#### **APA 2010 Site Visit**



# **Expanding New South Wales gas infrastructure for a growing energy market**

Wagga Wagga and Young NSW June 2010

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## **APA 2010 Site Visit**



**APA Group overview and strategy** 

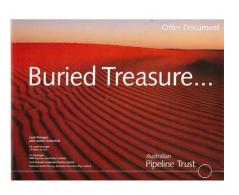
Mick McCormack
Managing Director and CEO

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#### From IPO in June 2000...



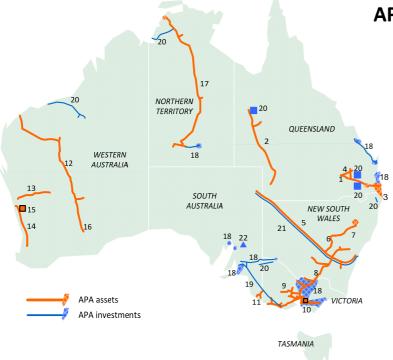
	June 2000	June 2010
	Infrastructure owner and manager	Integrated operating business
Market	\$0.49 billion	\$1.95 billion
capital		S&P/ASX 100
Assets	\$1.3 billion	>\$8 billion
owned / operated	7,000 km gas transmission	12,700 km gas transmission
		23,000 km gas distribution
	Transporting 25% of domestic gas	Transporting > 50% of domestic gas
Employees	6	1,100
Operator	External (Agility)	Internal



... to Australia's largest gas infrastructure business

## Quality infrastructure portfolio across Australia





#### **APA Group assets and investments**

#### Gas transmission and distribution

#### **Oueensland**

- (1) Roma Brisbane Pipeline (2) Carpentaria Gas Pipeline
- (3) APA Gas Network

#### (4) Berwyndale to Wallumbilla

#### **New South Wales**

- (5) Moomba Sydney Pipeline (6) Central West Pipeline (7) Central Ranges Pipeline (8) NSW interconnect with Victoria
- (9) Victorian Transmission System (10) Dandenong LNG facility

#### South Australia (11) SESA Pipeline

#### Western Australia

- (12) Goldfields Gas Pipeline (88-2%)
- (13) Mid West Pipeline (50%) (14) Parmelia Pipeline
- (15) Mondarra Gas Storage
- (16) Kalgoorlie Kambalda

#### Northern Territory (17) Amadeus Gas Pipeline (96%)

#### **Asset Management**

#### Commercial and operational services to:

- Energy Infrastructure Investments Envestra Limited
- Ethane Pipeline Income Fund

#### Operational services to:

SEA Gas Pipeline other third parties

#### **Energy investments**

#### (18) Envestra Limited (31%)

Gas distribution networks and pipelines (SA, Vic, Qld, NSW & NT)

#### (19) SEA Gas Pipeline (33.3%)

#### (20) Energy Infrastructure Investments

Annuity gas pipelines, electricity transmission, small gas-fired power stations and gas processing plants

(21) Ethane Pipeline Income Fund (6%)

(22) North Brown Hill wind farm (20.2%)

Hastings Diversified Utilities Fund (17%)

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#### Successful strategy implementation



"focus on gas transmission assets ... pursue development and acquisition of other gas transmission assets"

Major phases in APA's growth























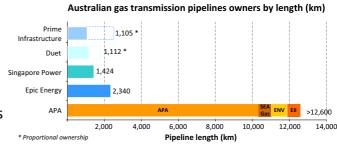
- Acquired minorities, achieving 100% ownership of major pipeline assets
- Acquisition and consolidation - gas pipelines and distribution, electricity interconnects
- Development gas power stations and processing plants
- Internal management and operation
- APA portfolio enhancement capacity expansion, pipeline development and acquisition
- Focused balance sheet divestment of non-core assets



## **Building on APA's strengths**

# APA Group

- Unrivalled gas asset footprint
  - largest transporter of natural gas across Australia by pipeline length, capacity and volume
- Integrated portfolio of gas pipeline assets
  - providing revenue and operating synergies
- Attractive growth opportunities



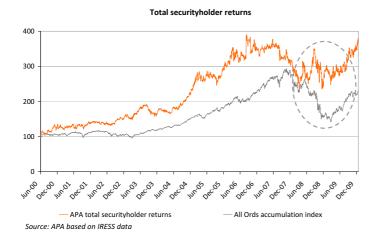
Source: APA & AER State of the Energy Market 2009

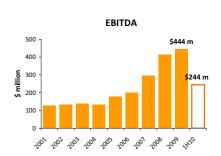
- enhancing capacity in APA's existing pipelines serving major growth markets across
   Australia
- Stable cash flow
  - from regulated and contracted revenue
- Internally managed and operated business
  - highly skilled and experienced workforce, extracting greater value from the business and responding to a dynamic energy market

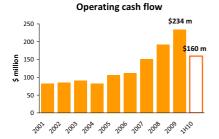
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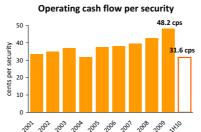
## **Delivering consistent, strong performance**

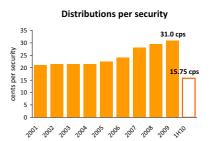














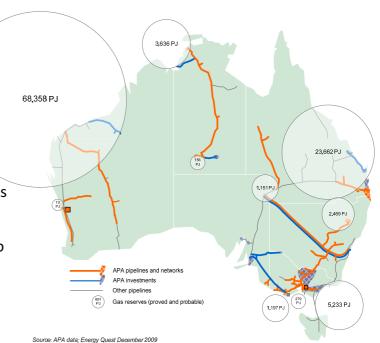
## APA strategy for sustainable, profitable growth

