Multinet Gas Networks

Attachment 9.6

Unit Rates Report

Final Plan 2023/24 – 2027/28

July 2022

Multinet Gas Networks

Attachment 9.6

Unit Rates Report

MGN Final Plan July 2023 – June 2028

June 2022

Preparation record:

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Contents

Executive summary

This Unit Rates Report provides an overview of unit rates that underpin the capital expenditure (capex) we expect to incur during the next access arrangement (AA) period[1] for the following high volume and/or repeatable, ongoing works:

- Installation of new mains, services and meters for domestic and industrial and commercial (I&C) customers
- Domestic and I&C customer meter replacement
- Mains replacement and associated activities

The unit rates in this report are a key input into the Mains and Services Strategy (MG-SP-0009) and the Meter Strategy (MH-SP-007) (refer Attachments 9.7 and 9.8). Costs and unit rates for bespoke, less repeatable capital projects (for example installation of high-pressure steel mains or modifications to transmission pipelines) and other network or non-network activities (for example telemetry and IT) are presented in their individual strategies and business cases.

In preparation for the upcoming AA period, we have undertaken a comprehensive review of unit rates in collaboration with our operational service providers. This has allowed us to arrive at forecast unit rates on a reasonable basis, and deliver the best forecast possible in the circumstances.

The process has yielded clarity on unit rates, enabling us to put forward estimates that are likely to reflect prevailing market conditions over the coming years. For the most part, we consider history to be a reasonable predictor of the future, and have used the current benchmarks a starting point, escalating them accordingly to reflect the most recent changes to work practices and economic conditions. Generally, any change in forecast rates compared to current benchmarks is a direct result of the revealed costs experienced in the current AA period.

Notwithstanding this, the review has also identified areas where unit rates are subject to considerable volatility. For example, meter replacement unit rates are difficult to forecast with any certainty, due to a combination of variable economic conditions over time, and the diversity of asset types being replaced across an asset family. While every attempt is made to accurately forecast the range of meter types that form each program, the variety of factors such as meter size, type, location, access and complexity of installation means the actual unit rates achieved will necessarily vary from forecast, particularly for defective meter replacements.

During the period will aim to deliver capital works for lower than the forecast cost, and will seek to combine works and/or achieve efficiencies where practicable. The costs estimated in this Unit Rates Report are a forecast only, and only those efficient costs actually incurred will be added to the regulatory asset base and recovered via regulated tariffs.

The following table shows the movement in forecast unit rates between the current period benchmarks and those we estimate will be achieved during the next AA period. The new unit rates are forecast to take effect from July 2022.

[1] July 2023 to June 2028.

TableExecSumm 1: Summary of forecast unit rate changes from benchmark, $ real 2021

	Category	Rate for next AA period	Change from current AA benchmark
Growth capex			
Domestic connections	New mains	[redacted]	↑$52 (68%)
	New services	[redacted]	↑$578 (37%)
	New meters	[redacted]	↑$110 (94%)
I&C connections	New mains	[redacted]	↑$14 (3%)
	New services	[redacted]	↓$2,160 (47%)
	New meters	[redacted]	↑$3,956 (258%)
Meter replacement			
Time expired replacement	Domestic meters	$[redacted]/meter	↑$[redacted] (3%)
	I&C meters	$[redacted]/meter	↑$[redacted] (15%)
Field life extension testing	Domestic meters	$[redacted]/meter	↑$[redacted] (3%)
	I&C meters	$[redacted]/meter	↑$[redacted] (18%)
Defective meter replacement	Domestic meters	$[redacted]/meter	↓$[redacted] (1%)
	I&C meters	$[redacted]/meter	↑$[redacted] (32%)
Mains replacement			
Low pressure replacement		$[redacted]/m	↑$[redacted] (28%)
Medium pressure steel replacement		$[redacted]/m	↓$[redacted] (52%)
Early generation HDPE 250 replacement		$[redacted]/m	-
HDPE 575 – sampling and assessment		$[redacted]/sample	-
Services replacement			
Reactive services replacement		$[redacted]/service	↓[redacted] (5%)

As shown in the above table. Most categories of unit rates are trending upwards for the next AA period. This general rise in unit rates is common across Australian gas distribution businesses, with AGN Victoria & Albury experiencing similar uplifts in costs across the board.

Several factors are contributing to higher forecast unit rates, both at a micro and macro level. For example, the impact of the global pandemic on supply chain costs is expected to continue to place upward pressure on unit rates. As discussed in a December 2021 Australian Industry (AI) Group

survey[2], the COVID-19 pandemic exposed weaknesses in global and ultimately Australian supply chains. The increase in global demand for goods, lengthy lockdowns, global shipping containing shortage, reduction in shipping services and resulting scarcity of materials created supply chain chaos. According to the AI survey, given the disruptions in 2021, just over half (52%) of Australian businesses expected their ability to source inputs would continue to be disrupted in 2022.

As a natural gas network owner, MGN has not been immune to these supply chain impacts. We source many of our network components and electronics from overseas, and are competing with other major Australian construction businesses for constrained materials and resources. This has resulted in higher labour and material costs generally, causing actual unit rates to be higher than forecast. We expect this pressure to continue during the coming years as the global economy emerges from pandemic conditions.

More localised issues are also expected to impact unit rates over the next AA period. For example, the cost of conducting pipelaying works is expected to increase as additional administrative and safety standards (including access and permit requirements, third party approval processes, etc.) give rise to higher contractor costs. In recent years, local authorities have designated tree protection zones, which require the use of non-destructive excavation (for example, hydro or manual excavation as opposed to mechanical).

Road reinstatement specifications and traffic management specifications are also becoming more stringent. For example, we are now required to conduct full lane with profiling for roads under five years old. Specifications can also vary by local authority. This contributes to higher costs, although the impact of this on current unit rates has been masked to some extent by volatility in the mix of work completed.

A good example of where these local unit rate impacts play out is mains and services replacement. Unit rates for these works, which comprises the bulk of our workload, are derived on a project-by-project basis. Individual project costs reflect the relative density and therefore complexity of the replacement works. As we get closer to the end of the low pressure replacement program, we are moving into higher density areas with potentially more unknowns. Based on recent experience in the AGN Victoria and Albury network, these higher density areas are typically more complex, with more access constraints, and are therefore more costly on average compared to the program delivered in the current period. Taking all this into consideration, we are forecasting an average unit rate increase of 28% across the low pressure mains replacement program in the next AA period,

We have made every effort to derive accurate forecast unit rates across all the programs. Given the expected ongoing upward pressure as the global and Victorian economy emerges from pandemic conditions, the unit rates forecast for installing new domestic mains, services and meters in this Unit Rates Report are conservative.

Consistent with NGR 74, we submit that the forecast unit rates in this Unit Rates Report have been arrived at on a reasonable basis. They are informed by recent revealed costs of the work that will be undertaken over the next AA period and reflect the best estimate possible in the circumstances.

[2] https://www.aigroup.com.au/globalassets/news/reports/2021/supply_chains_state_of_play_dec2021.pdf

1 Introduction

1.1 Overview

This report explains the derivation of the unit rate forecasts that underpin the capex forecasts for the next AA period. We use unit rates to develop our capex forecasts for repeatable or high volume works such as mains and meter replacement and new customer connections, which together form the majority of our ongoing capital works program for the Multinet Gas Networks (MGN) Metro and South Gippsland natural gas distribution networks. To forecast our capex requirements, we multiply the unit rate for each type of work by the volume of work we forecast to undertake.

The capex categories and subcategories derived using this 'unit rate x volume' forecast approach are:

- Growth capex:
  - Domestic connections – Mains, services, and meters
  - I&C connections – Mains, services, and meters
- Meter replacement:
  - Time expired meter replacement – Domestic and I&C meters
  - Field life extension testing – Domestic and I&C meters
  - Defective meter replacement – Domestic and I&C meters
- Mains replacement:
  - Block low pressure replacement
  - Medium pressure steel mains replacement
  - Early generation HDPE 250 replacement
  - HDPE 575 sampling and testing

This document explains how MGN has derived the unit rates for each of the above capex categories.

1.2 Consistency of forecasts with AER's approved approach

When developing the unit rate forecasts, we have adopted the same forecasting approach accepted by the Australian Energy Regulator (AER) in our current AA period, as well as for other networks we own such as Australian Gas Networks (AGN) South Australia (regarding the five-year period beginning 1 July 2021). To estimate each unit rate, we use one of three methods:

1. **Current actuals**

We use the better of the two options to inform unit rates going forward:

- the current actual unit rate; or
- the most recent contracted rates.

We find that using current actuals is generally the most useful method of estimating forecasts costs, particularly where the work program is subject to ongoing changes and external factors that can impact costs. Rather than attempting to factor in all potential changes, we will use the most recent revealed costs as an efficient baseline, and then escalate/de-escalate from there where practicable.

We use the current actuals method where:

- the expenditure category involves high volumes of work; and
  - the work is subject to regular and ongoing changes in industry practices (e.g., from a safety or technical perspective);
  - the work can be subject to increasing requirements and administrative standards specified by third parties (other infrastructure owners); or
  - the work is affected by other factors that are expected to place upward pressure on unit rates over the next AA period.

Examples of works where the current actual provides the best forecast are periodic meter replacement and news connections.

2. **Weighted average of historical actuals**

We use a weighted average of historical actuals (by volume) to forecast unit rates where:

- the expenditure category involves lower volumes of work; and
- the scope and complexity of the work is subject to a high degree of variability, making it difficult to derive meaningful assumptions on the forecast mix of work to be carried out.

Examples of work where the weighted average historical actuals provide the best forecast are reactive service replacements where there is a large variety of different types of services that may fail during any particular year.

3. Bottom-up estimate

We use a bottom-up estimate where current or historical actuals are not available. For example, if this is a new type of works where no tender submissions have been made or no historical data recorded. We also use bottom-up estimates to validate unit rates estimated via the current actuals method in certain circumstances (for example, where there has been a material change in works practices in recent years).

We develop the bottom-up unit rates using informed management estimates and evidence from peers or advice from independent technical expert consultants, contractors or vendors where available.

All three methods outlined in this approach provide a reasonable basis for the forecast unit rates and represent the best forecast or estimate possible in the circumstances. Therefore, all forecast unit rates in this report meet the requirements of Rule 74 of the National Gas Rules (NGR 74).

Note we also apply the same estimation methods when developing cost estimates and unit rates for larger, more bespoke pieces of work such as installation of transmission pressure steel mains or network regulator stations and other network or non-network activities such as IT. The unit rates for discreet capex projects are provided in the individual strategies and business cases associated with each project, and are outside the scope of this Unit Rates Report.

1.3 Basis of costs

All costs presented in this report are direct (excluding overheads) unescalated costs expressed in real dollars of June 2021 unless otherwise stated.

1.4 Summary of unit rates

Table 1-1 presents the unit rates for our networks over the next AA period.

