

Attachment 9.17

Plant & Equipment Strategy

Final Plan 2023/24 – 2027/28

July 2022



Plant and Equipment Strategy

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1. Executive summary

This document outlines the maintenance and replacement strategy for plant and equipment for Multinet Gas Networks (MGN). This strategy aims to achieve a high level of reliability for MGN's plant and equipment through preventative maintenance coupled with planned replacement prior to asset/equipment failure.

We have identified the following planned replacement capital works that must be delivered during the next access arrangement (AA) period (2023/24 to 2027/28):

- 1. Equipment enclosures program; and
- 2. Network specific plant and equipment program.

These ongoing programs are required to ensure we comply with our regulatory obligations under the Gas Safety Case, the Victorian Gas Distribution System Code, Australian Standard 4645 (AS 4645), and Australian Standard 2885 (AS 2885).

The capital expenditure (capex) works for the next AA period are summarised in the following sections.

1.1. Financial summary

Table 1-1 summarises the proposed expenditure across the two programs identified in this strategy. Average annual capex over the next five years is \$0.4 million.

Program	2023/24	2024/25	2025/26	2026/27	2027/28	Total
Equipment enclosures	318.2	318.2	457.9	125.9	125.9	1,346.1
Network specific plant & equipment	497.6	36.8	36.8	85.6	36.8	694.0
Total	815.8	355.0	494.7	211.5	162.7	2,039.7

Table 1-1: Plant & equipment program capital expenditure, \$'000 real 2021

1.2. Equipment enclosures program

The equipment enclosures program covers a broad spectrum of equipment enclosures which includes masonry buildings, concrete pits, chain wire fences, steel kiosks, gatic covers, and weld mesh fencing. The program for the next AA period has three components:

- Miscellaneous enclosure works ad-hoc replacement or refurbishment of equipment enclosures and associated components such as pit lids, concrete pit walls, ladders and footplates etc. This is consistent with similar miscellaneous works completed in previous periods (\$0.6 million);
- Additional Enclosures Works a specific program for the refurbishment of critical enclosure fencing at (\$0.3 million); and
- Key replacement program a specific program for replacement of the legacy and other legacy industry standard key systems providing access to facilities on the network (\$0.4 million).



The equipment enclosures program for 2023/24 to 2027/28 is summarised in Table 1-2.

Program 2023/24 2024/25 2025/26 2026/27 2027/28 Total Miscellaneous works Additional enclosures works Key replacement program Total 318.2 318.2 457.9 125.9 125.9 1,346.1

Table 1-2: Equipment enclosures works program capital expenditure, \$'000 real 2021

1.3. Network specific plant and equipment program

Network specific plant and equipment includes equipment used for mains tapping, water ingress trouble shooting, gas detectors for personal use (confined space), and all other approved gas detection devices used on the MGN distribution network. It is used by both MGN internal staff and service providers to effectively operate and maintain the distribution network. The program for 2023 to 2028 has two components:

- Plant and fleet replacement of plant and fleet that is past its useful life and not fit for purpose (1996); and
- Equipment and tools () purchase of new and replacement tools and equipment for use by internal staff and service providers when maintaining the network. This includes gas detection devices, cameras used to survey mains to identify water ingress and faults, window cutters to safely expose poly mains inserted into steel mains and other general use tools.

The network specific plant and equipment program for 2023/24 to 2027/28 is summarised in Table 1-3.

Program	2023/24	2024/25	2025/26	2026/27	2027/28	Total
Equipment and tools						
Plant and fleet						
Total	497.6	36.8	36.8	85.6	36.8	694.0

Table 1-3: Network specific plant & equipment program capital expenditure, \$'000 real 2021



1.4. Efficiency of the proposed solutions

We consider that the proposed plant and equipment programs are the minimum required to efficiently manage the network and mitigate the risk of injury and harm to personnel operating in the field, and site security. Alternative options to the program were considered, including utilising current plant and equipment until failure, and deferral of one program (key replacement) until later in the period. However, we submit that maintaining plant and equipment assets, and access to these assets, in good working condition in a timely manner reflects prudent asset management and makes the most efficient use of resources.

We consider the proposed plant and equipment programs satisfies the requirements of the following National Gas Rules:

- **NGR 79(1)** the proposed solution is consistent with good industry practice, several practicable options have been considered, and market rates have been tested to achieve the lowest sustainable cost of providing this service.
- **NGR 79(2)** proposed capex is justifiable under NGR 79(2)(c)(ii), as it is necessary to maintain the integrity of services.
- NGR 74 the forecast costs are based on the latest market rate testing and project options considering asset management requirements as per the latest Asset Management Strategy. The estimate has therefore been arrived at on a reasonable basis and represents the best estimate possible in the circumstances.



2. Document overview

2.1. Purpose

The Plant and Equipment Strategy articulates our approach to the management of plant and equipment assets. It has the following objectives:

- identify the capital works program for 2023/24 to 2027/28;
- present cost estimates for the works program;
- provide justification and evidence that demonstrates the proposed program is prudent and efficient (as per requirements of NGR 79);
- demonstrate that the program cost and volume estimate have been arrived at on a reasonable basis (as per requirements of NGR 74); and
- provide a record of the proposed works program to help inform program delivery and asset management during the period 2023/24 to 2027/28).

The document is intended for use by:

- MGN staff (and its service providers); and
- regulators technical, safety and economic.

2.2. Scope

This strategy covers the management of MGN's existing plant and equipment assets and their associated components. It covers a broad spectrum of assets, which include (but is not limited to):

- masonry buildings;
- concrete pits;
- chain wire fences;
- steel kiosks;
- gatic covers;
- weld mesh fencing;
- vehicles;
- gas detectors; and
- specialist equipment for use on network.

2.3. Relationship with other key asset management documents

The Plant and Equipment Strategy is one of a number of key asset management related documents developed and published by MGN in relation to its gas network. As indicated in Figure 2-1 below, detailed network strategies – including the Plant and Equipment Strategy - informs both the Asset Management Strategy (AMS) and AMP of the required capital programs needed to achieve the long-term objectives of the gas distribution network.



Figure 2-1: Asset Management Framework



2.4. Financial figures used in this document

All financial figures quoted within this document, unless otherwise specifically stated, are:

- real unescalated expenditure / cost (reference year = June 2021);
- direct expenditure only (i.e. excludes overheads and finance costs); and
- in units of \$1,000 (i.e. ,000).

2.5. Data sources

The following data source has been drawn on to develop the Plant and Equipment Strategy:

• SAP - the MGN primary asset management database used to store all Plant and Equipment related data.



2.6. References

- Gas Safety Case
- Gas Distribution System Code Ver. 15.0
- AS 4645 series Gas Distribution Networks
- AS 2885 series Gas and Liquid Petroleum
- Multinet Gas Risk Model
- Multinet Gas System Operations Manual
- Capital Growth Plan (MG-PL-0002)
- Supply Regulator Strategy (MG-SP-0003)
- MGN Asbestos Register (MG-HSE-3.002)
- Network Infrastructure Security Plan (U-PL-0003)
- Multinet Gas Networks Useful Life review CY 2020
- Fixed Asset Register
- Multinet Gas Security Assessment
- MGN Engineering Standards
- Equipment Register



3. Asset overview

3.1. Introduction

This Plant and Equipment strategy covers approximately 2,500 equipment enclosures¹, and all miscellaneous 'network specific' plant and equipment used on the MGN distribution network.

The term 'equipment enclosures' is used to refer to a broad spectrum of assets that house network equipment. Enclosure types range from large masonry structures through to small sub-surface plastic valve pits and include masonry buildings, concrete pits, chain wire fences, steel kiosks, gatic covers, and weld mesh fencing.

Network specific plant and equipment is equipment used by both MGN internal staff and service providers to effectively operate and maintain the MGN distribution network. It includes, but is not limited to:

- gas detection and monitoring devices;
- equipment for mains tapping, water ingress trouble shooting;
- emergency equipment;
- stopple equipment;
- fleet;
- cameras for internal mains inspection; and
- small tools.

3.2. Asset age profile

3.2.1. Equipment enclosures

The equipment enclosure age profile encompasses a broad time-span, with some of the older regulator buildings dating back to the late 1950's. The majority of the enclosures were constructed and / or installed by the former Gas and Fuel Corporation (GFC).

Gas equipment enclosures display a wear-out characteristic, with the rapid onset of degradation at the end of the useful life. The age profile of equipment enclosures installed within MGN are shown in Table 3-1.

¹ This strategy excludes consumer regulator enclosures, which are the responsibility of the customer to which gas is being supplied. For these enclosures, MGN provides reports as to the enclosure's safety and adequacy against the performance criteria. Where sites are found to be deficient, the enclosure's owner/representative is requested to arrange for rectification works to be completed. MGN will offer to rectify enclosure deficiencies at the owner's expense.