#### Continue to maximise value for stakeholders

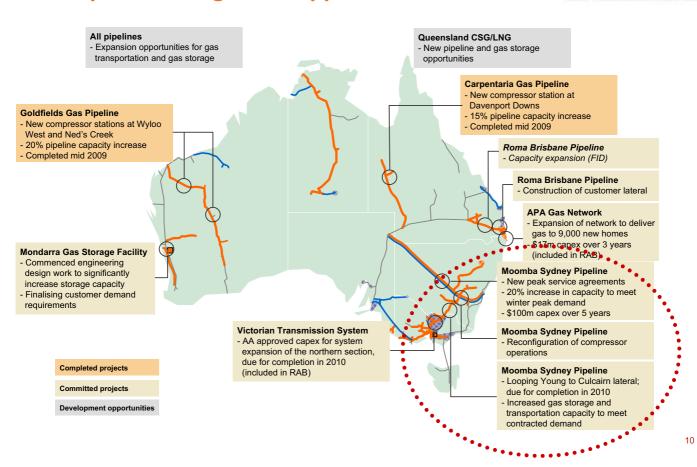
Focusing on gas infrastructure assets in Australia's growing gas market and enhancing

APA's portfolio of assets

- Abundant domestic gas reserves
- Increasing demand for natural gas, in particular for power generation
- Gas users focused on reducing carbon emissions regardless of CPRS, RET or other schemes
- Capturing revenue and operational synergies from APA's significant asset base
- Leveraging APA's gas infrastructure portfolio to develop related projects
- Pursuing opportunities that leverage APA's knowledge and skills base



#### **Development and growth opportunities**



## **APA 2010 Site Visit**



Commercial drivers underpinning APA's growth

Ross Gersbach
Group Manager Commercial

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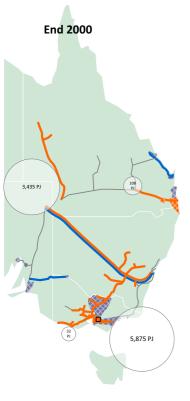
## East coast energy market



- Essential ingredients for pipeline growth supply and demand
- Abundance of indigenous gas reserves
  - conventional, coal seam gas, tight gas, shale gas
- Increasing use of natural gas
  - Clean credentials and power generation support
- Pipeline industry growth drivers
  - Power generation and peaking requirements
  - Efficient, flexible and secure gas delivery
  - Carbon and renewable policies
  - Energy pricing

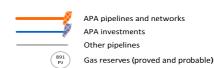






East Australia proven and probable gas reserves (PJ)				
	End 2000	End 2009		
Vic (Gippsland, Bass, Otway)	5,907	6,709		
SA (Cooper)	3,435	1,151		
Qld (Bowen/Surat)	108	204		
QLD coal seam gas	0	23,458		
NSW coal seam gas	0	2,469		
TOTAL	9,450	33,990		

- In 10 years east Australia gas reserves have tripled, with total reserve life extending to ~2060 from ~2015
- Areas of major reserves have shifted
  - Queensland CSG reserves dominate
  - Cooper Basin decline tight gas has not moved to reserve status
  - Gippsland Basin reserves added replace production





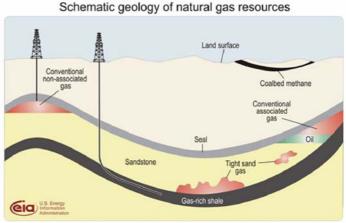
Source: APA data; ABARE, Energy Quest December 2009

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## **Emergence of unconventional reserves**

APA Group

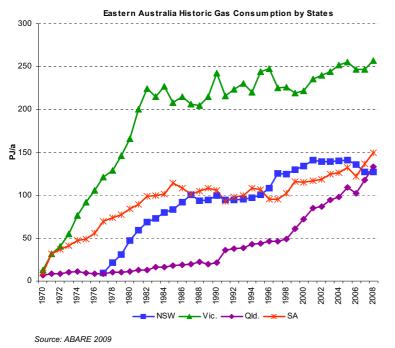
- Increasing gas demand has driven the identification and development of unconventional gas reserves (coal seam gas, shale gas and tight gas).
- In the last 3 years shale gas has been the big mover moving from obscurity to next horizon for petroleum majors who have been acquiring shale acreage
  - February 2010 ExxonMobil acquired XTO Energy shale interests and technical expertise for US\$30bn.
  - June 2009 and May 2010 BG acquired 50%
     stake in Exco Resources shale gas reserves and production for total >US\$2bn
  - May 2010 Shell acquired East Resources' US shale gas resource for US\$5bn
- Increased domestic reserves of shale gas and tight gas
  - "We are only just beginning to identify the potential that lies in unconventional gas resources such as shale gas and tight gas deep below the South Australian desert. ... In 40 years we have produced about 6 Tcf of natural gas from Moomba. Taken together, reserves and resources, both conventional and unconventional, suggest at least three times as much gas remains in the Cooper Basin than has already been produced." David Knox, Santos Chief Executive, 10 June 2010



#### Natural gas use by state



Unique state characteristics has influenced gas demand, and continues to impact future demand



- VICTORIA has the highest gas demand. Rapid growth in the first 10 years as the transmission and distribution systems were extended through the state, with modest growth since then. Colder climate favours gas and seasonal fluctuations can be seen in 2006-2008.
- SOUTH AUSTRALIA's gas demand has a significant power generation component, which began with the conversion of Torrens Island Power Station.
   Gas fired power generation continues to dominate.
- NEW SOUTH WALES had later access to natural gas compared to other states. Gas demand mainly industrial (BHP) with lower penetration and average use by tariff market compared with Victoria.
- QUEENSLAND gas use was almost exclusively for large industrials in Brisbane. Stepwise increases occurred as new industrial markets were connected to gas (Gladstone 1991, Mt Isa 1998), followed by demand growth for power generation and major industrials from 2000 onwards.