Table 1-1: Summary of forecast unit rates for July 2023 to 30 June 2028 ($ real 2021)

Category		Unit rate	Forecasting approach
Growth capex			
Domestic connections	New mains	$[redacted]/m	Current actuals – 2022 contract review
	New service	$[redacted]/service	Current actuals – 2022 contract review
	New meter	$[redacted]/meter	Current actuals – 2022 contract review
Commercial connections	New mains	$[redacted]/m	Current actuals – 2022 contract review
	New service	$[redacted]/service	Current actuals – 2022 contract review
	New meter	$[redacted]/meter	Current actuals – 2022 contract review
Meter replacement			
Time expired replacement	Domestic meters	$[redacted]/meter	Current actuals – 2022 contract review
	I&C meters	$[redacted]/meter	Current actuals – 2022 contract review
Field life extension testing	Domestic meters	$[redacted]/meter	Current actuals – 2022 contract review
	I&C meters	$[redacted]/meter	Current actuals – 2022 contract review
Defective meters	Domestic meters	$[redacted]/meter	Current actuals – 2022 contract review
	Commercial meters	$[redacted]/meter	Current actuals – 2022 contract review
Mains replacement			
Low pressure replacement		$[redacted]/m	Bottom-up estimate based on current actuals and independent estimation
Medium pressure steel replacement		$[redacted]/m	Bottom-up estimate based on current actuals and independent estimation
Early generation HDPE 250 replacement		$[redacted]/m	Bottom-up estimate based on current actuals and independent estimation
HDPE 575 – sampling and assessment		$[redacted]/sample	Bottom-up estimate
Service replacement			
Reactive services replacement		$[redacted]/service	Weighted average of historical actuals

The remaining sections in this report provide further detail on how these unit rates been derived.

1.5 Relevant contracts

MGN has one key contract in place to manage the overall operations of the network: the Operations and Maintenance Service Agreement (OMSA). In addition, MGN has a contestable panel that consists of four prequalified panel members for the remaining mains replacement works.

1.5.1 Operation and Maintenance Service Agreement

The scope of the OMSA contract includes:

- faults response;
- fault repair;
- planned maintenance;
- time expired meter replacement;
- augmentation projects;
- other authority projects, including Government initiated works;
- mains replacement;
- new services; and
- meter connections, including industrial and commercial meter set fabrication.

This contract commenced in 2013 following an open tender to the market where [redacted] and [redacted] were appointed to the southern and northern regions of MGN's network respectively. In 2017, a two-party tender was initiated between [redacted] and [redacted] and the decision was reached to remove [redacted] from the northern region and add [redacted] as a single service provider.

This provided savings on the duplication of overheads, and in turn is beneficial to our customers. The contract model is fully reimbursable with a capped pain share / gain share mechanism.

Target rates in the OMSA are renegotiated annually and require approval from MGN prior to engagement. The current contract has been extended to 30 June 2024, with an optional extension to 30 June 2027.

In preparation for the upcoming access arrangement a comprehensive review of unit rates has been undertaken in collaboration with the service providers in order to test that they have been arrived at on a reasonable basis and deliver the best forecast possible in the circumstances. The new unit rates take effect from July 2022.

1.5.2 Mains replacement contracts

The contestable panel was introduced to MGN in late 2017 via an open tender to the market. Prior to that, all mains replacement works were completed by the two OMSA service providers. A number of service providers were reviewed against set criteria, which included current performance, safety performance, safety systems, capability and pricing.

Five panelists were successful. In 2018, following the removal of [redacted] from the northern region, [redacted] ceased works in Victoria and pulled out from the panel, leaving MGN with four successfully performing members, [redacted] and [redacted]

The introduction of the panel has seen a significant improvement in mains replacement delivery and outperformance of the unit rate benchmarks in the current AA period. This has enabled us to

deliver a larger volume of mains replacement (around 638 km compared to 531 km) within the cost benchmarks set in the current AA period. This master agreement for the panel members was recently extended to 30 June 2023.

The tendering and contract awarding is scrutinised via our internal procurement processes. This includes consideration of how the new contractor rates compare with historical and present-day data, and whether market conditions are conducive to achieving a rate that reflects sustainable and efficient forward-looking costs.

Contractor rates can vary depending on the scope of works being conducted and the complexity of asset installations/replacements. MGN continually reviews and monitors contractor rates and performance to help ensure costs are reasonable and customers receive a quality service. The tendering cycle for the following year commences months in advance, providing the opportunity to award early and promote efficient resourcing.

2 Growth capex

2.1 Summary

Growth capex is required to establish new connections to the distribution network. This typically includes the installation of:

- new mains;
- the gas service pipe from the main to the meter;
- and the meter itself.

The connection of new customers is done through a series of unitised jobs, rather than by delivering a single consolidated project. Each customer connection comprises a series of unitised jobs delivered via MGN's OMSA.

Installing new mains, service and meters[3] to connect new domestic customers is high volume work, with over 6,500 new domestic customers forecast to connect each year in the next AA period. This work is subject to ongoing cost pressures and therefore the forecast unit rates for these works will be conservative.

Installing mains, services and meters to accommodate growth in I&C customers is lower volume work, with around 300 new I&C customers forecast to connect each year in the next AA period. I&C connections are subject to considerable variability and are driven by each customer's individual requirements. This makes it difficult to derive meaningful assumptions on the work mix expected in the next period. While we have used historical costs to estimate the forward-looking I&C unit rate, there will inevitably be some variance in unit costs achieved across the 300 new connections.

There are six forecast unit rates under the growth capex program. One of the unit rates is forecast to be lower in the next AA period than the current AA benchmark, while five are expected to be higher (see Table 2-1).

All rates have been derived from the most recent OMSA negotiations.

Table 2-1: Summary of growth capex unit rate changes from benchmark, $ real 2021

Category		Unit rate for next AA period	Change from current AA benchmark
Domestic connections	New mains	$[redacted]/m	↑$[redacted] (68%)
	New service	$[redacted]/service	↑$[redacted] (37%)
	New meter	$[redacted]/meter	↑$[redacted] (94%)
Commercial connections	New mains	$[redacted]/m	↑$[redacted] (3%)
	New service	$[redacted]/service	↓$[redacted] (47%)
	New meter	$[redacted]/meter	↑$[redacted] (258%)

[3] New estate, existing home, multiusers and domestic meters. Excluding I&C meters.

2.2 Factors impacting growth capex unit rates

Growth capex unit rates are informed by recently contracted rates for the same/similar works conducted during the current AA period, and reflect the best estimate possible in the circumstances.

While we have made every effort to derive accurate forecast unit rates, several factors are expected to place upward pressure on unit rates for growth capex activities over the next AA period. These are described below:

- The costs of carrying out work will increase over time as additional administrative and safety standards (including access and permit requirements, third party approval processes, etc.) give rise to higher contractor costs. For example, in recent years, local authorities have designated tree protection zones, which require the use of non-destructive excavation (for example, hydro or manual excavation as opposed to mechanical)
- Road reinstatement specifications and traffic management specifications are becoming more stringent. For example, we are now required to conduct full lane with profiling for roads under five years old. Specifications can also vary by local authority. This contributes to higher costs, although the impact of this cost pressure on current unit rates has been masked to some extent by volatility in the mix of work completed

Given the expected ongoing upward pressure on growth capex unit rates, the unit rates forecast for installing new domestic mains, services and meters in this Unit Rates Report are conservative. Consistent with NGR 74, the forecast unit rates for the growth capex activities have been arrived at on a reasonable basis.

2.3 Domestic connections

Domestic customers are defined as those "who use gas primarily for domestic purposes"[4], and are typically residential customers. As of December 2021, we had a little over 700,000 domestic connections, contributing 97.7% of our total customer base.

The most recent OMSA negotiations have been utilised to develop unit rates for mains, services and meters required to connect new domestic customers. The activity codes/work types, known as Maintenance Activity Type (MAT) codes, that apply to domestic connections are summarised in Table 2-2.

Table 2-2: OMSA activity codes – Domestic connections

Asset category	MAT code	Description	Rate card (Target cost)
Mains	CZA	New domestic subdivision mains extension	[redacted]
	CZB	Mains tie in – new domestic	[redacted]
	CGA	Existing domestic mains extension	[redacted]
	CGB	Mains tie in – existing domestic	[redacted]

[4] Definition from Gas Distribution System Code.

Service	CWD	New domestic service - complex	[redacted]
	CWE	Trunk service extension	[redacted]
	CWH	New service HP	[redacted]
	CWL	New service LP	[redacted]
	CWS	New service LP to HP standard	[redacted]
	CWT	New trunk service	[redacted]
Meters	CVS	Install gas meter <8m³	[redacted]
	GGA	Procure meters smaller or equal to 10[redacted]	[redacted]

The unit rates for installing mains, services and meters to accommodate domestic growth is outlined in the following sections.

2.3.1 Domestic new mains

Forecasting approach:	**Current contracted rates**

2.3.1.1 Nature of works and costs

This work involves installation of gas supply and reticulation mains within residential developments (greenfield) and mains extensions within established areas (brownfield). Typically, the cost of laying mains in greenfield sites is considerably lower than installing mains in brownfield sites. This is because with greenfield sites we are often excavating unsealed ground, plus there is usually less need for traffic management and customer notices advising of disruption. Greenfield developments can also offer the opportunity to use common trenches or install mains at the same time as other utility infrastructure.

A large portion of domestic (residential) developments are considered infill developments within our existing networks. Over the current AA period, 56% of growth-related mains installation (by length) has been within infill areas. Mains extensions within infill areas area shorter in length (compared to new estate developments), which require additional tie-ins to the existing network. The average infill mains extension during the current AA period was 59 m, compared to 234 m of new estate developments.

2.3.1.2 Historical and forecast unit rates

Table 2-3 sets out the actual unit rates incurred in laying mains over the current AA period and the forecast for the next AA period.

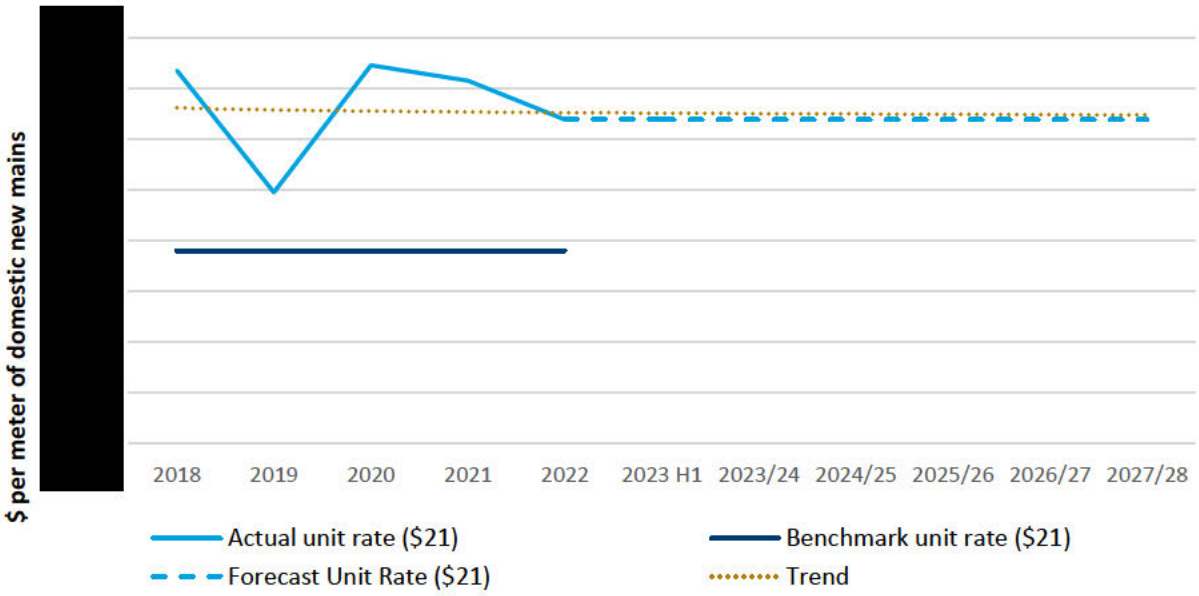
Table 2-3: New estate mains forecast unit rates, $ real 2021

	Current AA period					
	2018	2019	2020	2021	4-year average	Forecast for next AA period
Benchmark unit rate ($/metre)	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Actual unit rate ($/metre)	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

2.3.1.3 Comparison of historical rates with AER approved rates

Figure 2-1 shows actual unit rates achieved for new domestic mains within the current AA period, and the unit rate forecast for the coming AA period.

