Final report to

Independent Pricing and Regulatory Tribunal of NSW

PUBLIC VERSION

Demand forecast for the AGL Gas Network

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EXECUTIVE SUMMARY

Introduction

The Independent Pricing and Regulatory Tribunal of New South Wales (the Tribunal) has asked McLennan Magasanik Associates (MMA) to review demand forecasts proposed by AGL Gas Networks (AGLGN) to determine whether they meet the Gas Code criterion of "..best estimates arrived at on a reasonable basis".

In its draft report to the Tribunal dated 5 April 2004 MMA reported that while in most cases MMA considered the methodology adopted by AGLGN to be reasonable in many cases the assumptions made are either considered to be unreasonable or to require further analysis or justification. MMA set forward 26 detailed recommendations for AGLGN which, if adopted, would allow the forecasts to be considered by MMA to meet the criterion.

Summary outcome of the recommendations

Since the draft report there has been a public meeting and call for submissions allowing stakeholders to comment and a response to the recommendations, a meeting and many discussions between MMA and AGLGN. This has clarified the "outcome" of most of the recommendations. In some cases the recommendations have been accepted by AGLGN. In some cases MMA has accepted argument put forward by AGLGN and agreed with AGLGN's point of view or a compromise has been reached. In some cases MMA has not accepted the AGLGN response.

The actual recommendations and the debate and resolution, if any, are repeated in the body of this report. Exec Table 1 lists each recommendation and its outcome following the most recent discussions with AGLGN. A further "recommendation" arising from submissions by stakeholders is also considered.

Exec Table 1 Recommendations from the MMA draft report and outcomes

R No	Issue	Outcome
	Residential	
1	Use of latest Bis Shrapnel	Accepted by AGLGN
2	House/medium split	Accepted by AGLGN
3	Gas penetration rate into new dwellings	Acceptable compromise agreed between AGLGN and MMA
4	Proportion of Central Hot Water	Accepted by AGLGN

R No	Issue	Outcome
5	Singleton	Accepted by AGLGN
6	Disconnections	MMA accepted the AGLGN position as reasonable
7	HDD slope analysis	Accepted and provided by AGLGN
8	Basix substantiation	Although there has been some debate and movement on both sides this remains a key area of disagreement.
9	Basix timing	Still some disagreement
10	Basix stimulation of other gas usage	MMA has accepted the AGLGN position.
11	Weather normalisation in base year	Accepted by AGLGN
12	Starting average usage for new customers	Although there has been some debate and movement on both sides this is a key area of disagreement.
13	Average in project areas	Remaining key area of disagreement
14	Basix in 2003/04	Accepted by AGLGN
15	Basix proportion in 2004/05	Still some disagreement
16	Overall Impact of Basix	Although there has been some debate and movement on both sides this remains a key area of disagreement.
	Small Business	
17	Singleton	Accepted and provided by AGLGN
18	Project areas	Remaining disagreement but relatively minor
19	Weather normalisation	Accepted by AGLGN
20	Tariff to Contract transfers	Accepted by AGLGN
21	Business customer numbers	Accepted by AGLGN
	Contract	
22	Use of other drivers	MMA has accepted AGLGN's position.
23	Reconciliation of baseline	Accepted by AGLGN, still to be provided
24	Baseline adjustment	MMA has accepted AGLGN's position
25	Adjustment for additions and closures	Still some disagreement
26	"Rational" contracted MDQ for the majors	Remaining key area of disagreement
Extra	New Hunter Valley Projects	MMA recommends inclusion of probability-weighted demand for new projects

Key areas of agreement and disagreement

Residential numbers

All material issues relating to residential customer numbers have been resolved.

Residential average usage

Although several issues have been resolved three key areas of significant difference remain:

- Starting average usage by new customers. MMA estimates starting average usage to be higher than does AGLGN for new homes and medium density connections excluding central hot water (CHW) connections.
- Impact of Basix. MMA and AGLGN differ by about 20% on the estimated hot water impact of implementing Basix and also on the impact of Basix on usage in the CHW market.
- Project areas. MMA considers that AGLGN has not properly handled new customers in the Blue Mountains and Central West project areas

Together these result in a difference of forecasts (between the revised AGLGN forecasts and MMA assessment of best estimates) of about 150 to 200 TJ, or about 0.7% of the residential forecast (without the proposed AGLGN marketing incentive) in each year of the coming Access Arrangement (AA) period.

Small Business market

Although AGLGN has not accepted all the MMA recommendations the net difference is small, building to about 0.4% by 2010, and MMA considers the difference immaterial.

Contract Market

There is still disagreement between MMA and AGLGN on the following issues:

- Rational contracted MDQ
- Hunter Valley projects
- Timing of additions and closures.

Of these only the first two are of significance in the aggregate, with the first resulting in an estimated increase of about 20 TJ of contracted MDQ (about 7% of total contracted MDQ)

mainly in the Wollongong area and the second about 1.5 TJ, about 2% of contracted Newcastle load.

Conclusions

The process undertaken in the review of demand forecasts has meant on-going liaison between AGLGN and MMA in an attempt to agree to forecasts which can be accepted as "best estimates arrived at on a reasonable basis" as required by the Gas Code.

Although MMA accepts that the latest AGLGN forecasts meet this criterion in many areas, this is not the case in the key residential average usage and contract market forecasts. The impact of the differences is about 0.7% of the residential tariff market volumes (about 0.5% of the total tariff market volumes) and about 3% of the contract market MDQ forecasts (but not necessarily revenue) in each year of the forecasts.

1 INTRODUCTION

1.1 REVIEW PROCESS

The Independent Pricing and Regulatory Tribunal of New South Wales (the Tribunal) is currently undertaking a review of the regulatory arrangements to apply to the covered NSW gas distribution networks of AGL Gas Networks (AGLGN) from 1 January 2005.

The Tribunal has asked McLennan Magasanik Associates (MMA) to carry out an independent critical review of the AGLGN demand forecasts and to assess whether they can be said to represent "…best estimates arrived at on a reasonable basis" as required by the Gas Code.

The MMA draft report to the Tribunal dated 5 April 2004 reported that while in most cases MMA considered the methodology adopted by AGLGN to be reasonable in many cases the assumptions made are either considered to be unreasonable or to require further analysis or justification. MMA set forward 26 detailed recommendations for AGLGN which, if adopted, would allow the forecasts, as revised, to be considered by MMA to meet the Gas Code criterion.

Following feedback from stakeholders on the draft MMA report a further issue relating to potential new project usage in the Hunter Valley has been added to the list.

Subsequent to the draft report MMA and AGLGN have liaised regularly. AGLGN prepared an official response to the MMA recommendations and there has been on-going discussion about many of the issues. AGLGN has also provided MMA with an updated forecast.

This report reviews the recommendations made in MMA's draft report and the AGLGN responses to these.

1.2 LAYOUT

Although this report relies on the previous draft report it can be read in isolation as it relates almost entirely to the recommendations made in that draft report.

The report is laid out in the following order:

Chapter 2: Residential customer numbers

Chapter 3: Residential average usage

Chapter 4: Basix

Chapter 5: Small Business

Chapter 6: Contract Market

The final report to the Tribunal contains some material which is considered by AGLGN to be confidential. Such material has been omitted from the public report. Where this is the case the omission has been marked with "Confidential xx". There are, in addition, two confidential Appendices.

