APA
Australia's energy infrastructure partner

Lifecycle Management Plan

Amadeus Gas Pipeline: 2026–31 Access Arrangement Revision Proposal

30 June 2025

Contents

1. Introduction

1.1. Purpose

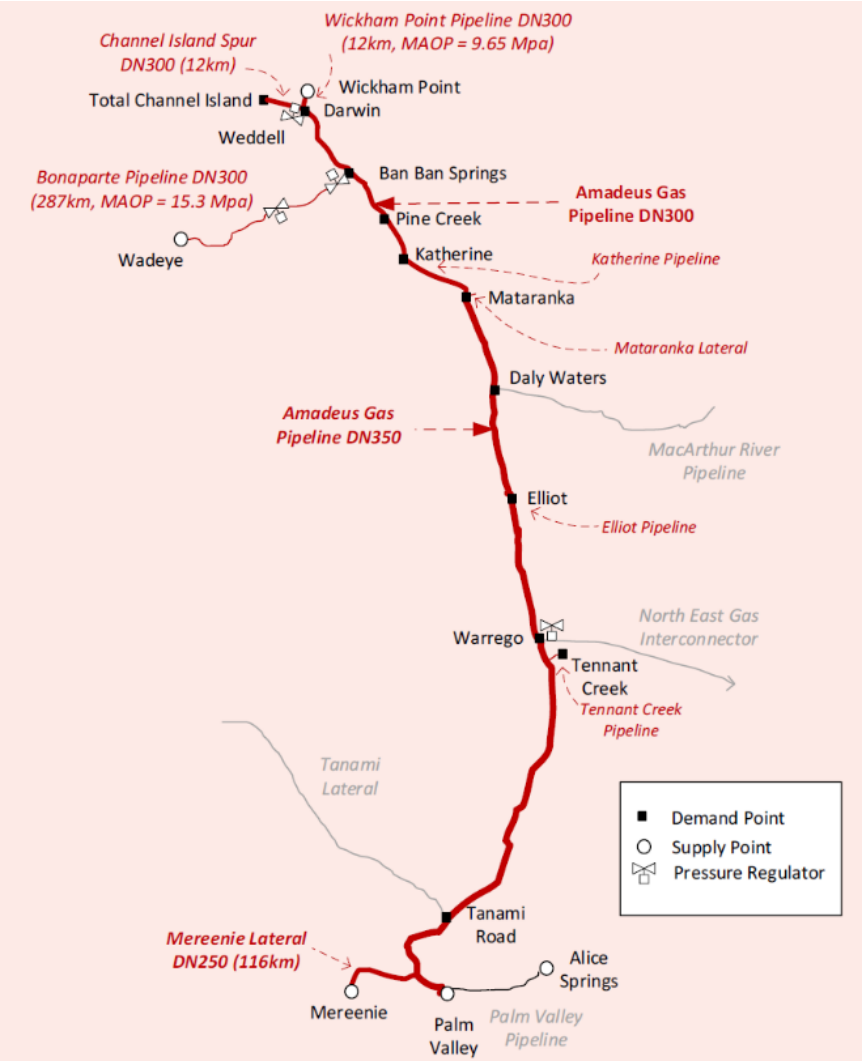
This Lifecycle Management Plan (LMP) presents a summary of the key aspects of management activities with respect to the Amadeus Gas Pipeline (AGP) and its associated laterals.

The plan is a collaborative document where operational excellence process owners provide a snapshot of the performance of the asset and detail any necessary actions required to meet or maintain the assets key objectives.

1.2. Scope

This document is specific to the AGP as licensed by the Northern Territory Government under the Energy Pipelines Act 1981, as specified under pipeline licences PL 4 and PL 18.