Figure 2-1: Domestic new mains unit rates, $ real 2021



The weighted average unit rate for domestic new mains was $[redacted]/m in the current period, compared to a benchmark rate of $[redacted]/m. The forecast unit rate for the next AA period is based on the current contracted rates for this work in 2022.

2.3.1.4 Are current costs efficient?

The current costs incurred reflect competitively tendered contractor costs. These rates are efficient as they have been determined through competitive market processes in line with our procurement processes. As we operate networks across Australia, we will compare to rates experienced in other jurisdictions where the work is sufficiently similar.

2.3.1.5 Forecast unit rates

The forecast unit rate for new mains (required for domestic connections) during the next AA period is $[redacted]/meter, which is 5% lower than the benchmark the AER approved in the current AA period, and 68% higher than the average actuals rates incurred in the current AA period.

The forecast unit rate is reflective of the most recent 2022 contracted unit rates, which has included a reprofiling of actual costs against project codes and additional soil testing requirements which have been introduced from 2021. As we do not have a lot of history for the actual costs of these additional requirements, we expect these rates to be conservative.

The mains unit rate is influenced by the expected ratio of greenfield versus brownfield connection works. The contract rate for the installation of new mains in infill areas ([redacted]) is circa three times the expected cost when compared to the new estates ([redacted]). This is due to the increased complexities of working in an established area, and the ability for dual / shared trenching in new estates. Similarly, the interconnection of new mains in new estates [redacted]) is streamlined compared to established areas [redacted]

We expect the mix of work (greenfield v brownfield) to remain broadly constant in the next period.

Refer to Table 2-4 for a breakdown historical work volume by MAT code, and the derivation of the main installations required for domestic connections.

Table 2-4: New mains – Domestic connection unit rate derivation, $ real 2021

MAT code	Work volume history					Rate card	Expenditure
	2018	2019	2020	2021	Average		
CZA	12,060	9,203	6,932	12,855	10,262	[redacted]	[redacted]
CZB	46	43	30	56	44	[redacted]	[redacted]
CGA	23,232	3,404	10,847	15,335	13,205	[redacted]	[redacted]
CGB	274	87	197	334	223	[redacted]	[redacted]
						Total cost	[redacted]
						Average length installed	[redacted]
						Unit rate ($/m)	[redacted]

2.3.2 New domestic services

Forecasting approach:	Current contracted rates

2.3.2.1 Nature of works and costs

This work involves the laying of services to new homes. A service is the dedicated consumer pipework from the main in the street to the above ground metering unit located at each connection.

In total, more than 8,000 domestic service are laid on the network each year. The majority (>80%) of these services are connected to the high-pressure network, followed by services on the LP network. This breakdown matches the pressure composition of our networks.

2.3.2.2 Historical and forecast unit rates

Table 2-5 sets out actual unit rates incurred in laying services over the current AA period and the forecast for the next AA period.

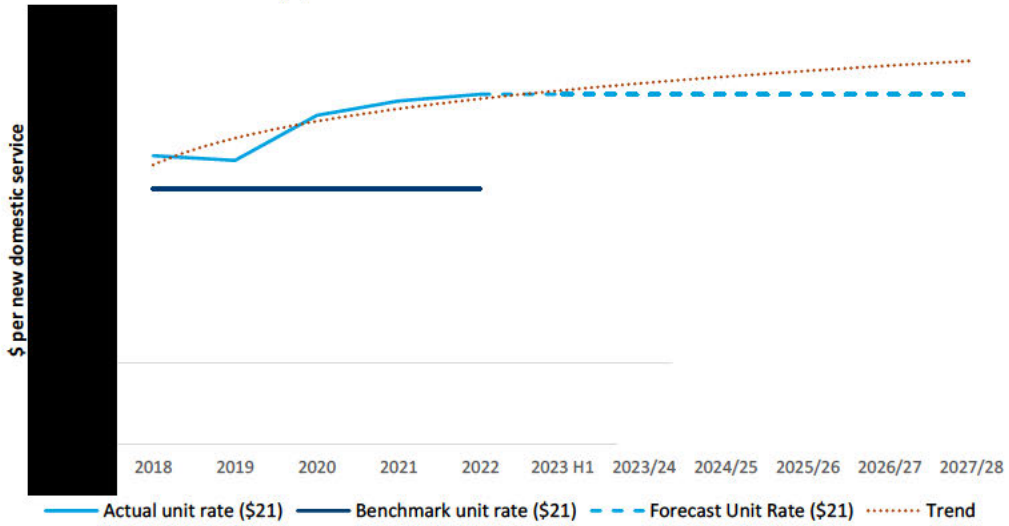
Table 2-5: New domestic services forecast unit rates, $ real 2021

	Current AA period					
	2018	2019	2020	2021	4-year average	Forecast for next AA period
Benchmark unit rate ($/service)	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Actual unit rate ($/service)	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

2.3.2.3 Comparison of historical rates with AER approved rates

The actual costs incurred to lay new domestic services has been above benchmark for each year of the current AA period, with an increasing trend in recent years.

Figure 2-2: New domestic services unit rates, $ real 2021



Compared to the flat benchmark rate for domestic services ( ) applied in the current AA period, actual unit rates averaged , which is 20% above the benchmark. In the most recent year of actual data (2021), we achieved a unit rate of for domestic services.

The forecast unit rate for the next AA period is based on the contracted rates for new domestic service work types in 2022. The forecast reflects the mix of standard and more complex connections undertaken over the past four years.

2.3.2.4 Are current costs efficient?

The current costs incurred reflect competitively tendered contractor costs. These rates are efficient as they have been determined through competitive market processes in line with our procurement processes. As we operate networks across Australia, we will compare to rates experienced in other jurisdictions where the work is sufficiently similar.

2.3.2.5 Forecast unit rates

The forecast unit rate for new domestic services during the next AA period is /service, which is 37% higher than the benchmark the AER approved in the current AA period. The forecast unit rate is aligned (within 2%) of actual rates achieved in 2021.

The forecast rate is based on the 2022 contracted rates for this work and is higher than historical levels due to additional soil testing requirements which have been introduced as part of the *Environment Protection Regulations 2021*. As we do not have an extensive history for the actual costs of these additional requirements, we expect these rates to be conservative.

Table 2-6 provides a breakdown of historical work volumes by MAT code and the derivation of the average service cost per domestic connection. As can be seen, the largest contributor to the weighted average unit rate is the installation of new services in the HP network (CWH) and LP network (CWS). The other work codes relate to non-standard service installations and trunk services.

Table 2-6: New Services – Domestic connection unit rate derivation, $ real 2021

MAT code	Work volume history					Rate card	Expenditure
	2018	2019	2020	2021	Average		
CWD	79	377	237	591	321	[redacted]	[redacted]
CWE	0	0	3	1	1	[redacted]	[redacted]
CWH	8,256	7,651	6,541	5,566	7,004	[redacted]	[redacted]
CWL	0	2	16	0	5	[redacted]	[redacted]
CWS	1,469	1,281	983	753	1,122	[redacted]	[redacted]
CWT	837	851	738	668	774	[redacted]	[redacted]
						Total cost	[redacted]
						Average gross connections	[redacted]
						Unit rate ($/service)	[redacted]

2.3.3 New domestic meters

Forecasting approach: **Current contracted rates**

2.3.3.1 Nature of works and costs

A meter is required at every connection off the distribution network. The volume of metering installations needed in the next AA period directly relates to the volume of expected connections, by connection type.

Installing domestic gas meters for new connections involves:

- procuring new meters and ancillary reequipment (isolation valve and pressure regulator), including quality control;
- planning and scheduling of meter installations;
- organising resources (combination of direct and contractor) to carry out the meter installation; and
- installing the new meter and carrying out a safety check and appliance commissioning.

This work is high volume and associated unit rates are relatively stable.

2.3.3.2 Historical and forecast unit rates

The table below sets out the actual unit rates incurred installing small gas meters for new domestic connections over the current AA period and the forecast for the next AA period.

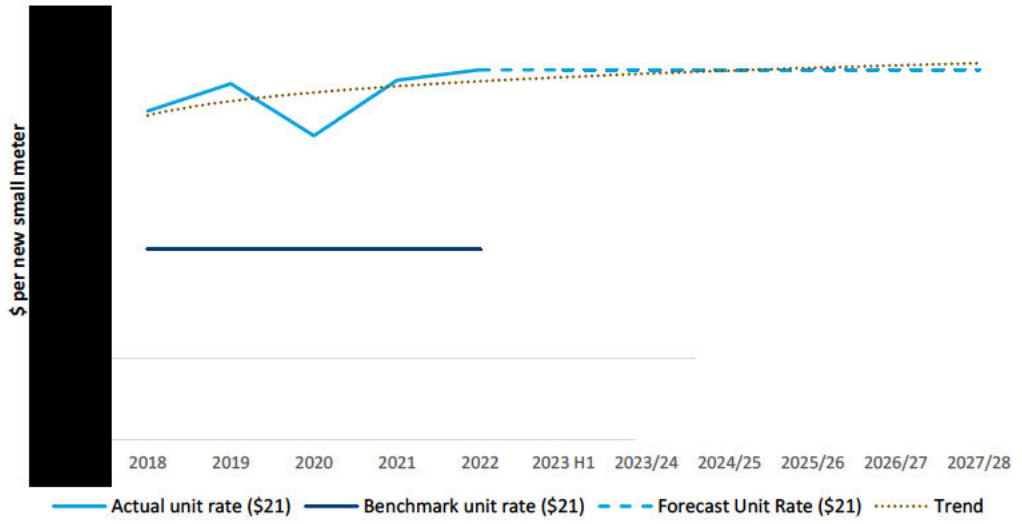
Table 2-7:New small meter forecast unit rates, $ real 2021

	Current AA period					
	2018	2019	2020	2021	4-year average	Forecast for next AA period
Benchmark unit rate ($/meter)	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Actual unit rate ($/meter)	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

2.3.3.3 Comparison of historical rates with AER approved rates

The actual costs of new domestic meter installations is summarised in Figure 2-3.

Figure 2-3: New small meter unit rates, $ real 2021



In every year the actual unit rates for new meter installations have been higher in the current AA period than the benchmark unit rates.

As part of the review of unit rates undertaken for this forecast, we found that the benchmark unit rate neglected to include the labour costs associated with the meter installation. This has been rectified in the forward forecasts.

The forecast for the next AA period is based on the contracted unit rates for 2022 for procuring new meters and installing new meters.

2.3.3.4 Are current costs efficient?

The current costs incurred reflect competitively tendered contractor costs. These rates are efficient as they have been determined through competitive market processes in line with our procurement processes. As we operate networks across Australia, we will compare to rates experienced in other jurisdictions where the work is sufficiently similar.

2.3.3.5 Forecast unit rates

The forecast unit rate for new small meters during the next AA period is [redacted] meter, which is 94% higher than the benchmark the AER approved in the current AA period and 10% higher than the weighted average actual costs incurred in the current AA period (but only 3% higher than the most recent actual costs in 2021). The forecast unit rate for new small meter installations is based on the current contracted rates for this work in 2022.

Table 2-8 provides a breakdown of historical work volumes by MAT code and the derivation of the average metering installation costs per domestic connection. Unit rates are derived from the cost of purchasing a new domestic meter (CWT) and field installation (CWD).