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#### Increasing natural gas demand



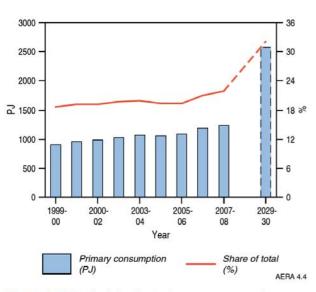


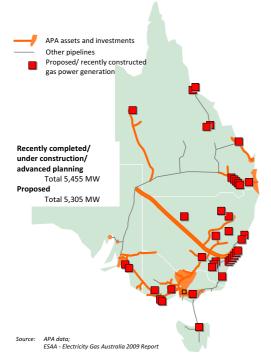
Figure 4.43 Outlook for Australian gas consumption,

- Growth in gas volumes (1)
  - Average annual growth rate of 3.4% pa over the next 20 years (compared with 1.4% for primary energy)
  - 1,240 PJ in 2007-08, doubling to 2,570 PJ in 2029-30
- Factors influencing gas demand increase
  - Population growth of 1.3% pa
  - GDP growth of 2.9% pa
  - Government policies encouraging lower carbon emissions, particularly in electricity generation
  - Electricity generation
  - Mining sector
- APA infrastructure is ideally positioned to participate in this growth through the sale of transport, load shaping and storage services



#### Increase in gas fired power generation

Location of new and proposed gas fired generation



- Reflects the shift to less carbon intensive fuels.
- Growth in electricity generated from gas (1)
  - Average growth rate 5% pa
  - Share of total generation 19% in 2007-08 increasing to 37% in 2029–30.
- Gas fired generation to manage peak demand and "firm" intermittent wind generation
  - Need for pipeline capacity, despite low gas volumes
  - Need for storage to manage peak firing
- APA infrastructure benefit
  - Incrementally expand pipeline capacity
  - Deliver gas from multiple sources
  - Supply security

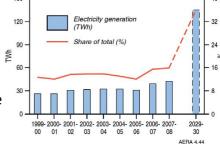


Figure 4.44 Outlook for Australian gas-fired electricity generation

Source: ABARE 2010; IEA 2009a

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(1) "Australian energy projections to 2029-30", ABARE March 2010

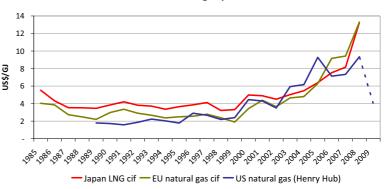
#### **Energy pricing**

#### Impacts on gas pricing

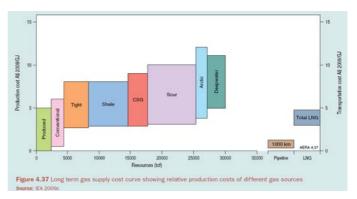
- Price of coal competing fuel for power generation
- World price parity LNG export market
- Production costs conventional vs. unconventional

The price of gas, combined with state and federal governments' carbon policies, will be a key determinant on how much gas can displace coal in power generation and the resultant demand for new pipeline capacity.

#### World natural gas prices



Source: BP Statistical Review of World Energy June 2009 data







#### **National policies**

- Renewable energy target (RET) 45,000 GWh/a by 2020
  - 41,000 GWh/a of electricity generation to be supplied by renewable fuel hydro, wind, solar etc (1)
  - Wind generation will dominate estimate 7.000 MW of new investment
  - Gas-fired generation to back-up intermittent wind generation estimate 6,000 MW of new investment
  - Further support at the retail level
- Carbon pollution reduction scheme (CPRS) delayed until 2013
  - When implemented, expect the addition of carbon price to make natural gas a more competitive fuel for base load electricity generation

#### State policies

- Obligations on energy retailers source electricity generated using natural gas and/or low carbon emitting fuel
- Obligations on energy users various rebate/incentives to switch to natural gas hot water systems or gas-boosted solar hot water systems and legislation to phase out greenhouse intensive water systems
- Example: Queensland Climate Smart

(1) Expanded RET - Bipartisan support for split into LRET (large scale projects) for 41,000 GWh/a and SRES (small scale projects) for remaining 4,000 GWh/a

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#### **Investment considerations**

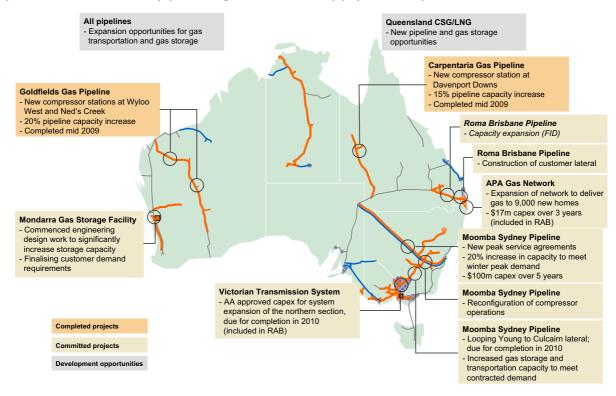


- Asset fit core asset versus non-core
  - Ownership percentage depends on the strategic nature of the asset and the ability to extract synergies with APA's asset footprint
  - Core assets 100% ownership preferred
  - Non-core assets retained in separate vehicle leverage APA's skills and portfolio
- Revenue security regulation or contract
  - Regulated assets are generally natural monopolies lower risk and secure revenue
  - Contracted assets returns commensurate with risk, contract terms, service offering, etc.
- Customer relationship long term focus
  - Enhance total service offering across assets
- Other economic, financing, operational etc

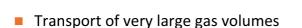




Opportunities driven by power generation, supply security and transition to cleaner fuels