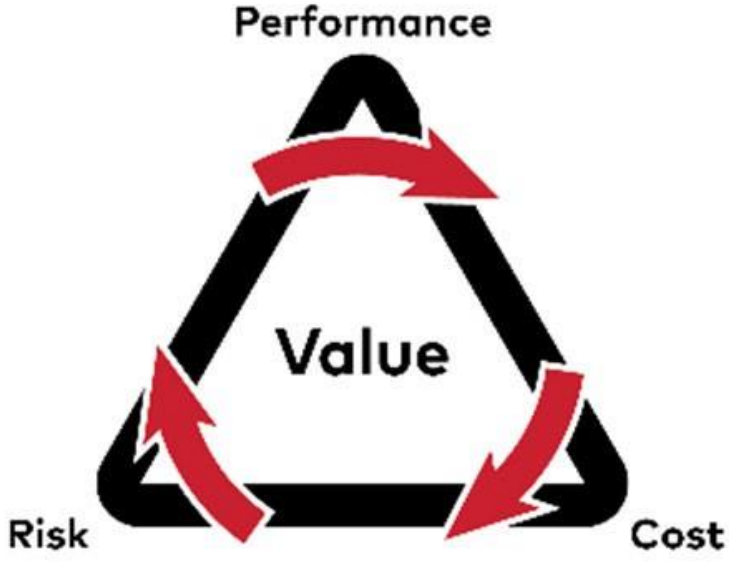
The AGP system extends from the Amadeus Basin to Darwin in the Northern Territory. It transports natural gas from onshore (Amadeus Basin) and offshore (Blacktip, via the Bonaparte Gas Pipeline) to Darwin, Alice Springs and regional centres for power generation. The AGP also facilitates the export of natural gas to the east coast via the connection point at Warrego, to other lateral pipelines for remote mine site power, and links to the Darwin and Ichthys LNG plants via the Wickham Point pipeline.



The scope specifically excludes the Northern Territory Energy Infrastructure Investments (EII) Assets (Bonaparte Gas Pipeline, Weddell Gas Pipeline, Darwin Distribution and Wickham Point Gas Pipeline).

2. APA Asset Management

Asset Management is systematic and coordinated activities and practices through which APA optimally and sustainably manages its assets and asset systems, their associated performance, revenues, risks, and expenditures over the asset life cycles for the purpose of achieving its organisational strategic plan.



APA's Asset Management team is the custodian for all of APA's managed assets nationally, including the AGP and other Northern Territory assets. This department works in close association with the leadership of the Northern Territory state operational staff.

2.1. Operational Excellence

Operational Excellence is a mindset that embraces certain principles and tools to create sustainable improvement within an organisation. It is a continuous improvement methodology to remove waste, focus on value, and enhance capability of operations.

Operational Excellence ensures APA executes its business strategy more effectively, efficiently, and consistently than its competitors, extracting maximum value from APA's assets for its customers and shareholders. Realising competitive advantage, best practice operations and supporting growth through the following operational excellence pillars:

- Exceeding customer expectations through reliable service to market and leading product offerings.
- Strategic alignment of business priorities realising long term business value whilst balancing risk, cost, and performance.
- Performance monitoring and management against SMART metrics.
- Innovation and continuous improvement aligned with value-ease and benefits realisation framework.
- High performing teams where APA have access to the right people at the right time, working in a positive culture and employee experience.

Figure 1: Operational Excellent Framework

2.2. Operational Excellent Processes

APA has identified 38 business processes that integrate to ensure our assets are operated, maintained and improved to maximise value in a safe, compliant and effective manner.