Table 2-8: New meters – Domestic connection unit rate derivation, $ real 2021

MAT code	Work volume history					Rate Card	Expenditure
	2018	2019	2020	2021	Average		
CWD	10,262	9,658	8,093	7,033	8,762	[redacted]	[redacted]
CWT[5]	10,262	9,658	8,093	7,033	8,762	[redacted]	[redacted]
						Total cost	[redacted]
						Average gross connections	[redacted]
						Unit rate ($/meter)	[redacted]

2.4 Industrial and commercial connections

I&C connections are those "who use gas primarily for non-domestic purposes"[6]. We have circa 16,200 I&C connections on the network, contributing 2.3% of the total customer base.

Consistent with our approach for domestic connections; the most recent OMSA negotiations have been utilised to develop unit rates for mains, services and meters required to connect new I&C connections.

The activity codes/work types that apply to commercial connections are summarised in Table 2-9.

Table 2-9: OMSA MAT codes – Commercial connections

Asset category	MAT code	Description	Rate card (Target cost)
Mains	CFA	I&C mains extension	[redacted]
	CFB	Mains tie in – I&C	[redacted]
Services	CWC	New service I&C and complex	[redacted]
Meters	CAB	Install regulator assembly – single run AL425 meter with Dival regulator	[redacted]
	CAC	Install regulator assembly – single run AL1000 meter with Dival/Reliance regulator	[redacted]
	CAD	Install regulator assembly – single run AL1400 meter with Dival/Reliance/Donkin regulator	[redacted]
	CAE	Install regulator assembly – single run AL2300 meter with Dival/Reliance/Donkin regulator	[redacted]
	CAF	Install regulator assembly – single run AL5000 meter with Dival/Reliance/Donkin regulator	[redacted]
	CAK	Install regulator assembly – dual run – low pressure – diaphragm meter (load up to 140 sm³/hr)	[redacted]

[5] Activity code GGA includes the procurement of all domestic (small) meters on the network. This is inclusive of time expired replacement, field life testing, defective meter replacement and new connections. Historical volumes have been reduced to match the volume of meter installs (CWD) as they represent gross new connections.

[6] Definition from Gas Distribution System Code.

Asset category	MAT code	Description	Rate card (Target cost)
	CAL	Install regulator assembly – dual run – low pressure – rotary meter (load up to 445 sm³/hr)	[redacted]
	CAN	Install regulator assembly – dual run – medium pressure – diaphragm meter (load up to 310 sm³/hr)	[redacted]
	CAO	Install regulator assembly – dual run – medium pressure – rotary/turbine meter (load up to 558 sm³/hr)	[redacted]
	CAP	Install regulator assembly – dual run – medium pressure – rotary/turbine meter – Fisher regulators (load up to 1,100 sm³/hr)	[redacted]
	CAQ	Install regulator assembly – dual run – high pressure – diaphragm meter – Reliance type regulators (load up to 300 sm³/hr)	[redacted]
	CAS	Install regulator assembly – dual run – high pressure – diaphragm meter – Rockwell/Dival type regulators (load up to 293 sm³/hr)	[redacted]
	CAT	Install regulator assembly – dual run – high pressure – diaphragm meter – Fisher 99/298 type regulators (load up to 450 sm³/hr)	[redacted]
	CAV	Install regulator assembly – dual run – high pressure – rotary meter – Reliance type regulators (load up to 337 sm³/hr)	[redacted]
	CAW	Install regulator assembly – dual run – high pressure – rotary meter – Fisher 99/298 type regulators (load up to 1,780 sm³/hr)	[redacted]
	CAY	Install regulator assembly – dual run – high pressure – turbine meter - Fisher 298 type regulators (load up to 2,835 sm³/hr)	[redacted]
	CAG	Install regulator assembly additional pipework for meter room – small installation	[redacted]
	CAH	Install regulator assembly additional pipework for meter room – medium installation	[redacted]
	CAJ	Install regulator assembly additional pipework for meter room – large installation	[redacted]
	CAZ	Install regulator assembly additional pipework for meter room – large complex installation	[redacted]
	CAM	Modification to regulator assembly	[redacted]
	CVL	Install gas meter >8 m³	[redacted]
	CVM	Install gas meter AL800	[redacted]
	CVN	Install gas meter AL1000 or greater	[redacted]
	GGE	Procure new/Repaired meters >10 sm³/hr (I&C;Large) +test-AL800	[redacted]
	GGG	Procure new/Repaired meters >10 sm³/hr (I&C;Large) +test-AL1400	[redacted]
	GGH	Procure new/Repaired meters >10 sm³/hr (I&C;Large) +test-AL2300	[redacted]
	GGL	Procure new/Repaired meters >10 sm³/hr (I&C;Large) +test-Var I&C	[redacted]
	GGB	Procure meters Gas >10 AL 425 HP	[redacted]
	GGK	Procure new/repaired meters >10 sm³/hr (I&C;Large) +test-Var I&C	[redacted]
	GGF	Procure meters gas >10 AL 1000	[redacted]

The cost of I&C customer mains is typically greater than laying domestic mains, as these developments often require higher pressure and larger diameter pipes.

There is also a high degree of variability in costs for industrial connections. This is because they tend to be site and customer specific, meaning the cost of these jobs can vary depending on the complexity of the work involved.

Unit rates incurred when installing a new meter for industrial connections differs depending on the type and size of meter installed. The unit rates include the cost of the meter, fabrication of the meter regulating unit and the costs associated with the installation.

2.4.1 I&C new mains

Forecasting approach: **Current contracted rates**

2.4.1.1 Nature of works and costs

This work involves the laying of new mains to the boundaries of commercial premises consuming less than 10 TJ of gas per annum.[7]

It typically comprises the installation of larger reticulation mains, typically ≤125mm polyethylene mains. The work is lower volume and subject to a high degree of inter-year variability because the scope and complexity of work can vary from small diameter extensions in low density urban areas to high volume large distribution network extensions in high density areas.

2.4.1.2 Historical and forecast unit rates

Table 2-10 sets out actual unit rates incurred in laying new mains for commercial customers over the current AA period and the forecast for the next AA period.

Table 2-10: I&C new mains forecast unit rates, $ real 2021

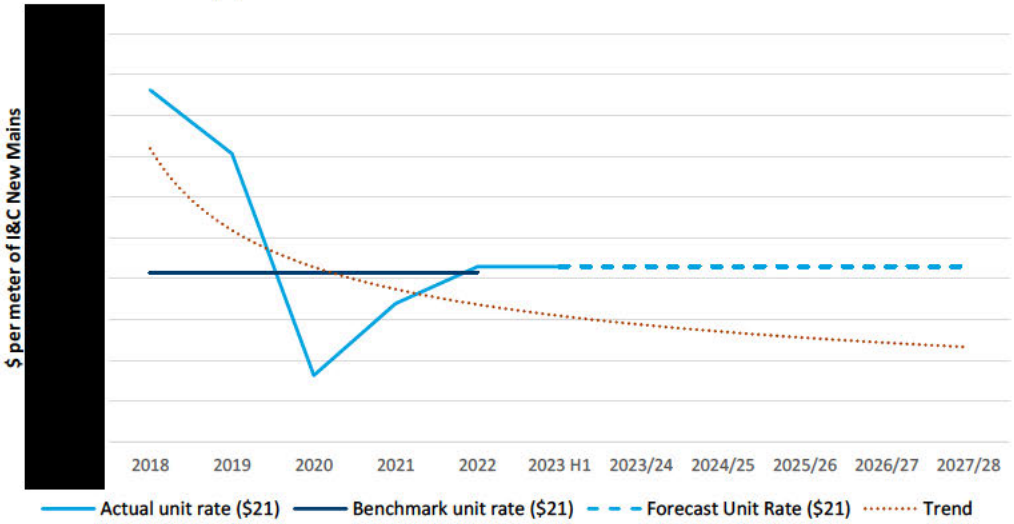
	Current AA reriod					
	2018	2019	2020	2021	4-year average	Forecast for next AA period
Benchmark unit rate ($/metre)	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Actual unit rate ($/metre)	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	

2.4.1.3 Comparison of historical rates with AER approved rates

The actual costs of new I&C mains have varied around the benchmark rates in the current AA period, reflective of the variability we typically see in this type of work.

[7] Note that no unit rates are used in respect of forecasting capex for Demand consumers (>10 TJ) because the frequency of connection of such consumers is low and the work is not of a generic nature.

Figure 2-4: I&C mew mains unit rates, $ real 2021



Although the rate has had intra year variability, the average unit rate within the current AA period is [redacted]/m, compared to the AA benchmark of [redacted]/m.

Forecast unit rates are based on contracted rates in 2022. Of note, new soil testing requirements came into effect in 2021, which have increase unit rates for all work which requires excavation of soil. As we have not had a full year of actuals with these requirements in place, we expect the forecast rates to be conservative.

2.4.1.4 Are current costs efficient?

The current costs incurred reflect competitively tendered contractor costs. These rates are efficient as they have been determined through competitive market processes in line with our procurement processes. As we operate networks across Australia, we will compare to rates experienced in other jurisdictions where the work is sufficiently similar.

2.4.1.5 Forecast unit rates

The forecast unit rate for new I&C mains during the next AA period is [redacted]/m, which is 3% higher than the benchmark the AER approved in the current AA period, and consistent (1% lower) with the average actual rates incurred over the current AA period.

Table 2-11 provides a breakdown of historical work volumes by MAT code and the derivation of the average mains installation costs per commercial connection. Unit rates are derived from the cost of laying new mains (CFA) and tying them into the existing network (CFB).

Table 2-11: New Meters – Domestic connection unit rate derivation, $real 2021

MAT code	Work volume history					Rate card	Expenditure
	2018	2019	2020	2021	Average		
CFA	983	2,947	3,537	2,752	2,555	[redacted]	[redacted]
CFB	33	47	36	31	37	[redacted]	[redacted]
						Total cost	[redacted]
						Average length installed	[redacted]
						Unit rate ($/meter)	[redacted]

2.4.2 New I&C services

Forecasting approach:	Current contracted rates

2.4.2.1 Nature of works and costs

This work involves the laying of services for commercial premises that consume less than 10TJ of gas per year. It is lower volume work and subject to a high degree of variation because the scope and complexity of work is site and customer specific. Projects can vary from small diameter basic commercial connections in suburban streets to complex industrial connections along VicRoads or within high-density, inner-city areas.

The costs of the metering facility (including regulator set-up) is contained in unit rate for metering.

2.4.2.2 Historical and forecast unit rates

Table 2-12 sets out actual unit rates incurred laying services at I&C premises over the current AA period and the forecast for the next AA period.

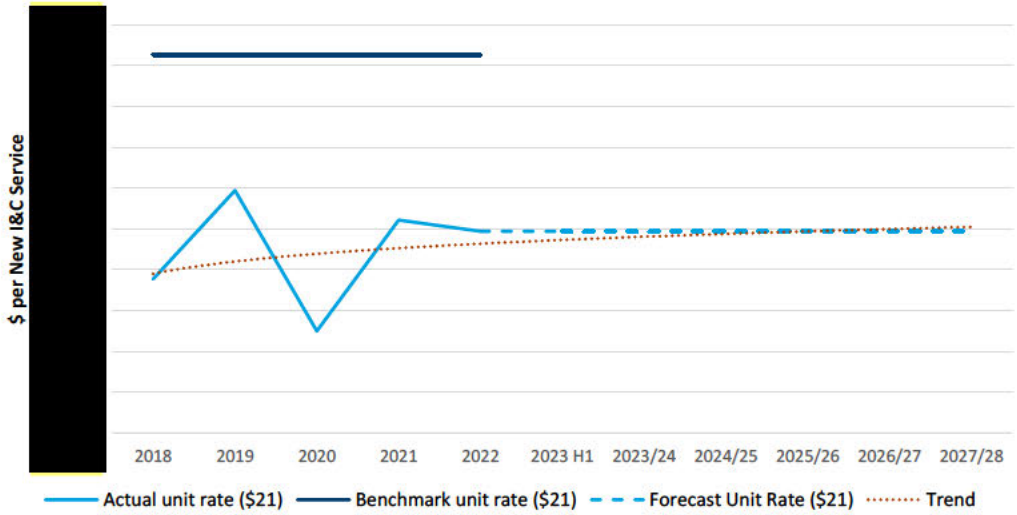
Table 2-12: New I&C Services forecast unit rates, $ real 2021

	Current AA period					
	2018	2019	2020	2021	4-year average	Forecast for next AA period
Benchmark unit rate ($/service)	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Actual unit rate ($/service)	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	

2.4.2.3 Comparison of historical rates with AER approved rates

The actual rates for new I&C services incurred in the current AA period have been much lower than the AER benchmark rates.