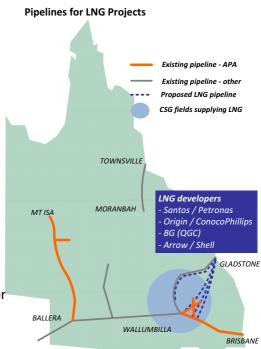
#### **Queensland CSG-LNG pipelines**



- 4.5 to 12 LNG trains each train average 3.5 LNG Mt/a
- Gas volumes required approx 1,000 PJ/a to 2,650 PJ/a (Australia's annual gas use is 1,100 PJ/a)
- Large diameter pipelines required at least 42"
- Current pipeline approach
  - Dedicated pipeline for each LNG project potentially 4 separate pipelines
- APA approach
  - Continue discussions with project proponents with respect to their pipeline requirements
  - Identify suitably experienced and skilled pipeline partners for large diameter pipeline construction – APA has the largest diameter long distance pipeline in Australia (MSP, 34")
  - Position APA for consolidation/collaboration of pipelines more likely to occur once proponents have completed FEED and reached FID



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## **Economic regulation of APA's pipelines**

- Regulation overview
- Pipeline coverage
- APA assets and regulation
- Regulation and pipeline expansions
- General regulatory update



## **Regulatory overview**

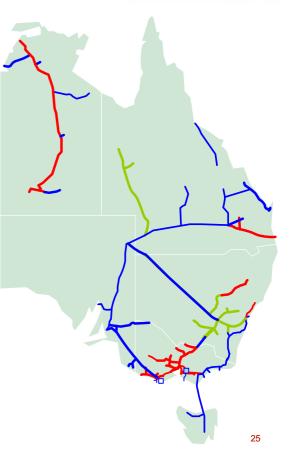
Regulator	APA Assets	Comment			
Australian Energy Regulator (AER)	Price regulated - VTS - APA Gas Network - Roma Brisbane - Central Ranges - (Envestra)	<ul> <li>The AER is responsible for the economic regulation of gas transmission and distribution networks and enforcing the nation gas law and national gas rules in all jurisdictions except Westerr Australia</li> <li>With the introduction of the National Gas Law, the AER has assumed responsibility as regulator for:</li> </ul>			
- Moomba S - Carpentari	Light regulation	<ul> <li>APA Gas Network from the Queensland Competition Authority (QCA)</li> </ul>			
	<ul><li>- Moomba Sydney</li><li>- Carpentaria</li><li>- Central West</li></ul>	<ul> <li><u>Envestra</u> assets which were previously regulated by the QCA and the Essential Services Commission of South Australia (ESCOSA)</li> </ul>			
		The AER is also responsible for the economic regulation of the electricity transmission and distribution networks in the NEM			
Economic Regulation	Price regulated - Goldfields	■ The ERA is the independent economic regulator for Western Australia			
Authority of Western Australia (ERA)		The ERA regulates monopoly aspects of the gas, electricity and rail industries and licenses providers of gas, electricity and water services and has a range of responsibilities in the retailing of gas and surveillance of the wholesale electricity market in Western Australia			



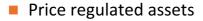
## **Regulatory coverage of Australian pipelines**

- Reduced regulatory coverage
  - Most pipelines on the east coast are uncovered due to interconnection of pipelines and increased supply options for markets
- Coverage of greenfield pipelines
  - Apply for 15 year exemption from coverage
- Coverage of pipeline expansions





## **Regulated and contractual assets**



- Staggered reset dates across APA's 6 major regulated assets
- Regulated assets can also earn revenue through contracted means however, in the event that capacity becomes uncontracted, regulated revenues will be earned on the uncontracted capacity



- Contracted assets
  - Across all major contracted assets, average contract term is 12 years

# Revenue Split Other 5% Subject to Price Regulation 50% Contracted 45%

Term Perpetu  Counterparty credit Broad populate  Volume risk Assets exhibit volume  Competition Monop definiti	ated ets	Contracted Assets	APA's Contracted Assets
Volume risk Assets exhibit volume  Competition Monop	ıity	Maturing contracts	12 year average contract term
exhibit volume  Competition Monop	ion	Subject to counterparty rating	For APA's 4 major contracted assets, 85% of the contracted capacity is with investment grade counterparties
		Contracts may have volume risk	≥ 80% of revenue is capacity based (ie 'take or pay')
40		Competing pipelines may exist	

## **Regulatory assets**



Victorian

Transmission

System 51%

**Regulated Revenue Split** 

**Central Ranges** 

Pipeline 1%

**Central West** 

Pipeline 1%

Envestra

Distribution

Network 5%

APA Gas \_/ Network 22%

**Goldfields Gas** 

Pipeline 20%

#### 50% of revenue is attributable to APA's price regulated assets

#### APA's price regulated assets

- Victorian Transmission System (51% of FY10 forecasted regulated revenue)
- APA Gas Network (22%)
- Goldfields Gas Pipeline (20%)
  - Revenue in the chart represents the 40% of Goldfields' revenue which is price regulated. Remaining 60% is earned through contracted tariffs
- Envestra (5%)
  - Chart represents dividends from 32% interest in Envestra
- Central Ranges Pipeline (1%)
- Roma Brisbane Pipeline (nil)
  - Roma Brisbane Pipeline is price regulated however, as 100% of capacity is contracted, revenue is not classified as regulated revenue in the chart at right

#### Light regulation

- Part of Moomba Sydney Pipeline is unregulated and the remainder subject to "light regulation"
- Carpentaria Gas Pipeline is fully contracted and subject to "light regulation"
- Central West Pipeline was price regulated until 31 Dec 2009 but is now under "light regulation" after application to the National Competition Council

