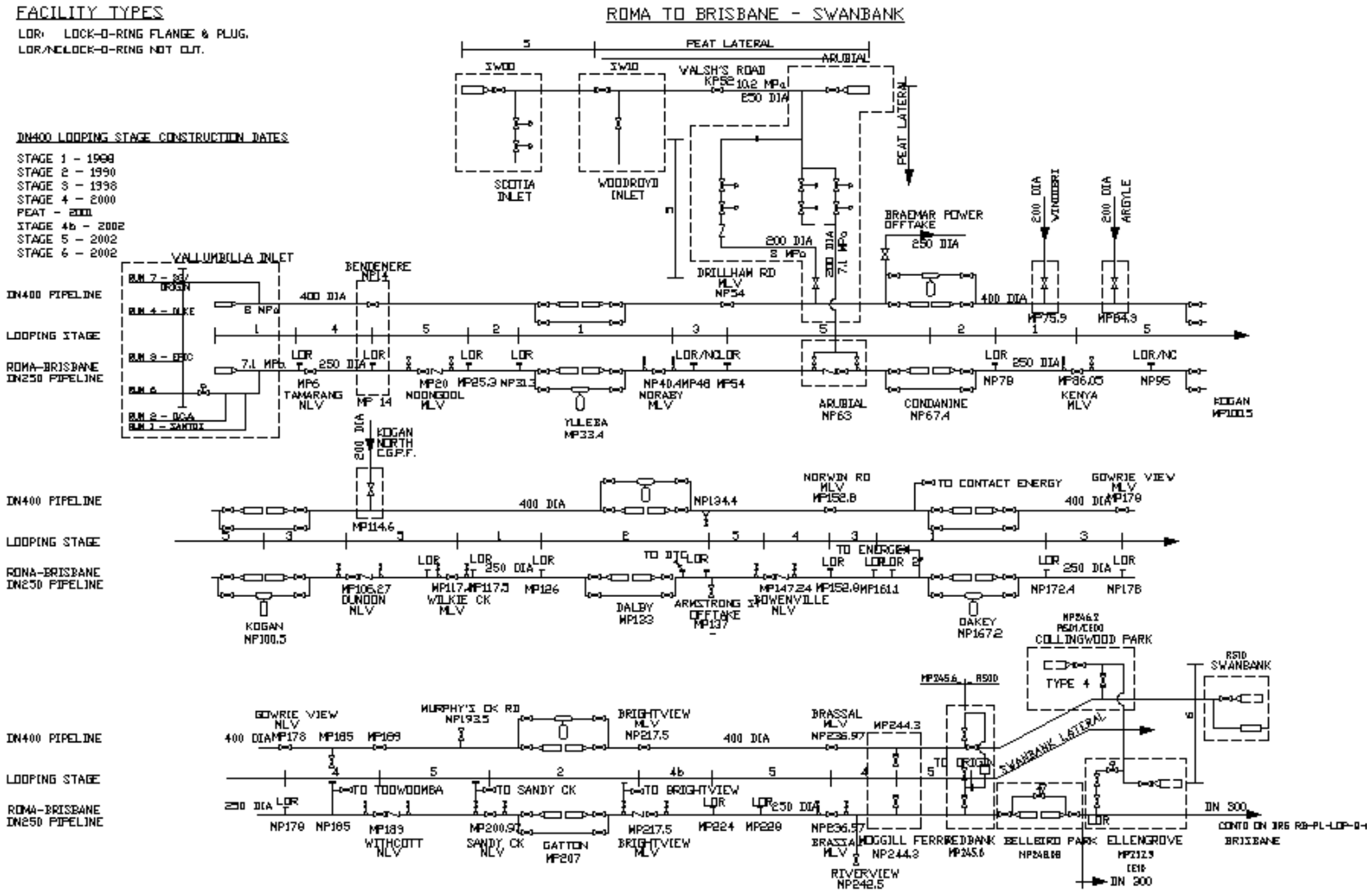
Control Centre uses reliable technology and has an appropriate 24 hour a day security system.

14.1.2.1 General Route Map

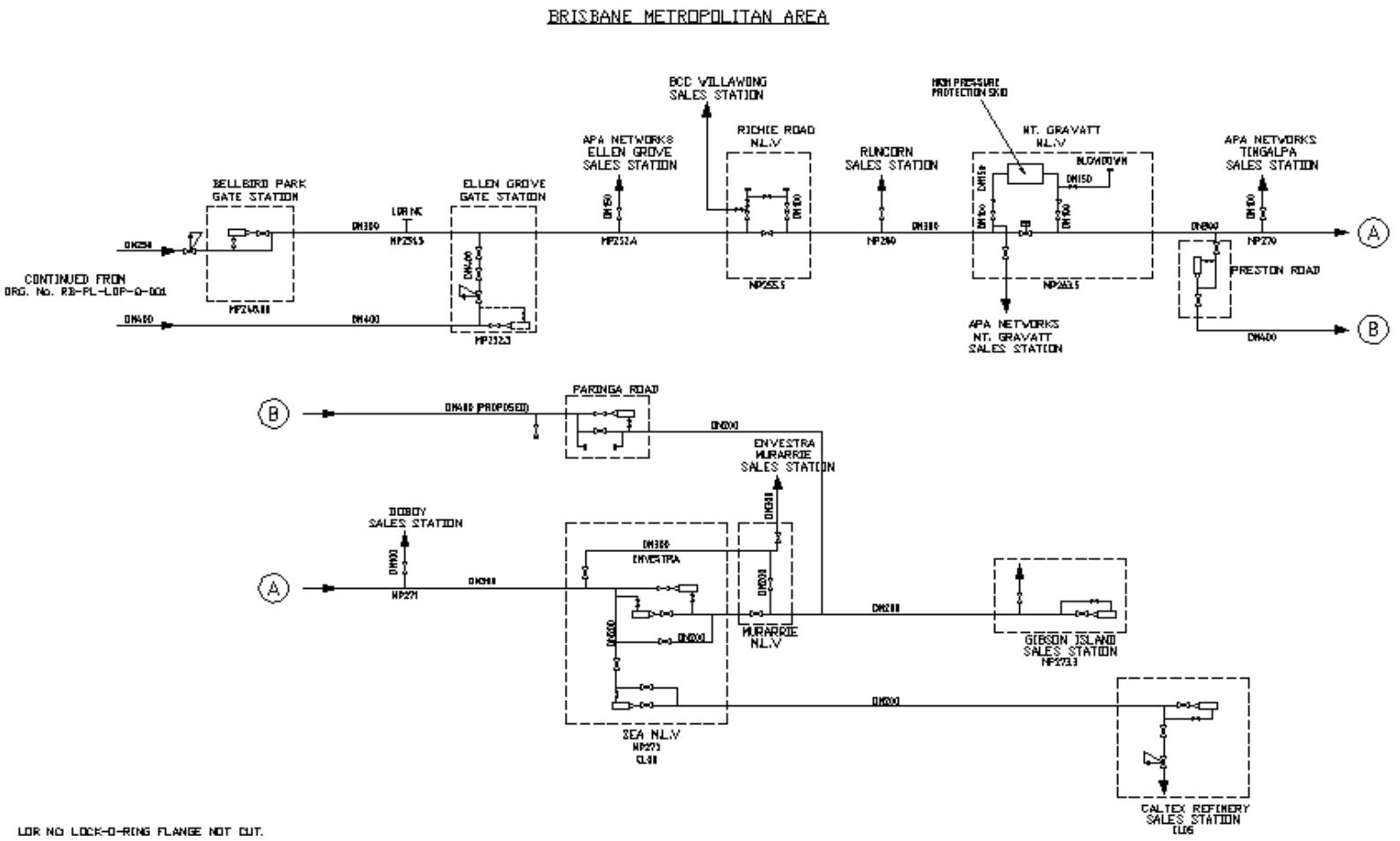




14.1.2.2 Pipeline Schematic RBP



14.1.2.3 Pipeline Schematic Metro Area RBP



14.1.3 KEY DESIGN FEATURES OF THE PIPELINE

The Pipeline dimensions are in accordance with the requirements of the design standards. The key design features of the Pipeline are:

	DN200	DN200 Lytton Lateral	DN250	DN300	DN400
Substance conveyed	**Natural Gas**	**Natural Gas**	**Natural Gas**	**Natural Gas**	**Natural Gas**
Length of pipeline	2.56km	5.4km	396.8km	37.6km	405.55km
Outside diameter	219.1mm	219.1mm	273.1mm	273.1mm	406.4mm
Wall Thickness	4.78mm	8.18mm	4.78-6.35mm	5.16mm	Stage 1&2 6.4-9.5mm Stage 3&4 6.6-9.5mm Stage 5 5.7-8.1mm +9.5mm,9.8mm Stage 6 9.5mm
Pipe specification	API 5L X46	API 5L X52	API 5L X46	API 5L X42	API 5L with Stage 1-4* X60 Part Stage-4 X80 MP 237.50 - MP244 Stage 5 X70,+X60 (Swanbank X70) Stage 6 X60 (Ellengrove)

*Stages refer to the stages of looping that are shown on the network schematic diagram attached in 14.1.2.2.

The Alignment Sheets, read in conjunction with actual Depth Survey Reports, for this Pipeline indicate minimum specified depth of cover, sections where heavy wall pipe has been used, and in hazardous areas where special arrangements using concrete covering of the pipeline has been utilised.

The Pipeline has an external coating, with a combination of impressed current and sacrificial anode cathodic protection systems applied to mitigate corrosion. All above ground pipe work and steelwork is painted with a high quality paint system to resist corrosion. This applies to all above ground pipe work at line valves and scraper stations.

The specifications for the mainline valves (ball valves) are, manufactured and tested in accordance with API 6D.

Flanges and fittings are specified to meet the pipeline's required design pressure at the time of construction. Due to this requirement most flanges are ANSI Class 600 and ANSI Class 300 for the metropolitan pipeline.

Further design and construction features that enhance the security of the Pipeline are:

- Provision of a minimum depth of cover ranging from 750 mm in rural areas, road reserves 900 mm, roadways 1200 mm, Collingwood Drive to Ellengrove 1200 mm;
- Increase in wall thickness and/or depth of cover where the Pipeline passes specific land features or roads;
- Installation of trench barriers on steep slopes on the DN400 pipeline;
- Protection against external corrosion for underground and above ground facilities using cathodic protection and coatings;
- HDD bored sections for environmental and regulatory requirements;
- Lightning protection by use of surge protectors at above ground facilities and buried Insulation joints;
- Remotely, and manually operable line valves;
- Scraper stations at regular intervals to facilitate in-line inspection;
- Above ground posts and buried survey marks to mark the easement;
- Warning signs, aerial markers;
- Security fencing around above ground facilities; and
- Telemetered signals from sensing points along the Pipeline.

The more important of these features are described in greater details below.

14.1.4 MAXIMUM ALLOWABLE OPERATING PRESSURE

The MAOP is the maximum pressure at which a pipeline or section of a pipeline may be operated, following hydrostatic testing in accordance with the AS2885.1 (2007) standard.

The MOP is the operating pressure limit (lower than the MAOP) imposed by the Licensee from time to time for pipeline safety or process reasons.

	DN200	DN200 Lytton Lateral	DN250	DN300	DN400
Substance conveyed	**Natural Gas**	**Natural Gas**	**Natural Gas**	**Natural Gas**	**Natural Gas**
Maximum Allowable Operating Pressure	4,612 kPag	9600kPag	7,136kPag	4,612 kPag 4,200 kPag down stream of Mt Gravatt MLV	9,600 kPag with exception MP 0 to MP 6 - 9,423 kPag DN400 systems MOP is 8,000kPa due to the limitations of the compressor stations

14.1.5 ABOVE GROUND FACILITIES

The main above ground facilities are shown in Table below.

Chainage from Wallumbilla Miles (km)	Site Names	Telemetered	Site Type	
0 (0)	Wallumbilla	T	IS,MS MLV MLV	 DN400 DN250
MP 6 (9.65)	Tamarang		MLV	DN250
MP14 (22.53)	Bendermere		MLV	DN400
MP20 (32.18)	Mongool		MLV	DN250
MP33.4 (53.75)	Yuleba	T	CS SS MLV MLV	DN250 DN400 DN400 DN250
MP40 (64.37)	Moraby Creek		MLV	DN250
MP54 (86.90)	Drillham Road		MLV	DN400
MP63 (101.38)	Condamine River Arubial (Peat Inlet*)	 T	MLV IS,MS	DN250
MP67.4 (108.46)	Condamine Braemar Power offtake (DN400 Suction)	T	CS SS MLV MLV	DN400 DN250 DN400 DN250 DN250
MP 75.9 (122.14)	Windibri	T	IS	DN400
MP 84.3 (135.66)	Argyle	T	IS	DN400
MP86 (138.39)	Kenya Block Valve		MLV	DN250
MP100 (160.93)	Kogan	T	CS SS MLV MLV	DN250 DN400 DN400 DN250
MP106 (170.58)	Kogan Block Valve		MLV	DN250
MP114.6 (KP184.4)	Kogan North Central Gas Processing Facility	T		DN400
MP117 (188.29)	Wilkie Creek		MLV	DN250
MP133 (214.04)	Dalby	T	CS SS MLV MLV	DN400 DN250 DN400 DN250
MP134 (215.64)	Dalby Town Council		MS	Offtake
MP147 (236.56)	Bowenville		MLV	DN250
MP152.8 (245.90)	Norwin Rd		MLV	DN400
MP167 (268.75)	Oakey Oakey APA Network Offtake Oakey Power Offtake	T T	CS SS MLV MLV MS MS	DN250 DN400 DN400 DN250
MP178 (286.45)	Gowrie View		MLV	DN400
MP185 (297.72)	Toowoomba	T	MS	

Chainage from Wallumbilla Miles (km)	Site Names	Telemetered	Site Type	
MP189 (304.15)	Withcott		MLV MLV	DN250 DN400
MP201 (323.47)	Sandy Creek	T	MLV MS	DN250
MP207 (333.12)	Gatton	T	CS SS MLV MLV	DN400 DN250 DN400 DN250
MP217 (349.21)	Brightview	T	MLV MLV MS	DN250 DN400
MP237 (381.40)	Brassall		MLV MLV	DN250 DN400
MP244.1 (392.95)	Moggill Ferry		MLV MLV	DN250 DN 400
MP244.3 (393.15)	Riverview	T	MS	DN250
MP245.6 (395.24)	Redbank	T	MLV MS	DN400
MP246.2 (396.21)	Collingwood Park		MLV	DN250
MP251.1 (404.09)	Swanbank	T	MLV SS MS	DN400 DN400
MP248 (399.11)	Bellbird Park (City Gate)	T	SS MLV MLV	DN 250 DN250 DN300
MP252.3 (406.03)	Ellengrove Gate station Ellengrove APA network off take	T	MLV MS	DN400
MP255.5 (411.17)	Runcorn (Ritchie Rd)	T	MLV MS	DN300
MP263.5 (424.05)	Mt Gravatt	T	MLV MS	DN300
MP270 ((434.51)	Tingalpa (Stanton Rd)	T	MS	DN300
MP274 (440.95)	Doboy	T	MS	DN300
MP274 (440.95)	Southern Electrical Authority (SEA)		MLV SS MLV SS MLV SS	DN300 DN200 DN200
MP274 (440.95)	Murarrie	T	MLV MS	DN300
MP275 (442.56)	Gibson Island	T	MLV SS MS	DN200
	Lytton Meter Station	T	MLV SS MS	DN200

- The Peat Lateral pipeline from the Scotia and Peat coal seam gas field is subject to a separate licence.