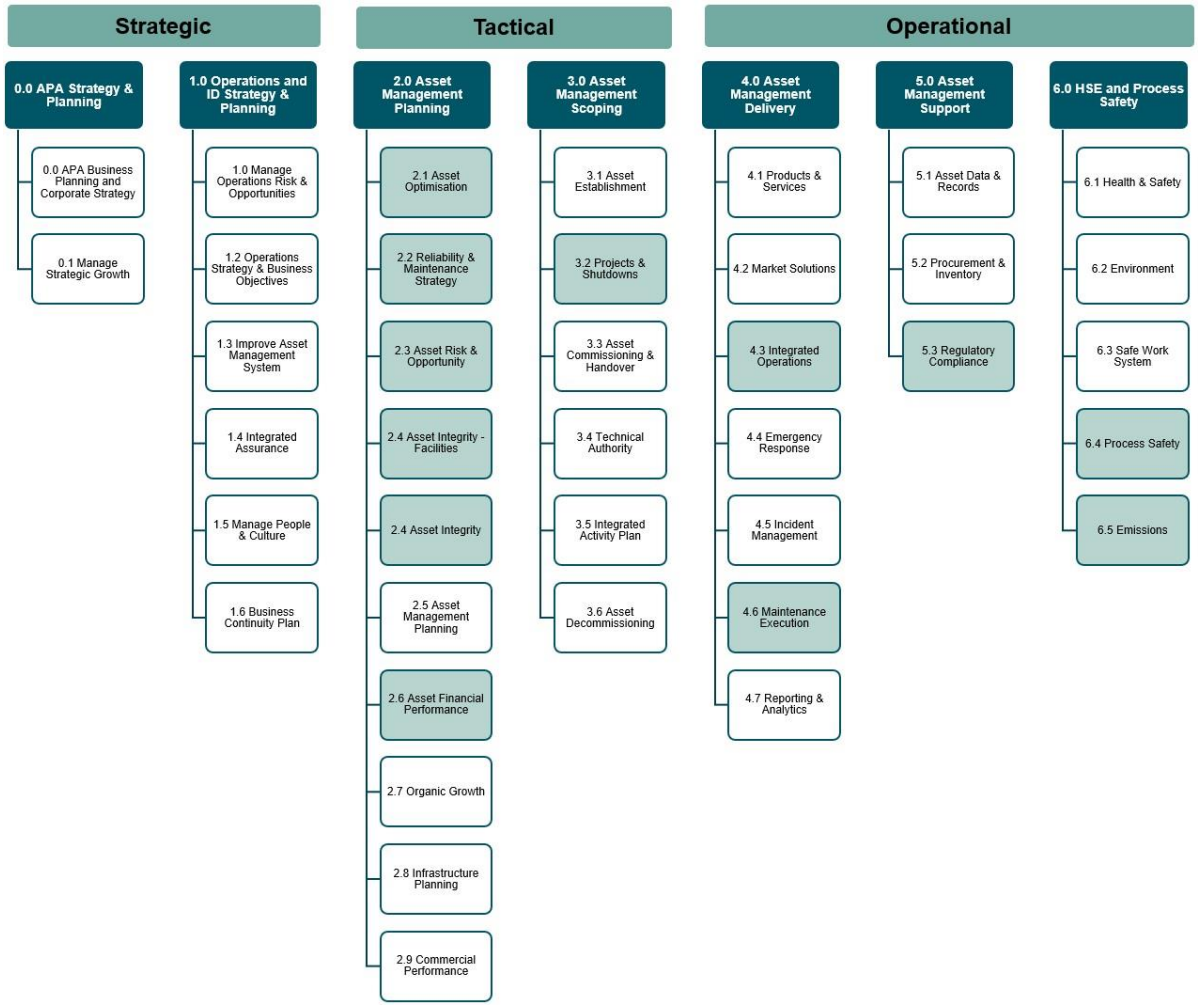
The purpose of defining these processes is to ensure:

— Clear alignment of purpose.
— Clear ownership of key processes.
— Integration of activities across teams to minimise risk and waste.
— Prioritisation of improvement initiatives (roadmaps and governance).

Definitions include the approved purposes and deliverables for each process as well as the agreed key performance metrics used to measure performance.

Figure 3 outlines the business processes. It also highlights the 12 key business processes monitored in monthly asset performance meetings.

Figure 2: Business Processes



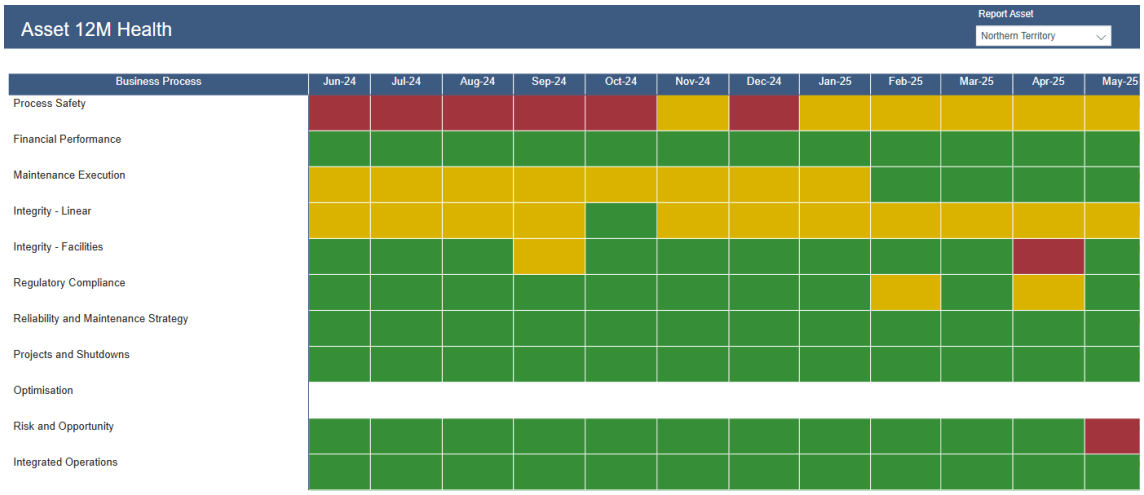
2.3. Asset Performance Monitoring

Performance monitoring is critical for driving strategic business decision making practices to achieve Operational Excellence.

