August 2016

roma to brisbane pipeline

access arrangement submission.

attachment 4-2 – national pipeline system management policy

National Pipeline Management System

POLICY

ASSET MANAGEMENT

Volume 1 - Management System Introduction

Owner	Rob Wheals	Next Review Date	Jan 2016
Document No	**320-POL-AM-0018**		

Rev	Date	Status	Originated	Checked	Approved for Transmission	Approved for Networks
0.1	17 Jan 2014	Final	G Callar	E Smith		
0.2	20 Feb 2014	Update	G Callar	J Bryan		
0.3	23 Feb 2015	Minor update	G Callar	J Bryan		

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REVISION RECORD

Revision No.	Description of Revision
0.1	First Issue for Use
0.2	Updated to include the Implementation statement
0.3	Common PMS - Scope increased to now cover Networks and Transmission. Minor update to be authorised in association with the 2016 review.

IMPLEMENTATION

The Pipeline Management System (PMS) has been developed nationally for implementation throughout APA Group and has been approved..

The PMS implementation will be managed locally. The following signatures represent the commitment from the operating groups to managing their businesses in accordance with the system.

Infrastructure Development	Kevin Lester Group Executive Infrastructure Development	
East Coast Grid	Kerryanne Mallitt General Manager Transmission Operations	
Northern Territory	Wendy Oldham General Manager NT Transmission	
Western Australia	Steve Lewis General Manager WA Transmission	
South Australia	Peter Sauer General Manager SA	
Victoria	Andrew Foley General Manager Victoria	
Queensland	Sashie Naidoo General Manager Queensland	

APA Group

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APA Group

1 INTRODUCTION

This policy entitled Volume 1 - Management System Introduction is applicable to all APA pipeline operated under AS2885. It is to be used by APA staff and its Contractors.

The PMS is designed to ensure that APAs system is compliant with AS2885.3 and AS 2885.0 addressing the critical requirements related to asset development, maintenance and use including but not limited to legislative, legal, external standards, internal standards, assets and regions that those requirements are related to. The PMS will continue to develop as additional requirements and improvements are identified.

All work performed in accordance with this policy shall comply with the requirements of the relevant local Acts, Regulations, Standards, and Codes of Practice of all authorities having jurisdiction over the work.

When conflict exists between the various applicable documents, the following order shall apply, in decreasing order of precedence. Where APA requirements are more stringent, they shall take precedence.

- Acts of law or other legislation
- Government licenses and permits
- APA Engineering Standards
- Local engineering standards

The PMS is a key component in the APA asset management system but primarily relates to the operating and maintenance phases. During 2015 it is intended to redesign the asset system to further meet the requirements of PAS55 and ISO 55000. This will potentially involve the documentation being substantially revised to incorporate construction processes and the system improvement impact of the Enterprise Content Management project and the Enterprise Asset Management project.

Any identified discrepancies shall be reported to the appropriate APA Project Manager for resolution.

If you are reading a hard copy of this policy, you should consider it uncontrolled.

1.1 Purpose and Scope

APA manages a large number of pipeline assets, transmission pipelines being covered by AS2885 and networks pressure pipelines under AS 4645. The Pipeline Management System is solely focussed upon the AS2885 assets, the others operating under a different management regime.

Transmission Pressure pipelines are operated by both the Transmission Operations department and the Networks department however the PMS has been designed to provide the appropriate level of rules and guidance across both departments.

AS2885.3 -2012 requires that a pipeline shall have a documented and approved pipeline management system.

"The pipeline management system shall be in place before commissioning and operation to ensure that the pipeline remains fit for operation.
The pipeline management system shall address the Licensee's approach to the following elements:
(a) Management.
(b) Planning.

(c) Implementation.

(d) Measurement and evaluation.

(e) Consultation, communication and reporting.

The pipeline management system shall include a description of the pipeline(s) including suitable maps (alignment sheets and/or GIS) showing the route of the pipeline, the location of associated facilities such as compressor and pump stations, transfer points, SCADA control centres, transmission towers, cathodic protection systems, valve stations, metering stations, and launching and receiving stations."

1.2 Definitions

The definitions used in this document are listed in Table 1; When the table is more than one page it should be included as an Appendix.

Table 1 Definitions

Item	Definition
Contractor	The person, firm or company undertaking to supply services, plant or equipment to which this document applies;
Authorised	A conscious act in writing by an authorised person
Pipeline	For the purposes of the PMS, a Pipeline is one operating at >20% SMYS and in accordance with AS2885.3.[1]

1.3 Abbreviations

The abbreviations used in this document are listed in Table 2;

Table 2 Abbreviations

Item	Definition
AMP	Asset Management Plan
EAM	Enterprise Asset Management
EMP	Environmental Management Plan
LMP	Land Management Plan
PIMP	Pipeline Integrity Management Plan
PMS	Pipeline Management System
RL Review	Remaining Life Review

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[1] AS4645.1 Exclusions 1.2 (b) Where an element of the network includes steel pipe with a hoop stress greater than 20% of SMYS, AS2885.1 provides appropriate requirements for design and construction and AS2885.3 provides appropriate requirements for operation and maintenance relevant to that higher hoop stress.

Item	Definition
SMS	Safety Management Study
WHS or HS&E	Workplace Health, Safety and Environment

1.4   References

Table 3 Referenced Documents

Referenced Document	
AS2885.3 - 2012	Pipelines – Gas and liquid petroleum Part 3: Operation and maintenance
AS2885.1 - 2012	Pipelines – Gas and liquid petroleum Part 1: Design and Construction

APA Group

2 Asset Management Framework

The Pipeline Management System is part of the asset management framework which operates in line with the principles of ISO 55001 and PAS 55.

The whole framework is under review and it is anticipated that the scope of the system will increase to cover the whole lifecycle including construction. It is anticipated that the new framework will be developed during 2015/6.
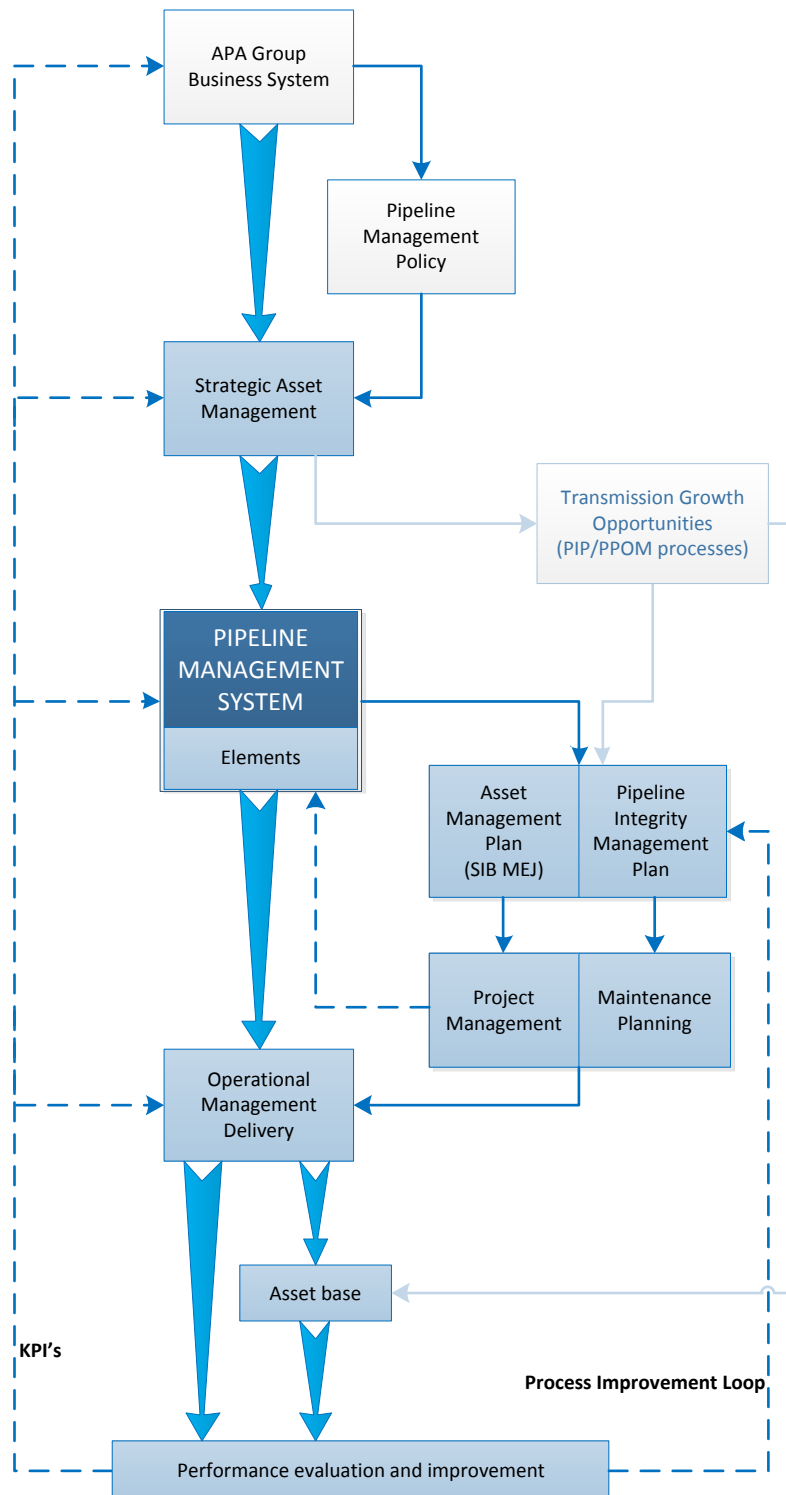
3 Pipeline Management Policy

Pipeline Management Policy

APA Group is committed to the safe, reliable and environmentally responsible operation and maintenance of our assets

To achieve this APA Group will:

- Provide leadership and direction to define clear accountability and responsibility for our pipeline management performance;

- Document, implement and maintain an appropriate Pipeline Management System;

- Comply will applicable Legislation, Standards, Codes, Licences, Agreements and best practice requirements to which APA subscribes and commits;

- Define clear accountabilities and responsibilities and facilitate appropriate levels of consultation within the business;

- Communicate pipeline management commitments and information to employees, contractors and other relevant stakeholders;

- Develop and/or maintain technology and methods to actively monitor, review, control and manage the overall safety, continuity of supply or asset failure risks;

- Use, where appropriate, established risk management principles to identify and manage threats at all levels of asset management;

- Monitor asset and business risk alignment and regularly review the fitness for purpose of our strategic asset plans and risk mitigation measures for the acquisition, integration and disposal of our asset;

- Maintain an environment where our pipeline teams are adequately resourced, motivated, appropriately skilled and proud of their work;

- Establish and monitor measurable objectives and targets to ensure continued improvement of the Pipeline Management System;

- Provide appropriate training, supervision, specialist support and other resources to ensure that our pipelines and facilities are appropriately managed;

General Responsibilities for the Management of the Pipeline Assets

APA will operate and maintain our pipeline assets in a manner that avoids placing unacceptable risk on the public, employees and the environment.

APA will operate and maintain our pipeline assets to meet our customer's needs and other stakeholder's requirements in terms of pipeline integrity, safety, environmental protection, capacity, capability, reliability, revenue and cost and through the continual improvement of our pipeline management performance.

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4 PMS Management System

The PMS provides guidance to the organisation regarding pipeline management and operation techniques. It provides the framework for a consistent and appropriate process throughout the business for all pipelines operating under AS2885.

The PMS covers the entire management system for the pipelines, including the asset management framework and the operational procedures and guidelines.
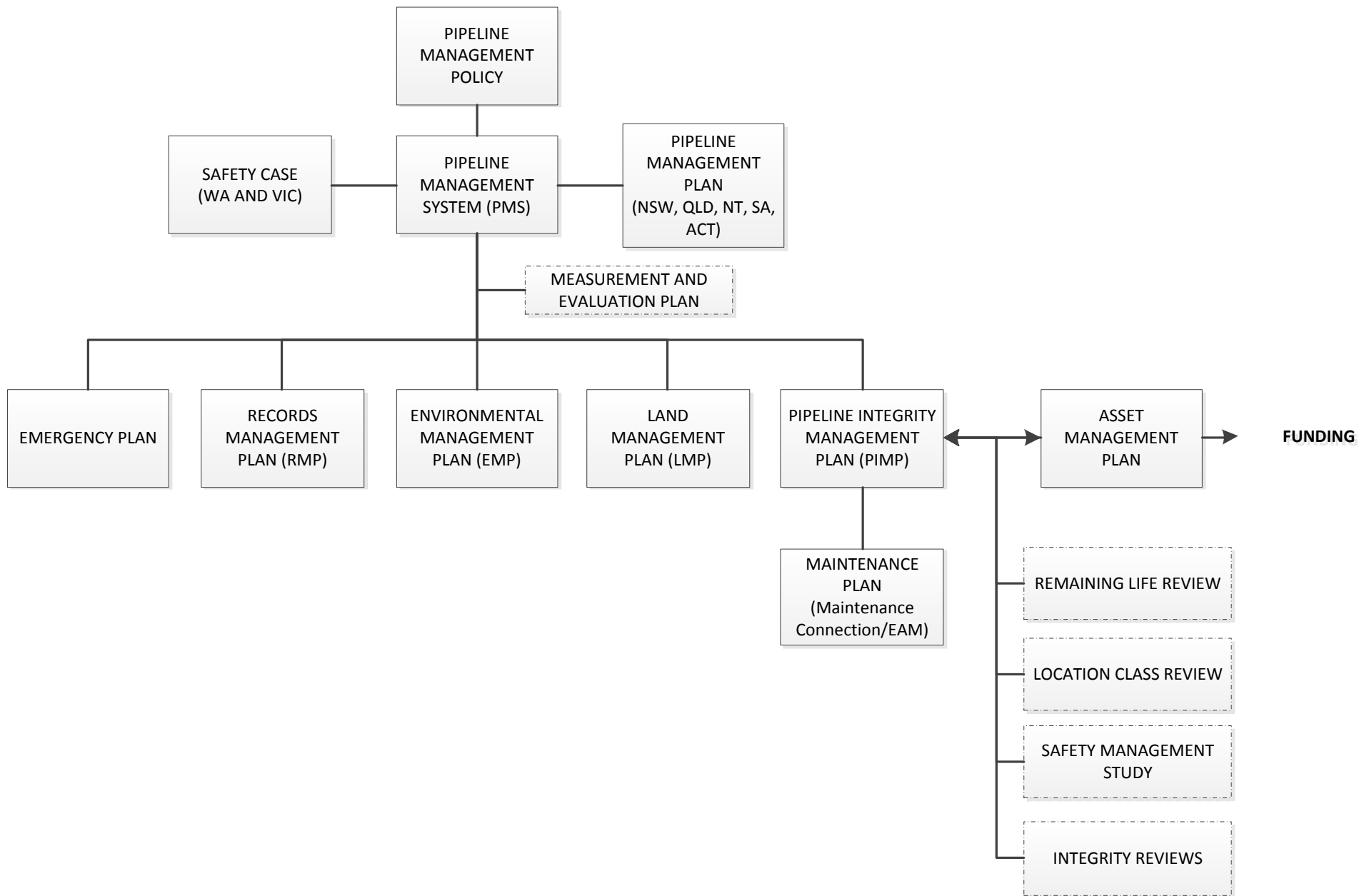
3.1 Asset Management Framework

The Asset framework is a series of documents complementing each other under the umbrella of the Pipeline Management System. In developing the PMS there has been a conscious attempt to limit the level of duplication of documentation, as had been necessary with the SaOP and Safety Case structures. In doing so, the PMS will develop into a live useable system and reference.

The main documents of the PMS are nationally based and are discussed below. Local planning and review documentation responding to the PMS are largely outside the scope of this document however where mentioned in AS2885.3 they have been included for reference.

The following framework identifies the relationship between the key documentation of the PMS system and the relationship with additionally documentation to meet the local regulatory requirements.

APA Group

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                          │    PIPELINE     │
                          │   MANAGEMENT    │
                          │     POLICY      │
                          └────────┬────────┘
                                   │
┌─────────────────┐      ┌─────────┴───────┐      ┌─────────────────┐
│                 │      │    PIPELINE     │      │    PIPELINE     │
│   SAFETY CASE   │──────│   MANAGEMENT    │──────│   MANAGEMENT    │
│  (WA AND VIC)   │      │  SYSTEM (PMS)   │      │      PLAN       │
│                 │      │                 │      │(NSW, QLD, NT, SA,│
└─────────────────┘      └─────────────────┘      │      ACT)       │
                                   │              └─────────────────┘
                          ┌────────┴────────┐
                          ┆ MEASUREMENT AND ┆
                          ┆ EVALUATION PLAN ┆
                          └─────────────────┘
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Organisational chart of Pipeline Management System.

- PIPELINE MANAGEMENT POLICY
- PIPELINE MANAGEMENT SYSTEM (PMS)
- SAFETY CASE (WA AND VIC)
- PIPELINE MANAGEMENT PLAN (NSW, QLD, NT, SA, ACT)
- MEASUREMENT AND EVALUATION PLAN
- EMERGENCY PLAN
- RECORDS MANAGEMENT PLAN (RMP)
- ENVIRONMENTAL MANAGEMENT PLAN (EMP)
- LAND MANAGEMENT PLAN (LMP)
- PIPELINE INTEGRITY MANAGEMENT PLAN (PIMP)
  - MAINTENANCE PLAN (Maintenance Connection/EAM)
- ASSET MANAGEMENT PLAN
- FUNDING
- REMAINING LIFE REVIEW
- LOCATION CLASS REVIEW
- SAFETY MANAGEMENT STUDY
- INTEGRITY REVIEWS

The naming of the documents inside the system are largely in accordance with AS2885.3 – 2012 however there are some differences.

For clarity the following will identify the function and purpose of each of the key documents.