IS	Inlet Station
MS	Meter Station
CS	Compressor Station
ScS	Scraper Station
MLV	Main Line Valve
T	Telemetered
MP	Mile post

14.1.6 Operations and Maintenance Bases

The main operations and maintenance offices and bases for the Pipeline are located at Wallumbilla, Condamine, Dalby, Gatton and Brisbane. Emergency equipment is stored at Wallumbilla, Dalby, Gatton and Brisbane.

14.1.7 Compressor Stations

Due to increase demand six compressor stations with scraper facilities were progressively commissioned at Kogan, Dalby, Oakey, Condamine, Yuleba and Gatton between 1981 and 1986. Each compressor station consists of a single, turbine driven, centrifugal compressor unit with the shaft horsepower of each gas turbine unit not exceeding 1185kW at ISO conditions.

Yuleba, Kogan, Oakey compress the DN250 pipeline

Condamine, Dalby, Gatton compress the DN400 pipeline

Each compressor site has scraper facility for both the DN400 and DN250 pipeline sections.

Bellbird Park Metering Station has a receiver facility for the DN250 pipeline on the inlet. Bellbird Park Metering Station and SEA Block valve have scraper facilities for the DN300 pipeline section. Swanbank has DN400 facilities.

The compressors are operated and maintained in accordance with Maintenance Procedures.

14.1.8 Meter Stations

Meter Stations supplied directly from the main pipeline are listed in Table below.

Relevant measurement and status data are telemetered back to the Pipeline Control Centre at Brisbane with the exception of Dalby Town Council, Oakey Meter Station and Doboy Meter Station.

Station Metering	Type	Measurement Standard	Compressibility Standard	Volume Measurement Uncertainty
Wallumbilla	Orifice	AGA 3	AGA 8	+/- 1%
Dalby Town Council	Positive Displacement	B 109.3	None	+/- 1%
Oakey Meter Station	Positive Displacement	B 109.3	NX 19	+/- 1%
Oakey Power Station	Turbine	AGA 7	AGA 8	+/- 1%
Toowoomba	Turbine	AGA 7	AGA 8	+/- 1%
Sandy Creek	Positive Displacement	B 109.3	AGA 8	+/- 1%
Bright View	Positive Displacement	B 109.3	AGA 8	+/- 1%
Riverview	Turbine	AGA 7	AGA 8	+/- 1%
Redbank	Turbine	AGA 7	AGA 8	+/- 1%
Swanbank	Turbine	AGA 7	AGA 8	+/- 1%
Ellengrove	Coriolis	AGA 11	AGA 8	+/- 1%
Runcorn	Turbine	AGA 7	AGA 8	+/- 1%
Mt Gravatt	Turbine	AGA 7	AGA 8	+/- 1%
Tingalpa	Turbine	AGA 7	AGA 8	+/- 1%
Doboy	Positive Displacement	B 109.3	NX 19	+/- 1%
Murarrie	Orifice	AGA 3	AGA 8	+/- 1%
Gibson Island	Orifice	AGA 3	AGA 8	+/- 1%
Caltex Refinery	Coriolis	AGA 3	AGA 8	+/- 1%

14.1.9 CORROSION PROTECTION

The Pipeline has an external coating, with a combination of impressed current and sacrificial anode cathodic protection systems applied to mitigate corrosion. The coatings of the pipeline system are as follows:

- DN200 pipeline - Double wrap PE tape - 55% overlap;
- DN200 pipeline - Dual Layer FBE to AS/NZS 3862 (Lytton Lateral);
- DN250 pipeline - Single wrap PE tape;
- DN300 pipeline - Double wrap PE tape - 55% overlap; and
- DN400 pipeline - HDPE AS 1518

The RBP is not internally lined.

Test points are typically 1.6 km apart. Cross bonding and a galvanic anode system is in place for the DN400 pipeline.

14.2 OPERATING PARAMETERS

14.2.1 GUIDELINES

The purpose of these guidelines is to establish a basis for operational decision making by documenting mandatory and desirable operating parameters used in the operation of the RBP.

14.2.2 SCOPE

The section of pipeline covered by this licence is from Wallumbilla to Brisbane. There are two fully separated pipelines predominately sharing a common easement. Some sections do diverge where it was required during construction.

Note that it does cover the section of pipeline running from Redbank to Swanbank and the extension to the Caltex Refinery.

However, it does not cover the Scotia/ Woodroyd to RBP lateral pipeline as this pipeline is covered by a separate licence.

14.2.3 OPERATING PARAMETERS

The operating parameters listed in this document have been developed acknowledging that there are a number of system constraints that affect the operation of the pipeline on any specific day. A number of these constraints are listed below.

14.2.3.1 System Constraints

- Gas Transportation Agreement (GTA) parameters;
- MAOP;
- System capacity;
- Daily nomination;
- Gas quality; and
- Inlet and outlet pressures and temperature requirements.

14.2.4 OPERATING WITHIN SYSTEM CONSTRAINTS

- The RBP is operated as required to exceed the minimum requirements specified in the GTAs for the pipeline.
- In general, this means that the CSs are operated only as necessary to maintain the minimum pipeline outlet pressures as stated in the GTAs. As at June 2008, the minimum delivery pressures at the RBP delivery points are:

4,500 kPag	Swanbank
4,000 kPag	Braemar - Condamine

1,500 kPag all other delivery points.

- In addition to this minimum pressure requirement, the RBP is operated to allow for the provision of a Storage Service as described in detail in the CS Energy GTA. Briefly, this Storage Service allows CS Energy to receipt gas into the pipeline continuously over a period of seven days, and deliver gas out of the pipeline to the Swanbank E power station, running varying flow rates throughout each day. The quantity of gas in and out of the pipeline is strictly controlled in accordance with the specific requirements outlined in the CS Energy GTA.
- The six compressor stations are operated as required to achieve the requirements outlined above.
- The RBP experiences a seasonal fluctuation in throughput, with the peak flows recorded generally during winter. During this period, the compressor stations normally operate to maintain the minimum delivery pressure requirements.
- In general, more compressor stations are on line during the week as the throughput of the pipeline is increased, to maintain the minimum pressure at Swanbank. The number of compressors on line is then reduced across the weekend as the required throughput drops off. The compressor stations are normally brought on line early, in anticipation of the high draw of the metropolitan area and power station on the pipeline. The line pack of the pipeline has a large bearing on the operations of the compressors.
- The compressors have a limitation on the suction pressure to which they are exposed. Urgent alarms are set within SCADA to alarm as the suction pressure approaches the limit to prompt the Duty Controller to perform actions to adjust the pipeline conditions to prevent the limit being exceeded. If after these actions have been implemented the suction pressure continues to rise one or more compressors will be switched off. A further alarm is set within SCADA to indicate a compressor suction pressure has reached 6,895 kPag.
- Both the DN250 and DN400 pipelines are used to provide the storage and pressure requirements described above. In general, the DN250 pipeline is maintained at a constant throughput, and the DN400 pipeline is used to provide the weekly swing in pressure that is required to achieve the pressure requirements. In practice, however, the relationship between the two pipelines is not as simple as this due to the interaction of pressure and flow from one pipeline to the other.
- Gas quality is monitored closely at each of the pipeline IS. The gas quality specifications are detailed in each GTA, and are in accordance with the Access Principles published for the pipeline. If the gas being presented for receipt into the pipeline does not meet the gas quality requirements specified in the GTA, then the GTA allows for the refusal to accept the gas. The decision to refuse entry of the gas is made by the Gas Contracts Specialist Queensland. In the first instance, communication is made with the relevant shipper to advise of the out-of-specification gas, and in most cases, the shipper will take action to return the gas to specification.

- The pipeline receipt points operate in a flow control mode. The quantity of gas receipted each day through the Wallumbilla Runs 1, 2 and 4 (SBOL, OCA and APA Group) are controlled by the APA Group control room to meet the shipper nominations. The other receipt points of Wallumbilla Run 3 (Epic), Woodroyd, Scotia (Peat lateral); Kogan North, Windibri and Argyle are controlled by others. Note that the interconnect point between the Peat Lateral and the RBP at Arubial is controlled by the APA Group control room. This "receipt" point for the RBP is controlled as required to move gas from the Peat Lateral into the RBP at the appropriate times. By appropriate use of the Arubial station, the amount of compression required on the RBP can be reduced.

14.2.5 OPERATING TO MAINTAIN INTEGRITY

- The MAOP of the various segments of the RBP are as follows:
  - DN400 MAOP 9,600 kPag;
  - DN250 MAOP 7,136 kPag;
  - DN300 MAOP 4,600 kPag and 4,200 kPag downstream of Mt Gravatt;
  - DN200 MAOP 9600 kPag (Lytton Lateral); and
  - DN200 MAOP 4600 kPag.
- It is worth noting the pipeline is not operated in a manner that is specifically designed to avoid Stress Corrosion Cracking (SCC). As stated above, the pipeline is operated to provide services to the shippers as per their GTAs.
- The pipeline is operated to ensure that the pressure is kept at or below MAOP at all times. Each of the pipeline receipt points has an automatic high pressure override function that will restrict flow into the RBP that prevents the pressure exceeding the MAOP and an automatic Emergency Shut Down (ESD) valve that will close if the pressure at that point exceeds the MAOP by more than 5%. A set of alarms in the SCADA system is used to warn the pipeline controller that the pressure limit for the pipeline is approaching so action can be taken to avoid an over pressure situation.
- Each of the compressor stations is equipped with a series of automatic over pressure control systems. The first is a SCADA control limit that will not allow the pipeline controller to accidentally enter a set point higher than the pipeline MAOP. The second is a software limit programmed into the compressor station RTU to shut down the compressor if it is tripped. The third is a hard wired pressure switch to shut down the compressor station if the MAOP of the pipeline is exceeded by more than approximately 4%. The fourth is a station relief valve that is set to trigger if the MAOP is exceeded by more than 10%.
- Other pressure regulation stations and delivery points are protected from over pressure by either relief valves or ESD valves.

15. APPENDIX B CARPENTARIA GAS PIPELINE LICENCE NO. 41

15.1 PIPELINE SYSTEM OPERATION

This section describes the pipeline and above ground facilities, important features of the design, and measures included in the design, that enhance the security of the system. Pipeline Licence is stated as 40 years from start date.

15.1.1 DESIGN LIFE

The design life is 40 years and life end date is December 2038.

A design life review needs to be carried out prior to each design life end date.

Design life reviews need to cover all the issues, aspects and material covered in an MAOP review. Design life reviews need also to cover review of all non-replaceable components and all components not expected to be replaced and all components not subject to a replacement schedule. They should also cover all items essential to the safe operation of the pipeline including MLV actuators, actuator controls and actuator control power supplies. The required coverage in a design life review may be by inclusion of the material in the review or by reference to appropriate material in other current documents such as a current MAOP review. Replacement schedules may be in the design life review or in the SAOP or in an asset management plan.

15.1.2 OVERVIEW OF THE PIPELINE SYSTEM

The CGP consists of 840 km of pipeline from gas fields at Ballera in south western Queensland to Mt. Isa in north western Queensland. Construction of the Pipeline commenced in 1997 and was completed in 1998. It has a free flow capacity of approximately 82 TJ/day and 175 TJ/day with future compression.

EEC receiving inlet at Mt Howitt, BHP Cannington Lateral off-take, WMC Phosphate lateral off-take and Trekelano future off-take are connected to the CGP.

- The pipeline has been designed to comply with the requirements of Australian Standard 2885-1987. Wall thicknesses in excess of the requirements of this standard have been adopted. The DN 300 pipeline has been designed for a Maximum Allowable Operating Pressure (MAOP) of 14,800 kPag.
- From CGP runs in a 30 metre wide Miscellaneous Transportation Infrastructure Corridor (MTIC). When the Queensland Government set up this MTIC, it was envisaged that other services would run within the MTIC in parallel with the Pipeline.
- One compressor station was commissioned at Morney Tank (scraper station 2) in December 2002. A further compressor station

was commissioned in July 2009 at Davenport Downs (scraper station 3).

- Fourteen isolation valves are along the length of the pipeline. These are strategically located to shut down and de-pressurise the pipeline in the event of emergency.

