Oakley Greenwood

Assessment of Prudency and Efficiency

prepared for:
Multinet Gas

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Executive Summary

Objective of this Report

Multinet Gas **(MG)** expects to overspend the AER's capital expenditure allowance in two capex categories in the current regulatory control period (being 2013 to 2017). These categories are:

- Mains replacement capex; and
- Connections capex.

MG has engaged Oakley Greenwood (**OGW**) to provide an independent opinion as to the prudency and efficiency of MG's actual capital expenditure for the above two categories of capex, in the context of the requirements of the National Gas Rules (**Rules**), in particular Rule 79.

Excluded from our scope of work is any examination of:

- Governance arrangements, as these are the subject of a separate review;
- Volumes of work; and
- Forecast capex for the forthcoming period.

Findings – Customer Connections

In our opinion, MG's expenditure on customer connections is consistent with the prudency requirements reflected in Rule 79. We base this opinion on the fact that MG's customer initiated capital works are customer driven, and undertaken subject to the present value of the expected incremental revenue being generated exceeding the present value of that capital expenditure (and where this is not the case, a connection charge is imposed to overcome this shortfall). This screening mechanisms aligns with the requirements of Rule 79 (subsection 2), in that it ensures that the overall economic value of the expenditure is positive.

Furthermore, in our opinion, MG's outturn unit rates for connections are likely to be consistent with those that would be incurred by a prudent service provider acting efficiently, in accordance with accepted good industry practice, to achieve the lowest sustainable cost of providing services – which accords with Rule 79. Our basis for this statement includes:

- The contracts underpinning the rates were competitively tendered, which, everything else being equal, should lead to the market revealing the efficient cost of supply,
- The approach for revising those rates over the life of the contract is, in our opinion, reasonable, and likely to reflect a robust means for applying competitive tension to the annual process for deriving new unit rates,
- MG's outturn unit rates for its industrial/commercial customers – even after including its Tariff D customers - are still well below the rates the AER approved as being efficient as part of the last GAAR determination process for AGN and AusNet Services' Tariff V customers, and
- MG's outturn unit rates for its residential customers are comparable, if not lower, than the rates the AER approved as being efficient for the other Victorian distribution businesses as part of the las GAAR process.

Findings – Mains Replacement

In our opinion, MG's expenditure on mains replacement is consistent with the prudency requirements reflected in Rule 79 (subsection 2), as MG's mains replacement program is undertaken to (a) maintain the integrity of services, (b) maintain and improve safety or services; and/or (c) comply with a regulatory obligation or requirement, all of which are limbs under Rule 79.

Furthermore, in our opinion, the mains replacement capital expenditure incurred by MG over the current regulatory control period is likely to be consistent with that of a prudent and efficient service provider, and therefore, consistent with Rule 79. We base this opinion on our view that:

- MG undertook a competitive tendering process for the provision of services for operational, maintenance and capital work, including mains replacement services. As part of the last GAAR process, the AER also came to the conclusion that this process was competitive.
- The process for generating competitive tension under the current contracting arrangements throughout the current regulatory period is reasonable, and likely to incentivise efficient outcomes. In particular, even though:
  - Work was allocated to the Service Providers based on the geographic area they covered during the period July 2013 to June 2015, the ability to engage an independent estimator to review target cost estimates for construction projects is likely to provide an appropriate constraint on Service Providers' cost estimates (as well as being consistent with good industry practise); and
  - There was a requirement for MG to tender one project to each Service Provider from July 2015 onwards, all other projects were tendered to both Service Providers, thereby creating competitive tension between the two Service Providers. Furthermore, in our opinion, providing a baseload level of work to each Service Provider (i.e., one project) is likely to have been efficient, as this base load level of work provides the means for Service Providers to "resource up" and thus become more robust bidders for the remainder of the projects let.
- The underlying contracting structure results in the contractor and MG sharing in any gain or loss relative to budget, which should incentivise the contractor to adopt the least cost means of undertaking mains replacement services, given the conditions faced.
- The evidence indicates that budgets set through the contractual process for mains replacement projects are not systemically too high (resulting in Service Providers benefiting systemically from over-estimating budgets) or too low (resulting in Service Providers being penalised systemically, which may indicate inappropriate risk sharing).
- We compared the cost of the two sample mains replacement projects with the cost allowed for by the AER in its decisions on Mains Replacement Event Cost Pass Through applications from MG, AGN and AusNet Services and found that the derived unit rates for the sample projects were at the low end of the derived unit rates approved by the AER.

1. Introduction

1.1. Background

Multinet Gas **(MG)** distributes natural gas to around 690,000 customers throughout Melbourne's inner and outer east, the Yarra Ranges and South Gippsland. Its network (164 kilometres of transmission pressure pipelines and 9,866 kilometres of distribution mains) transports gas from the high-pressure transmission network operated by APA GasNet to residential, commercial and industrial customers[1].

Under the Rules, MG is required to submit an access arrangement proposal for the 2018 to 2022 period to the Australian Energy Regulator (**AER**) by 31 December 2016. The Access Arrangement is required to describe the terms and conditions on which MG will provide access to its Distribution System.

The Rules[2] require that MG includes capex over the earlier access arrangement period (being 2013 to 2017) in its Access Arrangement Information (**AAI**). Rule 79 sets out the "new capex criteria" for assessing whether capex is "conforming" and therefore whether it can be included in the opening capital base (Rule 77(2)(b)).

Rule 79 states that:

> *(1) Conforming capital expenditure is capital expenditure that conforms with the following criteria:*
>
> *(a) The capital expenditure must be such as would be incurred by a prudent service provider acting efficiently, in accordance with accepted good industry practice, to achieve the lowest sustainable cost of providing services;*
>
> *(b) The capital expenditure must be justifiable on a ground state in subrule (2)*
>
> *(2) Capital expenditure is justifiable if:*
>
> *(a) The overall economic value of the expenditure is positive; or*
>
> *(b) The present value of the expected incremental revenue to be generated as a result of the expenditure exceeds the present value of the capital expenditure; or*
>
> *(c) The capital expenditure is necessary:*
>
> *(i) To maintain and improve safety or services; or*
>
> *(ii) To maintain the integrity of services; or*
>
> *(iii) To comply with a regulatory obligation or requirement; or*
>
> *(iv) To maintain the service provider's capacity to meet levels of demand for services existing at the time the capital expenditure is incurred (as distinct from projected demand that is dependent on an expansion of pipeline capacity);*
>
> *(d) The capital expenditure is an aggregate amount divisible into 2 parts, one referable to incremental services and the other referable to a purpose referred to in paragraph (c), and the former is justifiable under paragraph (b) and the latter under paragraph (c).*

1 https://www.multinetgas.com.au/our-vision-values/ [accessed 14 October, 2016]

2 Rule 72(1)(a)(i)) of the National Gas Rules.

1.2. Objective and caveats

MG expects to overspend the AER's allowance in two capex categories in the current regulatory control period (being 2013 to 2017). These categories are:

- Mains replacement capex; and
- Connections capex.

MG has engaged Oakley Greenwood (**OGW**) to provide an independent opinion as to the prudency and efficiency of MG's actual capital expenditure for the above two categories of capex, in the context of the requirements of the Rules (Rule 79 in particular).

Excluded from our scope of work is any examination of:

- Governance arrangements, as these are the subject of a separate review;
- Volumes of work; and
- Forecast capex for the forthcoming period.

More broadly, we note that:

- The scope of work did not provide for us to review the specific aspects of every single mains replacement project undertaken by MG over the current regulatory control period; rather, it provided for us to review a small sample of projects in detail, and
- We have taken on face value several pieces of information provided to us by MG regarding, amongst other things, outturn costs and the volumes of work undertaken by MG over the period. We have not sought to audit this information.

1.3. Overview of approach

In conducting our assessment of the prudency and efficiency of MG's actual capital expenditure for mains replacement and connections in the context of the requirements of the Rules, we have, amongst other:

- Reviewed cost and volume information provided to us by MG;
- Reviewed the information the AER gave consideration to when determining MG's original capex allowance, including MG's initial regulatory proposal and its revised regulatory proposal;
- Reviewed the AER's draft and final decisions as they relate to MG's mains replacement unit rates and customer connection unit rates;
- Reviewed the underlying contractual arrangements MG has relied upon (the "Operational Management Services Agreement") over the current regulatory period for delivery of its mains replacement and connections capex programs;
- Had our costing engineer undertake two site inspections to review the actual conditions and factors that one of MG's contractors, Zinfra, faced when completing two mains replacement projects over the current regulatory period; and
- Sought information from both MG and Zinfra regarding the factors they consider affected MG's mains replacement program over the regulatory period, including for the two sample projects reviewed.

Notwithstanding the above broad approach, in our experience, there are numerous project-specific factors that can affect the outturn cost of undertaking mains replacement works and connection works (particularly for commercial customers). For example:

- Mains replacement costs are affected by factors such as the depth of the main being replaced (as this affects whether MG can insert the new main using the existing main as a "sleeve"), whether a main is located under a road (as this affects rehabilitation costs), and traffic management requirements; and
- The cost of connecting a commercial customer will be materially influenced by their location (e.g., proximity to an existing main), gas consumption and ground conditions.

All in all, in our experience this means that the individual projects that make up the two categories of MG's capex program for which it has over-spent its allowance are not homogenous. In our opinion, everything else being equal, where a capex category, or its constitute projects, are not homogenous, this:

- Increases the complexity of deriving an appropriate desk-top benchmark for this service (i.e., one that accurately normalises for each of the unique factors that affects that project, or collectively, the costs of those projects in totality); and
- Increases the likelihood that market rates – generated through a competitive tendering process by the specific business being reviewed – will be a more accurate reflection of the efficient costs of providing those services.

As such, as opposed to a methodology that primarily relies on comparing MG's revealed rates to some "generic" desk-top benchmark, which inevitably does not consider all the specific factors affecting MG's outturn costs, our assessment approach has placed more weight on whether MG:

- Adopted a competitive tendering process, and / or
- Explicitly or implicitly tested the market rates it was being charged throughout the current regulatory control period under the contracts that were let through any competitive tendering process.

2. Background information regarding MG's over-spend relative to its allowance

2.1. Mains replacement

2.1.1. Information on forecast versus actual mains replacement capex

The following table summarises the information that MG has provided us regarding its forecast versus actual mains replacement capex.

Table 1: Forecast versus actual mains replacement capex ($M, Real 2017)

Cost basis	2013	2014	2015	2016	2017	Total
AER Final Decision (including cost pass-throughs approved in September 2015)	13.8	3.9	27.7	45.6	27.6	118.7
Actual / Estimated	12.4	24.8	21.5	35.5	45.0	139.2
Variance (Actual minus Final Decision)	(1.4)	20.9	(6.2)	(10.1)	17.3	20.5

Source: Multinet Gas

Overall, MG expects to over-spend its allowance (including it approved cost pass-through amount) by around $20.5m.

2.1.2. Our understanding of the basis for setting the mains replacement capex forecasts

MG set out the basis for its mains replacement program in its 2013 submission, as well as the drivers for that program. For example, in that submission it stated that[3]:

> *In broad terms, replacement expenditure projections are based on a combination of forecast expenditure required to address known issues, and anticipated increases in expenditure as the network ages. Projections of asset failure rates are derived from statistical analysis of Multinet's condition inspection data, and more generic data on industry practice.*

In its draft decision, the AER describes MG's approach to developing its unit rates as follows[4]:

> *Multinet's forecast average unit cost for all LP mains renewal in the fourth regulatory period (2013-2017) is $226/metre ($2012, direct costs, excluding internal direct overheads). This is 70 per cent higher in real terms than the average unit cost for the 2007-2011 period.*
>
> *Reasons given by Multinet for the increase in rates were:*
>
> - *the replacement of several large diameter low pressure supply mains that run through major arterial roads and high-density strip shopping where work is costly and complex.*
> - *the additional difficulty and complexity of the work in areas with high vehicular traffic volumes and multi-unit residential developments, including high-rise buildings*

3 Multinet, *Gas Access Arrangement Review, January 2013-December 2017, Access Arrangement Information*, page 113

4 AER, *Access arrangement draft decision, Multinet, Part 2: Attachments*, September 2012, page 40-41

- *movement in the program from geographic areas abutting the existing high pressure networks to inner suburban areas where some grid main construction work must be programmed.*

- *materials cost increases for both polyethylene (PE) and steel pipe over the last five years as a result of the resources boom and increases in the price of oil.*

Multinet provided data on the length, unit cost and total cost of work for each project by year for the 2013-17 access arrangement period. ***Multinet's unit rates showed a large variation between locations for normal and grid mains replacements*** *[emphasis added].*

In its draft decision, the AER reduced MG's average unit rate because, amongst other reasons, it considered Multinet overstated the direct overheads in its internal cost build-up of unit rates[5]. It described the basis for its decision as follows:

The AER's engineering consultant, Zincara, reviewed Multinet's internal cost estimate of the unit rate for each project. These cost build ups showed volumes and unit rates for all cost elements.