Pipeline Management Policy (national)	A high level document detailing APA Groups policy for the ownership and operation of its pipeline assets.
Pipeline Management System (national)	Called up by AS2885.3 the PMS is a nationally driven system utilising a series of Elements to contain relevant documentation. Whilst the Elements are generally fixed, it is anticipated that future nationalisation of technique will be implemented through this system. The PMS developed has a wider scope than AS 2885.3 and pulls together the asset related functions. It does not cover all of the legislation and Standard requirements however the relevant aspects will be included in locally driven planning. The System is updated as necessary and at least 2 yearly.
Asset Management Plan (local)	APA's Asset Management Plan is a locally developed internal document that provides a general five year overview of the assets against their current integrity and recommends repair and upgrade activities. Where available growth projects to meet customer demand requirements are included and carry detail relating to the following 1 and 5 year activities. The documentation carries sufficient detail to justify the 5 year budgetary approach and would support requests for next FY expenditure which would be calendarised. The Plan is revised annually and APA has standard templates for this Plan.
Safety Case	In jurisdictions requiring a Safety Case, the requirements have been found to meet, or exceed, those of the pipeline management system under AS2885.3. These documents are called up under legislation in Vic and WA but have differing requirements. The PMS maintains a key role across all states and territories maintaining consistency of good practice across the Group. In states requiring a safety case or other documentation all of the requirements of the PMS will become a component of the regulated system and mirrored in the regulatory documentation.

Pipeline Management Plan (local)	Similar to Safety Case, some states require additional system documentation in specific formats. Generally this is asset specific documentation and a Pipeline Management Plan has been designed as a single document with state specific sections to satisfy that requirement. Initially the plans for NSW, Qld and NT plans will be combined into a single PMP with separate chapters for state specific details.
Emergency Plan (Local but national anticipated)	Each operations group manages emergencies through its own Emergency Management Plan. The plan details the key emergency positions, their responsibilities and reporting relationships.
Environmental Management Plan (Local but national anticipated)	A national EMP has been implemented; however it is structured in parts to cover state specific details.
Pipeline Integrity Management Plan (Local)	Called up by AS2885.3 Section 5 the PIMP is a local document which is specific to particular assets or groups of assets. The PIMP carries relevant details of the assets and a detailed summary of the integrity challenges and mitigation. The PIMP specifies the maintenance requirements and operational guidelines for the pipeline for both normal operations and specific mitigation activities and is the basis of the Maintenance Plan. The Plan shall be revised at least 5 yearly and APA has developed a template for this Plan.
Land Management Plan (national)	Addresses AS2885.3 -2012 Section 7 External Interference Management detailing the planning necessary to manage the asset with respect to the land and associated third party issues.
Records Management Plan (Local)	Called up by AS2885.3 Section 12 the RMP details the requirement for storage of information from design and construction records through to current day operational records.
Remaining Life Review (Local)	Called up by AS2885.3 section 10.3 the RL Review is carried out at a maximum of 10 years and whilst delivered locally is coordinated nationally. APA has determined that the RL Review document will be routinely updated whenever new data becomes available as a 'fitness for purpose' style document and maintain a formal assessment of the asset integrity. The RL Review requires some field inspection and special checks which will be carried out as part of the 10 yearly formal review. APA has developed a template for this review document.

	During the period of change from MAOP reviews to RL Reviews MAOPs will continue to have a 5 year life and where a RL Review isn't possible within 5 years an additional MAOP review may be carried out to cover the period until a RL Review can be completed.
Safety Management Study Review (Local)	The SMS called up by AS2885.3 to the requirements of AS 2885.1 will be carried out locally using appropriate resources as indicated by the Standard. The SMS will be formally reviewed at least 5 yearly. During the period between formal reviews various specific risk aspects may occur requiring an SMS. Under these circumstances it may be appropriate for consideration of those aspects to be completed using relevant resources in isolation. Specific SMSs would not require a full review of the SMS and as such will not reset the formal review interval.
Maintenance Plan (Local)	The Maintenance Plan will be as programmed into the computerised maintenance system. It will not be a standalone document but as a minimum will be designed to address the requirements of the standard PMS practises and the PIMP for the respective assets.
The following documentation are not shown part of the framework but are associated with the operation of the PMS	
Approvals Matrix (National)	Called up under AS2885.0 and AS2885.3 the approvals matrix details the delegation of responsibilities for approval of specific significant functions throughout the states.
SIB & MEJ Budget Sheet (Local)	Generally developed is association with the AMP the budget sheet is a one-year view of the necessary work program that will be required over an above the normal maintenance regime. The document is generated locally but reviewed under national budgetary processes.
Group Procedures (National)	Documentation developed nationally and stored on the Hub to provide a consistent direction for the specific topic. The procedures include Policy documents that detail specific requirements and guidelines that describe and explain standard practices and processes.
Operational Procedures (National and Local)	A combination of local and national procedures developed to ensure that field operations are performed appropriately and safely.

3.2 PMS document Hierarchy

The PMS is structured into management 'elements' that describe specific aspects of the management system.

The elements are described in Volume 3 of the PMS. Many of the elements contain Group Procedures which provide the detail of the topics.

These procedures cover the full range of management aspects and are the key references for developing the state operational management systems.

5 State Regulatory Requirements

The Volumes of the PMS describe APAs pipeline operational and management techniques that satisfy the requirements of AS2885.3.

Where the requirements of state legislative exceed those of AS 2885.3, such as Safety Case (Vic and WA) and Safety Management Plan (Qld), additional local documentation will be developed to address the aspects as necessary.

6 Other Standards, Legislation and Procedures

It is recognised that there are business unit and site based activities and assets that necessarily respond to other Australian Standards and legislative requirements including Pipeline Licence, Pipeline Acts and Regulations, Workplace Health and Safety and Environmental that need to be complied with.

The PMS Procedures are designed to work in conjunction with the other requirements and it is required that local staff ensure that all aspects of the pipeline management and operation remain fully compliant with those Standards and requirements.

7 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.

The PMS is an integral part of APA Group's management philosophy and involves national direction to ensure a consistent national operations and local detail and documentation to enable local initiatives and customised control for the specific environment.

The PMS is reviewed 2 yearly and compliance is verified internally and externally by audit processes and routine checks.

APA Group

National Pipeline Management System

POLICY

ASSET MANAGEMENT

Volume 2 - Corporate Systems

Owner	Rob Wheals	Next Review Date	Feb 2016		
Document No	320-POL-AM-0019				
Rev	Date	Status	Originated	Checked	Approved	QMS Recorded
0	20 Feb 2014	Initial Issue	G Callar	L Smith	Rob Wheals	
0.1	23 Feb 2015	Minor update	G Callar	J Brayn	Not required	

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REVISION RECORD

Revision No.	Description of Revision
0	First issue for Use
0.1	Common version covering both Transmission and Network Operations. Minor adjustments only to be authorised in association with 2016 review

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1 INTRODUCTION

This POLICY entitled Volume 2 - Corporate Systems is applicable to all pipelines operated and/or owned by APA under AS2885. It is to be used by APA staff and its Contractors.

Should third party assets be required to operate under an external PMS, this PMS will not be utilised, however verification will be carried out against this PMS to ensure that the alternative system is compliant with Standards and Regulatory requirements.

All work performed in accordance with this POLICY shall comply with the requirements of the relevant local Acts, Regulations, Standards, and Codes of Practice of all authorities having jurisdiction over the work.

When conflict exists between the various applicable documents, the following order shall apply, in decreasing order of precedence. Where APA requirements are more stringent, they shall take precedence.

- Acts of law or other legislation
- Government licenses and permits
- Australian Standards
- APA technical standards including International Standard guidance
- Local technical standards

Any identified discrepancies shall be reported to the appropriate APA Manager for resolution.

If you are reading a hard copy of this POLICY, you should consider it uncontrolled.

1.1 Purpose and Scope

The purpose of this document is to overview Corporate Systems in APA Group that impact the Management and Operation of the pipeline assets that satisfy the requirements of AS2885.3. The PMS consists of national Volumes and Local Volumes that address the key management aspects of pipeline management to ensure that practice is nationally consistent and appropriate. The Volumes are supplemented by specific Group Procedures.

1.2 Definitions

The definitions used in this document are listed in Table 1;

Table 1 Definitions

Item	Definition
Contractor	The person, firm or company undertaking to supply services, plant or equipment to which this document applies;
Networks	This term is used to categorise the teams involved in the operation and maintenance of the gas network which includes transmission pressure asset covered under AS2885.
Transmission	This term is used to categorise the teams involved in the operation and maintenance of the Transmission pipelines systems that are not associated with the distribution networks.
Strategy and Development	The engineering based team generally associated with the Transmission's Engineering and Asset Management functions

1.3 Abbreviations

The abbreviations used in this document are listed in Table 2;

Table 2 Abbreviations

Item	Definition
AGN	Australian Gas Networks formerly Envestra Limited

1.4 References

All work performed in accordance with this POLICY shall be in conformance with the current issue, including amendments, of those national and international standards, codes of practice, guidelines and APA documents listed in Table 3

Table 3 Referenced Documents

Referenced Document	
AS/NZS 4801:2001	Occupational Health and Safety Management Systems
AS/NZS ISO 14001:2004	Environmental Management Systems
AS2885.1	Pipeline-Gas and liquid petroleum Part: 1 Design and construction
ASME B31.3	Pipeline-Gas and liquid petroleum Part: 3 Operations and maintenance

1.5 Superseded Documents

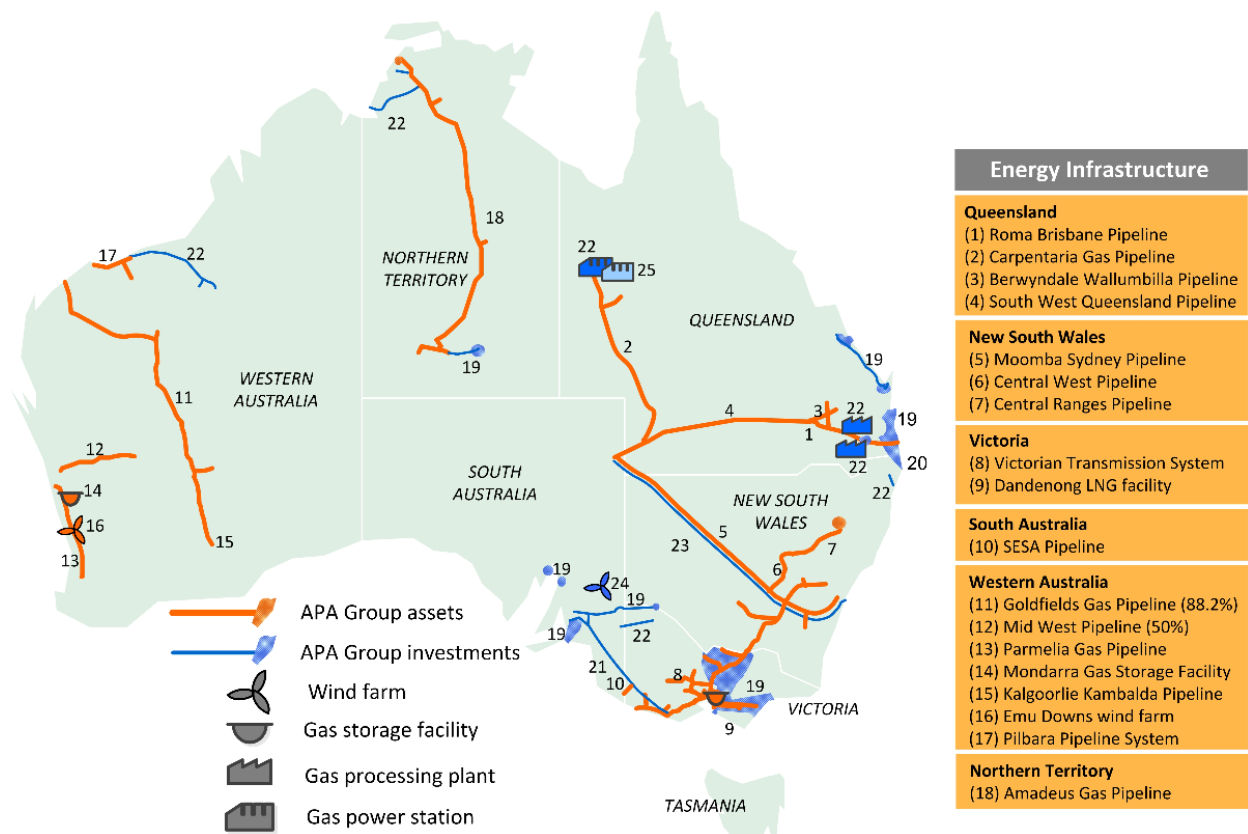This POLICY replaces the previously used document listed in Table 4

Table 4 Superseded Documents

Superseded Document	
PMS Volume 2 February 2014	The Transmission oriented document was superseded by this company wide version

APA Group

2 ORGANISATION OVERVIEW

APA Group (APA) is a major ASX-listed gas transportation business with interests in energy infrastructure across mainland Australia. APA owns and/or operates over 14,000 kilometres of natural gas pipelines, gas storage facilities and a wind farm. APA is Australia's largest transporter of natural gas, delivering approximately half of Australia's annual gas use through its infrastructure.

APA also has investments in other energy infrastructure through its minority interest in companies, including the Ethane Pipeline Income Fund, Energy Infrastructure Investments, EII2 and GDI (EII) which owns the Allgas Gas Network. APA's involvement also extends to the provision of commercial, accounting, corporate operations and maintenance services to most of these entities. APA also has as a long term agreement to operate Australian Gas Networks (AGN) gas transmission and distribution assets.

Energy Infrastructure
Queensland
(1) Roma Brisbane Pipeline
(2) Carpentaria Gas Pipeline
(3) Berwyndale Wallumbilla Pipeline
(4) South West Queensland Pipeline
New South Wales
(5) Moomba Sydney Pipeline
(6) Central West Pipeline
(7) Central Ranges Pipeline
Victoria
(8) Victorian Transmission System
(9) Dandenong LNG facility
South Australia
(10) SESA Pipeline
Western Australia
(11) Goldfields Gas Pipeline (88.2%)
(12) Mid West Pipeline (50%)
(13) Parmelia Gas Pipeline
(14) Mondarra Gas Storage Facility
(15) Kalgoorlie Kambalda Pipeline
(16) Emu Downs wind farm
(17) Pilbara Pipeline System
Northern Territory
(18) Amadeus Gas Pipeline

Legend:
- APA Group assets
- APA Group investments
- Wind farm
- Gas storage facility
- Gas processing plant
- Gas power station

2.1 APA Organisation Structure

APA Group consists of three core businesses:

- Strategy and Development
- Transmission
- Networks

Which are supported by an Infrastructure Development Group and 3 Corporate Services Groups being Finance and IT services, Human Resources services and Secretariat and Legal services.

2.2 Group Responsibilities

APA's organisation includes the following divisions:

Strategy, Regulatory and Development
This division is responsible for setting APA's strategy, growing APA's asset portfolio, growing APA's portfolio through non-regulated businesses such as power generation, optimising regulatory outcomes and capitalising on the carbon-constrained environment. Business units include Power Generation, Corporate Development, Strategy, Regulatory and Government Affairs, Environmental Development and Commercial Projects.

Transmission
The Transmission division is responsible for optimising APA's gas transportation services, via operation, management and development of its pipelines. The division includes three core P&L businesses: WA Transmission, NT Transmission and East Coast Transmission and Support and Commercial activities. It also has two service business units: Transmission Strategy and Service Delivery and Transmission Projects.

Networks
The Networks division is responsible for managing the reliable transportation of gas from the transmission pipelines to the end consumers, via management of the gas networks in Queensland, Victoria and SA, and on behalf of network owners. Business units include P&L businesses in Victoria, Queensland and SA, and three divisional service units: Networks Commercial, Networks Support Services and Mains Renewal Program.

Infrastructure Development
This division is responsible for supporting APA's $9 billion portfolio of assets. It provides engineering solutions to run the assets as smartly and efficiently as we can, and design and construction solutions to expand and enhance the performance of the assets. Business units include Infrastructure Construction, Infrastructure Support, and Infrastructure Strategy. This division also includes Procurement, which provides national procurement systems across APA.

Strategic Projects
The Strategic Projects division manages those very large projects that involve greater than standard complexity, risk, parties or specialist expertise. The two current projects are Mondarra Gas Storage and Diamantina Power Station.

Finance
The Finance division is responsible for all financial aspects of APA, including financial compliance and

APA Group

governance and its relations with financial analysts, investors and lenders. It incorporates the functions of Tax, Treasury, Management Accounting, Financial Accounting, Risk and Insurance and Investor Relations and Communications (internal and external). It also encompasses APA's IT functions.

Human Resources

The Human Resources division is responsible for setting and delivering APA's people strategy to attract, engage and retain talented employees, by providing a stimulating and rewarding work environment where employees can learn and grow. It also includes Health, Safety and Environment.

Company Secretariat

The Company Secretariat division provides the secretariat function for the APA Board and its various committees and oversees the corporate governance, legal and compliance functions. The division incorporates the functions of Company Secretariat and Legal.

2.3   Transmission Responsibilities, Accountabilities and Authorities

The following key positions are functionally responsible for the key aspects of the PMS. Individual assets will have specific structures detailed in their sections of the PMS identifying the relevant employees, including those identified as approved delegates of the Licensee. All employees are responsible for identifying and reporting existing or potential deficiencies within the PMS or the pipelines operations and maintenance, including those with the potential to impact pipeline integrity, the environment, public safety and occupational safety.

Group Executive Transmission

The Group Executive Transmission is the Licensee for APA Group Transmission assets for AS2885.3 and regulatory purposes.

Responsible for the daily commercial and operational management of the region's Transmission business and the allocation of resources sufficient to implement/complete actions to manage all of the stakeholders and facilities as per the Pipeline Management system.

Group Executive Infrastructure Development

Responsible for Asset Management, Engineering, Construction and Procurement functions throughout APA Group

General Manager Transmission Operations

Leads the end to end management of the transmission business including field activities, national support services, business processes, control room, SCADA and HSE.   The position has responsibility to implement corrective actions to ensure compliance with Codes and Standards and verify the effectiveness of corrective and preventative actions.

General Manager Infrastructure Strategy and Engineering

Leads the delivery of strategic Asset Management, lifecycle management and Engineering systems, including capacity management, design, problem solving, approval of engineering change and risk assessment. The position is responsible for the overseeing of regulatory and technical compliance for the assets and the development and implementation of improvements where necessary.

Manager Field Services (various)

APA Group

Leads the day to day resource management and workplace health and safety of the field staff assigned to the assets for operational, maintenance and emergency response activities including the identification, avoidance or reporting of potential or actual environmental and safety accidents, emergencies and deficiencies.

Manager Engineering (various titles)

Leads the day to day engineering function in accordance with the PMS requirements and is responsible for change management and the identification and implementation of asset upgrades and technical change.