Figure 2-5: New I&C services unit rates, $ real 2021



There has been variability across years, as is expected with the type of work involved in installing new I&C services, with actual rates in all years significantly below the benchmark rates in the current AA period.

The in-depth review as part of the preparations for the upcoming AA we revealed that we utilised a single contracted rate for the installation of commercial service (CWC) on the network. This was taken as the benchmark for the current AA period.

Unlike domestic services, the assumption of one service for every connection does not hold for commercial installations. In the commercial context, it is common for multiple connections (meters) to be linked to a single service, which means there is one-to-many relationship to for service connections. Over the current period there were 1.9 commercial meter types for every commercial service installed. This was the primary reason for unit rate outperformance in the current period. However, this has been rectified going forward and the forecast unit rates in the next AA period are based on current contracted rates and are consistent with the average actual rates incurred in the current AA period.

2.4.2.4 Are current costs efficient?

The current costs incurred reflect competitively tendered contractor costs. These rates are efficient as they have been determined through competitive market processes in line with our procurement processes. As we operate networks across Australia, we will compare to rates experienced in other jurisdictions where the work is sufficiently similar.

2.4.2.5 Forecast unit rates

The forecast unit rate for new I&C services during the next AA period is [redacted]/service, which is 47% lower than the benchmark the AER approved in the current AA period, and 15% higher than the weighted average actual costs incurred over the current AA period.

The forecast rate is based on the 2022 contracted rates for this work and is slightly higher than historic rates due to additional soil testing requirements which have been introduced from 2021. Table 2-13 provides a breakdown of historical work volumes by MAT code and the derivation of the average service installation costs per commercial connection.

Table 2-13: New meters – Domestic connection unit rate derivation, $ real 2021

MAT code	Work volume history					Rate card	Expenditure
	2018	2019	2020	2021	Average		
CWC	299	400	425	177	325	[redacted]	[redacted]
						Total cost	[redacted]
						Average gross connections	[redacted]
						Unit rate ($/service/connection)	[redacted]

2.4.3 New I&C meters

Forecasting approach: Current contracted actuals

2.4.3.1 Nature of works and costs

A meter is required at every connection off the distribution network. The volume of metering installations forecast for the next AA period directly relates to the volume of expected connections, by connection type.

Installing gas meters for new commercial meters involves:

- procuring new meters, including quality control;
- fabrication of meter and regulator sets;
- planning and scheduling of meter installations;
- organising resources (combination of direct and contractor) to carry out the meter installation; and
- installing the new meter and carrying out any relevant safety checks.

The work is lower volume and subject to a significant degree of volatility because the scope of work can differ from year to year depending on the number and size of the I&C meters that need to be connected. The nature and complexity of work poses a challenge, particularly with the limited access and high installation cost around high-density areas.

2.4.3.2 Historical and forecast unit rates

Table 2-14 sets out the actual unit rates incurred when connecting I&C meters over the current AA period and the forecast for the next AA period.

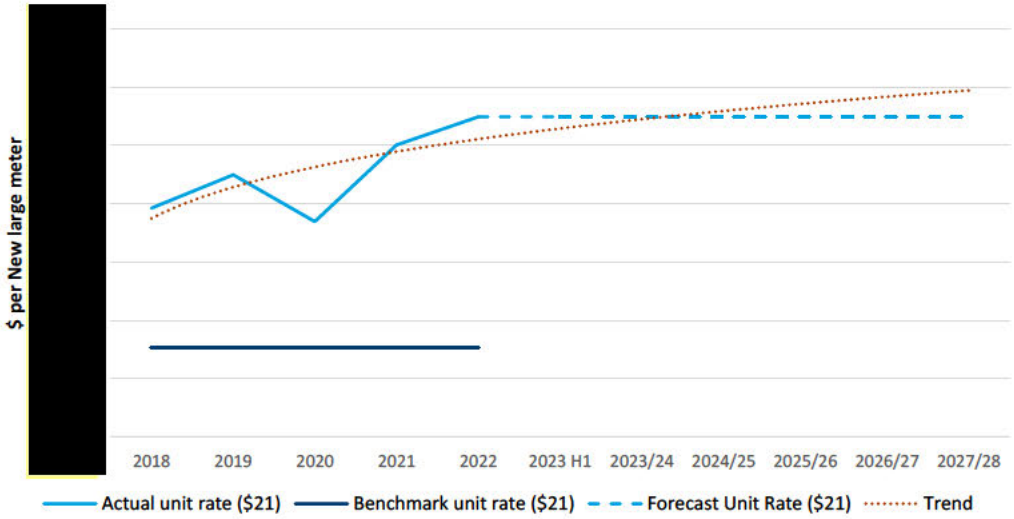
Table 2-14: New large meters forecast unit rates, $ real 2021

	Current AA period					
	2018	2019	2020	2021	4-year average	Forecast for next AA period
Benchmark unit rate ($/meters)	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Actual unit rate ($/meter)	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

2.4.3.3 Comparison of historical rates with AER approved rates

The actual cost of new large meter installations has been higher than the benchmark rates in all years in the current AA period.

Figure 2-6: New large meters unit rate (<10TJ) unit rates, $ real 2021



As part of the review conducted to inform unit rates for the next AA period, we found that the benchmark unit rate neglected to include the labour costs associated with the meter installation, this has been rectified in the forward forecasts.

The forecast for the next AA period is based on the contracted unit rates for 2022 for procuring new large meters and installing new large meters.

2.4.3.4 Are current costs efficient?

The current costs incurred reflect competitively tendered contractor costs. These rates are efficient as they have been determined through competitive market processes in line with our procurement processes. As we operate networks across Australia, we will compare to rates experienced in other jurisdictions where the work is sufficiently similar.

2.4.3.5 Forecast unit rates

The forecast unit rate for new commercial meters during the next AA period is [redacted]/meter, which is 258% higher than the benchmark the AER approved in the current AA period, and 30% higher than the weighted average actual costs incurred in the current AA period (but 10% higher than the most recent actual costs in 2021). The forecast unit rate for new large meter installations is based on the current contracted rates for this type of work in 2022 (and the actual mix of meter types and sizes in connection completed over recent years).

This approach is appropriate for new commercial large meters as the work involves lower volumes which are subject to a high degree of variability. The complexity of each project is site/customer specific, making it difficult to derive meaningful assumptions on the work mix over the next AA period.

Table 2-15 provides a breakdown of historical work volumes by MAT code and the derivation of the average meter costs per commercial connection.

Table 2-15: New meters – I&C connection unit rate derivation, $ real 2021[8]

MAT code	Work volume history					Rate card	expenditure
	2018	2019	2020	2021	Average		
CAB	2	1	12	2	4	[redacted]	[redacted]
CAC	27	15	22	15	20	[redacted]	[redacted]
CAD	4	8	20	5	9	[redacted]	[redacted]
CAE	12	6	74	7	25	[redacted]	[redacted]
CAF	7	3	9	2	5	[redacted]	[redacted]
CAL	0	0	1	0	0	[redacted]	[redacted]
CAO	0	1	1	1	1	[redacted]	[redacted]
CAP	0	0	1	0	0	[redacted]	[redacted]
CAQ	6	5	2	1	4	[redacted]	[redacted]
CAV	5	13	24	23	16	[redacted]	[redacted]
CAW	5	4	5	2	4	[redacted]	[redacted]
CAM	3	0	2	1	2	[redacted]	[redacted]
CVL	305	258	309	231	276	[redacted]	[redacted]
CVM	208	231	267	151	214	[redacted]	[redacted]
CVN	104	127	157	171	140	[redacted]	[redacted]
GGE	264	355	426	293	335	[redacted]	[redacted]
GGG	5	5	11	2	6	[redacted]	[redacted]
GGH	0	4	1	2	2	[redacted]	[redacted]
GGL	9	-5	0	1	1	[redacted]	[redacted]
GGB	568	397	644	461	518	[redacted]	[redacted]
GGK	5	14	47	16	21	[redacted]	[redacted]
GGF	380	107	271	1	190	[redacted]	[redacted]
						Total cost	[redacted]
						Average gross connections	[redacted]
						Unit rate ($/meter)	[redacted]

[8] Shown forecast table excludes MAT Codes CAK, CAN, CAS, CAT, CAY, CAG, CAH, CAJ, CAZ as each have not been used within the 2017 – 2021 historical period and are excluded from the unit rate derivation for the next period.

3 Meter replacement

3.1 Summary

Under the Victorian Gas Distribution System Code, MGN is required to provide an appropriate metering installation at each supply point (i.e., connection) off the network. We are required to periodically maintain these installations, replace meters when their field life has expired, and provide periodic metering information to retailers for billing purposes.

MGN has more than 700,000 meters in operation on the network. This is broken down into small meters, large meters and custody transfer meters (CTM).

A small gas meter is one with a capacity less than 10 sm^3/hr. Approximately 96% of our installed meters are small meters, typically supplying residents and small businesses.

Large meters have capacity greater than 10 sm^3/hr. They comprise approximately 4.0% (~30,000) of our meter population. Large meters are typically used to supply gas to industrial and commercial customers.

In maintaining our meter fleet, we undertake the following capital programs:

- **Time expired meter replacement** – the periodic replacement of meters at the end of the in-service compliance periods
- **Field life testing** – sample testing of meter families nearing the end of their in-service compliance periods as per the requirement of AS-4944
- **Defective meter replacement** – the replacement of meters that have failed during operation

Further details on these programs are contained within our Metering Strategy.

Our meter replacement programs are delivered through the OMSA. All labour associated with meter replacement is captured under an opex activity code and therefore only the procurement costs for new meters are included in the unit rates for the next AA period.

The unit rates we incur when replacing meters differ depending on the type of meter being replaced (industrial and commercial or domestic application). All small meters will be replaced with a new meter rather than refurbished meters as prices for the two are now similar (i.e., we are finding less and less domestic meter families which are able to be refurbished economically). Large meters will continue to be refurbished depending on the success of FLE testing.

The activity codes/work types that can apply when undertaking meter replacements are presented in the following table.