The AER considers that Multinet's detailed cost build-ups for each project provide a reasonable basis for estimating costs for future projects. ***This is on the basis that they take specific account of factors that affect the difficulty and cost in each location, and the per unit rates for materials and contractors align with market rates.*** *[Emphasis added]*

Zincara considered that the labour and material direct costs were within industry standards.

However, Multinet applied direct overheads costs to the direct labour and material costs which, based on the advice of Zincara , the AER considers are above standard industry practice. Multinet provided no evidence to justify this level of overhead. The AER therefore does not consider that this overhead rate is arrived at on a reasonable basis and the best estimate possible in the circumstances. The AER has adjusted Multinet's direct overhead rate down to industry standard rates. The resultant unit rate reflects an efficient level of overheads that are in accordance with accepted good industry practice, consistent with r 74(2) requirements.

Following on from the above, the AER stated that[6]:

The AER approves 240 km at an average unit rate of $175 per metre ($2012, direct costs, excluding internal direct overheads) and a total expenditure of $42.0 million ($2012, direct costs, excluding internal direct overheads).

In its final decision, the AER reaffirmed that it did not approve MG's proposed unit rates, and reaffirmed that unit rates that included an overhead rate of only 10 per cent were prudent and efficient[7]. The AER also provided a small allowance to undertake three large diameter cast iron mains replacement projects over the 2013-17 access arrangement period in its final decision; however, it rejected MG's proposed low pressure designated zone (LPDZ) mains replacement expenditure.

2.1.3. Issues to consider when assessing MG's outturn unit rates for mains replacement as compared to forecast

In its AAI[8] submission, MG flagged that:

5 AER, *Access arrangement draft decision, Multinet, Part 2: Attachments*, September 2012, page 25

6 AER, *Access arrangement draft decision, Multinet, Part 2: Attachments*, September 2012, page 46

7 AER, *Access arrangement final decision. Multinet, Part 2: Attachments*, March 2013, page 46

8 Multinet, *Gas Access Arrangement Review, January 2013-December 2017, Access Arrangement Information*, page 116

> *One of the challenges for Multinet will be managing the replacement of the large diameter low pressure supply mains that run through major arterial roads and high profile strip shopping centres. These **projects are costly, complex, have high local community impact, require significant traffic management planning and coordination with other service authorities** [Emphasis added].*

It was also noted by the AER that[9]:

> *Multinet's unit rates showed a **large variation between locations for normal and grid mains replacements** [Emphasis added].*

We have repeated these quotes as they highlight the difficulty in assessing the overall efficiency of a program of works related to mains replacement. Outturn costs are a function of numerous factors, many of which vary markedly between locations, and many of which cannot be accurately forecast in advance (particularly up to 5 years in advance), even in circumstances where forecasts are developed on a project-by-project basis.

Based on feedback from MG, several unique factors have affected its outturn mains replacement costs:

- Some projects have had a high proportion of particularly shallow mains (e.g., Kew), which were not known about at the time the original forecasts were prepared[10]. This means MG has been unable to insert the new main using the existing main as a "sleeve". Ideally, this method is utilised as it is both a cost-effective and quick method of replacing gas mains. Where mains are particularly shallow, other methods must be utilised such as open trench, mains bursting and directional drilling;
- More mains have been under the road instead of in the nature strip, which in turn increases MG's cost of reinstatement works[11];
- Socio-economic factors and customer requirements to maintain "street amenity" have necessitated MG having to move away from a least-cost servicing solution for some customers in some areas. For example, the preservation of existing vegetation in areas such as Kew has led MG to adopt alternative asset location strategies; and
- MG has faced significantly more non-compliant gas meters (i.e., gas meters being in "non-compliant" locations) that it otherwise expected, which in turn necessitates it having to incur higher costs to move infrastructure when they are discovered during mains replacement works. This has been particularly relevant in areas where the penetration of multi-unit sites is high.

None of this is to say that these factors were not in some way (whether implicitly or explicitly) reflected in the AER's forecast unit rate, but rather, it is to simply make the point that these factors would almost certainly never have been accurately accounted for in any forecast developed for regulatory purposes – even if done at a project level - simply because of the, in many cases, bespoke (i.e., area specific) and dynamic nature of these factors.

9 AER, *Access arrangement draft decision, Multinet, Part 2: Attachments*, September 2012, page 40

10 This is not surprising, as asset information systems tend to be less accurate in capturing asset information for older assets, which are generally those that are being replaced.

11 As per above, the accuracy of asset information tends to decline the older the asset is.

2.2. Customer initiated capex

2.2.1. Information on forecast versus actual connections capex

The following table summarises MG's forecast versus actual customer connections capex.

Table 2: Forecast versus actual customer connections capex ($M, Real 2017)

Cost basis	2013	2014	2015	2016	2017	Total
Final Decision	15.5	17.3	17.3	16.8	16.9	83.8
Actual / Estimated	17.9	19.1	23.3	21.7	23.3	106.2
Difference	**2.4**	**1.7**	**6.0**	**4.8**	**7.5**	**22.5**

Source: Multinet Gas

The following table disaggregates MG's forecast and actual connections capex by customer class.

Table 3: Disaggregation of customer connections capex by customer class ($M, Real 2017)

Customer class	2013	2014	2015	2016	2017	Total
Residential						
Final Decision	14	15.9	15.8	15.4	15.4	76.5
Actual / Estimated	16.5	16.5	19.1	17.5	19.2	88.8
Difference	**2.5**	**0.6**	**3.3**	**2.1**	**3.8**	**12.3**
Commercial						
Final Decision	1.4	1.4	1.4	1.4	1.4	7
Actual / Estimated	1.3	2.5	4.2	4.1	4.1	16.2
Difference	**-0.1**	**1.1**	**2.8**	**2.7**	**2.7**	**9.2**

Source: Multinet Gas

To give more context to these results, the following table provides the volume of connections, and the revealed unit rates.

Table 4: Disaggregation of customer connections volumes by customer class

Customer class	2013	2014	2015	2016	2017	Total
Residential						
Final Decision	8,600	8,613	8,573	8,243	8,128	42,157
Actual / Estimated	7,592	8,230	9,115	8,535	8,669	42,141
Difference	**-1,008**	**-383**	**542**	**292**	**541**	**-16**

Customer class	2013	2014	2015	2016	2017	Total
Commercial						
Final Decision	197	196	193	193	193	972
Actual / Estimated	413	444	469	410	414	2,150
Difference	**216**	**248**	**276**	**217**	**221**	**1,178**

Source: OGW analysis based on information provided by Multinet Gas

The following table provides the unit rates for each connection type.

Table 5: Disaggregation of customer connection unit rates by customer class ($Real 2017)

Customer class	2013	2014	2015	2016	2017	Total
Residential						
Final Decision	1,628	1,846	1,843	1,868	1,895	1,815
Actual / Estimated	2,173	2,005	2,095	2,050	2,215	2,107
$ Difference	**545**	**159**	**252**	**182**	**320**	**293**
% Difference	**33.51%**	**8.60%**	**13.70%**	**9.75%**	**16.89%**	**16.12%**
Commercial						
Final Decision[12]	7106	7142	7253	7253	7253	7201
Actual / Estimated	3147	5630	8955	10000	9903	7534
$ Difference	**-3,959**	**-1,512**	**1,702**	**2,747**	**2,650**	**333**
% Difference	**-55.71%**	**-21.17%**	**23.47%**	**37.87%**	**36.54%**	**4.62%**

Source: OGW analysis based on information provided by Multinet Gas

The above tables indicate that the majority of MG's over-expenditure in commercial connections is driven by high connection volumes, as the average actual/estimated unit rate over the period is only marginally above forecast. The information provided indicates that the opposite is the case in relation to residential connections – outturn volumes are similar to forecast, however, the outturn unit rate is higher than what the AER allowed for in its final decision ($2,107 versus $1,815).

12 Note that this includes the costs of connecting Tariff D customers, whereas in other parts of this report, we refer to an approved rate which is only for Tariff V commercial/industrial customers.

2.2.2. Our understanding of the basis for setting the customer connections forecasts

MG explained in its submission that one of the two key reasons why it was forecasting higher capital expenditure in the forthcoming Access Arrangement period when compared to the current period was that the market indicated that current rates were unsustainable[13]:

> *The market has indicated that the current level of rates obtained in the current contract is not sustainable. Multinet's customers have received the benefit of a contract during the current Access Arrangement Period that can no longer be sustained. Multinet's customers can be assured that the tender process, although an increase on current costs, will provide them the best possible price. Multinet is proposing a very similar customer number forecast in the forthcoming period as experienced in the current period.*

It is submission, MG provided a table that highlighted its forecast unit rates, as compared to its previously incurred unit rates.

Table 6: Actual unit rates (2008-2012) compared to forecast (2013-2017) by customer class

Customer Class	2008-2012 ($M, Real 2012)	2013-2017 ($M, Real 2012)
Residential - Unit rate	$1,573	$2,278
Commercial - Unit rate	$4,438	$10,202

Source: Multinet, *Gas Access Arrangement Review, January 2013-December 2017*, *Access Arrangement Information*, page 108

In support of its proposed unit rates, MG stated that[14]:

> *The analysis does show that the unit rate for the forthcoming period is higher than the current period. The unit rate for residential connections in the forthcoming period is* ***based on a competitive market process*** *and reflects the best possible price Multinet is able to obtain.* ***The market process has been subject to probity. The current contract contained unit rates that were not sustainable for the long-term*** *[emphasis added].*
>
> *For commercial/industrial connections the unit rates have also* ***been based on the tender process*** *however for this category there will also be a movement based on an assessment on the types of connections - there is a* ***large range of possible unit rates depending on customer specific circumstances. In this case the tenderers have determined this mix in their pricing*** *[emphasis added].*

In its draft decision, the AER stated that[15]:

13 Multinet, *Gas Access Arrangement Review, January 2013-December 2017*, *Access Arrangement Information*, page 104-105

14 Multinet, *Gas Access Arrangement Review, January 2013-December 2017, Access Arrangement Information*, page 108

15 AER, *Access arrangement draft decision, Multinet, Part 2: Attachments*, September 2012, page 56

> *The AER examined the tender documentation and **considers that the tender process was competitive** [emphasis added]. The AER sought to verify the unit rates derived at the mains, services and meters level from Multinet's total cost and volume information with the unit rates contained in the tender documentation provided by Multinet. The AER was unable to reconcile the derived unit rates with the tendered unit rates. The AER therefore does not consider that the unit rates have been forecast on a reasonable basis as required by r.74(2)(a).*

It also stated in its draft decision that[16]:

> *The AER has examined the 2008-12 unit rates provided by Multinet at the residential and commercial connection level. There is no clear trend in the residential connection unit rate. There is a downward trend in the commercial/industrial unit rate, however, **the AER considers that this is likely to be a reflection in the mix of work (given the range in costs of connection depending on the capacity requirements of the business) rather than a clear downward trend in real costs.** The AER therefore considers that a weighted average of the 2008-12 unit rates provided by Multinet is an appropriate alternative basis to use to determine the best estimate possible in the circumstances for the 2013-17 unit rates for residential and commercial connections. Accordingly, the AER approves a Tariff V residential connection unit rate of $1,572.44/connection ($2012, direct costs, excluding internal direct overheads) and a commercial/industrial rate of $4,422.25/connection ($2012, direct costs, excluding internal direct overheads). [Emphasis added]*

MG responded in its revised proposal by stating that[17]:

> *Residential connections forecasts are based on the tendered prices received during the tender process from its contractors. These prices are multiplied by the forecast of the number of new connections derived from the NIEIR report. The forecast of commercial connections in Multinet's original proposal was prepared in the same manner as the residential connection forecast. **In this revised proposal however Multinet has adopted historical average unit rates rather than tendered rates** [emphasis added].*

It further stated that[18]:

> *As already noted, Multinet has adopted the historical unit rate for commercial connections in this revised proposal. **Given that in this category there is a large variance between simple and complex jobs the most reasonable method of forecasting in the circumstances is the application of historical unit rates** [emphasis added].*

In its Final Decision, the AER stated[19]:

> *"Commercial connections–Multinet was unable to substantiate the unit rates in its revised proposal. Multinet subsequently stated that it would adopt the AER's draft decision on the industrial and commercial unit rates."*

It also stated that[20]:

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16 AER, *Access arrangement draft decision, Multinet, Part 2: Attachments*, September 2012, page 56

17 Multinet, Gas Access Arrangement Review January 2013-December 2017, Revised Proposal and Response to Draft Decision, 9 November, 2012, page 93

18 Multinet, *Gas Access Arrangement Review January 2013-December 2017, Revised Proposal and Response to Draft Decision,* 9 November, 2012, page 97

19 AER, *Access arrangement final decision. Multinet, Part 2: Attachments*, March 2013, page 29

20 AER, *Access arrangement final decision. Multinet, Part 2: Attachments*, March 2013, page 55

The AER accepts Multinet's residential unit rates are prudent, efficient and have been arrived at on a reasonable basis. The AER initially was unable to reconcile Multinet's revised cost build-up against the unit rates in the contracts Multinet entered into with its contractors. ***However, Multinet has now demonstrated that its revised forecast unit rates are consistent with its contracts. Multinet also has adjusted these contracted unit rates for the Limb 2 payments and inflation.*** *[emphasis added] Multinet had not previously shown these adjustments to the contracted rates to the AER. As such, the AER is satisfied that the unit rates forecasts in the corrected and updated forecast model have been arrived at on a reasonable basis and are the best possible in the circumstances.*

2.2.3. Issues to consider when assessing MG's outturn unit rates for customer connections as compared to forecast

It is self-evident that there are three key factors potentially influencing the difference between the AER's prescribed unit rates for customer connections and outturn unit rates which may be beyond the control of MG. These are:

- The accuracy of the AER's original estimate of unit rates, noting that it based MG's:
  - Residential rates on the rates MG derived through its competitive tendering process, and
  - Commercial rates on historical rates, despite MG stating at the time that they did not reflect revealed contracted unit rates for the forecast period.
- The efficiency of MG in delivering those connections; and
- The specific requirements of the individual customers that connect into MG's network, and in particular, whether the "mix" of customers (particularly as they relate to the connection of industrial and commercial customers) is consistent with what was explicitly or implicitly assumed when developing the original forecast.