Within each Chapter recommendation are generally handled sequentially. Where the recommendations have been accepted by AGLGN the recommendation is merely repeated with a statement that AGLGN has accepted it, often with a comment as to whether the newest forecasts also reflect the acceptance.

Where AGLGN has not fully accepted the recommendation a review of the issue and a summary of both sides of the debate is presented. If an outcome which was not that recommended has been considered acceptable by both MMA and AGLGN that outcome is presented and MMA's acceptance of this as meeting the spirit of the recommendation is recorded.

Where a recommendation has not been accepted and MMA and AGLGN have not been able to agree on an outcome acceptable to both parties a summary of both sides is presented and an indicative assessed impact is presented.

Each Chapter (except Chapter 3) ends with a conclusion as to whether or not that section of the forecasts is considered to meet the Code requirements and, if not, an indicative assessment of the difference between the AGLGN forecasts and those which MMA considers would meet the Code requirement.

2 CUSTOMER NUMBERS

2.1 MMA RECOMMENDATIONS

In its draft report MMA made the following recommendations related to residential customer numbers:

Recommendation 1: MMA recommends that forecasts for 2004 to 2009 and actual completions for 2002/03 from the March 2004 BIS Shrapnel report be used in forecasting by AGLGN.

Recommendation 2: MMA recommends that the division of growth between houses and others be based on the BIS Shrapnel numbers over the period 1997 to 2005, including the forecasts for 2004 and 2005 and trend analysis of these numbers from 2005 to 2010.

Recommendation 3: MMA recommends that the trend analysis penetration of gas from 1997 to 2003 be incorporated into forecasts for stand-alone houses and that the trend analysis capped at 85% be factored into forecasts for medium/high density houses.

Recommendation 4: MMA recommends that the average CHW proportion of 57.7% be used in forecasting unless AGLGN has reason to expect that this level of CHW will not continue.

Recommendation 5: AGLGN should be asked to provide a summary of the Singleton business case as evidence to support the new connection numbers.

Recommendation 6: MMA recommends that the average number of disconnections over the past five years, 2,744, be used to estimate disconnections over the next period.

2.2 RECOMMENDATION 1: USE OF LATEST BIS SHRAPNEL

This was accepted by AGLGN. The numbers and methods input by AGLGN are in line with the recommendations.

2.3 RECOMMENDATION 2: SPLIT BETWEEN HOUSE AND MEDIUM DENSITY

This was accepted by AGLGN. Apart from an apparent anomaly in one of the numbers used by AGLGN (number of medium density houses in 2000) this is as expected. AGLGN has explained that one of the historical numbers provided previously was an error and MMA considers this amendment reasonable. MMA accepts that the number and methods are in line with the recommendations.

2.4 RECOMMENDATION 3: PENETRATION RATE OF GAS INTO NEW DWELLINGS

MMA has recommended that the assumed penetration of gas into new houses be based on the trend analysis over the past six years, capped at 85% for medium density.

AGLGN has argued persuasively that it already connects 90% of dwellings within estates where gas is economically available and that it will be difficult to materially increase this proportion. Of course there are areas both within and outside the metropolitan areas which do not currently have gas reticulation and where gas is unlikely to be reticulated. This limits the proportion of new gas dwellings which will ever connect to gas.

Using the trend analysis proposed by MMA would result in very high penetration rates for both houses and medium density dwellings by 2010. MMA accepts the AGLGN argument that such an increase in penetration rates is unlikely.

Nevertheless there is evidence that the penetration rate is increasing in both houses and medium-density dwelling and MMA believes that this will continue to rise with the advent of Basix. The initial AGLGN position of a static penetration rate, being that achieved in 2003, also appears unacceptable.

Penetration rates can vary markedly between years and while the 2003 penetration rate for medium density dwellings appears reasonable, that for stand-alone houses appears low. MMA and AGLGN have reached agreement that a reasonable balance to adopt for penetration rates is to use, for 2004, the average penetration rate over the past four years and then to increase this by 1 percentage point per annum. The outcome is provided in Table 2-1.

Table 2-1 Forecast penetration rates

	2003	2004	2005	2006	2007	2008	2009	2010
Houses	50.0%	51.3%	52.3%	53.3%	54.3%	55.3%	56.3%	57.3%
Medium-density	77.0%	75.6%	76.6%	77.6%	78.6%	79.6%	80.6%	81.6%

MMA accepts that the methodology and calculations used by AGLGN are in line with the agreed position and meet the spirit of the recommendation.

2.5 RECOMMENDATION 4: PROPORTION OF CENTRAL HOT WATER

This recommendation was accepted by AGLGN. However, the numbers and methods input by AGLGN are somewhat different to those of MMA. MMA has used the weighted average of the past seven years while AGLGN has used the simple average of the past seven years. The differences are minor and MMA accepts that the spirit of the recommendation has been met.

2.6 RECOMMENDATION 5: SINGLETON

AGLGN intends to reticulate Singleton township and has forecast residential connections starting in 2006 and growing to 1500 homes by 2010. AGLGN has supplied MMA with a brief summary of its business case for Singleton. According to this summary there are about 5000 dwellings in Singleton and AGLGN has estimated penetration of 16% in Year 1 growing to 30% in Year 5.

According to the 2001 census there are about 7000 dwellings in Singleton Shire. However, we would expect a substantial proportion of these would be uneconomic to reticulate given the low average usage expected in Singleton (see Section 3.5). An estimate of 5,000 homes which might be reticulated appears reasonable.

A penetration rate of 30% by year 5 also appears reasonable given that the weather is relatively mild and the cost of gas is generally higher than in the cooler states.

MMA considers that AGLGN has met the requirements of the recommendation.

2.7 RECOMMENDATION 6: DISCONNECTIONS

AGLGN initially modelled disconnections as the average of recent years but growing in proportion to the customer base. MMA has recommended that disconnections be included at 2,744, the average rate over the past five years. This was based on the fact that there was no obvious relationship between the customer base and disconnections in any year and the assessment that, as customer losses are due largely to redevelopment of properties, the relationship should be with the number of new properties built, not total properties.

AGLGN has used the same starting point as proposed by MMA but has argued that:

- As most new homes are in new housing estates, that is had no previous gas supply point, there is no clear relationship between new connections and disconnections
- There is a clear relationship between disconnections and the existing customer base. The greater the existing customer base the greater the redevelopment potential of residential properties which previously had a supply point.
- Although there may be no clear connection between the customer base numbers and recent connections this may be due to the way disconnection data is connected. Over the longer term it would be expected that disconnections would increase.

The bed debt component of disconnections is also expected to be directly related to the customer base.

MMA has accepted AGLGN's argument to use the agreed starting point but to assume that disconnection numbers increase in proportion to the customer base. MMA has checked the incorporation of the methodology into the AGLGN and considers the spirit of this recommendation to be met.

2.8 CONCLUSION

MMA considers that the AGLGN methodology and assumptions relating to customer numbers meet the Code requirements.

3 AVERAGE RESIDENTIAL USAGE

3.1 MMA RECOMMENDATIONS

The recommendations in the draft report which related to average usage by residential customers apart from those related to Basix are considered in this section. Those which relate to Basix are treated in the following Chapter.

