Jemena Gas Networks (NSW) – Access Arrangement Information - Appendix 6.3

Step Changes

26 August 2009

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1 Obligations and Environment

1.1 Step change adjustments

Jemena Asset Management (**JAM)** and Jemena Gas Networks (NSW) Ltd (**JGN**) have identified items affecting JGN's future cost base that are not reflected in either the current JAM or JGN costs. These items represent step changes in both JGN's operating environment and regulatory obligations (e.g. changes in standards, compliance requirements, and new asset types with new operational and maintenance requirements). They total $4.1 million per year.

This appendix details the individual step change items, their causation and the basis of their forecast cost. These matters are described in sections 1.2 to 1.18 below.

Note that the forecasts of step changes in sections 1.2 to 1.16 below are in terms of $2008-09.

Table 1-1 lists these individual amounts and then converts them to $2009-10.

Table 1-1 then adds two further step changes (sections 1.17 and 1.18) which have been estimated in $2010.

Table 1-1: JGN step changes

Event	Section where detailed below	Annual cost ($)
Formal Safety Assessments	1.2	400,000
Safety Management Studies for primary mains and trunks	1.3	300,000
Network effects of upstream changes in pipeline, shipper and producer actions	1.4	20,000
Increase in staff (JAM) training	1.5	400,000
Implementation of Short Term Trading Market (**STTM**) which will incur increased commercial management	1.6	300,000
'Gas Make Whole' project	1.7	90,000
Additional activities on regulatory accounts	1.8	125,000
Exposed mains inspections	1.9	50,000
Exposed mains repairs	1.10	500,000
Mains encroachment	1.11	400,000
Painting (re-coating) of TRS/PRS/POTS[1]	1.12	520,000

[1] TRS = trunk receiving station, PRS = primary regulating station, and POTS = packaged offtake station.

Event	Section where detailed below	Annual cost ($)
Pressure vessel repairs	1.13	300,000
Existing water bath heaters (WBH) overhauls	1.14	60,000
Future WBH sites	1.15	113,000
Additional telecom costs associated with increased volume of special reads	1.16	37,000
Total above step changes $2009		**3,615,000**
Total above step changes $2010		**3,705,375**
Preparation of materials to implement ongoing compliance with new data requirements in NGR ($2010)	1.17	152,000
Contract management ($2010)	1.18	273,000
Total all step changes ($2010)		**4,130,375**

Note: forecast inflation from 2008-09 to 2009-10 is 2.5 per cent, consistent with JGN's modelling.

1.2 Formal safety assessments

This category covers changed requirements in the Australian Standard AS4645: Gas Distribution Networks. One particular change, which has arisen out of its revision process, is the introduction of formal safety assessments (**FSA**). The requirement to undertake FSA is set out in Section 2.3 of the standard and in later related sections. An FSA is a process to assess the safety of assets with a defined approach, requiring a series of workshops.

1.2.1 Forecast basis

Formal safety assessments require 2 full time employee (**FTE**) engineers (one senior, one junior) to manage the preparation, facilitation, review and management of activities. There will be approximately 12 workshops per year which will require 10 persons for 2 days, plus one day's preparation for these people.

Estimated as follows:

2 x FTE @ ($120,000 + $100,000) = $220,000

plus workshops: 12 x (2 + 1) x 10 x $500/d = $180,000

Estimated average annual cost ($2009)	$400,000

1.3 SMS for primary, trunk

The latest release of Australian Standard AS2885.1 has increased the level of rigour for the Safety Management Studies (**SMS**) process. Operators of high pressure gas infrastructure are required to run workshops to ensure appropriate

safety management. This revision in 2007 covers ten JGN pipeline licences/primary mains with assessments to be reviewed at five-yearly intervals.

1.3.1 Forecast basis

The SMS process requires 2 FTE engineers to cover the preparation, facilitation, review and management of activities. There will be on average 4 workshops per year which will include 10 persons for 2 days, plus one day's preparation for those people. This estimate is made based on 10 planned workshops to cover 10 licences/primary mains and an estimated additional 10 issue-specific workshops required over a five year period.