These factors will be discussed in more detail in later sections of this report.

3. Prudency assessment

3.1. Rule requirements

Rule 79 (1)(b) states that the that the "capital expenditure must be justifiable on a ground stated in sub-section (2)". The grounds specified in sub-rule (2) include:

- (a) The overall economic value of the expenditure is positive; or
- (b) The present value of the expected incremental revenue to be generated as a result of the expenditure exceeds the present value of the capital expenditure; or
- (c) The capital expenditure is necessary:
  - (i) To maintain and improve safety or services; or
  - (ii) To maintain the integrity of services; or
  - (iii) To comply with a regulatory obligation or requirement; or
  - (iv) To maintain the service provider's capacity to meet levels of demand for services existing at the time the capital expenditure is incurred (as distinct from projected demand that is dependent on an expansion of pipeline capacity);
- (d) The capital expenditure is an aggregate amount divisible into 2 parts, one referable to incremental services and the other referable to a purpose referred to in paragraph (c), and the former is justifiable under paragraph (b) and the latter under paragraph (c).

3.2. Our assessment of mains replacement and connection capex against these Rule requirements

3.2.1. Mains replacement

In its 2013 submission, MG provides some background regarding the drivers of the mains replacement program. Amongst other things, this includes[21]:

> *It is important to note that 11% of Multinet's distribution network or 1,050 km is at least 60 years old. Assets of this age expose Multinet and its customers to* ***performance risk. The replacement program is focused on the prudent management of this risk.*** *[Emphasis added]*

More broadly, it states that its[22]:

> *Maintenance and Replacement Strategies detail the work that is necessary to maintain the capability of the asset base to deliver services at the required standard, while optimising total life cycle costs.*

These comments are further reinforced by comments made by MG in its cost pass through application event submission of 2015, where it stated that:[23]

> *The mains replacement plan has a significant impact on network performance by:*
>
> - *reducing the risks to both public safety and property damage associated with gas leakage from the network;*
> - *increasing network capacity by replacing low pressure with high pressure mains;*

21 Multinet, *Gas Access Arrangement Review, January 2013-December 2017, Access Arrangement Information*, page 114

22 Multinet, *Gas Access Arrangement Review, January 2013-December 2017, Access Arrangement Information*, page 113

23 Multinet, *Cost Pass-Through Application: Mains Replacement Event*, 12 June 2015, page 3

- *improving network reliability by reducing the incidence of unplanned outages on the network; and*
- *reducing operating and maintenance costs relative to the situation where the mains replacement program did not occur.*

At a general level, MG's original justifications for its forecast mains replacement as well as its cost pass through application related to mains replacements, aligns with our understanding of the drivers for mains replacement. Ex ante, we believe the drivers for a mains replacement program conform with the prudency requirements, namely subsection 2, of Rule 79 (i.e., 79(2)(c)(ii) mains replacement capex is necessary….to maintain the integrity of services).

Furthermore, in its 2015 cost pass through application, MG stated that[24]:

> *The replacement of low pressure distribution mains with high pressure polyethylene mains is expected to **reduce safety risk, operating costs and improve supply reliability**. This is **consistent with Multinet's Gas Safety Case** which sets a date of 2033 for the replacement of all low pressure distribution mains within its network [emphasis added].*

In its decision regarding MG's cost pass through application, the AER acknowledged the linkage between MGs mains replacement and its Gas Safety Case:[25]

> *"the objective of the mains replacement program is to remove all cast iron mains over the longer term, consistent with the Victorian gas distribution businesses' Asset Management Plans approved by Energy Safe Victoria (ESV)".*

This again points to MG's mains replacement activities conforming with Rule 79, sub-section 2 (i.e., mains replacement capex is necessary….(i) to maintain and improve safety or services; or (iii) to comply with a regulatory obligation or requirement).

Finally, in assessing MG's mains replacement cost pass through application, the AER states that[26]:

> *We are satisfied Multinet's proposed cost of $51.6 million ($2012) to undertake additional mains replacement meets the capital expenditure criteria under cl. 79(1) of the NGR.*

As will be discussed in a later section of this report, there is nothing in MG's internal capex approval processes that would suggest that it is not adopting a robust approach for identifying areas where the integrity of services is likely to be compromised if mains replacement works are not undertaken.

Overall, we are of the belief that MG's expenditure during the current GAAR period on mains replacement is consistent with the prudency requirements (subsection 2) of Rule 79.

3.2.2. Connections capex

In its submission, MG stated that its[27]:

> *Customer Initiated Capital is capital expenditure required to connect new customers to the distribution system.*

24 Multinet, *Cost Pass-Through Application: Mains Replacement Event*, 12 June 2015, page 1

25 AER, *Multinet gas mains replacement cost pass thorugh, AER decision*, September 2015, page 2

26 AER, *Multinet gas mains replacement cost pass thorugh, AER decision*, September 2015, page 8

27 Multinet, *Gas Access Arrangement Review, January 2013-December 2017*, *Access Arrangement Information*, page 105

The customers can range from a new residential dwelling to a large industrial site. Customer Initiated Capital also includes recoverable works (asset relocations undertaken at the request of third parties.)

In accordance with its rights under Section 119M and 79(4) of the Rules, MG levies a capital contribution to connecting customers. In particular, Rule 119M (Connection charges criteria) states, amongst other things that[28]:

(1) Connection charges (or the method for calculating connection charges) for a particular connection service must be consistent with the following criteria (the connection charges criteria):

(a) if the present value of the expected incremental revenue to be generated as a result of the distributor's capital expenditure for the relevant connection assets exceeds the present value of that capital expenditure, no connection charge may be imposed; and

(b) if paragraph (a) does not prevent the imposition of a connection charge, the connection charge must not exceed the amount by which the present value of the capital expenditure exceeds the present value of the expected incremental revenue.

Whilst we have not explicitly reviewed MG's contributions model, on the presumption that this model accords with the Rules, any customer connection capital expenditure will only have been incurred if the present value of expected incremental revenue exceeds the present value of that capital expenditure. This positive NPV may come about because of the levying of a customer contribution, or simply because the future revenue stream generated from levying distribution tariffs upon a customer is forecast to be greater than the incremental costs of serving that customer.

Either way, this screening mechanism strongly indicates that the prudency requirements of Rule 79 (namely subsection 2) have been met, because it ensures that the overall economic value of the expenditure is positive in each individual case.

OUR OPINION:

In our opinion, MG's expenditure on both mains replacement and customer connections is consistent with the prudency requirements reflected in Rule 79 (subsection 2), as:

- **Mains replacement**: MG's mains replacement program is undertaken to (a) maintain the integrity of services, (b) maintain and improve safety or services; and/or (c) comply with a regulatory obligation or requirement, all of which are limbs under Rule 79 of the Rules.
- **Customer connections**: MG's customer initiated capital works are customer driven, and undertaken subject to the present value of the expected incremental revenue being generated exceeding the present value of that capital expenditure (and where this is not the case, a connection charge is imposed to overcome this shortfall). This screening mechanism aligns with the requirements of Rule 79 (subsection 2), as it ensures that the overall economic value of the expenditure is positive.

28 Rule 119M of the National Gas Rules, version 29

4. Efficiency of Customer Connections Capex

As has been stated previously, the difference between the AER's prescribed unit rates for customer connections and outturn unit rates will be influenced by the combined effect of (amongst other things):

- The accuracy of the AER's original estimate of unit rates,
- The efficiency of MG in delivering those connections; and
- The mix of connections, which relates to the specific requirements of the individual customers that are connecting into MG's network (and particularly in the case of industrial and commercial customers, as the cost of connecting different types of customers within both of these customer classes can vary widely).

In relation to the former, the AER rejected MG's originally proposed unit rates for commercial customers as the basis for the forecast as it was "*unable to reconcile the derived unit rates with the tendered[29] unit rates*" – but not necessarily because it deemed the tendered unit rates to be incorrect. In fact, the AER stated at the time that it had "*examined the tender documentation and considers that the tender process was competitive*". Moreover, the AER accepted MG's residential unit rates as being prudent and efficient once it could reconcile those unit rates to the contracts MG entered with its contractors.

Therefore, on face value, the reconciliation issue appears to be the primary reason why the AER reverted to using the weighted average of the 2008-12 unit rates provided by MG for commercial connections. This is even though at the time, MG flagged that "*the market has indicated that the current level (being the level that would have underpinned the 2008-12 rates) of rates obtained in the current contract is not sustainable*".

Taken on face value:

- if the AER accepted that the tender process was competitive at the time, *and*
- that competitive tender process revealed higher rates than historic levels, as MG suggested, *yet*
- the AER still choose to base its forecast rates for commercial customers on historic levels,

on the balance of probabilities, outturn unit rates for commercial customers would have been expected to exceed the AER's forecast unit rates for the 2013-2017 period (i.e., there was always an asymmetric risk around this forecast).

In relation to the efficiency of MG's unit rates, in our opinion, subject to one proviso (discussed below), any assessment of the efficiency of customer connections expenditure should be linked to an assessment of whether the contract/s underpinning the rates were competitively tendered within a competitive market, as economic theory would suggest that:

- Markets are the most efficient and effective means of sending appropriate price signals regarding the factors that impact upon the supply and demand for a particular good or service, and
- The combination of these price signals will lead to the efficient allocation of resources across the economy (i.e., the outcomes that are produced are efficient).

29 This presumably reflected the unit rates set out in the "Original Capex Rate-card" (OCR) of the OMSA.

This assessment framework aligns with previous approaches adopted by the AER. For example, when discussing how it will assess the efficiency of a business' proposed unit rates for mains replacement in any cost pass-through application, where no volumes have been approved in the AER's final decision for an area, the AER states in its final decision that[30]:

> *The evidence that the AER will consider in assessing the efficiency of the proposed unit rates may include but shall not be limited to…**whether the unit rate is an awarded tender rate and whether the rates were determined through a competitive tender process** [emphasis added].*

Another example is the AER's approach to assessing MG's unplanned service renewal costs. In its Final Decision, it stated that[31]:

> *For the unit rates, the AER considers that Multinet's tendered unit rates provide the best estimate possible in the circumstances. The AER considers that the tendered rates are the result of a competitive process. The AER considers that the use of tendered rates is preferable to the use of historical data as it provides the most reliable basis in the circumstances for estimating the unit rates for the 2013-17 access arrangement period. **On the basis that the tendered rates are a competitive market outcome, the AER considers that the unit rates are efficient"** [emphasis added]*

Finally, it is noted that the AER accepted MG's residential unit rates as being prudent and efficient once it could reconcile those unit rates to the contracts MG entered with its contractors. On face value, this indicates that it accepted ex ante, that the rates stemming from that process would be efficient.

The proviso referred to earlier is that the "Original Capex rate-card" rates (which were subjected to the original competitive tender process, which the AER agreed was competitive and which the AER implicitly approved in relation to MG's residential unit rates) must be **adjusted** during the regulatory period in a way that is likely to lead to efficient outcomes.

In relation to this issue, the key components of the Operational and Management Services Agreement (OMSA) – which is the agreement between MG and its Service Providers - are that:

- Unit rates used for Customer Initiated Capex (CIC) Rate-card Projects are reviewed by the parties in the course of developing each Annual Capex Budget (ACB) in accordance with paragraph 2 of the OMSA.
- The process outlined in paragraph 2 of the OMSA broadly entails:
  - By 15th December, MG providing the Service Providers with the new volumes for the following year,
  - By 15th January, MG confirming the volumes following any queries by the Service Provider,
  - By 28th February, the Service Provider providing the first draft of its Annual Operating Budget (AOB) to MG and its Independent Estimator. MG then analyses the data, including comparing each Service Provider's rates as well as comparing those rates to historical information (and potentially obtaining advice from the Independent Estimator).
  - By 30th April, MG notifies the Service Provider whether it accepts the rates.

For completeness, it is noted that the OMSA requires that:

30 AER, *Access arrangement final decision. Multinet, Part 2: Attachments*, March 2013, page 230

31 AER, *Access arrangement final decision. Multinet, Part 2: Attachments*, March 2013, page 52-53

- All Statements of Work and end-customer quotes that the Service Provider prepares for CIC Rate-card Projects must be wholly priced using the then current CIC Template (which is the approved schedule of rates for CIC Rate-card Projects), and
- Any CIC Estimate, in relation to a CIC Rate-card Project, must not contain any multiplier, escalator or other contingency or provision, except in accordance with the CIC Template.

