APA
Australia's energy infrastructure partner

Facilities Business Case

Amadeus Gas Pipeline: 2026–31 Access Arrangement

30 June 2025

Contents

1. Overview

Number/ identifier	AGP_SIB _Facilities
Description of project	Upgrades to the electrical, instrumentation and mechanical components of the AGP above ground facilities and associated compounds.
Options considered	As 'stay-in-business' capital expenditure, the proposed 'Facilities' replacements and upgrades aim to maintain the ongoing integrity of the pipeline to ensure it remains fit-for-purpose over its intended operating lifetime. The following options have been generally considered for these assets: • Option 1: Allow assets to degrade and for obsolescence to reach the point of being unrepairable through being no longer supported by Original Equipment Manufacturers (OEM's); or • Option 2: Plan an appropriate level of works to ensure the prudent and efficient on-going operation of the asset in relation to resourcing, spare parts, safety, security, communication, monitoring and automation.
Proposed Solution	Option 2 appropriately balances costs with the risks arising from the potential breach of regulatory requirements and the associated repercussions, which includes the potential loss of AGP's operating licence.
Estimated Cost	$3.39 million ($ Real 30 June 2026)
Relevant standards, obligations and legislation	• Australian Standard (AS) 2832.1:2015 Cathodic protection of metals • AS2885.0:2018 Pipelines — Gas and liquid petroleum • AS3000:2018 Electrical Installations • AGP Pipeline Licence • *Work Health and Safety Act 2011* (Cth) and *Work Health and Safety Act (National Uniform Legislation Act) 2011* (NT) – (WHS legislation)
Consistency with National Gas Rules	The investment in these assets complies with the capital expenditure criteria in Section 79 of the NGR because it: • is necessary to maintain and improve the safety and integrity of services (79(2)(c)(i) and (ii)); and • would be incurred by a prudent service provider acting efficiently, in accordance with accepted good industry practice, to achieve the lowest sustainable cost of providing services (79(1)(a)).

2. Facilities Program details

2.1. Background

Stay-in-business capital expenditure on the AGP relates to projects that are directly related to maintaining the ongoing integrity of the pipeline to ensure it remains fit-for-purpose over its intended operating lifetime.

The 'Facilities' business case encompasses replacements and upgrades to the electrical, instrumentation and mechanical components of the AGP and the compounds in which the equipment sits. Work is identified through routine inspections or performance data and undertaken as part of planned refurbishment programs.

The facilities assets scheduled for continued upgrades in the next access arrangement period are:

1. Hazardous area equipment;
2. Remote terminal units (RTUs);
3. Batteries and battery chargers;
4. Mainline valve actuators, and
5. General compound improvements

A detailed assessment for each of these assets is shown in sections 3 to 0 of this business case.

2.2. Assessment of options

The following options are generally considered within this business case:

– Option 1: Accept non-conformance with regulations and allow assets to fail or grounds to erode before replacement or restoration is undertaken.
– Option 2: Plan and undertake an appropriate level of works to ensure the prudent and efficient on-going operation of the asset in relation to resourcing, spare parts, safety, security, communication, monitoring and automation.

2.2.1. Risk assessment

The inherent business case risk that underlies option 1 is shown below. The table indicates the highest level of risk for each risk area using the outcomes from the individual risk assessments for each type of facilities asset found in sections 3 to 0 of this business case. The preferred options detailed in sections 3 to 0 lower the inherent risk from High to a Low residual risk. The risk assessment is based on APA's Enterprise Risk Matrix.

Table 2-1: Overall risk assessment for the Facilities business case

Risk Area	Potential impact	Likelihood / Impact	Risk Rating
Health & Safety	Minor burns, gas inhalation, trip hazards, injuries from failed structures	Occasional / Major	High
Environment	Escaped gas, erosion	Occasional / Minor	Low
Operational	Unplanned site visit	Occasional / Minor	Low
Compliance	Regulatory breach, loss of licence	Occasional / Major	High
Reputation & customer	Adverse publicity/ decline in share value, negative feedback	Occasional / Significant	Moderate
Financial	Costs and penalties	Occasional / Significant	Moderate
Untreated risk			**HIGH**

2.2.2. Financial assessment

A consideration of the pros and cons of the expected financial outlays for both options is shown below. Net Present Value calculations have not been undertaken as a realistic expenditure profile is unable to be ascertained for option 1. Given end-of-life replacement and rectification costs are inevitable, this business case demonstrates that the proposed expenditure is efficient and appropriate to manage the associated risks.