Responsible for the development and maintenance of the local aspects of the PMS

Manager Control Rooms & Metering

Leads the control rooms and gas metering nationally and responsible for the initiation of response activities to prevent a loss of integrity or damage to the environment.

Engineering Strategy Manager

Responsible for the maintenance of the PMS on behalf of the Licensees

Manager Support Services

Responsible for the development of operational effectiveness and audit for compliance of operational activities with Codes and Standards.

2.4 Networks Responsibilities, Accountabilities and Authorities

Group Executive Networks

The Networks division is responsible for managing the reliable transportation of gas from the transmission pipelines to the end consumers, via management of the gas networks in Queensland, Victoria and SA, and on behalf of network owners, AGN and GDI. Business units include P&L businesses in Victoria, Queensland and SA, and three divisional service units: Networks Commercial, Networks Support Services and Mains Renewal Program.

General Manager - Victoria, Queensland, SA (state networks)

Leads the end to end management of the network business including field activities, national support services, business processes, and HSE.   The position has responsibility to implement corrective actions to ensure compliance with Codes and Standards and verify the effectiveness of corrective and preventative actions.

Manager Engineering (various titles)

Leads the day to day engineering function in accordance with the PMS requirements and is responsible for change management and the identification and implementation of asset upgrades and technical change.

Responsible for the development and maintenance of the local aspects of the PMS

Manager Operations (various titles)

Leads the day to day resource management and workplace health and safety of the field staff assigned to the assets for operational, maintenance and emergency response activities including the identification, avoidance or reporting of potential or actual environmental and safety accidents, emergencies and deficiencies.

APA Group

3 VALUES AND COMMITMENTS

Values

Our values are **HOW** we operate to ensure business integrity. They provide the most fundamental direction on what sort of company we aspire to be, and what types of behaviour we regard as appropriate. They include:

- **Safe and professional environment**
  We will maintain a safe environment and a professional workplace where employees work collaboratively, are valued and treated with respect.
- **Personal responsibility and accountability**
  We take great pride in our work and accept individual and collective responsibility for the delivery of all business outcomes. We do what we say we are going to do.
- **Getting things done and achieving results**
  We consistently meet our commitments and deliver excellent results to the benefit of our employees, customers, investors and the community through tenacity and perseverance.
- **Ability to respond and adapt**
  We continually respond and adapt to our changing environment by innovating, modifying our behaviour and continually improving our processes and systems to take advantage of opportunities to enhance, improve and grow our business.
- **Service delivery focus**
  We are committed to high quality service delivery achieved through listening, understanding, anticipating and responding to our customers' needs.

Commitments

Our Commitments are **WHAT** we need to do to get there

- **People**
  Providing a safe working environment that supports strong performance where people feel valued respected and challenged. We encourage personal growth and development, and value teamwork.
- **Customers**
  Providing customers with safe and reliable delivery of energy, and responding to their changing energy needs.
- **Financial**
  Grow sustainable financial performance by increasing revenue and constraining costs.
- **Systems and processes**
  Develop and implement effective and optimal structures, internal systems, and processes to enable the delivery of APA's financial, customer, people and community objectives.
- **Community**
  We are a part of the Community. We work safely and responsibly to minimise the environmental effects and we consider the social impacts of our business.

APA Group

4 SAFEGUARD

APA Group maintains a Health & Safety and Environmental Management Systems aligned with AS/NZS 4801:2001, and ISO 14001:2004 requirements.

APA Group's Health Safety and Environment Policy states management's strategic safety objectives and reflect commitment by management to developing, maintaining and improving safety and environment in the workplace. The Policy is authorised by the Managing Director and communicated to employees, contractors and other stakeholders (Refer Attachment 1). The policy is reviewed and re-issued at least biannually.

The HSE Management System is called 'Safeguard' and provides a framework by which the processes relating to the company's Health, Safety and Environment (HSE) activities are written, approved, issued, communicated, implemented and controlled.

This management system is maintained on the Group's intranet which is accessible to all employees. The site contains a complete and updated list of:

- APA Group policies, procedures and supporting documentation
- HSE Legislation
- HSE Standards
- HSE Codes of Practice

Additionally, the management system is also subject to review and improvement to ensure objectives and obligations are continually satisfied. Key attributes of the Management System include:

- Work is conducted in a planned and systematic way;
- Variation is minimised and outcomes are predicable;
- Process-based and draws on Commit-Plan-Do-Check-Review principles;
- Requirements are documented and deployed;
- Risk is reduced, assurance is increased.

The APA HSE Management System is arranged under 15 Elements, structured to reflect the Continuous Improvement cycle of Commit, Plan, Do, Check and Act.

The Elements align to common OHS & E standards (e.g. AS4801 and ISO14001)and define what must be achieved rather than how to achieve it.

The APA HSE Management System is hierarchical and the requirements at any level must meet and support the requirements at higher levels. It establishes a framework for the management of HSE and the criteria expressed in the Elements must be met across all APA sites and operations. The Elements are consistent with the APA HSE Policy and were designed to promote safe practices across APA and to meet the company's legal obligations regarding HSE

All personnel employed by APA Group undergo mandatory HSE induction and training. This is complemented by ongoing HSE discussions and notifications aimed at achieving the policy objectives.

APA Group
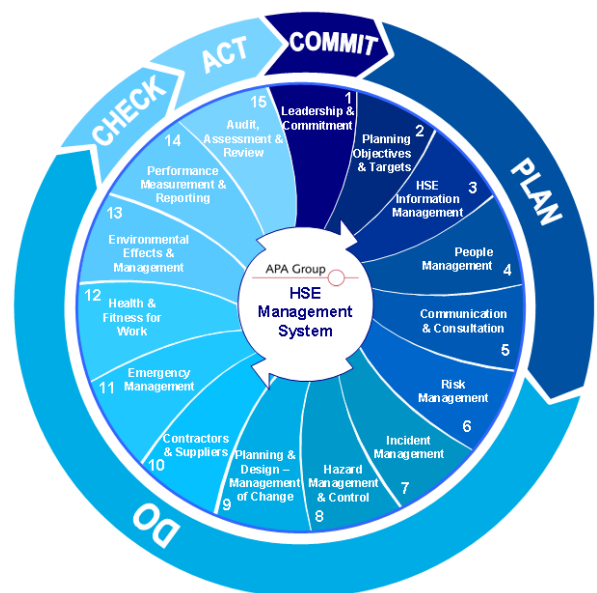
Health, Safety and Environmental Management System Committee

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
- Helping leaders to make the workplace safe and to minimise harm to the environment.

It is recognised that there are business units or site based activities and assets that will require specific HSE plans and procedures to manage HSE effectively. These plans and procedures apply within the business unit or site where they are developed and implemented and are intended to complement the company-wide procedures for those activities which are exclusive to that business unit or site.

Business /Asset HSE Plans

All company controlled assets and activities must be covered by a relevant HSE Plan. As a minimum there must be an HSE Plan that details What, Where, How, When and by Whom HSE matters are planned, allocated to responsible owners, implemented, monitored measured and reviewed.

Asset /Site HSE Plans and Procedures

Every workplace is required to establish a Plan for controlling assessed risks and have processes in place for assessing new risks and addressing corporate and external reporting requirements, close out of audit findings, licence conditions, audit and inspection schedules and training requirements. These requirements are formalised in Business or Asset / Site based HSE procedures.

APA Group

5 REGULATORY COMPLIANCE & OPERATING ENVIRONMENT

Where relevant, Pipelines are required to be operated in accordance with a number of Acts and Regulations as well as other instruments.

Each person employed in the operation of the Pipeline is required to comply with and enforce the provisions of the relevant Workplace Health and Safety Legislation, Petroleum Pipeline Acts and Regulations, Codes of Practice and Australian Standards as may be applicable.

Other technical and commercial compliance requirements will vary greatly depending on the operating environments which are based on the applicable:

- National and State Acts and Regulations
- Pipeline Licence Conditions
- Technical Standards
- Environmental Management Plan or equivalent
- Operational Safety Case, Safety and Operational Plan or Pipeline Management Plan
- Landowner Access Agreements
- Asset Regulatory Status (Access Arrangements)
- Short Term Trading Market (STTM)
- Gas Transmission Agreements (GTA) and other commercial contracts
- Operations Contracts (third party owners)

APA operates a system called MARCIS to steward actions arising from regulatory compliance obligations, audits, risk assessments and incident investigations. Management uses the systems to review compliance and responses to non-conformances and recommendations via regular reports and email notifications.

APA Group

6 QUALITY MANAGEMENT

APA Group's quality management consists of a series of written documents that:

- Communicate the Company's values, guiding beliefs, understandings and ways of thinking.
- Describe operations and procedures including the controls APA Group use to identify and mitigate risk and the structure, resources, processes and procedures needed to achieve business objectives.
- Help standardise and control business processes.
- Provide a stable platform from which improvement initiatives may be launched. The management system provides a mechanism for continual improvement and a receptacle for corporate learning and knowledge.

In most operations areas, Quality Management is supported by a system which is integrated and primarily designed to be deployed electronically. The objective has been to provide information in one place only and to link or reference to it. This reduces administrative upkeep whilst avoiding duplication, overlap and error.

Some areas of the business have quality system certification as required based on local obligations and practice.

Corporate Documents are available through the Hub portal.

APA Group

7 APA RISK MANAGEMENT

APA is committed to a culture where risks that could affect our shareholder value, employees, stakeholders, the community, the environment, our reputation, our operating assets, our financial and legal status, or prevent the achievement of our objectives are well managed.

APA adopts a Top-Down and Bottom-Up approach to the identification, assessment and management of risks:

- Top Down – the Managing Director, with support from the executive team, is responsible for developing and maintaining a register of the key risks facing the business. The process will be facilitated by the General Manager, Risk & Insurance. It is anticipated that this should focus predominantly on strategy / planning risks; and

- Bottom Up – Consolidated Risk Owners will develop and maintain a risk register for activities of the business for which they are accountable. It is anticipated that this should largely focus on operational / infrastructure, governance / compliance, reporting, and project risks. Both approaches will identify / review and analyse risks, and establish mitigation strategies to ensure appropriate management. Risks from individual business units will be consolidated into an APA register of risk.

APA has a National Risk Management Policy which provides details of corporate requirement and risk assessment matrices for BAU and Projects. APA also maintains and implements local risk management procedures and work instructions supporting specific risk assessment processes and compliance reporting requirements.

For example, a number of risk assessment processes including HAZIDs, HAZOPs and AS2885 threat assessments contribute to the hazard identification and risk management. APA also conducts regular HSE operational risk reviews, which result in an update of the APA hazard register and facility threat analysis.

APA Group

8 HUMAN RESOURCE MANAGEMENT

The role of Human Resources Group is to lead and support the achievement of APA's vision to provide a safe and professional workplace where individuals can grow and develop their careers. This means building a work environment that attracts and retains talented employees, and where all employees are engaged to give a high level of discretionary effort in the pursuit of business goals.

Key functions within Human Resources include Payroll, Recruitment, Learning and Development and Employee Relations. HR also includes Health, Safety and Environment and Training.

APA has in place policies and procedures that support HR functions and the management of resources within the organisation. These policies and procedures are available on the Intranet and are mandatory content of employee or contractor inductions as and where relevant.

8.1 Induction, Training and Competencies

Training

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.

Employee Selection

Position Descriptions (PDs) have been developed for all APA employees. The position descriptions identify the knowledge, skills and competencies that are required to perform the duties of the position. The position descriptions form the basis of selection of personnel for employment in specific roles.

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.

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 and in alignment with the organisation quality system.

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

APA Group

Pipeline specific training

Personnel operating in the pipelines environment receive training regarding the PMS. This previously was the SaOP or Safety Case documentation. Where appropriate the employees are briefed regarding the most recent Safety Management Study and the implication and actions arising.

Personnel required to work in field activities relating to the pipeline or to make decisions in relation to the operation and maintenance of the pipeline are specifically trained in the properties of the fluid including its hazards.

Pipeline equipment is only operated and/or maintained by personnel who are suitably trained or experienced in its use and understand the requirements and limitations applicable.

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 as well as the Quality systems applicable locally.

Inductions also cover business, operational and functional information as relevant for the performance of the specific roles.

Competency Skills

APA Group maintains an employee competency database in which the skills, training records, plans and competencies of each technical employee are recorded. These records are in electronic and hard copy form and are updated regularly. Regular reports are generated 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 and used to control permits being issued by referencing expiry dates and the types of permits allowed to be issued by individuals.

All personnel carrying out integrity management activities are trained/checked to ensure competence in the tasks they are to perform, and that competency should be able to be proved from qualifications, training and/or experience.

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.

A review of the status of licenses, certification and/or specialised permits held by employees is conducted annually by APA to confirm the continuing competence of APA employees.

National Learning Management System

The Learning Management System (LMS) is a web based tool designed to simplify training and related processes across APA into a single all-encompassing system. While the system will initially be populated with training and competency requirements for technical and field staff, the tool is also designed to manage training records and facilitate the tracking of professional and personal development for corporate staff.

The Learning Management System provides a one stop system for:

- Requesting attendance at training
- Manager approval of training requests
- Access to online, computer based training
- Access to internal training material
- Access to view your training records
- Training related reports

8.2 Resource Management and Recruitment

Line managers are required to ensure that their departments are sufficiently resourced with employees or contractors to meet their work scopes and responsibilities including compliance, development and review of this PMS. Where additional resources are identified as necessary to meet permanent or temporary requirements discussions applications are made to the relevant General Manager.

APA has in place a recruitment process to ensure that all personnel are suitably skilled and physically capable of carry out the work as per specific position decryption when required and for the duration that is required.

APA Group

9 CONTRACTOR, PROCUREMENT & VENDOR MANAGEMENT

9.1 Procurement Management

APA is committed to using best practice procurement processes to achieve cost savings leveraging APA's purchasing power, within the framework of the APA core values. Before any good or service is to be purchased, the following must be considered prior to seeking approval for the purchase:

- Is it necessary to purchase the good or service;
- Total cost, including where appropriate maintenance costs, disposal cost/benefit, cost of finance and any alternatives and life cycle costing;
- Fit for purpose, including quality and timeliness;
- HSE requirements are met;
- Professional excellence, including regulatory compliance; and
- Environmental sustainability.

9.2 Contractor Management

APA has policy documents that cover the selection criteria, briefing, monitoring and review of performance against objectives for contractors engaged to carry out consultancies or works.

Each contractor is required to have their own Safety Management System (SMS) and each SMS is to be assessed by APA as to whether the SMS is fit for purpose. In the event that a contractor does not have an SMS or their existing SMS does not meet APA standards, then the contractor is required to adhere to the APA SMS requirements.

To meet these requirements APA:

- incorporates health, safety and environmental requirements in the tender specification of all major contracts;
- has developed, implemented and maintains a sub-contractor selection and management procedure for major projects which includes:
  - a review of each tendering sub-contractors health, safety and environmental systems and performance;
  - a review of a sub-contractors health, safety and environmental management plan and integration of this with the Operator's management plan prior to commencement of work;
  - the requirement of the sub-contractor to use APA's critical procedures such as hazard identification and risk assessment, permit to work, JHA, communications and emergency response;
  - the process for monitoring sub-contractors safety and health performance by auditing and supervision; of the sub-contractors activities, and
  - verification of compliance with the tender specifications at the completion of contracts for major projects sub-contractors shall work to APA's management system which must comply with this system.
- incorporate health, safety and environmental requirements into purchase specifications and /or purchase orders;

APA Group

- consult with employees and sub-contractors prior to purchase of materials and equipment with potential health, safety and environmental issues;
- inspect and verify materials against purchase specifications;
- train employees and sub-contractors in the health, safety and environmental implications associated with purchases and the control measures to minimise risks associated with identified hazards;
- develop a purchase specification to include the purchase of chemicals and the requirements for a competent person to check the health, safety and environmental implications of any new chemical and material safety data sheets (MSDS) to be provided to employees prior to commencement of use; and
- maintain up-to-date MSDS Registers in an accessible format for employees and subcontractors to use in an emergency situation.

The employee who engages the contractor will determine if the contractor will be performing any safety critical tasks and will assess if the contractor has the necessary competencies to perform them. If additional training is required, it will be completed prior to the contractor undertaking the safety critical work and documented.

9.3 Standards and Specifications

Wherever possible, specifications are based on relevant Australian or International Standards and that relevant standards should be included in specification documents and on subsequent purchase orders relating to the specifications.

Health and Safety requirements including occupational health and safety legislation/regulations and health, safety and environment policies, procedures and requirements are addressed in the preparation of specifications.

Specifications for chemical products require Material Safety Data Sheets (MSDS) to be provided with supplied chemical products.

Relevant employees, including HSRs, are consulted regarding items or services that may have an impact on employees' health and safety and their input is taken into account in the development of specifications.

Consideration for training and changes to work procedures related to OHS is taken into account in the development of specifications.

APA Group

10 ASSET CREATION OR MODIFICATION (PROJECT MANAGEMENT)

The APA Project Management Policy lays out the intent for APA to have a single standardised project management approach across the whole company which is:

To provide a scalable, consistent, outcome focused approach to project management that will contribute to the effective execution of projects and improve decision making by focusing on better planning, delivery, communication, engagement and collaboration as well as minimising the frequency of unplanned activities that have the potential to disrupt our staff, our customers and the wider community

Projects at APA follow 5 stages:

Aligned to best practice, projects adopt processes (and sub processes) that are based on the PMBOK nine (9) Knowledge Areas – Scope, Time, Cost, Quality, Risk, HR, Contracts and Procurement, Communications and Integration. These processes underpin the five Project Management Stages.

There are four main project classifications:

- Complex Construction projects mainly used for new asset or major expansions
- Simple Construction projects mainly used for smaller asset renewal project using simplified processes better reflecting their lower level of complexity
- Basic Construction projects mainly used for minor projects where reduced project management controls are applicable
- B&T project mainly used for technological projects (IT)

11 ENTERPRISE CONTENT MANAGEMENT SYSTEM

APA has recognised that enhancing document management techniques will be a significant improvement step towards the management of reports, documents, drawings etc across the Group. Enterprise Content Management (ECM) is a project designed to improve control of all forms of documentation into a consistent appropriate manner. The new document management system will provide all employees with easy access to current up to date documents, to assist them in the safe performance of their work.

The management system documentation is arranged into a number of systems, frameworks, manuals and sub manuals reflecting the application of the document to the various parts of the organisation.

It is anticipated the ECM will start to roll out in late 2015.

