Report to

ACCC

Roma-Brisbane Pipeline Throughput Forecasts Comparisons of APTPPL, ACIL Tasman and MMA Forecasts

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EXECUTIVE SUMMARY

The Australian Competition and Consumer Commission (ACCC) has engaged McLennan Magasanik Associates (MMA) to provide advice in relation to volume forecasts for the Roma Brisbane Pipeline (RBP). On 7 February MMA submitted an independent forecast of RBP throughput and capacity requirements based on the assumption that RBP capacity would be expanded to meet demand.

The revised RBP Access Arrangement submitted by APT Petroleum Pipelines Limited (APTPPL) has however been framed around the existing capacity of the pipeline, excluding any capacity expansions, which at this stage are not committed. Consequently APTPPL's demand forecasts, submitted in its Access Arrangement Information (AAI), are constrained to levels consistent with the existing capacity and are not directly comparable with MMA's forecasts. We refer to these APTPPL forecasts as APTPPL's constrained forecasts.

In support of the revised Access Arrangement APTPPL has submitted a number of documents prepared by consultants, including "Market Outlook for the Roma (Wallumbilla) to Brisbane Gas Pipeline. Comparison of APA[1] forecasts with ACIL Tasman's independent market assessment" by ACIL Tasman, dated 2 December 2005, which refers to APTPPL forecasts that are clearly not constrained to existing capacity. We refer to these subsequently as APTPPL's unconstrained forecasts.

MMA has now also prepared independent forecasts of constrained demand and compared all the relevant constrained and unconstrained forecasts.

Unconstrained forecasts

The aggregate unconstrained throughput forecasts prepared by APTPPL, ACIL Tasman and MMA are compared in Figure E-1. Up to 2011 the three forecasts are broadly aligned, projecting strong initial throughput growth to over 65 PJ, followed by a period of lower growth. This is reflected in similar throughput NPVs over this period (Table E-1 – throughput NPV is the measure of the impact of the forecast on reference tariffs).

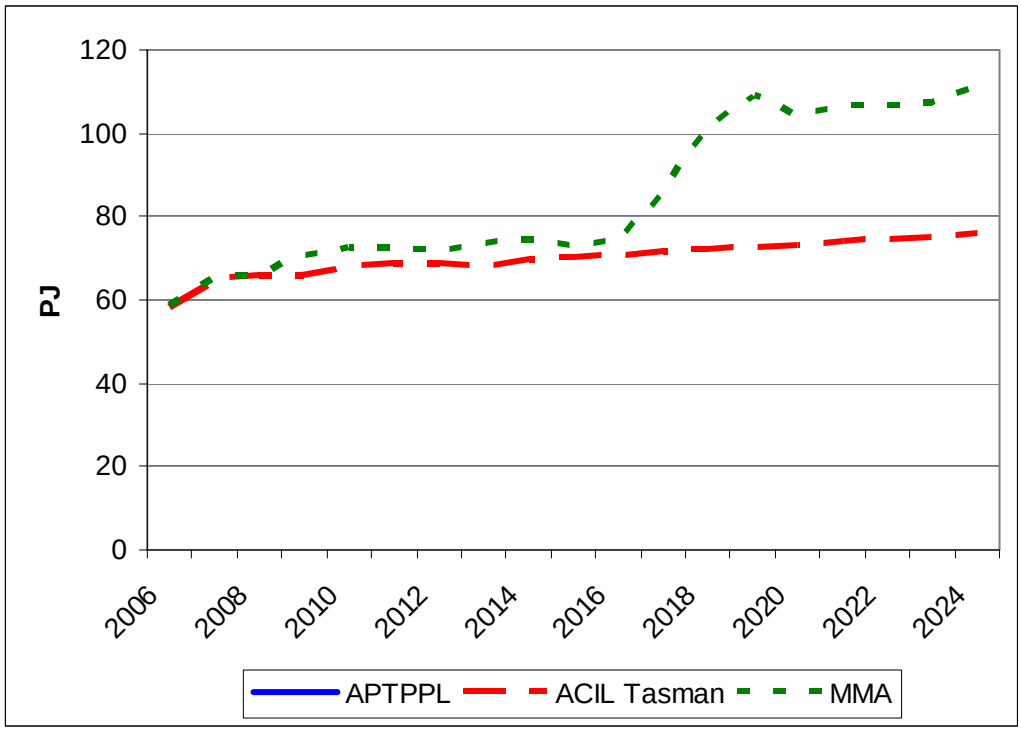
After 2011 the forecasts diverge, primarily on account of differing assumptions on the timing of entry of new gas-fired generation. APTPPL projects new entry in 2012, MMA projects new entry in 2017 and ACIL Tasman does not foresee any new entrant gas-fired generation that uses the RBP. These differences reflect different assumptions or modelling outcomes regarding the fuel used in new generating plant and possibly its location. ACIL Tasman assumes that Queensland electricity demand growth is met by coal fired plant but

[1] APA is the Stock Exchange Code of APT, APTPPL's parent company

acknowledges that it is conceivable that some of this plant could be gas fired, in which case their forecast would be closer to the APTPPL and MMA forecasts.

[Confidential text deleted]

Figure E-1 Aggregate unconstrained throughput forecasts (PJ)



[The APTPPL line is confidential]

Table E-1 Throughput NPVs (PJ)

	2007 to 2011	2007 to 2024
APTPPL	287	793
ACIL Tasman	273	702
MMA	284	817

Conclusions regarding the APTPPL unconstrained throughput forecast

On the basis of the above comparisons MMA considers the APTPPL unconstrained forecast to 2011, the period of the revised Access Arrangement, to be reasonable. We

consider that a reasonable forecast beyond 2011 would include new entrant generation at some time after 2011 and [confidential text deleted]. A reasonable forecast would therefore be higher than the ACIL Tasman forecast and would have a throughput NPV over the period to 2024 of at least 770. While the APTPPL forecast does not formally meet both of the first two criteria, its throughput NPV of 793 is reasonable.

Constrained forecasts

MMA has prepared two alternative constrained forecasts using different methodologies:

1. Assuming that capacity expansion occurs and allocating demand to new and existing capacity (MMA allocated forecast);
2. Assuming that capacity expansion does not occur and estimating demand that would eventuate (MMA constrained forecast). This approach was used by APTPPL for the Access Arrangement forecast.

The APTPPL constrained forecast and the two MMA forecasts are compared in Figure E-2. The forecasts are very similar, particularly over the Access Arrangement period from 2006/07 to 2010/11. This is also reflected in the similar throughput NPVs over the period (Table E-2).

The only minor difference between the APTPPL constrained forecast and the MMA constrained forecast lies in the higher rate of growth after 2006/07 in the MMA forecast. This may be associated with the higher capacity forecast by MMA (Figure E-3). From the information available regarding APTPPL's detailed assumptions the source of the difference is not clear.