Table 2-2: Financial assessment for the Facilities business case

	Commentary
Option 1: Accept non-conformance with regulations and asset failure	• Unplanned approach to replacements and rectification leads to lumpy and more unpredictable expenditure. • Replacements are more expensive given the efficiency losses (costs and staff/contractor resources) of unplanned works compared to planned works. • Expenditure grows significantly once the level of failures exceeds the capacity of staff resources –significant increased costs for contractors to be on stand-by. • Avoided costs in the earlier years are more than offset by regulatory fines and the financial costs and penalties arising from reputational damage, legal action and the loss of the AGP operating licence.
Option 2: Planned approach to managing risks and costs	• Where possible, replacements take place with other works at the site, improving cost and resource efficiency. • Steady replacement rate over the coming years gives predictability in expenditure. • Expect a reduction in some costs over time ahead of reaching a stabilised level of expenditure.

The risk and financial assessments above support the preferred option (option 2) as appropriately balancing costs and risks.

2.3. Consistency with the National Gas Rules and other regulations

The AGP is a major national pipeline and appropriate maintenance of the pipeline facilities enable the pipeline equipment to operate in accordance with its design basis, relevant standards and regulations.

APA consider this program to be consistent with the requirements of Rule 79 of the National Gas Rules, Australian Standards and other legislative obligations. The capital expenditure is:

- Necessary to maintain and improve the safety of services and maintain the integrity of services to customers and is of a nature that a prudent service provider would incur
- Consistent with the expenditure that a prudent service provider acting efficiently would incur
- Consistent with accepted and good industry practice
- Aligned with:
  - AS 2885.3 Pipelines: Gas and Liquid Petroleum Operations and Maintenance
  - AS3000: Electrical Installations, and
  - AS 2832.1 Cathodic Protection of Metals: Pipes and Cables
- Consistent with Australian Standard AS2885 in balancing the reduction of risk to as low as reasonably practicable considering the relevant costs.

Most of the work will be undertaken by AGP staff. Where external contractors are used, they will be procured in line with APA’s Procurement Policy, require the necessary skills and experience and have a demonstrated track record of completing work in a safe and cost-effective manner.

2.4. Proposed costs for 2026–31

The total cost of the Facilities business case is shown below. More detail on each asset type and the capital expenditure to be undertaken is found in sections 3 to 0 of this document.

*Table 2-3: Total proposed cost of Facilities business case ($000s real 30 June 2026)**

	2026–27	2027–28	2028–29	2029–30	2030–31	Total
Hazardous Area upgrades	22	206	216	-	22	**465**
RTU replacements	243	384	81	557	168	**1,433**
Batteries and battery chargers	114	65	65	65	130	**438**
Mainline valve actuators	130	65	65	65	-	**324**
Compound Improvements	108	-	108	-	108	**324**
Darwin City Gate Coating	406					**406**
Total	**1,022**	**719**	**535**	**687**	**427**	**3,391**

** Totals may not add due to rounding*

Note the expenditure on the coating repairs for the Darwin City Gate facilities in 2026-27 is actually deferred expenditure from the earlier access arrangement period.

The project will commence in 2025-26 but will not be completed during that financial year.

An additional $404,000 in capital expenditure will be incurred in 2026-27 and this has been included in the facilities business case as highlighted in the table above.

3. Hazardous Area upgrades

3.1. Project objective and scope

This assessment supports the ongoing four yearly inspection and rectification of electrical equipment in Hazardous Areas along the AGP.

Applicable Standards:

- AS/NZS 60079 Australian Hazardous Area Standards
- AS/NZS 3000 Electrical installations (known as the Australian/New Zealand Wiring Rules)
- AS2885 High Pressure Pipeline Systems

3.2. Background

AS/New Zealand Standard (NZS) 60079 requires all electrical equipment to achieve Hazardous Area compliance. Hazardous areas are places where an explosive atmosphere may exist which, coupled with an ignition source, will result in ignition and/or explosion. Electrical equipment in the hazardous area is a potential ignition source.

The standards specify that 'hazardous area zone rated equipment' be installed in such areas. Under its Pipeline Licence, APA has a duty of care to ensure that all electrical equipment at all sites is appropriately rated and maintained for the environmental conditions in which it operates.

In addition, the *Work Health and Safety Act 2011* (Cth), *Work Health and Safety Act (National Uniform Legislation Act) 2011* (NT) create a positive obligation for APA to ensure, as far as is reasonably practicable, the health and safety of workers (WHS) and other persons.

Instrument / Electrical Technicians are trained in hazardous area inspections. Currently, each station is inspected every four years to identify any compliance and degradation issues that require rectification works.

3.3. Assessment of options

In accordance with Northern Territory Legislation and Australian Standards, there is a requirement to ensure all electrical equipment achieves Hazardous Area compliance where applicable. Whilst regulations require non-conformances to be rectified, how non-conformances are identified can be undertaken in one of two ways:

- Option 1: No specific inspection program is conducted with non-conformances only identified by staff in their normal course of work or through an audit by either the technical regulator or internal audit.
- Option 2: Each site is subject to a regular Hazardous Area inspection – at present this is done through regular preventive maintenance inspections. As significant works are identified at any given site, these are scoped and works undertaken as a stay-in-business project campaign.

3.3.1. Residual risk assessment

The residual risk of both options are shown in the following table.