APA Group

12 WORKS MANAGEMENT SYSTEM

APA has a variety of works management systems across its asset teams to enable efficient and effective technical, administrative, and managerial actions during the life cycle of an asset.

The systems enable maintenance activities to be carried out on assets to repair equipment, or to ensure the asset continues to perform its intended functions, which includes any and all actions taken to prevent or reduce the likelihood and consequences of failure.

APA has identified the need for an enterprise wide asset maintenance system and its development has been initiated as the Enterprise Asset Management System (EAM) using Maximo. It is anticipated that the system will be rolled out in 2015

The Enterprise Asset Management (EAM) project is a multi-divisional business transformation program which will deliver a single enterprise wide Asset Management platform interfacing with the relevant systems and supported by nationally standardised processes and roles and responsibilities.

This platform will be designed so APA can better manage its assets throughout their entire lifecycle.

Expected benefits include:

- Consistent national processes and systems for APA employees and contractors maintaining APA assets to interact with across Australia;
- Improved asset maintenance practices and therefore asset care/life;
- Improved identification and prioritisation of higher value/higher risk maintenance activity;
- Better scheduling and utilisation of maintenance and support workforce, including associated vehicle/equipment usage;
- Improved inventory management;
- Numerous 'soft' benefits around training efficiencies, staff mobility within the business, and improved analytics which will enable more effective analysis and comparisons of each part of APA's maintenance performance.

The following diagram indicates the key functionality.
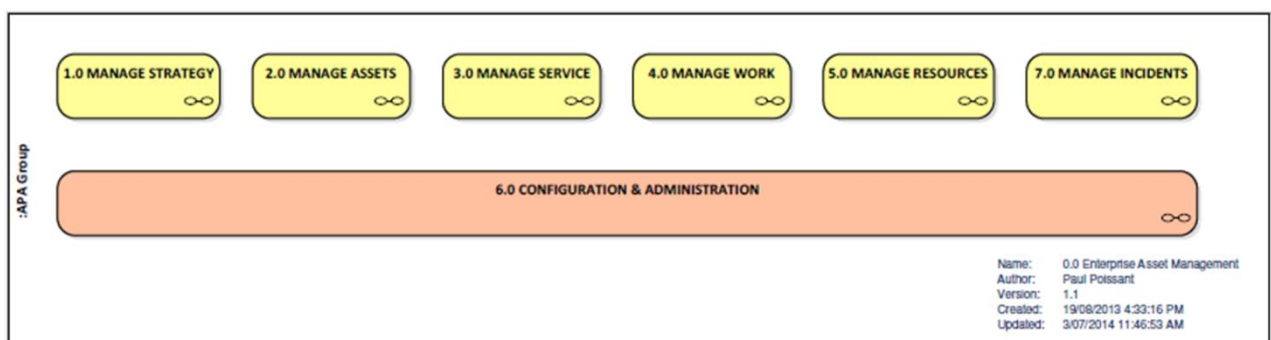
13 INTEGRITY DATA MANAGEMENT TOOL (IDMT)

Integrity data management is supported by the IDMT tool which is being rolled out throughout the Transmission areas of APA Group. The tool provides both a storage mechanism for significant volumes of data but also provides a tool to support integrity determination and risk management. The tool is provided by GL Noble Denton and is customised to satisfy the APA Group requirements. The data base links to an ESRI GIS platform for viewing.

Objectives of IDMT are to:

- Provide and configure an integrity management tool compatible and purpose built for pipeline data manipulation and assessment.
- Ability to align with APA and AS2885 risk management methodology. and automate high level risk profiling and correlation reviews
- Provide data management protocol to ensure data integrity.
- Facilitate and automate data extraction and upload for engineering assessments and reviews.
- Provide a centralised data repository for pipeline integrity information
- Ability to upload, correlate and align additional pipeline data sets.
- Enable program status monitoring through data reporting and visualisation.
- Implement a consistent national specification and conventions for new integrity data.
- Tool to provide an upgrade or alignment path with standard GIS platforms and other integrity management modules.

Examples of data sets that will be stored within the IDMT platform include:

- Inspection run data for all intelligent tool data styles
    - SCC
    - MFL
    - Geometry
    - Xyz
- Repair field data;
- Third Party information including exposure densities data;
- CP, Coating, leak surveys data
- Other pipeline and easement parametric information
- The basic functionality of the tool initially will be as follows, however it is expected that as the tool becomes fully operational that additional functionality will be added to its scope and capability:
- Store and maintain integrity data
- Maintain operational records
- Quantitative risk assessment
- Qualitative risk assessment
- Determination of the effect of features on the pipeline MAOP
- Model and determine feature growth rates
- Examine concurrency of features
- Scenario planning
- Optimisation of repair programs

APA Group

14 ASSET AND BUSINESS RECORDS

Asset records are generated through activities associated with the management system within APA Group. These include records of the asset design, construction and maintenance and inspections of the assets by operations staff, engineering activities associated with any changes, activities concerning the public such as communications with landowners and other correspondence, communications and contracts with our clients and records of improvements, including system audits and reviews.

Business records are also generated in day to day activities as determined by the different business functions.

In most cases, records are maintained locally on file servers but some records are maintained within systems such as the works management system , the integrity management system (Uptime) or the Finance system (Oracle).

To ensure ongoing effectiveness of the management system, asset relevant records shall be kept according to the applicable Records Management Plan and procedures and the new APA national Information Records Management requirements currently being developed and rolled out. Details of this National system are located on The Hub>The Guide>IRM.

Business records are maintained as directed by the various business function and using the released APA national Information Records Management guidelines.

APA Group

POLICY

ASSET MANAGEMENT

VOLUME 3 - SYSTEM ELEMENTS OVERVIEW

Owner	Rob Wheals	Next Review Date		Feb 2016
Document No	**320-POL-AM-0020**			

Rev	Date	Status	Originated	Checked	Approved	QMS Recorded
0	17 Jan 2014	Initial Issue	G Callar	E Smith		
1	20 Feb 2014	Update	G Callar	J Bryan	Rob Wheals	
2	23 Feb 2015	Minor Update	G Callar	J Bryan	Not required	

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REVISION RECORD

Revision No.	Description of Revision
0	Initial version issued for use:
1	Updated version post audit, certified compliant to AS2885.3
2	Updated version to adjust the language and scope to also suit Networks. Minor changes not affecting the meaning

APA Group

1. Introduction

This POLICY entitled Volume 3 - System Elements Overview is applicable to all APA pipeline operated under AS2885. It is to be used by APA staff and its Contractors.

All work performed in accordance with this POLICY shall comply with the requirements of the relevant local Acts, Regulations, Standards, and Codes of Practice of all authorities having jurisdiction over the work.

When conflict exists between the various applicable documents, the following order shall apply, in decreasing order of precedence. Where APA requirements are more stringent, they shall take precedence.

- Acts of law or other legislation
- Government licenses and permits
- Australian Standards
- APA Engineering Standards
- Local engineering standards

Any identified discrepancies shall be reported to the appropriate APA Project Manager for resolution.

If you are reading a hard copy of this POLICY, you should consider it uncontrolled.

2. Purpose and Scope

The PMS is part of a larger asset management framework designed to provide a consistent asset management standard across all of the pipeline assets which are operated and maintained under AS2885.3   The asset management framework is designed in accordance with the key aspects of PAS 55 and ISO 55001.

The PMS consists of national Volumes and Local Volumes that address the key management aspects of pipeline management to ensure that practice is nationally consistent and appropriate. The Volumes are supplemented by specific Group Procedures.

The purpose of this Volume is to overview the key Elements of APAs pipeline management techniques that satisfy the requirements of AS2885.3.

3. Abbreviations

Item	Abbreviation
AMP	Asset Management Plan
CP	Cathodic Protection
EMP	Environmental Management Plan
JHA	Job Hazard Analysis
JHEA	Job Hazard and Environmental Analysis
MOP	Maximum Operating Pressure Restriction
PIMP	Pipeline Integrity Management Plan
PMS	Pipeline Management System
RL Review	Remaining Life Review
SMS	Safety Management Study

Item	Abbreviation
WHS or HS&E	Workplace Health, Safety and Environment

Table 1 Abbreviations

4. References

All work performed in accordance with this POLICY shall be in conformance with the current issue, including amendments, of those national and international standards, codes of practice, guidelines and APA documents listed in Table 3; When the table is more than one page it should be included as an Appendix.

Referenced Documents	
AS2885.0 – 2012	Pipeline-Gas and liquid petroleum Part: 0 General Requirements
AS2885.1 – 2012	Pipeline-Gas and liquid petroleum Part: 1 Design and construction
AS2885.3 – 2012	Pipeline-Gas and liquid petroleum Part: 3 Operations and maintenance
Publically Available Specification PAS 55-1:2008	Specification for the optimised management of physical assets
International Standard ISO 55001	Asset Management –Management Systems - Requirements

Table 3 Referenced Documents

5. Superseded Documents

This POLICY replaces the previously used document listed in Table 4

Superseded Document	
There are no superseded documents	

Table 4 Superseded Documents

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6. Structure of the PMS Elements

The Pipeline Management System is structured in Elements reflecting the methodology of the Safeguard System (APA's WHSE system) .

The PMS Elements are structured in a cycle of Commit, Plan, Do and Check utilising the broad structure of AS2885.3 where appropriate.

The Elements of the PMS are a set of policies, processes, plans and information systems, which are integrated to give assurance that the pipeline management activities will be delivered

The elements are described in this document however in many cases specific details are maintained in Group Procedures which are stored on the Hub.

Commit

Element 1: Leadership and Commitment

Plan

Element 2: Governance

Element 3: Asset Management

Element 4: Technical Standards

Do

Element 5: Preparation of Operation and Handover

Element 6: Safety Management Processes

Element 7: Environmental Management Processes

Element 8: Operational Planning

Element 9: Pipeline Integrity Management

Element 10: Consultation Communication and Reporting

Element 11: Station Operation and Management

Element 12: Anomaly Assessment

Element 13: Change of Operating Conditions and RL Review

Element 14: Emergency Response

Element 15: Records Management

Check

Element 16: Measurement and Evaluation

The PMS exceeds those requirements of AS2885.3 and includes additional pipeline management aspects outside of the Standard's scope. The elements included in the 'Do' and 'Check' categories address the principle requirements of AS 2885.3.

APA Group

7. The PMS Elements

The Elements shown on the PMS wheel have been largely driven by AS2885.3. In the description of each element the 'Intent' shown on a black background has either been gathered from the Standard's text or the wording is APA specific.

8. Group Procedures

Group procedures are documented and relate to specific Elements. This document details the procedures and provides an overview of their content.

Group Procedures are documents that set out processes to be followed and tools to be used to ensure, that when implemented, they will give effect to the PMS in a consistent way across APA.

It is anticipated that additional procedures will be generated throughout the life of this PMS and will be added to the appropriate elements. These procedures are significant in that they also provide the national framework for completion of specific activities across APA.

The procedures should be referred to whenever relevant, rather than utilising this document in isolation.

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Pipeline Management System Elements

APA Group

APA Pipeline Management Policy

There is a single policy approved for all of the AS2885 covered pipelines operated by APA. This policy sets out the management commitment to provide a safe and reliable pipeline network throughout Australia.

APA Group

Pipeline Management Policy

APA Group is committed to the safe, reliable and environmentally responsible operation and maintenance of our assets

To achieve this APA Group will:

- Provide leadership and direction to define clear accountability and responsibility for our pipeline management performance;

- Document, Implement and maintain an appropriate Pipeline Management System;

- Comply will applicable Legislation, Australian Standards, Codes, Licences, best practice requirements to which APA subscribes and commitments;

- Define clear accountabilities and responsibilities and facilitate appropriate levels of consultation within the business;

- Communicate pipeline management commitments and information to employees, contractors and other relevant stakeholders;

- Develop and/or maintain technology and methods to actively monitor, review and manage the overall safety, supply or asset failure risks and reduce them to as low as reasonably practicable;

- Use, where appropriate, established risk management principles to identify and manage threats at all levels of asset management;

- Monitor asset and business risk alignment and regularly review the fitness for purpose of our strategic asset plans and risk mitigation measures for the acquisition, integration and disposal of our asset;

- Maintain an environment where our pipeline teams are adequately resourced, motivated, appropriately skilled and proud of their work;

- Establish and monitor measurable objectives and targets to ensure continued improvement of the Pipeline Management System;

- Provide appropriate training, supervision, specialist support and other resources to pipeline management matters; and

General Responsibilities for the Management of the Pipeline Assets

APA will operate and maintain our pipeline assets in a manner that avoids placing unacceptable risk on the public and employees.

APA will operate and maintain our pipeline assets to meet our customer's needs and other stakeholder's requirements in terms of pipeline integrity, safety, environmental protection, capacity, capability, reliability, revenue and cost and the continual improvement of our pipeline management performance.

APA Group

2 ELEMENT 2 - GOVERNANCE

> *APA manages and operates high pressure pipelines and around Australia. Governance is necessary to ensure that technical, safety, environmental and financial controls are in place and effective, to minimize the potential for loss.*

2.1 Compliance

APA has a strategy to provide a framework that:

- Ensures APA operates and maintains its assets in accordance with applicable compliance obligations,
- Provides security of risk of non-compliance,
- Provides for the development of local compliance management plans and supporting documentation.

The strategy details the responsibilities including the requirement for controls, monitoring and reporting.

2.2 Finance

APA utilises Oracle Financials to manage transactions within the company.   There are also formal delegation lists in place for all authorities and project control processes for Growth and SIB projects involving hard copy Application for Funds Expenditure processes and a computerised project control system.

2.3 Technical and System Change Management

A Technical Change Form is to be completed before any technical change that affects or alters the design criteria of a pipeline system, is carried out. The form is circulated through the appropriate stakeholders for that change to ensure full consideration of any adverse or unexpected impacts from the change and to consider the technical merit of the proposal. Where necessary additional risk mitigation or amendment to the proposed change will be required prior to approval.

The form also contains sections to ensure that basic OHSE has been adequately considered and a section to confirm compliance to AS 2885.

The principles are consistent across the Group.

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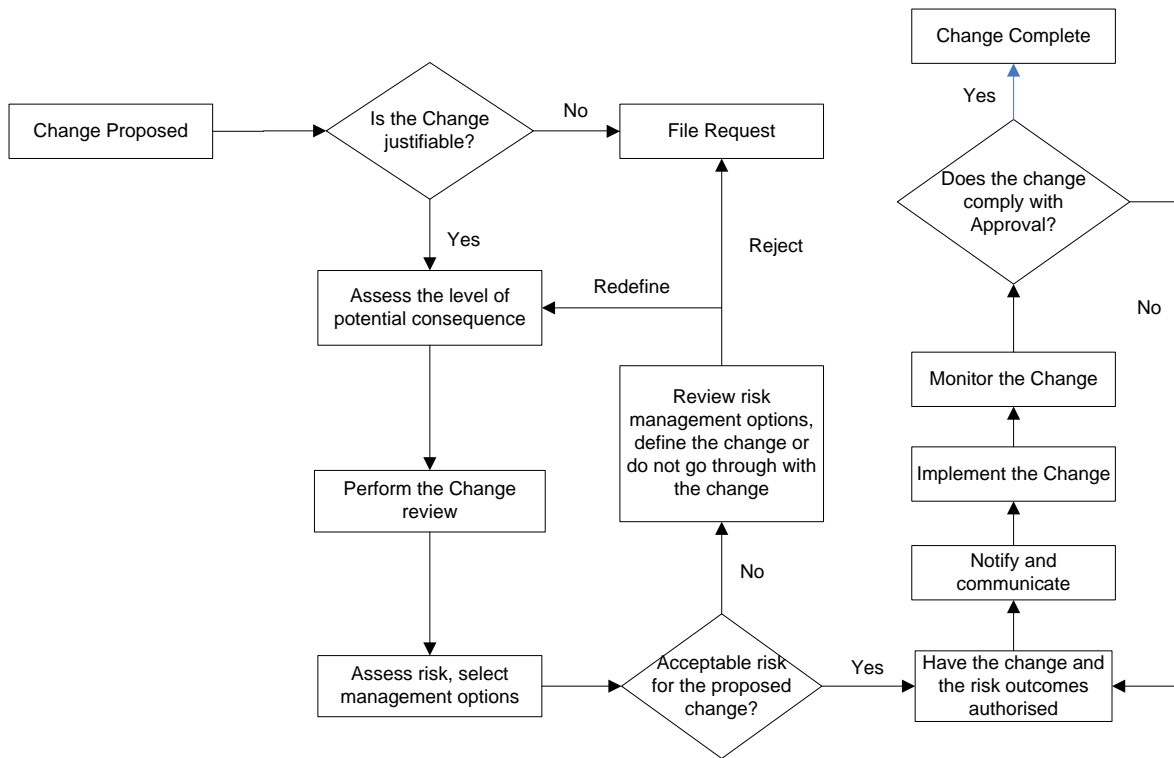
Change is considered when proposals for an engineering design upgrade or modification is envisaged or carried out.

The process ensures that where technical change is identified that the process ensures that all ramifications of such change are fully assessed and documented. The change is informed and checked by relevant personnel identified for the specific change prior to approval.

The process requires that the change form is physically signed by the reviewers and where necessary includes for Approval by the Licensee's designated person under the Approvals Matrix. This ensures that the approval was a conscious act (as required under AS2885.3 Section 2.2.2.3) and that there is an ability to demonstrate that the proposed technical change was suitably assessed and formally approved before it proceeded.

2.4 Approvals Matrix

APA operates formal approvals matrices in accordance with AS2885.0.   Approval for documents prepared in relation to the operation, maintenance, suspension of operation, decommissioning and abandonment of the pipeline assets has been delegated and deputy arrangements are specified for when officers are unavailable.

Under the approvals matrix the following documents are approved by the licensee:

- Approvals Matrix
- Safety Management Study
- Pipeline Management System
- Integrity Management Plan

In addition, the Approvals Matrix specifies additional documentation that requires specific approval.

APA Group

3 ELEMENT 3 - ASSET MANAGEMENT

APA has a considerable length of high pressure pipelines and associated sites that are managed under several operating groups. Effective asset management relies upon a consistent process initiating with local inspections and activities through to national budgeting.

3.1 Asset Lifecycle Management Process

APA is managing a considerable length of transmission pressure pipelines and associated facilities. Effective asset management relies upon a consistent process initiating with local inspections, maintenance and operation activities to national strategic planning.