Table 3-1: MGN equipment encl	osure age profile
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Enclosure type	Installation years	No. of sites	Expected life (years)	Life span (years)	Approx. avg age
Buildings	1958-1981	11	80	30	52
Chain wire fences	1969-ongoing	5	30	15	26
Paling and steel fences	1960-1972	13	25	10	56
Steel Kiosks reg	1958-1986	14	30	10	50
Steel Kiosks CPS	1970-1996	45	20	10	40
SCADA cabinets	1984-ongoing	204	20	6	20
Concrete pits	1959-1999	237	50	20	43
Hot dip galvanised steel covers	1976-ongoing	165	50	20	23
Painted steel covers	1959-1976	6	30	10	54
Gatic covers	1960-ongoing	72	50	20	30
Weld mesh fencing	2005-ongoing	9	50	20	8
Fibreglass, plastic, other equipment pits	1979-ongoing	2050	20	10	22

3.2.2. Network specific plant and equipment

The life of network specific plant and equipment is determined by their useful or expected life at the time of acquisition. The 'Multinet Gas Networks – Useful Life Review 2020' provides the framework for the management of our network specific plant and equipment.

The current age profile of equipment and tools assets is shown in Table 3-2. Note that some very small value items have not been included on this list.

Table 3-2 : Equipment and tools age profile

Equipment type	QTY	Acquisition year	Useful life in years	Current age in years (avg)
FIU gas detector I	4	2000	10	21
FIU gas detector II	2	2015	5	6
Laser diode methane detector	2	2015	3	6
CCTV camera	1	2010	5	11
Hand-held personal gas detectors	100	2009 - 2014	5	10

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Equipment type	QTY	Acquisition year	Useful life in years	Current age in years (avg)
Pig traps	2	2017	30	5
Window cutter	1	2018	5	4
stop system	1	2010	10	12
Cello dataloggers	80	2008	7	14
plugging system	1	2004	15	18
Pipe locator and AC voltage gradient	1	2021	5	1
plus high accuracy GPS kit	1	2021	5	1
Test kit-swain meter Flange testing set	1	2021	5	1
direct current voltage gradient (DCVG)	1	2021	5	1

The current age profile of plant and fleet assets is shown in Table 3-3.

Table 3-3 : Plant and fleet age profile

Registration plate	Make	Model	Last odometer	Purchase date	End of design life
	NISSAN	X-TRAIL	33,058	13-Jul-17	Jul-24
	NISSAN	X-TRAIL	107,418	13-Jul-17	Jul-24
	NISSAN	X-TRAIL	147,026	13-Jul-17	Jul-24
	NISSAN	X-TRAIL	82,740	13-Jul-17	Jul-24
	NISSAN	X-TRAIL	109,850	13-Jul-17	Jul-24
	NISSAN	X-TRAIL	79,480	6-Dec-17	Dec-24
	NISSAN	PATHFINDER	94,449	6-Dec-17	Dec-24
	NISSAN	X-TRAIL	82,000	31-May-20	Dec-27



3.3. Asset performance

3.3.1. Equipment enclosures

Equipment enclosure performance is measured by the enclosure's ability to:

- provide public and passer by safety;
- provide personnel and equipment safety at site;
- prevent casual, felonious and malicious intrusion to site; and
- provide safe access and egress from site.

Most sites are performing well over many years against these criteria. Assets in sub-standard condition, or that have reached or exceeded their design life, are periodically refurbished or replaced in order to provide a safe environment for employees and the public, and to maintain compliance with standards.

Current known issues with equipment enclosures are:

- All MGN regulator buildings have been independently audited with some found to contain asbestos, and others deemed to contain asbestos. Remedial works and monitoring for these sites is coordinated and detailed in the MG Asbestos Register (MG-HSE-3.002), which is maintained by the MGN HSE team collaboratively with an independent external asbestos consultant. A new audit was conducted in October 2021.
- Above ground regulator sites are especially susceptible to damage due to their high exposure to the external environment. Brick walls, roof structures, door/window structures and guttering are susceptible to degradation due to corrosion, rot and water related breakdown issues. An independent structural review was conducted in August 2014 (by T.D&C Consulting Engineers & Construction Managers) for a few of the above ground regulator sites with masonry buildings and compounds². The works identified in this structural review have now been completed. A follow up independent structural review is planned for FY2025, as these buildings have an average age of 50 years and as such, it is prudent that the structural integrity of these buildings is periodically reviewed.



² The scope of the structural review included an assessment of structural integrity of the building walls; a structural integrity of brick masonry / fencing walls; assessment of doors, windows and frame integrity; assessment of roofing of building; assessment of spouting and downpipes of building; assessment of drainage structures within building sites; and a general overall site condition assessment.



3.3.2. Network specific equipment

As shown in Table 3-2, the majority of the Equipment & Tools equipment has passed or will soon pass it's useful life date. Some items are now obsolete or have been superseded with new models.

The changing dynamics of the MGN distribution network such as the deterioration of the LP network has triggered the development and search for equipment to enable our internal staff and service providers to effectively and safely provide a continuous supply and service to our customers.

Specific known issues with network specific equipment include:

- As shown in Table 3-2, all gas detectors used by internal staff and service providers are well
 past their useful life
- The replacement of the **CCTV** insertion camera in use is overdue and is considered old technology

MGN Plant and Fleet, shown in Table 3-3, has the following characteristics:

- A fleet of eight passenger vehicles is used to perform various activities on the network, all
 of which will reach their useful life within the next AA period. As a good employer and
 prudent asset manager, we have a commitment to replace vehicles that are in poor condition
 and represent a safety and/or reliability risk
- At this point in time MGN has no vacuum (syphon) trucks to extract water ingress from mains and services. This equipment is currently supplied by MGN's service provider.



4. Asset management drivers

4.1. Network vision

The MGN vision informs the way we manage and invest in our assets.

Figure 4-1: Network vision

Our Vision

Our vision is to be the leading gas infrastructure business in Australia. In order to deliver this we aim to achieve top quartile performance on our targets.

L'UL
Sustainably cost efficient
Working within industry benchmarks
Delivering profitable growth
Environmentally and socially responsible

When developing our work program and asset management strategies for the MGN network, we consider how the work we conduct and investments we make will help achieve the three key vision objectives outlined in the figure above.

These vision objectives and how they relate to the plant and equipment program is summarised in the following sections.

4.2. Delivering for customers

Our aim is to continue to deliver customers the service they want and value. This includes keeping people safe from harm, maintaining a reliable gas supply, and providing quality customer service.

The MGN gas distribution and transmission pressure network is located in densely populated areas. This means we have a duty of care to make certain our assets are functioning properly, and that we can detect and prevent any potential safety issues.

Ensuring we have fit-for-purpose plant and equipment is essential, as it allows us to conduct our maintenance and replacement work safely and efficiently, identifying and addressing any network issues before they cause disruption to customers.

4.2.1. A good employer

We strive to be a leader in health and safety by ensuring employees and contractors are mindful of the factors affecting their physical and mental health. This is done through strict health and safety procedures, incentive programs and regular workshops and health screenings.



This strategy aims to achieve a high level of reliability and personnel / public safety through maintenance, refurbishment and replacement of assets, as necessary, using appropriate and fit-forpurpose tools and equipment.

We aim to ensure high employee engagement by keeping employees up to date with relevant town halls and workshops of the entire business. Skills development is also a focus, ensuring both contractors and employees have the relevant skills and requirements for performing their roles.

4.2.2. Sustainably cost efficient

We aim to be sustainably cost efficient, working within benchmarks while still providing benefits to the customer and to shareholders. We intend to ensure natural gas remains a competitive, valuefor-money fuel option in line with customer interests and expectations.

The maintenance and replacement strategies outlined in this document are aimed at improving the efficiency of the MGN network – providing the lowest cost of service to network users. We aim to deliver these programs for the lowest practicably sustainable cost and consider a range of options before committing to a course of action.

We are also mindful of our environmental and social responsibilities and will test our asset management strategies and work practices against relevant environmental, sustainability and societal obligations.

This strategy is also aimed at maintaining the equipment enclosures and plant and equipment within the MGN network in a cost-efficient manner. Items requiring maintenance are prioritised based on the level of risk posed to the general public, maintenance personnel and the gas equipment installed inside the facility. Some of the items requiring maintenance are completed whenever the site is due for a maintenance visit rather than in separate visits, ensuring that these repairs are conducted in an efficient manner.

4.3. Network objectives

We manage the network in line with six asset objectives, which are linked to the AGIG vision and underpin our asset management practices. Achieving these network objectives enables us to provide good customer service, remain a good employer and be sustainably cost efficient.