Performance requirements include:

— Monitoring and reviewing key performance indicators at frequencies defined in the relevant process definition.
— Each asset's management team considering corrective action where an asset's performance indicates it is significantly off track to meeting its strategic objectives.
— Where the performance metric indicates a national issue, corrective actions must be escalated to the General Manager or owner of that business process.

Figure 3: AGP Asset Performance Matrix



2.4. Asset Lifecycle Management

Lifecycle management involves the identification and treatment of risks and opportunities and the allocation of APA's Stay-in-business (SIB) capital budget over a 20-year window.

It is a tactical component of the *Develop & Implement Asset Management Plans* business process. However, projects are typically initiated under the *Manage Asset Risks and Opportunities* business process where physical and performance issues which threaten the safe and reliable operation of the assets are identified.

2.4.1. Project Identification and Selection

Project initiatives typically originate from three sources:

— Pipeline integrity driven work
— Field inspection driven replacement/upgrades
— Facility reliability improvement and upgrades

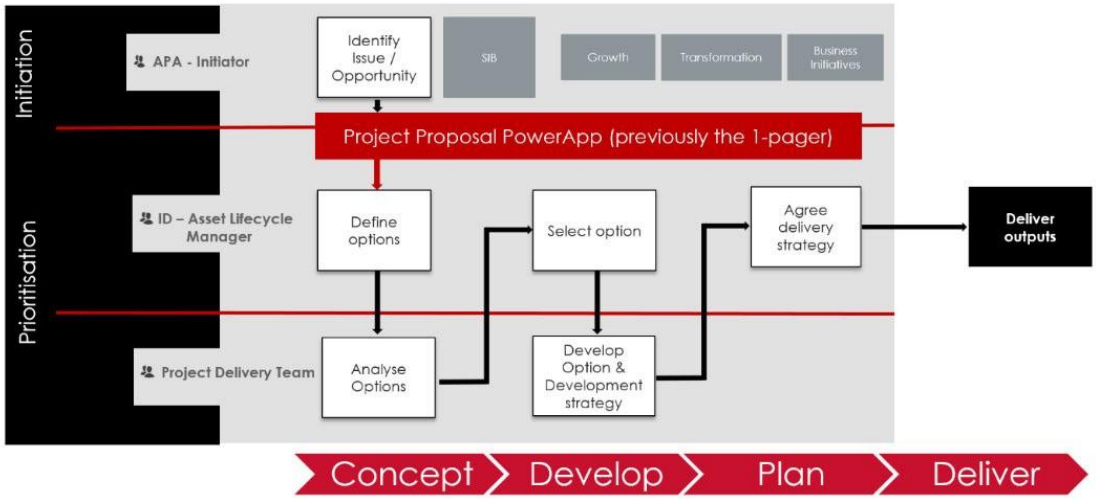
Operational data and integrity inspections provide much of the long-term planning; however, the process accepts additional proposals from operating departments. These typically relate to short and medium-term integrity-based activities such as operating hours-based overhauls, asset condition rectification and risk management mitigation initiatives.

SharePoint databases manage this information, and the input is collected through a proposal form which has been specifically designed to collect the information to enable a thorough understanding of the scenario and its impact for processing.

Where the issue is complex, additional information in the form of a business case may be attached. Additionally, opportunities to improve the assets may also be received. These are managed in parallel to the risk-based projects and utilise similar assessment criteria.

Most projects in the SIB category have an obvious solution as they typically relate to strategic projects or direct replacement. Where multiple solutions are possible, all will be considered and the preferred selected.

Figure 4: Project Proposal Lifecycle Map



2.4.2. Project budget and delivery management

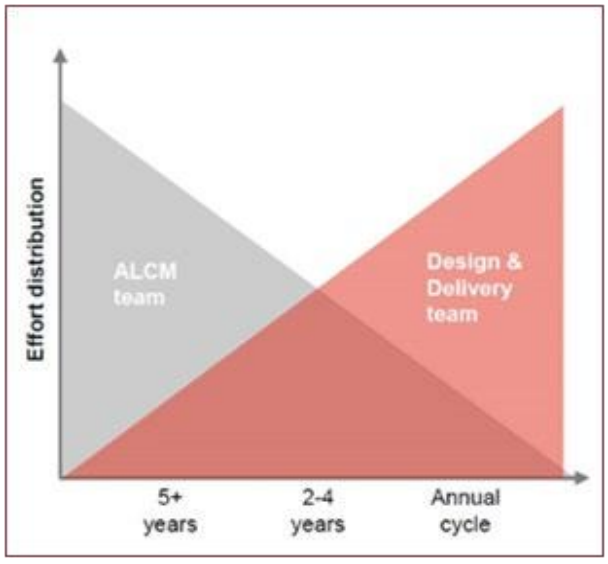
The Lifecycle team has flexibility during the budget development period and throughout the delivery periods to manually adjust the delivery scope where necessary. In addition, the lifecycle planning process provides the opportunity to group works on a site basis or on a delivery scope basis. In this way the delivery can be optimised and the project delivery schedules adjusted to cater for any identified efficiency opportunities

Capital projects are typically delivered by APA's Infrastructure Projects team, within the Engineering and Planning business unit. Projects may also be delivered by the Infrastructure Construction group or by Operations & Maintenance depending on the nature of the project.