Estimated as follows:

2 x FTE x $120,000 = $240,000 plus estimate based on previous workshops: 4 x (2+1) x 10 x $500/day = $60,000

Estimated average annual cost ($2009)	$300,000

1.4 Increase in impact on network from pipeline operators, producers, shippers

There has been an observed step change in the number of supply management incidents that are likely to be attributed to JAM no longer managing upstream gas transmission pipelines, and introduced ring fencing. This has changed the end-to-end management of both gas transmission and JGN network incident responses.

1.4.1 Forecast basis

It is assumed that there will be two incidents per year requiring standby field personnel, emergency incident meetings, network criticality analysis and load shedding.

The cost estimate assumes 2 incidents per year requiring 2 days with 10 people.

Estimate based on other workshops: 2 x 2 x 10 x $500/day = $20,000

Estimated Average Annual Cost ($2009)	$20,000

1.5 JAM training to home cost centres

Historical years have shown business non-conformances highlighted through safety and operating plan (**SAOP**) audits. This will be addressed by increased JAM training. The step change in budgeted 2009-10 training costs has been compared with 2008-09 actual costs attributed to home cost centres. The increased budgeted training costs are based on training guidelines circulated to managers. The guidelines include mandated courses and frequencies, including mandatory compliance training, new starters training and technical Occupational Health & Safety and Environment (**OH&SE**) compliance training.

1.5.1 Forecast basis

Additional training costs are based on the difference between the actual training costs for 2008-09 and the budgeted 2009-10 costs.

The 2009-10 training budget was developed by JAM East operational and maintenance (**O&M**) delivery managers under the guidelines circulated by the training group. Training guidelines included mandatory compliance training. The increase in training costs is estimated to be $400,000 per year.

Estimated Average Annual Cost ($2009)	$400,000

1.6 Implementation of a short term trading market will incur increased commercial management

As noted in section 16.6.6 of JGN's access arrangement information (AAI), the STTM will impose wide-reaching changes on JGN's market interactions and the costs of operating its network.

Implementation of the STTM will incur increased commercial management costs in the form of: new balancing costs, increased likelihood of new gas supply arrangements, and increased interface management.

1.6.1 Forecast basis

2 FTE engineers estimated as follows:

There will be additional administration and network operations planning. With the STTM there will be less time to plan with less data available to access. There will be higher costs in managing the increased risk.

Estimate 2 FTEs (senior engineers) to carry out this work.

Estimated Average Annual Cost ($2009)	$300,000

1.6.2 Explanation of additional IT costs involved in STTM compliant gas balancing

While the STTM will result in the removal of a number of costs currently associated with gas balancing by JGN, there will be no net reduction in JGN costs. The obligation to operate the portion of the capital analysis and balancing system (**CABS**) will no longer be required once the STTM functionality is implemented. At the same time, there will be new IT operating costs required to support STTM compliant gas balancing.

Up until now, gas balancing has been shared between NSW and the ACT. When the STTM starts, ActewAGL will pick-up 100 per cent of these services no longer used by JGN. JGN will then pick up 100 per cent of the new STTM services which replace the gas balancing functionality used previously. This effectively doubles the IT service requirement from a NSW/ACT perspective.

JGN has no net cost change from an IT operations perspective as only the model is changing. JGN forecasts the need for an additional FTE whose duties would include:

- diagnosing suspected data problems and/or transactional problems on a daily basis
- providing cost estimates to the market when changes to the balancing mechanism are suggested
- diagnosing and correcting processing failures
- Generally maintaining the system.

The net effect is shown in Table 1-2.

