Business Case

Service provider	APA GasNet Australia (Operations) Pty Limited
Asset	Victorian Transmission System (VTS) (i.e. APA GasNet System as defined under the Service Envelope Agreement (SEA))
Project	Gas to Culcairn Project - Revised
Project type	Capex – Growth
Project No	BC175-Rev1
Prepared by	Sheila Krishnan
Endorsed by (State Manager Asset Management)	Craig Bonar
Approved by (General Manager Asset Management)	Mark Fothergill
Date:	7th November 2012

PURPOSE

To present a project recommendation and justification for the APA GasNet System for the capacity augmentation to transport an additional:

- 30 TJ/day from Wollert for exports through Culcairn to NSW; and
- 49 TJ/day from Iona to Melbourne through the South West Pipeline.

The Project aims to facilitate incremental capacity of the pipelines between Iona, Melbourne and Culcairn.

BACKGROUND

AER Draft Decision September 2012

APA GasNet had submitted a business case (BC175 – Gas to Culcairn) detailing the augmentation for an additional load demand of 53 TJ/day from Iona to Melbourne through the South West Pipeline, of which 45 TJ/day would be exported through Culcairn via the Wollert to Barnawartha Pipeline. The augmentations required were 104 km of 18 inch looping on the Wollert to Barnawartha pipeline and the installation of a 5.5 MW compressor at Stonehaven on the South West Pipeline. APA GasNet submitted a capital expenditure of $157.5m ($2012) for the project.

In the Draft Decision, the AER only allowed a [C-in-C] TJ/day expansion for [C-in-C] who had confirmed their requirements to the AER. The Draft Decision allowed an augmentation of 27.2 km of 18 inch looping of the Wollert to Wandong pipeline and a 4.5 MW compressor at Winchelsea (or between Winchelsea and Iona) instead of Stonehaven. Accounting for the amended project scope, AER's estimate of conforming capital expenditure for the Gas to Culcairn project is $68.6m ($2012) of the $157.5m ($2012) submitted by APA GasNet.

APA GasNet has received two new shipper requests in August 2012 (see Attachment 3 Reference 1) from [C-in-C] for creation of new AMDQ Credits on the South West Pipeline. [C-in-C] have requested [C-in-C] TJ/day and [C-in-C] TJ/day gas transportation from Iona to Melbourne, respectively. APA had submitted these requests to AER in August 2012 and understands the AER had not considered these submissions in the Draft Decision.

APA GasNet is now including these volumes in the revision of the Gas to Culcairn Project. APA GasNet has also reviewed the analyses and augmentation proposed by the AER for the Wollert to Barnawartha for 30 TJ/day additional exports. APA GasNet has used the APA-AEMO transient agreed Common Model with the latest inputs and assumptions to verify the outcomes of the AER's steady-state analyses. The revised proposal in this business case has been reviewed and endorsed by AEMO.

Victorian Capacity

The Victorian Transmission System (VTS) is interconnected to the Moomba Sydney Pipeline (MSP) at Culcairn, where gas can be imported or exported between NSW and Victoria. Currently 38[1] TJ/day is exported from the VTS, and a maximum capacity of 42[2] TJ/day is available after the commissioning of the Euroa compressor and for a total demand day of approximately 1300 TJ/d on the VTS. Gas can also be imported from NSW with a maximum capacity of 117 TJ/d at Culcairn into the VTS.

As approved in the earlier Access Arrangement period, APA GasNet has begun augmenting the transmission pipeline from Wollert to Barnawartha to increase the export capability of the VTS through Culcairn. Stage 1 of the Northern Augmentation project was completed in March 2011 comprising the installation of two Centaur 50 compressors at Wollert Compressor Station, increasing the maximum allowable operating pressure (MAOP) from Wollert to Euroa from 7400 kPa to 8800 kPa and modification of the Springhurst compressor Station to enable bi-directional flow.

[1] An additional 2 TJ/day has been contracted at Culcairn into NSW since the previous submission.
[2] AEMO's October 2012 capacity assessment with revised load profiles and modelling assumptions.