Non-conforming equipment in hazardous areas poses a potentially high risk to worker safety. In a worst-case scenario, a fire resulting from the ignition of a small gas leak from damaged or incorrectly maintained equipment could cause minor burns. Such a failure is possible, particularly in remote areas where ultraviolet exposure can impact equipment.

Table 3-1: Risk assessment of Hazardous Area upgrades

Risk Area	Potential Impact	Option 1		Option 2	
		Likelihood & Impact	Inherent risk rating	Likelihood & Impact	Inherent risk rating
Health & Safety	Minor injury	Occasional/ Minor	Low	Remote/ Minor	Negligible
Environment	–	–	–	–	–
Operational	–	–	–	–	–
Compliance	Regulatory breach, loss of licence	Frequent/ Catastrophic	Extreme	Remote/ Major	Moderate
Reputation & Customer	Adverse publicity/ decline in value	Frequent/ Significant	High	Remote/ Minor	Negligible
Financial	Costs and penalties	Frequent/ Catastrophic	Extreme	Remote/ Major	Moderate
Untreated risk			**EXTREME**		**MODERATE**

Option 1

With no specific inspection program conducted, hazards and their associated risks are likely to exist for a longer period given staff and contractors are unlikely to place sufficient focus on spotting potential hazards when maintenance works are the primary reason for their visit.

It would likely result in some stations being 'safer' than others, as those visited more frequently are more likely to have hazards identified, ahead of those that are visited less frequently.

This would lead to a high risk of:

- regulatory breach and loss of licence as APA would not be meeting the expectations of its pipeline licence or WHS obligations.
- financial loss should a worker be injured or AGP loses its operating licence, and
- adverse publicity should a worker be injured or a regulatory breach occur.

Option 2

Trained technical staff dedicating their full attention to inspections will see hazards identified and rectified much earlier. This places equal emphasis on reducing hazards at every station.

It appropriately balances cost with reducing risk to as low as reasonably practicable, in line with Australian Standard AS2885 and WHS legislation.

3.3.2. Financial assessment

A consideration of the pros and cons of the expected financial outlays for both options is shown below. Net Present Value calculations have not been undertaken as a realistic expenditure profile for option 1 is unable to be ascertained. In addition, the rectification costs of non-conformance is not being questioned, so the bigger question is how the spend should be balanced to appropriately manage the associated risks.

Table 3-2: Financial assessment of Hazardous Area upgrades

	Commentary
Option 1: No specific inspection program	• Avoided inspection costs are more than offset by regulatory fines and the financial costs and penalties arising from reputational damage, legal action and the potential loss of the AGP operating licence. • Expected to be cheaper in the near-term, but the haphazard approach to non-conformance identification and associated rectification will lead to lumpy and more unpredictable expenditure.
Option 2: Dedicated four yearly inspection program	• Steady upgrades over the coming years brings more predictability in expenditure. • The dedicated inspection of each station sees a reduction in associated rectification works with the passing of each four-yearly cycle ahead of reaching a stabilised level of expenditure.

Based on the risk and financial assessments above, the preferred option that appropriately balances costs and risks is the continuation of the four yearly Hazardous Area inspection cycle and associated rectification program (option 2).

3.4. Proposed costs for 2026–31

The Hazardous Area program began as a campaign in 2022, focussing on several critical sites identified as having known aged degradation of equipment requiring upgrade to meet standard. From this, the major sites were scoped for priority of upgrade required and the lifecycle plan generated.

Originally, hazardous area inspections were expected to be undertaken every four years, however it has proven to be more efficient to include the inspections as part of the regular preventive maintenance inspections. As significant works are identified at any given site they are formally scoped and addressed on a priority system. Works are then executed by site as a specific campaign. All upgrades are recorded within the EXonline system for assurance of compliance.

Inspections are undertaken by APG Instrument / Electrical Technician staff who are trained in hazardous area inspections. Any rectification works will be subject to APA's procurement policy and carried out by external contractors who have demonstrated expertise in completing such works in a safe and cost-effective manner.

Table 3-3: Proposed 2026–31 costs for Hazardous Area upgrades ($000 real 30 June 2026)

Locations	2026–27	2027–28	2028–29	2029–30	2030–31	Total
Katherine	22					**22**
Mereenie		206				**206**
Pine Creek			216			**216**
Darwin City Gate					22	**22**
Total	**22**	**206**	**216**	**-**	**22**	**465**

** Totals may not add due to rounding*

4. Remote terminal unit upgrades

4.1. Project objective and scope

This assessment supports funding for the continued proactive replacement of Remote terminal units (RTUs) on the pipeline before they become unreliable or unserviceable.

4.2. Background

RTUs are a microprocessor-controlled device that serve as the interface between field equipment, such as pressure transmitters, flow meter's, cathodic protection and valve actuators, and the Supervisory Control And Data Acquisition (SCADA) system. There are currently 39 RTUs along the AGP and the telemetry data they transmit is critical for the automated control and monitoring of the pipeline facilities.