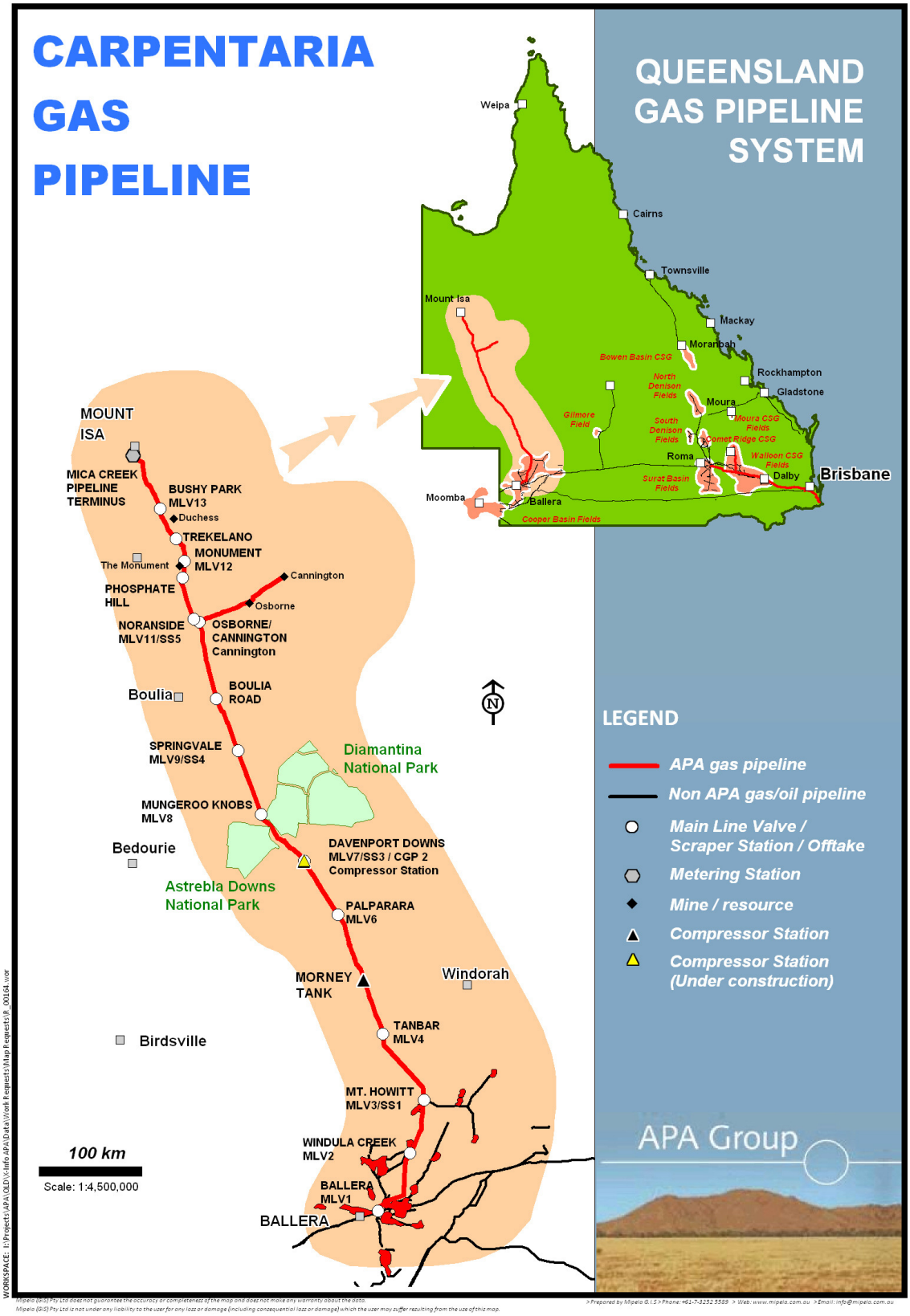
The pipeline is currently operated in accordance with AS2885.3. The pipeline is regulated under the Petroleum and Gas (Production and Safety) Act and Regulation 2004, under the instrument of Pipeline Licence (PL) No 41. PL 41 is named as a strategic pipeline in Schedule 5 of the Petroleum and Gas (Production and Safety) Regulation 2004.

Refer to 15.1.2.1 for a general route map of the Pipeline.

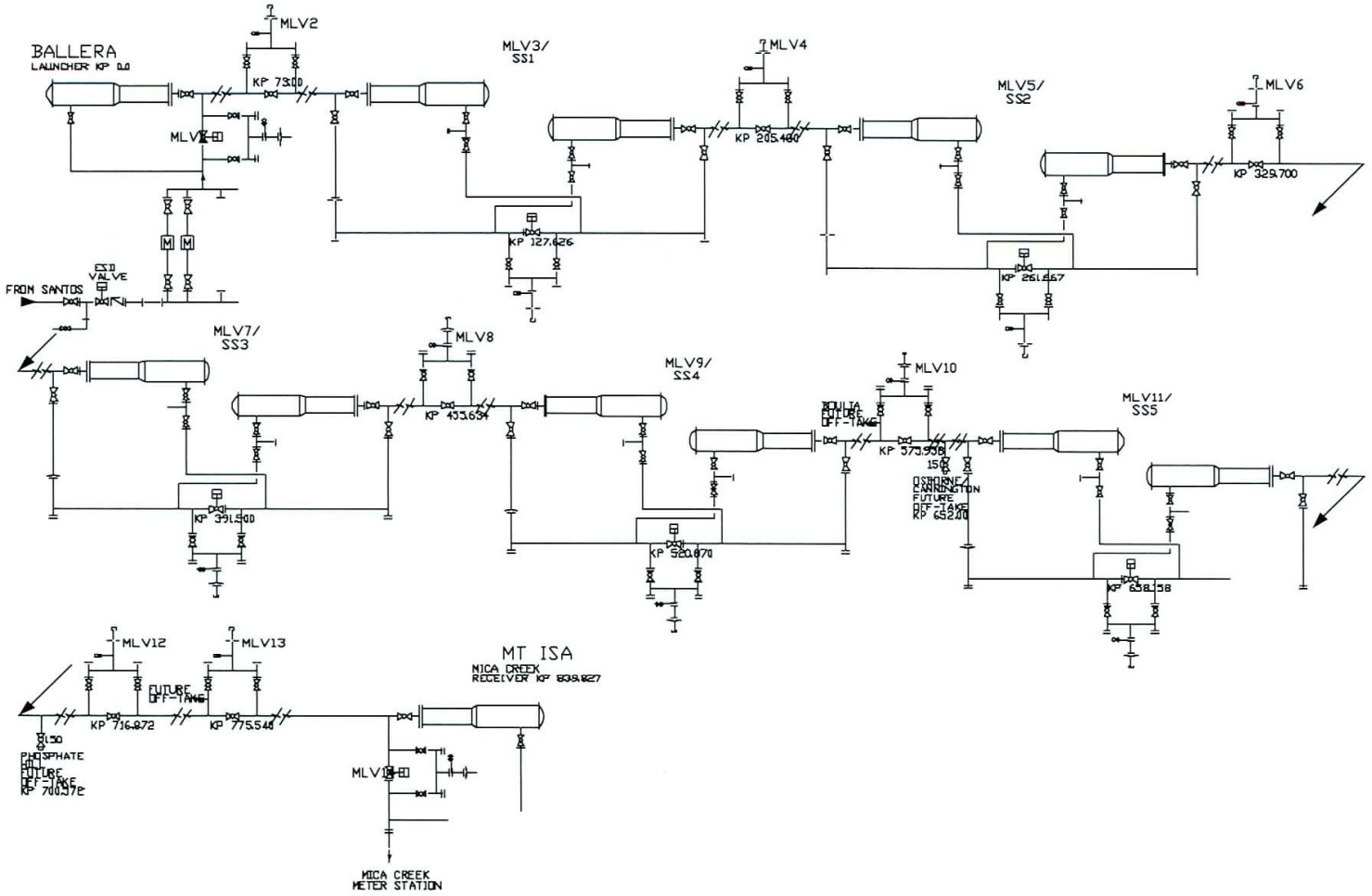
Refer to 15.1.2.2 for a schematic diagram showing major item details of the Pipeline.

The pipeline is managed from a control room located at the Brisbane Control Centre. In accordance with AS 2885.3 the control room has been provided with an un-interruptible power supply that has sufficient capacity to ensure continuous operation through a reasonable power outage. The Brisbane Control Centre uses reliable technology and has an appropriate 24 hour a day security system.

15.1.2.1 General Route Map



15.1.2.2 Pipeline Schematic



15.1.3 KEY DESIGN FEATURES OF THE PIPELINE

The pipeline dimensions are in accordance with the requirements of the design standards. The key design features of the pipeline are:

Nominal Bore	DN300
Substance conveyed	**Natural Gas**
Length of pipeline	840 km
Outside diameter	323.9 mm
Wall Thickness	Standard 6.91 mm for 1.0 Third Party Factor Heavy 8.29 mm for 1.2 Third Party Factor Extra Heavy 10.00 mm for 1.44 Third Party Factor
Pipe specification	API -5L X70

The Alignment Sheets for this pipeline indicate a minimum specified depth of cover, sections where heavy wall pipe has been used, and in hazardous areas where special arrangements using concrete covering of the pipeline has been utilised.

The pipeline has an external coating, and an impressed current cathodic protection system applied to mitigate corrosion. All above ground pipe work and steelwork is painted with a high quality corrosion resistant paint system. This applies to all above ground pipe work at line valves and scraper stations.

The specifications for the mainline valves (ball valves) are, manufactured and tested in accordance with API 6D.

Flanges and fittings are specified to meet the pipeline's required design pressure at the time of construction. Due to this requirement most flanges are Class 900.

Further design and construction features that enhance the security of the Pipeline are:

- Designed to and bettering of code requirements in the selection of the material and the standards of fabrication;
- Provision of a minimum depth of cover ranging from 750mm in rural areas, roadways 1200mm;
- Increase in wall thickness and/or depth of cover where the Pipeline passes specific land features or roads;
- Protection against external corrosion for underground and above ground facilities using cathodic protection and coatings;
- Lightning protection by use of surge protectors at above ground facilities and buried Insulation joints;
- Remotely, and manually operable line valves;
- Scraper stations at regular intervals to facilitate in-line inspection;
- Above ground posts and buried survey marks to mark the easement;
- Warning signs, aerial markers;
- Security fencing around above ground facilities; and
- Telemetered signals from sensing points along the pipeline.

The more important of these features are described in greater details below.

15.1.4 MAXIMUM ALLOWABLE OPERATING PRESSURE

The MAOP is the maximum pressure at which a pipeline or section of a pipeline may be operated, following hydrostatic testing in accordance with the AS2885.1 (2007) standard.

The MOP is the operating pressure limit (lower than the MAOP) imposed by the Licensee from time to time for pipeline safety or process reasons.

	DN300
Substance conveyed	Natural Gas
Maximum Allowable Operating Pressure	14800 kPag

15.1.5 ABOVE GROUND FACILITIES

Consideration of the requirements of the standards applicable at the time and of Safety/Risk factors resulted in the following:

Average Valve Spacing on the Pipeline is 60 Kms.

KP	Site Name	Telemetered	Site Type
0	Ballera Meter Station	T	MS MLV
73	Mainline Valve 2 (Windulah Creek)	T	MLV
127	Mt Howitt Scraper Station	T	SS MLV
205	Mainline Valve 4 (Tanbar)		MLV
261	Morney Tank Scraper Station / Compressor Station	T	SS/CS MLV
329	Mainline Valve 6 (Palparara)		MLV
391	Davenport Downs Scraper Station/ Compressor Station	T	SS/CS MLV
455	Mainline Valve 8 (Mungeroo Knobs)		MLV
520	Springvale Scraper Station	T	SS MLV
575	Mainline Valve 10 (Boulia Road)		MLV
652	Cannington / Osborne Offtake	T	OT
658	Noranside Scraper Station	T	SS MLV
700	Phosphate Hill Offtake	T	OT
716	Mainline Valve 12 (The Monument)		MLV
742	Trekelano Offtake	T	OT
775	Mainline Valve 13 (Bushy Park)		MLV
840	Mica Creek Scraper Station	T	SS MLV

LEGEND

MS	Meter Station
SS	Sales Station
CS	Compressor Station
SS	Scraper Station
MLV	Main Line Valve
OT	Off Take
T	Telemetered
KP	Kilometre Post

15.1.6 OPERATIONS AND MAINTENANCE BASES

The main operations and maintenance offices and bases for the Pipeline are located at Windorah, Boulia, and Mt Isa. Emergency equipment is stored at Windorah, Boulia, and Mt Isa.

15.1.7 COMPRESSOR STATIONS

Due to increase demand in 2002 one compressor station was commissioned at Morney Tank scraper station at KP 261. This compressor station consists of a single turbine driven compressor unit with the shaft horsepower of each gas turbine unit not exceeding 1185kW at ISO conditions.

Due to increase demand in 2009 a further compressor station was commissioned at Davenport Downs scraper station at KP 391.5. This compressor station consists of a single turbine driven compressor unit with the shaft horsepower not exceeding 4850 kW at ISO conditions.

15.1.8 METER STATIONS

There is only one meter station, at Ballera, covered by this SAOP Meter.

Station Metering	Type	Measurement Standard	Compressibility Standard	Volume Measurement Uncertainty
Ballera	Orifice	AGA 3	AGA 8	+/- 1%

15.1.9 CORROSION PROTECTION

The coating of the pipeline system is an extruded HDPE to AS 1518.

Test points are typically 2.5km apart.

The CGP is not internally lined.

Fusion Bonded Epoxy (FBE) is used as the coating material for 10Km downstream of Ballera and 5Km downstream of Morney Tank and all planned scraper stations because of the possibility of higher temperatures in those

regions if compression is installed. FBE is applied as per AS3862-1991 to a minimum average dry film thickness of 375microns (0.375mm).

15.2 OPERATING PARAMETERS

15.2.1 GUIDELINES

The purpose of these guidelines is to establish a basis for operational decision making by documenting mandatory and desirable operating parameters used in the operation of the CGP.

15.2.2 SCOPE

The section of pipeline covered by this licence is from Ballera to Mica Creek at Mt Isa.

- Note that the pipeline terminates at a flange within the Mica Creek scraper station compound, and does not include any of the Mica Creek metering station (MCMS). The MCMS is covered by a different pipeline licence and specifics for the SAOP are contained in Appendix D or Section 17.
- The CGP does not include any of the Cannington Lateral pipeline (approx 112 km pipeline from Corrie Downs to Cannington).
- At Phosphate hill, the CGP terminates at the downstream flange of the ANSI Class 900 valve located at the pipeline offtake. The short pipeline (approx 5 km) from the Phosphate Hill offtake across to the plant and meter station are owned, operated and licenced to others.
- At Mt Howlett, the CGP does not cover any of the pipeline from the Eromanga gas plant to Mt Howlett (approx 50 km), as this pipeline is owned, operated and licenced to others.

15.2.3 OPERATING PARAMETERS

The operating parameters listed in this document have been developed acknowledging that there are a number of system constraints that affect the operation of the pipeline on any specific day. A number of these constraints are listed below.