In our opinion, MG's contracting approach has:

- Subjected the original rates to competitive tension, with the AER previously acknowledging that the tender process was competitive, and
- Facilitates competitive tension between the service providers each year by:
  - Allowing for the comparison of each Service Provider proposed rates, with recourse for adjustment,
  - Comparing the proposed rates to historical outturn rates, with recourse for adjustment, and
  - Allowing for those rates to be reviewed by an Independent Estimator, with recourse for adjustment.
- Requires that those rates be used for all CIC Rate-card Projects, and
- Allows the Service Provider to reflect any scale and scope efficiencies into their proposed rates (by providing a best estimate of the volume of work they will be required to complete).

There is nothing in the above process that would lead us to conclude that the rates agreed to under the OMSA, both upon commencement, and annually, were not reasonably reflective of an efficient service provider. Therefore, the outturn unit rates are likely to be consistent with those that would be incurred by a prudent service provider acting efficiently, in accordance with accepted good industry practice, to achieve the lowest sustainable cost of providing services – which accords with Rule 79.

In relation to the second issue (the mix of connections, particularly commercial connections), as MG referred to in its original submission: *"there is a large range of possible unit rates depending on customer-specific circumstances. In this case the tenderers have determined this mix in their pricing".* Clearly, the mix of connections:

- is outside of the control of MG's management, and
- will impact on outturn costs – particularly for industrial/commercial connections.

In the context of this review, it is imperative that we normalise for the impact of customer "mix" on MG's outturn costs (and therefore average unit rate), given it is outside the control of MG's management.

Due to data availability, MG was unable to provide the actual cost for every individual customer to analyse the mix of customers over the 2007-11 period as compared to the current regulatory control period, so we cannot directly assess the impact that a changed mix of customers might have had on MG's outturn costs.

However, as a proxy for the impact that customer mix might have on a gas distribution business' revealed unit rate, we reviewed the rates approved by the AER for MG and the other gas distribution business as part of the last GAAR review process (for the 2007-11 period). In summary, MG's rates appear to have been materially below the rates that were approved for both Envestra (now Australian Gas Networks) and SP AusNet (now AusNet Services). The following table summarises our understanding of the commercial / industrial unit rate that the AER approved.

Table 7: Tariff V Commercial / industrial unit rates approved by the AER

Distribution business	AER approved rate / connection	$
Multinet[32]	$4,422.25	($2012, direct costs, excluding internal direct overheads)
Envestra (Victorian network)[33]	$12,151	($2011, escalated direct costs, excluding overheads)
SP AusNet[34]	$12,010	($2012, escalated direct costs, excluding overheads)

Whilst network characteristics and mix *may* reasonably lead to slight variations in unit rates across the three gas distribution businesses in Victoria:

- There are no features of AusNet Services' or AGN's Victorian service territories that would lead us to conclude that their commercial/industrial rates for Tariff V customers should be around 270% higher than MG's, and
- This "relative efficiency" (or the relativity between these rates) does not appear to have been explicitly addressed or considered by the AER in its draft or its final decisions.

Given that each rate appears to be based on 'history", the relative difference in the rates would appear to reflect either or both:

- The mix of connections, with, everything else being equal, this skewing:
  - MG's rate for the 2007-2011 period to abnormally low levels, and/or
  - AGN's and AusNet Services' rates to abnormally high levels, and/or
- MG's revealed rate for the 2007-2011 period being materially below the levels of the other businesses over that period, which may have resulted from MG's contracting strategy at the time, which, as MG stated at the time, may have not reflected the outturn results of the market going forward.

All in all, in our opinion, this information strongly indicates that if anything, the unit rates approved by the AER for MG's industrial and commercial customers were, on the balance of probabilities, too low, if the rates approved for the other businesses were reflective of their efficient costs.

Interestingly, in the industrial/commercial unit rate first proposed by MG ($10,202), which was based on average tendered rates at the time (albeit, potentially skewed towards the upper end if, as MG said at the time, that it included "a proportionally excessive number of difficult sites in the mix of works"), still sat below AusNet Services' and AGN's approved rates. It is also noted that MG's outturn unit rate over this regulatory period is well below the rates approved for AusNet Services' and AGN.

32 AER, *Access arrangement draft decision, Multinet, Part 2: Attachments*, September 2012, page 56

33 AER, *Access arrangement draft decision. Envestra, Part 2: Attachments*, September 2012, page 77

34 AER, *Access arrangement draft decision. SP AusNet, Part 2: Attachments*, September 2012, page 60

All-in-all, this indicates to us that MG's revealed rate is well within the reasonable expected range of outcomes, given the substantive influence that mix can have on the results.

Regarding residential unit rates, the AER accepted MG's residential unit rates as being prudent and efficient once it could reconcile those unit rates to the contracts MG entered with its contractors. Given that:

- MG's outturn rates are also a function of those same contracts, and
- the AER has previously agreed those contracts were competitively tendered, and
- the process for adjusting unit rates over the life of the contract appears, in our opinion, to be entirely reasonable,

MG's outturn unit rates for residential customers are in our opinion, likely to reflect efficient costs.

Rounding out the above discussion, it is noted that MG's outturn rate of $1824 ($Real 2017) for residential customers is either very comparable to (AGN) or lower than (AusNet Services) the rates the AER approved in its final decision for the other gas distribution businesses. For example, the AER approved an average Tariff V residential connection unit rate for AusNet Services of $2,392 ($2012, escalated direct costs, excluding overheads)[35] in its draft decision, which was in turn accepted by AusNet Services[36].

Finally, it is noted that in its last GAAR decision, the AER accepted cost overruns in new connections as being "conforming" capex. For example:

- For MG, the AER approved its actual capex over the 2007-2011 period as being conforming, even though residential connections expenditure was 37.5 per cent above the ESC approved amount of $79.9 million ($2012). It was stated that this arose because residential connection unit rates were higher than the ESC benchmark by 75 per cent[37].
- For AGN, despite it overspending the ESC allowance for residential customer connections by some 10 per cent and 70 per cent in its Victorian and Albury networks respectively, the AER approved this as being conforming capex under Rule 79. This overspend was attributed to a greater number of new connections than forecast in every year and higher unit costs due to greater cost pressure because of market conditions during 2007-11[38].
- For AusNet Services, despite it overspending the ESC allowance for new residential connections expenditure by 36 per cent, the AER approved this as being conforming capex under Rule 79. The AER stated that "*SP AusNet attributed this outcome to a greater number of new connections than forecast in every year and higher unit costs due to greater cost pressure because of market conditions. The actual number of new residential connections was 29 per cent higher than the ESC approved number of connections. The AER considers this to be prudent as distribution businesses have a regulatory obligation to connect customers. Unit costs for residential connections were approximately 7.2 per cent higher than the ESC approved benchmarks*[39]."

35 AER, *Access arrangement draft decision, SP AusNet, Part 2: Attachments*, September 2012, page 60

36 AER, *Access arrangement final decision, SP AusNet, Part 2: Attachments*, March 2013, page 62

37 AER, *Access arrangement draft decision, Multinet, Part 2: Attachments*, September 2012, page 36

38 AER, *Access arrangement draft decision. Envestra, Part 2: Attachments*, September 2012, page 54

39 AER, *Access arrangement draft decision. SP AusNet, Part 2: Attachments*, September 2012, page 42

Whilst this is not to say that the AER should automatically treat any over-expenditure as conforming capex under the Rules, it does suggest that the AER understands the difficulty in drawing definitive conclusions regarding conforming capex simply from whether a business over-spends it original allowance.

OUR OPINION:

In our opinion, MG's outturn unit rates for connections are likely to be consistent with those that would be incurred by a prudent service provider acting efficiently, in accordance with accepted good industry practice, to achieve the lowest sustainable cost of providing services – which accords with Rule 79. Our basis for this statement includes:

- The contracts underpinning the rates were competitively tendered, which, everything else being equal, should lead to the market revealing the efficient cost of supply,
- The approach for revising those rates over the life of the contract is, in our opinion, reasonable, and likely to provide a robust approach to applying competitive tension to the annual process for deriving new unit rates,
- MG's outturn unit rates for its industrial/commercial customers – even after including its Tariff D customers - are still well below the rates the AER approved as being efficient as part of the last GAAR determination process for AGN and AusNet Services' Tariff V commercial customers, and
- MG's outturn unit rates for its residential customers are comparable, if not lower, than the rates the AER approved for AGN and AusNet Services.

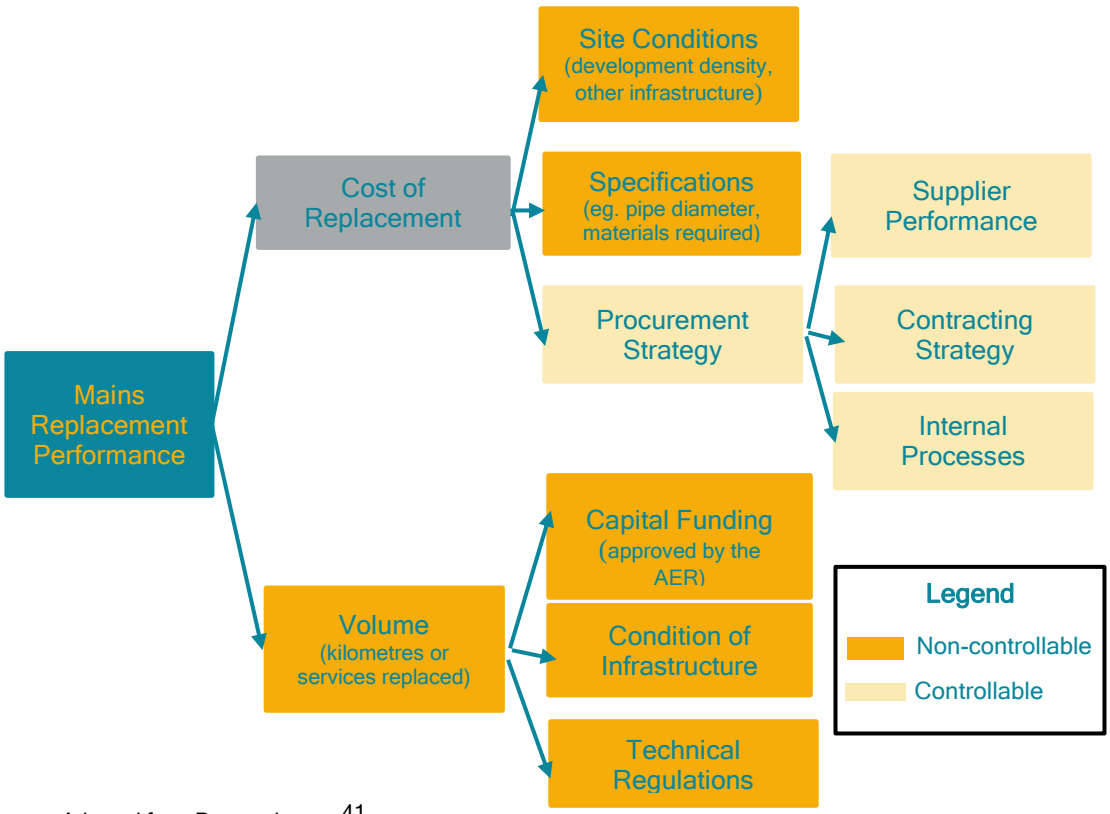
5. Drivers of the performance of a mains replacement program

The cost of mains replacement is determined by two types of drivers, firstly the volume of mains replacement undertaken, and secondly, the cost of replacing mains (see Figure 1 below). The volume of mains replacement is driven by the condition of the infrastructure, technical regulatory requirements and available funding for mains replacement programs.

In its 2015 Submission to the AER seeking approval for the AER to adjust Reference Tariffs, MG made the following statement regarding the requirement to undertake mains replacement[40].

> *The requirement for Multinet Gas to provide a safe and reliable supply of natural gas underpins the regulatory framework governing the provision of gas distribution services. The mains replacement plan has a significant impact on network performance by:*
>
> - *reducing the risks to both public safety and property damage associated with gas leakage from the network;*
> - *increasing network capacity by replacing low pressure with high pressure mains;*
> - *improving network reliability by reducing the incidence of unplanned outages on the network; and*
> - *reducing operating and maintenance costs relative to the situation where the mains replacement program did not occur.*

Figure 1: Mains replacement performance drivers



Source: Adapted from Poweradvocate[41]

40 Multinet Gas, *Cost Pass-Through Application: Mains Replacement Event,* June 2015, p. 3

41 http://www.costinsights.com/two-metrics-to-evaluate-gas-distribution-replacement-performance

The cost of mains replacement is driven by a combination of factors. Those that are within MG's control stem from its procurement strategy. Section 6 of this report includes details of our findings on the procurement strategy implemented by MG during the period.

Site conditions, which are not within the control of MG, have the potential to cause significant cost overruns. Section 6 also discusses the approach to managing the risk of cost overruns through the implementation of MG's procurement strategy.