Lifecycle management details the techniques utilised in APA Group to maintain the assets and facilities in a safe and reliable condition throughout their lifecycle.

This will be achieved by:

- Ensuring that any engineering design change, or change of operational parameters outside of the original design, is managed appropriately to assure that plant will continue to be operated safely and reliably.
- Maintaining all equipment to ensure that it remains safe for continued operation while providing the required reliability and availability.
- Managing corrosion protection, monitoring and inspection activities to provide assurance that the assets are safe for continued operation.
- Assessing the condition of assets in regular intervals.
- Determining the fitness-for-service when damage to an asset takes place or deterioration is detected.
- Determining the safe remaining life in the case of aged equipment for which running to failure has unacceptable consequences.
- Regularly reviewing performance and compliance and identifying opportunities for systems improvement
- Inspection, monitoring and mitigation activities, to ensure that controls identified in the Safety Management Study remain effective.

Processes are in place for the management of all assets based upon annual cycles. For APA owned assets the cycle matches the 1 July financial year, however for assets part-owned or where management is contracted the financial year may occur at a different time, however the process remains. The annual cycle is continuously from year to year. The process runs in parallel with the field delivery of maintenance and construction activities and also the performance measurement and condition review processes for the assets.

APA Group
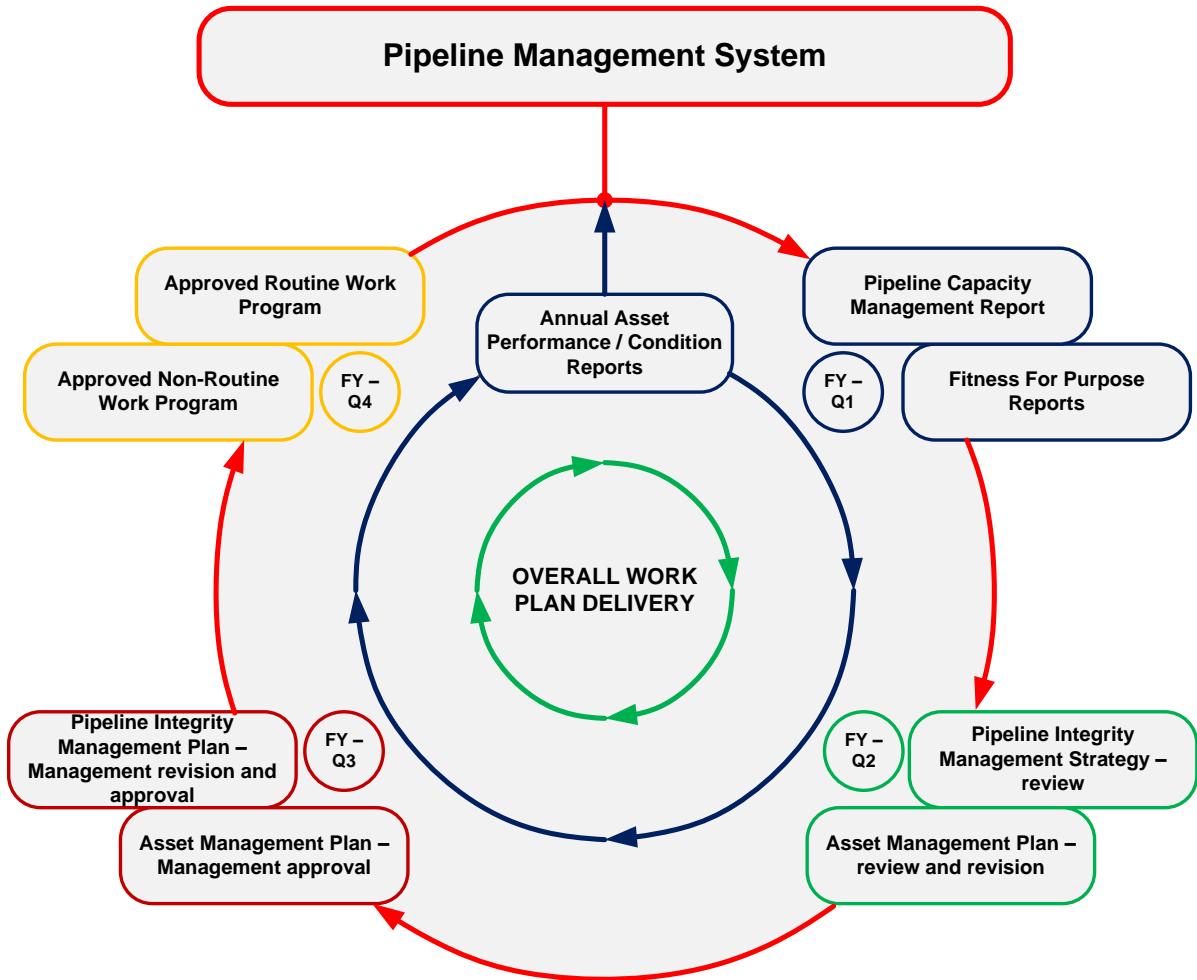
3.1.1 Q1 - Pipeline Fitness for Purpose and Capacity Management reports

At this stage in the cycle there are two key aspects underway:

Pipeline Capacity Management Report

This report reviews capability of all pipeline assets to meet current and following years anticipated capacity demands and determines whether all pipeline assets are capable delivering to the contractual requirements.

In developing this report the pipeline models may be validated against the previous year's operations and forecasted gas transportation requirements and key aspects such as weather forecasts may be reviewed.

Key outcomes of this report are to identify, evaluate and prioritise critical pipeline assets capacity related risks.

Fitness for Purpose Review

The previous year's asset performance and a review of the condition of the assets is gathered from annual reporting and routine reporting throughout the year. KPIs are utilised where appropriate and the results of incidents and specific integrity and operational studies are also reviewed.

The review considers the capability of all pipeline assets to meet current and future integrity, safety, regulatory, legislative and financial performance requirements and determine whether all pipeline assets are capable delivering to the contractual requirements. Key outcomes of this review are to identify, evaluate and prioritise critical pipeline assets integrity, safety, regulatory, legislative and financial performance related risks.

The outcome of the FFP study might lead to specific upgrades being proposed for inclusion in the following AMP, routine rectification works being scheduled or perhaps pipeline operational restrictions.

Where necessary risk reviews and safety management studies will be performed and any proposed changes will be controlled through the change management processes.

3.1.2 Q2 - Review of Asset Management Planning

The second quarter reviews the outcomes of all Capacity Management and Fitness for Purpose Reports, to develop and analyse all alternative risk mitigation options, and recommends and prioritise risk mitigation solutions based on residual risk levels and costs for unit risk reduction.

There are two key processes this quarter:

Review of the Pipeline Integrity Management Strategy

The result of the fitness for purpose studies may necessitate a revision to the Pipeline Integrity Management Strategy (Volume 2 of the PMS). Where such a change is Approved the impact will be national therefore Change Management Processes will be utilised as necessary.

Review of the Asset Management Plan

The Asset Management Plan details the proposed construction, operation, inspection and maintenance activities and indicative costs to achieve asset management objectives based on risk management and process optimisation to ensure that the assets to perform reliably. It also reviews the previous year's activities against budget and identifies any ongoing risks or carry forward projects that require necessary actions and budget consideration.

At this stage a preliminary budget is developed reflecting 'stay in business' capital requirements, 'major Opex expenditure and the routine pipeline maintenance aspects.

3.1.3 Q3 - Asset and Integrity Management Plans Approvals

There are two key processes this quarter:

Asset Management Plan Approval

The budgetary aspects of the Asset Management Plans are collated nationally and the quality and merit of the proposals reviewed. Where necessary additional information or alternative approaches may be considered and the risks associated with completion and non-completion of the proposals reviewed. National budget considerations are fed back into the process and adjustments considered.

The Asset Management Plans are finalised, but the work program may still be subject to adjustment later in the process.

Pipeline Integrity Management Plan Revision and Approval

The Pipeline Integrity Management Plan is asset specific and as such the outcome of the asset management planning process may impose some change to maintenance schedules and other key parameters in the document. Where necessary the Pipeline Integrity Management Plan will be adjusted to meet the new requirement and where necessary the maintenance program schedules may require adjustment. Approval of those documents will be consistent with the Approval Matrix stored on the HUB

3.1.4 Q4 – Asset Management Plan Program Funding Approval

Following revision of the draft AMP the proposed budgets are developed into Board submissions for approval.

The budget proposal is submitted to the Board at meetings prior to the end of the financial year with the expectation of approval being gained prior to the start of the following year.

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The approved funding is reviewed and AMP and PIMP adjusted if required based on risk management priorities.

 The routine and non-routine work funding approval enables pre-planning of the field deliverables with the intention of the early projects being able to commence from the start of the financial year.

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4 ELEMENT 4 - TECHNICAL STANDARDS

APA maintains technical specifications, guidelines and procedures to detail fundamental practices that are implemented throughout the Group. This ensures that learning from experience can be shared and ensures consistent and appropriate technical practice in critical aspects. The documents provide the framework from which lifecycle management techniques and Asset Management Plans are developed.

Amalgamation of different operating systems through the acquisition of pipeline companies has produced multiple versions of many practices and processes. APA has embarked on the nationalisation of key standards, under this PMS and will continue to do so.

The Enterprise Asset Management project will nationalise maintenance practices to a common design across the pipelines groups and will significantly reduce the amount of documentation currently in use.

Additional documentation as it is generated will lock down national practice and will generally fit into the following three categories:

4.1 Technical Specifications

APA Group has a number of technical specifications that are applicable nationally.

Specifications provide the requirements for the critical operating aspects to ensure compliance with Standards and good practice.

The following table contains synopsis of relevant technical specifications for information purposes. The full documents are stored under the relevant Element on the Hub and should be read in full and considered in context for each application. Most are stored under Element 4, however where they directly relate to another Element they are stored under that element.superseded

Additional specifications will be developed on an 'as needs' basis as specific requirements arise.

4.2 Technical Guides

Technical Guides provide the user with APA's standard practices. They are not mandatory but it is anticipated that the standard practices will be followed wherever practicable.

Technical Guides are stored under the relevant Element on the Hub and details are included in the table below.

4.3 Work Instructions and templates

Work Instructions and templates are utilised to direct field operatives in the technical aspects of particular tasks. The instruction stand-alone but may be issued in conjunction with work orders to ensure that field crews have the latest information, methods and forms.

Work Instructions are stored on the Transmission HUB site and in the Network Red Books.

Technical Standards	Type	Element	Applicability	Synopsis
Approvals Under AS2885	Specification	2	All	Details the requirement for an Approval Matrix to identify designated persons for specific approvals and also details the audit process to ensure competency in these tasks.
National SCADA Policy	Specification	4	Transmission	Details standard criteria for new SCADA systems and for the replacement of current SCADA systems as they reach obsolescence. SCADA systems that are covered by this policy are to be in accordance with the APA National SCADA Blueprint.
MAOP / MOP Reviews – Gas and Liquid Pipelines	Specification	4	All	MAOP review has been superseded by the remaining Life Review in the 2012 revision of AS2885.3. It is though a necessary assessment under the remaining life review. The Specification contains a template which can be adapted to facilitate the implementation of an MOP situation and can used to formally notify the Control Room and relevant officers of the Approved MOP/MAOP.
Colour Coding for Exposed Pipes	Specification	4	All	Details the base colour code selection for exposed pipes carrying water, flammable gases or fire service.
MFL – Metal Loss Pigging Frequency Policy	Specification	9	All	Details the time interval between commissioning and the first MFL survey and between subsequent MFL surveys. Regulatory requirements and engineering assessment may vary the default interval for specific assets.
Technical Specification for Composite Repair Systems	Specification	4	All	Details that the products shall be tested and approved as per ISO-TS 24817 requirements.
Asset Management Plan	Specification	3	All	Details the requirements for an AMP in terms of template design and the basic planning activities.
Asset Management Planning Process	Specification	3	All	Details the framework for the asset management processes with respect to the planning processes leading from initial proposal through to funding
Coatings for Buried Pipelines	Specification	4	All	Details the coating requirements for line pipe coatings
Supply Validation	Specification	4	All	Details the requirements for pipelines to have established and validated computer simulation models to be used to monitor performance.
Corrosion Management Guideline	Guideline	4	All	Describes the arrangements for the management of corrosion protection systems
Safety Management Studies Policy	Specification	6	All	Details the minimum requirements for an AS2885 SMS, including necessary personnel, schedules and methodology.
Design Life Reviews	Specification	4	All	Details the default design life period for pipelines that have no formal design life. The process for a design life review is detailed and the process aligns with a remaining life review.

5 ELEMENT 5 - PREPARATION FOR OPERATION AND HANDOVER

> *AS 2885.3-2012 Section 3.1*
>
> *Pipeline operation follows commissioning and requires adequate preparation involving a number of stakeholders including, for example, construction, commissioning and operations personnel, landholders and regulators. These stakeholders need to work together to take the pipeline through a controlled process from construction through to a fully commissioned and operating pipeline. This requires coordination and appropriate resources and communication at each stage.*

Pipelines shall not be considered ready to commence or recommence operation unless, as a minimum, the following checklist has been completed:

- The safety management study has been reviewed, including operations personnel as ready for operation
- The pipeline complies with the requirements of all relevant parts of AS 2885 series.
- The hydrostatic strength and leak test requirements have been achieved and documented.
- The MAOP has been established.
- The welds of tie-ins to existing facilities, which have not been subjected to testing in accordance with Item (c), have been inspected by an approved non-destructive examination method, and comply with AS 2885.2.
- Components have been tested for satisfactory operation. Where impracticable, other appropriate inspections have been carried out.
- Sufficient operating, maintenance and emergency personnel have been trained and obtained necessary competence.
- The pipeline is cathodically protected as required by AS 2885.1.
- Threat mitigation measures have been implemented in accordance with AS2885.3 Section 7.
- Staff have been inducted

NOTES:

1 Additional site-specific aspects may need to be evaluated prior to commencement of operation.

2 Initial operations may be approved before completion of the field work, provided the incomplete work does not directly affect the safety of the pipeline, the public, or the operating personnel, or provided alternate temporary provisions have been made.

5.1 Handover to Operations

Handover of a commissioned pipeline system occurs at the completion of the commissioning phase.

At the completion of commissioning, the Licensee shall approve completion of commissioning and pass control of the system to operations.

The handover process shall transfer the management and control of the pipeline system at a defined point. Preparation for the transfer to operations shall include compiling critical documentation including, where appropriate, the following items:

- Update and delivery of as-built design records and documents.
- Review of a complete as-built construction Manufacturer's Data Report.

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- Transfer of a construction punch list.
- Inventory of pipeline tools, spare parts location and documentation.
- Register of landholder and third-party records and liaison documentation.
- Specialist vendor training for operations personnel.
- Updated details incorporated by the Licensee in the pipeline management system.
- Updated Environmental Management Plan.
- Updated and accepted Safety Case (where required for State legislation)
- Records management plan.
- Transfer of electronic files, software and licences such as SCADA and logic controller programs.
- Training or briefing of operational personnel on commissioning issues.
- Liaison with regulatory authorities.

5.2 Delayed Commencement of operations

Where a pipeline is commissioned but not placed in operation immediately, it shall have all key features implemented and any deficiencies considered and appropriate mitigation implemented and staff inducted accordingly.

If the hydrostatic test fluid is allowed to remain in the pipeline, the test fluid shall be dosed with a corrosion inhibitor or the pipeline shall be filled with a fluid that inhibits corrosion, unless it can be demonstrated that such measures are not warranted.

Where the test fluid is removed, the pipeline shall be dried or purged, or both, with inert gas to produce a moisture level that will not promote corrosion during the delay period.

Where the pipeline is left filled with fluid, precautions shall be taken to ensure that no damage is caused by overpressure (e.g. thermal expansion effects).

During the period between the hydrostatic test and the initial operation, the pipeline integrity shall be maintained in accordance with this Standard.

Should an inspection reveal that unacceptable corrosion is occurring, corrective action shall be taken and consideration shall be given to further hydrostatic testing.

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6 ELEMENT 6 - SAFETY MANAGEMENT PROCESSES

AS 2885.3-2012 Section 4.1

The safety of the public and pipeline personnel, the impact on the environment and the integrity of the pipeline and its equipment shall not be compromised by pipeline operations and maintenance activities.

The Licensee shall consider the work environment in which pipeline personnel are required to work when planning operations and maintenance activities and take into account the impact of operations and maintenance activities on the pipeline personnel, public and the environment.

The Safety Management Process is an integral component of the planning, design, construction, operation, maintenance and abandonment of the pipeline and it provides assurance that the threats to pipeline and associated risks are identified and appropriate plans developed and implemented to manage these risks. The following chart is extracted from AS2885.1 and reflects APA's process.
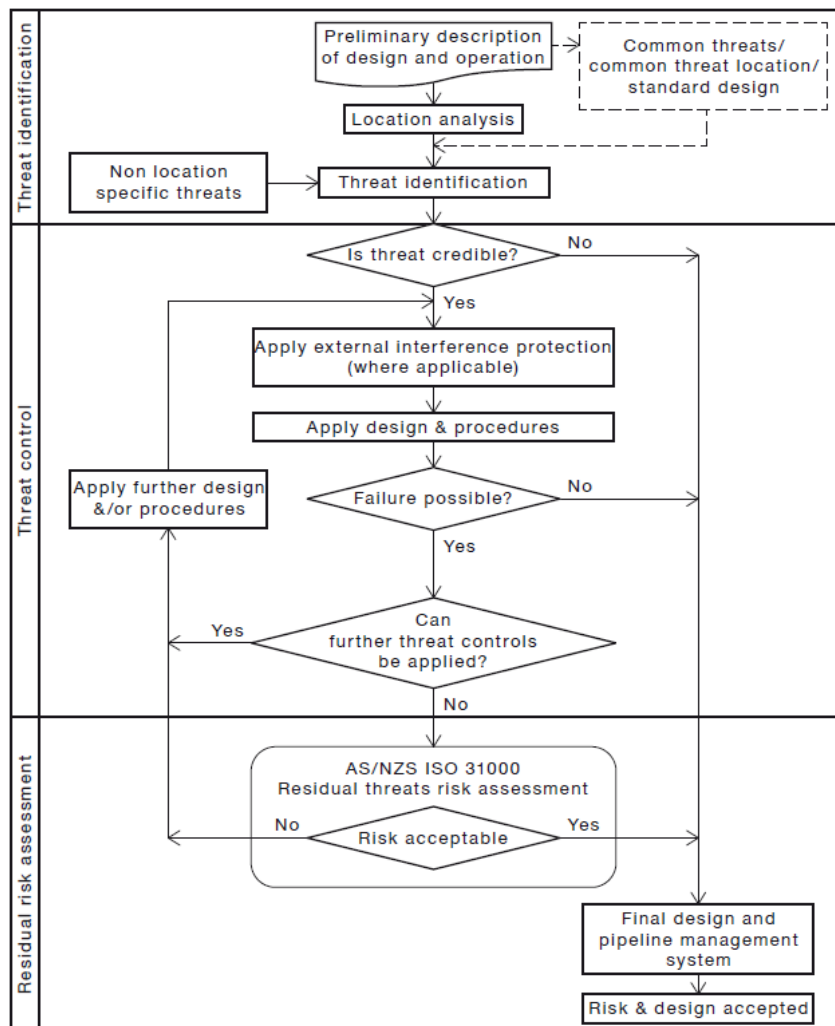

FIGURE 2.3.1 PIPELINE SAFETY MANAGEMENT PROCESS

6.1 Threat Identification

New pipelines are constructed in accordance with AS2885.1 however some legacy pipelines were designed and constructed to the 'standard of the day'. Details of the standards used are set out in the Pipeline Safety Management Study and the Basis of Design for the specific pipeline.