15.2.3.1 System Constraints

- Gas Transportation Agreement (GTA) parameters;
- MAOP;
- System Capacity;
- Daily nomination;
- Gas quality; and

- Inlet and outlet pressure and temperature requirements

15.2.4 OPERATING WITHIN SYSTEM CONSTRAINTS

- The South West Queensland Producers (SWQP) GTA places an obligation on the shipper (SWQP) to maintain a receipt pressure at Ballera of 14,800 kPag. Note that this is regardless of flow meaning that this pipeline operates with its Ballera receipt point in a pressure control mode. The flow and pressure at Ballera is managed and controlled by SWQP at their Ballera plant. If they are not maintaining their contractually obligated pressure (i.e. the Ballera pressure is lower than 14,800 kPag), then our remedy is to contact the shipper via telephone or escalate via client commercial services.
- If the pressure being delivered by SWQP at Ballera is above the MAOP of the pipeline (14,800 kPag) by more than 5%, then an automatic Emergency Shut Down (ESD) valve will close and stop all flow of gas into the pipeline at Ballera. An operator is required to attend site to reset this ESD valve before the flow of gas can resume.
- There is a receipt point at the Mt Howitt scraper station to receipt gas from the Energy Equity Corporation (EEC) gas plant at Eromanga. This gas plant has been idle since early 2002, and there are no plans in place to resume operation. This could change at any time.
- A gas chromatograph monitors the quality and composition of the gas as it enters the pipeline at Ballera and at Mt Howitt, and as it exits the pipeline at Mica Creek and Phosphate Hill.
- A moisture analyser monitors the level of water vapour in the gas that is entering the pipeline at Ballera and at Mt Howitt.
- Compressor stations are installed at Morney Tank and Davenport Downs. These compressors are used as required to maintain a delivery pressure at Mica Creek above 3,000 kPag. Note that the operation of these compressor stations is dependant upon the throughput of the pipeline. Whilst the pipeline throughput is below approximately 86 TJ/d, operation of the compressors is not required. For pipeline throughput above this, the compressors are used to build pressure at Mica Creek (up to say 7,500 kPag), and then shut down while the pressure at Mica Creek decays again. The compressors are restarted when the Mica Creek pressure falls to around 4,000 kPag, to allow time for its impact to reach Mica Creek (580 km) before the Mica Creek pressure falls below 3,000 kPag.
- The contractual delivery pressure at Mica Creek is 2,000 kPag, with an aim to maintain a pressure above 3,000 kPag. The same requirement exists at the Phosphate Hill delivery point. It is noted that if this delivery pressure is maintained at Mica Creek, then it will also be met at the upstream delivery points of Phosphate Hill and Corrie Downs. The contractual delivery pressure at Corrie Downs is 5,000 kPag. If the pipeline is operated to maintain a pressure at

Mica Creek above 3,000 kPag, then the pressure at Corrie Downs is usually above 6,000 kPag.

15.2.5 OPERATING TO MAINTAIN INTEGRITY

- The pipeline is operated to ensure that the pressure is kept at or below MAOP at all times. ESD valves provide an automatic trip if the pressure exceeds MAOP by 5%. Alarms in the pipeline control centre are used to warn that the pressure is approaching MAOP so that an action can be taken to avoid exceeding MAOP. As discussed above, the MAOP for the pipeline is 14,800 kPag; and
- It must be at a temperature which is not less than 0°C and not higher than the greater of:
  - 50°C; or
  - the ambient temperature plus 12°C but in any event not to exceed 60°C.

16. APPENDIX C CANNINGTON LATERAL LICENCE NO. 42

16.1 PIPELINE SYSTEM OPERATION

This section describes the pipeline and above ground facilities, important features of the design, and measures included in the design, that enhance the security of the system. Pipeline Licence No. 42 is stated as 40 years from start date.

16.1.1 DESIGN LIFE

The design life as per the Pipeline Licence condition is 40 years and life end date is November 2038.

A design life review needs to be carried out prior to each design life end date.

Design life reviews need to cover all the issues, aspects and material covered in an MAOP review. Design life reviews need also to cover review of all non-replaceable components and all components not expected to be replaced and all components not subject to a replacement schedule. They should also cover all items essential to the safe operation of the pipeline including MLV actuators, actuator controls and actuator control power supplies. The required coverage in a design life review may be by inclusion of the material in the review or by reference to appropriate material in other current documents such as a current MAOP review. Replacement schedules may be in the design life review or in the SAOP or in an asset management plan.

16.1.2 OVERVIEW OF THE PIPELINE SYSTEM

- The Cannington Lateral consists of 98 km of DN150mm pipeline originating at Corrie Downs off-take on the Carpentaria Gas Pipeline (CGP) and running due east of the CGP. The Cannington Lateral transports gas from gas fields at Ballera in south western Queensland to BHP Cannington and Osborne Mine in north western Queensland. The Cannington Lateral was construction in 1997 and was completed in 1998. It has a free flow capacity of approximately 12.8 TJ/day.
- The pipeline has been designed to comply with the requirements of Australian Standard 2885.1. Wall thicknesses in excess of the requirements of this standard have been adopted. The Pipeline DN 150 pipeline has been designed for a Maximum Allowable Operating Pressure (MAOP) of 9,900 kPag.
- The pipeline runs in a 30 metre wide easement.
- Isolation valves are located at either end of the lateral. These are strategically located to shut down and de-pressurise the pipeline in the event of emergency.

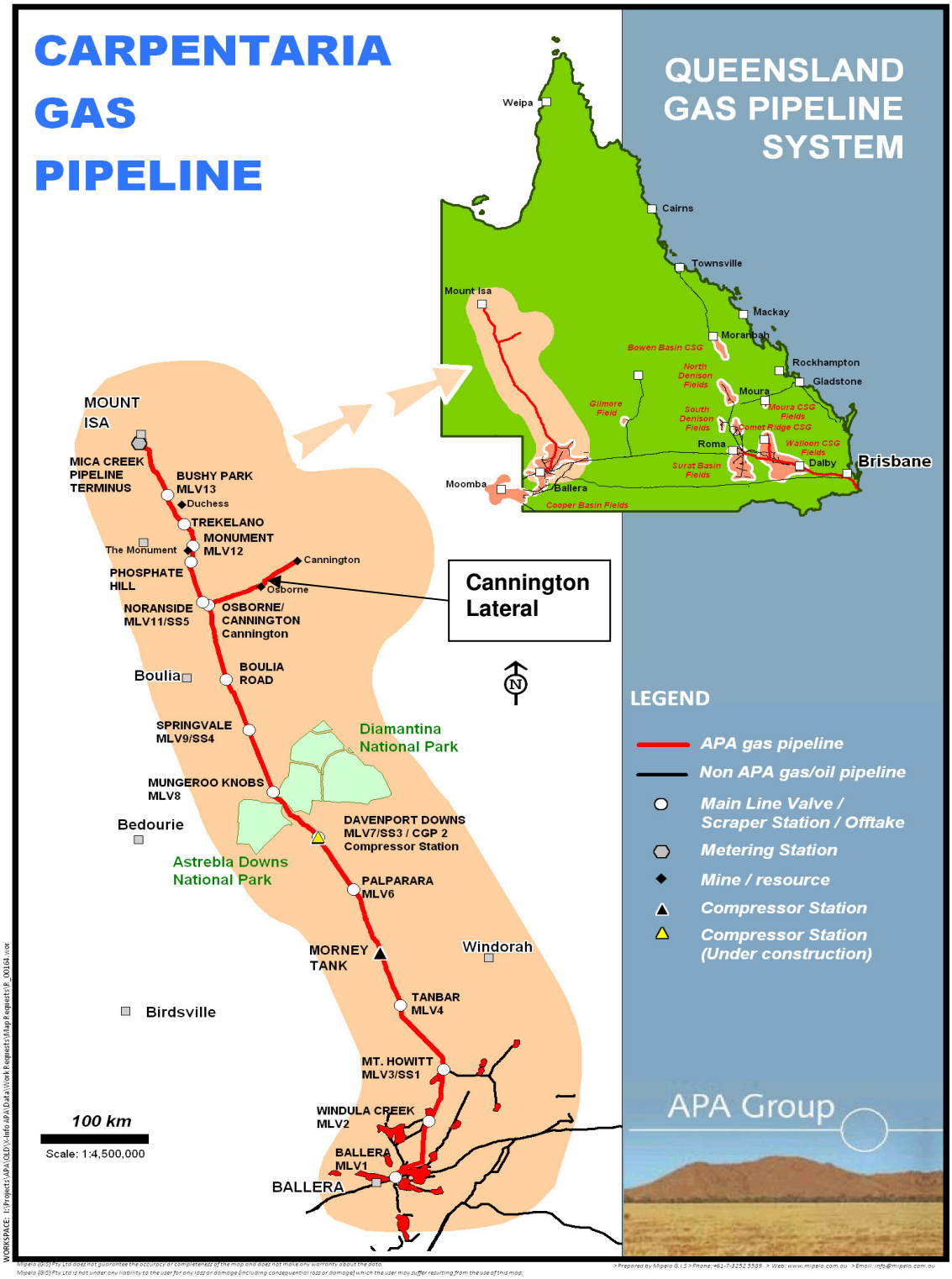
The pipeline is currently operated in accordance with AS2885.3. The pipeline is regulated under the Petroleum and Gas (Production and Safety) Act and Regulation 2004, under the instrument of Pipeline Licence (PL) No 42. PL No 42 is not named as a strategic pipeline in Schedule 5 of the Petroleum and Gas (Production and Safety) Regulation 2004.

Refer to 16.1.2.1 for a general route map of the Pipeline.

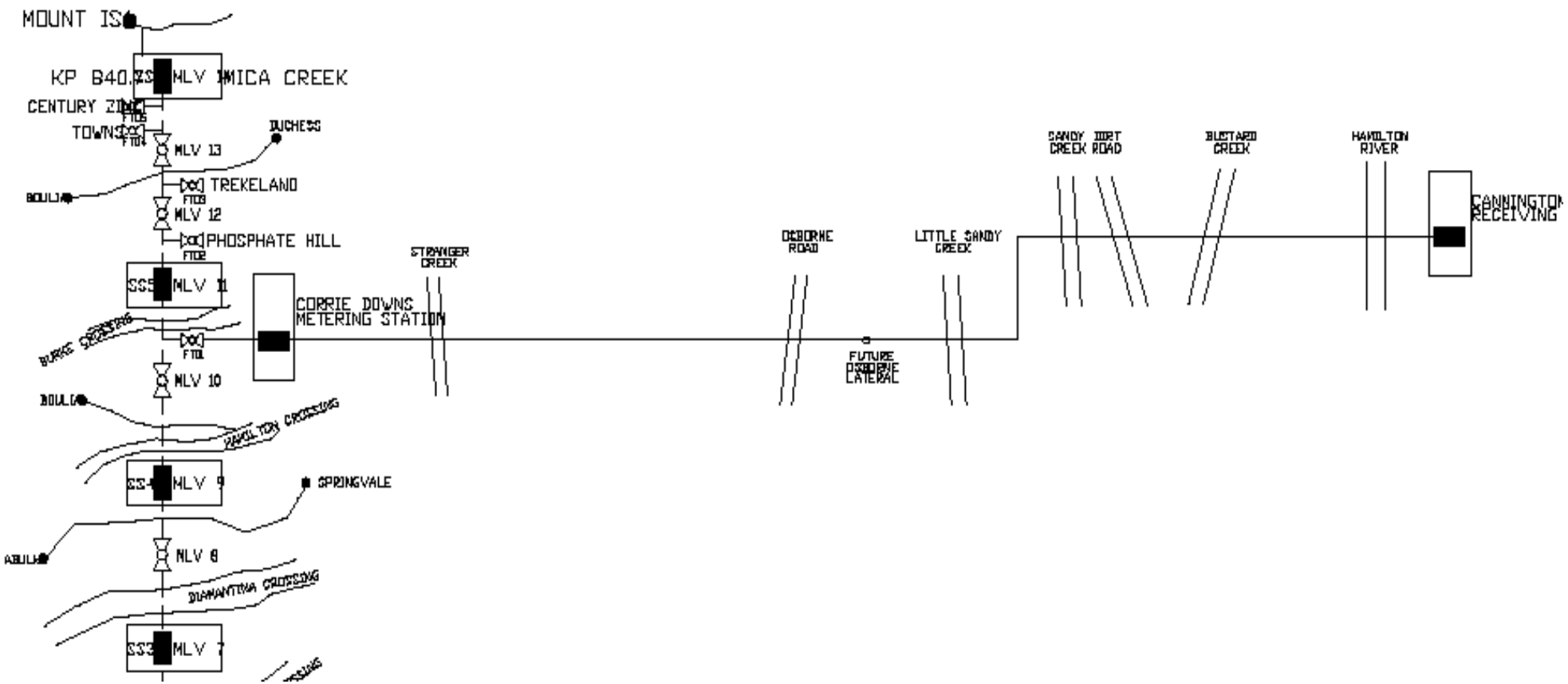
Refer to 16.1.2.2 for a schematic diagram showing major item details of the Pipeline.

The pipeline is managed from a control room located at the Brisbane Control Centre. In accordance with AS 2885.3 the control room has been provided with an un-interruptible power supply that has sufficient capacity to ensure continuous operation through a reasonable power outage. The Brisbane Control Centre uses reliable technology and has an appropriate 24 hour a day security system.

16.1.2.1 General Route Map



16.1.2.2 Schematic of Pipeline



16.1.3 KEY DESIGN FEATURES OF THE PIPELINE

The pipeline dimensions are in accordance with the requirements of the design standards. The key design features of the pipeline are:

Nominal Bore	DN150
Substance conveyed	Natural Gas
Length of pipeline	98 km
Outside diameter	168.3 mm
Wall Thickness	Standard 4.13 mm Heavy 4.95 mm used at two locations where overhead power lines cross the lateral at KP51.318 And KP 95.484.
Pipe specification	API -5L X42

The Alignment Sheets for this pipeline indicate minimum specified depth of cover, sections where heavy wall pipe has been used, and in hazardous areas where special arrangements using concrete covering of the pipeline has been utilised.

The pipeline has an external coating, and galvanic anodes provide cathodic protection to mitigate corrosion. All above ground pipe work and steelwork is painted with a high quality corrosion resistant paint system. This applies to all above ground pipe work at scraper stations.

The specifications for the mainline valves (ball valves) are, manufactured and tested in accordance with API 6D.

Flanges and fittings are specified to meet the pipeline's required design pressure at the time of construction. Due to this requirement most flanges are Class 600.