Stage 2 of the Northern Augmentation project comprises the installation of a compressor station at Euroa (i.e. one Centaur 50 compressor) and was commissioned in early October 2012.

With both Stage 1 and Stage 2 projects implemented, the Northern Zone is able to meet load demand forecast at the various delivery points in northern Victoria and increased Culcairn export capacity up to 42 TJ/day and for a total demand day of approximately 1300 TJ/d on the VTS. Currently, approximately 38 TJ/day of exports are contracted on the NSW side at Culcairn on a "firm" basis, hence there is some 4 TJ/day spare capacity available for exports through Culcairn.

The current declared capacity of the South West Pipeline (from Iona to Lara) is 353 TJ/day. Gas supply available from Iona is significantly higher than the capacity of the South West Pipeline. Currently, the South West Pipeline is at full capacity, hence any additional volumes of gas from Iona would require augmentation to the South West Pipeline.

IDENTIFICATION OF NEED

Three shippers, that is, TRUenergy, Simply Energy and APG have advised APA of their VTS requirements, as outlined in Table 1 below.

Table 1: Forecast Gas Volumes (Incremental Volumes)

	Receipt Point TJ/d	**Delivery Point TJ/d**		**Year**
	Iona	**Culcairn**	**Melbourne**	
Total	**49**	**30**	**19**	1-Jan-15

These injection and withdrawal volumes are incremental to current injections and withdrawals at Iona and Culcairn, with the exception of the 19 TJ/day expected to be delivered into Melbourne.

The total exports through Culcairn, including the existing exports of 38 TJ/day, would be 68 TJ/day.

- **South West Pipeline Augmentation**

Currently, the South West Pipeline is at full capacity, hence the additional 49 TJ/day from Iona would require augmentation to the South West Pipeline.

- **Northern Zone Augmentation**

The Northern Zone has insufficient spare capacity to provide an additional 30 TJ/day capacity to Culcairn. Further augmentations would be required on the Wollert to Barnawartha pipeline.

Proposal

The following augmentations are proposed to enable 49 TJ/day of additional gas from Iona to Melbourne, of which 30 TJ/day would be transported to Culcairn for exports into NSW:

- Installation of a Centaur 50 4.5 MW compressor station on the South West Pipeline at Winchelsea; and
- Pipeline looping and MAOP upgrade of the Wollert to Barnawartha pipeline, comprising:
  - Wollert to Clonbinane loop (35.4km x 450mm Class 600 MAOP 10200 kPa)
  - MAOP upgrade from 7400 kPa to 8800 kPa from Euroa to Springhurst Pipeline requiring:
    a) Construction of a new pressure regulating station on the Echuca offtake ("Echuca PRS") to avoid replacement of the CTMs and city gate stations (x6) along that lateral;
    b) Relocation of the Euroa PRS regulating station to Springhurst to achieve the required class break at Springhurst;
    c) A short mains lay of 20m from the Euroa CTM and city gate to the downstream of the new Echuca PRS regulator station to avoid replacement of this CTM and city gate station; and
    d) Replacement of piping, regulators and heaters (city gates) (and CTMs if applicable) at Benalla, Monsbent, Wangaratta and Wangaratta East.

Also included would be in-line inspection and documentation reviews. Refer to the schematic in Attachment 1 detailing the required augmentations.

APA GasNet accepts the AER Draft Decision proposal for a compressor at Winchelsea (or between Winchelsea and Iona) instead of Stonehaven. As there is no longer a constraint in timing to provide a compressor on the South West Pipeline, subject to securing and permitting a suitable compressor site within the approved capital cost for the compressor site, APA GasNet considers the Winchelsea location an acceptable location (see section 2.1 covering all possible compressor sites).

In the Draft Decision, the AER has only approved 27.2 km of looping from Wollert to Wandong. APA GasNet has found that the AER Draft Decision of 27.2 km of looping from Wollert to Wandong is insufficient for an additional 30 TJ/day of exports through Culcairn. An additional 8.2 km of looping to Clonbinane as well as the MAOP upgrade on the Euroa to Springhurst pipeline section has to be constructed to achieve the additional 30 TJ/day of exports through Culcairn.