Table 4-1: Summary of MGN network objectives

Operate and invest in assets to MGN will achieve this by: keep the public and MGN's Investing in and operating the network in line with the Gas Safety employees safe Case, zero harm principle and all laws and relevant industry standards: Managing known risks to as low as reasonably practicable (ALARP); and Meeting emergency response Key Performance Indicators (KPIs) (call centre, high priority leaks). Maintain continuity of supply to MGN will achieve this by: MGN's customers Meeting network availability KPIs; Maintaining operating pressures through monitoring and augmenting MGN's network; and Addressing leaks in line with MGN's leak management plan.



Improve MGN's customers' service MGN will do this by: experience in line with their Maintaining accuracy of metering assets within relevant industry expectations standards; Delivering valued services to customers at the lowest sustainable price; and Meeting customer KPIs (reliability/outages, safety, complaints, and overall customer satisfaction). Balance network performance and MGN will do this by: costs to deliver affordable services Optimising overall asset lifecycle management costs; Maintaining operating efficiency without compromising safety and reliability; Developing investment plans that consider stakeholder expectations; and Leveraging people, data and technology to deliver continuous improvement. MGN will achieve this by: Promote gas usage to ensure the networks remain sustainable Connecting new greenfield expansion projects in a timely manner; Enabling new urban infill connections; Engaging with key stakeholders to develop adequate network solutions for future supply options; Increasing long term competitiveness of networks through higher asset utilisation; and Promoting use of gas.

MGN will achieve this by:

- Considering alternative innovative, sustainable and/or lower long-term cost solutions;
- Pursuing research and development opportunities where they facilitate us to meet MGN's vision and objectives; and
- Supporting the decarbonisation of MGN's gas supplies and the move to smarter gas networks.

4.4. Technical and regulatory requirements

4.4.1. Technical obligations

This strategy aims to achieve a high level of technical compliance by ensuring that all maintenance and replacement activities are carried out to meet the requirements of the following regulatory instruments:

- MGN Safety Case
- AS 4645 series Gas Distribution Networks
- AS 2885 series Gas and Liquid Petroleum
- Gas Distribution System Code

Embrace innovation and work towards net-zero emissions



4.4.2. Consistency with the National Gas Objective and the National Gas Rules

In developing these forecasts, we have had regard to the National Gas Objective (NGO) and Rule 79/91 and Rule 74 of the National Gas Rules (NGR). With regard to all projects, and as a prudent asset manager/network business, we give careful consideration to whether capex is conforming from a number of perspectives before committing to capital investment.

National Gas Objective

This strategy furthers the NGO by promoting efficient investment in, and efficient operation and use of, natural gas services for the long term interests of consumers of natural gas with respect to price, quality, safety, reliability and security of supply of natural gas.

National Gas Rules

We consider the proposed plant and equipment programs satisfies the requirements of the following National Gas Rules:

- NGR 79(1) the proposed solution is consistent with good industry practice, several practicable options have been considered, and market rates have been tested to achieve the lowest sustainable cost of providing this service.
- NGR 79(2) proposed capex is justifiable under NGR 79(2)(c)(ii), as it is necessary to maintain the integrity of services.
- NGR 74 the forecast costs are based on the latest market rate testing and project options considering asset management requirements as per the latest Asset Management Strategy. The estimate has therefore been arrived at on a reasonable basis and represents the best estimate possible in the circumstances.

4.5. Risk management

Risk management is a constant cycle of identification, analysis, treatment, monitoring, reporting

and then back to identification (as illustrated in Figure 4-2). When considering risk and determining the appropriate mitigation activities, we seek to balance the risk outcome with our delivery capabilities and cost implications. Consistent with stakeholder expectations, safety and reliability of supply are our highest priorities.

Our risk assessment approach focuses on understanding the potential severity of failure events associated with each asset and the likelihood that the event will occur. Based on these two key inputs, the risk assessment and derived risk rating then guides the actions required to reduce or manage the risk to an acceptable level.

MGN's risk management framework is based on:

- AS/NZS ISO 31000 Risk Management Principles and Guidelines;
- AS 2885 Pipelines-Gas and Liquid Petroleum; and
- AS/NZS 4645 Gas Distribution Network Management.





The Gas Act 1997 and Gas Regulations 2012, through their incorporation of AS/NZS 4645 and the Work Health and Safety Act 2012, place a regulatory obligation and requirement on MGN to reduce risks rated high or extreme to low or negligible as soon as possible (immediately if extreme). If it is not possible to reduce the risk to low or negligible, then we must reduce the risk to as low as reasonably practicable (ALARP).

When assessing risk for the purpose of investment decisions, rather than analysing all conceivable risks associated with an asset, we look at a credible, primary risk events to test the level of investment required. Where a credible risk event has an overall risk rating of intermediate or higher, we will undertake investment to reduce the risk.

Six consequence categories are considered for each type of risk:

- **People** injuries or illness of a temporary or permanent nature, or death, to employees and contractors or members of the public.
- 2 Environment (including heritage) impact on the surroundings in which the asset operates, including natural, built and Aboriginal cultural heritage, soil, water, vegetation, fauna, air and their interrelationships
- 3 **Supply** disruption in the daily operations and/or the provision of services/supply, impacting customers
- 4 **Compliance** the impact from non-compliance with operating licences, legal, regulatory, contractual obligations, debt financing covenants or reporting / disclosure requirements
- 5 **Reputation** impact on stakeholders' opinion of MGN, including personnel, customers, investors, security holders, regulators and the community
- 6 **Financial** financial impact on MGN, measured on a cumulative basis

Note that risk is not the sole determinant of what investment is required. Many other factors such as growth, cost, efficiency, sustainability and the future of the network are also considered when we develop engineering solutions. The risk management framework provides a valuable tool to manage our assets, and prioritise our works program, however it is not designed to provide a binary (yes/no) trigger for investment. As prudent asset managers, we apply our experience and discretion to manage and invest in our distribution networks in the best interests of existing and potential customers.

4.5.1. Risk assessment

A Network Infrastructure Security Plan (U-PL-0003) provides the framework for the management of MGN assets with respect to calculated security risks. The objectives of the Network Infrastructure Security Plan are:

- To minimise the medium, to long term inability to operate the network assets as a result of an unauthorised access incident;
- To provide a consistent approach for identifying and prioritising the 'criticality' of infrastructure;
- To identify the 'vulnerability' of specific assets that if immobilised would result in wide-spread community impact;
- To provide a consistent assessment and treatment of security risks;
- To identify specific actions and liaison with state emergency response agencies;



- To provide an assurance to the community served by MGN's networks and the regulatory regime, that MGN is taking pro-active preventative measures in respect to its network infrastructure assets; and
- To ensure public safety and continuation of supply.

4.6. Lifecycle management

Lifecycle management has four components:

- 1. Plan and create
- 2. Operate and maintain
- 3. Monitor and review
- 4. Repair, replace, abandon

These are discussed in the following sections.

4.6.1. Plan and create

Planning and creation considers current and future customer growth and load demands, asset performance and service needs, and secures the necessary approvals for expenditure. It includes the creation of new assets to:

- extend the network;
- provide new network, metering and SCADA facilities; and
- augment/upgrade/replace existing assets.

For plant and equipment, the focus is on identifying the most prudent time to replace equipment, tools, plant and fleet, and identifying any new assets/technologies that will improve our asset management capabilities.

4.6.2. Operate and maintain

Operation and maintenance involves three principal sub-processes. These are described below.

Surveillance and monitoring

Inspection and reporting of Plant and Equipment condition is undertaken during use, scheduled and breakdown maintenance visits as well as during audits and inspections. The frequency of these visits is dependent on the enclosed asset type. The type of tasks conducted using network specific equipment MGN's maintenance activities are scheduled to conform to the requirements of AS 4645 and AS 2885.

Enclosures for meter units supplying industrial/commercial premises are the responsibility of the supplied customer. However, enclosures are inspected during scheduled and breakdown maintenance of the enclosed equipment. Where enclosures are found to be sub-standard, the customer/representative is notified and requested to arrange for rectification works at the customer's expense.

Maintenance and upkeep of network specific equipment is the responsibility of the custodian of that equipment.