Throughout the year, the delivery of projects is reviewed and expenditure is re-forecast monthly. The delivery teams operate independently, and separate governance meetings are held monthly to ensure scope, schedule and budget milestones are being met.

The Lifecycle team take any variations taken into consideration and may add projects to or defer projects from the annual scope, as necessary.

Figure 5: Effort distribution and ownership of projects



3. Key Operational Processes

Key Operational Excellence business processes which apply to the AGP are discussed below.

3.1. Asset Optimisation

The purpose of the *Asset Optimisation* business process is to plan and manage the operational performance of our assets to deliver customer services within safe operating limits. It involves proactive identification and mitigation of reliability or revenue impacting events as well as identification of improved efficiencies to drive positive financial and operational outcomes.

The *Asset Optimisation* business process considers the asset strategy and market demand when developing and managing Optimisation Project Proposals.

Key Performance Indicators are outlined in the *Asset Optimisation* business process and discussed monthly in Asset Performance Meetings and other forums.

3.2. Reliability and Maintenance Strategy

The *Reliability and Maintenance Strategy* business process ensures equipment is available when needed while minimising risks of equipment failure through the effective and efficient implementation of reliability and maintenance strategies.

APA have adopted a Reliability Centred Maintenance (RCM) strategy which is focused on providing a consistent corporate level maintenance strategy based on a reliability-based philosophy, with the aim to improve safety, reliability, and efficiency to APA's Operations.

RCM will deliver improved equipment reliability by applying the correct level of maintenance effort, consistency and focus against equipment appropriate to its level of criticality to the business.

RCM is a proactive, risk-based approach to maintenance that helps identify and prioritise maintenance activities based on the criticality of equipment and systems, ensuring that the right maintenance is done at the right time to maintain equipment reliability and availability and delivery cost effective outcomes. It is based on the idea that equipment should be maintained in a way that addresses the root causes of failure, rather than simply fixing problems as they arise.

RCM involves analysing the equipment and systems to identify the possible failure modes and their causes, determining the consequences of those failures, and choosing the maintenance activities that will minimise the likelihood of those failures.

The goal of RCM at APA is to minimise equipment downtime, reduce maintenance costs, and improve overall equipment reliability.

3.3. Asset Integrity Linear

The *Asset Integrity - Linear* business process maintains the physical life of our linear assets (e.g., hydrocarbon pipelines and electrical transmission) to ensure the safety of our employees, contractors and the public and ensure security of supply. Most transmission assets are exposed to corrosion, cracking, fatigue, stress related failure, vibration, wear, third party damage and other degradation.

The purpose of this business process is to:

— Develop operating and maintenance strategies to balance cost with maintaining asset life.
— Integrate asset maintenance, data collection with lifecycle planning to continuously improve integrity management plans and proactively ensure the life of our assets.

— Actively monitor and assure the Manage Asset Integrity business process, measure performance against KPIs and takes corrective action to balance cost and improve performance.

3.4. Asset Integrity Facilities

The *Asset Integrity – Facilities* business process ensures the safety of our employees, contractors, and the public; uphold regulatory compliance and security of supply by maintaining the integrity, safety, and physical life of pressure equipment assets at APA facilities.

Pressure equipment assets are exposed to numerous damage mechanisms including corrosion, cracking, fatigue, stress related failure, vibration, wear, third party damage and other degradation.

Safety and compliance are maintained via ongoing integrity monitoring.

We actively monitor pressure equipment and measure performance against KPIs delivering preventive and corrective actions that balance risk, cost, and improved performance.

3.5. Risk and Opportunity

The *Asset Risks and Opportunities* business process ensure assets are being managed to achieve the strategic objectives. These objectives allow us to extract maximum value from assets by balancing performance and cost with risk.

Risks are considered those things that will stop the asset achieving its objectives and opportunities being those things that assist in exceeding objectives.