EVALUATION OF ALTERNATIVES
Options were considered, which include:

(1) Do Nothing Option

The Shippers will not be able to access gas from Iona and Longford, hence may seek gas supply opportunities from other sources outside the VTS.

This is not an acceptable option and will hinder growth in the VTS.

The compressor on the South West Pipeline would still be required as it provides other benefits to the VTS (see section 2.1 for justification).

(2) Northern Zone and South West Pipeline Augmentations

(2.1) South West Pipeline Augmentation

A compressor on the South West Pipeline would provide:

- Increased capacity of the South West Pipeline to transport more gas from Iona to Melbourne.
- Security of supply to supplement any shortfall in Longford supplies.
- More capacity to refill the Western Underground Storage, supply the Western Transmission System and/or export gas to South Australia.

Compressor Options

The AER has approved Winchelsea (or between Winchelsea and Iona) a site for the installation of a Centaur 50 compressor single unit. APA GasNet has reviewed the analyses performed by the AER and concurs that the Winchelsea 4.5 MW Centaur 50 would be sufficient to provide the required additional capacity for 49 TJ/day with some allowance for demand increases.

The capacity and cost estimates for the various compressor options at Stonehaven (KP118), Winchelsea (KP80 - Birregurra) and Pirron (KP34 to KP46 – Irrewillipe Area), a new site closest to Iona, as suggested by AER[3]) are shown in Table 2 below.

Table 2: Incremental Capacity and Costs.

Compressor	Incremental Capacity to SWP (TJ/day)	Cost Estimate ($m)
Stonehaven T60	62	38.3
Stonehaven C50	48	34.9
Winchelsea T60	74	40.5
Winchelsea C50	61	37.0
Pirron T60	74	41.0
Pirron C50	70	37.5

[3] "Review of Gas to Culcairn and Western Outer Ring Main" July 2012, Sleeman Consulting pg. 11

The capacities in Table 2 are based on a maximum pressure of 9500 kPa at Iona and determined via transient analyses. Note that there are some differences particularly in Winchelsea capacities compared to the numbers published in the previous business case because of revised modelling assumptions and load profiles. The analyses have also been updated with the Anglesea Project load (approved by the AER) and Qenos (a recently connected Gas Generation Plant). These variations do not affect the recommendations.

The AER steady state analyses had presented higher achievable capacities with 10200 kPa at Iona[4]. APA GasNet submits that AEMO (the VTS System Operator) would not operate the pipeline at 10200 kPa and has capped the pressure to 9500 kPa maximum to better manage linepack and demand uncertainty for the deliverability of the Iona injections into the South West Pipeline.

While Pirron appears to provide the most incremental capacity for flows towards Melbourne, consideration also has to be given to the westbound flow for refilling of the Western Underground Storage and/or exporting gas to South Australia. The Pirron location is located far west and is the least optimal among the three compressor locations for westbound flows. Stonehaven is the optimal location for westbound flows. Securing land in the Pirron area for a compressor may also be more difficult (see below).

In terms of securing the compressor sites:

- APA GasNet has secured the site for the Stonehaven compressor subject to a planning permit from the local council.
- The Winchelsea/Birregurra land in this area is generally cattle grazing country. It is within an old lava flow area, with a basalt rock base. It is good grazing country but not as fertile as the country closer to Colac. The nearest house is about 600 metres away, on the opposite side of the railway line.
- APA GasNet has not carried out an intensive investigation of the Pirron (Irrewillipe Area) however, offer the following comments:
  - Land in dairy country is generally worth more to buy (i.e. at least 50% more compared to the Winchelsea/Birregurra land) than open grazing country. The Irrewillipe to Simpson area covers some of the best dairy country in the State.
  - In the Irrewillipe Area, a suitable compressor location may be difficult to secure that has an adequate buffer from houses. Dairy farms are smaller and the houses and dairies are often located close to the roads.
  - A broader community consultation would be needed to construct a compressor station in this area.