The principle codes used were:

1969-1972	ANSI B31.8 Gas Transmission and Distribution Pipeline Systems
1972-1975	AS CB28-1972 SAA Gas Pipeline Code
1975-1979	AS 1697-1975 SAA Gas Pipeline Code
1979-1981	AS 1697-1979 SAA Gas Pipeline Code
1981-1990	AS 1697-1981 SAA Gas Pipeline Code
1990-1997	AS 2885-1987 Pipelines – Gas and Liquid Petroleum
1997-2007	AS 2885-1997 Pipelines – Gas and Liquid Petroleum
2007-2012	AS 2885-2007 Pipelines – Gas and Liquid Petroleum
2012 to present	AS 2885-2012 Pipelines – Gas and Liquid Petroleum

Any risk that may be associated with the pipeline not being built to AS2885.1 is considered if relevant during any ongoing review. In all cases the pipelines are operated to AS2885.3 and deficiencies are risk assessed to ensure that they don't impact upon the safe operation of the assets.

At pipeline design Safety Management Studies are completed on a metre by metre basis which directly impacts the design to ensure that it will ultimately be safe to operate. Throughout the lifecycle of the asset changes to the easement and surrounding area can impact the risk associated with the pipeline and require further consideration.

6.2 External Interference Protection – Physical Controls

6.2.1 Pipeline Cover

The main method of physical protection is separation by burial which under normal circumstances is fixed for the life of the asset. Where necessary concrete slabs are installed in higher risk locations such as tracks and creeks. Some locations such as designated crossings have heavy walled pipe for additional strength against movement.

Use of regular patrolling by land and/or air methods as well as depth checking at critical locations ensures that the design level of the protection is maintained.

6.2.2 Resistance to Penetration

All transmission pressure assets are resistant to a level of penetration by the nature of the steel construction. The power and weight of plant and the style of the ground cutting teeth significantly impact the likelihood of pipe-wall penetration and the extent of damage. During SMS processes the plant identified as typical for the location are considered further.

6.3 Review of Safety Management Studies

Safety Management Studies for all transmission pipelines are reviewed on a metre by metre basis for any changes or developments, which may impact on the pipeline.in accordance with AS2885.1. The studies are reviewed at a maximum interval of 5 years or as required in the course of operation should circumstances change, and provide the rationale for pipeline upgrading and the ongoing or routine maintenance and operations activities.

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Where field risks change, a review of that section of the Safety Management Study may be completed rather than a full review. The pipeline safety management study is updated to reflect these on-going changes and also considers the latest requirements of AS 2885 at those opportunities.

In addition to implementing design controls for external threats identified in the original SMS, the effectiveness of the threat mitigation controls themselves are monitored and discussed at SMS reviews.

APA recognises that safety management study is a multi-faceted process, which is therefore carried out by a multi-disciplinary team with an intimate knowledge of the different pipeline aspects.

The risk evaluation is conducted for raw risks and for the residual threats based on AS2885.1; risk categorisation may be Extreme, High, Intermediate, Low or Negligible.   Extreme and High threats are unacceptable for ongoing operations and are mitigated. Intermediate threats are also unacceptable, although ALARP considerations, as per AS2885.1 Appendix G, may allow an intermediate risk to remain without further mitigation. Low and negligible threats are deemed acceptable, however additional mitigation may be considered.

Reviews of the Safety Management Study are Approved in accordance with the Approvals Matrix..

6.4   Other Risk Assessments (HAZOP, etc.)

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 affect 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.

6.5   Risk Register

Where risks are resolved to be Intermediate ALARP or higher they are incorporated on a Risk Register detailing the risk details and the relevant actions required to meet ALARP. Where specific control actions are required these will be documented under the appropriate system and implementation confirmed prior to close out of the SMS or risk study.

6.6   Review of Location Class

AS 2885.3 requires a review of location class at intervals not exceeding 5 years. This will be routinely completed in conjunction with the review of the Safety Management Study and the Remaining Life Review (and at the 5 year interval between).

The impact of proposed development and encroachment generally may impact the location class detailed in AS2885.1 and the necessary pipeline protection. Reviews that generate a location class change to a 'T', 'S' or 'I' category will be considered with respect to the requirements of AS2885.1 with respect to pipeline marking, valving, 'no rupture' and maximum discharge rate.

Details of the location class are maintained and depending upon pipeline group may be found on the alignment sheets, the GIS or the SMS database.

6.7   Failure Analysis

Threat identification is carried out to identify and describe all the credible threats to the pipeline. Failure analysis is then carried out on residual threats. ie analysis was carried out to determine the threats which were not reduced to an acceptable risk level by design and/or procedures. Threats with Low or Negligible risk ranking are taken to be of an acceptable risk level as per AS 2885.1.

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7 ELEMENT 7 - ENVIRONMENTAL MANAGEMENT PROCESSES

> *AS 2885.3-2012 Section 4.7.1*
>
> *Environmental planning is necessary to ensure that all field practices and procedures minimize impact on the environment.*
>
> *The Licensee shall consider environmental aspects of its pipeline operations and associated facilities and document them in an environmental management plan (EMP). Any threats to the environment shall be assessed and appropriate controls implemented as part of the pipeline management system.*

APA 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 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
- To conduct maintenance and repair activities consistent with the Australian Pipeline Industry Association (APIA) Code of Environmental Practice Part B Onshore Pipelines Operations

The EMP addresses the following issues where relevant:

- 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

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8 ELEMENT 8 – OPERATIONAL PLANNING

> *AS 2885.3-2012 Section 6.1*
>
> *The Licensee shall establish systems and processes based on the safety management study to ensure pipeline structural integrity for the design life of the pipeline. The Licensee shall describe these systems and processes in the pipeline management system and be able to demonstrate that appropriate systems are established, implemented and maintained.*

APA has developed and implemented systems and procedural controls to safeguard the assets and the general public. These are implemented throughout Networks and Transmission.

For the purposes of this chapter JHA and JHEA are synonymous and cover the full range of environmental and safety considerations. JHEA will generally be used as it more adequately describes with the practice.

8.1 Planning for Normal Operations

The pipeline is ready for operation once Approval has been obtained from the authorised person and Regulatory approval has been given, if necessary.

The key pipeline operational set-points are detailed in the PIMP and all necessary equipment and SCADA alarms are set accordingly.

Transmission pipelines have complex operational requirements and are therefore operated and monitored by Controllers at each Control Room using the SCADA facilities to monitor and control the assets to ensure that all operational parameters are met.

Networks pipelines are generally point to point assets with local controls. These are not normally controlled through control rooms but their operations may be monitored.

8.1.1 Resources

APA Group's policy and practice is to ensure that sufficient resources are available to implement the health and safety policy and maintain and improve the SMS. The appropriate human, physical (e.g. facilities, equipment), and financial resources essential to the implementation of policies and the achievement of our objectives have been defined and are made available.

This is achieved by the establishment of annual work programs and associated budgets which define the costs and the resources required to maintain the facilities in a safe working condition. These work programs and budgets are also re-forecast during the period to make any adjustments necessary to include changes to the original program and confirm that sufficient resources are available and identify if there is a requirement to outsource any critical functions during the financial period under review.

8.1.2 Duty Cycle of Personnel

A normal field working day may be varied between 8 to 10 hours. However, where approved, under exceptional circumstances working hours of up to 16 hours is acceptable. To ensure personnel safety, the JHEA will identify the extended operating hours and appropriate safety considerations will be implemented.

8.1.3 Remote Travel

Where pipelines are operated and require travel to remote locations, local control rooms or specific site offices will have procedures in place to track and follow up on crews that fail to arrive by the expected time of arrival.

Safeguard Fatal Risk Protocol APA HSE FRP 030 Driving details the minimum requirements for driving and driver fatigue management.

8.1.4 First Aid Requirements

All APA field vehicles are equipped with standard first aid kits which have been developed for the field environment that will be encountered. First aid kits are also located at key Stations and main office locations. Kits containing medications have the ability to be locked to ensure security.

Field Personnel are required to undertake first aid training to obtain the necessary competency for the treatment of minor injuries and the initial treatment of personnel requiring off-site medical attention.

The emergency transportation and medical attention of personnel requiring off-site treatment is coordinated in accordance with existing procedures.

The inspection of first aid kits is contained in the local maintenance plan and managed by the works management system.

8.1.5 Site Safety and Environmental management

8.1.5.1 Job Hazard and Environmental Analysis

The purpose of the JHEA (or JHA) process is to identify and mitigate hazards in the workplace and help integrate accepted safety, health and environmental principles for a particular job. A JHEA must be completed prior to the start of any job, examining each basic step of a job to identify assess and control safety and environmental hazards.

The JHEA process applies to all work undertaken by APA employees or contractors engaged to work on any assets managed by APA. All persons involved with carrying out the job will participate in the JHEA as a team as this ensures a wide knowledge base is used. The work group leader is responsible for leading the JHEA process and involving each member of the work group team.

APA utilises two types of JHEA:

- "On-Site" JHEA and
- "Preliminary" JHEA.

The "on-site JHEA" compliments, and can be used in conjunction with other procedures such as the Permit to Work system and is conducted at the worksite prior to commencing the job.

A "preliminary JHEA" may be developed in a "workshop" environment off site to assess identified hazards at the site or involved with completing the job. The preliminary JHEA can then be adopted by the Work Party to add to it any worksite or job specific hazards identified at the worksite on the day of the job. The preliminary JHEA then becomes the precursor for the "on site JHEA".

8.1.5.2 Permit to Work

Both Transmission Operations and Network operate comprehensive Permit to Work systems for the transmission pressure pipelines, however the differences in the asset base of the groups provide differing scope for the systems, albeit for a similar outcome. Transmission is focussed upon safety with a particular need to ensure that all operational works can be co-ordinated to occur without impacting operational capability whilst Networks are focussed upon worker safety during specific hazardous tasks.

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Both departments operate their systems nationally and administer them within their Works Management System.

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

- Cold Work (including excavation)
- 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 supervisor before a PTW will be issued by the Pipeline Permit Authority (PPA).

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.

For Networks the system issues Hazard Task Permits for a number of tasks:

- Deep Excavation
- Confined Spaces
- High Voltage Access
- Hot Tapping
- Hot work in hazardous areas.

All relevant personnel are trained and assessed as competent in PTW and JHEA. Part of the training includes identifying where relevant types of permit are to be used.

8.1.6 Isolation and tagging

The Tagging and Isolation Procedure details the isolation of potential hazardous sources of energy and the use of Danger, Information and Out-of-Service Tags. It explains the selection, use and removal of these tags and applies to all employees and contractors.

Personal Danger

The Personal Danger Tag is an administrative control for the protection of individuals. A Personal Danger Tag must be attached to the isolation device/s (isolating switch, valve, etc.), whenever danger to persons carrying out repairs/maintenance could arise from the operation of machinery, electricity, flow of energy (steam, gas, liquids) and/or use of faulty equipment.

Out of Service

The Out of Service Tag is designed to advise colleagues that hazards, system abnormalities or other situations may exist with equipment or facilities.

Out of Service Tags are also designed to identify faulty or substandard equipment out of normal service, or to identify devices that should not be operated for process or mechanical reasons to prevent injury to colleagues or damage to plant.

8.1.7 Plant release

The Plant Release Procedure details the process for obtaining permission to remove plant from service. The plant release process is built into Maintenance Connection work flow and is managed by the Plant Permit Authority (PPA) who is generally the Plant Controller.

On determining that proposed work will require a Plant Release Authorisation (PRA), a 'Request for Plant Release Authorisation form is submit to the PPA at least one week prior to the proposed commencement of work. (In QLD this is one calendar month).

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In situations where unplanned maintenance requires urgent action, the plant release approval can be obtained verbally prior to the completion of the PRA form.

8.1.8 Maintenance and Construction Damage

AS2885.3 restricts the use of excavating equipment within 300mm of the pipeline, however poor site practices can lead to pipe wall damage being caused. External interference of this nature could also be caused by APA whilst carrying out work on the pipeline, such as:

- Coating assessment and repairs.
- Pipe wall assessment and repairs.
- Joint assessment and repair.
- Loss of cover repair.

Controls for these activities shall also be included in the JHEA for the works and the excavation requirements of AS 2885.3 will be maintained.

8.1.9 Purging and Venting

Specific procedures and JHEAs will be developed for any purging of pipelines to ensure that all hazards are suitably mitigated. Consideration shall be given to any noise implications, temperature variations and the hazards associated with gaseous clouds.

When a pipeline is being purged of gas by the use of air after venting, consideration shall be given to the safety and operational consequences of the formation of an explosive mixture at the gas/air interface. For safety and environmental reasons, where practicable, depleting linepack by consumer use and flaring is preferable to venting.

8.1.10 External **Interference Management**

All work in the vicinity of a live pipeline will be managed in accordance with AS 2885.3.

APA has a standard policy to bring to the attention of all relevant parties the specific requirements related to performing any activities near pipelines managed by APA Group. APA will take all reasonable steps to assess the works and assist the party, but will require agreement with APA's conditions / controls of the works such that the pipeline or pipeline coating is not damaged.

Should a third party not agree to APA's conditions and proceeds to undertake work without any formal consent then urgent action is required to safeguard the pipeline and act in a legally correct manner. Consideration will be given to the necessary action to maintain the safety of the asset and the field workers.   The State Technical Regulator would be notified for urgent assistance and legislation may provide penalties for unlawful actions that cause damage to a pipeline or interference with its operation.

8.1.11 Pipeline Patrolling

The pipeline route is patrolled regularly to the schedule detailed in the PIMP and reviewed during SMSs. Pipeline patrols are designed at a frequency required to provide assurance that external interference threats are identified and managed.

Patrol frequency and techniques shall be varied as required by changes in the risk of external interference (threat likelihood and threat consequence), along the pipeline route and also throughout the pipeline life.

Aerial patrols of the pipeline are mainly looking for activities and events which directly affect the pipeline's pressure integrity. Therefore attention is given to any activities with the potential to penetrate the pipe such as excavation, directional drilling, blasting, boring (including the use of an auger). Natural events causing ground movement also have the potential to rupture the pipeline.

Aerial patrols also identify any variations to surface conditions such as erosion, earth movement or seismic activity which may be the result of flood, earthquake or ground slips.

Vehicular patrols are considerably slower surveillance processes but are far more suitable for built-up areas where detailed inspection is necessary and discussions with plant operators/utilities may be necessary.

8.1.12 Vegetation Management

Large vegetation is controlled on the easement to protect the asset and ensure rapid access during emergencies. Trees and large shrub roots have the potential to damage the pipeline coating and limit access for repairs. Additionally trees blowing over in storms have the potential to damage the pipeline if their root balls encompass the pipe.

Each asset has an Environmental Management Plan or equivalent which indicates the specific actions that are relevant. In general vegetation is maintained below 1 metre.

8.1.13 External loading on the pipeline

Patrols and liaison are used to manage other external loading threats to the pipeline. Typical threats include:

- Landslide
- Explosives
- Placement of material on the easement
- New land access track across the easement

Each provides a unique threat which may be immediate or long term degradation. The situation is reviewed by Safety Management Study and appropriate measures implemented.

8.2 Asset Management Plan (AMP)

APA has an Asset Management Plan prepared for every asset or group of assets. Asset Management Plan specifies the activities, resources and timescales required for individual assets or group of assets to achieve the asset management objectives (health and safety, environmental, operational, customers, reputational, compliance and financial).

AMP is based on 5 year planning horizon and covering tactical initiatives for first financial year in detail. It is reviewed annually to ensure continual alignment with the asset management objectives.

A risk identification, evaluation, ranking and management processes are used to recommend and prioritise critical activities that have a significant potential to impact on the achievement of the asset management objectives.

AMP has information in summary form including:

- Assets management process
- Assets overview
- Assets key performance indicators
- Current and forecast demands and supplies
- Assets Lifecycle Management Plan
- Proposed risk mitigation actions
- Capex and Opex Plans

8.3 Stay-in-Business Capital Planning

The APA's Asset Management Planning processes are driven by the funding approval cycle and a pro-active view of the asset lifecycle. Supporting the Asset Management Plan (AMP) are processes for gathering information from which the longer term strategic and integrity decisions are formed. The

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successful acceptance of an AMP and the associated budget flows directly to OPEX and CAPEX project funding and work program delivery for the following financial year.

The Asset Management Planning Policy details the processes and the documents required to achieve prioritised, justified and funding for short and long term project work programs.

APA Project Management Framework supports both the Asset Management Planning and the Project Delivery processes.

8.4 Planning and Preparation for Abnormal Operations

8.1.1 Emergency Management

APA ensures that plans, procedures and resources are in place to effectively respond to emergency situations, to protect the workforce, the environment, the public and customers and preserve APA Group's reputation and assets under management.

The Emergency Response Plan was developed to:

- Provide emergency response personnel with efficient and co-ordinated emergency management processes to minimise the consequences of an emergency situation
- Provide guidelines to determine the severity of an emergency and provision of appropriate response
- Define the roles, responsibilities and actions for APA staff and contractors involved in response to emergency
- Ensure the safety of all personnel included in emergency response and protects assets and community from adverse effects of an emergency

All personnel are required to undergo emergency response training. The regular use of simulated emergency exercises is key resource for training."