Risk and opportunity management involves identification of the risks and opportunities as well as getting agreement on ownership and accountability for each. Consistent analysis and assessment of both risks and opportunities ensures risks are managed within the APA risk appetite and that appropriate controls are in place and treatment actions are established.

A mechanism is in place to enable risk-based decision making and the effective allocation of resources as well as provision for the reporting and escalation of risks as required. A structured business process also exists to scan the external environment, industry changes, incidents, and other indicators of risk to establish emerging risks and opportunities.

3.6. Maintenance execution

The goal of the *Maintenance Execution* business process is to execute the preventive maintenance programme in line with agreed priorities and in accordance with applicable technical and regulatory standards. This business process also ensures we respond to system faults, equipment breakdowns and emergencies to best support continued delivery of customer commitments and ensures appropriately skilled and competent personnel are completing work in an optimised manner.

The objective of this business process is to produce an integrated proactive and reactive work plan so that repair work is minimised, and reliability and availability of equipment is optimised. The *Maintenance Execution* business process will deliver from a list of prioritised activities, executed safely in respect of people, contractors, environment, and the community.

The end-to-end process of execution of maintenance activities including planning, scheduling and execution is monitored and reviewed for opportunity to improve effectiveness of execution and support balanced decisions regarding equipment maintenance strategies.

3.7. Regulatory compliance

The purpose of the *Regulatory Compliance* business process is to ensure all assets are being managed and operated in accordance with legislative obligations.

Regulatory Compliance ensures that reporting and management of regulatory compliance activities align with APA's Group Risk and Compliance standard and the APA Risk Appetite for compliance.

All applicable legislation, regulation, standards, and associated reporting requirements are identified and accountability for obligations and associated actions are defined and reviewed consistently. The regulatory compliance business process ensures adequate systems and processes are in place to manage a register of obligations, regulatory documentation, mandatory compliance reporting, scheduled and ad hoc reporting to regulators.

APA's regulator relationships are managed as part of this business process, through proactive regulator meetings. Internal & external technical compliance audit programs, audit action management and the interface to industry for regulatory/standard changes are also managed via this business process.

4. Asset Summary

APA manages the integrity and safety of the assets such that capacity, reliability, and public safety are not compromised. Key objectives include:

- Continued reliable operation of the asset ensuring the safety of our people, the community and environment
- Maintain pipeline Maximum Allowable Operating Pressure (MAOP) and ensure reliability of supply for customers
- Manage costs considering future demand for services
- Maintain technical regulatory compliance; and
- Match reliability to station criticality such that contractual commitments are met.

4.1. Asset Details

The AGP is reaching mid-life at approximately thirty-four years. The updating and replacement of equipment is necessary to maintain the asset condition and to manage obsolescence. The pipeline itself is in a generally sound condition, but has experienced some degradation, which can be assumed to be ongoing for the rest of its lifecycle.

Key processes involved with monitoring the pipe wall involve In-line inspection (ILI) surveys and Direct Current Voltage Gradients (DCVGs) to ensure that the development of any corrosion threat can be assessed, monitored and can be repaired where necessary in a timely manner. For regulatory purposes ILI and DCVG are treated as operating expenditure.

For facilities, the key processes involve direct inspection, operational performance and vendor support of the equipment.

There are a several items of the AGP which the LMP considers significant, namely:

- corrosion of pipewall under failed shrink sleeves,
- the level of cathodic protection (CP),
- hazardous area compliance, and
- obsolescence of electrical equipment.

The management of these items is currently undertaken by routine inspection and refurbishment programs. These programs will be required for the remaining life of the pipeline, and program costs can be expected to escalate as the pipeline continues to age and additional degradation becomes apparent.

Control systems and electrical systems at many of the older stations have been identified as an issue that will need management and funding throughout this planning period.

4.2. Regulatory obligations

The AGP is subject to the requirements of the following legislation:

- *Petroleum Pipelines Act 1969*
- *Petroleum Pipelines (Occupational Health and Safety) Regulations 2010*
- *Petroleum Pipelines (Management of Safety of Pipeline Operations) Regulations 2010*
- *Petroleum Pipelines (Environment) Regulations 2012*

The AGP has been granted a licence (Licence 4), under *Petroleum Pipelines Act 1969*. This licence includes obligations, including that the pipeline is designed, constructed, tested, operated and maintained in accordance with AS2885.

4.3. Risk Assessment

APA complies with AS2885.3 for the operation of the assets and utilises a standard risk assessment matrix which is consistent with AS2885.6 for the management of risk, but which has been extended to also satisfy APA's corporate requirements.

For its age and environmental surroundings, the pipeline is in relatively good condition compared to other assets of the same vintage. Under the assessment there are no significant risks at this time, however this has largely been due to the proactive nature of the management applied and generally good pipeline practice.