Taking into account the Draft Decision's to not approve the Western Outer Ring Main (WORM) Project, a compressor on the South West Pipeline would provide security of supply benefits to the VTS. Considering capacity (both east and west bound capability), timing and capital expenditure, APA GasNet concurs with the AER's Draft Decision to construct a 4.5 MW Centaur 50 compressor at Winchelsea (or between Winchelsea and Iona).

[4] "Review of Gas to Culcairn and Western Outer Ring Main" July 2012, Sleeman Consulting pg. 10

(2.2) Northern Zone Augmentation

APA GasNet considered two feasible solutions for the VTS Northern Zone augmentation:

Option A (preferred): Looping and MAOP Upgrade:

- Looping of 35.4 km of 450 mm pipeline from Wollert to Clonbinane; and
- MAOP upgrade to 8800 kPa from Euroa to Springhurst has to be constructed. The MAOP upgrade involves:
  - Construction of a new pressure regulating station on the Echuca offtake ("Echuca PRS") to avoid replacement of the CTMs and city gate stations (x6) along that lateral;
  - Relocation of the Euroa PRS regulating station to Springhurst to achieve the required class break at Springhurst;
  - A short mains lay of 20m from the Euroa CTM and city gate to the downstream of the new Echuca PRS regulator station to avoid replacement of this CTM and city gate station; and
  - Replacement of piping, regulators and heaters (city gates) (and CTMs if applicable) at Benalla, Monsbent, Wangaratta and Wangaratta East.

Option B: Looping only.

Instead of a MAOP upgrade on the Euroa to Springhurst pipeline, looping was considered as an alternative. The scope of works would require:

- Looping of 35.4 km of 450 mm pipeline from Wollert to Clonbinane; and
- Looping from 9.5 km of 450 mm pipeline from Euroa to south of Line Valve 15.

Cost estimates for both Option A and B are shown in Table 3.

APA GasNet has also analysed an installation of a compressor near Broadford instead of looping from Wollert to Clonbinane. This option was not considered a feasible option because of excessive and unsafe gas pipeline velocities and system integrity in the Wollert to Wandong section of the pipeline. The Wollert to Wandong section of pipeline would require looping in this option which would make the compressor redundant, hence not a prudent augmentation option.

Pipe Diameter Options

For both Options A and B, the selection of 450 mm pipeline for looping was selected based on a longer term outlook on the Northern Zone, APA has performed a high level assessment to transport an additional 188 TJ/day of exports (total 226 TJ/day) and found that a 450 mm pipe looping from Wollert to Barnawartha (approximately 260 km in length) would be the minimum requirement for that export scenario. This is consistent with VENCorp's 2030 Vision of a 220 TJ/day export case which stated a 450 mm pipe looping requirement from Wollert to Barnawartha (refer Attachment 3, Reference 2).

Therefore, a 450 mm pipe size is considered a prudent pipe size for the current requirements and also for efficient future development of the VTS Northern Zone.

APA GasNet proposes that Option A (Looping and MAOP upgrade) is the preferred and most cost effective option.

RISK ASSESSMENT

Construction. The proposed project is of a routine nature to APA.

Technical. All construction work would be completed by technically proven contractors, to APA's engineering design and specifications. All construction processes are oversighted by APA engineers and personnel.

Operation. The new compressor, pipeline loop and MAOP upgrade will be operated in accordance with APA's standard management practices for assets of this type. APA has a suitably qualified and experienced workforce in Victoria to perform this type of operation.

Regulatory. NPV for recommended investment is positive and should be regarded as complying with Rule 79(2)b, and therefore should be accepted to Capital Base of VTS at the next regulatory review.

ESTIMATED COST

Capital Expenditure:

The capital cost for the project is detailed in the Table 3 below in 2012 dollars.