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# APA Group

## **Regulatory assets details**

Regulated Asset (1)	VTS	APA Gas Network	Goldfields	Envestra <sup>(2)</sup>	Roma Brisbane
% of APA regulated revenues	51%	22%	20%	5%	-
Regulator	AER	AER	ERA	AER	AER
RAB (current estimate)	\$610 m	\$386 m	\$544 m	\$2,260 m	\$286 m
Date of RAB estimate	Jan 10	Jun 09	Dec 09	Jun 09	Jun 09
Reset date	Jan 13	Jul 11	Jul 10	Jul 11/Dec 12	Apr 12
Nominal risk free rate	6.29%	5.25%	5.79%	5.25%-6.05%	5.70%
Cost of debt margin	2.99%	1.30%	2.83%	1.25%-2.15%	1.14%
Cost of raising debt	0.10%	0.13%	0.125%		0.10%
Cost of debt	9.38%	6.68%	8.75%	6.71% - 8.25%	6.94%
Gearing	60.0%	60.0%	60.0%	60.0%	60.0%
Equity beta	1.0	1.1	0.8 - 1.0	0.8 - 1.1	1.0
Market risk premium	6.00%	6.00%	5.00% - 7.00%	6.00%	6.00%
Cost of equity	12.29%	11.85%	10.38% - 15.77%	10.97%-12.03%	11.70%
WACC	10.55%	8.75%	9.62% - 11.34% <sup>(3)</sup>	8.80-9.37%	8.85%

<sup>(1)</sup> Reflecting their relatively small scale, table excludes Central West Pipeline (under Light Regulation since 1 Jan 2010), Central Ranges Pipeline and Network

<sup>(2)</sup> Revenues derived from APA's 32% share of Envestra

<sup>(3)</sup> Regulator's final decision; APA/GGT has applied for the upper end of the regulatory range

## **General regulatory update**



- Differences between economic regulation of gas and electricity assets
- Regulatory and market trends
- Goldfields Gas Pipeline ERA final decision

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## **Meeting customer requirements**



#### Creating value by delivering services that meet customer needs

- Drivers of future growth and change in the market
- Customer requirements in an evolving market
- APA Commercial team aligned to customers
- Delivering services that meet customer needs
- Moomba to Sydney Pipeline (MSP)
  - History and capacity
  - Revenue trends
  - Outlook and contracting approach
- Delivering the vision of the east Australian gas grid



## Drivers of future growth and change in the market

- Increasing gas supply and demand
- Gas fired power generation
- Climate driven legislative changes
- Coal seam gas for LNG export and domestic use
- Short Term Trading Market (STTM)
- Vertically integrated players
- Competition
  - ... and most importantly,
- Customer requirements



## **Customer requirements in an evolving market**



- Small number of retailers across east Australian gas and electricity markets
  - Retail both fuels (gas and electricity) to multiple markets
  - Have diversified gas portfolios across gas basins and producers
- Changing customer requirements
  - reduced complexity
  - 'whole of customer' view
  - flexibility, not just point-to-point
  - supply security
  - new, enhanced services
    - Load shaping services such as storage and peak delivery
    - Flexibility of moving gas from multiple supply sources to multiple markets





- National team structure
  - Sales teams responsible for customer portfolios
  - 'National' contracts management and commercial operations
  - Supported by national business processes
- Customer focus
  - Account management model
  - Whole of customer' view
- Service experience
  - Single 'standard' contracts
  - Services across one or more assets
  - Vision is 'one-stop-shop' for customers



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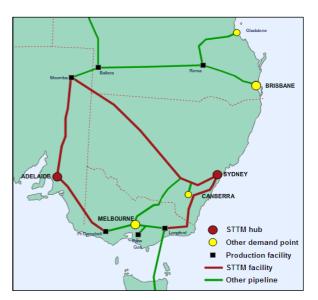
## **Delivering services that meet customer needs**



- Firm transport services
  - Receipt and delivery point, capacity based
- Non-firm services
  - Receipt & delivery point, throughput based (often in excess of pipeline contracted capacity)
- Flexibility
  - Bi directional receipt points either side of delivery point
  - Includes backhaul service no physical flow of gas in backhaul direction, throughput based
- Peak requirements
  - Non-firm services (interruptible and as-available), throughput based
- New STTM products
  - Parking, intra day nomination service (charge per nomination variation)
- Storage / parking
  - Capacity x time
  - Withdrawal and injection services (firm & non-firm)



- Market for wholesale trading of gas at defined hubs (Sydney and Adelaide)
- Australian Energy Market Operator (AEMO) operates the STTM
- Each hub "scheduled" and "settled" separately
- Gas is traded a day ahead of the actual gas day at day-ahead price ("ex ante market price")
- Market settles daily ie. buyers pay AEMO for gas taken and AEMO pays sellers for gas supplied using the ex ante market price
- Buyers may pay "deviation penalties"
  - difference between their scheduled quantities and actual consumption on the gas day



Source: AEMO

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#### **New STTM products**

- STTM uncertainty driving demand for new pipeline services
  - Significant penalties imposed on participants for forecasting error
  - New "markets within the market"
    - Operational balancing gas called "Market Operator Services" (MOS)
    - · Emergency supply called "Contingency Gas"
- MSP expansion to provide capacity for these services
  - Additional delivery capacity (MDQ)
  - More pipeline storage to align with balancing gas requirements
  - Intraday nomination service
  - ... in time for STTM start (1 September 2010)







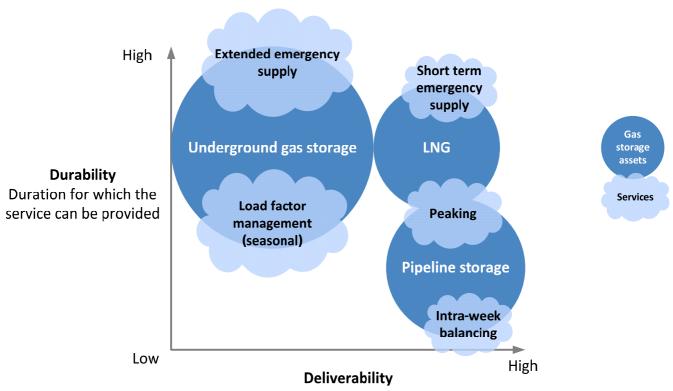
# Storage services provide the means to manage liabilities and capture opportunities