Section 7 includes our findings concerning typical site conditions encountered by MG. This was based on discussions with one of MG's contractors for mains replacements and visits to two sites where MG undertook mains replacement projects. This includes a discussion on the site conditions that MG encountered during these projects.

6. Review MG's procurement strategy

6.1. Objective of section

The objective of this section is to assess whether MG's procurement process was consistent with the process that a prudent service provider acting efficiently, in accordance with accepted good industry practice, to achieve the lowest sustainable cost of providing services, would have been likely to adopt.

6.2. Introduction

For the first half year of the current period Jemena was the sole contractor providing mains replacement and customer connections services under a legacy agreement. MG advised that[42]:

> *At that time 30% of all projects were issued to the market for quote to ensure the market rate was consistent with the established then benchmark rate, and the remaining were completed by sub-contractors in house using the bench mark rate as a fixed price.*

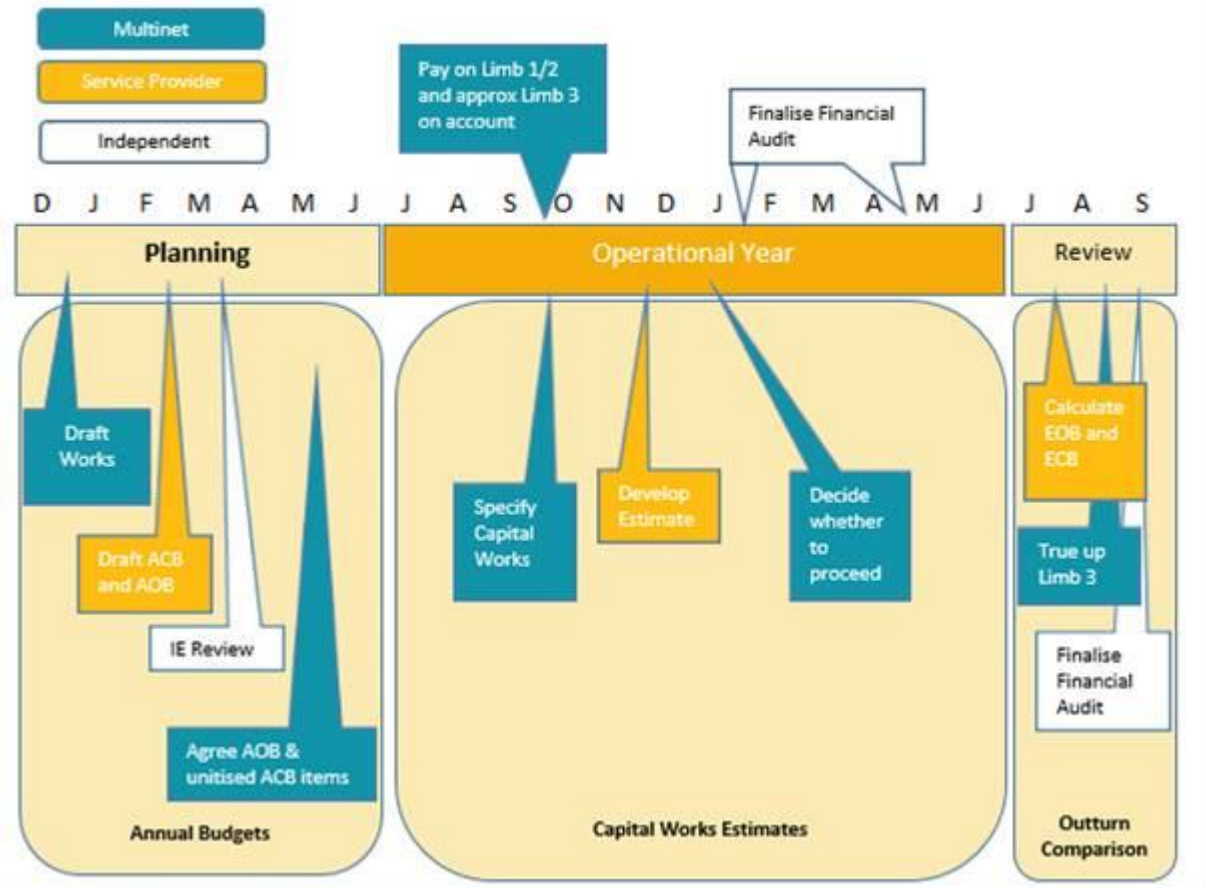
After 6 months, MG implemented a procurement strategy for its mains replacement program based on the following:

- A contracting strategy with a preferred service provider panel consisting of the primary contractors Comdain and Zinfra;
- A cost reimbursable and painshare/gainshare commercial structure with each primary contractor;
- Inviting proposals (including a target cost estimate) from one or both of Comdain and Zinfra for each package of work (documented in a Statement of Works) to be undertaken in a geographic area;
- Engagement of an Independent Estimator to review the target cost estimate prepared for each Statement of Works; and
- Engagement of a Financial Auditor to audit the Service Provider's charges.

The following figure provides an overview of MG's annual budgeting and cost reconciliation process and highlights key points at which the Independent Estimator and Financial Auditor are involved.

42 Email from Michelle Wingrave, Large Capital Works Manager, MG on Thursday 27 October 2016

Figure 2: OMSA Budgeting and Payment process



Source: Multinet Gas, ZNX Pty Ltd and ZNX (2) Pty Ltd, *Operational and Management Services Agreement*, Schedule 4, Clause 10.1, p. 186

6.3. Contracting strategy

The contracting strategy initially implemented by MG was based on contracting operational, maintenance and capital work with Jemena Asset Management. This arrangement was in place up to June 2013 and was documented in an operating services arrangement dated July 2003.

New Operating Maintenance Service Agreements (OMSA) with Zinfra (formerly Jemena Asset Management) and Comdain (each a Service Provider) took affect from 1 July 2013. Zinfra provided services in the northern part of MG's distribution region and Comdain in the southern part. The adoption of a two-region model with a Service Provider in each region was recommended by AT Kearney as it[43]:

> *would provide the most efficient and prudent business model for delivering Network Operations.*

Both Service Providers are well regarded contractors for the construction and maintenance of gas infrastructure.

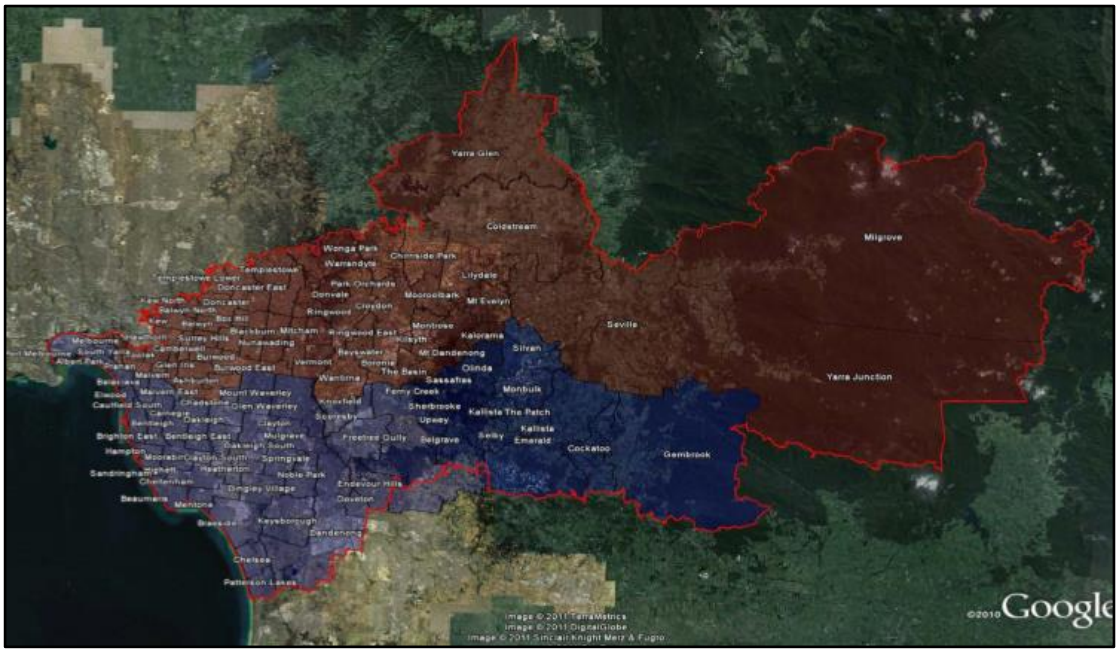
43 Multinet Gas, *Gas Access Arrangement Review January 2013-December 2017 Access Arrangement Information,* March 2012, p 57.

Zinfra is a service provider to electricity, water, gas and telecommunications asset owners. Zinfra employs 1500 people. Zinfra also provides operation, maintenance and inspection services to Palisade TGP Pty Ltd, the owner of the Tasmanian Gas Pipeline. Comdain is a service provider to water and gas asset owners. Comdain also has a long-term agreement in place with APA Group to provide operation, maintenance and construction services for Australian Gas Network's Victorian network.

The OMSA documents the terms and conditions for Service Providers undertaking operational, maintenance and capital work, including mains replacement projects and customer connections.

The Service Providers are principal contractors and sub-contract the projects they manage on behalf of MG to sub-contractors. Zinfra has advised that it sub-contracts approximately 95% of the work it performs to registered smaller contractors on an agreed-rate basis for all aspects of the work.

Figure 3: Service provider regions



Source: Multinet Gas, ZNX Pty Ltd and ZNX (2) Pty Ltd, *Operational and Management Services Agreement*, Schedule 4, Clause 10.1, p. 186

During the period July 2013 to June 2015 work was allocated to the Service Providers based on the geographic areas they covered.

In July 2015, MG commenced tendering all mains replacement projects to both Service Providers. In 2015/16 MG tendered at least one project to each Service Provider. MG advised that the basis for that decision was that the Service Providers were uncomfortable that work was not guaranteed and as such they were not employing additional field crews and consequently the rate at which MG was replacing mains slowed. So as to not jeopardise its target for mains replacement[44], MG issued one project to each Service Provider and engaged the Independent Estimator to verify the target cost estimates provided by the Service Providers.

44 Email from Multinet on Thursday, 20 October 2016

The sub-contractors that the Service Providers engage are local operators in their respective north and south geographic areas. The exception to this is contractors who undertake specialised tasks such as directional drilling.

The decision by MG to engage Comdain as a Service Provider followed a process to evaluate companies with the capability and resources to provide construction, operations and maintenance services. A competitive tendering process was undertaken in 2011. The tendering process consisted of three stages:

- Expression of Interest;
- Request for Proposal (RFP); and
- Target Cost Establishment (TCE).

The process commenced with MG seeking Expressions of Interest from potential contractors. The companies that submitted complying expressions of interest were; Tenix Australia, Conneq Infrastructure Services, Comdain Infrastructure, AJ Lucas Operations, Thiess Services, Select Solutions Pty Ltd, National Australian Pipelines and Electrix[45].

Five of these companies were selected to move to a RFP initial evaluation stage. Three companies progressed to the RFP Commercial evaluation stage.

The RFP evaluation process narrowed the selection to Tenix and Comdain who progressed to the TCE phase, where detailed cost proposals were submitted. Comdain was selected because of a superior "Reimbursable Cost Accounting Plan and Governance Framework" and "as it offered a more attractive Opex and Capex bid"[46].

In our opinion:

- By inviting expressions of interest from a range of contractors as part of a two-stage tender process, MG applied a formal approach to testing the market for the required services;
- MG engaged a service provider by applying a competitive approach, which is consistent with the conclusion that the AER had previously drawn[47]; and
- MG's two-stage tender process is good practice as it maintains competitive tension through to the stage where detailed cost proposals are submitted.

In relation to the latter, the benefits of a two-stage process are recognised by industry. In a report on the scope for improvement in the construction and infrastructure sector it was noted that[48]:

> *Principals are generally willing to consider a two stage process, but want to avoid losing competitive tension too early in the process. Many principals prefer to have at least two, and often three, tenderers progress through to the stage where they submit detailed bids.*

45 Multinet Gas, *EOI Evaluation Report Multinet's Network Operational Services*, page 1

46 Multinet Gas, *Network Services Tender TCE Final Evaluation*, October 2011, Slide 2

47 AER, *Access arrangement draft decision, Multinet, Part 2: Attachments*, September 2012, page 56

48 Ashurst, the Australian Constructors Association and Infrastructure Partnerships Australia, *Scope for Improvement 2014: Project pressure points - where industry stands,*. http://www.constructors.com.au/wp-content/uploads/2015/09/Scope-for-Improvement-2014.pdf

6.4. Commercial Structure

The OMSA includes a statement of its objectives. A Service Provider is required to provide services in a manner which achieves the Objectives of the OMSA, which include[49]:

a) *operating and maintaining the Service Provider Region of the Distribution Network efficiently, safely and in accordance with Good Industry Practice;*

b) *provision of services which are market competitive in terms of cost and quality and which comply with all legal and regulatory obligations relating to the Services and the Customer's Distribution Network;*

c) *a collaborative working relationship between the parties which aligns the risks and rewards of the parties by ensuring value for money and cost transparency for the Customer and delivers a reasonable return for the Service Provider; and*

d) *ensuring the efficient provision of the Services and sharing the financial gains and financial losses from delivering, or failing to deliver, the Services efficiently.*

The objective set out in d) above is reflected in the OMSA with the Service Providers including a P50 painshare/gainshare commercial arrangement for mains replacement projects. Under this type of commercial arrangement, there is a sharing of the overruns or underruns depending on how the Actual Out-turn Cost compares to the Target Out-turn Cost estimate. A painshare/gainshare mechanism applies where the difference between the Target Out-turn Cost and the Actual Out-turn Cost is shared on a 50/50 basis with MG. If the Actual Out-turn Cost exceeds the Target Out-turn Cost, the cost overrun is shared as pain. Conversely with a cost underrun, the saving is shared as a gain.