Recommendation 7: AGLGN is asked to provide statistical analysis to demonstrate that the HDD trend slope line is less than zero at a statistically significant level.

Recommendation 8: In its tariff volume summary, the weather normalisation should be applied to the 2002/03 year and this should then be multiplied by the calculated increase to provide the starting 2003/04 usage by existing customers.

Recommendation 9: AGLGN should use, as the starting point for the new houses, new medium density, new CHW and new E to G the average of the three years measured usage but take into account the impact of the annual shift from storage to instantaneous HWS (expected to be some 0.1 – 0.2 GJ pa).

Recommendation 10: AGLGN should use the same average usage numbers going forward in the Blue Mountains and Central West as it has in its historical reconciliation.

Recommendation 11: AGLGN should either provide further evidence of the low expected average usage in Singleton or adopt the value used in the Central West.

3.2 RECOMMENDATION 7: IMPACT OF WEATHER

AGLGN has provided statistical analysis to demonstrate that the Heating Degree Day (HDD) trend over the past 52 years has been negative. MMA accepts the analysis and the corresponding assumption of 536 HDDs as standard for 2002/03 with a further trend reduction of 3 HDDs each year throughout the AA period.

3.3 RECOMMENDATION 11: WEATHER NORMALISATION IN 2002/03

AGLGN has accepted this recommendation. Although the implementation by AGLGN is not identical with that used by MMA it is considered reasonable.

3.4 RECOMMENDATION 12: STARTING AVERAGE USAGE FOR NEW CUSTOMERS

MMA has recommended that AGLGN use the average of the past three years usage as its 2003/04 average use starting points for new customers.

AGLGN has argued that it should use the results from the 2002/03 base year as there has been a steady decline in consumption which is in line with the steady decline in marketing resources and increasing use of energy efficient appliances. AGLGN has also cited preliminary data for customers connected in 2002/03 as further evidence of a declining trend.

Relevant average usage, marketing expenditure and heating degree day data provided by AGLGN are reproduced in Table 3-1.

Table 3-1 Average usage by new homes and E to G customers in the first year of their connection, marketing expenditure and billing heating degree days (HDDs)

Year of Connection	Average GJ new houses	Average GJ, Central Hot Water	Average GJ E to G,	Marketing expenditure, $M	Billing HDDs
1998/99	24.8		21.7		570
1999/2000	27.5	19.1	21.1	23.3	551
2000/01	27	19.1	19.2	17.1	543
2001/02	24	19.1	17.3	12.4	485
2002/03*	24.8		17.4	13.1	491

Source: AGLGN Follow up and clarification questions and spreadsheet average usage by new customers.xls.
* part year only

3.4.1 New homes

As can be seen, there is no obvious reducing trend in energy usage by new houses, even if the first year data is ignored as being very atypical. Weather may well have played a significant part in recent years with the years from 1999/2000 to 2002/03 becoming progressively warmer. Note also that the analysis of weather data here is complicated as connections in (say) 2000/01 may have used gas in both 2000/01 and 2001/02 in the first full year of their connection – the data recorded here.

While MMA is prepared to concede that there has been a shift to increasingly efficient appliances in the case of new homes this is only expected to reduce the average usage by about 0.1 GJ pa. Similarly the warming trend is expected to have only a minor effect. While marketing effort may well play in the number of appliances selected by new consumers this has stabilised over the past year or two. A further factor may well be the proportion of stand-alone versus medium and high density homes which has shifted quite markedly over the past few years.

MMA continues to believe that the average of the past few years weather normalised consumption is the best estimate of average usage going forward. MMA has proposed that the average of the past three years be used as the starting point for new homes but

considers reasonable to also incorporate the preliminary data for 2002/03 connections as well.

3.4.2 E to G houses

According to data collected by AGLGN[1] users in E to G houses are shifting to continuous hot water which uses less energy than the conventional storage systems. MMA considers it reasonable to use the average of the weather adjusted data for the 2001/02 and 2002/03 years for E to G houses.

3.4.3 Project areas

AGLGN has reconciled usage over the past four years using an average of 40.8 GJ for Blue Mountains houses and 33.8 GJ for Central West project houses (see Section 3.5). Despite AGLGN arguing that the proposed average of 17.3 GJ covers both project and non-project E to G houses we consider the above estimates to be the more realistic. AGLGN has used 18.6 GJ as the estimate for Singleton, see Section 3.5) and MMA considers this to be reasonable.

3.4.4 Starting average usage assumptions

MMA therefore believes the following values should be used as 2002/03 starting average usage values.

New Connection Type	**Assumed average usage in 2002/03, GJ pa**
New homes and medium density	26.0
E to G excluding project	17.6
Project Homes: Blue Mountains:	40.8
Project Homes Central West:	33.8
Project Homes: Singleton:	18.6
Central Hot Water:	19.1
Customer Losses	Average of all customers for the year

1 Provided in the AGLGN document "Hot Water Impacts for New Dwellings for AGLGN Network NSW", Revision C, 19 May 2004.

3.5 RECOMMENDATIONS 13, 17: AVERAGE USAGE IN PROJECT AREAS

MMA has recommended that AGLGN should use the same average usage going forward in the Blue Mountain and Central West project areas as it did in its historical reconciliations.

AGLGN has argued that it has already taken the different usages in the Blue Mountains and Central West into account in its average usage of 17.3 GJ per customer.

However, from the information provided to MMA this does not appear to be the case. In the Market Forecasts Methodology Report, page 17, it is specifically stated that the 17.3 GJ for E to G excludes projects. Similarly, in the reconciliations used by AGLGN to calculate changes in average usage by ongoing customers the average consumption of E to G is given as 17.3, those in the Blue Mountains as 40.8 GJ and those in the Central West as 33.8 GJ. The averages available also suggest that the 17.3 GJ does not include the projects as well as non-project E to G[2].

We have assumed that the project areas continue at the previous average rate given by AGLGN except for Singleton for which AGLGN has accepted an average usage of 18.6 GJ, the average for customers in the nearby Cessnock and Maitland regions.

2 For example, if the average usages in the Blue Mountains and Central West are 40.8 and 33.8 respectively then, in 2001/02 the average of all other E to G would have had to have been 11.5 GJ to make the average for all 17.3 GJ. This appears very unlikely.

4 BASIX

4.1 RECOMMENDATIONS

Several of the recommendations in the draft MMA report referred to attempting to reduce uncertainties about the impact of the implementation of Basix, the Building Sustainability Index regulation which is being implemented by the NSW Department of Infrastructure, Planning and Natural Resources, on gas usage in new houses.

In general terms, while MMA accepted that Basix would impact on average usage by new home customers, it did not accept the initial AGLGN estimates of the Basix impact and recommended that further work be done by AGLGN to substantiate its position. The Origin submission on the MMA draft report also commented that, given the degree of uncertainty about the impact of Basix, MMA should pay particular attention to assumptions used by AGLGN in its forecasting.

AGLGN has carried out further work on the likely impact of Basix and MMA has also met with AGLGN to review the state of the work at the time. The following discussion relates to AGLGN's Revision C of the document entitled "Hot water impacts for New Dwellings for AGLGN Network Australia" and dated 19 May 2004. Following this the recommendations are considered in turn.