Table 1-2: Net IT step changes

Item	Description of change in obligation	amount ($2009)
Subtraction of current gas balancing functionality IT maintenance.	Removal of the obligation to operate the portion of CABS gas balancing no longer required once the STTM functionality is implemented.	-$200,000
Addition of STTM functionality IT maintenance	IT Operating costs required to support the STTM compliant implementation of gas balancing	+200,000

1.7 Gas make whole

The primary metering, billing, and works management IT system used by JGN to manage its network business (**GASS)** system is the major customer management and maintenance system used by JGN to manage a majority of its business functions. This system was a shared, but ring-fenced, system with distribution and retail functionality used by both JGN and AGL Energy's retail arm.

In October 2006 AGL and Alinta (now Jemena) undertook an asset swap transaction whereby AGL's interest in JGN (previously AGLGN) and ActewAGL Distribution were transferred to Jemena. With the asset swap transaction AGL Energy has moved to establish a new retail customer management system separate from JGN via a project that was called 'GASS Make Whole'. This project applied to JAM on behalf of ActewAGL Distribution and ActewAGL Retail for which AGL Energy provides retail services. The GASS Make Whole project eliminates the economies of not being required to have external interfaces, in that external interfaces have been built and now require maintenance.

These Business to Business (**B2B**) system changes have been implemented during 2009 to support Jemena to JGN/ActewAGL transactions, network diaries, contract customers, introduction of network supply point solutions, auto allocate read frequency, data scrambling and data conversion.

1.7.1 Forecast basis

The 'Gas Make Whole' business process impacts analysis undertaken in May 2008 identified additional costs. JGN has identified that these costs are already showing up in 2008-09 costs since the separation process was completed in November 2008.

This is a major change to the business and it is likely that there has been a systematic under-delivery of daily business to accommodate the project. It is estimated that an additional FTE will be required to manage the new environment.

A step change estimate is based on an assumed $100,000 for one FTE. Allocation of the JAM costs is 90 per cent JGN and 10 per cent ActewAGL based on the ratio of the business driver which is customer numbers.

Estimated Average Annual Cost ($2009)	$90,000

1.8 Additional activities on regulatory accounts

There will be changes in proposed Australian Energy Regulator (**AER**) requirements for regular reporting on regulatory accounts. This will have the effect of increasing JAM costs.

1.8.1 Forecast basis

Estimated as follows:

- additional partial FTE to collect costs and put the regulatory accounts together estimated at $15,000 per year
- audit costs of the regulatory accounts, estimated at $20,000 per year
- additional management labour costs and supervision estimated at $15,000 per year.

Estimate of total JAM cost increases is $50,000 per year.

Estimated Average Annual Cost ($2009)	$50,000

1.9 Exposed Mains Inspections

The historical exposed main inspection method is ineffective. New equipment and tools are now available that allow clear access and inspection of asset condition (for example mains, brackets and supportive structure). Traditional viewing techniques for assessing exposed mains have proven ineffective due to the increasing age of assets. Additionally, changes in regulation specify more costly traffic control and night work, adding to the cost.

There is a need for significant increase in expenditure for more detailed inspections on high risk mains subject to corrosion. Full inspection is required to identify difficult-to-inspect sites involving traffic control, confined space rescue equipment,

and special equipment such as cherry pickers to lower colleagues over the side of bridges.

1.9.1 Forecast Basis

There are 333 sites in the JGN distribution network which are considered 'exposed' and require annual visual inspection. 23 typical sites were investigated and costed at $1,500 for the provision of adequate inspection services.

Based on all 333 sites to be inspected annually as per current technical policy, at an average cost of $1,500 per site the total cost is estimated at $500,000 per year.

Estimated Average Annual Cost ($2009)	$500,000

1.10 Exposed Mains Repairs

Given the increased and more accurate inspection activity noted in section 1.9 above, there will be a corresponding identification of more mains requiring repair.

1.10.1 Forecast basis

There will be an estimated 3 large sites identified for repair per year, plus one ad hoc repair, costed by selecting recent typical exposed mains repairs as follows:

- Quote for Windang Bridge - $215,000 for painting of entire bridge, including $22,000 for pipe repairs
- Quote from Richardson Cres Temp - $89,000 for cleaning and painting
- Account from Stockton Bridge repair - costs incurred of $70,000 for pipe repair and painting
- Ad hoc minor repair - $25,000 per site.