Further design and construction features that enhance the security of the Pipeline are:

- Designed to and bettering of code requirements in the selection of the material and the standards of fabrication;
- Provision of a minimum depth of cover ranging from 750mm in rural areas, roadways 1200mm;
- Increase in wall thickness and/or depth of cover where the Pipeline passes specific land features or roads;
- Protection against external corrosion for underground and above ground facilities using cathodic protection and coatings;
- Lightning protection by use of surge protectors at above ground facilities and buried Insulation joints;
- Remotely, and manually operable station valves;
- Scraper stations at both ends to facilitate in-line inspection;
- Above ground posts and buried survey marks to mark the easement;
- Warning signs, aerial markers;

- Security fencing around above ground facilities; and
- Telemetered signals from sensing points at both ends of the pipeline.

The more important of these features are described in greater details below.

16.1.4 MAXIMUM ALLOWABLE OPERATING PRESSURE

The MAOP is the maximum pressure at which a pipeline or section of a pipeline may be operated, following hydrostatic testing in accordance with the AS2885.1 (2007) standard.

The MOP is the operating pressure limit (lower than the MAOP) imposed by the Licensee from time to time for pipeline safety or process reasons.

	DN150
Substance conveyed	Natural Gas
Maximum Allowable Operating Pressure	9.900 kPag

16.1.5 ABOVE GROUND FACILITIES

Consideration of the requirements of Australian Standard 2885.1 and of Safety / Risk factors resulted in the following:

There are no intermediate valves and the valve spacing on the Pipeline is 98 km.

KP	Site Name	Telemetered	Site Type
0	Corrie Downs	T	MS SS
52.36	Osborne take off		OT
98.02	Cannington	T	SS PR

LEGEND

PR	Pressure Reduction
MS	Meter Station
SS	Scraper Station
OT	Offtake

16.1.6 OPERATIONS AND MAINTENANCE BASES

The main operations and maintenance offices and bases for the Pipeline are located at Boulia, Mt Isa, and Brisbane. Emergency equipment is stored at Boulia, and Mt Isa.

16.1.7 COMPRESSOR STATIONS

There is no compression on this pipeline.

16.1.8 METER STATIONS

Meter Stations supplied directly from the main pipeline are listed in below.

Station Metering	Type	Measurement Standard	Compressibility Standard	Volume Measurement Uncertainty
Cannington	Turbine	AGA 7	AGA 8	+/- 1%

SPECIAL NOTE: the above MS is not part of this SAOP, the information is for reference only.

16.1.9 CORROSION PROTECTION

All of the welded joints and pipes are hand coated using a tape coating system. (Polyken tape 943 with Polyken 955 outer wrap).

Test points are typically 2.5km apart.

The Cannington Lateral is not internally lined.

16.2 OPERATING PARAMETERS

16.2.1 GUIDELINES

The purpose of these guidelines is to establish a basis for operational decision making by documenting mandatory and desirable operating parameters used in the operation of the CGP and the Cannington Lateral.

16.2.2 SCOPE

The section of pipeline covered by this licence is from Corrie Downs to the upstream face of the inlet flange on the Cannington meter station.

16.2.3 OPERATING PARAMETERS

The operating parameters listed in this document have been developed acknowledging that there are a number of system constraints that affect the operation of the pipeline on any specific day. A number of these constraints are listed below.

16.2.3.1 System Constraints

- Gas Transportation Agreement (GTA) parameters;
- MAOP;
- System Capacity;
- Daily nomination;
- Gas quality; and
- Inlet and outlet pressure and temperature requirements

16.2.4 OPERATING WITHIN SYSTEM CONSTRAINTS

- It is worth noting that the GTA's that apply to the Cannington lateral are different to those that apply to the Carpentaria Gas Pipeline (CGP).
- The inlet to this pipeline is operated in a pressure control mode, with the pressure set point set to approximately 7,500 kPag via a pneumatic pressure control system on site. The pipeline control centre is not able to adjust this pressure set point from the control room. Note that the receipt pressure should be in the range from 5,000 kPag to 9,900 kPag.
- The pipeline control centre is able to shut in the pipeline at Corrie Downs via Shut Down Valves (SDV's) if required.
- There is no gas quality monitoring on this pipeline. The gas quality (composition and moisture) is monitored on the Carpentaria Gas Pipeline (CGP), and is assumed to be consistent with the gas that is flowing in the Cannington Lateral pipeline.
- The delivery point pressure requirement is 2,000 kPag at the outlet of the pipeline (upstream face of the inlet flange on the Cannington meter station).
- There is very little control available for this pipeline. There are no compressors, and the receipt point pressure control set point can only be changed on site. The control elements available are restricted to shutdown valves at Corrie Downs that are designed to avoid over pressuring the pipeline.

16.2.5 OPERATING TO MAINTAIN INTEGRITY

- Pressure fluctuations on this pipeline are limited where possible through the use of a pressure control system at the inlet to the pipeline;
- The pipeline is operated to ensure that the pressure is kept at or below MAOP at all times. ESD valves provide an automatic trip if the pressure exceeds MAOP by 5%. Alarms in the pipeline control centre are used to warn that the pressure is approaching MAOP so that an

action can be taken to avoid exceeding MAOP. As discussed above, the MAOP for the pipeline is 9,900 kPag; and

- It must be at a temperature which is not less than 0°C and not higher than the greater of:
  - 50°C; or
  - the ambient temperature plus 12°C but in any event not to exceed 60°C.

17. APPENDIX D MICA CREEK METER STATION LICENCE 50 AND MT ISA LATERAL LICENCE 51

17.1 PIPELINE SYSTEM OPERATION

This section describes the pipeline and above ground facilities, important features of the design, and measures included in the design, that enhance the security of the system. Pipeline Licences are stated as 40 years from start date.

17.1.1 DESIGN LIFE

The design life is 40 years and life end date is March 2038.

A design life review needs to be carried out prior to each design life end date.

Design life reviews need to cover all the issues, aspects and material covered in an MAOP review. Design life reviews need also to cover review of all non-replaceable components and all components not expected to be replaced and all components not subject to a replacement schedule. They should also cover all items essential to the safe operation of the pipeline including Main Line Valves (MLV) actuators, actuator controls and actuator control power supplies. The required coverage in a design life review may be by inclusion of the material in the review or by reference to appropriate material in other current documents such as a current MAOP review. Replacement schedules may be in the design life review or in the SAOP or in an asset management plan.

17.1.2 OVERVIEW OF THE PIPELINE SYSTEM

Mt. Isa Mines (MIM) Lateral (Pipeline Licence No.51) consists of a DN150 pipeline 6.2 km long to transport natural gas from the Mica Creek Meter Station (MCMS) (Pipeline Licence No.50) to Mount Isa Mines. The meter station and the lateral were commissioned in 1998. The lateral has a nominal capacity of approximately 26 TJ/day with an operating pressure of 2,700 kPag at the inlet terminal point and 1,000 kPag at the outlet terminal point.

The MIM lateral has been designed to comply with the requirements of Australian Standard 2885.1-1997. Wall thicknesses in excess of the requirements of this standard have been adopted. The lateral has been designed for a Maximum Allowable Operating Pressure (MAOP) of 5,100 kPag in the DN 168.3 mm section, and 1,960 kPag for the reminder of the pipeline.

The extension of the MIM Lateral to the X41 Power Station consists of approximately 243 m of DN150 pipeline that runs directly to the X41 Power Station. This also includes a gas metering and pressure reduction facility (X41 Meter Station).

MCMS consists of a fully fenced compound with an area less than 6000 square meters and less than 250 metres long. This comprises a series of gas treatment and pressure reduction skids with a MAOP of 10,200kPa. The

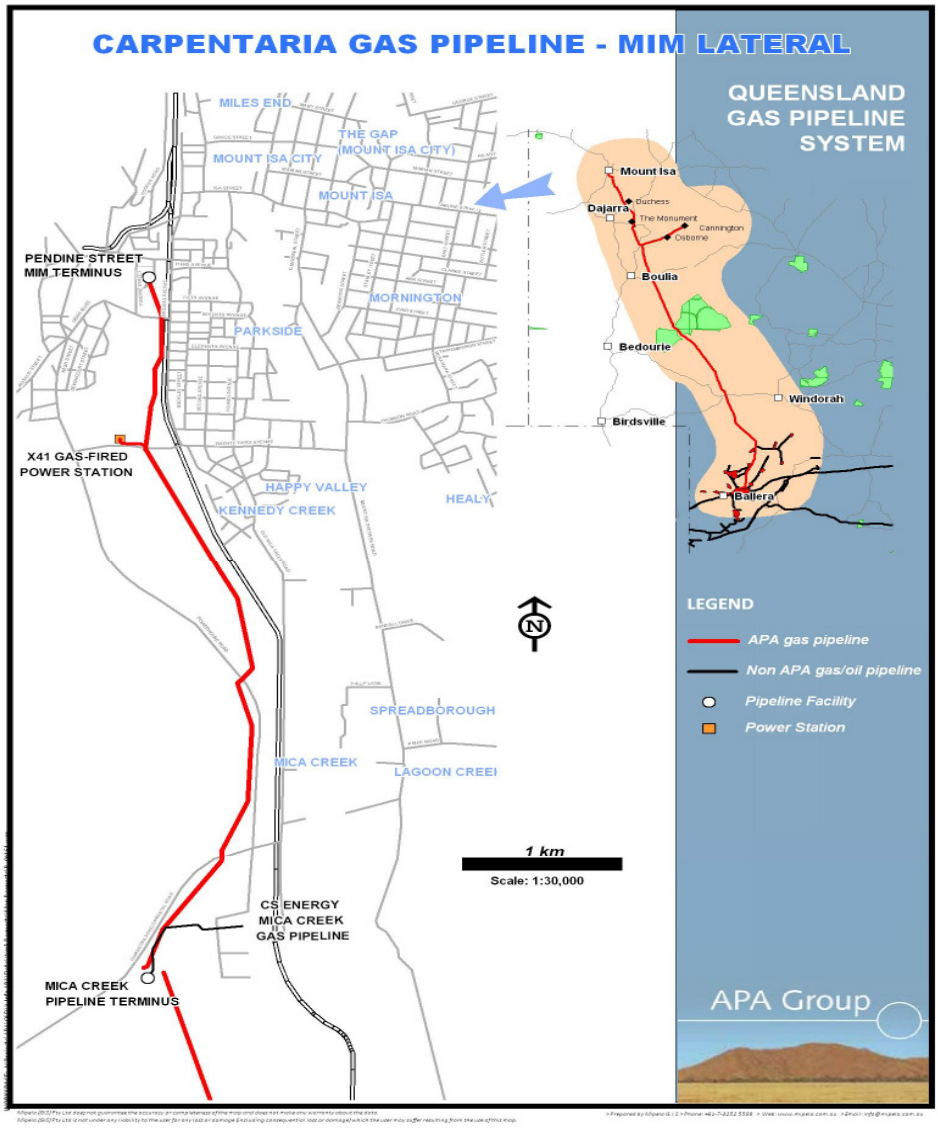
licensed section under consideration adjoins Licence No.41 on the inlet end and adjoins the separately licensed and operated laterals to MIM (Pipeline Licence No.51) and the Mica Creek Power Station (Pipeline Licence No.49 held by CS Energy) at the outlet. Significant parts of this system are comprised of above ground pipe and are designed to AS 4041.

The pipeline is currently operated in accordance with AS2885.3. The pipeline is regulated under the Petroleum and Gas (Production and Safety) Regulation 2004, under the instrument of Pipeline Licences (PL) No.50 and No.51. PL No.50 and No.51 are not named as a strategic pipeline in Schedule 5 of the Petroleum and Gas (Production and Safety) Regulation 2004.

Refer to 17.1.2.1 for a general route map of the Pipeline.

The pipeline is operated from a control room located at the Brisbane Control Centre. In accordance with AS 2885.3 the control room has been provided with an un-interruptible power supply that has sufficient capacity to ensure continuous operation through a reasonable power outage. The Brisbane Control Centre uses reliable technology and has an appropriate 24 hour a day security system.

17.1.2.1 General Route Map



17.1.3 KEY DESIGN FEATURES OF THE PIPELINE

The pipeline dimensions are in accordance with the requirements of the design standards. The key design features of the pipeline are:

MIM Lateral	DN150
Substance conveyed	Natural Gas
Length of pipeline	6.2 km
Outside diameter	168.3 mm for 6,115m and 88.9 mm for 86m
Wall Thickness	6.4 mm, 4.8 mm for the 168.3 mm section and 5.5 mm for the 88.9mm section
Pipe specification	API 5L X42

X41 Lateral	DN150 and DN300
Substance conveyed	Natural Gas
Length of pipeline	243 m
Outside diameter	• 168.3 mm for 173 m • 323.9 mm for 70 m (downstream of X41 Meter Station)
Wall Thickness	• 7.11 mm (DN150) • 6.4 mm (DN300)
Pipe specification	API 5L X42

The Alignment Sheets for this pipeline indicate minimum specified depth of cover, sections where heavy wall pipe has been used, and in hazardous areas where special arrangements using concrete covering of the pipeline has been utilised.

The pipeline has an external coating, and a galvanic anode cathodic protection system applied to mitigate corrosion. All above ground pipe work and steelwork is painted with a high quality corrosion resistant paint system. This applies to all above ground pipe work.

The specifications for the mainline valves (ball valves) are, manufactured and tested in accordance with API 6D.

Flanges and fittings are specified to meet the pipeline's required design pressure at the time of construction. Due to this requirement most flanges are Class 300.

Further design and construction features that enhance the security of the Pipeline are:

- Designed to and bettering of code requirements in the selection of the material and the standards of fabrication;
- Provision of a minimum depth of cover ranging from 750mm in rural areas, roadways 1200mm;
- Increase in wall thickness and/or depth of cover where the Pipeline passes specific land features or roads;
- Protection against external corrosion for underground and above ground facilities using cathodic protection and coatings;

- Lightning protection by use of surge protectors at above ground facilities and buried Insulation joints;
- Manually operable valves;
- Above ground posts and buried survey marks to mark the easement;
- Warning signs;
- Security fencing around above ground facilities; and
- Telemetered signals from sensing points at each end of the pipeline.

The more important of these features are described in greater details below.

17.1.4 MAXIMUM ALLOWABLE OPERATING PRESSURE

The MAOP is the maximum pressure at which a pipeline or section of a pipeline may be operated, following hydrostatic testing in accordance with the AS2885.1 (2007) standard.