Table 3-1: OMSA MAT codes – Meter procurement

Asset category	MAT Code	Description	Rate card (Target cost)
Domestic	GGA	Procure meters gas smaller or equal to 10 [redacted]	[redacted]
I&C	GGB	Procure meters gas >10 [redacted]	[redacted]
	GGE	Procure new/Repaired meters >10 sm³/hr (I&C;Large) [redacted]	[redacted]
	GGF	Procure meters gas >10 [redacted]	[redacted]
	GGG	Procure new/repaired Meters >10 sm³/hr (I&C;Large) [redacted]	[redacted]
	GGH	Procure new/repaired Meters >10 sm³/hr (I&C;Large) [redacted]	[redacted]
	GGK	Procure new/repaired Meters >10 sm³/hr (I&C;Large) [redacted]	[redacted]
	GGL	Procure new/repaired Meters >10 sm³/hr (I&C;Large) [redacted]	[redacted]

At the highest level, the unit rate for replacing domestic meters is forecast to be similar in the next AA period compared with the approved benchmark in the current AA period. We continue to apply the unit rate for the procurement of a new meter (≤ sm^3 – GGA) for all domestic meter replacement programs.

The unit rates for the I&C programs have been applied to the forecast mix of meter to be replaced in the I&C replacement programs, which is more volatile and changes from year to year as well as period to period.

For the time expired and FLE program, this is a known breakdown of meter types / families. For the defective meter program, this is the assumed average cost of a meter replacement based on full fleet of I&C meters within the network. The commercial meter unit rate is forecast to be higher than that achieved over the current AA period.

Table 3-2: Meter replacement – Unit rate summary, $ real 2021

Meter replacement unit rate		Weighted average rate for next AA period	Change from current AA benchmark
Time expired replacement	Domestic meters	[redacted]	↑$[redacted] (3%)
	I&C meters	[redacted]	↑[redacted] (15%)
Field life extension testing	Domestic meters	[redacted]	↑[redacted] (3%)
	I&C meters	[redacted]	↑[redacted] (18%)
Defective meter replacement	Domestic meters	[redacted]	↓[redacted] (1%)
	I&C meters	[redacted]	↑[redacted] (32%)

Each of the programs underpinning the cumulative unit rates are outlined in the following sections.

3.2 Time expired meter replacement

The time expired meter replacement program involves the periodic replacement of meters at the end of the in-service compliance periods. We maintain annual time expired meter replacement programs for domestic and I&C meters.

3.2.1 Time expired meter replacement – Domestic meters

Forecasting approach: **Current contracted rates**

3.2.1.1 Nature of works and costs

The replacement of domestic meters over the next AA period is required to ensure meters remain fit for purpose by accurately measuring gas usage within the accuracy limits as defined by Australian Standard AS/NZS 4944 and the Victorian Gas Distribution Code.

Meters at the end of the deemed in-service compliance periods are to be replaced. For our domestic meter fleet, the scale of this annual program is influenced by the outcomes of our FLE program.

All labour associated with meter replacement is captured under an opex activity code and therefore only the procurement costs for new meters are included in the unit rates for the next AA period.

3.2.1.2 Historical and forecast unit rates

Table 3-3 sets out actual unit rates incurred in replacing domestic small gas meters over the current AA period and the forecast for the next AA period.

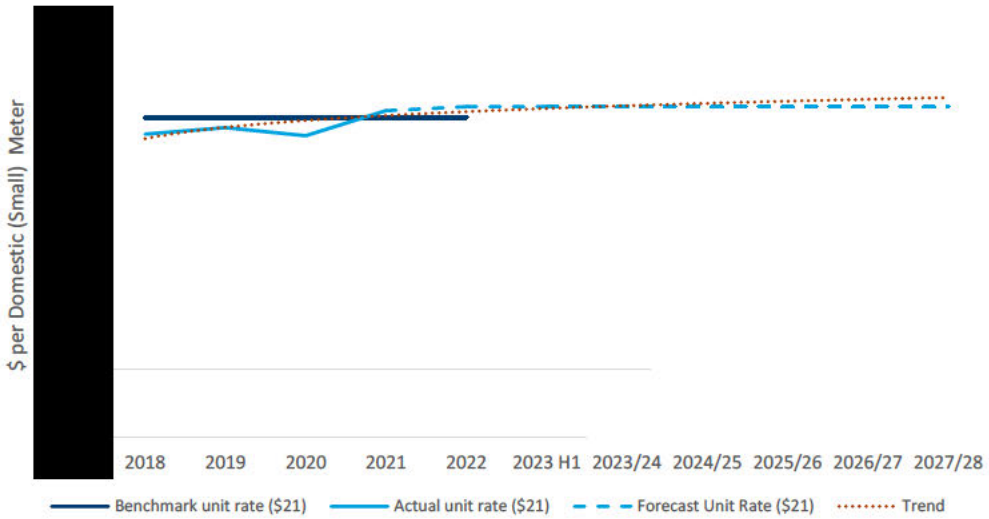
Table 3-3: Meters ≤ 25 sm³ (Domestic) meter replacement forecast unit rates, $ real 2021

	Current AA period					
	2018	2019	2020	2021	4-year average	Forecast for next AA period
Benchmark unit rate ($/meter)	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Actual unit rate ($/meter)	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

3.2.1.3 Comparison of historical rates with AER approved rates

Figure 3-1 shows the actual unit rates for domestic time expired meter replacement were consistent, although slightly below, benchmarks for the current AA period.

Figure 3-1: Domestic (small) meter replacement unit rates, $ real 2021



Forecast unit rates are based on contracted rates in 2022 for procurement of new domestic meters. These forecast rates are in line with the benchmark rates set for the current AA period.

3.2.1.4 Are current costs efficient?

The current costs incurred reflect competitively tendered contractor costs. These rates are efficient as they have been determined through competitive market processes in line with our procurement processes. As we operate networks across Australia, we will compare to rates experienced in other jurisdictions where the work is sufficiently similar.

3.2.1.5 Forecast unit rates

The forecast unit rate for procuring new domestic small meters during the next AA period is [redacted]/meter, which is 3% higher than the benchmark the AER approved in the current AA period.

The forecast unit rate for procuring new domestic (small) meters is based on the current contracted rates in 2022.

3.2.2 Time expired meter replacement – I&C meters

Forecasting approach: **Current contracted rates**

3.2.2.1 Nature of works and costs

The replacement of I&C (large) meters over the next AA period is required to ensure meters remain fit for purpose by accurately measuring gas usage within the accuracy limits as defined by Australian Standard AS/NZS 4944 and the Gas Distribution System Code.

The time expired meter replacement program for commercial meters is smaller when compared to the domestic (small) meter program. It is subject to a significant degree of volatility because the scope of work can differ depending on the mix of sizes of the commercial meters that need to be replaced within each year.

For this program, we know which meter types are falling due for time expired replacement over the next AA period based on when they were installed (for meters not subject to FLE testing) and therefore we can use this to inform the mix of contracted unit rates across different meter types and sizes.

3.2.2.2 Historical and forecast unit rates

Table 3-4 sets out actual unit rates incurred in replacing domestic small gas meters over the current AA period and the forecast for the next AA period.

Table 3-4: Meters >10 sm³ (Commercial) meter replacement forecast unit rates, $ real 2021

	Current AA period					
	2018	2019	2020	2021	4-year average	Forecast for next AA period
Benchmark unit rate ($/meter)	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Actual unit rate ($/meter)	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

3.2.2.3 Comparison of historical rates with AER approved rates

Actual unit rates for time expired meter replacement averaged [redacted]/meter in the current period, which is 35% below the benchmark. The unit rate for this program is heavily impacted by the volume and type of meters requiring replacement in the period.

The forecast unit rate for the next AA period is based on the contracted for the purchase of new meters, based on the forecast composition of meter to be replaced per year in the next AA period.

3.2.2.4 Are current costs efficient?

The current costs incurred reflect competitively tendered contractor costs. These rates are efficient as they have been determined through competitive market processes in line with our procurement processes. As we operate networks across Australia, we will compare to rates experienced in other jurisdictions where the work is sufficiently similar.

3.2.2.5 Forecast unit rates

Our Metering Strategy provides a forecast of I&C meters to be replaced during the next AA period.

Based on experience, most [redacted] I&C meters will continue to be refurbished in the next AA period. I&C meter refurbishment costs are captured under an opex activity code and therefore only the procurement costs for new meters are included in the unit rates for the next AA period.

For the meters that cannot be refurbished, the forecast unit rate for procuring a new commercial (large) meter, based on the current contracted rates in 2022, is used for like-for-like replacement meters.

As shown in Table 3-5, a total of 6,251 commercial meters will require replacement in the coming AA period, requiring the purchase of [redacted] new meters at an average cost of [redacted]

Table 3-5: Meters ≤ 25 sm³ meter replacement forecast unit rates, $ real 2021

	2023/24	2024/25	2025/26	2026/27	2027/28	Total
Forecast meters	714	1,034	1,523	1,665	1,317	**6,251**
- Repairable meter types (10% to be replaced)	[redacted]					
- Repairable meter types (30% to be replaced)	[redacted]					
New meter purchases	[redacted]					
Unit rate ($/meter)	[redacted]					

3.3 Field life extension

We undertake field life extension (FLE) testing on selected diaphragm meter families nearing the end of their service lives. The program is also known as in-service compliance testing.

FLE testing is undertaken in accordance with the requirements of AS/NZS 4944:2006 and is required to extend the in-service compliance period of a meter family beyond its initial period (typically 15 years). Subject to accuracy and leak testing, a meter family may be extended for an additional five, three or one year.

The results of annual FLE testing informs the scope of the time expired meter replacement program for the subsequent year.

3.3.1 FLE – Domestic meters

Forecasting approach: **Current contracted rates**

3.3.1.1 Nature of works and costs

We have over 700,000 domestic meters within our fleet. All are of diaphragm type and meet the requirement for FLE testing as per the requirements of AS/NZS 4944.

FLE testing is undertaken on a meter family where it is deemed economical to do so.

3.3.1.2 Historical and forecast unit rates

Table 3-6 sets out actual unit rates incurred in conducting FLE testing of domestic (small) gas meters over the current AA period and the forecast for the next AA period.

[redacted]

Table 3-6: FLE – Domestic meter replacement forecast unit rates, $ real 2021

	Current AA Period					
	2018	2019	2020	2021	4-Year Average	Forecast for Next AA Period
Benchmark unit rate ($/meter)	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Actual unit rate ($/meter)	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	

3.3.1.3 Comparison of historical rates with AER approved rates

Unit cost allocations for domestic meter purchases are applied equally across all replacement programs – i.e., time expired, FLE and defective replacements. As such, the benchmark unit rate and actual unit rate for domestic meter replacement remains common across programs.

3.3.1.4 Are current costs efficient?

The current costs incurred reflect competitively tendered contractor costs. These rates are efficient as they have been determined through competitive market processes in line with our procurement processes. As we operate networks across Australia, we will compare to rates experienced in other jurisdictions where the work is sufficiently similar.

3.3.1.5 Forecast unit rates

The forecast unit rate for procuring new domestic small meters during the next AA period is [redacted]/meter, which is 3% higher than the benchmark the AER approved in the current AA period.

The forecast unit rate for procuring new domestic (small) meters is based on the current contracted rates in the OMSA.

3.3.2 FLE – I&C meters

Forecasting approach: **Current contracted rates**

3.3.2.1 Nature of works and costs

Our FLE programs extend to qualifying commercial meter families, as per the requirement of AS/NZS 4944:2006. Turbine and rotary meter types do not qualify for FLE testing and are replaced at the end of their in-service compliance periods.

The weighted average unit rate for this program is depended on the meters forecast for FLE testing in each year, and their ability to be economically refurbished. Meter refurbishment costs and installation labour are captured under an opex activity codes and therefore only the procurement costs for new meters are included in the unit rates for the next AA period.

3.3.2.2 Historical and forecast unit rates

Table 3-7 sets out actual unit rates incurred in conducting FLE testing of commercial (large) gas meters over the current AA period and the forecast for the next AA period.