Recommendation 12: AGLGN will need to substantiate in much greater detail its forecasts of new home energy usage after Basix is introduced compared to that of current new homes.

Recommendation 13: The modelling of Basix impact should reflect that Basix is only to be introduced into Sydney in mid 2004 and into the rest of NSW by 1/7/2005.

Recommendation 14: The modelling of Basix impact should also take some account of the potential of Basix to stimulate gas usage in appliances other than hot water.

Recommendation 15: AGLGN should use the 2002/03 averages for 2003/04 as there will be no impact of the Basix program until 2004/05 at the earliest.

Recommendation 16: AGLGN should include only the changes applicable to new dwellings in Sydney in 2004/05 (estimated at some 75% to 80% of the total) and the remainder only from 2005/06.

Recommendation 17: AGLGN should review the expected impact of Basix in light of the comments made in Section 2.10.2 of the draft report.

4.2 CHANGE TO HOT WATER MIX

According to AGLGN the choice of gas hot water appliances is in a state of flux. The market share of continuous hot water systems has grown substantially in recent years and is expected to keep growing. The rationale behind the change is provided in Hot Water Impacts. Continuous systems are understood to offer space savings and other features to homeowners and to now be of similar in cost to conventional hot water systems.

After talking with industry representatives AGLGN has provided the following assumptions about changing market penetration for independent services (both stand-alone and medium density serviced by stand-alone hot water systems) and appliances suitable for centralised services (mainly flats and apartments).

Table 4-1 Forecast change in hot water mix xx Confidential

DWELLING TYPE	HWS TYPE	2003	2004	2005	2006	2007	2008	2009	2010
New Dwellings – Independent Services	Storage	[redacted]							
	Continuous	[redacted]							
	Solar gas boosted	[redacted]							
New Dwellings – Centralised Services	Continuous	[redacted]							
	Centralised	[redacted]							
	Solar gas boosted	[redacted]							
E-G	Storage	[redacted]							
	Continuous	[redacted]							
	Solar gas boosted	[redacted]							

Source: AGLGN Table A1

MMA accepts that there has been a shift towards continuous hot water systems in recent years and that this trend is expected to continue. The pace of the trend is also considered reasonable.

4.3 GAS USAGE BY DIFFERENT HOT WATER APPLIANCES

AGLGN has provided the following assumed gas usages by hot water appliances.

Table 4-2 Assumed current usage by hot water appliances

DWELLING TYPE	HWS TYPE	GJ/yr
New Dwellings – Individual Services	Storage	19.6
	Continuous	15.4
	Solar gas boosted	6.5
New Dwellings - Centralised Services	Continuous	8.7
	Centralised	18.3
	Centralised Solar	9.8
E-G	Storage	19.6
	Continuous	15.4
	Solar gas boosted	6.5

Source: AGLGN Table B1

MMA considers these to be reasonable estimates of current practice for use for this purpose.

4.4 RESULTANT CHANGES PER ANNUM

As a result of these changes to appliance mix, the average usage per hot water system in new homes with individual services and in E to G homes is expected by AGLGN to reduce by about 0.1 GJ pa cumulative. MMA considers this to be a reasonable assumption.

4.5 IMPACT OF AAA SHOWERHEADS AND TAP AERATORS / REGULATORS ON WATER USE

A great deal of uncertainty surrounds the expected water savings from AAA showerheads and tap aerator/regulators.

4.5.1 AGLGN estimates for Showerheads

According to AGLGN, AAA showerheads are expected to save some 45% of water compared to current average and new home usage. This is on the basis that:

- current average showerhead flow rate is 16 L/minute (based on the average of two sources cited by AGLGN)
- the AAA showerhead uses at most 9 L/minute
- The saving is thus 45%(actually calculated 43.8%) based on estimated flow rate differences
- Penetration rates of AAA showerheads in both current average homes and new homes is believed to be around 30%.

4.5.2 AGLGN estimates for tap aerators/regulators

While citing industry claims that water savings from aerators and regulators will save up to 70% of water usage, AGLGN has assumed that tap aerators (and presumably regulators) will 41.6% of free-flow tap usage in households. This estimate is derived from:

- current average tap flow rate is 15-18 L/minute (Source quoted: Wilkenfeld)
- the aerator taps discharge at 8 L/minute (Source quoted: Wilkenfeld)
- One third of taps already has aerators (conservative estimate according to AGLGN)
- The saving is thus 41.6% based on estimated flow rate differences between current average and efficient.

4.6 MEASURED WATER SAVINGS ESTIMATES

While the above assumptions appear theoretically reasonable, they must be tested against the realities of actual observed savings. For example, people with AAA showerheads may shower for longer than those with standard showerheads. In the Perth Study referred to in the MMA draft report, the actual savings recorded in a domestic water study in Perth[3], which measured actual water usage with normal and "water-efficient" showerheads, found that water efficient showers used only about 10% less than normal showerheads in single residential houses and less than 3% less in multi-residential dwellings.

Unfortunately a flaw in the study design meant that the study could not differentiate between the A, AA and AAA "water efficient" showerheads. This means that the water flows supplied by the "efficient" showerheads could have ranged from 15 to less than 9 Litres/minute. AGLGN has highlighted this flaw, and the fact that the study relates to Perth, not NSW, as a concern with the use of the study results.

While MMA accepts these concerns the study does provide two significant considerations for the Basix analysis. The first is that "real" savings from AAA showerheads need to be evaluated – not just theoretical savings. The second is that the study measured water flows in "normal flow" showers to be only about 9 L/minute. Even taking into account the possibility of some experimental error this is significantly less than the 15 or so L/minute assumed theoretically to be the average flow rate for normal showerheads.

The most relevant applicable comparison of water savings from AAA showerheads and aerators/regulators appears to be that by Sarac, Day and White of the Institute of

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3 M Loh and P Coghlan, for the Water Corporation, "Domestic water use study ub Perth, Western Australia, 1998-2001, March 2003.

Sustainable Futures (ISF) of the University of Technology Sydney. In their comparison group analysis study of three NSW water savings programs [4] they found that:

- Programs with efficient showerheads resulted in statistically significant savings of 14.5 kL pa
- While the savings for tap aerator/regulator alone were not statistically significant, those with tap aerators/regulators as well as efficient showerheads achieved statistically significant savings of 19.6 kL pa. This implies a saving of the order of 5 kL pa for the tap regulators and aerators.

It would be expected that the retrofits etc in these programs would have been applied largely to standard showerheads and fittings. Therefore, the savings seen here are likely to be greater than those observed if there is already a significant penetration of AAA and aerator appliances.

AGLGN has critically reviewed this paper and commented that the actual water usage for showers was not provided, meaning that the percentage savings could not be calculated and also that all AAA fittings had not been adopted in all cases. While these short-comings are accepted, MMA considers this study to provide a strong indication of potential water savings from NSW residents intent on saving water.