- Peaking
  - short bursts of high deliverability required due to short term market drivers (spikes in demand)
- Load factor management
  - storing gas during long periods of low demand and delivering it during demand peaks
- Intraday/intraweek balancing
  - allows customers to respond to fluctuations in supply and demand
- Warehousing or emergency supply
  - minimises 'take or pay' contract obligations
  - enables opportunities to benefit from short term gas price falls
  - manages gas requirements during production 'ramp up' stage (eg CSG for LNG)
  - emergency supply (eg. Longford and Varanus Island explosions)

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#### APA Group

## Relationship between gas storage assets and services



Rate at which the service can be supplied

## **APA's storage capability**

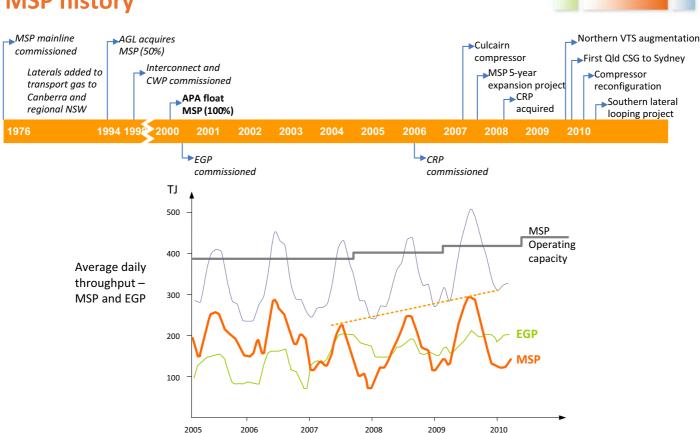


#### Current storage capability and expansion opportunities

- Mondarra underground gas storage facility (Western Australia)
  - Significant withdrawal capacity expansion proposed to meet market demand
  - Start of interconnected pipeline system in WA
- LNG storage facility (Victoria)
  - Originally designed for system security
    - Vaporisation to refill rate > 50 times
  - Further development opportunities
    - Peak shaving, LNG trucking, storage product (with faster refill)
- Linepack (pipeline) storage
  - Well suited to peaking power stations
  - Various pipeline expansion projects commenced or in planning stage

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## **MSP** history



Source: APA; Jemena

## **Understanding MSP capacity and services**

APA Group

- Maximum capacity (pre expansion<sup>(1)</sup>)
- Current maximum capacity (post expansion<sup>(1)</sup>)
  - Current contracted forward-haul
  - Other services (eg storage)
- Maximum capacity post June 2010 upgrade<sup>(2)</sup>

Thoughput only capacity

380 TJ/d

420 TJ/d

approx 320 TJ/d

remaining capacity (100 TJ/d equiv)

438 TJ/d

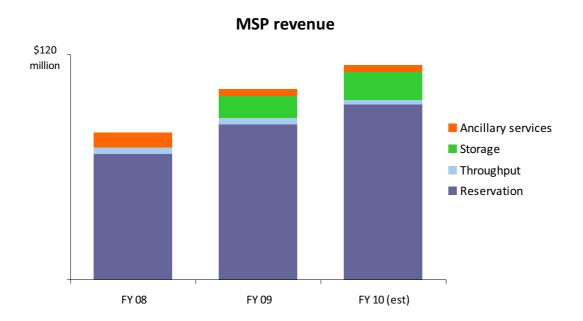
- Storage capacity versus forward-haul throughput
  - Not a 1:1 relationship of storage to throughput capacity
  - As storage increases, pipeline throughput is decreased
  - Storage priced such that revenues exceed equivalent throughput revenues
- (1) \$100m expansion announced in May 2008
- (2) Compression reconfiguration on MSP mainline and laterals mid 2010 completion

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#### **MSP** revenue components



Changing revenue mix reflects growing demand for MSP storage and other services







#### Future MSP revenue growth supported by:

- Scale economics and extensive footprint
- Queensland coal seam gas (CSG) into NSW
- NSW CSG into Sydney, regional and other markets
- Gas flow into and from Victoria via the southern lateral
- Growing presence of gas powered generation in NSW
- Sydney as STTM hub requirements for parking and other flexible services

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## Expansions and new flexible services underpinned by contracted outcomes

- Part of the MSP is unregulated and remainder is subject to "light regulation"
- New revenues typically are underpinned by medium to long term negotiated contracts
- Negotiated contracted outcomes:
  - Provide a high degree of predictability for future revenues
  - Can provide greater returns
    - Through leverage of asset footprint
    - Allow tailoring of services to better meet customer requirements
  - Encourage new investment through a 'win:win' outcome



#### **Example: Southern lateral expansion**

#### Increased storage capacity on the MSP southern lateral

- Approval by Department of Planning on 8 June 2010, project complete by end of September
- Increase storage capacity by 30 TJ to 72 TJ
- Gas can be delivered to power station through the day and refilled over night
- Total capital investment of \$90 million includes the upgrade of the Northern Victorian System

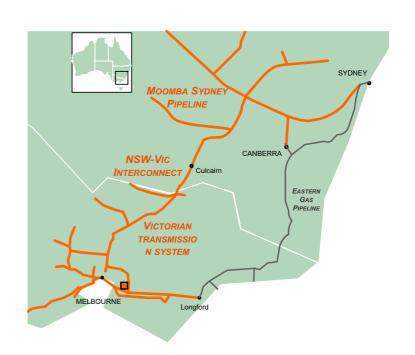


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## **Example: Provision of interstate services**