Preventative maintenance

Structured preventative maintenance plans for plant and equipment have not been created as plant and equipment are inspected and maintained during all use, asset maintenance and inspection visits. The following represents typical plant and equipment maintenance activity undertaken by MGN and our service providers:

- Equipment enclosure maintenance activities:
 - Liquids in pits are removed as priority when conducting works in confined space.
 - All enclosure signage is checked; where obsolete, damaged or missing signage is reported & replaced.
 - Chain wire and paling fence compound maintenance involves lubricating all hinges and pad locks as well as reporting any further works required. Compounds are expected to be kept clean and free of debris. Overhanging tree branches are removed.
 - Regulator kiosk maintenance involves clearing the kiosk of dust, grime, insects, spiders and cobwebs. Lubricating all hinges, door and pad locks as well as reporting any further works required. Coating faults on the kiosks are also attended to during maintenance.
 - Concrete pit maintenance is limited to the removal of liquids, dust, grime, grease, insects and cobwebs as well as maintaining pit wall coatings.
 - Ladders and footplates are inspected with major defects reported. Minor defects are rectified on the spot.
 - SCADA and CPS cabinet maintenance involves clearing the cabinet of dust, insects and cobwebs. Lubricating all hinges and door locks and replacing door seals and insect screens (as needed), as well as reporting any further works required.
 - Hot dip galvanised pit lid maintenance involves lubricating hinges, pivots and locks and ensuring lid stay bars operate correctly as well as reporting any further works required. Damaged or missing components are repaired or replaced as required. The pit lid gutter and drains are cleared of any debris.
 - Painted pit lids and frames maintenance involves lubricating hinges, pivots and locks and ensuring lid stay bars operate correctly as well as reporting any further works required. Damaged or missing components are repaired or replaced, as required.
 - Faults requiring immediate attention are attended to during the maintenance inspections. Minor defects are also attended to during the maintenance inspections with more involved defects rectified on a special visit or during the next scheduled maintenance inspection.
- Network specific equipment maintenance activities
 - Check equipment is complete before use.
 - Ensure equipment is within calibration/service date before use.
 - Current condition of equipment meets manufacturers requirements

If the equipment does not meet the above it should not be used and should be quarantined accordingly.

Corrective maintenance – faults and defects



Faults and defects are reported and rectified as follows:

- by the maintenance crews who are expected to rectify any faults/defects during use and scheduled maintenance activities;
- by the public who phone the 1800 number (displayed on all above ground Equipment Enclosures); and
- by staff/contractors during use, audits and inspections, with rectification occurring during the next scheduled maintenance or by a special visit (if warranted).

4.6.3. Monitor and review

Monitoring of assets includes the following:

- Capacity to meet customer demands for gas, delivered at required flow rates and pressures
- To highlight existing and emerging issues related to normal aging over time, accelerated aging or new risk issues
- Continuous collection of operational data, trend monitoring for emerging issues and amendment to Operational Procedures or Capital program recommendations post risk analysis
- Auditing to ensure activities and processes comply with required industry standards. The results of both internal and external auditing are reported to management
- Performance Measures Equipment enclosure performance is typically measured by the enclosure's ability to:
 - provide public and passer by safety;
 - provide personnel and equipment safety at site;
 - prevent casual, felonious and malicious intrusion to site; and
 - provide safe access and egress from site.

Network specific equipment performance is typically measured by the end user, or when used on the MGN distribution network by MGN and service providers.

Our reviewing activities include:

- review of real time data;
- review of field reports and assessments;
- review of asset performance, condition and integrity key performance indicators (KPIs). These are reviewed on a monthly basis in the monthly operating and management report and annually through, amongst others, the Distribution System Performance Review (DSPR); and
- review of quarterly and annual regulatory reports.

Key internal audits include:

- supervisor monitoring audits;
- verification audits The purpose of these audits is to verify that audits of task related activities provide credible and consistent results;



- technical facility audits Findings from these audits are reported to management through detailed reports;
- MGN audits "as required" to provide confidence that contractors are operating with due diligence and in compliance with requirements. The results of these audits are communicated to the AGIG management team.

Key external audits include:

- regulatory audits Conducted by regulators as a means of ensuring that activities performed conform to legislative requirements. Audit results form an important input to management improvement processes; and
- Safety Management Plan audits external auditors may be engaged to conduct audits on particular aspects of safety or operating plans.

4.6.4. Repair, replace, abandon

The refurbishment/repair of equipment enclosures depends on the type of enclosure and its construction.

- The refurbishment of distribution asset buildings occurs every 20 to 25 years. Future refurbishment of regulator buildings will need to accommodate asbestos removal, lighting and venting requirements as well as noise regulations, rather than just housing for the regulator station.
- Chain-wire and paling fences are not refurbished, rather they are maintained as part of the overall site and are repaired only when damaged or replaced if considered beyond repairable; and in order to adequately prevent unlawful and malicious intrusion to site, and/or danger to the public, employees or contractors.
- Refurbished regulator kiosks are used to replace damaged or sub-standard kiosks. Regulator kiosk refurbishment generally involves replacing corroded sections of a kiosk together with hinges and door lock mechanisms that may be seized, heavy to operate or broken. Further kiosk refurbishment may involve installing or replacing lid hinges and gas struts for easier kiosk access and safety. Refurbished regulator kiosks are also fully painted.
- Concrete pit refurbishment depends on the pit construction method. Pre-cast concrete pit covers are replaced when damaged or faulty. Cast-in-situ pits are refurbished to prevent water ingress and modified if found to be sub-standard.
- SCADA cabinets are not financially viable to refurbish so are replaced on an as required basis. This is determined on a site by site a basis as local conditions contribute greatly to cabinet condition.
- Older type cathodic protection cabinets are refurbished, whilst the newer type cabinets are replaced rather than refurbished.

The refurbishment/repair of network specific equipment is typically dependent on the condition of the equipment and its stage in useful life expectancy. This will also be impacted by the availability of parts and qualified approved manufacture repair agents. The viability and availability of any new technology equipment is also considered.



5. Capital program – 2023/24 to 2027/28

5.1. **Program overview**

The following ongoing programs must be delivered during the next AA period:

- 1. Equipment enclosures; and
- 2. Network specific equipment.

These programs are required to ensure we maintain alignment with network objectives and remain compliant with our regulatory obligations contained in the Gas Safety Case, Gas Distribution System Code, AS 4645 and AS 2885 in the equipment enclosures.

Table 5-1 provides a breakdown of program capital expenditure.

Table 5-1: Plant and equipment program forecast capex, \$'000 real 2021

Program	2023/24	2024/25	2025/26	2026/27	2027/28	Total
Equipment enclosures	318.2	318.2	457.9	125.9	125.9	1,346.1
Network specific equipment	497.6	36.8	36.8	85.7	36.8	694.0
Total	815.8	355.0	494.7	211.5	162.7	2,039.7

5.2. Customer and stakeholder engagement

MGN is committed to operating the network in a manner that is consistent with the long-term interests of our customers. To facilitate this, we conduct regular stakeholder engagement to understand and respond to the priorities of our customers and stakeholders. Feedback from stakeholders is built into our asset management considerations and is an important input when developing and reviewing our expenditure programs.

Our customers have told us their top three priorities are price/affordability, reliability of supply, and maintaining public safety. The asset management activities outlined in this strategy are primarily associated with maintaining reliability of supply at the lowest practicable cost.

Our customers rely on a continuous gas supply to be able to heat their homes and operate their businesses. Any disruption to supply can adversely impact residential customers, and carry significant financial consequences for our industrial and commercial customers. With this in mind, our Plant and Equipment Strategy is designed to minimise the risk of disruption to customer supply by ensuring that our plant and equipment is appropriate and fit-for-purpose for employee and service provider use, and allows us to address any supply issues quickly.

5.3. Estimating efficient costs

All expenditure related to the programs covered by this strategy is capex. Cost estimates are based on the following factors:

- vendor quotes for equipment;
- historical project costs for internal or external labour and estimated effort;
- design, engineering, construction and commissioning costs; and



• other ancillary materials.

Where appropriate and possible, individual projects within each of the programs have been scheduled in order to achieve efficiency in design, engineering and project management.

5.4. Equipment enclosures

5.4.1. Program summary

The equipment enclosures program covers a broad spectrum of equipment enclosures which includes masonry buildings, concrete pits, chain wire fences, steel kiosks, gatic covers, and weld mesh fencing. The forecast for this program is provided in Table 5-2 and further details of each project is provided below.



Table 5-2: Equipment enclosures expenditure, \$'000 real 2021

5.4.1.1. Miscellaneous enclosure works

The miscellaneous enclosure works program considers replacement or refurbishment of equipment enclosures and its associated components such as pit lids, concrete pit walls, ladders and footplates etc. These components are replaced or refurbished on a case-by-case basis to rectify any safety related issues that can derive from yearly maintenances and updated reports. Some of the other issues which drive capital works and affect the integrity of equipment enclosures are:

- Damage: Above ground sites are more susceptible to damage due to their relatively high exposure to the external environment. Vehicular impact although uncommon can have serious consequences
- Vandalism: Vandalism is a problem with graffiti and malicious damage occurring frequently
- Theft: Theft from the sites is rare but does occur and may create a public safety issue
- Noise: Noise and smell complaints from members of the public are common at all locations. Being above ground exacerbates the effects of any noise or sound leakage more so than in pits. In addition, there are frequent complaints about the aesthetics of the units from residents and businesses
- Contamination: Some sites are built on former coal gas sites, and which may contain some ground pollution
- Vegetation management: Overhanging trees creates constant maintenance and the risk of branches falling and damaging the facility is a security issue as they make for easy access to the site by climbing the tree



 Asbestos: Many of the older style brick buildings have materials containing asbestos and some flanges still have asbestos gaskets, which present obvious OH&S risks for maintenance staff. There is potential for harm to staff, contractors, and the public. Please refer to the MG Asbestos Register (MG-HSE-3.002) for more information

Asset replacement is prioritised by risk, with the riskiest/poorest condition assets being targeted for replacement first as per MGN Network Infrastructure Security Plan (U-PL-003).