8.1.2 APA Crisis and Emergency Management Planning

The APA Crisis and Emergency Management Policy applies a comprehensive risk based emergency management approach (prevention, preparedness, response and recovery).

Emergency Response Plans are subservient to, and complement, the Crisis Management Plan.

While the Company's risk management system focuses on prevention of illness, injury and damage to plant and the environment, it recognises the potential for unplanned emergencies and as such, it has developed emergency plans which are tested periodically to allow for an effective response during these situations.

Figure 1- Crisis Management Plan Escalation Hierarchy
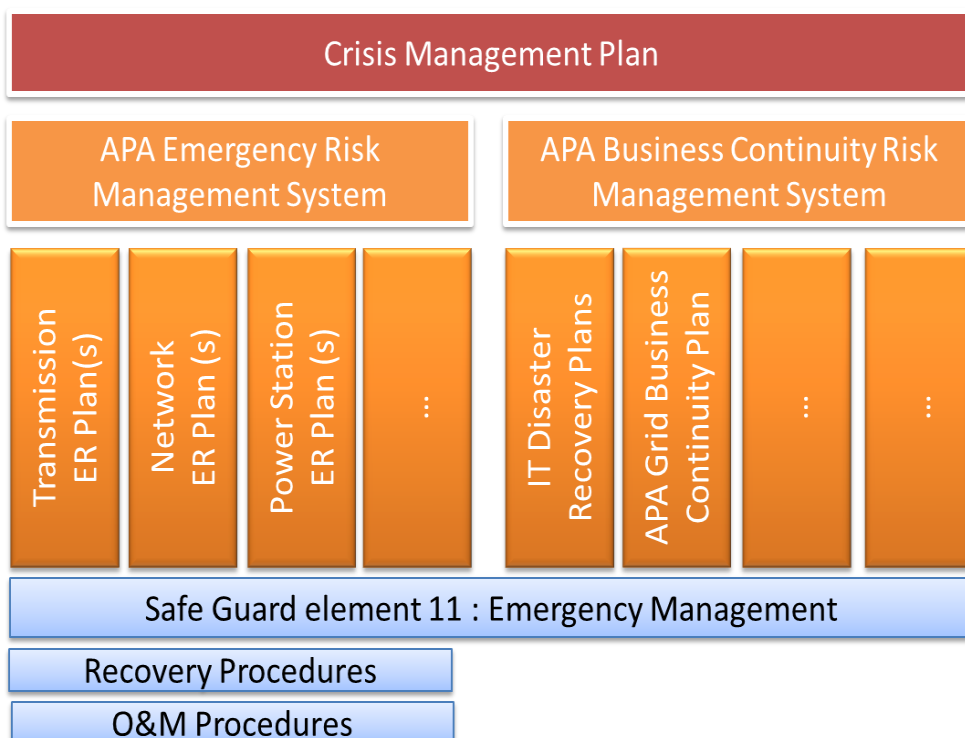
Under emergency circumstances extensive operating hours may be required to be worked by personnel and the impact of those hours on the individuals must be considered. Site JHEAs will be utilised to identify tasks and procedures that are unsuitable for fatigued personnel and emergency operations will be resourced accordingly.

Emergency control rooms will monitor the working hours of field staff and control them through the permit system. Where possible emergency management will resource field response to avoid excessive working hours.

8.3.1 Risk Management

Whilst routinely used in Safety Management Studies the risk matrix of AS2885.1 has more immediate impact in emergency management decision making. Emergency risk management is carried out in accordance with AS2885.1 with the Risk Treatment Actions detailed in Table F5 of the Standard interpreted as follows:

Extreme

- In-service pipeline risk must be reduced immediately
- Pipeline Control takes immediate action
- General Manager for operational activities to be advised immediately
- Operational Manager to modify the threat, the frequency or the consequence

High

- Any practical immediate action to isolate or reduce the risk is implemented
- Notify the threat in writing to the General Manager Infrastructure Strategy and Engineering
- Manager Engineering 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

- Engineering Manager to review with appropriate personnel and determine validity and confirm the ranking of the threat;
- Determine the actions to be implemented to reduce to Low where practical (These action may be the same as in reducing High risk above);
- Otherwise determine action to reduce to ALARP; and
- Prepare a management plan and implement as per high risk.

Low or negligible

- Record in risk assessment for future review; and
- Provide risk assessment information to relevant maintenance personnel for monitoring changes.
- For extreme, high and intermediate risks emergency response is considered, and actioned if appropriate.

8.3.2 Maximum Operating Pressure Restriction (MOP) Process

The implementation of a MOP is a short-term practice for dealing with "managed situations" involving a known or anticipated defect or temporary modification to operating conditions. For example, the excavation of corroded pipelines requires the pressure to be reduced to at least 10%.

The following practices are mandated:

- For managed defects on a pipeline, temporary MOPs will be considered with the requirement to ensure safe operation of the defect(s)

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- Location specific risk is considered in relation to defect failure mode and suitable MOP and repair strategies developed
- MOP reviews will involve pressure testing or calculation
- Where MOP's are in place annual reviews are completed and documented
- Where defects are deemed to be permanent and are not actively managed, they become part of the risk profile and are dealt with by an MAOP review
- Acknowledgement that the control room has been made aware of the MOP restriction is part of the communication process

For wide scale integrity issues such as SCC and corrosion on pipelines with very poor coating, the MOP process is utilised and MOP reductions could be in place for several years.

Due to the significance of an MOP review, these are formally considered and documented.

The removal of an MOP or increase of operating pressure back to MAOP is to be subject to a safety management study and will be authorised under the approvals matrix prior to actioning.

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> *AS 2885.3-2012 Section 6.1*
>
> *The Licensee shall establish systems and processes based on the safety management study to ensure pipeline structural integrity for the design life of the pipeline. The Licensee shall describe these systems and processes in the pipeline management system and be able to demonstrate that appropriate systems are established, implemented and maintained.*

Transmission pipelines require significant management throughout their lifecycle. Whether purchased or built the assets require on-going monitoring to ensure that they are operating correctly and regular integrity assessment.
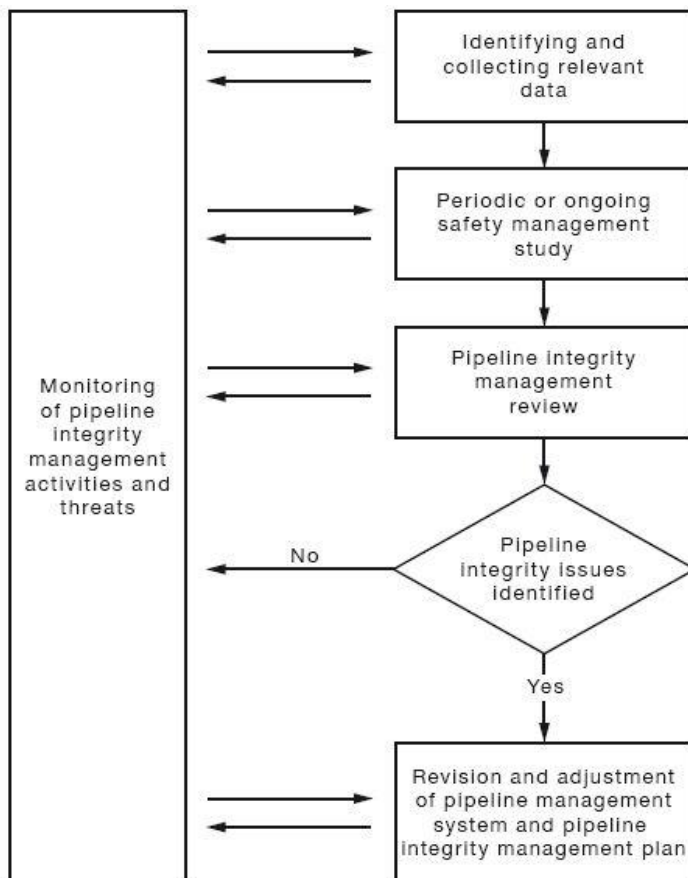
9.1   Pipeline Integrity Management

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 at commissioning. 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 for each asset which documents the specifics of the Integrity Management Program. In general, pipeline integrity is maintained by:

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- 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. Strategies and processes are in place to mitigate corrosion and integrity threats to the pipelines, including 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;
- Facilities HAZOPs;
- HS&E risk management as per Company's corporate policies;
- Environmental Management Plan; and
- Pipeline Integrity Management Plans

For Transmission Operations assets the procedures are stored on the Hub and can be accessed through the maintenance systems. For Networks asset the procedures are detailed in APA's Manual – M002 Transmission Pipelines Operating and Maintenance Procedures. These procedures are reviewed and approved on an as-required basis, ie when operational requirements change, improvements are made or standards change.

9.2   Pipeline Integrity Management Plan (PIMP)

The Plan discusses the outcome of all processes that have been used to identify the integrity of the assets and summarises them to provide a picture of the current integrity.   Where necessary, any special activities or schedules that are required to mitigate any specific issues are documented.

The PIMP is the basis of the Maintenance Plan, specifying the necessary scope and interval for all routine and non-routine activities associated with the maintenance of the assets.

The PIMP is a live document which will be updated as necessary. It will be reviewed at least every 5 years and immediately following a pipeline failure event. Where the default interval of 5 years isn't appropriate the PIMP will detail its review period.

9.3   Physical Checks of Pipeline Integrity

Specific techniques are available to maintain a good understanding of the pipeline integrity:

In-line Inspection is utilised by contracting vendors to carry out an in-line survey utilising intelligent tools and providing analytical review of the data gather for integrity reporting to APA. There are various tools available to provide the following key services:

- Metal loss
- Pipeline Geometry
- SCC cracking
- Geo-positioning (xyz survey)
- Dents

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Direct Assessment Digs involves targeted pipeline inspections to view the condition of the pipe and/or coating. Inspection is also carried out on an opportunity basis, when other works require opening onto the pipeline.

DCVG involves above ground survey to identify areas where the coating system has failed and is potentially allowing metal loss corrosion to occur.

Gas leak survey can be utilised particularly to confirm that mechanical joints are gas tight. For SCC repair activities leakage survey by helicopter is normally used for pre-excavation gas detection.

Hydrographic and Underwater Survey can be used to locate and review underwater pipelines. Utilising combinations of multi-beam acoustic surveys, tilted sonar and sub bottom profiler surveys the location and physical circumstance of the sea/riverbed can provide critical integrity monitoring information.   This is particularly useful for river crossings where pipe movement is suspected.

9.4 Physical Checks of Station Pipework

Routine maintenance incorporates leak testing of above ground equipment, inspection of painting or coated surfaces and operability checks.

9.5 Remaining Life Reviews

Remaining Life Reviews provide a periodic thorough review of the integrity of the pipeline and equipment by reviewing all key information integrity information and by carrying out field inspection of critical devices. Whilst required under AS2885.3 -2012 Section 10.3 at an approved interval with a maximum of 10 years, the plan will be kept updated as new information is gathered.

9.6 Review of Pressure-Control Equipment

The suitability of the pressure control equipment operational on the assets is reviewed in conjunction with the Remaining Life Review. Where the equipment is at a class break and protects downstream MAOPs or where failure could have significant repercussions the equipment will be physically checked to ensure that it is still in accordance with the asset records.

9.7 Management of High Consequence Areas

9.7.1   Risk Management in High Consequence Areas

APA is aware of its obligations minimise societal risk and is committed to reduce as far as practicable probability of failure from credible threats to the integrity of the pipeline in high consequence areas. The approach to risk management relies on robust application of AS2885 safety management studies (SMS) and activities across multiple disciplines including:

1. Pipeline Design and Construction
2. Asset Management
3. Integrity Management
4. Land and Encroachment Management
5. Operational Management and Emergency Response

9.7.2   Safety Management Studies

The APA Safety Management Study and Location Class Review Policy includes:

1. Evaluation for compliance with the AS2885 no rupture and energy release rate requirements in HCA's.
2. Use of a national threat register to ensure all identified credible threats are evaluated during SMS.
3. Collation and review of DBYD information to identify type and size of equipment used in the vicinity of pipelines.
4. Design SMS to review proposed developments and land use classifications to identify future HCA's

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5. A formalised ALARP assessment process.
6. A process for review and close out of actions.
7. Review of effectiveness of controls.
8. Provision for increased frequency of SMS in HCA's where high levels of third party activity are identified.

9.7.3 Design and Construction

All new pipelines in areas with existing and known future HCA's are designed to satisfy the no rupture and energy release rate requirements of AS2885.

9.7.4 Asset Management

Asset management teams review and assess SMS's and manage actions and lessons learnt.

9.7.5 Integrity Management

Integrity management policies and guidelines with specific additional requirements for HCA's are:

1. Corrosion Management Plan: Requirement for increased frequency of monitoring of CP systems in urban areas.
2. SCC Expert Guide: Includes requirement for SCC direct assessment programs.
3. ILI Policy – Application of a 1.25 factor to growth rates used in determining re-inspection intervals and use of higher specification tools.
4. ILI Policy - All new pipelines and, where practicable, existing unpiggable pipelines to be modified to allow ILI.

9.7.6 Lands and Encroachment Management

The national Land Management Plan (LMP) 320-PL-HEL-001 and associated procedures/guidelines include specific additional requirements for existing and new HCA's:

1. Ground patrols in all urban areas with frequency determined by SMS
2. Marker locations/spacings as per AS2885 recommendations and a requirement for replacement/repair of damaged marker signs as soon as practicable after report.
3. Requirements for a risk management plan to be in place for all new developments within the AS2885 measurement length.

The APA Groups Awareness Program outlined in the LMP and Management of Encroachment on Transmission Pipelines Guidelines (320-GD-HEL-0008) provides a structured approach to identifying and managing new encroachments.

APA Group actively participates in the APIA Corridor Committee and Pipeline Operator Groups to develop a consistent industry approach to managing encroachment.

9.7.7 Operational Management and Emergency Response

Field Staff have responsibility to actively monitor and maintain controls (Signage/Depth of Cover/Machine Size/Type) as identified in SMS.

10 ELEMENT 10 - CONSULTATION COMMUNICATION AND REPORTING

> *AS 2885.3-2012 Section 7.1*
>
> *The Licensee shall establish and implement pipeline integrity management procedures to ensure that all external interference threats to the pipeline identified in the safety management study are controlled effectively.*

10.1 Landowner Liaison

APA Group maintains a comprehensive landowner liaison program that includes:

- Visiting the land occupiers from time to time on an 'as need' basis (as detailed in the PIMP); and
- Maintaining a landowner database along a pipeline easement.

Where attempts to meet the land occupier fail, pipeline information is either left at the homestead or posted to the land owner for their information.

Landowners are encouraged to phone APA Group if they wish to ask any questions with regard to proposed activities on the pipeline easement. Local Councils and Contractors to major projects are encouraged to contact APA Group if any developments occur in the vicinity of the pipeline easement.

10.2 Community and stakeholder awareness

Awareness programs enhance the effectiveness of other procedural controls such as pipeline markers, buried marker tape and one-call services.

APA undertakes regular communication and education regarding the importance of pipeline awareness with landowners and occupiers, and also targets groups that may also impact the pipeline easement such as housing developers, excavators, drillers, blasting companies, borers, construction organisations etc, and relevant authorities located near any facility. The courses are to familiarise the attending personnel with the location and characteristics of the asset(s), the risk mitigation processes being carried out, the possible impact of a pipeline failure and the necessary precautions to be taken should loss of containment occur.

The frequency of contact is reviewed during the five yearly SMS review including landowner and community awareness and promotional material.

Emergency services, environmental agencies, landowners and occupiers, etc., shall also be informed of the hazardous properties of the fluid, methods of recognising threats to the pipeline / emergency situations, and be informed of 24 h contact numbers of personnel or organisations to be informed in case of emergency.

10.3 Regulatory Reporting

Each State jurisdiction has specific Pipeline Act and Regulations applied to the assets either directly or through Licences. Each pipeline operating group maintains a register of the routine reporting

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10.4 Dial Before You Dig

APA Group participates nationally with the program allowing activity enquiries to be made either directly to APA or via the 'Dial Before You Dig' service. In response to enquiries APA Group advises regarding the location and impact on the pipeline and coordinates filed supervision as necessary. Whenever the pipeline is exposed, a record is kept of the location, coating condition and other details to be used in future integrity assessments. Third party enquiries and activities are documented and where necessary any relevant as-built drawings updated.

10.5 Land use planning - encroachment

APA undertakes proactive liaison with town planners and developers with the aim of identifying and influencing as early as possible any changes in planning, development or other activities that pose a threat to the pipeline.

Where encroachment is identified Safety Management Studies are held and where appropriate reviewed with the land developers to determine whether additional mitigation actions are necessary.

10.6 Asset Modification, Renewal and Disposal

Throughout the life of a transmission pipeline modifications are made to facilitate 3rd party development, mitigate risk and to develop additional and improved delivery. Similarly, at the end of a pipelines life disposal whether it be in-situ or by removal requires engineering design and Approval.

APA Group operates and manages a large number of transmission pipelines and processes are in place to ensure that all modifications are carried out appropriately and satisfy AS2885 design and approval requirements, Legislative requirements and follow the guidelines of the APIA Code of Environmental Practice.

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11   ELEMENT 11 - STATION OPERATION AND MAINTENANCE

> *AS2885.3-2012 Section 8.1*
>
> *Stations shall be operated within the limits of their process design.*
>
> *Maintenance of stations shall ensure that—*
>
> *(a) all devices and systems required to ensure the station operates within these limits are operable; and*
>
> *(b) the structural and pressure integrity of stations is not compromised over time.*
>
> *Operations and maintenance activities of stations shall be documented and the effectiveness of these activities shall be monitored.*

11.1 Safety and Maintenance of Equipment

12.1.1   Critical Equipment

All stations are operated within the limits of their process design and all components are maintained and operationally checked during station servicing accordingly. Critical equipment is defined as that which is required to maintain the station operations within the process design envelope including, but not limited to:

- Regulators
- Pressure-control valves
- Pressure- and temperature-sensing and control circuits
- Pressure relieving devices
- Slam-shut or emergency shut-off valves
- Pressure and temperature switches
- Emergency shutdown systems
- Meters,
- Flow computers,
- Filters,
- Odourisers and
- Heaters

Such equipment shall be maintained and tested to ensure reliable operation.in accordance with vendor's recommendations, any relevant standards, and industry best practise. The maintenance schedule for this equipment is detailed in the PIMP.