In a paper dated November 2002 for the Healthy Rivers Commission of NSW[5], White and Campbell of the ISF estimated the following savings from showerheads and tap fittings

Table 4-3 Savings potential of AAA showerheads and aerators/regulators

	Current Average or Standard, kL/household pa	Efficient kL/household pa	Saving Potential
Shower	51	33	19
Taps and other indoor inc leaks, baths and sinks	33	19	
Taps alone			8

Source: ISF for Healthy Rivers Commission Tables 3.2 and Table C-2

The paper then multiplies the savings by a proportion to which the savings apply. This is 80% for both showers and tap flow regulators. It is unclear whether these weightings are

4 K Sarac, D Day, S White, "What are we saving anyway? The results of three water demand management programs in NSW", Institute of Sustainable Futures, University of Technology, Sydney, Proceedings of the International Water Association Congress, Melbourne, April 2002

5 S White & S Campbell, Institute of Sustainable Futures, "Integrated water service provision, opportunities and implications on the NSW North Coast, Occasional Paper OCP 1007 for the Healthy Rivers Commission of NSW, November 2002.

due to the proportion of people who already have the efficient showerheads or some other reason[6]. However, the weighted average saving estimated in the paper (Table C-2):

- 15.2 kL pa for AAA showerheads and
- 6.4 kL pa for tap flow regulators

is not dissimilar to the results provided in the Sarac et al paper.

MMA considers these estimates to be the most reliable assessment of savings currently available. The savings can already be assumed to take into account the proportion of new homes which already have the features, although this proportion may be understated.

It should also be noted that ratio for the points for water saving allocated to the devices buy Basix (8 for AAA Showerheads and 3 for aerator/regulators) is approximately in line with the savings found above.

4.7 HOT WATER SAVINGS

AGLGN has used the work of Wilkenfeld et al[7] to calculate hot water savings for showers and aerators/regulators. MMA considers the use of this source for allocation to be reasonable but has applied it to the average usage in the ISF for the sake of consistency.

The hot water savings allocated to by MMA is

- 30% of showers (15.2/51)
- 19% of hot water used in other tap-based applications.

Using the ISF/White estimates of total water usage and savings and the Wilkenfeld estimate of hot water proportions of total usage results in an estimated hot water saving of 22% by MMA. This is about 20% less than the savings estimated by AGLGN using the more theoretical savings. The main difference appears to be in the assumptions about the percent of the properties in which savings will occur.

AGLGN has contested the above assumptions, largely on the basis that the full savings identified in the White estimates already take into account those with efficient appliances. However, MMA does not consider this to be the case and also believes that the following considerations need to be borne in mind

6 Probably the former as the paper assesses a 35 ML pa "tune-up" benefit but applies it only to 70% of the population as 30% are assumed to already be efficient.

7 G Wilkenfeld and Associates Pty Ltd et al, "A mandatory water efficiency labelling scheme for Australia, final report to Environment Australia, April 2003.

- Basix does not require all houses to have AAA showerheads and tap regulators/aerators. Although these are considered cost-effective options they need not be implemented in all cases.

- Basix does not give points for installing aerators/regulators on laundry taps

- In some cases the AAA showerheads and tap fittings may not be installed or may be removed at the request of the homeowner

- The penetration rate of the AAA appliances in current new homes may well be greater than in average homes. For example we understand that Basix has assumed a 20% penetration rate of efficient showerheads while Ellis estimated a AAA penetration rate of new domestic showerheads in 1997 of 30%[8].

MMA has accordingly applied the potential benefits and weightings provided in Appendix C by White in its estimations.

4.8 SAVINGS IN ENERGY

4.8.1 Continuous and storage systems

AGLGN has estimated that the energy saved in continuous hot water systems will be in proportion to the total hot water used overall and that the absolute amount saved in storage systems will be the same as that saved in continuous. This eliminates the need for calculation of standing energy.

These appear to be reasonable assumptions.

4.8.2 Centralised systems

AGLGN has assumed that the reduction in usage for a centralised hot water unit will be in direct proportion to the change in usage. Thus, it has assumed that the usage for a centralised system will reduce from 18.3 GJ to 13.1 GJ pa, a reduction of 28.6%.

The basis for the reduction is that AGLGN expects the centralised systems after Basix to retain the same design criterion of 0.4 MJ/L. According to AGLGN, whether or not AAA devices are used the design constraint will stay the same and the standing energy component will reduce. According to AGLGN this will be achieved through a reduction in size of units and possibly of piping.

MMA does not consider this to be a likely outcome in the short and medium term. Taken to an extreme, if no water was used the standing energy component would be expected to drop to zero, clearly an unlikely outcome.

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8 M Ellis and S White, "The water efficient shower market in NSW", a scoping study for SEDA, December 1997.

MMA considers it more likely that initially the same centralised and sized units would be used, with approximately the same efficiencies, albeit for less water, and would produce energy savings of the same order as that in continuous units for flats – that is a reduction of 22% of 8.7 GJ or 1.9 GJ per unit. Over time, however, MMA considers it reasonable to assume that further efficiencies will be found. MMA has modelled the improved efficiency to come about over five years from 2006.

4.9 ELECTRICITY TO GAS HOMES

While AGLGN has assumed that the introduction of Basix will result in a reduction of usage of gas for hot water in E to G houses it has not included this in its analysis. E to G houses are existing, not new, houses and will thus not be required to meet the Basix requirements – although according to AGLGN renovations will also be required to meet the Basix requirements from 1 October 2005.

MMA considers it reasonable to model no change in E to G apart from changes in hot water system. MMA notes that AGLGN assumes that a large proportion of gas used in new E to G houses is for hot water. While it is considered likely that gas may be used for other appliances as well, the impact is expected to be relatively small.

MMA has modelled changes in the hot water system but notices that AGLGN has not done so. This difference acts to reduce the gap between the AGLGN and MMA version of Basix impact.

4.10 SWITCH TO BASIX

Basix is to be introduced to Sydney stand-alone and dual occupancy dwellings on 1 July 2004, to remaining dwellings on 1 October 2004 and to the remainder of NSW on 1 July 2005.

As we understand it, this would result in approximately the following level of applicability:

- 2003/04 – none
- 2004/05 stand-alone and some medium density houses in Sydney from 1 July and then the remainder in Sydney from 1 October. We estimate 83% of stand-alone homes, say 78% of medium-density not CHW and 63% of CHW in this year.
- 2005/06 – 100% of all new homes.

4.11 RECOMMENDATIONS 8, 16: AVERAGE USAGE AFTER BASIX

MMA has recommended that AGLGN provide a significant amount of substantiation for its modelling of Basix. AGLGN has carried out extra work to provide further substantiation, as evidenced in its Hot Water Impacts document and discussed above.

Basix is yet to be introduced and there is a significant degree of uncertainty about its impact in all areas including that of AAA showerheads and tap fittings. Although studies exist, most are theoretical rather than measuring actual impact. MMA is of the belief that the studies which are most reliable are those that measure actual savings. Despite some shortcomings the Sarac et al study is considered to be most reliable indicator of likely savings.

It must be recognised that, despite the expectation that AAA showerheads and tap aerators/regulators will in most cases be implemented after Basix is introduced because of the cost-effectiveness, this need not necessarily be the case. Basix requires only that a point target be met. It is not prescriptive about how this is achieved. Other alternatives exist, especially for the tap regulators and aerators.

MMA considers the AGLGN estimates to be somewhat optimistic in terms of the savings that are most likely to be made. MMA has estimated hot water savings of 22% compared to the 28% estimated by AGLGN.

MMA does not consider that the AGLGN assumptions in this area meet the recommendation requirements.