No major structural engineering rectification works are scheduled during this period. However, an engineering assessment will be conducted in 2024/25 to inspect structures that will then form the basis of future capital programs.

5.4.1.2. Additional enclosures works

is a shared site with **and the second second**

The installation of new weld mesh fencing to meet security standards around the entire enclosure would reduce the vulnerability score of this site from

5.4.1.3. Key replacement program

Industry keys (e.g.) have been a staple since the times of Gas and Fuel Corporation. Despite privatisation, these keys remain in circulation. This means that other gas distribution businesses could have unauthorised access to MGN facilities, posing a security risk. Furthermore, existing blanks for certain keys types (and and are no longer in production or have reached the end of their key series meaning no more keys can be replicated for the current locks on some MGN facilities.

While the availability of keys may not have been a major issue up to this point, over time the keys to facilities such as field regulators, district regulators, city gates, compounds and all various type of cabinets on the MGN network have been lost, broken or no longer used. As a result, MGN field crews have in recent years have been unable to access certain sites for maintenance works within expected timeframes. As such, we consider it prudent to invest in a new key system for the network to improve network security and provide for appropriate staff access moving forward.

5.4.2. Recommended option

The ongoing replacement or refurbishment of equipment enclosures and associated components through the miscellaneous enclosure works program is considered the most prudent end efficient option. Other options were considered, including moving to reactive equipment enclosure works only, and deferring the key replacement program to later in the period. These options are discussed in Appendix A.

However, we consider the proposed program described above is the most appropriate in order to rectify safety concerns as well as issues due to damage, vandalism, theft, noise and smell complaints, contamination, vegetation management and asbestos removal. In addition to general ongoing maintenance, this option includes the **example and and a key** replacement program.



The **performing the required works could risk the required levels of protection on one of MGN's major supply points.** This lowers the safety and reliability of the network and significantly increases the risk of threats to the asset.

Replacement of the key system and movement from industry keys to an MGN specific key system is also considered prudent and reasonable. Not performing the required program could risk the required levels of protection on MGN's enclosed assets therefore increasing the chance of terrorist threats, vandalism, or asset damage which lowers the safety and reliability of the network.

This option is consistent with stakeholder requirements and our vision and is deliverable within the time frame envisaged.

5.5. Network specific equipment

5.5.1. **Program summary**

Over the next period, MGN will maintain alignment with network objectives and remain compliant with regulatory obligations contained in the Gas Safety Case, Gas Distribution System Code, AS 4645 and AS 2885 by conducting the following ongoing network specific plant and equipment programs:

- equipment and tools;
- plant and fleet.

The expenditure on these programs is shown in Table 5-3.

Program	2023/24	2024/25	2025/26	2026/27	2027/28	Total
Equipment and tools						
Plant and fleet						
Total	497.6	36.8	36.8	85.7	36.8	694.0

Table 5-3: Network specific equipment expenditure, \$'000 real 2021

5.5.1.1. Equipment and tools

MGN has historically purchased various equipment and tools for MGN personnel and service providers to use on the network. Moving forward, it is prudent for MGN to maintain fit-for purpose industry standard equipment and tools. In the upcoming period, the following has been identified as being required:

- gas detectors, for leakage survey purposes. These will replace detectors that are past their useful life;
- replacement of old and poor condition personal gas detectors used by MGN staff on the network;
- basic small tools and equipment, including Ultrasonic tester head replacement;
- new concernent cameras for water ingress investigations. The current camera in use is obsolete technology and replacement is overdue.
 camera will be purchased to enable more investigations to be performed, to ensure supply is maintained to customers as the LP network continues to deteriorate; and



window cutter. As the LP network continues to deteriorate there is an increasing requirement to safely expose poly mains inserted into steel mains.

The program for equipment and tools is summarised in Table 5-4.

Table 5-4: Equipment and tools expenditure, \$'000 real 2021

Program	2023/24	2024/25	2025/26	2026/27	2027/28	Total
gas detector		I	i	I	Í	
Personal gas detectors						
Small tools and equipment						
cameras		1	I.		í	
Window cutter		1	I	1	í	
Total						

5.5.1.2. Plant and fleet

We have a fleet of passenger vehicles that internal staff use to conduct site visits, meet with customers/stakeholders, audit service providers, and perform various other activities on the network. The vehicle list is provided in Table 3-3.

All **control** of these vehicles will reach the end of their design life (seven years) during the next AA period. **Control** vehicles have usage consistent with this replacement profile, while one (registration **control**) has travelled a low number of kilometres relative to its age.

All vehicles are individually assessed on an ongoing basis and will be extended past their design life if safe and efficient to do so. Despite this, even with our good maintenance practices and maximising the asset life, we expect that the majority of vehicles that pass the end of their design life will require replacement within the period. As a result, we have forecast to replace wehicle

, to replace vehicles past their useful life date and no longer fit and safe for purpose. It is assumed that good asset management practices will enable the other **ware** vehicles to be able to be deferred past the end of their design life and into the following period.

From time to time, MGN operations also require large plant items for maintenance on the network, in particular Vacuum trucks to extract water ingress from mains and services. MGN has historically relied upon these items to be provided by its main service provider. Following a change in service provider, and to ensure business continuity, it is considered it prudent for MGN to own and subsequently issue vacuum trucks to the preferred service provider going forward. We have therefore forecast the purchase of wacuum trucks.

The proposed expenditure on new plant and fleet for the upcoming access arrangement period is shown in Table 5-5.



 Program
 2023/24
 2024/25
 2025/26
 2026/27
 2027/28
 Total

 General fleet replacement
 Image: Second Contract 2021
 Image: Second Contract 2021

5.5.2. Recommended option

It is considered prudent to continue to proactively aged and damaged plant, tools and equipment because:

- plant, fleet, equipment and tools are required for maintaining the gas network. This option
 ensures existing equipment is appropriate, up to date and reliable, and that new equipment
 technology is reviewed and utilised where appropriate to improve safety and efficiency;
- providing service providers with new **Exercise Constant and Constant**
- it is the only option that reduces risks to an acceptable level. Not replacing plant & fleet and equipment & tools could result in safety and reliability impacts in the event of equipment failure during either planned or emergency situations, and as such, this option is not considered prudent;
- additional costs could be expected to be incurred under a reactive replacement scenario, including costs associated with the potential requirement to stop work and then restart once new plant & equipment items have been procured;
- it is consistent with stakeholder requirements and our vision; and
- the delivery of the scope of works is achievable in the time frame envisaged.

We considered ceasing the proactive replacement program, moving to reactive replacement only, but this would not mitigate the risk of equipment failure and could also place our employees at risk of harm if they are working with substandard equipment. We have therefore not pursued reactive replacement as an option (see Appendix B).

Table 5-5: Plant and fleet expenditure, \$'000 real 2021



Appendix A Equipment enclosures – Options analysis

A.1 Options considered

We considered the following options to manage equipment enclosures on the network

- Option 1 Discontinue miscellaneous equipment enclosure works; Do not undertake works or the key replacement program.
- Option 2 Undertake miscellaneous works, specific required enclosure works and the key replacement program.
- Option 3 Undertake miscellaneous works and specific required Enclosure works. Undertake the key replacement period, but defer to later in the period.

Each of these options are discussed in the following sections.

A.1.1 Option 1 – Discontinue miscellaneous equipment enclosure works; Do not undertake works or the key replacement program

This option is to not proactively replace or refurbish any MGN equipment enclosure assets over the next access arrangement period. Equipment enclosures will be maintained as per the strategies outlined in section 0. Assets will be replaced reactively upon failure where necessary.

Cost assessment

There is no additional upfront capital cost associated with this option.

Risk assessment

The key risk event for equipment enclosures is that an MGN employee or third party enters the site, and the inadequacy of impact protection, barriers and P&IDs results in improper use of/contact with assets. This may lead to serious harm to employee/third parties, asset failure and impact to customer supply.

This could lead to several possible outcomes including:

- operational risks may occur due to poor pressure control, loss of supply due to equipment failure or vandalism, and damage to equipment due to vehicle impact;
- safety risks may result in injuries to personnel from: slips, trips and falls at ground level; falls from a height; vehicle impact with personnel; manual handling; exposure to natural gas; and fire.
- non-compliance with the current applicable Australian Standards or the requirements of the Gas Safety Act and Gas Distribution System Code. The Gas Distribution System Code requires compliance with current Australian Standards, while the Energy Safe Victoria Gas Safety Act states that gas companies must minimise, as far as possible, the hazards and risks associated with gas to the public, customers and property.