It is not acceptable for a pipeline operator to be unable to shut a valve or appropriately control a compressor by command, so when pipeline monitoring and communication with vital components is lost, a site visit is required to determine the cause of failure. In a worst-case scenario, a pipeline failure, coupled with a failed RTU, might delay the identification of the multiple issues, expanding the magnitude of the incident and raising some regulatory concern.

The typical field life for an RTU is approximately 10 to 15 years. Like all electronic equipment, their operating life is finite. Components lose condition over time, especially given the extreme temperatures they operate in, and vendor support for both hardware (spare parts) and software diminishes, before ceasing altogether. Many RTUs are also damaged or destroyed by electrical surge from lightning strikes, which are a regular feature along the AGP.

The current generation of RTUs are no longer supported by the operating equipment manufacturer. This means spare parts are no longer able to be acquired and the units present a reduction in data security. However, at this stage, obsolescence does not yet present a current threat to supply reliability, given the spare parts APA has on hand.

AS2885.3 section 8.9 ‘Supervisory Control and Data Acquisition (SCADA)’ requires that where a pipeline has a SCADA system that the following is maintained during the operational life of the pipeline:

- Security and reliability
- Supervision of the operation of the pipeline system
- The capability of issuing operating and control commands
- The capability of collecting, storing and displaying data, facility alarms, and status, and
- Ensuring safe operation of control systems at remote facilities.

APA has instrument electrical equipment specifically designed with SCADA monitoring and alarms to meet AS2885.3 section 5.2 (b) which requires that “… the operating pressure at any point in the pipeline does not exceed the Maximum Allowable Operating Pressure (MAOP), and that transient pressure does not exceed 110 percent of the MAOP”.

A SCADA station related clause (AS 2885.3 Section 5.8.1 (f)) specifies that “When deviations from the normal operating conditions that affect the safety of the pipeline occur, corrective action shall be initiated immediately”. Immediate corrective action is not realistically achievable, so AGP put forward a business case in the 2021–26 Access Arrangement for the progressive, proactive replacement of the existing aged units.

The benefits of this approach are:

- AGP meets the requirements of its operating licence
- RTU failure ahead of proactive replacement is rare, and
- Replacements free up spare parts for the remaining unsupported RTUs.

4.3. Assessment of options

There are two options for this project in the access arrangement period:

- Option 1: Replace RTUs only when they fail.
- Option 2: Proactive replacement of RTUs before they become unreliable or unserviceable.

4.3.1. Risk assessment

The potential risks of both options are shown below.

Table 4-1: Risk assessment of RTU upgrades

Risk Area	Potential Impact	Option 1		Option 2	
		Likelihood & Impact	Inherent risk rating	Likelihood / Impact	Residual risk rating
Health & Safety	–	–	–	–	–
Environment	–	–	–	–	–
Operational	Unplanned site visit	Frequent/ Significant	High	Remote/ Significant	Low
Compliance	Regulatory breach, loss of licence	Frequent/ Catastrophic	Extreme	Remote/ Major	Moderate
Reputation & Customer	Adverse publicity, decline in value, disrupted supply	Frequent/ Major	Extreme	Remote/ Minor	Negligible
Financial	Costs and penalties	Frequent/ Major	Extreme	Remote/ Minor	Negligible
Untreated risk			**EXTREME**		**MODERATE**

Option 1

The scale of the AGP means the reactive replacement of RTUs fails to meet the requirements of AS 2885.3.

There is no way of determining the cause of failed SCADA communications ahead of a site visit and, should the RTU be found to be the cause, contractors/staff do not carry the site-specific parts for a full unit replacement at any given site. This means the risk of a regulatory breach, associated penalties and reputational damage is high.

The ability to replace the unit and restore communications is also greatly impacted by the availability of staff/ contractors and the distance to travel. In the meantime, the risk to supply reliability is increased given the loss of visibility and control.

Under this option, unsupported RTUs would remain in the field for longer periods, increasing the risk of a security breach and reducing efficiency by disrupting planned works and diverting resources.

Whilst the timely replacement of RTUs at failure may be achievable in the short-term, the growing number of replacements in the mid-term would be untenable due to resourcing constraints.

Option 2

The proactive replacement of aged RTUs, based on an assessment of criticality and performance, significantly reduces the potential for in-field failure and the associated repercussions.

Given their importance to the safe and reliable operation of the pipeline, proactive RTU replacement aligns with industry best practice and the expectations of stakeholders.

The replacements would provide spare parts for the remaining unsupported RTUs, ensuring a sufficient supply of spares for those units.

Planning of replacements ensures the availability of resources and maximises efficiency given the replacement can be undertaken in conjunction with other work at the site. This significantly increases supply reliability for customers.

4.3.2. Financial assessment

A consideration of the pros and cons of the expected financial outlays for both options is shown below. Net Present Value calculations have not been undertaken as a realistic expenditure profile for option 1 is unable to be ascertained. In addition, replacement costs are expected in the near-term under both options, so the more important question is how the spend should be balanced to appropriately manage the associated risks.