The MOP is the operating pressure limit (lower than the MAOP) imposed by the Licensee from time to time for pipeline safety or process reasons.

	MIM Lateral DN150	X41 Lateral DN150
Substance conveyed	Natural Gas	
Maximum Allowable Operating Pressure	5,100 kPag for the laterals outlet skid and 1,960 kPag for the remainder of the pipeline.	5,100 kPag upstream of the X41 Meter Station and 1,960 kPag downstream of the X41 Meter Station

17.1.5 ABOVE GROUND FACILITIES

Consideration of the requirements of the standards and of Safety / Risk factors determined that no intermediate valves were required.

KP	Site Name	Telemetered	Site Type
MITL 0	Mica Creek Meter Station	T	MS
MITL 4.2	X41 Meter Station Lateral Offtake		OT
MITL 6.2	Pendine Street pressure reduction skid	T	MLV, PR
XL 0.2	X41 Meter Station	T	MS, PR
XL 0.25	X41 Power Station Outlet		

LEGEND

MITL Kilometre distance from Mica Creek Meter Station

XL Kilometre distance from X41 Meter Station Lateral Offtake

MS Meter Station
MLV Main Line Valve
PR Pressure Reduction

17.1.6 Operations and Maintenance Bases

The main operations and maintenance offices and bases for the Pipeline are located at Mt Isa and Brisbane. Emergency equipment is stored at Mt Isa.

17.1.7 Compressor Stations

There is no compression on this pipeline.

17.1.8 Meter Station

The Meter Stations supplied directly from the main pipeline are in table below.

Station Metering	Type	Measurement Standard	Compressibility Standard	Volume Measurement Uncertainty
Mica Creek	Turbine	AGA 7	AGA 8	+/- 1%
X41 Meter station	Coriolis	AGA 11		+/- 1% (Mass)

17.1.9 Corrosion Protection

The coating of the pipeline system is an extruded HDPE to AS 1518.

Test points are typically 2.5km apart.

The MIM Lateral is not internally lined.

Note: The X41 off take Lateral has a tri-laminate coating.

The field joint coating of welded joints between pipes is coated using a tape coating system. (Polyken tape 943 with Polyken 955 outer wrap) compatible with the primary coating. All above ground pipework and steelwork is painted with a high quality corrosion resistant paint system. This applies to all above ground pipework at line valves and scraper stations.

The pipeline is not internally lined.

17.2 Operating Parameters

17.2.1 GUIDELINES

The purpose of these guidelines is to establish a basis for operational decision making by documenting mandatory and desirable operating parameters used in the operation of the Pipeline.

17.2.2 SCOPE

The section of pipeline covered by this licence is the Mica Creek Meter Station (MCMS) and the MIM Lateral and the offtake to the X41 Meter Station.

Note that it does not cover any of the pipeline that runs from the Mica Creek Meter Station to the Mica Creek Power Station as this is owned, operated and licensed by others.

17.2.3 OPERATING PARAMETERS

The operating parameters listed in this document have been developed acknowledging that there are a number of system constraints that affect the operation of the pipeline on any specific day. A number of these constraints are listed below.

17.2.3.1 System Constraints

- Gas Transportation Agreement (GTA) parameters;
- MAOP;
- System Capacity;
- Daily nomination;
- Gas quality; and
- Outlet pressure, temperature and other gas quality requirements

17.2.4 OPERATING WITHIN SYSTEM CONSTRAINTS

- It is worth noting that the GTA's that apply to the MCMS and MIM lateral are different to those that apply to the Carpentaria Gas Pipeline (CGP).
- There is only one shipper (MIM) transporting gas through the MCMS and MIM lateral. There is one GTA for the MCMS (known as the Mica Creek Metering Facility Agreement), and another GTA for the MIM lateral (known as the Town Lateral Gas Transportation Agreement).
- Gas is to be supplied to the receipt point at pressures between 2,000 kPag and 10,200 kPag.
- If the gas is supplied at pressures exceeding 3,000 kPag, then the gas shall be delivered to the outlet of the MCMS at no less than 2,700

kPag. If the gas is supplied at pressures below 3,000 kPag, then the minimum delivery pressure shall be 1,500 kPag.

- Part of the services being performed in the MCMS is a gas "conditioning" service to bring the temperature of the gas into the range of:
  - Maximum temperature: 50°C
  - Minimum temperature: the higher of:
    - 0°C; or
    - 15°C above the moisture (water) dewpoint of gas exiting the facility; or
    - 15°C above the hydrocarbon dewpoint of gas exiting the facility.
- Gas being delivered to MIM via the Town Lateral is to be odorised.
- The water bath heaters are operated as required to meet the temperature requirements set out above.
- A gas chromatograph monitors the quality and composition of the gas in the MCMS.
- A moisture analyser monitors the water dewpoint of the gas in the MCMS.
- The hydrocarbon dewpoint of the gas is calculated based on the gas composition data provided by the gas chromatograph.
- For the MIM Lateral, the minimum delivery pressure at the delivery point (downstream face of the 168.3 mm Class 150 ball valve that is immediately downstream of the pressure reducing skid located in the MIM mine site) is 850 kPag. Note that if the gas is supplied to the receipt point of the MIM lateral pipeline at pressures in excess of 2,700 kPag, then the gas will be delivered at a pressure higher than this 850 kPag.

17.2.5 OPERATING TO MAINTAIN INTEGRITY

- The MCMS is designed to accept gas at up to 10,200 kPag, and deliver this gas according to the pressure and temperature constraints described above.
- With the large range of pressures that exist within the MCMS, the station is broken into three sections of different class pipework and vessels. The pipework and vessels up to the first pressure cut regulators is Class 900. From this point through to the second pressure cut regulators (including the water bath heaters) is Class 600. From this point to the outlet of the station (including the metering) is Class 300. The various Emergency Shut Down (ESD) valves within the station are set according to the class of pipework and vessels they are designed to protect.
- Essential equipment (regulators, water bath heaters and metering) in the MCMS have been duplicated throughout the station. For the regulators, the station has been configured with one set of electronically controlled regulators (normally in operation) with the

duplicate set of regulators pneumatically controlled. This allows the MCMS to continue to operate even if power is lost to the regulators.

- The typical pressure set points used in the MCMS are:

Location	Pressure Set Point
1st pressure cut	6,000 kPag (approx)
2nd pressure cut	3,010 kPag

- The temperature set point for the water bath heater is controlled automatically in accordance with the requirements described above for the delivery point minimum temperature.
- Each section of the MCMS is protected by an automatic system of shut down valves. Generally, these valves will operate to transfer duty from the duty control valves to the standby control valves. In the case of the 2nd pressure cut regulators, each of the duty and standby regulator sets consists of a primary and a secondary pressure regulator, providing an additional level of control and redundancy.
- The MAOP of the MIM Lateral pipeline is 5,100 kPag. This pipeline is protected by a pressure switch (set to 3,600 kPag) which closes the shut down valves at the 2nd pressure cut regulators.

18. APPENDIX E PEAT LATERAL LICENCE NO. 74

18.1 PIPELINE SYSTEM OPERATION

This section describes the Pipeline and above ground facilities, important features of the design, and measures included in the design that enhances the security of the system. Pipeline Licence No. 74 states that the pipeline licence is for 40 years from the start date.

18.1.1 DESIGN LIFE

The design life is 40 years and life end date is February 2041.

A design life review needs to be carried out prior to each design life end date.

Design life reviews need to cover all the issues, aspects and material covered in a Maximum Allowable Operating Pressure (MAOP) review. Design life reviews need also to cover review of all non-replaceable components and all components not expected to be replaced and all components not subject to a replacement schedule. They should also cover all items essential to the safe operation of the pipeline including Main Line Valves (MLV) actuators, actuator controls and actuator control power supplies. The required coverage in a design life review may be by inclusion of the material in the review or by reference to appropriate material in other current documents such as a current MAOP review. Replacement schedules may be in the design life review or in the SAOP or in an asset management plan.

18.1.2 OVERVIEW OF THE PIPELINE SYSTEM

The Scotia/Woodroyd to RBP (Peat Lateral) natural gas pipeline system consists of:

- The Woodroyd to RBP DN250 pipeline 110.7 km long, to transport natural gas from the Woodroyd Coal Seam Methane Field Treatment Plant near Wandoan in South Queensland to the Arubial pressure reduction station at the Main Line Valve at RBP MP63.3. This section of the Peat Lateral was commissioned in 2001; and
- The Scotia Extension DN250 pipeline with a length of 10.7 km from the Scotia Coal Seam Methane Field to the Woodroyd Coal Seam Methane Field. The Inlet Scraper Station was relocated from Woodroyd to Scotia. The inlet Meter Station at Scotia was commissioned in 2002.

The Peat Lateral runs in a 30 metre wide easement or in road and rail reserves. The lateral has a nominal free flow capacity of approximately 74 TJ/day.

The Peat Lateral has been designed to comply with the requirements of Australian Standard 2885.1-1997. Wall thicknesses in excess of the requirements of this standard have been adopted. The lateral has been

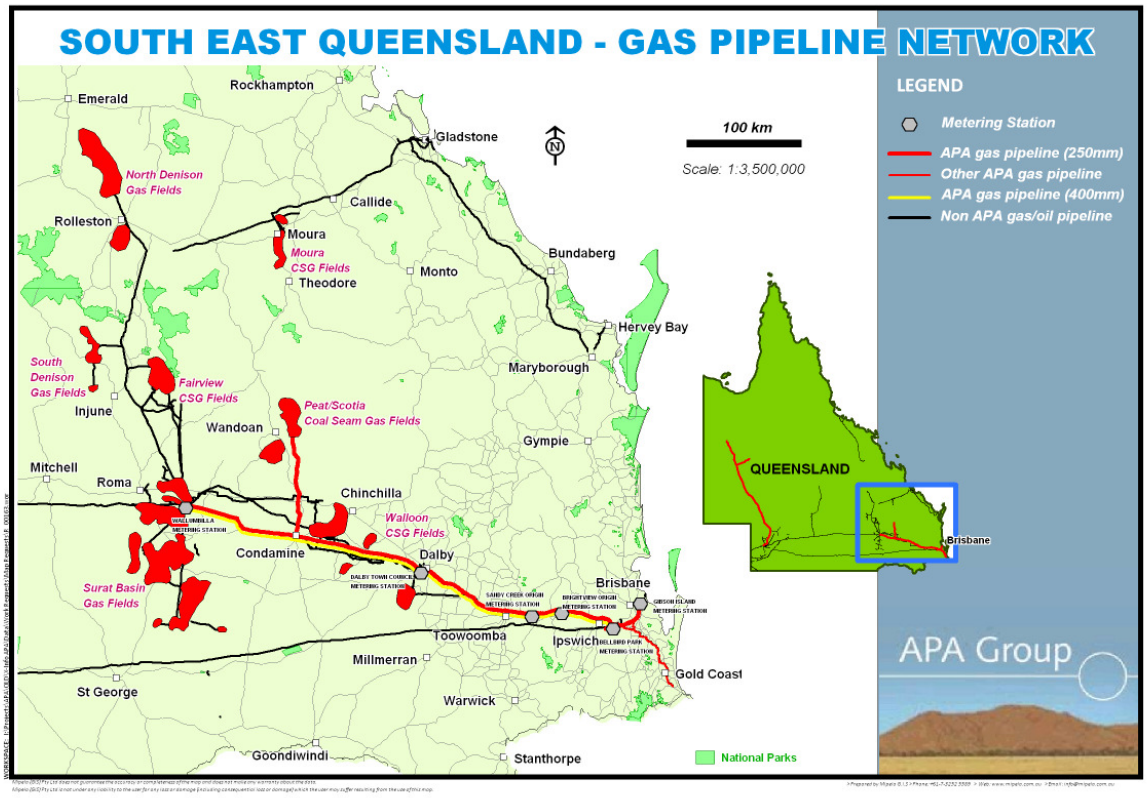
designed for a Maximum Allowable Operating Pressure (MAOP) of 10,200 kPag.

The pipeline is currently operated in accordance with AS2885.3. The pipeline is regulated under the Petroleum and Gas (Production and Safety) Act and Regulation 2004, under the instrument of Pipeline Licence (PL) No.74. PL No.74 is not named as a strategic pipeline in Schedule 5 of the Petroleum and Gas (Production and Safety) Regulation 2004.

Refer to 18.1.2.1 for a general route map of the Pipeline.

The pipeline is operated from a control room located at the Brisbane Control Centre. In accordance with AS 2885.3 the control room has been provided with an un-interruptible power supply that has sufficient capacity to ensure continuous operation through a reasonable power outage. The Brisbane Control Centre uses reliable technology and has an appropriate 24 hour a day security system.

18.1.2.1 General Route Map



18.1.3 KEY DESIGN FEATURES OF THE PIPELINE

The Pipeline dimensions are in accordance with the requirements of the design standards. The key design features of the Pipeline are:

Design parameter	DN250
Substance conveyed	**Natural Gas**
Length of pipeline	121.4 km
Outside diameter	273.1mm
Wall Thickness	4.78-5.7mm
Pipe specification	API 5L X60

The Alignment Sheets, read in conjunction with actual Depth Survey Reports, for this Pipeline indicate minimum specified depth of cover, sections where heavy wall pipe has been used, and in hazardous areas where special arrangements using concrete covering of the pipeline has been utilised.

The Pipeline has an external coating, with an impressed current cathodic protection system applied to mitigate corrosion. All above ground pipe work and steelwork is painted with a high quality paint system to resist corrosion. This applies to all above ground pipe work at line valves and scraper stations.

The specifications for the mainline valves (ball valves) are, manufactured and tested in accordance with API 6D.

Further design and construction features that enhance the security of the Pipeline are:

- protection against external corrosion for underground and above ground facilities using cathodic protection and coatings;
- lightning protection by use of surge protectors at above ground facilities and buried Insulation joints;
- remotely, and manually operable line valves;
- scraper stations at regular intervals to facilitate in-line inspection;
- above ground posts and buried survey marks to mark the easement;
- warning signs, aerial markers;
- security fencing around above ground facilities; and
- telemetered signals from sensing points along the Pipeline.

18.1.4 MAXIMUM ALLOWABLE OPERATING PRESSURE

The MAOP is the maximum pressure at which a pipeline or section of a pipeline may be operated, following hydrostatic testing in accordance with the AS2885.1 (2007) standard.