Figure E-2 Constrained throughput forecast comparison (PJ)

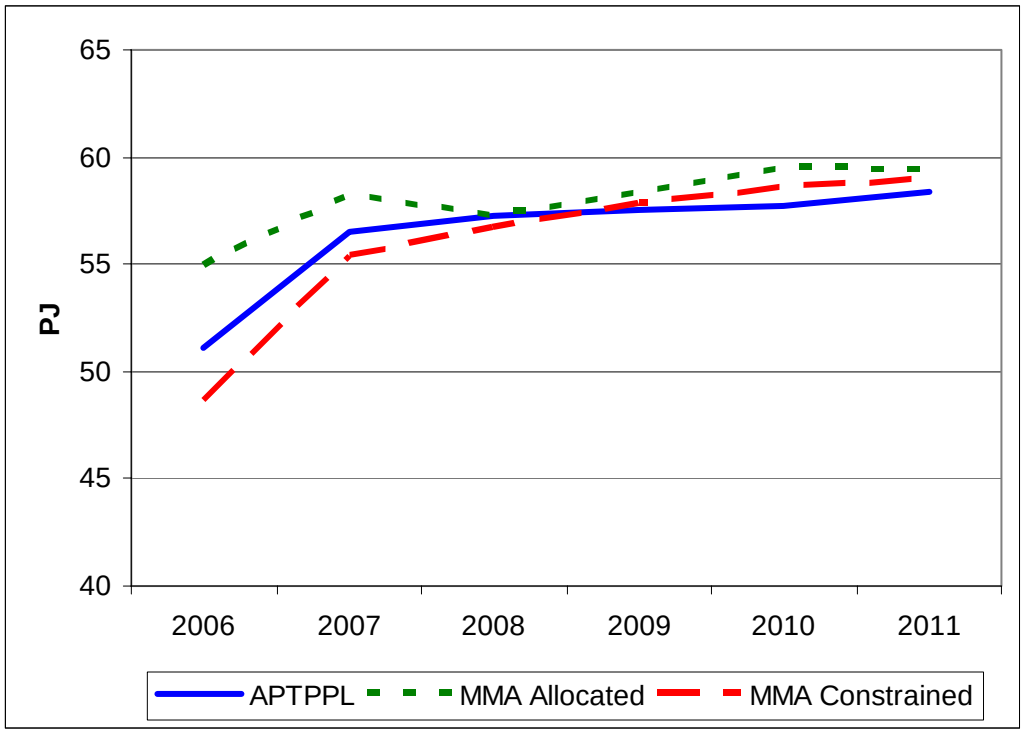
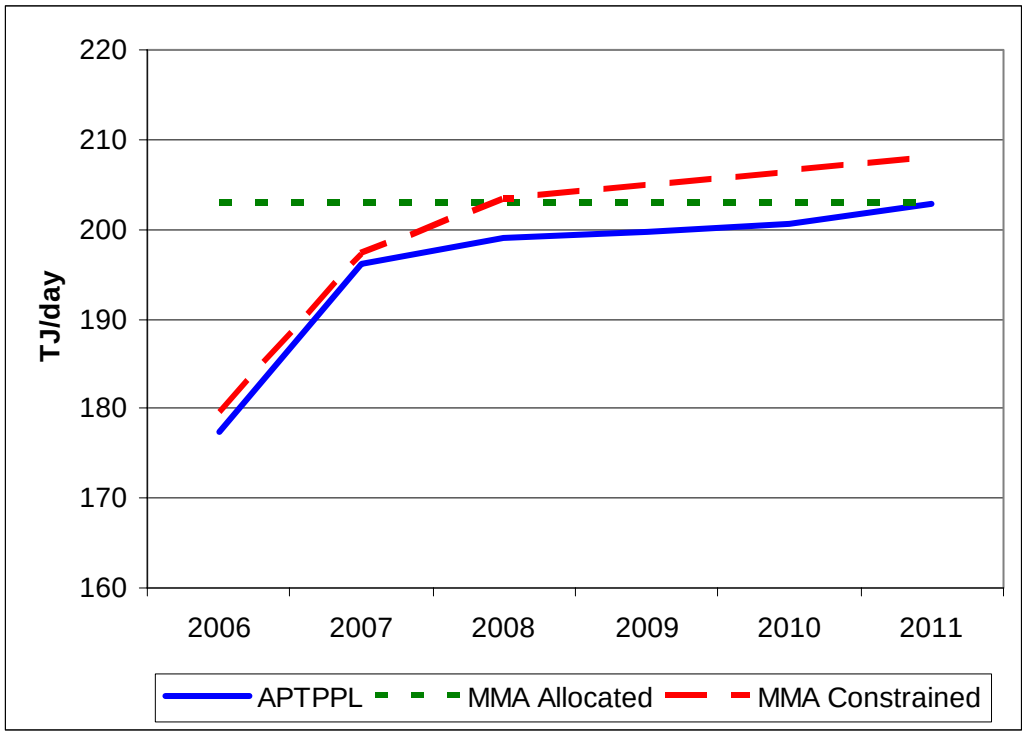


Table E-2 Throughput NPVs (PJ)

	2007 to 2011
APTPPL	236
MMA Constrained	236
MMA Allocated	240

Figure E-3 Constrained capacity forecast comparison (TJ/day)



Conclusions regarding the APTPPL constrained forecasts

On the basis of the above comparisons MMA considers the APTPPL constrained throughput and capacity forecasts to 2011 to be reasonable.

1 INTRODUCTION

The Roma to Brisbane Pipeline (RBP, also known as the Wallumbilla to Brisbane Pipeline), is owned by APT Petroleum Pipelines Limited (APTPPL), a subsidiary of the Australian Pipeline Trust. The RBP is a covered pipeline under the National Third Party Access Code for Natural Gas Pipeline Systems (the Code), under which covered pipelines are required to submit Access Arrangements (AAs), specifying the commercial terms under which third parties can use the pipeline, for regulatory approval. On 31 January 2006 APTPPL submitted a revised Access Arrangement to the Australian Competition and Consumer Commission (ACCC), the relevant regulator for the RBP, for approval.

Demand[1] forecasts have played a significant role in determining the reference tariffs applicable to many covered pipelines:

- Demand is a significant determinant of future capital and operating costs used to estimate the regulated revenue
- Demand acts as a divisor of regulated revenue in setting the tariffs

The ACCC, in recognition of the importance of demand forecasts, engaged McLennan Magasanik Associates (MMA) to provide advice in relation to volume forecasts for the RBP prior to the submission of the revised Access Arrangement.

MMA prepared throughput and capacity forecasts[2] based on a number of assumptions, most critically that RBP capacity would be expanded to meet customer requirements, i.e. that demand would not be constrained. However APTPPL has framed the revised Access Arrangement around the existing capacity of the pipeline, excluding any capacity expansions, which at this stage are not committed. Consequently APTPPL's demand forecasts, submitted in its Access Arrangement Information (AAI), are constrained to levels consistent with the existing capacity and are not directly comparable with MMA's forecasts. There are two ways of deriving forecasts for existing capacity: by allocating unconstrained forecasts to existing and new capacity; and by preparing a forecast of demand that would or could eventuate if the capacity were not expanded. It appears that the APTPPL AAI forecasts have been prepared on the latter basis and we refer to them subsequently as APTPPL's constrained forecasts.