This style of tendering is mainly designed to create an incentive for the contractor to execute the works in an economical and diligent manner.

A key to the successful implementation of a contracting strategy during the planning and delivery phase of projects is to identify risks that could result in costs increases or schedule delays, the latter of which also typically have cost implications. MG has adopted a structured approach to the recognition of risks by using a risk register for each project. The cost impact of some risks can be excluded from the Actual Out-turn Cost when calculating the pain or gain payments.

In our opinion, the approach of identifying risks in a risk register that MG has applied is consistent with good industry practise.

The type of risks that a Service Provider is likely to encounter includes higher than expected amounts of rock in the area where work is to be undertaken, weather delays and contaminated soil. MG[50] stated that the Service Providers are aware of the potential for rock and MG does not exclude rock. This then becomes the Service Providers risk.

The approach described by MG[51] includes a mechanism to exclude the cost impact of:

- Weather delays more than a specified number of days for each project; and
- Removal of contaminated soil if the assessment of site conditions undertaken during the tendering process did not indicate the presence of contaminated soil.

49 Multinet Gas, ZNX Pty Ltd and ZNX (2) Pty Ltd, *Operational and Management Services Agreement*, General Terms, Clause 1.1 and 5.1, pages 3 and 7.

50 Conversation with Michelle Wingrave, Large Capital Works Manager, MG on Wednesday, 26 October 2016

51 Conversation with Michelle Wingrave, Large Capital Works Manager, MG on Wednesday, 26 October 2016

In our opinion, the exclusion of some items is a prudent approach to managing the risk of occurrence of circumstances, that may give rise to cost overruns, which are not expected to occur but cannot be ruled out. This approach places the consequence of their occurrence with MG rather than attempting to transfer to the Service Providers, who would find it difficult to manage that risk and hence would be likely to inaccurately price in that risk. OGW has confidentially tested MG's approach to the treatment of the risk of weather delays with another linear infrastructure owner in Victoria and MG's approach is consistent with that of this other infrastructure owner.

MG reviews the rates for each operational year (January to December) with the Service Providers. This process consists of the following[52]:

- by 15 December MG provides the Service Providers with a forecast of the volume of work for the following operational year;
- by 15 January MG confirms the volumes following any queries by the Service Providers;
- by 28 February the Service Providers provide the first draft of their Annual Capital Budgets (ACB)to MG and the Independent Estimator. MG then analyses the data, compares the rates of the Service Providers and negotiates accordingly using historical information;
- within 14 days of receipt by MG of the draft ACB, MG and the Service Provider meet to review the draft ACB and any information provided by the Independent Estimator to agree an Annual Capital Budget, that meets, amongst other things, the Objectives (refer to above); and
- by 30 April MG issues notification to the Service Providers of acceptance of the rates (if there is no acceptance the Service Providers are advised of the rates).

In our opinion, this approach facilitates competitive tension between the Service Providers each year by:

- allowing for the comparison of each Service Provider's proposed rates;
- comparing the proposed rates to historical outturn rates;
- allowing for those rates to be reviewed by an Independent Estimator; and
- where MG and a Service Provider are unable to agree the rates, specifying that a dispute resolution mechanism with the Independent Estimator determining the rates that will apply.

In our opinion, this process for determining budgets is efficient as it allows the Service Providers to develop budgets based on current forecasts of the volume of work in the following operational year, thus enabling the Service Providers to more accurately plan the resourcing requirements to undertake the work and to factor this into the budgets they submit to MG.

6.5. Proposal process

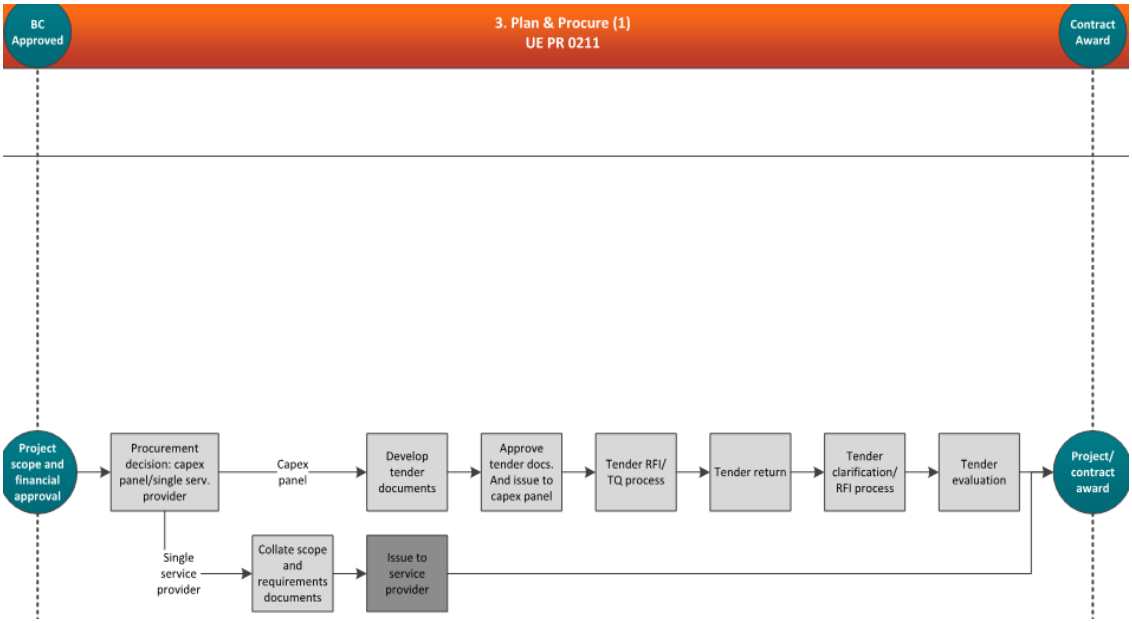
MG has in place a governance structure for large capital projects, which includes documented end-to-end processes:

- from the initial recognition of the need to undertake work, be it from the Asset Management Plan (for mains replacement) or customer initiated connections, to
- the close out of the projects.

52 Multinet Gas, ZNX Pty Ltd and ZNX (2) Pty Ltd, *Operational and Management Services Agreement* Schedule 4, Annexure 9, paragraph 2, pages 228-232.

The end-to-end process maps are included in Appendix 1. The following figure is the process map for the Plan and Procure stage of the Project Lifecycle for the delivery of large capital projects.

Figure 4: MG proposal process for large capital projects



Source: Multinet, *UE FL 025 United Energy Large Capital Projects Projects Delivery Framework: Level 1 & 2 Process Maps*

The Asset Management Plan, which is approved by Energy Safe Victoria, optimises and prioritises large capital projects. The development of Project Charters is in the Initiate stage of the Project Lifecycle for the delivery of large capital projects and the Project Charters are driven out of the Asset Management Plan. The long-term planning encompassed in the Asset Management Plan and this plan driving capital projects is recognised as good practice.

The proposal process commences with a decision as to whether to sole source a project with a Service Provider or seek proposals from the Service Provider panel and then progresses through a tender evaluation process if proposals are requested from the panel. The flexibility to allocate a project to a Service Provider or to open up a project to the Service Provider panel provides MG with a mechanism to maintain competitive tension. The MG process is typical of tendering processes and is consistent with the process recommended by the Australian Constructors Association[53].

In our opinion, the tendering process applied by MG:

- is consistent with good industry practise; and
- assists in maintaining competitive tension between the Service Providers.

53 http://www.constructors.com.au/wp-content/uploads/2006/08/Guidelines-for-Tendering-11-August-20061.pdf

6.6. Role of the Independent Estimator

The appointment of an independent estimator to review target cost estimates for construction projects is recognised as being good practise within the infrastructure and construction industries. The appointment of a suitably qualified estimator allows the asset owner to draw upon specialist expertise across multiple disciplines, a range of expertise that an asset owner is unlikely to be able to maintain efficiently in-house.

MG engaged Evans and Peck (now Advisian, a member of the Worley Parsons Group) as the independent estimator for projects during the period May 2013 to June 2016. The services provided by Evans and Peck under the Consultancy Agreement were[54]:

> *independent estimating services to support each OMSA and ensure that Budgets are developed by Service Providers in accordance with the terms of the OMSA.*

Evans and Peck's services included reviewing proposals by the Service Providers for:

- the annual capital budget (high value capital work);
- the Customer Initiated Connections template (low value capital work);
- detailed estimates for capital projects; and
- adjustments to target costs during the delivery phase of a project.

In performing its review of the budgets, Evans and Peck was required to form a view as to whether the rates or estimates conform to the requirements of the OMSA, utilising expertise in the following areas[55]:

- *bottom-up cost estimating including quantity surveying, design procurement, planning, scheduling and construction;*
- *cost comparison or benchmarking; and*
- *quantification of risks and contingencies in the context of cost-reimburseable target cost contracts.*

If MG and a Service Provider are unable to agree on:

- the annual budgets;
- a line item in a budget; or
- the Customer Initiated Connections template

there is a dispute resolution process in the OMSA culminating in the appointment of an expert, in this case Evans and Peck, to determine the outcome.[56] The decisions of the expert are binding on both MG and the relevant Service Provider.

In our opinion, the appointment of an Independent Estimator is:

- an efficient approach to resolving disputes between MG and a Service Provider concerning unit rates and budgets;
- an efficient approach to providing access to specialist resources; and

54 Multinet Gas and Evans & Peck, *Consultancy Agreement*, dated 16 May 2013, Schedule 1 Item 2

55 Multinet Gas and Evans & Peck, *Consultancy Agreement*, dated 16 May 2013, Schedule 1 Item 2

56 Multinet Gas, ZNX Pty Ltd and ZNX (2) Pty Ltd, Operational and Management Services Agreement, General Terms Clause 18.6 and Schedule 6 - Budgets and Charges

- in accordance with accepted good industry practice.

6.7. Comparison of Independent Estimator estimates with Statement of Works

The following table compares the estimates of the Independent Estimator with the estimates in the Statement of Works prepared by the relevant Service Provider for a sample of projects[57].

Table 8: Comparison of Cost Estimates with Statement of Works

Project	Independent Estimator	Statement of Works	Variance	Variance %
Carrum	$4,082,173	$4,633,965	-$551,792	-12%
Highett to Cheltenham Pipeworks	$8,536,204	$8,490,705	$45,499	1%
Canterbury-Balwyn	$9,671,768	$9,104,232	$567,536	6%
Lysterfield Demand Reinforcement	$213,489	$137,538	$75,951	55%
Kew Part 1	$5,228,135	$4,849,872	$378,263	8%
Aspendale Pipeworks	$6,620,660	$5,375,636	$1,245,024	23%

The following diagram highlights the level of cost estimation accuracy at stages of the project lifecycle[58]. The submission of a Statement of Works is analogous with the submission of a Tender in the lifecycle below. At this stage, the level of cost estimation accuracy is in the order of -10% to +20%.

Figure 5: Anticipated cost estimation accuracy during the project lifecycle

The Lysterfield Demand Reinforcement is a low value project with a variation between the Statement of Works estimate and the Independent Estimator's estimate of 55%. Large variances can be expected in estimates for relatively low value projects.

The variances for the remainder of the projects are broadly in line with the range -10% to +20%, and for the three projects that represent two thirds of the total value of the above projects the variance between the two estimates is less than 10%.

In our opinion, this information indicates that there is no systemic under- or over-estimation of the cost of projects at the Statement of Work stage of individual mains replacement projects.

57 Email from Vessy Calligeros, Project Performance Engineer, Monday, 24 October 2016

58 Evans and Peck, *Delivering Large Scale Capital Projects in the Infrastructure Sector - A Baseline of Performance in Australia*, Prepared for the Business Council of Australia, 2011, page 10.

6.8. Role of the Financial Auditor

The Financial Auditor is responsible for investigating claims for payment for consistency with the provisions of the OMSA. The role of Financial Auditor is currently performed by PwC. The Financial Auditor may recommend adjustments to payments to the Governance Team[59].

The Governance Team consists of representatives from MG and the Service Providers. The Governance Team is responsible for the management of the relationship between MG and the Service Provider at a strategic level.

If either party disputes a recommendation of the Financial Auditor that party may refer the dispute to the Financial Auditor for resolution with the Financial Auditor acting as an expert.[60]

Following the end of the operational year the Financial Auditor undertakes an audit of each Service Provider's costs as part of the process of finalising the painshare/gainshare provisions under the OMSA.