The untreated risk rating is presented in Table Appendix 1.



MGN Operational Risk Matrix											
Untreated risk	People	Supply	oly Environment Reputation		Financial	Compliance	risk				
Frequency	Frequent	Frequent	Frequent	Frequent	Frequent	Frequent					
Severity	Severe	Severe	Minor	Minor	Trivial	Severe	High				
Risk Level	High	High	Intermediate	Intermediate	Low	High					

Table Appendix 1: Risk assessment – Equipment enclosures untreated risk

Option 1 does not reduce the residual risk associated with MGNs equipment enclosures, and these risks will continue to increase over time.

Table Appendix 2: Risk assessment – Equipment enclosures Option 1

	MGN Operational Risk Matrix										
Option 1	People	Supply	Supply Environment		Financial	Compliance	risk				
Frequency	Frequent	Frequent	Frequent	Frequent	Frequent	Frequent					
Severity	Severe	Severe	Minor	Minor	Trivial	Severe	High				
Risk Level	High	High	Intermediate	Intermediate	Low	High					

Alignment with vision objectives

The following table shows how Option 1 aligns with our vision objectives.

Table Appendix 3: Alignment with vision – Equipment enclosures Option 1

Vision objective	Alignment
Delivering for Customers – Public Safety	N
Delivering for Customers – Reliability	Ν
Delivering for Customers – Customer Service	-
A Good Employer – Health and Safety	Ν
A Good Employer – Employee Engagement	-
A Good Employer – Skills Development	-
Sustainably Cost Efficient – Working within Industry Benchmarks	N
Sustainably Cost Efficient – Delivering Profitable Growth	-
Sustainably Cost Efficient – Environmentally and Socially Responsible	N

Option 1 would not align with our objectives of *Delivering for Customers*, as it does not address ongoing security concerns related to equipment enclosures, including accessibility. This could impact on security of supply to a large customer base and the potential for vandalism or damage leading to customer outage and dissatisfaction.

This option would not enable sufficient protection and access to facilities and therefore may have an impact on workforce health and safety and thus would not be consistent with being *A Good Employer*.

This option is not Environmentally and Socially Responsible as facilities and sites are vulnerable to ease of access, and it is also not working within industry benchmarks. This option therefore does not align with our objective to be *Sustainably Cost Efficient*.



A.1.1 **Option 2 – Undertake Miscellaneous Works, specific required Enclosure Works and the Key** Replacement Program

This option focuses on the necessary works to maintain MGN equipment enclosures on an ongoing basis, as well as delivering the additional enclosure works identified to reduce the high risks of fencing, and lack of secure keyed access to equipment enclosure facilities.

This is the preferred option as outlined with the main body of the Strategy.

Cost assessment

The capital cost of this option is \$1.3 million.

Table Appendix 4: Option 2 – Equipment enclosures program 2023/24 to 2027/28, \$'000 real 2021

Program	2023/24	2024/25	2025/26	2026/27	2027/28	Total
Miscellaneous enclosure works						
Additional enclosures works	í	í		í		
Key replacement			1	1	í.	
Total	318.2	318.2	457.9	125.9	125.9	1,346.1

For the key replacement program, a detailed cost estimate (shown in the table below) has been prepared based on the number of sites, and the market cost of locks and external labour. The estimate assumes that standard padlock replacement will be replaced by operational personnel as part of maintenance activity. Door and gate locks will require a locksmith and service provider escort. This program has been scheduled for completion across the first two years of the period, for consistency with maintenance cycles, and reflecting the necessity of addressing the increasing risks as soon as practicable.



Table Appendix 5: Key replacement program estimate, \$'000 real 2021

Location type	No. of sites	Lock cost (\$)	Locksmith cost (\$)	Ext. labour - 1 hr (\$)	Total (\$'000)
Padlocks					
City, dist and field regs			í	í	
Line valves			Í	í	
Easements			Í	í	
I&C system ops			Í	í	
Domestic			Í	í	
Door and gate locks					
City, dist and field regs					
I&C system ops and domestic					
Total					384.6

For the miscellaneous enclosure works, the estimate has been determined on the basis of an average of the last four years' expenditure, as shown in the following table.

Table Appendix 6: Miscellaneous enclosure works historical expenditure \$'000 real 2021

Program	2018	2019	2020	2021	Avg.
Facilities Key Replacement Program					

For the additional enclosure works at **Example to the second and a similar** project recently completed at **Example to the second a similar**. With this project being a shared site, it will take time to plan, and as such, is scheduled for the third year of the period. The following table shows the estimated expenditure.

Table Appendix 7: Additional enclosures program estimate, \$'000 real 2021

Expense type	Multinet share	Unit cost (\$)	Total cost (\$ '000)
Fence replacement			
Site survey	Ī		
Project management	Ī		
Signage	Ī		
Total			332.3



Risk assessment

This option reduces the risk to an acceptable level, is aligned to good industry practice and maximises asset integrity and life. It reduces the risk to Low / ALARP, and as such is consistent with the requirements of our risk management framework and meets the test of a prudent asset manager/network business.

Table	Appendix	8: R	Risk	assessment	_	Equipment	enclosures	Option	2
									_

MGN Operational Risk Matrix						Overall		
Option 2	People	Supply	Environment	Reputation	Financial	Compliance	risk	
Frequency	Remote	Remote	Remote	Remote	Remote	Remote		
Severity	Severe	Severe	Minor	Minor	Trivial	Minor	Low	
Risk Level	Low	Low	Negligible	Negligible	Negligible	Negligible		

Alignment with vision objectives

The following table shows how Option 2 aligns with our vision objectives.

Table Appendix 9: Alignment with vision – Option 2

Vision objective	Alignment
Delivering for Customers – Public Safety	Y
Delivering for Customers – Reliability	Y
Delivering for Customers – Customer Service	Y
A Good Employer – Health and Safety	Y
A Good Employer – Employee Engagement	-
A Good Employer – Skills Development	-
Sustainably Cost Efficient – Working within Industry Benchmarks	Y
Sustainably Cost Efficient – Delivering Profitable Growth	-
Sustainably Cost Efficient – Environmentally and Socially Responsible	Y

Undertaking additional enclosure works, miscellaneous works and the key replacement program would align with our objectives of *Delivering for Customers*, as it would address security risks which could impact on security of supply to a large customer base and hence mitigate the potential for vandalism or damage leading to customer outage and dissatisfaction.

This option would ensure the health and safety of the field workforce and the public through ensuring assets and facilities are safe and secure therefore would be consistent with being *A Good Employer*. Furthermore, it also ensures the health and safety of the field workforce travelling in between sites.

This option would also align with Industry Benchmarks in terms of security and access to facilities and ensure both the public and field workforce are adequately protected and working with appropriate infrastructure hence this option would be Environmentally and Socially Responsible. This option therefore does align with our objective to be *Sustainably Cost Efficient*.



A.1.1 Option 3 – Undertake Miscellaneous Works and specific required Enclosure Works. Undertake the key replacement program, but defer to later in the period

This option focuses on the necessary works to maintain MGN equipment enclosures on an ongoing basis, as well as delivering the additional enclosure works identified to reduce the high risks of fencing, and lack of secure keyed access to equipment enclosure

facilities.

This option is similar to Option 2. However there is a difference in timing of the Facilities Key Replacement program which would start in 2026/27 under this option, compared with 2023/24 under Option 2.

Cost assessment

The capital cost of this option is \$1.3 million. This is the same as Option 2. However deferral of the Facilities Key Replacement program to start in 2026/27 would result in a smoother expenditure profile for the whole Plant & Equipment strategy across the access arrangement period.

Table Appendix 10: Option 3 – Equipment enclosures program 2023/24 to 2027/28, \$'000 real 2021

Program	2023/24	2024/25	2025/26	2026/27	2027/28	Total
Miscellaneous enclosure works						
Additional enclosures works (Í	Í		Í	-	
Key replacement	I.	í	i.			
Total						1,346.1

Risk assessment

This option reduces the risk to Low / ALARP by the end of the period, which is consistent with the requirements of our risk framework. However we consider that the high security risk associated with legacy keys, as well as the risk of staff being unable to access facilities in a timely manner means that it is inappropriate to defer this program any further.

Table Appendix 11: Risk assessment – Option 3

MGN Operational Risk Matrix						Overall	
Option 3	People	Supply	Environment	Reputation	Financial	Compliance	risk
Frequency	Remote	Remote	Remote	Remote	Remote	Remote	
Severity	Severe	Severe	Minor	Minor	Trivial	Minor	Low
Risk Level	Low	Low	Negligible	Negligible	Negligible	Negligible	



Alignment with vision objectives

The following table shows how Option 3 aligns with our vision objectives.