In support of the revised Access Arrangement APTPPL has submitted a number of documents prepared by consultants, including: "Market Outlook for the Roma (Wallumbilla) to Brisbane Gas Pipeline. Comparison of APA[3] forecasts with ACIL Tasman's independent market assessment" by ACIL Tasman, dated 2 December 2005; and

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[1] Demand has two components, throughput and capacity requirement. The term throughput is generally used to mean (annual) quantities carried (in PJ). The daily capacity requirement is the sum of capacity reservations by customers (MDQ, measured in TJ/day).

[2] Roma-Brisbane Pipeline Throughput and Capacity Requirement Forecasts, MMA, 7 February 2006. Available from www.aer.gov.au

[3] APA is the Stock Exchange Code of APT, APTPPL's parent company

"Roma Brisbane Gas Pipeline Network Optimised Replacement Cost Study" by Venton & Associates, dated 4 January 2006. These documents both refer to APTPPL forecasts that are clearly not constrained to existing capacity but appear to be consistent with one another. We refer to these subsequently as APTPPL's unconstrained forecasts, though recognising that they can only be attributed to APTPPL on the authority of ACIL Tasman and Venton & Associates.

The purpose of this report is to:

1. Summarise historical demand (capacity and throughput)
2. Summarise gas supply and transportation contracts that provide an indication of anticipated demand
3. Compare the forecast assumptions used by APTPPL, MMA and ACIL Tasman
4. Compare the APTPPL unconstrained forecast, the ACIL Tasman forecast, and the MMA 7 February forecast, with particular attention to the first five years, and determine the reasons for differences. This comparison is restricted to throughput forecasts since APTPPL and ACIL Tasman unconstrained capacity forecasts have not been published.
5. Derive an independent estimate of demand consistent with existing capacity and compare with the APTPPL constrained forecast.

1.1 Conventions

In this report:

1. All years are financial years unless otherwise stated. In tables financial years are denoted 2005/06 etc or referred to as the financial year ending on June 30. In figures 2006 refers to the financial year ending on June 30 2006.
2. Historical prices are in dollars of the relevant year.
3. Projected prices are in July 2005 dollars.

1.2 Abbreviations and glossary of terms

AA	Access Arrangement - document governing terms of third party access to pipelines
APTPPL	APT Petroleum Pipelines Limited, owner of the RBP
Coincident peak load	Maximum simultaneous daily demand by users
Conventional gas	Natural gas produced from hydrocarbon reservoirs in sandstone formations
CSG	Coal seam gas – natural gas adsorbed in coal seams and released by drilling
End user	Consumer of gas
Firm capacity	Pipeline capacity reserved by and paid for a user
FRC	Full retail competition
Gas	Natural gas, a mixture predominantly of methane, also containing other hydrocarbons and inert gases
GJ	Gigajoule (joule x 10^9)
GECS	Queensland Gas Electricity Certificate Scheme
GSA	Gas supply agreement
Interruptible capacity	Pipeline capacity used and paid for when it is available
LF	Load factor – average daily load / peak daily load
MDQ	Maximum daily quantity – the pipeline capacity reserved by a user
Non-coincident peak load	The sum of individual user peak daily demands
PJ	Petajoule ((joule x 10^{15})
RBP	Roma-Brisbane Pipeline
TJ	Terajoule ((joule x 10^{12})
User	Party that contracts to use the RBP

2 METHODOLOGY AND ASSUMPTIONS

2.1 Code requirements

The Gas Access Code requires forecasts submitted by service providers as part of an Access Arrangement to be "…best estimates arrived at on a reasonable basis" (Code section 8.2). MMA interprets this to have two components:

- That the approach and methodology adopted are reasonable.
- That any assumptions used should be the best available.

In preparing forecasts of RBP throughput and capacity requirements MMA has endeavoured to meet these requirements. Appropriate forecasting methodologies have been identified for three distinct end-user categories, generation, distribution load and large users, and assumptions have been based on careful interpretation of historical data and forward contract information.

2.2 Methodology

The methodologies used by APTPPL, ACIL Tasman and MMA in the preparation of the unconstrained forecasts are summarised in Table 2-1. The methodologies embrace similar information and are based on the same user disaggregations but the models applied to each user category differ. On the basis of the limited detail provided on the APTPPL and ACIL Tasman models, it is not possible to comment on the suitability or otherwise of these models.

It is noted that the APTPPL unconstrained forecast was prepared in July 2005, the ACIL Tasman forecast in November/December 2005 and the MMA forecast in January/February 2006. The APTPPL forecast relies upon earlier information than the ACIL Tasman and MMA forecasts, for example it uses the 2004 NEMMCO Statement of Opportunities rather than the 2005 version released in October 2005. These timing related informational differences may result in differences between the APTPPL forecast and the ACIL Tasman and MMA forecasts.

Table 2-1 Unconstrained forecast methodologies

	APTPPL[4]	ACIL Tasman	MMA[5]
Historical information	Own data. Other data from public sources	Throughput and peak day usage obtained from APTPPL. Other data from public sources	Throughput and peak day usage obtained from APTPPL. Other data from public sources
Forecast key drivers	Not stated	Socio-economic forecasts	Socio-economic forecasts and gas prices
Pipeline users survey	Not stated	Not stated	Interviewed retailers, producers and generators
Generation forecasts	Modelling based on NEMMCO Statement of Opportunities	Projected using NEM models	Projected using NEM models
Large Users	User specific	User specific	User specific
Distribution load	Trend projection	Trend projection	Based on DB regulatory forecasts
High and low cases	No	No	Yes

[4] As reported by ACIL Tasman

[5] Please refer to MMA's 7 February 2006 report to the ACCC for details.

2.3 Key Assumptions

Factors that influence the growth of throughput on a pipeline include:

- Economic growth
- Gas supply adequacy
- Gas supply prices
- Pipeline tariffs
- Pipeline competition or bypass
- Pipeline extension to new regions
- Pipeline capacity expansion

Assumptions made by APTPPL, ACIL Tasman and MMA in regard to these factors are summarised in Table 2-2. Where APTPPL and ACIL Tasman have articulated a view, their views are consistent with MMA's.

Table 2-2 Unconstrained forecast assumptions

	APTPPL[6]	ACIL Tasman	MMA[7]
Economic growth	Not stated	Not stated	Qld GSP 4.1% p.a. to 2011
Gas supply	Sufficient to meet demand	Sufficient to meet demand	Sufficient to meet demand
Gas prices	Not stated	Not stated	Declining initially, later increasing
RBP Tariffs	Not stated	Not stated	Similar to current surcharge level
Pipeline competition	None	None	None
RBP extension to new regions	None	None	None
RBP capacity expansion	As required	As required	As required

[6] As reported by ACIL Tasman

[7] Please refer to MMA's 7 February 2006 report to ACCC for details.