Table 4-2: Financial assessment of RTU upgrades

	Commentary
Option 1: Replace RTUs when they fail	• Initial capital expenditure is lower than option 2 as expenditure is pushed out until failure occurs. However, replacements are more expensive given the efficiency losses (costs and staff/contractor resources) of unplanned works. • The expenditure is unpredictable and grows significantly once the level of failures exceeds the capacity of staff resources. • Avoided costs in the near-term are more than offset by regulatory fines and the financial costs and penalties arising from reputational damage and the potential loss of the AGP operating licence.
Option 2: Proactive replacement of RTUs	• Where possible, replacements take place with other works at the site, improving cost and resource efficiency. • Steady replacement rate over the coming years gives predictability in expenditure.

Based on the risk and financial assessments above, the preferred option that appropriately balances costs and risks is the continuation of the proactive replacement of RTUs (option 2).

4.4. Proposed costs for 2026–31

Proactive RTU replacements will be prioritised based on the criticality and performance of stations. An initial list of priority sites has been determined, however this will be adjusted over time to reflect on-going RTU performance and relevant operating environment factors.

The complexity of each site – either simple, medium or hard – is also considered. Of the 39 RTUs currently on the AGP, one medium complexity site has been upgraded to date.

Three to four upgrades are proposed for each year of the 2026–31 period. The estimated costs are based on the replacement experience to date, with an adjustment to work hours to allow for more simple or complex sites.

The RTU's will be replaced using APA resources, however specialised vendors will be engaged to perform site specific configuration of the RTU's where necessary. Where this does occur, the contract will be subject to APA’s procurement policy and carried out by external contractors who have demonstrated expertise in undertaking such works in a safe and cost-effective manner.

Table 4-3: Proposed 2026–31 costs for RTU upgrades ($000s real 30 June 2026)

Locations	2026–27	2027–28	2028–29	2029–30	2030–31	Total
Tylers Pass	243					**243**
Warrego		384				**384**
Wauchope			81			**81**
TBA				557	168	**725**
Total	**243**	**384**	**81**	**557**	**168**	**1,433**

** Totals may not add due to rounding*

5. Batteries and battery chargers

5.1. Project objective and scope

This assessment supports funding for:

– The replacement of solar powered and mains powered battery chargers on site.
– The proactive replacement of site batteries based primarily on age, but also on condition.

5.2. Background

Electrical power is critical to the control, monitoring and cathodic protection of the pipeline. A battery and charger system along with power, supplied either from a mains connection or solar panels, provides an Uninterruptible Power Supply (UPS) to meters, RTUs and cathodic protection sites, providing constant, essential communications, station monitoring and control.

Failure of a battery or charger is unacceptable for meter stations and other critical sites. In the absence of a power supply, these sites cannot be monitored or controlled remotely via SCADA – a requirement of APG's pipeline licence and AS 2885.

A UPS system needs to be reliable so that a failure to discharge (fail to supply) or charge (fail to take) does not occur. In its simplest form, a UPS system comprises two elements – batteries and a battery charger (or rectifier) that comprises an inverter and controls when and how the battery is charged and discharged.

All batteries degrade over time, and the site life of the batteries in a UPS is heavily influenced by their composition, frequency of full discharge and their exposure to temperature extremes.

– Where batteries are allowed to drain completely a decline in life can be expected due to the risk of deep discharge damage.
– Temperature extremes can affect UPS performance; for instance, operating a NiCad battery in very high or low temperatures can worsen its capacity and shorten its life.

The battery chargers in a UPS typically have a useful life of 15 years in the field.

AGP currently replaces batteries and battery chargers when measurements indicate significant performance decline, meaning that failure is imminent.

5.3. Assessment of options

Two options have been considered for this project:

– Option 1: Replace batteries and battery chargers when they fail.
– Option 2: Proactive replacement of aged and poor performing batteries and battery chargers ahead of failure when measurements indicate that failure is imminent.

5.3.1. Risk assessment

The potential risks of both options are shown below noting that batteries are required for continuous power supply for both cathodic protection systems and communications and control of remotes sites.

Table 5-1: Risk assessment of batteries and battery charger replacements

Risk Area	Potential Impact	Option 1		Option 2	
		Likelihood & Impact	Inherent risk rating	Likelihood / Impact	Residual risk rating
Health & Safety	–	–	–	–	–
Environment	–	–	–	–	–
Operational	Unplanned site visit	Frequent/ Significant	High	Remote/ Significant	Low
Compliance	Regulatory breach, loss of licence	Frequent/ Major	Extreme	Remote/ Significant	Low
Reputation & Customer	Adverse publicity, disrupted supply	Frequent/ Major	Extreme	Remote/ Significant	Low
Financial	Costs and penalties	Frequent/ Major	Extreme	Remote/ Significant	Low
Untreated risk			**EXTREME**		**LOW**

Option 1

The scale of the AGP means the reactive replacement of batteries and battery chargers only when they fail will likely breach the SCADA communication and monitoring requirements within AS 2885.3.