Total typical cost of exposed mains repair estimated as $400,000 per year.

Estimated Average Annual Cost ($2009)	$400,000

1.11 Encroachment

There has been a step change increase in encroachment on trunk and primary mains since the last AA due primarily to urban development along existing mains. The completion of the Sydney Primary Loop has also added an additional 30 km to the primary mains length. These changes will require an additional FTE to address land services issues, such as responding to enquiries and liaison with engineering personnel and the public

1.11.1 Forecast basis

Estimated as follow:

1 FTE and associated equipment costed at $125,000 per year.

Estimated Average Annual Cost ($2009)	$125,000

1.12 Painting (re-coating) of trunk receiving station/primary regulation station/packaged offtake station

Given the age of these assets, the current strategy of simply repainting them is not effective. A number of sites will require significant re-coating of external surfaces. Engineering assessments have indicated a need for complete stripping of the surface of the equipment, with applied heat for improved adhesion of the recoated surface.

1.12.1 Forecast basis

Recoating will be required for 40 of a total of 80 sites over the AA period.

The cost estimate is based on the following three components:

- quotes for painting of Five Island Rd and Mt Kiera stations have been received. Contractor costs are approximately $45k for each site. This covers only contractor costs to fit devices, coat sites with paint and allow to dry (but excludes sand blasting). Additionally there is a requirement for preheating of gas for effective painting

- one month front end engineering required to establish a site-specific preferred method of preheating gas, overall project risk assessment, and development of safety methods (approximately $16,000 per site)

- five internal people required (mix engineers, asset management, project delivery) to carry out individual risk assessments (approximately $4,000 per site).

The resulting estimated cost per site is $65,000. Assuming eight sites per year (40 sites over five years), total cost is $520,000 per year.

Estimated Average Annual Cost ($2009)	$520,000

1.13 Pressure vessel repairs

Previously inaccessible sites are now required to be inspected by removing the vessel from its pit. With new equipment, recent inspections of vessels have identified necessary repair work to filters and hydraulic bottles.

1.13.1 Forecast basis

Estimated as follows:

The following 7 sites have been nominated by the vessel inspector as requiring repairs:

- North Ryde PRS
- Flemington PRS
- Caltex Kurnell
- Mascot PRS
- Haberfield ALB
- Plumpton TRS
- Penrith PRS.

Estimated ongoing total cost of $300,000 per year.

Estimated Average Annual Cost ($2009)	$300,000

1.14 Existing water bath heaters overhauls

This is a new asset type introduced into the networks since the previous AA which requires new maintenance activities. The need for water bath heaters is driven by increased upstream operating pressure ranges resulting in a larger pressure drop and consequent Joule Thompson cooling at existing TRS and POTS. This cooling effect therefore requires the gas to be heated to maintain temperatures in the appropriate operating ranges for downstream delivery by JGN.

1.14.1 Forecast basis

Water bath heaters (**WBH**) were installed at ten existing sites over the past five years. Fourteen five yearly overhauls will be required between 2009-10 and 2014-15, or an average of 3 per year.

20 six-monthly overhauls will be required per year. Incremental costs have been identified with each six monthly overhaul above existing overhaul costs.

Estimated as follows:

- Five-yearly overhaul

  No five-yearly major service has yet been required due to the young age of the assets. However, for each year between 2009-10 and 2014-15, between 2 and 3 five-yearly overhauls will be needed. Each five-yearly overhaul is

estimated to cost $15,000. This new activity will require an additional $45,000 per year above existing maintenance costs (3 x $15,000).