The MOP is the operating pressure limit (lower than the MAOP) imposed by the Licensee from time to time for pipeline safety or process reasons.

	Peat Lateral DN250
Substance conveyed	Natural Gas
Maximum Allowable Operating Pressure	10200kPag

The more important of these features are described in greater details below.

18.1.5 ABOVE GROUND FACILITIES

The main above ground facilities are shown in table below

Chainage from Scotia to Woodroyd (Km) (SW)	Site Name	Site Type
S-W 0	Scotia	ScS / IS
S-W 10.7	Woodroyd	IS
Chainage from Woodroyd to Arubial (Km) (W-A)	**Site Name**	**Site Type**
W-A 0	Woodroyd	ScS / IS
W-A 51.96	L-Tree Creek	MLV
W-A 110.685	Arubial	ScS/ PRS

* The Peat Lateral pipeline from the Scotia and Peat gas field is subject to a separate licence and Safety and Operating Plan.

LEGEND

IS	Inlet Station
MS	Meter Station
CS	Compressor Station
SS	Scraper Station
MLV	Main Line Valve
T	Telemetered
MP	Mile Post
PRS	Pressure Reduction Station
S-W	Scotia -Woodroyd
W-A	Woodroyd- Arubial

18.1.6 OPERATIONS AND MAINTENANCE BASES

The main operations and maintenance offices and bases for the Pipeline are located at Wallumbilla, Condamine and Brisbane. Emergency equipment is stored at Wallumbilla, Dalby and Brisbane.

18.1.7 COMPRESSOR STATIONS

Not Applicable

18.1.8 METER STATIONS

Meter Stations supplied directly from the main pipeline are listed in the table below.

Relevant measurement and status data are telemetered back to the Pipeline Control Centre at Brisbane.

Station Metering	Type	Measurement Standard	Compressibility Standard	Volume Measurement Uncertainty
Scotia	Orifice	AGA 3	AGA 8	+/- 1%
Arubial	Orifice	AGA 3	AGA 8	+/- 1%

18.1.9 CORROSION PROTECTION

The coating of the pipeline system is an extruded yellow HDPE to AS 1518 with a minimum thickness of 1.2mm.

The CP test points are on average 3 km apart.

The Scotia/Woodroyd to RBP is not internally lined.

Corrosion of the pipeline is mitigated by the cathodic protection system, utilising sacrificial anodes for all buried metallic structures.

Currently, there are nine galvanic anode beds on the Scotia/Woodroyd to RBP Pipeline.

18.2 OPERATING PARAMETERS

18.2.1 GUIDELINES

The purpose of these guidelines is to establish a basis for operational decision making by documenting mandatory and desirable operating parameters used in the operation of the Peat Lateral.

18.2.2 SCOPE

The section of pipeline covered by this licence is from Scotia to Arubial.

18.2.3 OPERATING PARAMETERS

The operating parameters listed in this document have been developed acknowledging that there are a number of system constraints that affect the operation of the pipeline on any specific day. A number of these constraints are listed below.

18.2.3.1 System Constraints

- Gas Transportation Agreement (GTA) parameters;
- MAOP;

- System capacity;
- Daily nomination;
- Gas quality; and
- Inlet and outlet pressures and temperature requirements

18.2.4 OPERATING WITHIN SYSTEM CONSTRAINTS

- The Pipeline is operated as required to exceed the minimum requirements specified in the GTAs for the pipeline.
- The receipt points on this pipeline operate in a notional flow control mode. The amount of gas entering the pipeline at Scotia and Woodroyd is controlled by others, and is generally close to nominations. However, the quantity that flows into the pipeline is not usually precise.
- The delivery point for the pipeline at Arubial is controlled via the PCC. The Arubial station can be put into either flow control or pressure control mode, depending on the needs of the pipeline controller at the time. Generally, Arubial will be in pressure control, and will be used to assist in pressure management within the RBP. In this mode, Arubial can act as a pseudo compressor station for the RBP.
- The line pack in the pipeline goes up and down depending on the needs of the pipeline controller at the time. This line pack is used as a part of the overall combined pipeline system management. At times, gas stored in the pipeline, and at other times the gas is released into the RBP. **Note** that these activities are performed so as not to impact on the ability of the shippers to receipt their nominated quantity into the pipeline each day.
- The pipeline controller is able to open and close shut down valves at Arubial, Woodroyd and Scotia as required. ESD valves can be operated as necessary to protect the pipeline from excessive pressure. An ESD can be initiated by the pipeline controller. However, the valve cannot be re-opened remotely.
- A gas chromatograph monitors the quality and composition of the gas as it enters the pipelines at both Scotia and Woodroyd.
- A moisture analyser monitors the level of water vapour in the gas that is entering the pipeline at both Scotia and Woodroyd.
- The GTAs that cover the transportation of gas in this pipeline treat this pipeline and the RBP as a single entity. Therefore, there is no minimum pressure set for the Arubial delivery point. The pressure at Arubial varies as required by the control scenarios discussed above.
- The receipt point pressure for Woodroyd can be up to 10,200 kPag. The receipt point pressure for Scotia can be up to 9,600 kPag. Note that if it is required, the Scotia pressure can be increased to 10,200 kPag as well, after 9 months written notice to the shipper. The actual pressure at the receipt point will vary, depending on how the pipeline is being managed at the time.
- **Note** that the interconnect point between the Peat Lateral and the RBP at Arubial is controlled by the APA Group control room. This “receipt” point for the RBP is controlled as required to move gas from

the Peat lateral into the RBP at the appropriate times. By appropriate use of the Arubial station, the amount of compression required on the RBP can be reduced.

18.2.5 OPERATING TO MAINTAIN INTEGRITY

- It is noted that the pipeline is not operated in a manner that is specifically designed to avoid stress corrosion cracking (SCC). As stated above, the pipeline is operated to provide services to the shippers as per their GTAs;
- The pipeline is operated to ensure that the pressure is kept at or below MAOP at all times. Each of the pipeline receipt points have an automatic high pressure override function that will restrict flow into the Pipeline and prevent the pressure exceeding the MAOP and an automatic Emergency Shut Down (ESD) valve that will close if the pressure at that point exceeds the MAOP by more than 5%. A set of alarms in the SCADA system are used to warn the pipeline controller that the pressure limit for the pipeline is approaching so that action can be taken to avoid an over pressure situation;
- It must be at a temperature which is not less than 0°C and not higher than the greater of:
  - 50°C; or
  - the ambient temperature plus 12°C but in any event not to exceed 60°C.
- Other pressure regulation stations and delivery points are protected from over pressure by either relief valves or ESD valves.

19. APPENDIX F KOGAN NORTH CENTRAL GAS PROCESSING FACILITY LICENCE NO. 120

19.1 FACILITY SYSTEM OPERATION

This section describes the plant facilities, important features of the design, and measures included in the design that enhance the safety and security of the system.

19.1.1 DESIGN LIFE

The above ground facilities were designed for a life of 15 years and life end date is December 2020. It is also expected that the facility will continue operation at reduced gas rates for at least 2 years after this date. A design life review needs to be carried out prior to the design life end date.

Design life reviews need to cover all the issues, aspects and material covered in an MAOP review. Design life reviews also need to include the review of all non-replaceable components, all components not expected to be replaced and all components not subject to a replacement schedule. They should also cover all items essential to the safe operation of the plant and pipeline. The required coverage in a design life review may also be achieved by reference to appropriate material in other current documents, such as a current MAOP review.

19.1.2 OVERVIEW OF THE FACILITY SYSTEM

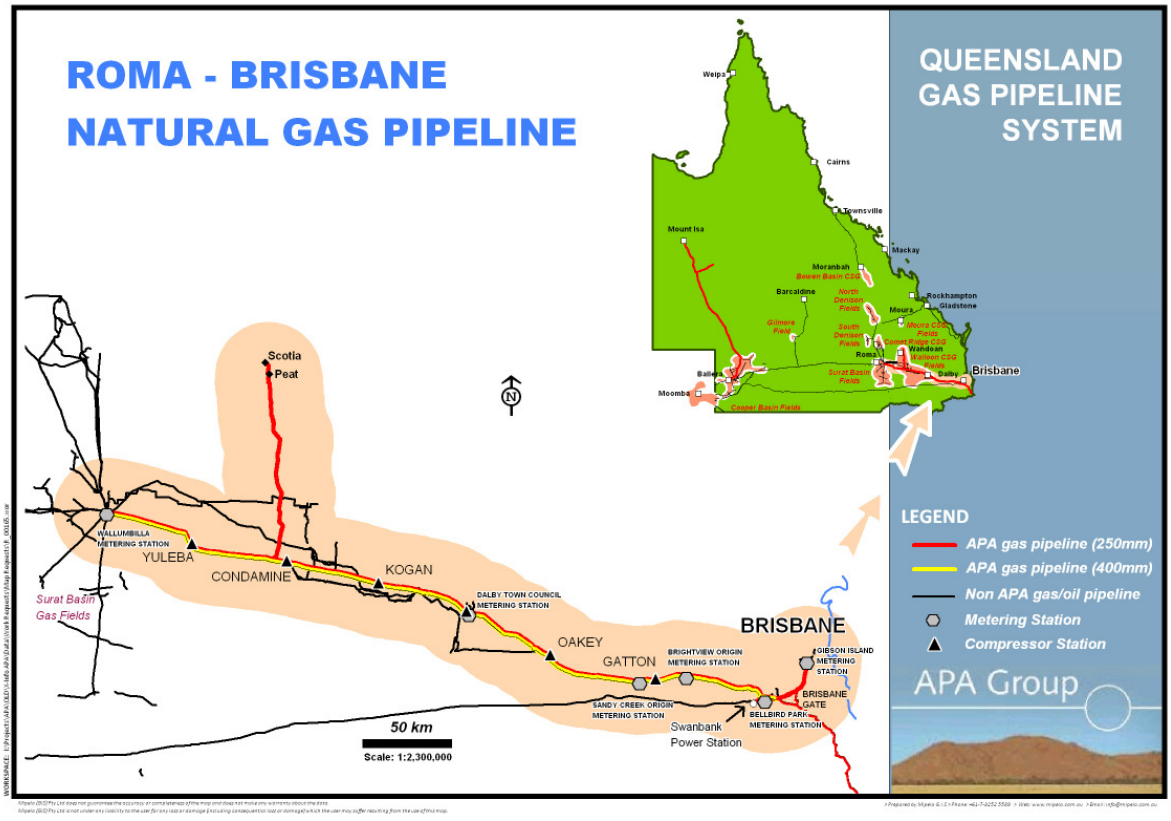
The KNCGPF is designed to process raw low pressure coal seam gas for supply into the Roma Brisbane Gas Pipeline (RBP). The facility ties in to the RBP DN400 pipeline at MP 114.6 (KP 184.4) approximately 35 km west of Dalby on the Condamine Highway. The facility consists of:

- Inlet de-watering system, which includes DN600 polyethylene (PE) pipe, ESD valve and water removal system. A plant vent prevents overpressure of the gas field by allowing the gas field to be vented in the event that the plant is shut down for an extended period.
- Produced water handling plant separates water from contaminates and returns water to the field evaporation ponds.
- There are three compressor packages, in a parallel configuration, consisting of Cat V16 gas engines coupled to 4 stage Ariel reciprocating compressors.
- A Compressor Lube Oil Filter Coalescer separator Unit.
- A Sivalls TEG (Triethylene Glycol) Dehydration Unit.
- A TEG Filter Coalescer separator Unit.

- A Custody Transfer Metering skid including series proven Coriolis Meters, Black Start/Fuel Gas Coriolis Meter, Roma to Brisbane Pipeline inlet shut down valve, Gas Chromatograph and Moisture content analyser.
- The gathering system is protected by a back-pressure control valve on the suction manifold which will open to maintain flow from the wells.
- A 40.5 m DN200 lateral pipeline interconnecting with the DN400, Roma to Brisbane Natural Gas Pipeline.
- Grid mains power is the primary power supply with an auto start diesel backup generator.

19.1.2.1 General Location Map

Kogan North Central Gas Processing Facility is located about midway between Kogan Compressor Station and Dalby Compressor Station on the Roma - Brisbane Pipeline. The facility supplies gas to the DN400 line of the RBP only. The tie in point to the RBP is at MP 114.6.



19.1.3 KEY DESIGN FEATURES OF THE FACILITY

The processing plant was designed for the delivery of gas into the RBP at a pressure up to but not exceeding 9.6 MPag, as per the sales gas contract.

No provision was made for pigging facilities in the well gas supply line.

The well gas arriving at the KNCGPF is saturated with water. However no provision was provided for slug catching at the inlet to the KNCGPF due to low point drains in the field gathering system ensuring proper dewatering.

The KNCGPF can be divided into two sections with different trains as follows:

- Basic particulate and water removal with compression, in three parallel trains; and
- Lube oil coalescer filtration, dehydration with glycol coalescing filtration and meters in a single train.

19.1.4 MAXIMUM ALLOWABLE OPERATING PRESSURE

The MAOP is the maximum pressure at which a facility or section of a facility may be operated, following testing in accordance with the AS2885.1 (2007) standard.

The MOP is the operating pressure limit (lower than the MAOP) imposed by the Licensee from time to time for facility safety or process reasons.

	KNCGPF
Substance conveyed	CSG/Natural Gas
Maximum Allowable Operating Pressure	9600 kPag

19.1.5 ABOVE GROUND FACILITIES

All equipment is above ground with the exception of the inlet and outlet piping, electrical supply and water discharge system.

The location of the below ground equipment is shown on drawings located on the shared drive within the APA Group network and on site in hard copy format. The on site drawings are regularly checked to ensure currency.

19.1.6 OPERATIONS AND MAINTENANCE BASES

The main operations and maintenance offices and bases for the Plant and Pipeline are located on site at KNCGPF. Pipeline Emergency equipment is stored on site and supported by equipment located at Dalby and Wallumbilla.

19.1.7 COMPRESSOR STATIONS

The site is a facility to compress low pressure coal seam gas up to sufficient pressure to allow injection into the RBP.

19.1.8 METER STATIONS

The sales gas metering system meters the sales gas prior to entering the RBP, and in accordance with the Category 3 metering system requirements specified in the Gas Sales Agreement. The meter system is designed for the following conditions:

Dimension	Specification
Flow Rate	17.6 MMscfd – 500000 Sm^3/day
Inlet Pressure	8000 kPag
Inlet Temperature	50°C
Max Pressure Drop	35 Kpa (Clean Condition)

The metering system includes:

- 2 x 100% capacity meter runs;
- A common gas chromatograph for measuring heating value, specific gravity, Wobbe Index, inerts, and hydrocarbon components;
- An on-line water dewpoint analyser; and
- A sample point to allow spot checking of the gas quality, for example, periodic checking of the levels of sulphur compounds, and for checking the performance of the dewpoint analyser.