3 ACTUAL USAGE

3.1 RBP Users

The RBP has a limited number of current and scheduled users who contract directly for RBP capacity:

- The South West Queensland Joint Venture producers, who supply gas on a delivered basis to Dalby Council, Energex Retail[8], Origin Energy and Incitec-Pivot. Energex and Origin are also users in their own rights.
- Energex Retail, which supplies the majority of gas users on the Energex (Allgas) network and competes for sales to contestable customers (currently those using over 1 TJ pa)
- Origin Energy, which supplies the majority of gas users on the Envestra network, supplies BP Bulwer Island Refinery and competes for sales to contestable customers
- Swanbank E power station, a 385MW combined cycle gas fired generator currently operating in an intermediate generation role. It is understood that the Oakey power station, a 320 MW open cycle peaking plant, obtains supply and RBP capacity via Energex and Origin rather than contracting directly.
- BP Bulwer Island Refinery, which has an additional supply agreement that started in early 2006, for which it is understood to have contracted RBP capacity directly
- Incitec-Pivot, which has replacement supply agreements scheduled to start on 1 July 2007, for which it is understood to be contracting RBP capacity directly
- Braemar power station (also known as Wambo PS), a 450 MW open cycle generator nearing completion at Braemar approximately 160 km east of Wallumbilla. Braemar PS has recently entered contracts for gas supply and transmission capacity that are scheduled to start in the current quarter.

In view of the uncertainty as to which RBP users will supply which end-users in future, analysis of historical demand and forecast preparation are more readily undertaken on an end-use basis rather than on the basis of the parties that contract RBP capacity. The most suitable end-user disaggregation, based on data availability and commonality of gas usage drivers, is:

- Gas-fired generators: Swanbank E, Oakey and Braemar
- Distribution load: Energex and Envestra
- Large users: Incitec-Pivot and BP

[8] Energex Retail has recently been renamed Sun Retail

3.2 Gas – fired generation

Actual annual and peak day gas usage by the two existing generators, Oakey and Swanbank E, has been estimated using their generation data published by NEMMCO and MMA estimates of their heat rates in GJ/MWh (Table 3-1). The values in this table have been updated since MMA's 7 February report to the ACCC to reflect a better understanding of Swanbank E's heat rates. It is noted that peak day usage is the actual peak usage, which for generators may not be a good indication of capacity contracted on the RBP. The cost of firm capacity to a peaking generator such as Oakey, which has a gas load factor less than 15%, would be over $5/GJ, making it more economic to rely upon interruptible capacity and/or spot sales – it is understood that no firm transportation contracts are held by or for Oakey. For an intermediate generator such as Swanbank E, with a gas load factor of approximately 50%, firm capacity would be more economic at $2/GJ but it is nevertheless likely that they would only contract part of their requirement and may rely in part on interruptible capacity.

Table 3-1 Estimated actual gas usage by South East Queensland Generators

	2000/01	2001/02	2002/03	2003/04	2004/05
Annual (PJ)					
Swanbank E	N/a	0.13	5.09	5.00	10.13
Oakey	0.11	0.05	0.05	0.47	1.13
Peak Day (TJ)					
Swanbank E	N/a	25.4	42.1	32.1	53.0
Oakey	5.9	3.8	7.6	12.9	24.5
Load factor (%)					
Swanbank E	N/a	1%	33%	43%	52%
Oakey	5%	4%	2%	10%	13%

Gas use by Swanbank E increased markedly in 2004/05, largely due to the commencement of the Queensland Gas Electricity Certificate scheme (GECS) on 1 January 2005. GECS requires electricity retailers in Queensland to source 13% of their supply from gas-fired generation – this obligation is fulfilled by retailers by surrendering certificates purchased from generators. The current (15 May 2006) value of GECS is $15.70/MWh, which reduces the net marginal cost of Swanbank E's generation to a level comparable with older coal fired plant.

The value of GECS enabled Swanbank E to extend its generation in 2005. In calendar 2004 it had a typical pattern of generating 12 hours a day for 5 days a week, i.e. weekdays only, mostly between 8am and 8pm, averaging 63 hours per week. In 2005 this changed to generating for up to 24 hours a day for 5 days (weekdays, with lower generation levels overnight) and 12 hours for 1 day (Saturday), averaging 124 hours per week. Calendar year consumption rose from 7.0 PJ in 2004 to 12.8 PJ in 2005. The average output when generating was approximately 270 MW in 2004 and 240 MW in 2005, considerably below the plant's maximum output of 385 MW, which suggests that further increases in gas usage are possible if generation at higher levels overnight and at the weekend are economic.

The pattern of gas usage by Oakey reflects both the availability of gas/transmission capacity and variations in peak electricity prices. The low usage figures in the first two years are believed to reflect RBP capacity constraints whereas the third year figure was due to low electricity prices. Higher usage in the final two years is due to the availability of additional RBP capacity and higher electricity prices. In the immediate future, with the RBP again nearing full capacity utilisation, Oakey's usage would be expected to decline until a further capacity expansion was undertaken and this is reflected in its calendar 2005 usage, which was at 2002/03 levels. It is also noted that as a less efficient open cycle plant with higher marginal costs, the sale of GECs does not reduce Oakey's marginal costs to levels comparable with coal plant.

Revised estimates of Swanbank E and Oakey gas usage for 2005/06 are 11.8 PJ and 0.05 PJ respectively. Swanbank E was taken off-line for a major overhaul during April 2006 and this figure is indicative of only 11 months generation during the year.

3.3 Distribution load

Estimated actual annual and peak day distribution loads have been derived from annual load data provided by the distribution businesses in their Access Arrangement Information (AAI) documents submitted to the Queensland Competition Authority[9]. The Energex AAI document provides only historical growth rates rather than actual usage, hence the Energex estimates represent smoothed trends. Estimates for Dalby, where the network is not covered by the Code and there is no recent public information, are based on submissions to the National Competition Council regarding coverage revocation.

Estimates of unaccounted for gas (UAG, gas losses and measurement errors) on the networks have been added to load delivered by the networks to determine loads delivered by the RBP. UAG estimates are based on data for 2004/05 provided by the distribution

[9] Access Arrangement Information for the Queensland Network. Allgas Energy Pty Ltd, 1 October 2005.
Forecasts of Demand for the Queensland Regulated Natural Gas Distribution Network (AAI attachment 6). Envestra, September 2005

businesses[10]. In the case of the Envestra network, load and UAG associated with the Northern network in the Gladstone area has been excluded.

Peak day loads have been derived from annual loads using load factors derived from AAI data. In the case of distribution loads, peak day usage gives a good indication of the likely capacity contracted on the RBP.

Table 3-2 Estimated actual distribution loads

	2000/01	2001/02	2002/03	2003/04	2004/05
Annual (PJ)					
Energex	9.94	10.06	10.18	10.31	10.44
Envestra	4.35	4.35	4.67	4.90	5.22
Dalby	0.15	0.15	0.15	0.15	0.15
Peak Day (TJ)					
Energex	43.2	43.8	44.4	45.1	45.8
Envestra	19.1	19.1	20.5	21.6	22.9
Dalby	0.8	0.8	0.8	0.8	0.8

Load growth over the period 2000/01 to 2004/05 on the Energex network has been relatively modest at 1.2%, but Envestra's load growth has been stronger, at 4.7%, largely due to growth in large customer load.