Table 3: Capital Costs for each Option

Budget for Project	**Option A (Preferred) 35.4 km x 450 mm Looping Wollert to Clonbinane + MAOP Upgrade + Winchelsea Compressor**				**Option B 35.4 km x 450 mm Looping Wollert to Clonbinane + 9.5 km looping Euroa to Springhurst + Winchelsea compressor**	
	Northern Zone Augmentation		South West Pipeline Augmentation		Northern Zone Augmentation	South West Pipeline Augmentation
	Pipeline	MAOP Upgrade	Compressor		Pipeline	Compressor
Total	**$38.3m**	**$7.9m**	**$37.0m**		**$48.4m**	**$37.0m**
Total Project	**$83.2m**				**$85.4m**	

The AER Draft Decision estimated the capital expenditure for the Gas to Culcairn project to be $68.6m for 27.2 km looping from Wollert to Wandong and a Centaur 50 compressor at Winchelsea (or between Winchelsea and Iona). APA GasNet submits an additional 8.2km of looping (Wollert to Clonbinane) and MAOP upgrade of the Euroa to Springhurst pipeline, requiring an additional capital expenditure of $14.6m ($2012). The total project capital expenditure including the Winchelsea compressor is $83.2m ($2012).

Operating Expenditure:

Annual expenditure to operate and maintain the looped pipeline and Winchelsea compressor (Option A) has been estimated to be in order of $645,000 per annum in the first year and $595,000 per annum thereafter. This opex increase is estimated as incremental expenditure to the base operating expenditure and it will form a step change to VTS operating expenditure budgets.

PLAN FOR EFFECTIVE EXECUTION

The requirement for conforming capital expenditure specified in Rule 79(1) is that the capital expenditure must be such as would be incurred by a prudent service provider acting efficiently, in accordance with accepted good industry practice, to achieve the lowest sustainable cost of providing services.

APA has systems and procedures guiding the development of the capital projects from Concept through to the Delivery phase. For most capital projects over $1m, design and procurement will be carried in-house and the delivery/construction phase will be tendered. If there is a constraint in resources, then the design and procurement could also be tendered out under an Engineering Procurement Contract Process.

JUSTIFICATION

The requirements for justification of conforming capital expenditure specified in Rule 79(2) are as follows:

The capital expenditure must be justifiable on one of the following grounds;

a. The overall economic value of the expenditure is positive, or

b. The present value of the expected incremental revenue to be generated as a result of the expenditure exceeds the present value of the capital expenditure, or

c. The capital expenditure is necessary;

i. To maintain and improve the safety of services, or

ii. To maintain integrity of services, or

iii. To comply with regulatory obligation or requirement, or

iv. To maintain the service provider's capacity to meet levels of demand for services existing at the time the capital expenditure is incurred (as distinct from projected demand that is dependent on an expansion of pipeline capacity); or

d. The capital expenditure is an aggregate amount divisible into two parts, one referable to incremental services and the other referable to a purpose referred to in paragraph "c", and the former is justifiable under paragraph "b" and the latter under paragraph "c".