There is a heightened risk of pipeline corrosion during periods of no-power, given cathodic protection relies on a constant power source and waiting for failure reduces efficiency by disrupting planned works and diverting staff resources. Contractors are not a viable option for this work given resource constraints in the NT.

Any disruptions to supply and regulatory breaches will lead to financial penalties, potential loss of licence and reputational damage.

Option 2

The proactive replacement based on an assessment of criticality and performance, significantly reduces the potential for in-field failure and the associated repercussions.

Given their importance to the safe and reliable operation of the pipeline, proactive replacement aligns with industry best practice and the expectations of stakeholders.

It safeguards against pipeline corrosion by maintaining a 24/7 power source that is essential to cathodic protection and reduces the likelihood that SCADA communications and automated management of the pipeline is lost to either the failure of a battery or battery charger. This reduces the risk of supply disruption, regulatory breaches and associated repercussions.

Asset replacements are planned, maximising efficiency and ensuring the availability of staff resources (noting replacements can be undertaken in conjunction with other work at the site).

5.3.2. Financial assessment

A consideration of the expected financial outlays for both options is shown below. Net Present Value calculations have not been undertaken as a realistic expenditure profile for option 1 is unable to be ascertained. In addition, replacement costs are expected in the near-term for both options, so the more important question is how the spend should be balanced to appropriately manage the associated risks.

Table 5-2: Financial assessment of batteries and battery charger replacements

	Commentary
Option 1: Replace batteries and chargers when they fail	• Initial capital expenditure is lower than option 2 as expenditure is pushed out until failure occurs. However, replacements are more expensive given the efficiency losses (costs and staff/contractor resources) of unplanned works. • Expenditure is less predictable in the earlier years and grows significantly once the level of failures exceeds the capacity of staff resources – contractors would need significant enticement to be on stand-by for replacements. • Avoided costs in the near-term are more than offset by regulatory fines and the financial costs and penalties arising from reputational damage and the potential loss of the AGP operating licence.
Option 2: Proactive replacement of batteries and chargers	• Where possible, replacements take place with other works at the site, improving cost and resource efficiency. • Steady replacement rate over the coming years gives predictability in resourcing and expenditure.

Based on the risk and financial assessments above, the preferred option that appropriately balances costs and risks is the continued proactive replacement of batteries and battery chargers (option 2).

5.4. Proposed costs for 2026–31

Replacements are prioritised based on criticality and performance. An initial list of priority sites has been determined, however this will be adjusted over time to reflect on-going performance and relevant operating environment factors.

Six to eight battery sites and two to three chargers are proposed to be replaced each year of the 2026–31 period. Synergies will be sought in relation to replacing batteries and battery chargers at the time other work is being undertaken at a site, and in undertaking replacements at multiple co-located sites.

Batteries and battery chargers will be replaced using APA resources and will meet the necessary APA specifications.

The estimated costs for replacements are based on asset costs, recent experiences with replacements and the differing levels of equipment requirements at each site.

Table 5-3: Proposed 2026–31 costs for battery and battery charger replacements ($000 real 30 June 2026)

Locations	2026–27	2027–28	2028–29	2029–30	2030–31	Total
Batteries	65	65	65	65	65	**325**
Battery chargers	48	-	-	-	65	**113**
Total	**114**	**65**	**65**	**65**	**130**	**438**

** Totals may not add due to rounding*

6. Mainline valve actuators replacement

6.1. Project objective and scope

This assessment supports funding for the continued replacement and upgrade of the mainline valve actuators.

6.2. Background

Mainline valves are installed on all pipelines to provide the option of pipeline isolation during times of emergency. The valves are required by AS2885.1 Section 4.8.1 and are a standard item for pipeline safety. “Equipment shall be provided for the isolation of the pipeline system for maintenance purposes or in the event of a loss of containment within the segment”.

The valves are operated by actuators with a gas over oil mechanism, whereby adjustable valve positioning allows high pressure gas to drive the oil through the actuator to either open or shut the value. There are 20 mainline valves installed on the AGP alongside scraper stations and at critical mid-sections. They can be operated locally or remotely via SCADA.

Actuators are inspected and maintained, however the original actuators on the 12” and 14” mainline valves and the various sized lateral actuated valves were installed in 1986 and the components for maintaining these are no longer available.

In 2011, in preparation of expected obsolescence, AGP undertook a valve actuator selection process between three vendors of rotary actuators (these are preferred to the axial style in the original valves). The business has since been steadily, proactively replacing the original valve actuators with the new preferred actuators. 10 of the 20 valves have been replaced to date.

The valves have a long lead-time and whilst their replacement is not yet urgent, the current approach has been to steadily replace them in conjunction with other work being undertaken on a site, given their criticality in an emergency response.