4.12 RECOMMENDATIONS 9, 14 15: TIMING OF IMPLEMENTATION OF BASIX

MMA has recommended that the timing of reduction of usage reflect the timing of introduction of Basix. AGLGN has appropriately not included Basix in its calculations in 2003/04. However, while AGLGN has incorporated the fact that only Sydney will be covered by Basix in 2004/05 it does not appear to have recognised that multi-unit dwellings in Sydney will not be covered until October 2004.

MMA has incorporated this consideration in its modelling of timing.

4.13 RECOMMENDATION 10: STIMULATION OF ADDITIONAL DEMAND

Continuing increased penetration of gas into new dwellings, in part attributable to the introduction of Basix, has already been considered in Section 2.4.

Basix allows additional energy points for gas cooking and for a gas heater connection and some new dwellings may incorporate these features. These would tend to add to average gas usage for new dwellings.

However, the number of points allocated to these two items is relatively low and the extent of any additional penetration and loads is uncertain. Also the potential for increased usage is balanced by the possibility that new storage hot water systems will be of higher efficiency than assumed, also earning a point in Basix.

On balance MMA considers that any increase in average gas usage will be relatively small. MMA accepts that the modelling of AGLGN, as modified by MMA, meets the spirit of this recommendation.

4.14 CONCLUSIONS ON AVERAGE RESIDENTIAL USAGE AND BASIX

MMA does not consider the AGLGN forecasts in these areas to meet the Code requirements in three areas:

- Average usage for new houses.
- Impacts of Basix, in particular in hot water savings (MMA and AGLGN differ by about 20% here) and impact on central hot water systems.
- Usage in Project Areas

In combination these result in a difference in forecasts (between the revised AGLGN forecasts and MMA assessment of best estimates) of about 150 to 200 TJ, or about 0.7% of the residential forecast (without the proposed marketing incentive) or 0.5% of the tariff market forecast in each year of the coming Access Arrangement period.

5 SMALL BUSINESS USE

5.1 MMA RECOMMENDATIONS

The recommendations in the draft report which related to small business customers are considered in this section.

Recommendation 18: AGLGN should either provide further evidence of the low expected average usage in Singleton or adopt the value used in the Central West.

Recommendation 19: AGLGN should use a growth rate for the business market which continues to assess the Central West and Blue Mountains as project areas. The business tariff growth rate can be estimated in ratio to the proportion of new homes projected in these areas every year compared to recent history. Singleton business tariff growth should be additional to this.

Recommendation 20: In its tariff volume summary, the weather normalisation should be applied to the 2002/03 year and this should then be multiplied by the calculated increase to provide the starting 2003/04 usage by existing business customers.

Recommendation 21: Only the volumes which have actually transferred or asked for offers be included as T to C (and C to T) for 2004/05. A further 50% of the remainder should be assumed to transfer over the remaining period of the AA.

Recommendation 22: AGLGN should assume that business customer numbers over the coming period remain constant at 2003/04 levels.

5.2 RECOMMENDATION 17: SINGLETON

MMA recommended that AGLGN substantiate its assumptions about the Singleton project area. MMA has already found the residential assumptions for Singleton to be reasonable in Section 2.6.

According to the summary of the business case analysis provided to MMA, AGLGN has assumed that the potential number of small business customers in Singleton is about 5% of total residential properties. AGLGN has also assumed that the average usage per connection will be about that for the state as a whole. MMA considers these assumptions to be reasonable.

MMA considers that AGLGN has met the requirements of this recommendation.

5.3 RECOMMENDATION 18: PROJECT AREAS

After weather normalisation growth rates in the small business market over the past five years have averaged 0.9% pa. Of this some 0.4% pa is estimated to have been derived from growth in the existing market with a further 0.5% pa due to growth in the project areas. MMA has recommended that some continued growth from the Blue Mountains and Central West project areas should be added to this as these are still relatively immature (Singleton is treated separately).

AGLGN has proposed to continue to grow the small business market by 0.41% pa but has discounted any further growth in the project areas, arguing that the major construction and associated marketing phases of both the Blue Mountains and Central West were completed by 2001 and that commercial and residential growth in these areas will now develop at the same rate as the rest of the state.

Based on MMA's modelling using residential growth as the base, the two project areas are forecast to grow at 13 TJ in 2004, reducing to 7 TJ in 2010. While MMA accepts that the residential growth base is not necessarily an accurate gauge of small business growth, it appears to be a reasonable proxy.

The result of incorporating the project growth is a difference between MMA and AGLGN small business forecasts of about 40 TJ, or 0.35% by 2010. The difference is somewhat less than expected because MMA has used a slightly different weather normalisation technique than AGLGN (using billing HDDs), resulting in slightly less weather correction than assumed by AGLGN.

Given that the differences are relatively small and taking into account AGLGN's argument that most of the small business growth in the project areas is largely complete, we consider that the AGLGN forecasts (using current methodology) to be acceptable.

5.4 RECOMMENDATION 19: WEATHER NORMALISATION IN BASE YEAR

AGLGN has accepted this recommendation and MMA accepts that the methodology used is reasonable.

5.5 RECOMMENDATION 20: TARIFF TO CONTRACT TRANSFERS

AGLGN initially assumed that a net 221 TJ[9] of tariff customers would convert from Tariff to Contract status over the coming AA period. This was on the basis that customers who could be contract customers would transfer as they would be better off.

9 Comprising 281 TJ of tariff to contract and 60 TJ of contract to tariff movements.

MMA argued that this is not necessarily the case and has recommended that only those customers who have actually made the transfer or asked for an offer to do so should be included from the start, with a further 50% to shift over the AA period.

AGLGN has accepted this recommendation. It has shifted a net 130 TJ from Tariff to Contract in 2004/05 and assumed a further 45 TJ in 2006/07. Previously AGLGN had stated that 190 TJ of Tariff Customers had shifted or asked for an offer, consistent with the numbers provided here. MMA accepts that the AGL amendment meets the spirit of the recommendation subject to confirmation by AGLGN that customers making up the 130 TJ net transfer (up to 190 TJ of customers) have already transferred or asked for a transfer.

5.6 RECOMMENDATION 21: BUSINESS CUSTOMER NUMBERS

MMA has recommended that the number of business customer numbers remain constant. AGLGN has accepted this but has pointed out that this will have little bearing on the forecasts and will marginally increase the capital expenditure (as AGLGN had been forecasting a net reduction with disconnections exceeding connections).

Despite this recommendation not yet being incorporated in AGLGN modelling, MMA accepts that the impact on forecast revenues will be very limited and that there will be a marginal impact on capital expenditures and revenues.

5.7 CONCLUSION

Although AGLGN has not adopted all of MMA's recommendations, overall the results are such that the differences between the revised AGLGN forecasts and those considered to be best estimates by MMA are considered immaterial.

6 CONTRACT MARKET

6.1 MMA RECOMMENDATIONS

The recommendations in the draft report which related to contract customers and submissions by stakeholders are considered in this section.

Recommendation 23: AGLGN should try using other drivers (eg NSW sectoral output) and exponential and logarithmic relationships as well as time-linear relationships in forecasting growth by contract category. The best relationship should be used unless there are compelling reasons not to.

Recommendation 24: AGLGN should provide reconciliation between its baseline adjustments in the spreadsheet and those in Table 4.7 of the contracts report and also between the net T to C transfer of 221 TJ in the market report against 207 TJ in Table 4.7.