Being proactive requires upfront cost and this is being managed in a responsible manner with medium term programs being applied to avoid sudden financial shocks and reliability issues. It is intended that this approach would continue as should obsolescence and degradation due to ageing and environmental conditions not be addressed proactively, they could lead to challenges in maintaining a safe and reliable system.

The pipeline risk assessments utilised for the business cases confirm that the necessary work over future years will largely be driven by good business practice, dealing with identified threats prior to them materialising. Whilst proactivity comes at a cost, it is being managed in a responsible manner with medium term programs being applied to avoid sudden financial shocks and reliability issues.

The principal threat on the pipeline that could eventually lead to a dramatic change in the SIB expenditure relates to corrosion under failed shrink-sleeve coatings. This is being carefully and thoroughly managed to ensure that sufficient proactivity is in place to avoid significant numbers requiring field repair in the same interval.

The AGP is a major national pipeline, and good practice requires it to be appropriately maintained to eliminate the risk of such events. It is proposed and this LMP has been developed on the basis of the pipeline being managed to a good pipeline practice.

5. Asset Management Plan

The business processes applied to the AGP support this plan which balances risk, performance, and cost to achieve the AGP's asset mission and key objectives.

Together the business processes ensure that the Plan reflects customer expectations (including the paramount importance of reliability), good industry practice, regulatory requirements, as well as asset condition and criticality.

The scope of this document is limited to AGP specific investments (rather than investments arising from APA's national processes, such as cyber security).

5.1. Pipeline Integrity

Our plan for pipeline integrity is driven by our *Asset Integrity Linear* process. Consistent with this process and as outlined in the Pipeline License, the AGP is managed in accordance with the Australian Standard for High Pressure Pipeline Systems (AS 2885).

APA continue to identify risks through Safety Management Studies (SMS) performed every 5 years. These studies consider the technical, environmental conditions and operational factors such as age, material, condition, whether the pipeline traverses through areas of high community risk, etc. Identified risks are then managed to a level that is as low as reasonably practicable (ALARP) through a combination of design, physical, and procedural controls.

The risk assessment of the threats and execution of these controls identifies the pipeline integrity threats, risk and controls such as:

- Asset specific factors, including the commissioning date (1996), technology used to construct and gas moisture content.
- Integrity data, including from the 2024 ILI campaign such as defect growth rate, manufacturing features and the importance of high-resolution data to differentiate between the two.
- Recent developments with ILI technology, including the general industry shift towards greater use of MFL-C (as part of a multi tool strategy with MFL-A), Tri-axial and EMAT technology.
- APA's experience in undertaking ILI campaigns across Australia, in particular the level of confidence that each tool provides to identify defects.

The linear integrity of the AGP is maintained by performing the periodic ILI, coating defect surveys and digs, as well as managing and analysing cathodic protection systems.

5.1.1. Cathodic protection

The cathodic protection units are effectively smart transformers that responds to the protection level on the pipeline. These units work 24/7 with a finite life and a number of them are obsolete, with spare parts difficult or impossible to obtain. The intention is to proactively replace obsolete CP units prior to them failing, based either upon condition assessment or opportunistically when carrying other electrical upgrades at a site.

A buried steel pipeline is protected against corrosion by a coating. Inevitably minor damage may occur during construction and over time the coating system may also be further damaged or degrade. These 'coating defects might fully penetrate the coating and allow the pipe to become in electrical contact with the surrounding environment. This could lead to corrosion (rust) and ultimately failure of the pipe. A protective cathodic current is therefore applied to the pipeline, from the time of construction, to maintain the pipeline at the desired electrical potential whereby corrosion can't occur.

As the pipeline coating slowly deteriorates with time the protective CP current necessary increases to the point where the CP units have insufficient capacity to supply the full requirement. Cathodic protection surveys are carried out along the pipeline to identify locations of poor protection and

additional CP units are specified to provide the necessary current to restore full protection at those points.

For the AGP, it has been found that one CP site per year is a reasonable anticipation of the increased power requirement necessary to maintain the protective current. Additional sites at locations to be determined from the survey data.

Additional sites require the negotiation of additional sub-leases, which are at times difficult to obtain. To ensure that the annual additional requirement is achievable, the future requirements for the pipeline are assessed and typically 5 new sub-leases are entered into negotiation at a time. This ensures that whilst one site may be troublesome the installation of alternative sites can be arranged to maintain the program. This process will be undertaken in 2025-26 and again 2030-31.