6.3. Assessment of options

Two options have been considered for this project:

- Option 1: Replace the mainline valve actuators upon failure.
- Option 2: Proactive replacement of mainline valve actuators ahead of failure.

6.3.1. Risk assessment

The potential risks of both options are shown below.

If the valves are not maintained in reliable working order, there is no ability to automatically shut the valves in response to an emergency. This would see large volumes of gas released to atmosphere without the ability to isolate a given section of the pipeline, increasing the risk of damage, outage duration and loss of inventory.

Delays in isolating a pipeline segment increase the loss of linepack (gas volume held in the pipeline) leading to potential safety, environmental and financial consequences (costs to restore supply and fines from regulatory breaches), as well as damage to APA’s reputation. In a worst-case scenario, a puncture to the pipeline coupled with a failed valve, would result in gas leaking into the air, causing greater environmental impact. Access to the site would be limited until the gas has dissipated.

Table 6-1: Risk assessment of mainline valve actuators replacement

Risk Area	Potential Impact	Option 1		Option 2	
		Likelihood & Impact	Inherent risk rating	Likelihood / Impact	Residual risk rating
Health &Safety	Gas inhalation	Unlikely/ Minimal	Low	Remote/ Minimal	Negligible
Environment	Escaped gas	Frequent/ Minimal	Low	Unlikely/ Minimal	Negligible
Operational	Unplanned site visit	Frequent/ Significant	High	Remote/ Significant	Low
Compliance	Regulatory breach, loss of licence	Frequent/ Major	Extreme	Remote/ Significant	Low
Reputation & Customer	Adverse publicity, decline in value, disrupted supply	Frequent/ Minor	Moderate	Unlikely/ Minor	Low
Financial	Costs and penalties	Frequent/ Significant	High	Remote/ Significant	Low
Untreated risk			**EXTREME**		**LOW**

Option 1

The ability to replace failed units is severely impacted by the availability of staff and the distance to travel. This reduces efficiency by disrupting planned works and diverting staff resources – contractors are a less viable option for this work given resource constraints in the NT.

Any disruptions to supply and regulatory breaches will lead to financial penalties, potential loss of licence and reputational damage.

Replacing upon failure is likely achievable in the short-term, but any material number of required replacements would quickly outweigh available staff resources and take staff away from other critical maintenance activities.

Option 2

Proactive replacement significantly reduces the potential for in-field failure and the associated repercussions. Mainline valve actuators are critical to the safe and reliable operation of the pipeline, so proactive replacement aligns with industry best practice and the expectations of stakeholders.

Proactive, planned replacements would:

- free-up parts for any remaining unsupported equipment, ensuring a sufficient supply of spares for those units and
- maximise efficiency and ensure the availability of staff resources (replacements undertaken in conjunction with other work at the site).

This option appropriately balances cost with reducing risk to as low as reasonably practicable, in line with Australian Standard AS2885 and WHS legislation.

6.3.2. Financial assessment

A consideration of the pros and cons of the expected financial outlays for both options is shown below. Net Present Value calculations have not been undertaken as a realistic expenditure profile for option 1 is unable to be ascertained. In addition, replacement costs are expected in the near to mid-term for both options, so the bigger question is how the spend should be balanced to appropriately manage the associated risks.

Table 6-2: Financial assessment of mainline valve actuator replacements

	Commentary
Option 1: Replacement of actuators upon failure	• Cheaper in the earliest years as expenditure is pushed out until failure occurs, but future replacement capital expenditure will be more expensive given the efficiency losses (both costs and staff resources) incurred in undertaking unplanned works. • Expenditure is less predictable in the earlier years and grows significantly once the level of failures exceeds the capacity of staff resources – limited contractors operating in the NT. • Avoided costs in the near-term are more than offset by regulatory fines and the financial costs and penalties arising from reputational damage and the potential loss of the AGP operating licence.
Option 2: Proactive replacement of actuators	• Where possible, replacements take place with other works at the site, improving cost and resource efficiency. • Steady replacement rate over the coming years gives predictability in resourcing and expenditure.

Based on the risk and financial assessments above, the preferred option that appropriately balances costs and risks is the continuation of the proactive replacement of mainline valve actuators (option 2).

6.4. Proposed costs for 2026–31

The replacement of actuators is not complex, and the proposed work will be carried out as part of the annual stay-in-business programs, using APA staff.

This is an ongoing campaign to upgrade no-longer supported units to a new standard of actuator that has OEM component support and so can be maintained for ongoing function.

A further five valves are proposed for replacement over the 2026–31 period – this will mean 14 of the 18 mainline valves on the AGP will have been replaced by 30 June 2031, with the last four to be replaced in the following Access Arrangement period.