3.4 Large Users

Details regarding Incitec-Pivot's and BP's annual and peak loads over the period 2000/01 to 2004/05 are not available. Based on an Incitec Pivot publication[11] it is understood that its current figures are 13-14 PJ annually and approximately 38 TJ/day peak.

MMA estimates of BP's consumption are presented in the following section.

3.5 Total throughput

APTPPL has provided total annual throughput for the period 2000/01 to 2004/05, from which combined large user consumption has been estimated by subtracting generator and distribution loads (Table 3-3).

[10] Gas Distribution Service Quality Annual Report July 2004 to June 2005. Allgas Energy, September 2005. Envestra Service Quality Report 2004/2005. Envestra, 2005.

[11] Queensland Gas Market and Assessments . A Customer's Perspective. Arthur Pitts, Gas Purchasing Manager, Incitec-Pivot Ltd. EUAA Queensland Energy Seminar 30 October 2003

Table 3-3 RBP actual annual throughput (PJ)

	2000/01	2001/02	2002/03	2003/04	2004/05
Total RBP	30.02	34.16	40.00	42.14	48.07
Generators	0.11	0.18	5.14	5.47	11.26
Distribution	14.44	14.56	15.00	15.38	15.81
Large Users	15.47	19.42	19.87	21.30	20.99

Total RBP throughput has grown by 12.5% p.a. over the period and large user consumption has grown by 7.5% p.a. The latter growth has been largely at BP, which only connected to gas in 1999/00 – if it is assumed that Incitec-pivot's load was constant at 13 PJ through the period, then BP's load must have grown from 2.5 PJ to 8 PJ.

3.6 Peak usage and contracted capacity

The sum of estimated non-coincident peak loads is presented in Table 3-4. The peak loads of Incitec-Pivot and BP are based on the application of simple load factors to the loads hypothesized above.

The simple sum of peak requirements is considerably higher than the sum of contracted capacity (Table 3-5, data provided by APTPPL). This is due to the non-coincidence of peak loads, particularly generator and large user peaks.

Table 3-4 Estimated actual non-coincident peak loads (TJ/day)

	2000/01	2001/02	2002/03	2003/04	2004/05
Swanbank E	0.0	25.4	42.1	32.1	53.0
Oakey	5.9	3.8	7.6	12.9	24.5
Energex DB	43.2	43.8	44.4	45.1	45.8
Envestra DB	19.1	19.1	20.5	21.6	22.9
Dalby	0.8	0.8	0.8	0.8	0.8
Incitec-Pivot	38.7	38.7	38.7	38.7	38.7
BP	9.0	23.4	25.1	30.3	29.2
Total	116.8	155.1	179.2	181.6	214.9

Table 3-5 Contracted RBP capacity (TJ/day)

	2000/01	2001/02	2002/03	2003/04	2004/05
Total	100.5	109.6	158.7	160.5	175.1

Estimates of RBP capacity contracted for each load in 2004/05 have been derived by assuming that: DB and large user requirements are contracted; that because it is a peaking plant with very low load factor, no capacity is contracted for Oakey; and that the remaining capacity is contracted for Swanbank E. (Note: no assumptions are made regarding which shippers are parties to the relevant contracts.)

Table 3-6 Estimated RBP capacity contracts (TJ/day)

On behalf of	2004/05
Swanbank E	36
Oakey	0
Energex DB	46
Envestra DB	23
Dalby	1
Incitec-Pivot	40
BP	29
Total	175

It is also noted that the RBP load factor (defined as average daily load/contracted capacity) declined significantly in 2002/03 and then partly rebounded, suggesting that the large capacity additions and contracts in 2002/03 were not initially fully utilised (Table 3-7).

Table 3-7 RBP load factor (%)

	2000/01	2001/02	2002/03	2003/04	2004/05
Total	82%	85%	69%	72%	75%

4 GAS SUPPLY AND TRANSPORTATION AGREEMENTS

4.1 Introduction

The majority of gas is sold under long-term gas supply agreements (GSAs) between producers and buyers, including retailers, generators and large users. Particularly in Queensland, many GSAs involve the development of new gas resources and the GSAs are therefore entered several years before first supply, to enable the resources to be developed. In the short to medium term GSAs therefore provide useful indicators of both the supply outlook and the demand outlook, since buyers typically face a financial penalty if their demand falls below GSA take-or-pay levels.

Offsetting the value of this information is the fact that all GSAs are commercial-in-confidence legal documents and limited details are made public. The large majority are nevertheless reported, as they are material transactions which listed companies are obliged to notify to the market, through press releases issued by the gas producers. MMA maintains a comprehensive data base of GSAs covering the Eastern States of Australia and has developed considerable expertise in estimating the missing information.

Transmission capacity is also generally contracted under long term arrangements between the service provider (the pipeline owner) and gas shippers, which can be the producer or buyer. Reporting of transmission agreements is not as comprehensive as reporting of GSAs however.

4.2 Gas supply agreements

The estimated aggregated quantities of gas available to current and known future users of the RBP under GSAs are summarised in Table 4-1. It includes only gas that will not by-pass the RBP and therefore excludes gas available to a number of proposed small open cycle gas-fired power stations (Chinchilla, proposed by Queensland Gas Company, Dalby, proposed by Ergon, and Daandine, proposed by Arrow), where it is anticipated that the gas will be transported directly to the power station, bypassing the RBP. The Braemar PS holds a further 10 PJ of GSAs which are also expected to bypass the RBP. There appear to be no GSAs between gas producers and the Oakey PS, which must therefore purchase gas from aggregators such as Energex and Origin. The quantities listed for Swanbank E exclude a GSA with Mosaic that to date has not delivered according to the contracted schedule.

The gas volumes listed in Table 4-1 are maximum quantities i.e. total usage under each contract would be expected to be slightly lower, the actual level depending on the take-or-pay volume. It is expected that most GSAs would have take-or-pay set at 80% to 90% of the maximum. Some GSAs do however provide for quantity renominations in the future.

The volumes contracted indicate potentially significant planned increases in gas use by Swanbank E power station (from 10 PJ in 2004/05 to 16-20 PJ in 2006/07) and BP (up from 9 PJ 2004/05 to 10.5 PJ in 2006/07). Incitec Pivot has a further 2PJ option available.

Table 4-1 Contracted gas available to major buyers, RBP only (PJ)

	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11
Swanbank E	14.4	20.0	20.0	20.0	20.0	20.0
Braemar PS	1.1	4.5	4.5	4.5	4.5	4.5
Energex Retail	15.6	15.3	12.5	12.6	12.7	13.0
Origin Energy*	6.5	6.7	6.9	7.0	7.2	7.6
Dalby	0.2	0.2	0.2	0.2	0.2	0.2
Incitec-Pivot	13.0	13.0	14.4	14.4	14.4	14.4
BP	9.0	10.5	10.5	10.5	10.5	9.0
Total	59.7	70.1	68.9	69.1	69.4	68.6

* Excluding gas on-sold to BP and Incitec Pivot

4.3 Transportation agreements

Less information is published about transportation agreements than about GSAs. The information in Table 4-2 has been collated from APT annual reports and AGL annual reports prior to 2000, when AGL was the majority owner of the RBP. The transportation volumes are quoted in annual terms which are understood to reflect the maximum volumes that could be transported, i.e. at a 100% load factor, and the capacity figures are calculated using this assumption.