- Additional MSP transportation and storage capacity available from July 2010 (third expansion of MSP since 2008)
- Will enable:
  - Customers to purchase gas from the Victorian spot market and store on MSP in NSW to re-inject into Victoria when gas price increases
  - Greater competition with Eastern Gas Pipeline (EGP) into Sydney wholesale gas market
- Working towards seamless transport from VTS to the MSP

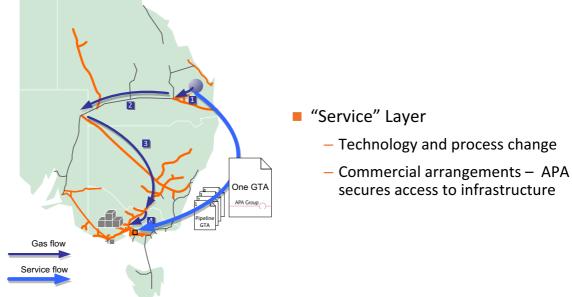




## Delivering the vision of the east Australian gas grid

#### A seamless sales and service experience for all our customers

- "Infrastructure" Layer
  - existing pipelines (APA and others) form grid backbone
  - continued enhancement of existing infrastructure by APA and others



## **East Australian gas grid benefits**



- Flexibility of supply
- Gas affordability
- Simpler and potentially lower cost transportation service
- Security of supply
  - For example, the recent Moomba incident

#### ... for all market participants

#### **APA 2010 Site Visit**



**Operations** 

Stephen Ohl Group Manager operations

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## **Operations division key focus**



- HS&E Excellence
  - To achieve HS&E Excellence through the reinforcement of a safety culture and the use and improvement of consistent, robust systems across APA nationally targeting continuous improvement in HS&E KPIs
- Business Transformation
  - To continue to move the Operations division from inherited legacy state and local systems to more
    effective and efficient nationally consistent policies, processes and systems
- Business Efficiency and Growth
  - Continually striving for efficiency gains in all that we do so that the business can improve its current activities as well as easily accommodate future growth
- Revenue and Cost Management
  - Drive a sustainable cost focus to have the lowest practicable operating costs and capital project expenditure and to ensure that third party activities provide appropriate returns
- People and their Performance
  - Use APA Performance Management systems to engage employees and to improve productivity
    while all are working in an environment where everyone can develop to their maximum potential

## **Operations division functions**



#### **Transmission**

#### **Day to Day Functions**

- Responsible for all APA high pressure pipelines and also operation of EII assets, Ethane Pipeline, SEA Gas Pipeline and other third party assets
- Field operation and maintenance
- · Emergency preparedness
- · Metering management
- · Control rooms
- · Landowner liaison
- · Routine intelligent pigging
- Delivery of minor capital works

#### **Projects**

#### **Day to Day Functions**

- Responsible for all major APA transmission and networks projects and some Envestra Networks projects
- New compressors & upgrades
- Pipeline extension/expansion
- Specialised intelligent pigging and repairs
- NGV stations

#### **Networks**

#### **Day to Day Functions**

- Responsible for APA Networks and management, operation, etc of Envestra Networks and Transmission assets
- Field operation and maintenance
- · Emergency response
- Metering management
- New Subdivisions and services
- FRC transactions management
- Network commercial/marketing
- Appliance testing
- · Delivery of minor capital works

#### Asset Management & Engineering

#### **Day to Day Functions**

- Standardising Asset Management across APA assets including asset management plans
- Compliance
- Audit and Risk management
- Safety Case / SAOP
- Engineering support to commercial/ operations/projects
- Pipeline planning and capacity modelling

#### **Strategic Procurement**

#### **Day to Day Functions**

- Standardising procurement processes across all of APA
- Major procurement activities and contracts for all of APA
- Track savings achieved
- Manage APA property portfolio

#### **NT Gas**

#### **Day to Day Functions**

- Responsible for the operation of all Northern Territory transmission assets for APA, EII and Power and Water Corporation
- Responsible for NT Gas Distribution network
- Functions as for Transmission division

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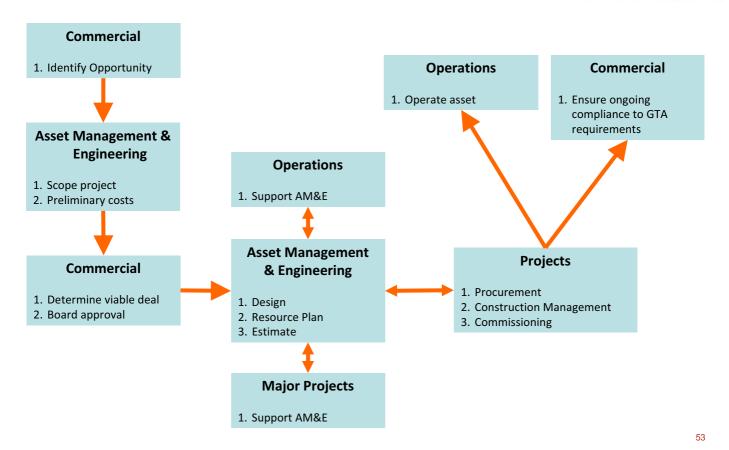
## **Building and expanding gas pipelines**



- Design
- Construction
- Compression
- Looping







## **Developing a pipeline solution**



- What does the Market/Customer want?
  - Average Throughput Capacity, Peak Throughput Capacity, Storage, Park & Loan, Pressure Service, etc.
- Can the current infrastructure provide the service?
  - Revise existing pipeline computer model with new requirements
  - Will an alteration to existing operating parameters be sufficient to provide the service?
- If not what is the optimum incremental expansion to provide the service?
  - Test likely expansion options with the pipeline computer model with new requirements (usually involves multiple iterations)
  - Test most likely expansion options against probable future service options (ensure that the immediate solution does not limit long term future expansions that may be needed to meet new requirements)
- What is the tariff required to justify the expansion?
  - Will the proposed tariff provide APA with an appropriate return on investment?
  - Is the proposed tariff acceptable to the Market/Customer?
  - How does the proposed tariff fit into the existing and possible future tariff structure?