Table 6-3: Proposed 2026–31 costs for Mainline Valve Actuators ($000s real 30 June 2026)

Locations	2026–27	2027–28	2028–29	2029–30	2030–31	Total
Tylers Pass (x 2)	130					**130**
Renner Springs		65				**65**
Warrego			65			**65**
To be determined				65		**65**
Total	**130**	**65**	**65**	**65**	**-**	**324**

** Totals may not add due to rounding*

7. General compound improvements

7.1. Project objective and scope

This assessment supports the on-going funding to upgrade deteriorating infrastructure (fencing, grounds and huts) in the compounds along the AGP.

7.2. Background

Compounds exist along the AGP and encompass fencing, grounds and huts to protect pipeline equipment. Typically, a slow and steady rate of expenditure is required to upgrade fencing, repair erosion damage, repair roofs and paint huts at the various compounds along the pipeline.

7.3. Assessment of options

Two options have been considered for this project:

- Option 1: Replace structures when they fail and repair ground damage only where safety maybe compromised or negative publicity may arise.
- Option 2: Proactively upgrade compounds and associated structures when the benefits of replacement exceed the costs and potential safety and regulatory risks.

7.3.1. Risk assessment

The potential risks of both options are shown below.

The main concerns arising from sub-standard structures and ground conditions relate to the safety of staff and contractors. WHS legislation creates a positive obligation for AGP to ensure, as far as is reasonably practicable, the health and safety of workers and other persons.

Failing to meet the requirements of the legislation significantly increases the financial risk arising from legal action.

Table 7-1: Risk assessment of general compound improvements

Risk Area	Potential Impact	Option 1		Option 2	
		Likelihood & Impact	Inherent risk rating	Likelihood / Impact	Residual risk rating
Health & Safety	Trip hazards, injuries, failed structures	Occasional/ Major	High	Remote/ Minor	Negligible
Environment	Erosion	Unlikely/ Minor	Low	Rare/ Minor	Negligible
Operational	Unplanned site visit	Occasional/ Significant	Moderate	Remote/ Significant	Low
Compliance	Regulatory breach	Occasional/ Major	High	Remote/ Minor	Negligible
Reputation & Customer	Adverse publicity, decline in value	Occasional/ Minor	Low	Remote/ Minor	Negligible
Financial	Financial penalty	Occasional/ Major	High	Remote/ Minor	Negligible
Untreated risk			**HIGH**		**LOW**

Option 1

If structures are only repaired upon failure then hazards and risks are likely to exist for prolonged periods as the ability to complete upgrades when required will be impacted by the availability of staff and the distance to travel.

This reduces efficiency by disrupting planned works and diverting staff resources and could lead to regulatory breaches, financial penalties, potential loss of licence and reputational damage.

This option does not meet WHS obligations, so creates a high risk of reputational and financial loss should a worker be injured and the potential for APG to lose its operating licence.

Option 2

Early rectification of issues reduces the potential for the deterioration and failure of other assets e.g. repairing holes in the floor of a battery housing stops the ingress of snakes, insects and vermin that could damage or destroy the battery system.

Given their importance to protecting the assets that drive the safe and reliable operation of the pipeline, replacing any damaged items aligns with industry best practice and the expectations of stakeholders.

Planned replacements will maximise efficiency and ensure the availability of staff and contractor resources (replacements can be undertaken in conjunction with other work at the site). There is a steady replacement rate over the coming years that provides predictability in resourcing and expenditure.

This option appropriately balances cost with reducing risk to as low as reasonably practicable, in line with Australian Standard AS2885 and WHS legislation.

7.3.2. Financial assessment

A consideration of the pros and cons of the expected financial outlays for both options is shown below. Net Present Value calculations have not been undertaken as a realistic expenditure profile for option 1 is unable to be ascertained. In addition, replacement costs are expected in the near to mid-term for both options, so the bigger question is how the spend should be balanced to appropriately manage the associated risks.

Table 7-2: Financial assessment of general compound improvements

	Commentary
Option 1: Replace at failure or when safety concerns arise	• Cheaper capital expenditure in earlier years as expenditure is deferred until failure • Replacements will be more expensive given the efficiency losses (costs and staff/contractor resources) incurred in undertaking unplanned works. • Expenditure is less predictable in the earlier years. • Avoided costs in the near-term are more than offset by regulatory fines, legal costs and the financial costs and penalties arising from reputational damage and the potential loss of the AGP operating licence.
Option 2: Proactive upgrade when the benefits exceed the costs and risks	• Where possible, replacements take place with other works at the site, improving cost and resource efficiency. • Steady replacement rate over the coming years gives predictability in expenditure.

Based on the risk and financial assessments above, the preferred option that appropriately balances costs and risks is the continuation of on-going upgrades to general compounds based on condition assessment (option 2).

7.4. Proposed costs for 2026–31

Sites are chosen for necessary works through regular maintenance and inspection programs.

Table 7-3: Proposed 2026–31 costs for general compound improvements ($000s real 30 June 2026)

Compound improvements	2026–27	2027–28	2028–29	2029–30	2030–31	Total
Total	**108**	**-**	**108**	**-**	**108**	**324**

** Totals may not add due to rounding*