MG has allocated the roles of Financial Auditor and Independent Estimator to two separate consultants. In some cases, principals allocate these roles to a single consultant. Whether to allocate the roles to a single consultant or two consultants depends on the availability of consultants who can perform both roles and the complexity of the tasks to be undertaken by one or both roles.

In our opinion, the appointment of a Financial Auditor is:

- an efficient approach to resolving disputes between MG and a Service Provider concerning payments under the OMSA; and
- in accordance with accepted good industry practice.

6.9. Previous reviews

In preparing its submission to the AER for a change to its tariffs due to the volume of work undertaken on mains replacement in the current period, MG engaged Advisian to independently examine the costs incurred in 2013, 2014 and part of 2015. MG's submission included the following extract from Advisian's report[61]:

> *Advisian have independently examined all information received and confirm the lengths and costs summarised in the Executive Summary of the report to be a true and accurate assessment of the works undertaken from 1 January 2013 to 30 April 2015. Advisian also advise that* ***based on current market knowledge, construction costs associated with these projects are within industry expectations****. [emphasis added]*

59 Multinet Gas, ZNX Pty Ltd and ZNX (2) Pty Ltd, *Operational and Management Services Agreement*, Schedule 6 - Budgets and Charges

60 Multinet Gas, ZNX Pty Ltd and ZNX (2) Pty Ltd, *Operational and Management Services Agreement*, Schedule 6 - Budgets and Charges

61 Multinet Gas, *Cost Pass-Through Application: Mains Replacement Event*, 12 June 2015, page 6

6.10. Findings

OUR OPINION:

In our opinion, the mains replacement capital expenditure incurred by MG over the current regulatory control period is likely to be consistent with that of a prudent and efficient service provider, and therefore, consistent with Rule 79 of the National Gas Rules. We base this opinion on our view that:

- MG undertook a competitive tendering process for the provision of services for operational, maintenance and capital work, including mains replacement services. As part of the last GAAR process, the AER came to this same conclusion.
- The process for generating competitive tension throughout the current regulatory period under the current contracting arrangements is reasonable, and likely to incentivise efficient outcomes. In particular, even though:
  - work was allocated to the Service Providers based on the geographic area they covered during the period July 2013 to June 2015, the ability to engage an Independent Estimator to review target cost estimates for construction projects is likely to have provided an appropriate constraint on Service Providers' cost estimates (as well as being good practise within the infrastructure and construction industries), and
  - there was a requirement for MG to tender one project to each Service Provider from July 2015 onwards, all other projects were tendered to both Service Providers, hence creating competitive tension between the two Service Providers. In our opinion, providing a baseload level of work to each Service Provider (i.e., one project) is also likely to have been efficient, if this baseload level of work then allowed the Service Providers to "resource up" and therefore become a more robust bidder against the other service provider for the remainder of the projects let.
- The underlying contracting structure (P50) results in the contractor sharing in any gain or loss relative to budget, which should incentivise it to adopt the least-cost means of undertaking mains replacement services, given the conditions faced.
- The evidence indicates that budgets set through the contractual process for mains replacement projects are not systemically too high (resulting in Service Providers benefiting systemically from over estimating budgets) or too low (resulting in Service Providers being penalised systemically, either of which could indicate inappropriate risk sharing.

7. Engineering assessment of a sample of mains replacement projects

7.1. Objective of this section

The objective of this section is to assess MG's revealed unit rates for mains replacement for a sample of sites, given the actual site conditions faced by MG.

7.2. Background

OGW's costing engineer investigated the site conditions experienced by MG for a small sample of mains replacement projects that MG has undertaken over the current period. The purpose of this investigation was to prepare:

- an overview of the projects, including locations, length of mains, project costs (both internal and external, if available);
- a description of the site conditions faced by MG in conducting the projects; and
- a description of the impact that those site conditions are likely to have had on the type of costs (e.g., traffic management) MG would have had to incur to complete those projects.

7.3. Outcomes of the independent assessment

OGW's costing engineer met with the Zinfra managers responsible for the delivery of the mains replacement work for MG. The purpose of this meeting was to obtain an overview of two sample projects[62] undertaken by Zinfra and to undertake a site visit to gain an appreciation of the site conditions that were encountered during the projects.

7.3.1. Project descriptions

The Canterbury/Balwyn project involves approximately 39.3 kilometres of mains replacement and approximately 2,500 services connections. The Kew East project entails some 29 kilometres of mains replacement and 2,000 services connections.

The Statement of Awards for these two projects were made in October 2014 and June 2015 respectively. The Canterbury/Balwyn contract is now effectively closed out. The Kew East project is ongoing.

Both projects entail the upgrading of the existing mains primarily from low pressure to high pressure. This is largely completed by high-density polyethylene pipe (HDPE) pipe insertions inside the existing mains where practicable. Whilst access to the existing mains is mainly achieved via excavation pits, shorter specialised sections are constructed either by horizontal directional drilling (HDD) where access is very limited or by re-laying some mains where older pipe is encountered or for practical reasons.

62 These projects were selected by OGW – not MG - after considering the entire list of mains replacement projects undertaken by MG over the period. In selecting these projects, we considered the likelihood that these projects would be a reasonable reflection of the typical circumstances/conditions faced by MG in undertaking mains replacement works over the regulatory period.

7.3.2. Site conditions

Typical sections of both projects were inspected during the site visit. Whilst other project areas were not inspected, the mix of easier residential streets to difficult busy feeder roads within the sample of project areas visited is considered to be representative of other projects. Hence, it is deemed likely most, if not all projects, entail working conditions varying from easy to particularly difficult.

An analysis of the site problems, restrictions, changes to work practices and constraints encountered at both sites highlights the high risks involved with construction aspects of these two projects.

Mains replacement occurs along all types of streets ranging from narrow lanes, quiet residential streets, busy feeder roads to heavily trafficked arterial roads. Units and apartments, shops and commercial enterprises predominate in some areas along the major streets.

Tram tracks and other road features also inhibit ease of construction. Parked vehicles and through traffic are major issues along many streets. Management of work in the vicinity of parked vehicles involves extensive liaison with landowners and shop owners.

As well, narrow nature strips are common with other underground services usually to be contended with.

Ground excavation criteria varies from easy shallow digging to areas where hard rock is encountered to other areas where shoring and/or trench shield techniques are necessary due to OHS regulations. Pit excavation often entails cutting and removal of concrete slabs in the road or the nature strip. In roads, a thick hot-mix wearing service often exists requiring expensive diamond cutting prior to excavation.

Traffic management is a major issue in any construction works in heavily trafficked streets. It is a large cost factor here as well as evidenced by the extra traffic management works called for at Canterbury/Balwyn between June 2015 and November 2015, and similarly at Kew East during 2016.

Most of the above criteria apply to both projects. Both sites generally incurred the same restrictions, site constraints and high associated risks.

Unforeseen issues that were outside of management control that arose on site during the currency of the two projects included, but were not limited to:

- traffic management arrangements, which were more complex and extensive than envisaged, requiring costly full-traffic control 100% of the time for much of the project work;
- Energy Safe Victoria audits resulting in significant work delays; and
- discovering the expensive need to over-excavate the access pits due to some mains being deeper than anticipated and/or the difficulty in locating mains where the mains were not located where indicated in drawings.

The following figures provide an indication of the conditions encountered on site.

Figure 6: Site conditions in retail street

Figure 7: Site conditions on major road

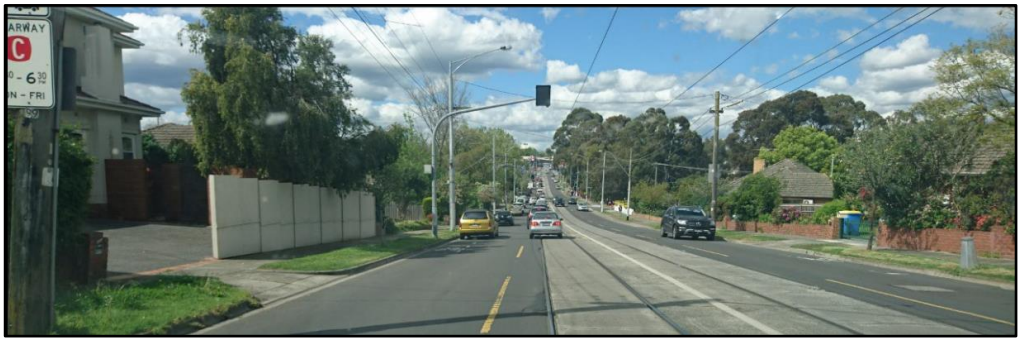


Figure 8: Site conditions in suburban street

7.3.3. Kew East Project Costs

The yet to be finalised cost of the 29,000 metres of mains replacement in Kew East, including connections, is expected to be approximately $7.5 million which equates to $259/metre. This information was supplied by Zinfra.

MG advised that the AER rate (this rate was included in MG's Mains Replacement Cost Pass Through Application[63]) for this project was $165/metre. This figure excludes MG overheads. Note this figure is in 2012 dollars hence needs to be escalated to 2016 dollars. As small civil engineering and gas pipeline works increased nominally in value by 4% per annum over these years, the adjusted AER rate is actually $193/metre in 2016 dollar terms.

This is still materially less than the $259/metre rate advised by Zinfra which represents a 34% increase in project cost.

The target price submitted by Zinfra was $232/metre which included the connections.

MG advised that site conditions encountered during the Kew East project included:

- shallow mains, which resulted in the need for the more expensive method of excavating along the mains and re-covering;
- a low volume of mains in the nature strip, with a higher than expected volume in roads which required excavation and reinstatement of the road surface; and
- smaller street frontages for properties, and therefore more services to be reinstated, which slowed the rate at which mains could be replaced.

7.3.4. Canterbury/Balwyn Project Costs

The Canterbury/Balwyn project involved some 39,000 metres of mains replacement. Zinfra have advised us the completed cost is $8.05 million. This equates to a unit rate of $206/metre including the service connections.

The AER rate (this rate was included in MG's GAAR[64]) advised by MG for this project was $168/m. After allowance for escalation due to inflation and ongoing increases in construction costs as previously, this figure is estimated to be around $196/metre in 2016 terms. Thus, with this project, the final constructed actual cost was only 5% higher than budget. The target contract price as bid by Zinfra was $191/metre.

MG advised that the number of multiple unit developments in the Canterbury/Balwyn project area impacted on the cost of this project. Factors that affected the cost included:

- the need to relocate meters in non-compliant locations;
- pipe in the developments in some cases being under the building and therefore new pipe needing to be installed; and
- where it was necessary to install new pipe on the walls of buildings, the need to use copper pipe due to its resistance to heat generated from exposure to sunlight.

63 Email from Julian Bialecki, MG Works Program Manager – Gas Network on 14 October 2016

64 Email from Julian Bialecki, MG Works Program Manager – Gas Network on 14 October 2016

7.4. Benchmarking MG unit rates with other mains replacement programs

Having regard to the above information, we have sought to compare the unit rates for the two mains replacement projects described above with unit rates derived from decisions by the AER on Mains Replacement Cost Pass Through applications from MG, AGN[65] for its Victorian distribution network and AusNet Services[66].

Table 9: Comparison of actual MG unit rates with AER approved rates for other gas distribution businesses

Project/Company	Capital Expenditure ($2012)	Length of Mains (metres)	$/metre
AusNet Services - Mains Replacement	$14,800,000	85,000	174
AGN - Mains Replacement	$117,100,000	331,000	354
MG - Mains Replacement	$51,600,000	272,000	190
MG Canterbury/Balwyn Project[67]	$6,881,174	39,000	176
MG Kew East Project	$6,411,031	29,000	221

As stated earlier in this report, there are numerous project-specific factors that can affect the outturn cost of mains replacement works. In the context of the above table, this is compounded by the fact that contextual information, such as the number of connections to be replaced as part of the mains renewal programs, is treated as commercial-in-confidence and therefore not available.

This heterogeneity means it is not possible to make direct comparisons of the unit rates in the above table, however it is possible to draw broad conclusions based on orders of magnitude.

To this end, the MG rates for the above projects are either at or close to the lower end of the average rates approved by the AER for AGN and AusNet Services. It is noted that both AGN and AusNet Services' rates were predominately derived from competitively tendered contracts, as were MG's outturn rates, hence they present a reasonable proxy for the expected range for mains replacement expenditure (per metre) over the period.

Furthermore, it is noted that AusNet Services mains replacement program was focused on areas in Geelong, Ballarat, Castlemaine, Fawkner and Williamstown[68]. Whilst every area is unique, and likely to present different challenges, on face value, the site conditions affecting many of AusNet Services' areas (namely Geelong, Ballarat and Castlemaine) may not have been as challenging as those encountered on the above MG projects. This is particularly so for the Kew East project, which involved a more densely developed urban area that, on face value, is likely to have necessitated, amongst other things, more traffic management costs and more services per metre of main (due to smaller street frontages).