The transportation agreements are broadly consistent with the GSA information:

- The Origin contract is only part of BP's supply portfolio
- The Energex spot sales agreement may have covered Oakey and part of Swanbank E requirements
- The CS Energy agreement is an increase over the estimated 2004/05 capacity, consistent with the increase in usage suggested by CSE's new GSAs
- The Wambo agreement is consistent with usage of up to 5 PJ p.a.
- The Incitec Pivot agreement represents a 4 TJ/day increase over the estimated 2004/05 capacity, consistent with a 2 PJ p.a. increase in usage

Table 4-2 RBP transportation agreements

Shipper	Start	End	Capacity (TJ/day)	Maximum Annual (PJ)
Origin Energy (for BP)[12]	2000/01	2019/20	16	6
Energex (for generators)[13]	2003/04	Unknown	Spot sales	N/a
CS Energy (Swanbank E)[14]	2005/06	2016/17	Over 41	Over 15
Wambo (Braemar PS)[14]	2006/07	2015/16	16	6
Incitec Pivot[14]	2007/08	2016/17	44	16

[12] AGL Annual Report 1999 p 14

[13] APT Annual Report 2004 p 18

[14] APT Annual Report 2005 p 23

5 UNCONSTRAINED FORECAST COMPARISON

5.1 Throughput forecast comparison

As noted in section 1, RBP throughput forecasts that are not constrained by the existing RBP capacity have been prepared by APTPPL, ACIL Tasman and MMA for a variety of purposes. However they are not comparable with the APTPPL forecasts submitted as part of the revised RBP Access Arrangement, which relate to the existing capacity of the RBP and are constrained by the existing capacity. The constrained forecast is discussed in the following section.

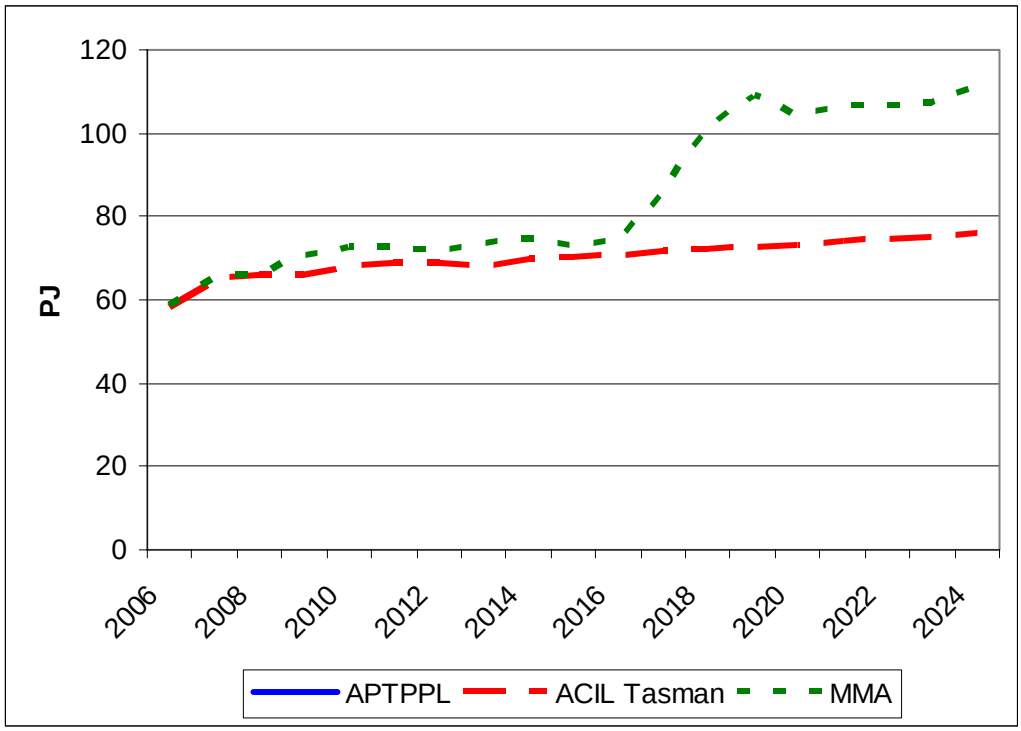
The aggregate unconstrained throughput forecasts prepared by APTPPL, ACIL Tasman and MMA are documented in Table 5-1 and illustrated in Figure 5-1. It is noted that both the APTPPL and ACIL Tasman forecasts have been extracted from figures in the ACIL Tasman report. The ACIL Tasman forecast used here is their mid-line forecast which we understand includes Braemar PS and is consistent with the MMA forecast. The MMA forecast is the Base Case forecast exactly as per MMA's 7 February report to the ACCC and does not include the updated estimates for 2005/06 discussed in section 3.

Up to 2011 the three forecasts are broadly aligned, projecting strong initial growth to over 65 PJ p.a., followed by a period of lower growth. This is reflected in similar throughput NPVs over this period (Table 5-2 – throughput NPV is the measure of the impact of the forecast on reference tariffs and has been calculated using the 6.9% cost of capital put forward in the revised Access Arrangement).

Table 5-1 Aggregate unconstrained throughput forecasts (PJ)

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
APTPPL	Confidential									
ACIL Tasman	58.1	64.8	65.7	65.7	67.7	68.6	68.7	67.7	69.7	69.9
MMA	58.5	65.1	66.3	70.4	72.3	72.6	71.3	73.5	74.6	73.1
	2016	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**
APTPPL	Confidential									
ACIL Tasman	70.7	71.3	71.9	72.5	73.2	73.8	74.4	75.1	75.8	N/a
MMA	74.4	86.1	101.6	108.8	104.3	106.8	106.5	107.2	111.1	111.6

Figure 5-1 Aggregate unconstrained throughput forecasts (PJ)



[The APTPPL line is confidential]

Table 5-2 Throughput NPVs (PJ)

	2007 to 2011	2007 to 2024
APTPPL	287	793
ACIL Tasman	273	702
MMA	284	817

After 2011 the forecasts diverge, primarily on account of differing assumptions on timing entry of new gas-fired generation. APTPPL projects new entry in 2012, MMA projects new entry in 2017 and ACIL Tasman does not foresee any new entrant gas-fired generation that uses the RBP. These differences reflect different assumptions or modelling outcomes regarding the fuel used in new generating plant and possibly its location. ACIL Tasman assumes that Queensland electricity demand growth is met by 900MW of coal fired plant commissioned in 2011 but acknowledges that it is conceivable that some of this plant could be gas fired, in which case their forecast would be closer to the APTPPL and MMA forecasts.

[Confidential text deleted]

5.2 Conclusions regarding the APTPPL unconstrained throughput forecast

On the basis of the above comparisons MMA considers the APTPPL unconstrained forecast to 2011, the period of the revised Access Arrangement, to be reasonable. We consider that a reasonable forecast beyond 2011 would include new entrant generation at some time after 2011 and [confidential text deleted]. A reasonable forecast would therefore be higher than the ACIL Tasman forecast and would have a throughput NPV over the period to 2024 of at least 770. While the APTPPL forecast does not formally meet both of the first two criteria, its throughput NPV of 793 is reasonable.