Station Metering	Type	Measurement Standard	Compressibility Standard	Volume Measurement Uncertainty
Kogan North	Coriolis	AGA 11	AGA 8	+/- 1%

19.1.9 CORROSION PROTECTION

Corrosion protection has been provided for pressure vessels and pipework by the application of an external coating. The KNCGPF interconnection to RBP is not internally lined. The pipeline lateral has an external HDPE coating, and a galvanic cathodic protection system applied to mitigate corrosion.

19.2 OPERATING PARAMETERS

19.2.1 GUIDELINES

The purpose of these guidelines is to establish a basis for operational decision making by documenting mandatory and desirable operating parameters used in the operation of the Kogan North Central Gas Processing Facility.

19.2.2 SCOPE

The section of pipeline covered by this licence is from the Station Inlet Line to the Roma to Brisbane Gas Pipeline.

19.2.3 OPERATING PARAMETERS

The operating parameters listed in this document have been developed acknowledging that there are a number of system constraints that affect the operation of the plant and pipeline on any specific day. A number of these constraints are listed below.

19.2.3.1 System Constraints

- Gas Transportation Agreement (GTA) parameters;
- MAOP;
- System Capacity;
- Daily nomination;
- Gas quality; and
- Inlet pressure and temperature requirements.

19.2.4 OPERATING WITHIN SYSTEM CONSTRAINTS

The receipt points on this pipeline operate in a notional flow control mode. The amount of gas entering the pipeline at Kogan North is controlled by the APA Group, and is generally close to nominations. However, the quantity that flows into the pipeline is not usually precise.

Emergency Shut Down valves (ESD) can be operated as necessary to protect the pipeline from excessive pressure. The pipeline controller can initiate an ESD. However, the valve cannot be re-opened remotely.

A gas chromatograph monitors the quality and composition of the gas as it enters the pipeline at Kogan North.

A moisture analyser monitors the level of water vapour in the gas that is entering the pipeline at Kogan North.

The receipt point pressure for Kogan North can be up to 8,000 kPag. The actual pressure at the receipt points will vary, depending on how the pipeline is being managed at the time.

19.2.5 Operating to Maintain Integrity

The gas composition limits are set out in the GTA's. A sample of the composition limits has been reproduced in section 6.1.9 of this SAOP for ease of reference.

The Coal Seam Gas (CSG) delivered by the suppliers to the APA Group at the Receipt Point must comply with the CSG Specifications.

If the APA Group (acting reasonably) is aware that any CSG delivered or to be delivered at the Receipt Point does not meet the CSG Specifications, it must immediately notify all Users.

The APA Group may refuse to accept CSG at the Receipt Point that does not meet the CSG Specifications without affecting the User's obligations.

The plant and pipeline is operated to ensure that the pressure is kept at or below MAOP at all times. ESD valves provide an automatic trip if the pressure exceeds MAOP by 5%. Alarms in the pipeline control centre are used to warn that the pressure is approaching MAOP so that action can be taken to avoid exceeding the MAOP of 9,600 kPag.

19.3 Specific Features of the Facility

19.3.1 Process Description

Initial treatment of the well gas consists of vertical coalescing filters (in compressor packages) to remove particulates and free water (in the form of mist).

Following separation of free water, the gas is compressed to the sales specification using 3 off, 4-stage gas engine driven reciprocating compressors, connected in parallel. Fuel gas for the gas driven compressor engines is from the export gas line of the plant. The compressors discharge to a common manifold system.

The compressors controls on discharge flow rate with high discharge pressure override. On high discharge pressure, the compressors will unload and go into recycle mode. If the discharge pressure continues to increase, the compressor 'high-high' pressure signal will energise the compressor stop signal. This will carry out a stop of the compressors. The actuated valves on the inlet and outlet of the compressor skids will close and the blowdown valve will open. This will isolate the compressor skids.

In the case that the well production is higher than plant throughput, the suction manifold pressure will rise. The gathering system is protected by a back pressure control valve on the suction manifold that will open to maintain flow from the wells. A pressure control valve (PCV) is installed in the individual compressor suction lines to ensure that the compressors can be started when the gathering system pressure is higher than 137 kPag. A pressure safety valve (PSV) is installed to protect the suction line from overpressure.

If the suction pressure drops (due to wellhead failure or pipe rupture etc) during normal operation the compressors will shutdown on low suction pressure.

Normal deliverability would be resumed by manual intervention once the suction pressure has been restored and operators are confident of its stability.

After compression, lube oil filter coalescers are used to remove any lube oil carried over in the gas stream. The discharge lube oil filter coalescer is shared by the three compressors.

The processing plant was designed for the delivery of gas into the RBP at a pressure up to but not exceeding 9600 kPag, as per the sales gas contract.

No provision was made for pigging facilities in the well gas supply line.

The well gas arriving at the KNCGPF is saturated with water. However no provision was provided for slug catching at the inlet to the KNCGPF due to low point drains in the field gathering system ensuring proper dewatering.

The KNCGPF can be divided into two sections with different trains as follows:

Basic particulate and water removal with compression, in three parallel trains

Lube oil coalescer filtration, dehydration with glycol coalescing filtration and meters in a single train.

19.3.2 COMPRESSION

The gas compressors are supplied with gas from a single inlet manifold.

Initial treatment of the well gas consists of vertical coalescing filters (in compressor packages) to remove particulates and free water (in the form of mist).

Following separation of free water, the gas is compressed to the sales specification using 3 off, 4-stage gas engine driven reciprocating compressors, connected in parallel. Fuel gas for the gas driven compressor engines is from the export gas line of the plant. The compressors discharge to a common manifold system.

The compressors controls on discharge flow rate with high discharge pressure override. On high discharge pressure, the compressors will unload and go into recycle mode. If the discharge pressure continues to increase, the compressor 'high-high' pressure signal will energise the compressor stop signal. This will carry out a stop of the compressors. The actuated valves on the inlet and outlet of the compressor skids will close and the blowdown valve will open. This will isolate the compressor skids.

In the case that the well production is higher than plant throughput, the suction manifold pressure will rise. The gathering system is protected by a back pressure control valve on the suction manifold that will open to maintain flow from the wells. A pressure control valve (PCV) is installed in the individual compressor suction lines to ensure that the compressors can be started when the gathering system pressure is higher than 137 kPag. A pressure safety valve (PSV) is installed to protect the suction line from overpressure.

If the suction pressure drops (due to wellhead failure or pipe rupture etc) during normal operation the compressors will shutdown on low suction pressure.

Normal deliverability would be resumed by manual intervention once the suction pressure has been restored and operators are confident of its stability.

After compression, lube oil filter coalescers are used to remove any lube oil carried over in the gas stream. The discharge lube oil filter coalescer is shared by the three compressors.

19.3.2.1 Compression Specifications

Three Ariel JGE-4 reciprocating compressors are installed, in parallel, to meet the maximum demand for sales gas. These three units are identical.

The design flow rate of the suction manifold, discharge manifold and discharge line is sufficient for up to four identical compressors. The compressors have been designed for the following conditions:

Dimension	Specification
Suction header pressure (at B/L)	= 68.947 kPag to 90 kPag
Suction pressure (max for compressors)	= 140 kPag
Discharge pressure (normal)	= 8,400 kPag
Discharge pressure (maximum)	= 10,000 kPag
Suction temperature range	= 20 to 60°C, expected op. temperature 25°C
Discharge temperature (maximum)	= 50°C after the aftercooler.

Suction pressure control valves are required to ensure that suction pressures are kept below approximately 138 kPag (20 psig) otherwise the units will shutdown on high inter-stage pressures (due to rod load). The design case is for 68.947 kPag (10 psig).

Suction Pressure (kPag)	Discharge Pressure (kPag)	Manufacturer's Rated Flow at 40°C suction	
		Sm^3/h	
70	8,400	5,406[1]	70
70	10,000	5,203[1]	70

19.3.3 DEHYDRATION

The gas is then dehydrated in a single TEG unit comprising a contactor column, TEG pumps, gas fired regenerator and ancillaries. Fuel gas for the TEG unit is supplied from the TEG Flash Separator and/or the suction header.

A TEG Liquid Coalescer installed downstream of the TEG contactor minimises the carry over of glycol into the sales gas stream.

To maintain a constant pressure in the TEG contactor tower, a back pressure controller is installed upstream of the meter station.

[1] *These are manufacturer theoretical rated flows at 40 deg. C.*

A manual plant recycle system allows gas flow to recirculate around the plant and through the contactor at start-up. This allows the gas dewpoint specification to be achieved before discharge into the sales gas pipeline.

19.3.3.1 Dehydration Unit

A back pressure control valve is installed at the plant outlet. This allows the dehydration and final filtration to operate at a constant pressure.

The section is designed for a minimum contactor pressure of approximately 7,900 kPag.

The dehydration unit is designed using the following parameters:

Dimension	Specification
Inlet pressure	= 8,200 kPag
Inlet temperature	= 50°C
Flow rate	= Future Plant Flow Requirements
	= 21,119 Sm^3/h (17.9 MMscfd)
Maximum Water Content	= 65 mg/Sm^3

19.3.3.2 TEG Filter Coalescer

This is a vertical coalescer vessel. This is used to remove TEG from the compressed gas and is designed for the following conditions:

Dimension	Specification
Flow rate	= 17.6 MMscfd – 500000 Sm^3/day
Inlet pressure	= 8,400 kPag
Inlet temperature	= 50°C
Maximum pressure drop	= 35 kPa (clean condition)

19.3.3.3 Plant TEG Dehydration System

Planned inspection and maintenance activities for the TEG Unit include:

- Temperature control stability checks;
- Temperature indicating instrumentation checks;
- Over Temperature protection system;
- Glycol Level checks and top ups;
- Instrument Air checks;
- Pilot Flame fuel gas pressure regulation;
- Main Burner fuel gas pressure regulation;
- Burner Igniter; and

- Burner Management System operation check.

19.3.3.4 Lube Oil Coalescer

The lube oil filter coalescer can be bypassed for maintenance. Compressed gas will be routed through the TEG liquid coalescer and subsequently to the TEG unit. Dehydrated gas will then be routed to the meter skid without passing through a coalescer filter.

The product gas is analysed (for moisture and composition) and metered before entering the RBP.

The lube oil filter coalescer a vertical vessel, which is used to remove lube-oil and oil/water emulsion from the compressed gas, prior to entering the dehydration unit. All compressors share the Coalescer and are designed for the following conditions:

Dimension	Specification
Flow rate	= 17.6 MMscfd – 500000 Sm^3/day
Inlet pressure	= 8,400 kPag
Inlet temperature	= 50^oC
Maximum pressure drop	= 35 kPa (clean condition)

The Plant is designed to operate on a continuous basis and produce approximately 12.05 TJ/day.

Refer to 19.3.3.1 for a schematic view of plant and pipeline configuration.

A network schematic diagram giving further details of the Facility has been attached in 19.3.3.2.

An isometric diagram giving further details of the Facility has been attached in 19.3.3.3.

The facility is controlled locally and monitored from the Brisbane Pipeline Control Centre which has an un-interruptible power supply that has sufficient capacity to ensure continuous operation during a power outage. The Brisbane Pipeline Control Centre uses reliable technology and has an appropriate 24 hour a day security system.

19.3.4 INLET MANIFOLD

There is no slug catching facilities. In the field, at each well, a separator is installed. This system is regularly checked (by Arrow Energy) to ensure no liquid slugs are transmitted to the KNCGPF.

The inlet manifold is a 600mm NB section of PE pipe, which incorporates a drain boot at the downstream end to facilitate removal of free water from the well gas. This boot contains level indication equipment.

19.3.5 COLD VENT SYSTEMS

Two cold venting systems in the plant vent gas from equipment PSVs, compressor depressurising and emergency shutdowns. The compressor starter motor is driven by air, which is discharged at a remote location.

The field cold vent vents gas from the gathering system, allowing the wells to continue to produce gas while the compressors are shutdown or operating at a sufficiently reduced capacity. The field vent while located in the perimeter fence for the facility is the responsibility of the field operator, Arrow Energy Pty Ltd.

All gas is vented to atmosphere at a safe location, with regard to the predominant wind direction.

19.3.6 WASTE WATER PRODUCTION

All liquids produced by the plant enter the Above Ground Separator through the drains and process water lines. The oily water separator allows gravity separation of any contaminants. The water is piped to the below ground drain sump, and can be pumped through pipes to the evaporation pond via a closed drain system.

A concrete bund around the tanks provides spill protection.

Oil is removed from the drain tank by a 'sucker' truck. The drain tank is sized to keep intervals between emptying to a maximum.

An injection point has been provided for an emulsion breaking chemical, in case this is required in the future.

The drain tank is dipped on a daily basis to identify the oil interface. A 'lute' pipe is installed to allow water from the bottom of the tank to drain off to the open drain sump.

Waste water is produced by the following equipment:

- Inlet dewatering manifold;
- Interstage Suction Scrubbers;
- Lube Oil Coalescer;
- TEG Coalescer;
- TEG Unit (water evaporated)
- Equipment wash down and spill containment; and
- Instrument Air Compressors.

19.3.7 PIPELINE LATERAL

The pipeline lateral connecting into the RBP is in accordance with the requirements of the design standards (AS2885). The key design features of the pipeline are:

Dimension	Specification
Pipeline size	DN200
Substance conveyed	Coal Seam Methane
DN 400 RBP Tie in point	MP 114.6 (KP 184.4)
Length of pipeline	40.5 m
Outside diameter	219.1 mm
Wall Thickness	12.70 mm
Pipe specification	ASTM A106 Gr.B
Maximum Allowable Operating Pressure (MAOP)	9,600 kPag

The pipeline lateral has an external HDPE coating, and a galvanic cathodic protection system applied to mitigate corrosion. The pipeline lateral is not pigable. All above ground pipe work and steelwork is painted with a high quality corrosion resistant paint system.

The specifications for the valves (ball valves) are, manufactured and tested in accordance with API 6D.

The tie-in into the RBP has been fabricated in accordance with requirements of AS2885.