Table 3-7: FLE I&C meter replacement forecast unit rates, $ real 2021

	Current AA period					
	2018	2019	2020	2021	4-year average	Forecast for next AA period
Benchmark unit rate ($/meter)	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Actual unit rate ($/meter)	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	

Note: Totals may not add due to rounding.

3.3.2.3 Comparison of historical rates with AER approved rates

Actual unit rates for FLE averaged [redacted]/meter in the current period, which is 18% above the benchmark. The unit rate for this program is heavily impacted by the volume and type of meters within the FLE program each year.

The forecast unit rate for the next AA period is based on the contract for the purchase of new meters, based on the forecast composition of meters to be included in the FLE program each year.

3.3.2.4 Are current costs efficient?

The current costs incurred reflect competitively tendered contractor costs. These rates are efficient as they have been determined through competitive market processes in line with our procurement processes. As we operate networks across Australia, we will compare to rates experienced in other jurisdictions where the work is sufficiently similar.

3.3.2.5 Forecast unit rates

Our Metering Strategy provides a forecast of commercial meters to be included in our FLE program for the next AA period.

Based on experience, most ([redacted]) commercial meters will continue to be refurbished in the next AA period. This includes all meters within our forecast FLE program. Meter refurbishment costs and installation labour are captured under an opex activity codes and therefore only the procurement costs for new meters are included in the unit rates for the next AA period.

For the meters that cannot be refurbished (10%), the forecast unit rate for procuring a new (like-for-like) meter is based on the current contracted rates in the OMSA.

As summarised in Table 3-8, a total of 1,236 commercial meters are included in our FLE program forecast for the coming AA period, requiring the purchase of [redacted] new meters at an average cost of [redacted]

Table 3-8: Meters ≤ 25 sm³ FLE forecast unit rates, $ real 2021

	2023/24	2024/25	2025/26	2026/27	2027/28	Total
Forecast meters	393	375	240	130	99	**1,236**
- Repairable meter types (10% to be replaced)	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
- Repairable meter types (30% to be replaced)	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	
New meter purchases	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Unit rate ($/meter)	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

[redacted]

3.4 Defective meter replacement

Leakage, inaccuracy, damage, excess noise and seizure are all failure methods for gas meters. Meter faults are predominantly identified by the public with meters replaced following an investigation.

Meters that have failed in operation are replaced with a like-for-like meter.

3.4.1 Defective meter replacement – Domestic Meters

Forecasting approach: Current contracted rates

3.4.1.1 Nature of works and costs

Our domestic metering population is considered very reliable with stable failure rates of close approximately [redacted] per annum of our domestic (small) meter fleet. Leaking meters and third-party damage are the two leading causes of defective meter removals for both small and large meter types.

3.4.1.2 Historical and forecast unit rates

Table 3-9 sets out actual unit rates incurred in replacing defective domestic gas meters over the current AA period and the forecast for the next AA period.

Table 3-9: Defective meter replacement forecast unit rates - Domestic, $ real 2021

	Current AA Period					
	2018	2019	2020	2021	4-Year Average	Forecast for Next AA Period
Benchmark unit rate ($/meter)	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Actual unit rate ($/meter)	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	

3.4.1.3 Comparison of historical rates with AER approved rates

Unit cost allocations for domestic meter purchases are applied equally across all replacement programs – i.e., time expired, FLE and defective replacements.

As such, actual unit rate for domestic meter replacement remains common across all programs.

3.4.1.4 Are current costs efficient?

The current costs incurred reflect competitively tendered contractor costs. These rates are efficient as they have been determined through competitive market processes in line with our procurement processes. As we operate networks across Australia, we will compare to rates experienced in other jurisdictions where the work is sufficiently similar.

3.4.1.5 Forecast unit rates

The forecast unit rate for procuring new domestic small meters during the next AA period is [redacted]/meter, which is 1% lower than the benchmark the AER approved in the current AA period. The forecast unit rate for procuring new domestic (small) meters is based on the current contracted rates in the OMSA.

3.4.2 Defective meter replacement – I&C meters

Forecasting approach: **Current contracted rates**

3.4.2.1 Nature of works and costs

Our metering population is considered very reliable with stable failure rates of approximately [redacted] of our commercial (large) meter fleet experienced each year. Leaking meters and third-party damage are the two leading causes of defective meter removals for both small and large meter types.

Meters are replaced in the field when identified as defective. Depending on the nature of the defect, meters can be refurbished and reused in the field. A [redacted] refurbish rate is applied to forecast new meter costs for failed meters.

3.4.2.2 Historical and forecast unit rates

Table 3-10 sets out actual unit rates incurred in replacing defective commercial gas meters over the current AA period and the forecast for the next AA period.

Table 3-10: Defective meter replacement forecast unit rates – I&C, $ real 2021

	Current AA period					
	2018	2019	2020	2021	4-year average	Forecast for next AA period
Benchmark unit rate ($/meter)	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Actual unit rate ($/meter)	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	

Actual unit rates for FLE averaged [redacted]/meter in the current period, which is 1% below the benchmark. The unit rate for this program is heavily impacted by the volume and type of meters that fail in operations.

3.4.2.3 Are current costs efficient?

The current costs incurred reflect competitively tendered contractor costs. These rates are efficient as they have been determined through competitive market processes in line with our procurement processes. As we operate networks across Australia, we will compare to rates experienced in other jurisdictions where the work is sufficiently similar.

3.4.2.4 Forecast unit rates

Our Metering Strategy (MG-SP-0007) provides a forecast of defective I&C meters to be replaced in the next AA period.

Based on experience, due to the nature of the meter defect, approximately half of meter will not be suitable for refurbishment flowing a deflect. It is our preference to refurbish meters where possible as this provides the lowest ongoing cost of providing the metering installation. Meter refurbishment costs and installation labour are captured under an opex activity codes and therefore only the procurement costs for new meters are included in the unit rates for the next AA period.

The forecast unit rate for procuring a new (like-for-like) meter is based on the current contracted rates in the OMSA. The unit rate for defective commercial meters has been derived from the weighted average replacement cost of all commercial meters maintained on our network.

As shown in Table 3-11 we forecast 858 commercial meters to be identified as defective in the coming AA period, requiring the purchase of [redacted] new meters at an average cost of $1,851.

Table 3-11: Defective meter replacement forecast unit rates I&C, $ real 2021

	2023/24	2024/25	2025/26	2026/27	2027/28	Total
Forecast meters	32,766	34266	35,766	37,266	38,766	-
Forecast defective meters [redacted] of Fleet)	157	164	172	179	186	858
New meter purchases	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Unit rate ($/meter)	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

4 Mains replacement

4.1 Summary

The unit rate we incur when carrying out mains replacement and related activities varies depending on the category of mains and location. Categories and location of mains are detailed in the Mains and Services Strategy (refer Attachment 9.7).

There are five overarching unit rate categories for mains replacement activities in the next AA period. These are summarised in Table 4-1.

Table 4-1: Mains replacement unit rate and mains and services strategy categories

	Unit rate for next AA period	Change from current AA benchmark
Low pressure mains replacement	[redacted]	↑$[redacted] (28%)
Medium pressure steel mains replacement	[redacted]	↓$[redacted] (52%)
Early generation HDPE 250 replacement	[redacted]	N/A
HDPE 575 – sampling and assessment	[redacted]	N/A

Low pressure mains replacement varies across work packages depending on the density of connections, presence of other services, traffic control and reinstatement requirements.

To ensure we have taken all reasonable measures to determine the forecast cost of each low pressure main replacement project, which ultimately rolls up to the entire program, we have derived unit rates for each and every postcode that we are planning to construct new mains in. The unit rates for each specific postcode have been determined by recently tendered works in the area, leveraging the four companies on the tendering panel, or by deriving the forecast from actual unit rates in that postcode.

The medium pressure steel mains replacement program to be carried out in the next AA is a relatively lower volume work compared to the low-pressure mains replacement. This is a targeted program in the [redacted] area to address a poorly constructed area of steel mains where cathodic protection systems are no longer effective in preventing corrosion. Work on this replacement started in the current AA period and the costs of this have been used as a basis for forecast unit rates in the next AA period.

The earliest generation HDPE replacement program is a relatively new program for the next AA period. However, we are completing a package of this work in 2022 and the actual tendered rates for this work have informed the forecast rates for this program over the next AA period.

In this report we have presented the average unit rates across each of the planned programs. More detail on the bottom-up build, by work package (and postcode) for these planned mains replacement activities can be found in the Mains and Services Strategy.

HDPE 575 sampling and assessment is a new program in the next AA period that we are undertaking in conjunction with [redacted] the other distribution networks to determine better understand the condition and failure modes of these mains, and use that information to inform ongoing asset management approaches to this asset class.

The reactive mains replacement program is ongoing in nature, required to replace mains when repair is not possible or cost efficient.

4.1.1 Factors impacting mains replacement unit rates

While we have made every effort to derive accurate forecast unit rates, several factors are expected to place upward pressure on the unit rates for mains replacement activities over the next AA period. These are summarised below.

- As we get closer to the end of the low-pressure replacement program we are moving into more complex, higher density areas with potentially more unknowns
- New regulations introduced with the *Environment Protection Regulations 2021* which require soil testing when any excavations are undertaken
- The unit rate will come under pressure due to increasing materials and labour costs currently being experienced across Australia in the wake of the COVID-19 pandemic

Consistent with NGR 74, the forecast unit rates for mains replacement and associated activities have been arrived at on a reasonable basis, reflect the best estimate of the work that will be undertaken over the next AA period and represent the best forecast possible in the circumstances.

4.2 Low pressure mains replacement

Forecasting Approach:	**Bottom up estimate using a mixture of tendered rates, actual rates & density factor comparisons by postcode**

4.2.1 Nature of works and costs

We have an established performance of replacing our low-pressure mains and services to modern high pressure polyethylene. The focus of the replacement program is heavily deteriorated cast iron and unprotected steel mains which have exceeded their service life. Polyethylene mains, installed through insertion methods are predominantly used to upgrade the low-pressure networks to high pressure.

This program involves the delivery of large scale and complex replacement projects. In addition to mains, each project includes the replacement of individual customer services, service risers and associated meter sets rebuilds.

The following sections provide a high-level snapshot of the average unit rates achieved and forecast across all work packages under the low-pressure replacement program. The detailed makeup of the program and forecast unit rates for each of the work packages under the program are outlined in the Mains and Services Strategy.

4.2.2 Historical and forecast unit rates

Table 4-2 sets out the average actual unit rates that have been incurred over the current AA period and the forecast that has been assumed for the next AA period.

Table 4-2: Low pressure mains replacement unit rates, $ real 2021

	Current AA period					
	2018	2019	2020	2021	4-year average	Forecast for next AA period
Benchmark unit rate ($/m)	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Actual unit rate ($/m)	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

4.2.3 Comparison of historical rates with AER approved rates

The actual rates incurred for low pressure mains replacement in the current AA period have been below the benchmark in every year. We were able to achieve favourable rates in the current AA period through the introduction of the contestable panel, which proved successful in reducing unit rates and exceeding volume targets for the current period.

4.2.4 Are current costs efficient?

The current costs incurred reflect competitively tendered contractor costs. These rates are efficient as they have been determined through competitive market processes in line with our procurement processes. As we operate networks across Australia, we will compare to rates experienced in other jurisdictions where the work is sufficiently similar.

4.2.5 Forecast unit rates

The forecast average unit rate for low pressure mains replacement during the next AA period is [redacted]/meter, which is 28% higher than the benchmark the AER approved in the current AA period, and 71% above the actual unit rate achieved in the current AA period.

The increase in unit rates is reflective of general cost pressures in construction, however we are now moving to more costly postcodes that are higher density and more complex in nature. The diligence on each postcode has been completed and the overall unit rate is an outcome of combining all the projects during the upcoming AA period.