65 AER, *Australian Gas Network's cost pass through event variation application of 31 July 2014 for Costs proposed for AGN's Victorian distribution network mains replacement program*, November 2014, page 2

66 AER, *AusNet Services gas mains replacement cost pass through AER decision*, September 2016, page 1.

67 The capital expenditure for this project and the Kew East project has been calculated by de-escalating the actual cost using the assumption that small civil engineering and gas pipeline works increased nominally in value by 4% per annum over this period.

68 AusNet Services, Gas Access Arrangement 2013-17, Cost Pass Through Application, 11 August, 2016, page 14

In our opinion, this information further reinforces our view that MG's outturn mains replacement costs are within the reasonable expected range given current market conditions, and therefore, they are likely to have been prudent and efficient.

7.5. Findings

OUR OPINION:

Our review of two of MG's mains replacement projects undertaken during the period indicates that MG's outturn mains replacement costs are within the reasonable expected range given current market conditions. Therefore, they are likely to have been prudent and efficient, and as a result, consistent with Rule 79 of the National Gas Rules.

We base this opinion on our view that:

- The site conditions encountered were challenging, and MG could not have forecast accurately many of those challenging factors at the time it developed its regulatory proposal.
- In addition, Zinfra or any other competent contractor could not have reasonably foreseen many of the above unforeseen site issues, even at the time of tender.
- Many of these factors were exogenous; that is, they were beyond or predominately beyond the control of MG management.
- We have not identified any malpractices, incompetency or lack of project understanding in our assessment of the execution of the two sample projects. Moreover, there is nothing to suggest that the actions of MG materially adversely affected the costs incurred by Zinfra, and therefore the costs that will be borne by MG's customers over the life of those assets (presuming they are rolled into the regulatory asset base).
- In both cases Zinfra's actual costs exceeded its budgeted costs, and therefore it was subjected to a 50% share of the cost overrun. This should have heavily incentivised Zinfra to have managed the costs of these projects in a way that minimised the overall cost of the project, whilst meeting all requisite safety and regulatory requirements.
- We compared the cost of the two sample mains replacement projects with the cost allowed for by the AER in its decisions on Mains Replacement Event Cost Pass Through applications from AGN and Ausnet Services and found that the derived unit rates for the sample projects were at the lower end of the derived unit rates approved by the AER.

8. Conclusions

8.1. Customer Connections

In our opinion, MG's expenditure on customer connections is consistent with the prudency requirements reflected in Rule 79 (subsection 2). We base this opinion on the fact that MG's customer initiated capital works are customer driven, and undertaken subject to the present value of the expected incremental revenue being generated exceeding the present value of that capital expenditure (and where this is not the case, a connection charge is imposed to overcome the shortfall). This screening mechanism aligns with the requirements of Rule 79 (subsection 2), as it ensures that the overall economic value of the expenditure is positive.

Furthermore, in our opinion, MG's outturn unit rates for connections are likely to be consistent with those that would be incurred by a prudent service provider acting efficiently, in accordance with accepted good industry practice, to achieve the lowest sustainable cost of providing services – which accords with Rule 79. Our basis for making this statement is that:

- The contracts underpinning the rates were competitively tendered, which, everything else being equal, should lead to the market revealing the efficient cost of supply,
- The approach for revising those rates over the life of the contract is, in our opinion, reasonable, and likely to provide a robust approach to applying competitive tension to the annual process for deriving new unit rates,
- MG's outturn unit rates for its industrial/commercial customers – even after including its Tariff D customers - are still well below the rates the AER approved as being efficient as part of the last GAAR determination process for AGN and AusNet Services' Tariff V customers, and
- MG's outturn unit rates for its residential customers are comparable, if not lower, than the rates the AER approved for AGN and AusNet Services.

8.2. Mains Replacement

In our opinion, MG's expenditure on mains replacement is consistent with the prudency requirements reflected in Rule 79 (subsection 2), as MG's mains replacement program is undertaken to (a) maintain the integrity of services, (b) maintain and improve safety or services; and/or (c) comply with a regulatory obligation or requirement, all of which are limbs under Rule 79.

Furthermore, in our opinion, the mains replacement capital expenditure incurred by MG over the current regulatory control period is likely to be consistent with that of a prudent and efficient service provider, and therefore, consistent with Rule 79. We base this opinion on our view that:

- MG undertook a competitive tendering process for the provision of services for operational, maintenance and capital work, including mains replacement services. As part of the last GAAR process, the AER also came to the conclusion that this process was competitive.
- The process for generating competitive tension under the current contracting arrangements throughout the current regulatory period is reasonable, and likely to incentivise efficient outcomes. In particular, even though:
  - work was allocated to the Service Providers based on the geographic area they covered during the period July 2013 to June 2015, the ability to engage an independent estimator to review target cost estimates for construction projects is likely to provide an appropriate constraint on Service Providers' cost estimates (as well as being consistent with good industry practise); and

- there was a requirement for MG to tender one project to each Service Provider from July 2015 onwards, all other projects were tendered to both Service Providers, hence creating competitive tension between the two Service Providers. Furthermore, in our opinion, providing a baseload level of work to each Service Provider (i.e., one project) is likely to have been efficient, as this base load level of work provides the means for the Service Provider to "resource up" and thus become a more robust bidder for the remainder of the projects let.

- The underlying contracting structure results in the contractor and MG sharing in any gain or loss relative to budget, which should incentivise the contractor to adopt the least-cost means of undertaking mains replacement services, given the conditions faced.
- The evidence indicates that budgets set through the contractual process for mains replacement projects are not systemically too high (resulting in Service Providers benefiting systemically from over estimating budgets) or too low (resulting in Service Providers being penalised systemically), either of which could indicate inappropriate risk sharing.

We compared the cost of two sample mains replacement projects with the cost allowed for by the AER in its decisions on Mains Replacement Event Cost Pass Through applications from MG, AGN and Ausnet Services and found that the derived unit rates for the sample projects were at the low end of the derived unit rates approved by the AER.

Appendix A – Process map for Large Capital Projects

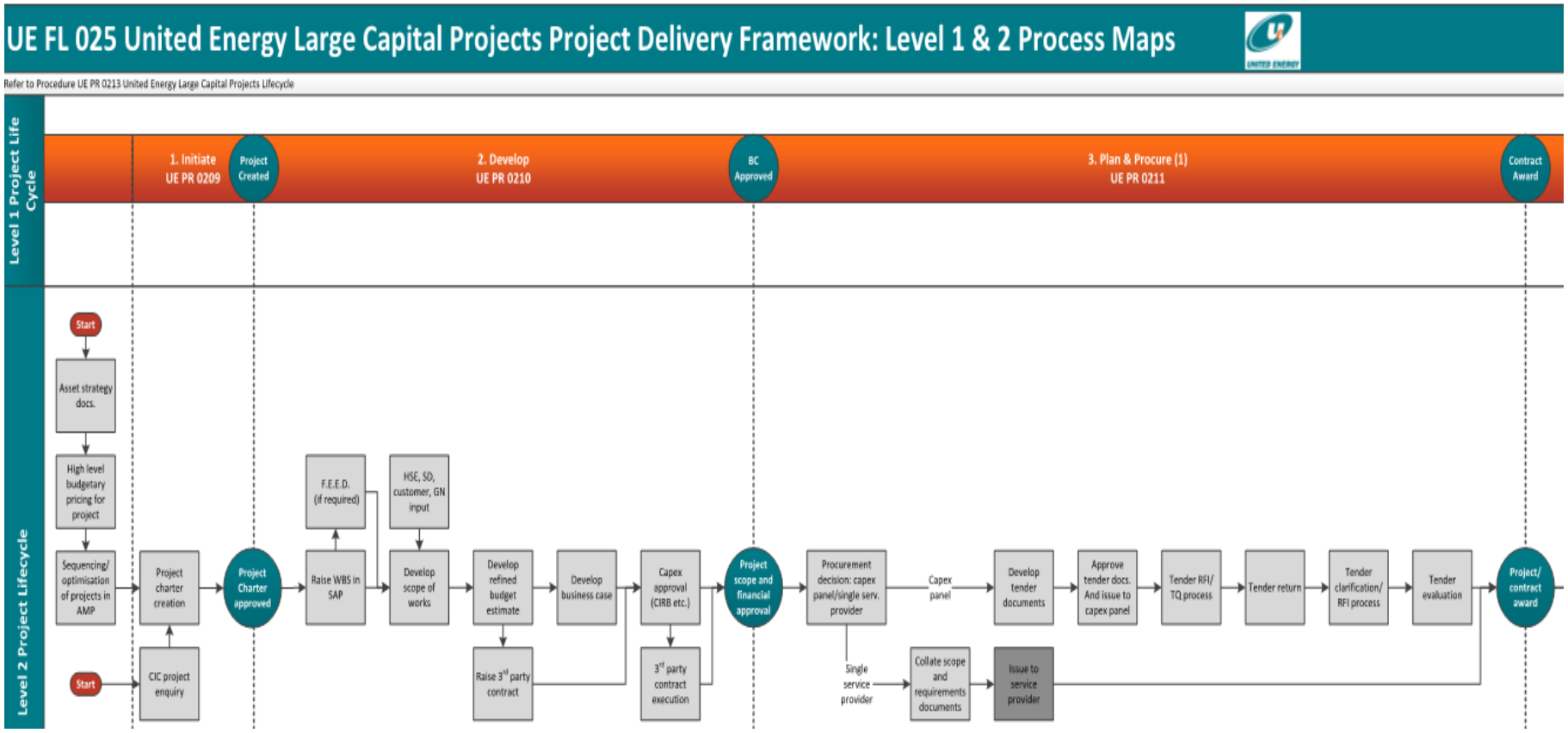


Figure 9: Process maps for large capital projects (2)

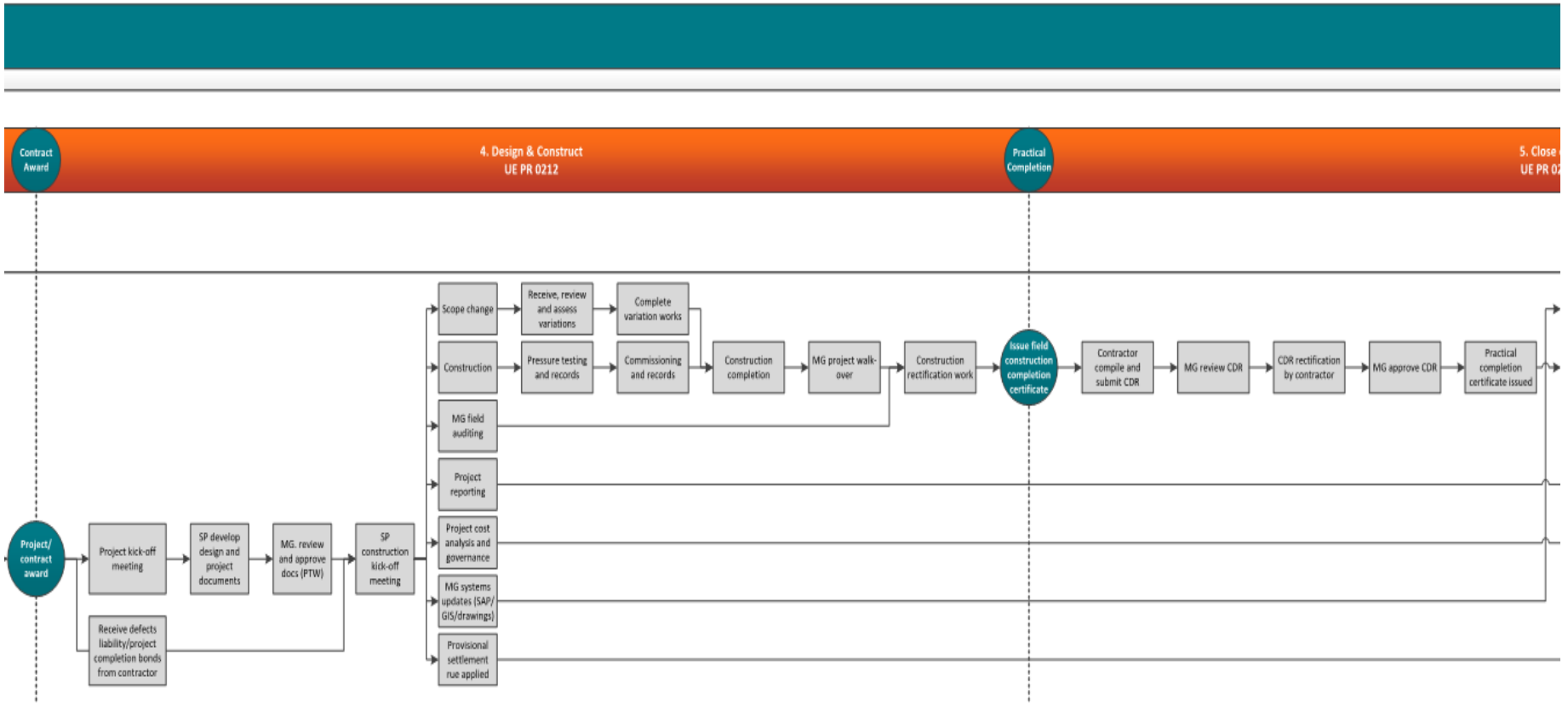


Figure 10: Process maps for large capital projects (3)