5.3 Capacity forecasts

The ACIL Tasman report does not present any unconstrained capacity forecasts that could be compared with MMA's forecast.

6 CONSTRAINED FORECAST COMPARISON

6.1 APTPPL constrained forecasts

APTPPL's revised Access Arrangement forecasts are documented in Table 6-1. According to further information[15] submitted by APTPPL on 21 February 2006, the forecast reflects the following:

- Contracted load
- Organic growth in the retail gas market - this growth is assumed to be 3% pa.
- No growth in the large industrial market
- Step change growth in the power generation market.

The last is attributed to availability of competitively priced gas from coal seam methane, changes within the electricity market and continuing strong demand for electricity in south east Queensland.

The forecast MDQ exceeds the nominal pipeline capacity of 180 TJ/day because some quantities are received downstream of Wallumbilla and delivered upstream of Brisbane, which uses less capacity than full distance delivery.

Table 6-1 APTPPL Access Arrangement forecasts

	2006	2007	2008	2009	2010	2011
Throughput (PJ)	51.1	56.5	57.3	57.5	57.7	58.4
MDQ (TJ/day)	177.5	196.2	199.1	199.8	200.5	202.9

The forecast appears to be based on demand that would result if RBP capacity was not expanded, rather than on an allocation of unconstrained demand to existing capacity and new capacity. It is arguable which of these two approaches is more logical since if new capacity is constructed, as seems most likely, while the existing and new capacities are easily distinguished, the actual usage of existing and new capacities by any existing users cannot be distinguished i.e. its allocation is arbitrary.

As APTPPL has not documented any unconstrained capacity projections, it is not possible to allocate its unconstrained forecast to existing capacity.

[15] Further Information provided to ACCC. APTPPL, 21 February 2006.

6.2 MMA constrained forecasts

MMA has prepared two independent constrained forecasts:

1. Assuming that capacity expansion occurs and allocating demand to new and existing capacity;
2. Assuming that capacity expansion does not occur and estimating demand that would eventuate.

The first forecast is an allocation of MMA's unconstrained forecast to existing capacity; and the second is based on similar assumptions to the APTPPL Access Arrangement forecast.

6.2.1 Allocation method

This forecast is simply the MMA unconstrained Base Case forecast allocated to existing and projected new RBP capacity. Existing capacity is assumed to be 202.9 TJ/day, consistent with the APTPPL Access Arrangement forecast for 2010/11, and the existing capacity component is calculated by multiplying the unconstrained forecast by 202.9 and dividing by the unconstrained capacity forecast.

Table 6-2 MMA allocation based forecasts

	2006	2007	2008	2009	2010	2011
Throughput (PJ)	54.9	58.1	57.2	58.3	59.5	59.4
MDQ (TJ/day)	202.9	202.9	202.9	202.9	202.9	202.9

6.2.2 APTPPL method

This forecast is based on the unconstrained Base Case throughput and capacity requirement forecasts presented in our 7 February report to the ACCC, adjusted to remove loads that we believe would be dependent upon RBP capacity expansion.

6.2.2.1 Gas fired generation

Braemar

The unconstrained Base Case forecast for Braemar is based upon RBP capacity that has already been contracted. Forecasts for Braemar are therefore as in the unconstrained Base Case, with the exception that no load is forecast for 2006.

Oakey

As noted in section 3, during 2005/06 Oakey was barely dispatched, using an estimated 0.05 PJ for the year. This is understood to be due to the RBP operating at or near capacity

and the consequent non-availability of gas under Oakey's interruptible supply arrangements. For the constrained forecast it is appropriate to assume that this level of operation continues over the period to 2010/11. It is considerably lower than MMA's unconstrained forecast.

Swanbank E

Swanbank E's estimated usage of 11.8 PJ in 2005/06 is expected to increase over the five years to 2010/11 owing to increased availability of gas under its new contracts, even without additional RBP capacity. In order to use its estimated take-or-pay quantity of 16 PJ p.a. without additional RBP capacity, Swanbank E would have to increase its gas load factor from 57% in 2005/06 to 79% from 2006/07, equivalent to a generation availability factor of 60%. This is an achievable generation pattern and it is reasonable to assume that if no additional RBP capacity was constructed then this pattern would be adopted, to avoid take-or-pay obligations. The 16 PJ figure is also consistent with Swanbank E's transmission contract capacity of over 15 PJ (Table 4-2) but is considerably lower than MMA's unconstrained forecast.

Table 6-3 Constrained forecast - generation loads (PJ)

	2006	2007	2008	2009	2010	2011
Braemar	0.0	3.1	2.0	2.7	3.1	3.1
Oakey	0.1	0.1	0.1	0.1	0.1	0.1
Swanbank E	11.8	16.0	16.0	16.0	16.0	16.0
Total	11.9	19.1	18.0	18.8	19.2	19.2

6.2.3 Distribution loads

The APTPPL approach allows for organic growth in the retail gas market. Consequently the MMA forecasts for this sector are as in the unconstrained Base Case documented in our 7 February report to the ACCC, reproduced below.

Table 6-4 Constrained forecast - distribution loads (PJ)

	2006	2007	2008	2009	2010	2011
Energex	10.6	10.9	11.1	11.3	11.6	11.8
Envestra	5.2	5.3	5.4	5.5	5.6	5.7
Dalby	0.2	0.2	0.2	0.2	0.2	0.2
Total	15.9	16.3	16.6	17.0	17.4	17.7

6.2.4 Large Users

Incitec Pivot

The unconstrained Base Case forecast for Incitec Pivot is based upon contracted RBP capacity and is therefore unchanged.

BP Bulwer Island Refinery

The unconstrained/Base Case forecast for BP assumed steady growth from 8 PJ in 2004/05 based on the estimated 10.5PJ p.a. of gas contracted from 2006/07. However it is not clear to MMA that BP has contracted additional RBP capacity and in the constrained case further capacity to support load growth will not be available. The forecast in this case is therefore for BP load to remain at 8 PJ p.a.

Table 6-5 Constrained forecast – large users (PJ)

	2006	2007	2008	2009	2010	2011
Incitec Pivot	13.0	12.0	14.0	14.0	14.0	14.0
BP Refinery	8.0	8.0	8.0	8.0	8.0	8.0
Total	21.0	20.0	22.0	22.0	22.0	22.0

6.2.5 Total RBP throughput

Forecast total annual RBP throughputs are illustrated in Table 6-6. Total throughput is projected to grow from 48 PJ in 2005/06 to 59 PJ in 2010/11.

Table 6-6 Constrained forecast – total (PJ)

	2006	2007	2008	2009	2010	2011
Generation	11.9	19.1	18.0	18.8	19.2	19.2
Distribution	15.9	16.3	16.6	17.0	17.4	17.7
Large users	21.0	20.0	22.0	22.0	22.0	22.0
Total	48.6	55.4	56.7	57.8	58.5	58.9

6.2.6 Total contracted capacity

The contracted capacity associated with the above throughput forecast is presented in Table 6-7. Capacity contracted increases because of recent agreements with Swanbank E, Braemar and Incitec Pivot and organic distribution load growth.