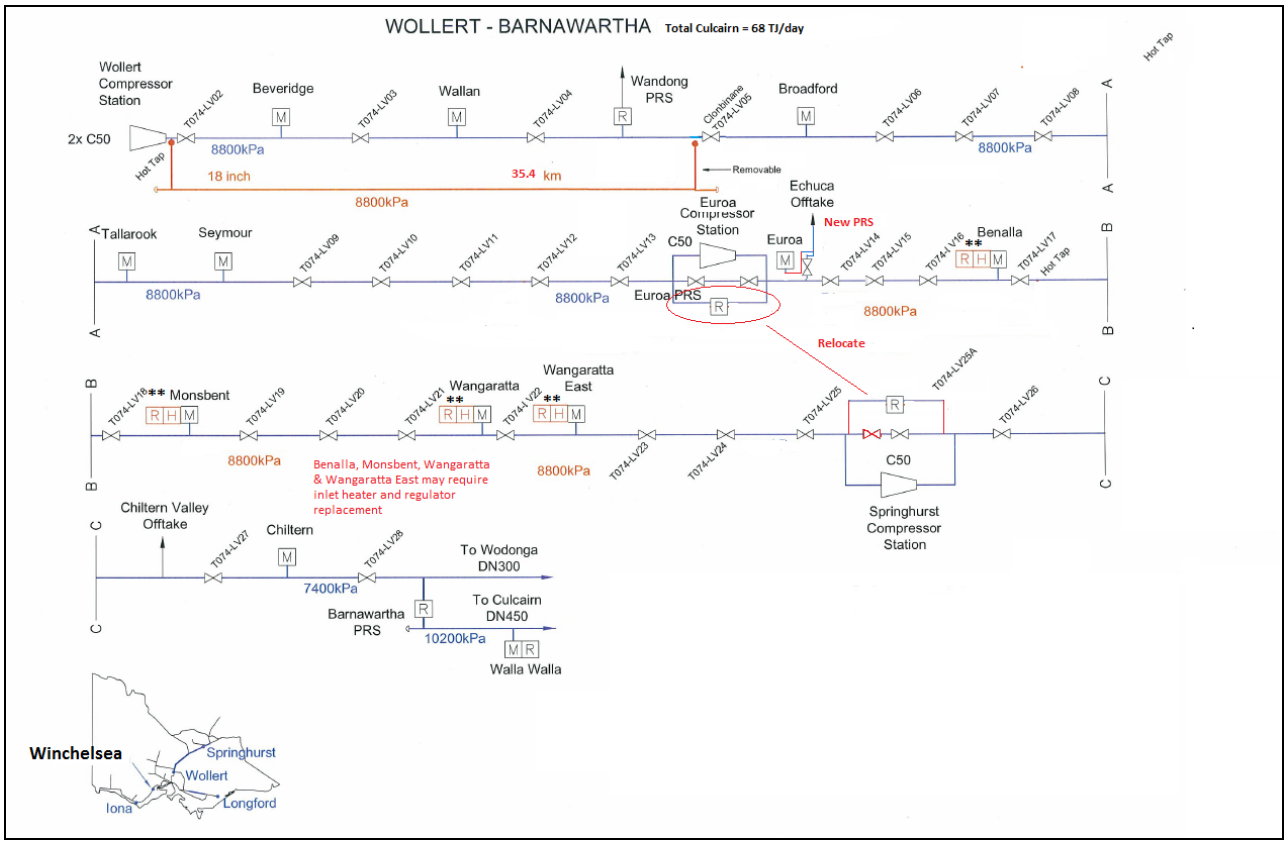
APA is of the opinion that the above presented capital project meets the criteria of Rule 79(2)b, that is the project has achieved a positive net present value (refer Attachment 3, Reference 3), hence the capital expenditure is justified under Rule 79(2)b as conforming for the purpose of its inclusion into the Capital Base of the APA GasNet System.

RECOMMENDATION

A single unit Centaur 50 compressor station at Winchelsea and 35.4 km of 450 mm pipeline looping of the Wollert to Clonbinane pipeline and MAOP upgrade to 8800 kPa between Euroa to Springhurst is the most efficient and prudent investment to augment the capacity of South West Pipeline and the VTS Northern Zone. The project is expected to be fully operational by January 2015.

If the additional 30 TJ/day gas exports to Culcairn is not approved, it is still recommended that the Centaur 50 compressor on the South West Pipeline proceed as the most efficient and prudent investment to augment the capacity of the South West Pipeline based on its security of supply and stay-in-business benefits to the VTS.

ATTACHMENT 1: Schematic of VTS Augmentations



ATTACHMENT 2: Capital Cost Details

The capital cost for the options are detailed below in 2012 dollars.

A2.1 Compressor Options: Capital Cost details

	Winchelsea Compressor Taurus 60	Stonehaven Compressor Taurus 60	Pirron Compressor Taurus 60	Winchelsea Compressor Centaur 50	Stonehaven Compressor Centaur 50	Pirron Compressor Centaur 50
Total	**$40.524m**	**$38.328m**	**$41.024m**	**$36.975m**	**$34.871m**	**$37.475m**

Note: Land acquisition at Pirron (and surrounding areas (and if possible)) is assumed to be at least 50% higher in costs compared to the proposed Winchelsea compressor site land.

ATTACHMENT 3: References

1. Letters from Simply Energy date 12 August 2012 and APG dated 2 August 2012.

2. “VENCorp Vision 2030 Update”, VENCorp 2009, Section 4.5.3 Figures 73, 74

   http://www.aemo.com.au/planning/v400-0003.pdf

3. NPV analysis spreadsheet.