A CP ground bed provides an electrical link between the anodes and the pipeline but are gradually consumed and require replacement. This is monitored throughout their life as the degradation is usage based, not time based therefore enabling regeneration of the site in a timely manner.

One site replaced every other year is anticipated for the 2026-27 to 2030-31 period however, on-going monitoring may identify an increased requirement with the increasing number of units in service. The planned use of satellite technology in this access arrangement period will also increase the effectiveness of on-going monitoring.

Proactively replacing obsolete CP units prior to them failing is also to be considered based on condition assessment, usually when carrying on other electrical upgrades at a site.

5.2. Facilities

The risk assessment for replacement of facilities and assets associated with the AGP include:

— Asset specific factors, such as commissioning date
— Integrity data and manufacturing features
— Recent developments and experience of asset failure; and
— APA's experience with identifying defects.

5.2.1. Mainline valve actuator upgrade program

The Limitorque actuators on the 12 inch and 14 inch mainline valves (MLVs) are original equipment and obsolete, as spare parts cannot be readily obtained. It is intended to replace all of the actuators proactively at a rate of two per year to ensure that they are all replaced prior to them creating maintenance and reliability issues.

5.2.2. Battery charger upgrade

Electrical power is critical to ensure the control and monitoring of the stations can be performed and to apply the power for the cathodic protection to the pipeline. Whether power is supplied from 240-volt sources or solar panels an uninterruptible power supply (UPS) battery charger system ensures that the back-up batteries are correctly charged and available.

The battery chargers typically have a useful life of 15 years in field application, and it is important that the UPS systems work reliably, particularly for meter stations. The chargers on the AGP have been assessed and a number are scheduled to be replaced during the 2021-22 to 2025-26 period based upon their age and the level of their ongoing support.

5.2.3. Battery replacements

The field life of all site batteries is heavily influenced by the temperature that they are exposed to and their type. Regardless, all batteries require replacement at some stage and the sites along the AGP have been scheduled for proactive replacement based upon their type, age and condition.

5.2.4. Hazardous area equipment upgrades

Most pipeline sites have hazardous area (HA) rated equipment which requires 4 yearly inspections in accordance with AS/NZS 60079.17. The AGP sites had received substantial upgrade programs over previous years, however it is likely that minor upgrades will be required when they are inspected again, due to the impact of the environment that they operate in.

The inspection and any necessary minor upgrades are mandatory (in accordance with NT legislation).

5.2.5. Compound improvements

General compound upgrades, e.g. fencing, erosion and huts for reactive replacement upon failure or degradation.

5.2.6. Remote terminal unit replacement

A typical design life for a remote terminal unit (RTU) is approximately 10 to 15 years under field conditions and as with many electronic items they may become unsupported during their lifecycle.

A number of units have been identified as likely to require replacement due to poor condition and obsolescence.

5.3. Heat shrink sleeve upgrades

The heat shrink sleeves applied across the field welds when the AGP was constructed were intended to seal the pipeline from the environments. Over time a very large number have failed to maintain full protection, which has allowed very slow but steadily growing corrosion to develop under them.

This style of corrosion is reasonably slow and readily identified by in-line inspection. This enables the development of corrosion under failed sleeves to be monitored and the ideal repair schedule determined by engineering calculation. After every in-line inspection the necessary repair level and re-inspection interval is reassessed.

Over recent years 13 – 17 corrosion repairs per year have been carried out and it intended to maintain this level of repair.

5.4. Other Major Maintenance

Ongoing investment is required to support the *Integrated Operations* and *Maintenance Delivery* business processes, specifically miscellaneous capital and capitalisable maintenance.

5.4.1. Miscellaneous Capital

Capital items are purchased throughout the year and requested on an individual basis. The category typically includes plant and equipment purchased in an ad hoc fashion in response to circumstances, for example - operational equipment such as tools, trailers and equipment.

While often ad-hoc and reactive, this expenditure will continue to be required and is expected to be generally inline consistent with the historic average of around $0.3 million per year.

The category is a small funding pool to facilitate replacement of those minor capital assets, enabling simple and swift purchasing as necessary. All purchase approvals are controlled under APA's delegation limits.

5.4.2. Major Capitalisable Maintenance

Our plan also includes capex intended to cover expenditure to undertake minor operational and maintenance works that are capitalised.

This includes an allocation of work logged in APA's asset management system and known preventative maintenance work such as for above ground pressure vessels.

Expenditure varies year-to-year depending on what maintenance works are required.

While often ad-hoc and reactive, this expenditure will continue to be required and is expected to be generally inline consistent with the historic average of around $0.3 million per year.