- Six-Monthly Overhaul

  It has been identified that the current quality of periodic overhauls requires improvement. A major overhaul of a water bath heater is a complex task and detailed work procedures are required to support this activity. The impact of failure of a WBH would be very high since they are frequently part of a single/major supply facility to townships. The incremental additional cost per six-monthly overhaul per site is estimated at $800. This results in an additional $16,000 per year for six monthly overhauls for 10 existing sites (10 x 2 x $800).

Total estimated additional maintenance cost is $60,000 per year.

Estimated Average Annual Cost ($2009)	$60,000

1.15 Future water bath heater sites

JGN has received notification from the Australian Pipeline Trust of its intent to raise the maximum operating pressure of the pipeline known as the Marsden-to-Dubbo lateral. This change will require 6 POTS located along the lateral to have upgrades of major equipment. This includes the installation of water bath heaters at all sites. The WBH will be required by 2010-11. A similar requirement for WBH is expected at seven sites on the Junee-Griffith pipeline in 2014-15. Two other WBH will be required at proposed new facilities that are linked to JGN growth plans (Wollongong and Bingarra). A total of 15 new WBH is proposed over the period 2009-10 to 2014-15.

1.15.1 Forecast basis

Estimated as follows:

The installation of these 15 sites will be staged over 2009-10 to 2014-15.

The estimation of change in maintenance is based on an average of seven sites for the 5-year period. These will require weekly inspections and 6 monthly (minor) overhauls.

- The costs for weekly inspections are based on an inspection timeframe of 2 man-hours, assuming labour cost of $120/hour.

  Total cost = 7 x 52 x 2 x $120 = $88,000 per year.

- Six-monthly minor overhauls are based on revised overhaul costs of $1800/overhaul.

  Total cost = 7 x 2 x $1800 = $25,000 per year.

Estimated total cost is $113,000 pa.

Estimated Average Annual Cost ($2009)	$113,000

1.16 Increased telecom costs associated with increased volume of special reads

The changing retailer environment has resulted in more churn (turnover between retailers) of customers. As a result, to close out accounts quickly, retailers are requesting more special reads. Additionally, from November 2008, AGL Energy discontinued its use of GASS under the project 'GASS Make Whole". Prior to this, AGL asked customers to read their own meter. At this time, the process was changed to requesting special reads for move-ins and move-outs. This resulted in a considerable increase in the number of special reads in 2008-09 over historical levels.

1.16.1 Forecast basis

There is an estimated increase in special reads in 2009-10 (over 2007-08) of 150,000 reads per year. The contractor costs for special reads are separately captured and recorded, and are included in the 'business as usual' forecasted volumes and costs. However, associated with each special read is a phone call which has not been included. The estimated cost of each additional phone call is 25 cents, resulting in an incremental communications step change.

Communications costs are estimated based on projected volume, assuming that a single phone call charge would be associated with each special read.

Estimated Average Annual Cost ($2009)	$37,000

1.17 Compliance with new data requirements in NGR

Under the AA 2005 final decision by Independent Pricing and Regulatory Tribunal of New South Wales (**IPART**), JGN was not required to complete yearly regulatory accounts. Under the AER's 2009-10 AA review this is expected to change and to follow the Essential Services Commission (**ESC**) Victorian regulatory model

1.17.1 Forecast basis

Based on Jemena Electricity Networks (Vic) costs to manage this activity, it is estimated that the equivalent of one person full time for four months (including management time) is needed to prepare regulatory and possibility statutory accounts depending on the period year. Additional annual costs will be incurred in auditing these accounts for the regulator. The labour plus audit cost is estimated at $152,000 ($2010).

Estimated average annual cost ($2010)	$152,000

1.18 Contract management

The new asset management agreement between JGN and JAM will require active management. Additional resources will be required for this task.

1.18.1 Forecast basis

It is estimated that:

- two additional labour FTE's will be needed for contract management
- a senior analyst will be required to focus on asset performance measurement and performance management under the agreement
- an administrator/graduate will be needed to focus on reporting, performance meetings etc.

Estimated average annual cost ($2010)	$273,000