Table Appendix 12: Alignment with vision – Option 3

Vision objective	Alignment
Delivering for Customers – Public Safety	Ν
Delivering for Customers – Reliability	Ν
Delivering for Customers – Customer Service	-
A Good Employer – Health and Safety	Ν
A Good Employer – Employee Engagement	-
A Good Employer – Skills Development	-
Sustainably Cost Efficient – Working within Industry Benchmarks	Y
Sustainably Cost Efficient – Delivering Profitable Growth	-
Sustainably Cost Efficient – Environmentally and Socially Responsible	Ν

Option 3 would not align with our objectives of *Delivering for Customers*, as the public safety and reliability concerns associated will increase with further deferral of the key replacement program.

This option would not enable sufficient protection and access to facilities and therefore may have an impact on workforce health and safety and thus would not be consistent with being *A Good Employer*.

This option is not Environmentally and Socially Responsible as facilities and sites are currently vulnerable to ease of access, and this risk continues to increase. This option therefore does not align with our objective to be *Sustainably Cost Efficient*.



Appendix B Plant and equipment – Options analysis

B.1 Options considered

We considered the following options to manage network specific plant and equipment on the network

- Option 1 Carry out the procurement of plant and fleet, and equipment and tools.
- Option 2 Do not carry out the procurement of plant and fleet, and equipment and tools.

B.1.1 Option 1 - Carry out the procurement of plant and fleet and equipment and tools.

Under this option we would continue the current proactive replacement strategy. This would involve:

- continuing to purchase small plant and equipment items at a level consistent with historical trend; and
- purchasing two vacuum trucks to extract water ingress from mains and services; and replacing five fleet vehicles that will reach their engineering design life during the next access arrangement period.

This is the preferred option as outlined with the main body of the strategy.

Cost assessment

The estimated direct capital cost of this option is \$0.7 million as profiled in Table Appendix 13 below.

For equipment and tools, the estimate for larger items reflects quotes sourced from multiple approved vendors via an RFQ process. A minor amount **contract on the set of the set**

For plant and fleet, the forecast is based on vendor quotes for **second second second second**. The general fleet cost reflects the replacement of **second second** per year, based on the cost incurred of a similar recently purchased vehicle.

Table Appendix 13: Option 1 - Plant and equipment program 2023/24 to 2027/28, \$'000 real 2021





The key drivers for this option are:

- productivity will be maintained or improved, as newer tools and emerging technologies may promote more efficient ways of carrying out the work;
- health and safety performance will be maintained by making sure we continue to utilise current technologies, equipment design and work methodologies;
- procurement of items can be effectively and efficiently planned and executed, for example purchasing tools in bulk where applicable to capture volume discounts, or competitively tendering larger items; and
- we will align to good industry practice and continues to fulfil its obligations to maintain a safe working environment and will continue to reduce the impact of its operations on the public.

Risk assessment

A risk assessment has been carried out using MGN's established evaluation criteria. Failure of plant and equipment can lead to a number of risks and risk events, depending on what type of asset fails (or is unavailable). Examples include:

- failure to have appropriate gas detectors to adequately detect and classify gas leaks could result in a gas in building incident resulting in ignition, which can lead to serious harm and extensive property damage;
- providing equipment that offers insufficient protection against manual handling risks in general can result in significant workplace injuries, primarily to field workers performing normal duties, including driving, digging, carrying and lifting;
- failure to provide a safe work environment around and within confined spaces could lead to fatality through asphyxiation or inadequate retrieval in a medical emergency; and
- failure to provide correct storage of material stocks and tools and equipment can result in hazardous store situations. Good housekeeping and a tidy workplace contribute to a fit for purpose working environment for personnel, minimising health and safety incidents.

There is also the potential for legislative penalties for failing to provide a safe place of work and litigation if injuries are incurred.

The primary consequence category affected by this risk is Health & Safety, as failure or unavailability of fit for purpose plant and equipment can lead to serious injury or fatality in certain circumstances. There is also an intermediate risk to both the supply and compliance categories.

MGN Operational Risk Matrix					Overall		
Untreated risk	People	Supply	Environment	Reputation	Financial	Compliance	risk
Frequency	Occasional	Occasional	Occasional	Occasional	Occasional	Occasional	
Severity	Major	Severe	Minor	Minor	Trivial	Severe	High
Risk Level	High	Intermediate	Low	Low	Low	Intermediate	

Table Appendix 14: Risk assessment – Plant and equipment untreated risk

Option 1 reduces the frequency from occasional to remote, reducing the overall risk to Low. This option is therefore consistent with the requirements of our risk management framework, and meets the test of a prudent asset manager/network business.



		MGN Ope	erational Risk M	atrix			Overall
Option 1	People	Supply	Environment	Reputation	Financial	Compliance	risk
Frequency	Remote	Remote	Remote	Remote	Remote	Remote	
Severity	Severe	Minor	Minor	Trivial	Trivial	Minor	Low
Risk Level	Low	Negligible	Negligible	Negligible	Negligible	Negligible	

Table Appendix 15: Risk assessment – Plant and equipment Option 1

Alignment with vision objectives

The following table shows how Option 1 aligns with our vision objectives.

Table Appendix 16: Alignment with vision – Option 1

Vision objective	Alignment
Delivering for Customers – Public Safety	Y
Delivering for Customers – Reliability	Y
Delivering for Customers – Customer Service	Y
A Good Employer – Health and Safety	Y
A Good Employer – Employee Engagement	-
A Good Employer – Skills Development	Y
Sustainably Cost Efficient – Working within Industry Benchmarks	Y
Sustainably Cost Efficient – Delivering Profitable Growth	Y
Sustainably Cost Efficient – Environmentally and Socially Responsible	Y

Option 2 would align with the *Delivering for Customers* and *A Good Employer* aspect of our vision, as having fit for purpose plant and equipment will allow us to maintain employee and public safety standards. Having fit for purpose plant and equipment readily available will also enable us to maintain reliability levels and respond quickly during an emergency.

This option would also ensure the field workforce has up to date modern and safe plant, equipment and tooling, and therefore would be consistent with being *A Good Employer*.

This option is also *Sustainably Cost Efficient*, as proactive purchase of plant and equipment as part of a scheduled ongoing program is considerably more cost effective than purchasing it on a reactive basis. We also seek to replace plant and equipment with new and/or improved technologies, where that new technology allows us to operate more efficiently (without compromising safety). Additionally, this option mitigates potential financial risks associated with unsafe workplace legislative penalties or litigation.

B.1.2 Option 2 – Do not carry out the procurement of Plant and Fleet and Equipment and Tools.

This option is to discontinue the current practice of proactively keeping plant and equipment fit for purpose and up to date. We will continue to use existing vehicles, and small plant and equipment until each item is no longer able to be used due to obsolescence, breakdown or loss of function. Once this equipment becomes unusable or is no longer able to be maintained, it would need to be replaced on a reactive basis.



Cost assessment

The primary benefit of this option is the deferral of capex to a reactive environment. The disadvantages of this option are:

- increasing wear and tear on plant and equipment, with assets not able to be maintained in an appropriate manner, and therefore a gradually degrading and reducing equipment pool;
- increased operating expenditure (opex) for additional maintenance activities to 'keep tools and equipment going';
- loss of productivity, loss of purchasing power, less economies of scale and increased timeframe pressures during the procurement process;
- sharing of functional equipment between operational crews, resulting in decreased productivity associated with inefficient operation; and
- additional costs could be expected to be incurred under a reactive replacement scenario, including costs associated with the potential requirement to stop work and then restart once new plant and equipment items have been procured.

Risk assessment

The risk outcome of this option is high. If tools and equipment are not properly maintained and fit for purpose, it exposes our staff, contractors, and customers to avoidable health and safety risks. The residual risk associated with Option 1 is essentially the same as the untreated risk rating.

MGN Operational Risk Matrix						Overall		
Option 2	People	Supply	Environment	Reputation	Financial	Compliance	risk	
Frequency	Occasional	Occasional	Occasional	Occasional	Occasional	Occasional		
Severity	Major	Severe	Minor	Minor	Trivial	Severe	High	
Risk Level	High	Intermediate	Low	Low	Low	Intermediate		

Table Appendix 17: Risk assessment – Plant and equipment Option 2

Alignment with vision objectives

The following table shows how Option 2 aligns with our vision objectives.

Table Appendix 18: Alignment with vision – Option 2

Vision objective	Alignment
Delivering for Customers – Public Safety	N
Delivering for Customers – Reliability	N
Delivering for Customers – Customer Service	N
A Good Employer – Health and Safety	N
A Good Employer – Employee Engagement	-
A Good Employer – Skills Development	N
Sustainably Cost Efficient – Working within Industry Benchmarks	N
Sustainably Cost Efficient – Delivering Profitable Growth	N
Sustainably Cost Efficient – Environmentally and Socially Responsible	N



This option does not align with our objectives of *Delivering for Customers,* as it would not provide the appropriate tools for MGN to maintain the reliability of the network (eg removal of water ingress on the network), and would lead to increased public safety risks. Risks to workforce health and safety would not be consistent with being *A Good Employer*.