Recommendation 25: AGLGN should adjust the 2002/03 baseline only for "return to trend" values. All other adjustments should be made in the year they will actually take place.

Recommendation 26: AGLGN should only adjust for known additions and closures which have happened or will happen in 2003/04. Other additions and closures can be adjusted for only through a trend analysis carried forward to the year of addition or closure.

Recommendation 27: AGLGN should assume that contracted MDQ levels for the majors stay at 2002/03 levels unless it provides evidence from customers that they intend to change their ordering behaviour or provides evidence that the incentive to some customers for reducing MDQ contracted will become greater over the new AA period.

Further Recommendation (following submissions from stakeholders): AGLGN should reconsider usage by potential new customers in the Hunter Valley.

6.2 RECOMMENDATION 22: USE OF OTHER DRIVERS AND RELATIONSHIPS

AGLGN used a linear time series to establish trends for forecasting the non-majors by industry category. When MMA analysed the data it became clear that while a linear time trend provided a reasonable relationship for some industry groups it did not for others and that other relationships (either with time or sector output) might more closely fit the actual data.

MMA recommended that AGLGN examine linear, logarithmic and exponential relationships of industry usage against time and dollar value of output. AGLGN carried

out such an analysis and found that when a mixed analysis was carried out using the relationship with the best r- squared value the "mixed" relationships provided a better fit historically than did any of the others. The r-squared coefficient with the mixed method was 45% versus 36% for that using the linear method.

However, AGLGN had concerns about the use of some of the mixed methods including:

- The output data for the years 2009 and 2010 had to be interpolated as the BIS Shrapnel data from which it was derived only gave values for 2008 and 2013.
- The sectoral industry definitions used by AGLGN may not align well with the BIS Shrapnel definitions and uncertainty as to whether sector dollar outputs provide a good basis for gas forecasting.
- The significant impact of the use of exponential relationships toward the tail end of the period. According to AGLGN while the mixed relationships resulted in aggregate outcomes very similar to those of the time linear regressions from 2004 to 2007 after that there was a step change due in large part to the use of exponential functions in the Food and Beverage and the Transport sectors.

AGLGN is particularly concerned about the use of exponential relationships without a strong rationale and a reality check.

MMA is in agreement with AGLGN that care is required in all cases when applying forecasting techniques. This is why MMA stated that the assessed best driver should be used unless there is good reason not to. MMA is also of the opinion that a simple linear analysis should be used except where another relationship has a significantly better r-squared coefficient. In this context significantly better is considered to be 2% or more. In the case of the food and beverage and the transport industry groups the r-squared of the exponential output relationship was of the same order as that of the output linear function and MMA considers that the linear function is probably preferable. Similarly, MMA considers the use of the linear time relationship more reasonable than time exponential relationship for laundries.

The result of these changes is to bring the mixed forecast within 1% of the linear trend forecast in all years and within 0.1% in the final year. However, the r-squared of the mixed relationship is 44%, still significantly better than that of the linear function. Although the result in aggregate is very similar to that of the time trend forecast, the result by industry group and thus MDQ and location allocations may be different.

Given the small difference between the use of the linear time relationship and the mixed relationship model, MMA has, on balance, accepted AGLGN's arguments (including simplicity and transparency) in favour of using AGLGN's model.

6.3 RECOMMENDATIONS 23, 24: BASELINE RECONCILIATION AND TREND ADJUSTMENT

MMA has recommended that AGLGN reconcile its baseline adjustments. AGLGN has accepts this recommendation but believes it should be carried out after all the other relevant changes have been made. MMA accepts this to be the appropriate timing.

MMA has also recommended that the 2002/03 baseline should be adjusted only for "return to trend" values, with all other adjustments being made only in the year they take place. AGLGN has argued that the impact of this change is small and MMA accepts this to be the case. Although MMA considers that the increased transparency of the forecasts warrants the more correct procedures being adopted it accepts that the difference is likely to be immaterial.

MMA considers the spirit of these recommendations to be met and will check the reconciliations when provided.

6.4 RECOMMENDATIONS 25: ADJUSTMENTS FOR ADDITIONS AND CLOSURES

AGLGN has included several planned closures and additions directly into its baseline. MMA has recommended that only the additions and closures that take place in 2002/03 or 2003/04 be included in this way and that others be included only within an extended trend evaluation.

AGLGN has argued that only one site, [redacted] xx Confidential with recent consumption [redacted] xx Confidential and expected closure in mid financial year 2004/05, would be excluded from the baseline in this way as the other additions and closures took place in 2003/04. AGLGN has also argued that trend analysis would not properly capture the impact of the closure and that its inclusion would set the base unrealistically high with impacts throughout the period.

The year 2004/05 is the first year of relevance to the new Access Arrangement forecasts and MMA considers it important to include within these forecasts any plant which is operating within that time period. MMA is prepared to accept the argument that the closure should be included in full, not only in extended trend analysis, but believes that the year 2004/05 should include the best estimate of ACQ and MDQ for the plant for the part of the year it is operational with adjustment only in subsequent years.

MMA considers that this recommendation still needs to be met.

6.5 RECOMMENDATIONS 26: CONTRACTED MDQ FOR THE MAJORS

AGLGN has assumed "rational" MDQ contracting behaviour by a small number of major customers who, AGLGN considers, do not currently have a meaningful MDQ in their

contracts. This has resulted in a significant step reduction in forecast MDQ, an item commented on in submissions by some stakeholders.

After speaking to some of these customers MMA has recommended that AGLGN should assume that MDQ contracts stay at the 2002/03 levels unless it provides evidence that the contracting will change. AGLGN has not provided any such evidence.

AGLGN has argued that incorporating the contracted MDQ as recommended by MMA will distort the cost allocation used in zonal pricing. While this may be correct MMA considers that this would best be handled through means other than a demand forecast.

MMA considers that this recommendation still needs to be met.

6.6 SUBMISSIONS FROM STAKEHOLDERS: HUNTER VALLEY LOADS

In its draft report MMA stated with regard to major new gas users:

"At this stage we consider it unlikely that any significant new cogeneration or generation project will offtake from the distribution mains over the coming AA period. AGLGN has confirmed that it is not aware of any such projects as well. While there may be additional smaller cogeneration loads, such as for example at hospitals, this will be relatively minor and is covered in the non-majors analysis.

Similarly, although major new projects (such as steel or aluminium) are often mentioned, none is considered likely to eventuate over the next few years. We consider it appropriate for AGLGN to have not included any major new energy user in its forecasts."

Submissions on the draft report by Energy Advice and Orica were critical of this aspect of the MMA report and asked that further work be carried out on assessing the loads of potential off-takers such as Macquarie Generation.

As a result of this feedback MMA has held discussions with senior representatives of Macquarie Generation, Protech, Hunter Specialty Steel, National Ceramic Industries, Energy Advice and the Hunter Economic Zone. MMA has also held discussions with AGLGN on this issue.

As a result of these discussions MMA has estimated the potential consumption of each of the projects within the timeframe of concern and then attached a probability weighting on each of these. We stress that the probability is based on MMA's subjective assessments.

Such a risk-weighting approach is often undertaken in assessing likely demand by new projects (eg pipelines) and is considered reasonable here.