Where equipment is found to be unserviceable it will be replaced.

12.1.2   Rotating plant and other equipment

Non-critical items will be identified, recorded and maintained appropriately with records kept.

During maintenance inspections all above-ground station pipework will be inspected for evidence of damage/corrosion and where the impact isn't immediately critical will be scheduled for further inspection repair. Should the damage require urgent attention appropriate actions will be initiated.

11.2 Electrical Safety

12.2.1 General

Hazardous voltages on pipelines can arise from faults associated with high voltage installations and lightning strike. The pipelines are designed to reduce possibility of personnel exposure to hazardous voltages under both operating and fault conditions. Additionally the pipeline design shall protect assets e.g. from surge conditions.

12.2.2 High Voltage Installations

The design shall address the safety requirements during operation as well as construction. Voltage can be induced during construction as a result of capacitive coupling. The capacitive coupling hazard shall be assessed and its protection shall be designed in accordance with Section 7 of AS 4853-2000.

Hazards which can arise from the operation of pipelines require more detailed assessment. The following steps shall be taken:

- Survey of high voltage exposure
- Collection of electrical parameters
- Calculation of Low Frequency Induction (LFI)
- Calculation of Earth Potential Rise (EPR)
- Assessment of electrical hazard
- Consideration of AC mitigation
- Consideration of the requirements of AS 4853-2012

12.2.3 Lightning/surge Protection

Station and pipeline earthing are designed in accordance with AS 2885.1, AS 4853 and AS 2832.1 to reduce electrical hazard from a lightning strike. The earthing design shall be in accordance with AS 1768. Installations shall not be altered, even temporarily, without full consideration of their design with respect to electrical risks.

Where risk of lightning strike exists, appropriate measures shall be taken in accordance with AS 1768 to protect CP components, eg isolation joints and flanges.

11.3 Mechanical Safety

Stations contain the critical compression, pressure control monitoring equipment with electrical and mechanical components with differing maintenance requirements and life cycles.

The stations can be generally grouped into the following maintenance groups:

- Compressor stations
- Regulating stations
- Metering (Custody Transfer)
- Scraper stations
- Line Valves
- Cathodic protection

Maintenance on the pipeline 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).

practices. Operation and maintenance activities incorporate those measures required to mitigate the threats identified in the risk assessment to the acceptable levels.

11.4 Station Local Control Strategies

12.4.1 General

The local control system are designed and maintained to the following characteristics;

- Operate independently of the SCADA system
- On failure of the local control system, the station will either:
  o Perform a shutdown of the station if implemented or
  o Continue to operation is the condition before failure with protection afforded by mechanical means.
- Powered sites normally have battery support

The instrumentation (local bonding to station earth), control wiring (Shielding or armouring of cable) and control system (located in a metallic cabinet and/or over-voltage protection) are tolerable to electromagnetic interference.

Remote access to the local control system can only be achieved through the secure corporate network. Local access requires permission through a locked fence boundary and locked control room.

All facilities with an electronic control system can be access by SCADA for remote monitoring and control.

12.4.2 SCADA

APA group has selected the ClearSCADA system which is being rolled out nationally across all of the transmission assets.

SCADA is operated and maintained to the following characteristics;

- Operate within the corporate network for security and uses industry proven software.
- All facilities with an electronic control system can be access by SCADA for remote monitoring and control.
- SCADA is operated 24 hours a day by dedicated personnel.
- The information collected by SCADA is used to assist with operation and maintenance of the station under supervision.
- SCADA operates independently of the supervised local control system.
- On failure of the primary SCADA server, the backup SCADA server will provide continued operation.
- Changes to the SCADA system will not affect these characteristics.

12.4.3 Site Security

All above-ground APA sites are secured with chain link fencing with barbed wire, or better. All sites are padlocked and in most cases remote buildings are locked and alarmed.

Above-ground valves are normally locked in position with chain and padlocks.

12.4.4 Operating Pressure Control

Operation of the pipeline is designed to maintain the pipeline fit-for-purpose by operating within the structural integrity parameters.

The stations carry out a variety of differing tasks, but the key aspects relate to pipeline operational control with the following objectives:

- Ensure that during normal operation, the operating pressure at any point in the pipeline does not exceed the MAOP, and that transient pressure does not exceed 110% of the MAOP;

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- Minimise pressure cycling on the pipeline by the maintenance of a steady inlet pressure and appropriate use of compression on the pipeline;
- Ensure that the operating temperature of gas entering the Pipeline or downstream of the compressor stations does not exceed the maximum or minimum allowable temperature; and
- Monitor the natural gas quality to ensure that it meets specification for the end users but also for the integrity of the major installed equipment such as pressure reduction processes, compressor operations and meter stations along the pipeline.
- Ensure that downstream pipelines, networks or customer gas installations are supplied with gas quantities, pressures and temperatures in accordance with relevant arrangements

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12 ELEMENT 12 - ANOMALY ASSESSMENT

> *AS2885.3-2012 Section 9.1*
>
> *The objective of establishing anomaly assessment and repair procedures for the pipeline is to ensure that the continued operation of the pipeline will not cause injury to the public, operating personnel, damage to the environment and infrastructure, and/or disruption of service.*
>
> *AS2885.3-2012 Section 9.8*
> *Where an MOP restriction may be required for an extended period (e.g. 12 months or longer), a safety management study shall be undertaken to assess the integrity of the pipeline and its reliable operation, prior to lifting the MOP restriction.*
> *Where an anomaly is determined to affect the pipeline's long-term integrity, the pipeline MAOP shall be reduced. MAOP reduction shall be approved and documented.*

12.1 Assessment technique

Anomaly assessment is primarily carried out in accordance with Sections 9.4 to 9.7 of 2885.3 or other Approved methods. RSTRENG Level 1 is typically used to sentence defects, and where used ILI vendors are requested to provide integrity details in that manner.

Further analysis using site measurement may be carried out using RSTRENG Level 2 with the detailed or "river bottom" approach for a more accurate sentencing.

Alternative methods detailed in AS2885.3 are considered where necessary and specific techniques may be developed for particular applications.

All assessment methods are Approved and all sentencing is carried out by competent personnel or under the guidance of competent personnel.

12.2 Maximum Operating Pressure Restriction (MOP)

Pipeline anomalies may require a reduction in the pipeline operating pressure to maintain safe operations. APA Group utilises these restrictions as measures to ensure safety in pipeline operations whilst the pipeline anomalies are under management. MOPs are approved and implemented formally.

Where MOPs are implemented they will be managed in accordance with section 8.3.2 of this PMS Volume 3.

Where the pipeline defects are either unrepairable or unmanageable the MAOP may be reduced rather than utilising the MOP approach.

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13 ELEMENT 13 - CHANGE OF OPERATING CONDITIONS AND RL REVIEW

> *AS2885.3-2012 section 10.1*
>
> *Changes proposed to the approved design shall be designed and approved in accordance with the requirements of AS 2885.0 and AS 2885.1 so that the integrity of the pipeline is not impaired, the safety of the public and operating personnel is not diminished and the environment is protected.*

13.1 Change of Operating Conditions

All changes to the operating conditions of a pipeline are subject to a safety management study review which is designed to consider the impact of any change and determine whether modified practices or mitigation are necessary.

Reviews will be completed where the following are considered:

- Design condition changes
- MAOP verification by pressure testing
- Pipeline modifications
- Review of pressure control arrangements

Reviews of the safety management study will be Approved.

13.2 Remaining Life Reviews

Remaining Life Reviews are completed at a 10 year interval. For existing assets these will initially become due at the expiry of the previous 5 year MAOP review. For new assets these will become initially due 10 years after the hydrotest unless incorporated with other assets due at an earlier period.

APA Group is developing standard practices for this review.

Reviews of the Remaining Life Reviews will be approved.

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14 ELEMENT 14 - EMERGENCY RESPONSE

> *AS2885.3-2012 Section 11.1*
>
> *Pipeline related emergency events pose significant risk to all personnel on-site, the public, the environment and the asset. Planning and preparation for emergencies is conducted as an integral part of the pipeline management system, which requires the Licensee to respond to any identified emergency event in a coordinated and safe manner.*

While the APA Group's risk management system focuses on prevention of illness, injury and damage to plant and the environment, it recognises the potential for unplanned emergencies and as such, it has developed emergency plans which are tested periodically to allow for an effective response during these situations.

The Plans (or Manuals) are developed in accordance with Section 11 of AS 2885.3-2012.

14.1 Scope of the Emergency Response Plan

The Emergency Response Plans are managed locally and define the minimum response required for an emergency arising on all pipelines and associated pipeline facilities and any other pipeline that the Company manages on behalf of other companies.

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.

14.2 Emergency Response Plan

An Emergency Plan ensures that the response is correctly coordinated by focussing upon the response structure and field control to:

- ensure a consistent and coordinated approach by emergency response personnel to any emergency
- control and limit any effect that the emergency may have on people, property and environment
- ensure priority communication of critical emergency information to affected stakeholders
- provide a sound basis for the training and assessment of emergency response personnel
- provide a means for reviewing and improving the response techniques

Every asset or asset group has an Emergency Response Plan which details the emergency positions and the reporting hierarchy to manage emergencies of any nature.

14.3 Emergency Venting and Purging

In the event of a loss of containment incident pipeline venting and purging may be necessary to enable pipeline inspection and repair.

Where venting and purging is utilised the emergency management team will develop and implement a site specific procedure and JHEA to ensure that all hazards are suitably mitigated. Where suitable vents already exist they will be used in preference to establishing new locations.

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14.4 Review and Improvement of the Emergency Response Plan

The Emergency Response Plan, all resources and any emergency reports are reviewed in accordance with the PIMP, which may reflect local requirements. The findings of simulations and audits are used to improve the manual and ensure the procedural correctness of the strategy and that personnel understand their respective roles in an emergency.

The Emergency Response Plan will also be updated when:

- A risk assessment identifies that a change to the Emergency Response Plan is required; or
- Legislative or Australian Standards relating to the Emergency Response Plan have changed.

Changes to the Emergency Response Plan will be approved.

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15 ELEMENT 15 - RECORDS MANAGEMENT

> *AS2885.3-2012 Section 12.1*
>
> *The Licensee shall establish procedures for the identification, collection, storage and disposal of records pertinent to the pipeline management system and to the achievement of the above objectives and document those in the record management plan. Procedures shall cover electronic as well as paper-based records.*

15.1 Controlled Documents

APA has developed procedures and work instructions for the operation and maintenance of Gas Transmission Pipelines. These procedures and work instructions are maintained under the integrated management system and the latest versions of individual procedures are located on relevant intranet site(s).

Other documents may require to be controlled such as project management plans, contract documents or engineering design and drawing documents.

All controlled documents are clearly identified and controlled by the document controller as per the local Document Control Procedure. This is to ensure that changes are communicated and that employees only access current versions of critical documents. If appropriate, documents may be controlled within an area by a designated person, rather than through the company document controller. The designated person is responsible for ensuring that the documents are appropriately authorised, identified and controlled.

To reduce paper usage, electronic documents shall be used in preference to issuing paper copies. The company will also encourage the use of e-mail and internet viewing to reduce paper use. All printed internal documents, Standards, etc, are considered to be uncontrolled unless clearly stamped "CONTROLLED"

15.2 Records Management

The Company has developed a Records Management Plan as per AS2885.3 to obtain and maintain records that are necessary to safely operate and maintain the Pipeline and to determine the fitness-for-purpose of the Pipeline at any stage of the pipeline operating life.

The Records Management Plan includes:

- Identification of records to be maintained in accordance with legislative requirements;
- Retention requirements for those records
- Records compliance matrix to AS 2885.3 Section 10
- Records keeping accountability and standard location
- Reference to Record maintenance procedures
- Requirement to assess obsolete records and procedures

In the event of a missing 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 Pipeline at any stage of the pipeline operating life. Such assessments are detailed in the Records Management Plan.

In accordance with AS 2885.3, the Records Management Plans includes the following records:

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ELEMENT 16 - MEASUREMENT AND EVALUATION

APA recognizes the importance of continuous improvement and utilises audit and review techniques coupled with management review to ensure that lessons are leant and the experiences fed back into systems and processes.

16.1 Continuous Improvement

16.1.1 Non-Conformance Reporting

An operational non-conformance is defined as an occurrence, which does not conform to operational general practices. Examples of these are:

- Failure of material and/or component breakdown
- Third Party Damage
- Acceptance test failures
- Supply interruptions
- Operational failures during construction and commissioning
- Major gas escapes
- Gas fires/explosions (with no injuries)
- Near misses which may have threatened to cause any of these occurrences

The system of reporting requires the employee reporting the emergency to fill out a one-page form and give it to their immediate Supervisor.

16.1.2 Emergency/Accident Investigation, Reporting and Recording

APA Group encourages hazard identification and reporting by all location personnel and ensures that all emergencies are investigated thoroughly and reported on and followed up with the object of ensuring preventative strategies have been implemented. All supervisors, managers and H&S advisers and representatives attend training in emergency investigation and root cause analysis.

Where a hazard/emergency has been identified in the workplace, an HS&E Alert form is initiated by the employee to record essential information to enable the determination of appropriate actions to be implemented to manage the occurrence or future potential.

Employees are encouraged to be constantly aware of safety on the worksite. Every employee has access to emergency report forms (known as "HSE Alert Forms") and is encouraged to use them. Managers from each department are members of HS&E Committees and have input into all safety reviews and reports.

Where an emergency has resulted in injury it is referred to as an Accident and requires an Emergency/Accident Report Form to be initiated. With the initiation of an Emergency/Accident Report, the location Supervisor/Manager (as appropriate, in consultation with an employee HS&E Representative) investigates the occurrence and initiates corrective actions.

The Licensee is notified of significant emergencies reported and receives a full copy of the investigation report including the corrective actions raised. These details are also included in the monthly report to the Licensee.

Where a serious Emergency has occurred, the General Manager of the operating group responsible required to be notified immediately and report to, assist and liaise with government authorities as required.

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16.1.3 Emergency Investigation

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

Internal Emergency Report

Immediately after the emergency is over, the relevant manager will arrange for an investigation and written report. This report should be completed within 30 days. The report should include a detailed review of the sequence of events, communications and actions taken immediately prior to, during and after the emergency. Where available, computer records and logs will be examined carefully and retained. In most cases, photographs taken immediately after the emergency will be of value to the investigators. The report will include a review of the Emergency Response Manual and recommend changes as required. If necessary the report should be sent to relevant government departments.

Where asset failures are involved the manager will carry out a further investigation to determine the suitability and risk associated with further operations of the equipment. Emergency details are submitted on the nominated forms to APIA for inclusion on the POG emergency database.

Internal Investigation

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

16.2 Corrective action

16.2.1 Reporting Systems

Safeguard Plus is used to capture health and safety related emergency data where actual or potential harm to personnel (employees, contractors and/or visitors) has occurred. Safeguard Plus stewards the actions that result from subsequent emergency 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.

Safeguard Plus captures emergencies of an operational nature including environmental emergencies. MARCIS stewards the actions that result from the emergency investigations. MARCIS is also used to steward actions arising from regulatory compliance obligations, audits, risk assessments and emergency investigations of operational nature. MARCIS can be used for actions where document control and external reporting is important.

Maintenance Connection or Maximo are used for maintenance scheduling. Maximo has however been selected as the long term maintenance program and will be progressively rolled-out during 2015-6 across the organisation.

The maintenance system is used to steward the completion of all operational activities including actions that were initiated from the 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.

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This may be summarised:

- MARCIS captures information relating to the assets, their management and operation.
- WorkWise captures information relating to personnel compliance and safety.
- The maintenance system captures information relating to the physical condition of the assets.

16.2.2 Auditing and Assessment

In measuring the effectiveness of the management system, the audit and review process is carried out for all activities within the company to ensure compliance with set performance standards. The process evaluates how appropriate the current management system is and how well safety objectives are achieved. The following auditing and assessment methods are conducted:

- Employee Reporting,
- Six-monthly departmental inspections (conducted internally),
- APA HS&E physical audit and review,
- Insurance Audits.
- HSEQ certification of the APA integrated management system and operational safety case requirements where required
- Technical compliance audits
- Approvals audit
- Approver Competence Audit

APA Group on behalf of its clients will conduct internal and external audits during each calendar year. This plan is supported by an audit schedule and both documents are subject to regular review and update to reflect changes in the schedule, and additions or removal of licences and facilities as they occur during the year.

Audit procedures cover the scope, frequency, methodologies and competencies, as well as the responsibilities and requirements for conducting audits and reporting results. Output information on the results of audits is disseminated to management, and employees.

Upon approval of audit reports and proposed action plans by the relevant managers, all corrective and preventive actions arising from audits are created in the APA online action management system . These actions are then monitored and tracked through to effective closure. Satisfactory completion of corrective and preventive actions provides the basis for continual improvement of the APA integrated management system.

16.2.3 Evaluation of Safety Management & Work Methods

The APA Operations Manager is responsible for ensuring that 6 monthly inspections of the facility and associated workplaces are carried out, in order to assess the organisation and effectiveness of APA workplace environments and work practice safety. Deficiencies identified are regarded as an unsatisfactory level of performance and require corrective action.

16.3 Management Review and Improvement

The Company 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 in order to make adjustments to build upon and improve its effectiveness.

The Company is therefore committed to regularly reviewing and continually improving its performance. The scope of the review is comprehensive.

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Senior Management Reviews are utilised to identify areas for improvement. These are generally conducted at weekly team meetings by both the operations and engineering teams and the following data is gathered by exception for that purpose:

- the extent to which objectives and targets have been met;
- relevant Health and Safety Statistics, Trends and reports;
- emergencies, accidents and maintenance / operability issues;
- non-conformance reports;
- hazard alerts;
- on-going validation of the PMS;
- the results of internal or external audits; and
- the results of planned inspections.

At the weekly review meetings the representatives of each operating group report to the team regarding excursions to the requirements. Where possible the root cause is identified and investigated and corrective actions to be applied across all national operations are developed.

16.3.1   Data Acquisition and Analysis

SCADA continually monitors the performance of the systems and in particular compliance with key operating parameters e.g. pressure, temperature.

Where operating parameters are exceeded or not met the incident is reviewed formally and corrective actions implemented.

Pipeline models are utilised to simulate the anticipated performance of the system and are routinely validated against that performance.

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