Option 2 also does not allow the organisation to explore further options that reduce greenhouse emissions, improve work efficiency and potentially replace current inspection regimes with improved and safer approaches. It therefore not does not align with our objective to be *Sustainably Cost Efficient*.



Glossary and definitions

The table below is a comprehensive list of asset management terminology and acronyms commonly used at AGIG. Note not all these terms may appear in this document.

Term	Meaning
AA	Access arrangement
ACIF	Australian Construction Industry Forum
AEMO	Australian Energy Market Operator: Responsible for the administration and operation of the wholesale national electricity market in accordance with the National Electricity Code.
AER	Australian Energy Regulator: Responsible for the economic regulation of energy networks.
AGIG	Australian Gas Infrastructure Group
AGN	Australian Gas Networks
AHC	Australian Hydrogen Centre
ALARP	As low as reasonably practicable
AMP	Asset Management Plan
AMS	Asset Management Strategy
ARS	Ancillary Reference Service - Standard services offered by Multinet Gas at fixed charges
AS/NZ	Australian/New Zealand Standards
AUS EX	Australian Program for the Certification of Equipment for Explosive Atmospheres
Available testing	Testing of a non-faulty meter returned from the field less than 10 years old from purchase or repair tested in a meter testing facility before being re-installed in the field to complete its in- service life.
Capex	Capital expenditure
Cathodic protection	Prevention of corrosion by application of direct electric current to the surface of a metal.
Cathodic protection unit (CPU)	A device providing cathodic protection current, powered from an external energy source. Such energy sources include mains power, solar, etc. Cathodic protection units require permits and registration in accord with the Electricity Safety (Cathodic Protection) Regulations 2009
Cathodically protected	An electrically isolated area within the distribution system, of size convenient and practicable for assessing and maintaining the effectiveness of corrosion protection



Term	Meaning
(Distribution) area	
CI	Cast iron
Coating quality survey	A survey conducted by traversing directly above a coated main along its length using equipment and techniques designed to identify any defects in the coating. Methods in common use include "Pearson" and Direct Current Voltage Gradient (DCVG)
Coil (Electromagnetic coil) Survey	An electromagnetic tracing technique for locating points of failed insulation or electrical contact to other metallic structures.
Corrosion	The deterioration of metal caused by its electrochemical reaction with its environment
СР	Cathodic Protection
CPU	Cathodic Protection Units
СТМ	Custody Transfer Meter. A large capacity meter installed at every injection point from the DTS to MGN's network.
Current AA period	Jan 2018 to June 2023
Data logger	Interval metering equipment that counts pulses from the mechanical meter index and records gas volume.
Direct Current Voltage Gradient (DCVG) Survey	A type of coating quality assessment survey conducted by traversing above the pipeline using equipment that applies pulsating DC electrical signals to identify coating defects.
Drainage Bond	An electrical connection via cable from a point in the distribution system to tram or train substations to prevent adverse effects from stray currents. These installations include equipment to control the direction and magnitude of current flowing.
DTS	Declared Transmission System
EDMI	Meter manufacture and supplier to MGN
EFT	Economic Feasibility Test
Electrical isolation	The electrical separation of structures to be protected from other structures and/or electrical systems. This is achieved by the installation of insulating flanges, monolithic insulating joints and insulating couplings
ESV	Energy Safe Victoria. A government body responsible for the safety and technical regulation of energy networks in Victoria.
FIRB	Foreign Investment Review Board



Term	Meaning
FLE	Field Life Extension. Alternative name for Sample Testing Program/in-service compliance testing of diaphragm meters <30m3/hr.
Flow corrector	Interval metering equipment which can correct gas flow to energy with the help of live pressure and temperature values.
FY	Financial year
Galvanic (Sacrificial) anode	A block of metal which provides protection by preferentially sacrificing itself instead of allowing the steel to corrode.
Gas meter	Mechanical device (usually) used to measure the volumetric flow rate of gas that passes the device. The volume of energy that passes through the meter is dependent on both gas pressure and temperature when the volume is measured
GDSC	Gas Distribution System Code
GFC	Gas and Fuel Corporation
GFCV	The Gas and Fuel Corporation of Victoria
GIS	Geographic Information System
GJ	Giga Joule, 1 Giga Joule = 1,000,000 Joules
GPC	Group Pressure Control
GPRS	General Packet Radio Services
GSC	Gas Safety Case
GSM	Global System for Mobile Communications
HDPE	High density polyethylene
HP	High pressure (140 to 515 kPa)
HP2	High pressure 2 (600 to 1050 kPa)
I&C	Industrial and Commercial
IEC EX	International Electrotechnical Commission System for certification to Standards Relating to Equipment for Use in Explosive Atmospheres
ILI	In line inspection
Interval meter site	Installation which is large enough (with respect to gas usage) to warrant the use of hourly metering data via a data logger of flow corrector.
IO	Input output



Term	Meaning
kPa	KiloPascals
L&G	Landis & Gyr – Meter manufacture and supplier to MGN
Large meter	Meter with capacity greater than $>10 \text{ sm}^3/\text{hr}$.
LP	Low pressure (1.4 to 7 kPa)
MAOP	Maximum allowable operating pressure
Meter family	A group of the same meter brand and type installed in the same calendar year.
Meter type	Refers to the technique employed to measure gas flow i.e. Rotary, Turbine, Diaphragm.
MG	Multinet Gas
MGN	Multinet Gas Networks
MHQ	Maximum Hourly Quantity
MIBB	Market Information Bulletin Board
MP	Medium pressure (35 to 210 kPa)
MPE	Maximum Permissible Error
NATA	National Association of Testing Authorities
NCC	Network Control Centre
Next AA period	July 2028 to June 2028
NGL	National Gas Law
NGR	National Gas Rules
NMI	National Measurement Institute
Non-reference Service	Non-standard services offered by MGN provided at fair and reasonable cost.
OEM	Original Equipment Manufacturer
OMSA	Operational and Management Services Agreement between MGN and Service Provider
Opex	Operating expenditure
PE	Polyethylene
PIG	Pipeline Inspection Gauge



Term	Meaning
PMC	Periodic meter change
PVC	Poly vinyl chloride
RAB	Regulated asset base
RF	Radio Frequency
RTU	Remote Telemetry/Terminal Unit
Sample testing program	Annual program whereby sample meters from each meter family population are tested as per AS/NZS 4944 to determine their on-going or extension to their in-service life in the field
SAP	An Enterprise Resource Planning tool which used recording asset data and maintenance management.
SCADA	Supervisory control and data acquisition
SEPP	State Environment Protection Policy
Shared assets	Shared network assets – for example, Mains in the street
SIOS	SCADA Input Output Schematic
sm³/hr	Standard cubic meters per hour (either Gas or Air).
Small meter	Meter with capacity less than 10 sm ³ /hr. Normally used for Residential (domestic) purposes.
SMS	Safety Management Study
Spot potential reading	A measurement of pipe-to-soil potential taken at a given location at a particular point in time. Such readings can be used to assess protection status where potentials do not vary with time. However, in circumstances where potentials fluctuate due to telluric or stray current influences, recordings of potential over a period of time (usually 24 hours) are necessary
Stray current electrolysis	Is the effect of stray currents on buried metallic structures
Tariff D	Tariff D applies to customers using greater than 10,000 GJ a year or more than 10 GJ MHQ.
Tariff L	Tariff L is open to customers who consume more than 1,000 GJ per annum or less than 10,000 GJ per annum and have an MHQ demand of less than 10 GJ per hour.
Tariff V	Applies to customers using less than 10,000 GJ a year and less than 10 GJ MHQ.
Test point	A conveniently located termination point for electrical cables connecting to a buried pipeline. This allows measurement of the pipeline potential, and is the principal method of assessing the effectiveness of corrosion protection. Test points are also required for coating quality surveys and electromagnetic coil surveys to investigate losses in protection



Term	Meaning
Thyristor drainage unit (TDU)	Electrical equipment, usually installed in tram or train substations, to provide sufficient negative voltage for drainage bonds to be effective. The output voltage of TDUs is normally controlled so as to vary in accord with substation load
נד	Terajoule
ТР	Transmission Pressure (Pressure Range: Above 1050 kPa)
UAFG	Unaccounted for gas
UPS	Unprotected steel
Variable conductance drainage bond (VCDB)	Electronic equipment used to control the current in a drainage bond. The output current of VCDBs is normally controlled to maintain a set level of protection on a structure
Victorian Electrolysis Committee (VEC)	The Victorian Electrolysis Committee comprises membership of all parties affected by or causing stray current electrolysis. It is responsible for co-ordination of testing and adjustment required to maintain effective protection from stray currents and to control interference between adjacent cathodic protection systems. It is also responsible for administration of cathodic protection permits and regulations under the authority of Energy Safe Victoria.