To promote efficient delivery of the low pressure mains replacement program, we are targeting projects by postcode area. The costs of conducting works in different parts of the network can vary depending on network configuration, soil type, urban density and accessibility. Scheduling the low pressure mains replacement plan allows us to identify a unit rate for each postcode, which improves the accuracy of our expenditure forecasts.

To determine postcode unit rates, we use four methods, in order of preference as follows:

- Tender process – where practical we issue a contestable capital panel tender request to our approved service providers. We use this method where the works are sufficiently well defined to enable us to approach our service providers to provide a firm quotation and we intend to proceed with the successful tender.

- Historical rates – where the tender process is not practical, we rely on actual historical rates where we have previously undertaken work in the postcode.
- Street walks – where we have not previously undertaken works, we reviewed the new areas with a combination of street walks, data identification, similar density areas and project specific identification.
- Density – we undertake postcode density correlation to establish unit rates in similar postcodes based on actual historical rates.

Our Mains and Services Strategy provides a breakdown of the method (or combination or methods) used to determine the unit rates for each postcode where mains replacement is forecast for the next AA period.

The unit rate for mains replacement includes an allowance for planned services replacements associated with the packages of work (in addition to the mains replacements). The costs of these services works are included in the unit rates and are estimated using the same methodologies.

Our approach is consistent with the forecasting approach applied and approved for the current AA period. The outperformance on unit rates in the current AA period was a result of the step change in our contracting arrangements for mains replacement works and therefore we do not consider this to be repeatable in the next AA period. As we are entering the final stages of the mains replacement program, we move to harder and higher density areas which impact the per unit rate of replacement.

We also note these rates are likely to be conservative as we have not been able to reflect a large amount of actual cost information for complying with new environmental regulations.

4.3 Medium pressure steel mains replacement program

Forecasting approach:	**Bottom-up estimate based on current actuals and independent estimation**

4.3.1 Nature of works and costs

The [redacted] steel replacement program is necessary to address a poorly constructed area of steel mains where cathodic protection systems are also no longer effective in preventing corrosion.

This program will replace two isolated aged steel networks. One is a medium pressure network which is surrounded by higher pressure networks and fed by a single field regulator. The other is a custom single fed network that operates at 140 kpa

The program and projects within have been designed around a block replacement methodology, whereby two discrete sections totalling approximately 30.6 km of medium pressure is replaced/upgraded with the resulting mains operated at high pressure.

This program has been priced using blended main laying unit rate, an uprating unit rate, and a grid main unit rate. These rates have been established with reference to independent estimator pricing (by [redacted], tender prices of similar projects and analysis of grid main (125PE) pricing for past renewal works.

4.3.2 Historical and forecast unit rates

Table 4-3 sets out the actual unit rates that have been incurred over the current AA period and the forecast that has been assumed for the next AA period.

The quoted unit rates relate to medium pressure replacement works in the current period. The focus of this program was the replacement of cast iron and unprotected steel mains that are beyond their useful life. This is the highest risk cast iron mains in the network.

Table 4-3: Medium pressure mains replacement unit rates, $ real 2021

	Current AA period					
	2018	2019	2020	2021	Average	Forecast for next AA period
Benchmark unit rate ($/m)	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Actual unit rate ($/m)	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

4.3.3 Comparison of historical rates with AER approved rates

The historical unit rates achieved for medium pressure replacement is contained in Table 4-3. Due to the timing of decommissioning works within each project and year, the costs allocated per project and the reported annual lengths can vary significantly[11].

For the first four years of the current AA, we undertook 30.8 km of medium pressure replacement at an average rate of [redacted]/m. This was significantly below the approved unit rate of $875/m.

We are drawing on the knowledge gained in replacing medium pressure mains in the current period to help inform forecast unit rates for the next AA period.

4.3.4 Are current costs efficient?

The current costs incurred reflect competitively tendered contractor and material costs. These rates are efficient as they have been determined through competitive market processes in line with our procurement processes. As we operate networks across Australia, we will compare to rates experienced in other jurisdictions where the work is sufficiently similar.

4.3.5 Forecast unit rates

The forecast unit rate for low pressure mains replacement during the next AA period is [redacted]/meter, which is 52% lower than the benchmark the AER approved in the current AA period.

The project has been designed around a block replacement methodology, whereby two discrete sections totalling approximately 30.6 km of medium pressure is replaced/upgraded with the resulting mains operated at high pressure.

[11] The per meter cost of decommissioning work is significantly cheaper when compared to installing new mains. Decommissioning works are typically performance at the end of a project following the installation of new mains. A large volume of decommissioned mains can result at the end of a project.

This program has been priced using blended main laying unit rate, an uprating unit rate, and a grid main unit rate. Including the grid mains, this averages to be a unit rate of $424/m across the entire program. These rates have been established with reference to independent estimator pricing (by [redacted]), tender prices of similar projects and analysis of grid main (125PE) pricing for past renewal works.

4.4 Early generation HDPE 250 replacement

Forecasting approach:	**Bottom-up estimate based on current actuals and independent estimation**

4.4.1 Nature of works and costs

Early generation polyethylene mains were installed in our network before 1980. These mains experience slow crack growth and are the highest risk polyethylene mains installed in the network.

This program will abandon 86.1 km mains in [redacted], with the focus to replace our medium pressure earliest generation polyethylene mains.

The program and projects within have been designed around a block replacement methodology, whereby five discrete projects will be delivered in the AA period. The resulting mains will operate at high pressure.

4.4.2 Forecast unit rates

The forecast unit rate for HDPE mains replacement during the next AA period is $[redacted]/meter.

This program has been priced using blended main laying unit rate, an uprating unit rate, and a grid main unit rate that has been established with reference to a tendered price for a comparable project, and two independent estimator pricing undertaken by [redacted]. Mains insertion is not possible for these projects.

4.5 HDPE 575 mains sampling and testing

Forecasting Approach:	**Bottom-up estimate**

4.5.1 Nature of works and costs

This work involves taking HDPE 575 mains samples for laboratory testing to develop an end-of-life model for these mains and asset management strategy. The sampling will be prioritised within and across asset categories is required to inform and support work program planning. The prioritisation of HDPE mains is developed by disaggregating the HDPE 575 mains population based on:

- age, operating pressure and diameter;
- leak history by segment; and

- a deterioration factor for mains over 30 years.

As discussed in our Mains and Services Strategy, we will take [redacted] vintage HDPE samples from throughout MGN's network for laboratory testing to determine remaining life for the material of these mains and develop asset management strategy for future management programs.

The unit rate for this sampling activity has been based on bottom-up estimate methodology supported by data from operational leak repairs and quotations for testing.

The HDPE 575 mains sampling and testing program is considered operational expenditure.

4.5.2 Forecast unit rates

In the next AA period, the total program cost for the HDPE sampling and testing program is estimated to $[redacted], which translated to an average unit rate of [redacted] per HDPE sample.

The forecast has been calculated having regard to the following factors:

- One third of the [redacted] (Total of [redacted] – shared with other distribution networks)
- 4 x HDPE camera purchases @ [redacted]
- 100 x pipe sample retrievals @ [redacted] each

Estimates are based on our experience in carrying out such works for similar projects as this work has not been completed in our network previously. Program forecasts are set out in the Table 4-4.

Table 4-4: Vintage HDPE mains sampling and testing program forecast unit rates, $ real 2021

Items	Inputs	Total expenditure
One third of the [redacted]	[redacted] / 3	[redacted]
HDPE camera purchases	4 cameras @ $[redacted] in total	[redacted]
Sample retrievals	100 Samples @ $[redacted]	[redacted]
Total		[redacted]

[redacted]

5 Services replacement

A service is a dedicated network asset comprising of a service pipe, fittings and metallic upstand with ball valve, which can be used to isolate customer supply in the event of an emergency. There are over 700,000 inlet services connecting mains (typically located in the street) to customer meters located at each network user.

5.1 Reactive services replacement

Forecasting approach: **Weighted average of historical actuals**

5.1.1 Nature of works and costs

Reactive services replacement program provides for an allocation of capital expenditure to allow for the piecemeal replacement of services. These minor works result when reactive maintenance (i.e., repairing mains leaks, service leaks, or water ingress issues) is deemed unsafe or inefficient; considering the deteriorated condition of the asset which limits the effectiveness to repair the fault. The optimum long-term solution to manage the risk associated with leaks in services is to replace the service with polyethylene in a compliant location.

The proposed reactive services replacement program for the next AA period is based on the historical average expenditure on replacements over the past three years (2019-21). The program excludes service replacement associated with the planned mains replacement programs. It also excludes third party damages, and customer-initiated works.

5.1.2 Historical and forecast unit rates

Table 5-1 sets out the actual unit rates that have been incurred over the current AA period and the forecast that has been assumed for the next AA period.

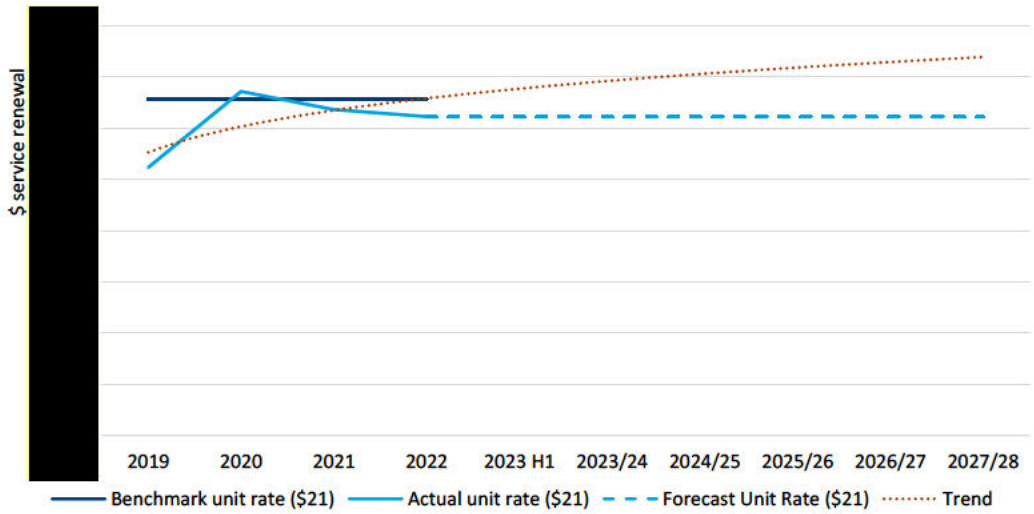
Table 5-1: Reactive services replacement forecast unit rate, $ real 2021

	Current AA period				Forecast for next AA period
	2019	2020	2021	3-Year average	
Benchmark unit rate	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Actual unit rate	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

5.1.3 Comparison of historical rates with AER approved rates

Figure 5-1 below sets out the actual unit rates for jobs that have been delivered since 2018 and form the basis for the forecast assumed for the next AA period.

Figure 5-1: Reactive service replacement forecast unit rates, $ real 2021



The average unit rate for service replacement work is dependent on the types of renewals completed within a year. The average unit rate for service replacement was fairly aligned with the current AA benchmark.

5.1.4 Are current costs efficient?

The current costs incurred reflect competitively tendered contractor costs. These rates are efficient as they have been determined through competitive market processes in line with our procurement processes.

5.1.5 Forecast unit rates

The forecast average unit rate for reactive services renewals during the next AA period is [redacted]/service, which is 5% lower than the benchmark the AER approved in the current AA period. This unit rate aligns to the three-year average rate achieved from 2019 to 2021.