The summary of that approach is provided here. Fuller details of the discussions and assessments are included in confidential xx Appendix A .

6.6.1 Overview of probability assessments

MMA has assessed four potential major projects in the Newcastle/Hunter Valley region after talking to proponents of the proposals and AGLGN. MMA did not speak to proponents of the Austeel project as we understand that this project has lapsed.

After the discussions it is clear that all of the projects have a probability of proceeding (or expanding in the case of National Ceramics). It is also clear that all of the projects are far from certain of proceeding within the timeframe of concern.

MMA has considered in its subjective assessment of the probability of any of the projects proceeding whether the project:

- Has a compelling business case, including a strong rationale for the project.
- Is significantly developed including development approvals and significant expenditure to date.
- Has an experienced operator
- Has offtake and supply agreements in place
- Has construction contracts in place
- Has a major financial advisor
- Has a significant equity base
- Has prepared a bankable feasibility study
- Is well looked on by the market
- Has achieved financial close.

Two key milestones for every major project are achieving substantial equity commitment and achieving financial close. If a project has completed its feasibility study and has substantial equity commitment – from a major shareholder or significant affiliated party - it is generally considered to be well on the way down the track. When a project has reached financial close it is generally considered to have a probability of well over 50% of completion – although as has been seen in the case of Australian Magnesium Corporation even this does not guarantee success, especially if the financial close has significant contingencies.

To the best of our knowledge none of the new projects has yet achieved either of these milestones, although each claims to be well along the way to achieving them. This means that at the moment we consider all of the projects to have probabilities well below 50%. Nevertheless, each has some real prospects of proceeding.

Tomago Peaker Plant

There is general agreement that a peaker plant will be required in NSW within the period 2007 to 2010 although there is some disagreement about timing. The fact that the Tomago Peaker Plant has already achieved development approvals places it in a good position to be considered for peaking generation over the next few years.

However, the location is far from ideal from a gas point of view. Firstly, there is an additional distribution cost which would not be faced by peakers off-taking from transmission mains. Secondly, expansion beyond a first stage of 150 MW would require significant capital expenditure on the pipeline network. Other locations at Tallawarra and Wagga Wagga would appear to be in a better position from this point of view. Supply of Coal Seam Methane (CSM) to the project could significantly reduce the cost of gas, and hence increase the attractiveness, but would presumably use less of the AGLGN network and pay less for MDQ.

The balance of marginal loss factor and the possibility of region splitting in the national electricity market (NEM) would also tend to favour peakers in different locations. While there may be network augmentation advantages offered by the Tomago Peaker these are not considered to be significant.

There is also currently no clear developer of the Tomago Peaker Plant as the NSW Government has stated that it will not fund new power stations and the Tomago Peaker Plant does not yet have equity participants.

Protech Steel

The Protech Steel project has been around for a number of years with a significant amount of money spent to date. While this obviously does not guarantee it will proceed, it does suggest commitment on behalf of those who have provided the funds. According to Protech personnel approvals and contracts and affiliations are in place and the project is close to reaching financial close.

While we consider that a number of the building blocks for the project are in place, the steel market is very volatile and the prospects of competing head to head with Blue Scope Steel must be daunting.

Boulder Hunter Specialty Steel

The HSS Project has also been in gestation for a number of years. During this time it has formed a strategic alliance with the Austrian Breitenfeld Steel Group, with whom it is expected to merge upon financial close of the HSS project. The project is also not expected to face strong Australian competition. However, the change of both construction company and financial advisers and delays in producing a bankable feasibility study suggest some difficulties with the project.

National Ceramic Industry

The National Ceramic plant started consuming gas in early 2004 and the first line has been included in the AGLGN forecasts.

There is a strong expectation that a second line will proceed within the next two years.

Hunter Economic Zone

We have not factored in any gas usage by new customers from this zone. No customers have been identified, therefore any assumptions about usage would be entirely speculative. As most new HEZ consumers are likely to be currently off-taking in other parts of the AGLGN network similar speculative reductions would be required elsewhere to compensate.

There is also a possibility of a pipeline to the HEZ bypassing some of the AGLGN local network zones in the Newcastle region. This has not been considered.

Probability-weighted MDQ contracted

In summary MMA has estimated the following probability-weighted additional MDQ contracting taking into account the estimated consumptions, assumed probabilities and starting dates and ramp-ups.

Table 6-1 Probability-weighted MDQ estimates

	2006/07	2007/08	2008/09	2009/10
Total	955	1808	2035	1944

In total the probability-weighted MDQ of the above projects would add some 3% to the MDQ currently expected to be contracted on the Wilton to Newcastle trunk main by the end of the Access Arrangement period.

AGLGN arguments

In discussion AGLGN has raised some arguments against the use of such an analysis. These arguments and MMA responses are listed below. It should be noted that these were ad hoc comments and AGLGN may well have further arguments to raise.

- The loads discussed are all speculative and should not be included. While MMA accepts that they are speculative, it considers that probability weighting is a reasonable way of handling this uncertainty.

- The inclusion of such projects reduces the incentive for AGLGN to increase demand. MMA considers that the Gas Code requirement is that the current best forecast estimate should be used and that the incentive is to better that forecast.

- If they are to be included then, to be symmetrical, consideration should be given to the possibility of existing plants shutting down. MMA accepts this to be reasonable. However, closure of non-majors is already handled through the trend analysis while the AGLGN discussions with the majors would presumably have resulted in a contemplation of closure or reductions in usage if this was a real issue.

- Non-majors are already handled in the trend analysis. MMA accepts this argument and believes that the National Ceramic plant should be handled only through incorporation in a revised trend analysis. This reduces the impact to some 2.3% by the end of the AA period.

Conclusion

MMA's probability-weighted best estimate of additional (equivalent) contracted MDQ on the Wilton to Newcastle trunk main due to the four projects is outlined in Table 6-1. As the National Ceramic plant is theoretically handled through the non-majors trend analysis this should be included there as an additional trend consideration in 2006/07. The rest should be added as probability-weighted "major" loads.

Mechanism to automatically adjust

Submissions by Energy Advice and Orica have suggested that a trigger mechanism may be the best way to handle significant uncertainty. The recommendation of such a mechanism is beyond the scope of this consultancy.

6.7 SUBMISSIONS FROM STAKEHOLDERS: INTERVIEWS WITH "MAJORS"

One of the respondents to the MMA draft report asked for details about the majors with whom MMA had spoken. MMA has held discussions with representatives of 13 of the 16 AGLGN "majors". A list of the companies and people with whom discussions were held is provided in confidential xx Appendix B .

6.8 CONCLUSIONS

There is still disagreement between MMA and AGLGN on the following issues:

- Rational contracted MDQ
- Hunter Valley projects
- Timing of additions and closures.

Of these only the first two are of significance in the aggregate, with the first resulting in an estimated increase of about 20 TJ of contracted MDQ (about 7% of contracted MDQ) mainly in the Wollongong area and the second about 1.5 TJ, about 2% of contracted load in the Newcastle area.

APPENDIX A DISCUSSIONS WITH POTENTIAL LARGE CONSUMERS IN THE HUNTER VALLEY - CONFIDENTIAL XX

APPENDIX B MAJORS WITH WHOM DISCUSSIONS WERE HELD – CONFIDENTIAL XX

Company	Person
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]