Table 6-7 Estimated RBP capacity contracts (TJ/day)

On behalf of	2005	2006	2007	2008	2009	2010	2011
Swanbank E	36	41	41	41	41	41	41
Oakey	0	0	0	0	0	0	0
Braemar	0	0	16	16	16	16	16
Energex DB	46	46	47	48	49	50	51
Envestra DB	23	23	23	24	24	25	25
Dalby	1	1	1	1	1	1	1
Incitec-Pivot	40	40	40	44	44	44	44
BP	29	29	29	29	29	29	29
Total	175	180	197	203	205	206	208

6.3 Forecast comparison

The APTPPL constrained forecast and the two MMA forecasts are compared in Table 6-8 and Figure 6-1. The forecasts are very similar and this is reflected in the similar throughput NPVs over the period (Table 6-9).

Table 6-8 Constrained throughput forecast comparison (PJ)

	2006	2007	2008	2009	2010	2011
APTPPL	51.1	56.5	57.3	57.5	57.7	58.4
MMA Constrained	48.6	55.4	56.7	57.8	58.5	58.9
MMA Allocated	54.9	58.1	57.2	58.3	59.5	59.4

Figure 6-1 Constrained throughput forecast comparison (PJ)

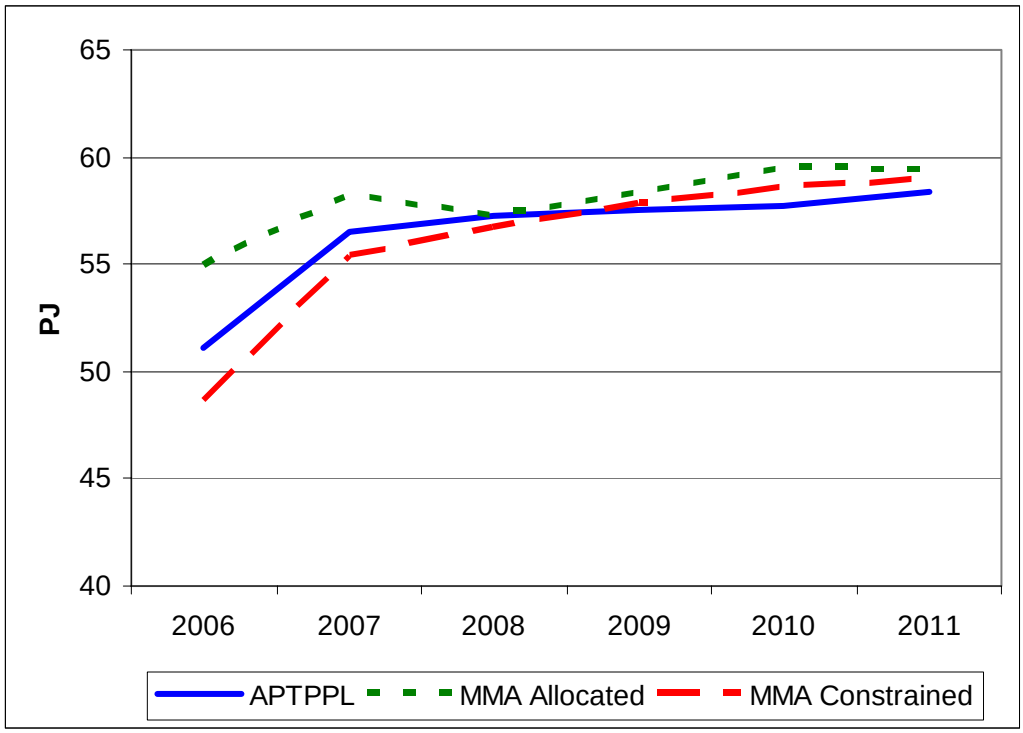
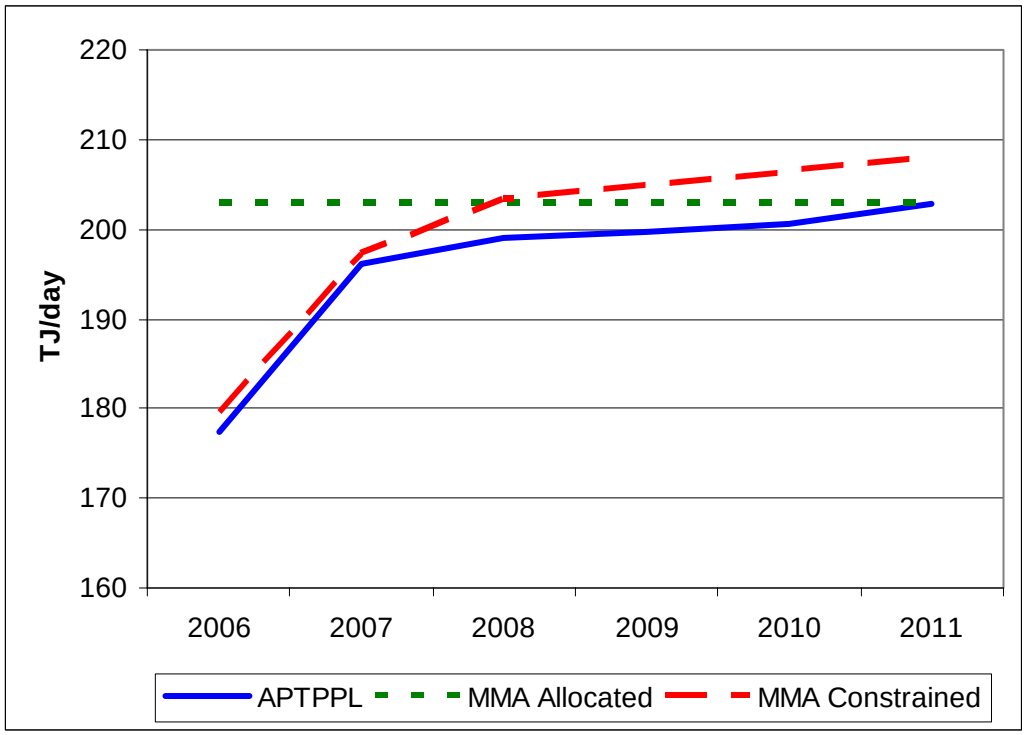


Table 6-9 Throughput NPVs (PJ)

	2007 to 2011
APTPPL	236
MMA Constrained	236
MMA Allocated	240

The only minor difference between the APTPPL constrained forecast and the MMA constrained forecast lies in the higher rate of growth after 2006/07 in the MMA forecast. This may be associated with the higher capacity forecast by MMA (Figure 6-2). From the information available regarding APTPPL's detailed assumptions the source of the difference is not clear however.

Figure 6-2 Constrained capacity forecast comparison (TJ/day)



6.4 Conclusions regarding the APTPPL constrained forecasts

On the basis of the above comparisons MMA considers the APTPPL constrained throughput and capacity forecasts to 2011 to be reasonable.