- Alteration of existing pipeline operating parameters
  - Can the pipeline inlet/operating pressure be increased or the pipeline outlet pressure/s be reduced? (doubling the pressure drop across a pipeline can increase the flow capacity by up to approximately 30%)
  - Can the inlet or outlet flow profiles be altered to increase the pipeline throughput/ storage capacity? (eg flow control versus pressure control)
  - Can the operating parameters of intermediate compressors stations be altered to increase the pipeline throughput/storage capacity? (eg on/off operation versus variable speed versus continuous operation)
- Installation of additional compression
  - Can an upgrade or the installation of a bigger compressor at an existing compressor station provide the required additional capacity? (increased compressor power can deliver increased throughput and/or increased pressure differential)
  - Is the installation of an additional compressor station required? (effectively halving the length of a pipeline can increase the flow capacity by up to approximately 40%)

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## Types of pipeline expansion options (cont)

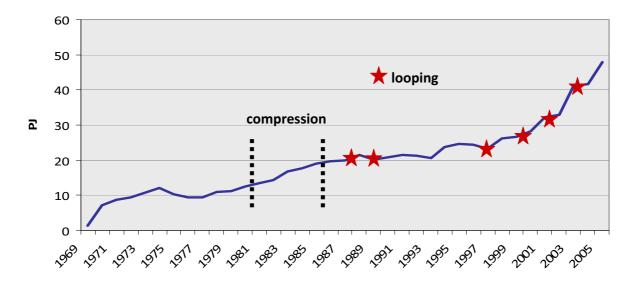


- Looping of an existing pipeline
  - Is the installation of looping a more effective solution that installing additional compression? (peak versus steady state capacity, compressor fuel gas requirements, initial high cost of looping versus the long term capacity requirements of the system, etc)
  - What size of looping is the most cost effective? (immediate increased throughput requirements vs. long term capacity requirements)
  - What configuration of looping is the most cost effective? (single loop at the inlet or delivery end, multiple loops between compressor stations, etc)
- Building a new pipeline
  - What size of pipeline is the most cost effective? (immediate throughput requirements vs. long term capacity requirements, peak capacity requirements vs. average capacity requirements)
  - What configuration of pipeline is the most cost effective? (longer mainline route to service multiple delivery points vs. straighter mainline with laterals)
  - What is the most cost effective initial design? (eg free flow, compressed, internally lined, pressure rating, immediate throughput requirements vs. long term capacity requirements, peak capacity requirements vs. average capacity requirements, etc)



## **Expansion case study: Roma Brisbane Pipeline**

- Commissioned 1969 as full free flow pipeline with two delivery points (397 km of 250 mm NB Class 600 (7.2 MPa), 38 km of 300 mm NB and 2 km of 200mm NB Class 300 (4.2 MPa).
- Added six 750KW compressor stations progressively from 1982 to 1987.
- Added 414 km of 400 mm NB Class 600 (9.2 MPa) looping in six stages from 1988 to 2004.
- At various times have increased compressor stations power to 970KW and increased operating pressures to 8.0 MPa (Class 600) and 4.6 MPa (Class 300)



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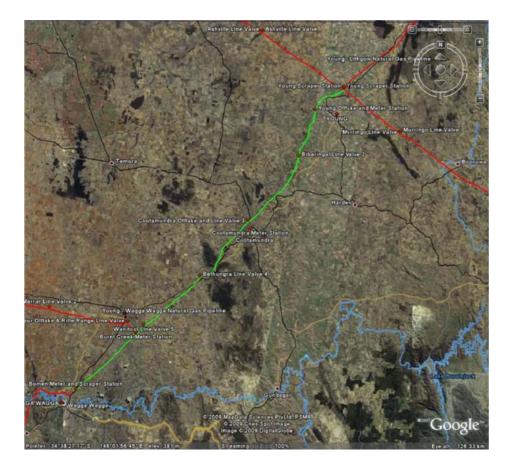
## **Current south east Australia transmission projects**



- Young Wagga looping
- Victorian Northern Augmentation
- Moomba Sydney Pipeline capacity upgrade



## **Young Wagga Pipeline Looping**



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## **Young Wagga Pipeline Looping (cont)**

#### Background

- The 131 km Young-Wagga lateral is 300mm NB, Class 600 (originally 8.1 MPa) and initially operated at up to 6.0 MPa following commissioning in 1981.
- The 88 km Wagga to Culcairn Interconnect is 450mm NB, Class 600 (10.2 MPa) commissioned in 1998.
- The 2005 proposal to develop the 640 MW Uranquinty peaking power station included a plan to construct a dedicated pipeline from Culcairn to the power station to provide the gas supply and act as a storage bottle (as had been done at Braemar in south east Queensland).
- APA proposed a 15 year Gas Transport and Storage Agreement (fixed plus variable tariffs) to provide a transport and storage service by developing its existing assets thus saving the power station developer the capital and operating cost for building their own gas infrastructure.
- Culcairn compressor station was constructed, the Young compressor station modified and Young-Wagga lateral maximum allowable operating pressure was increased to 8.5 MPa to meet the contract to supply Uranquinty.
- So that the Uranquinty power station could operate for longer when required Origin Energy requested additional storage capacity and a contract was signed in late 2009 for the additional service.
- The current looping project was commenced to provide this additional service.



## **Young Wagga Pipeline Looping (cont)**

#### **Project details**

■ The Young Wagga looping design (first stage) is 61km of 450mm NB, Class 600 (10.2 MPa) pipeline, all within the existing pipeline easement

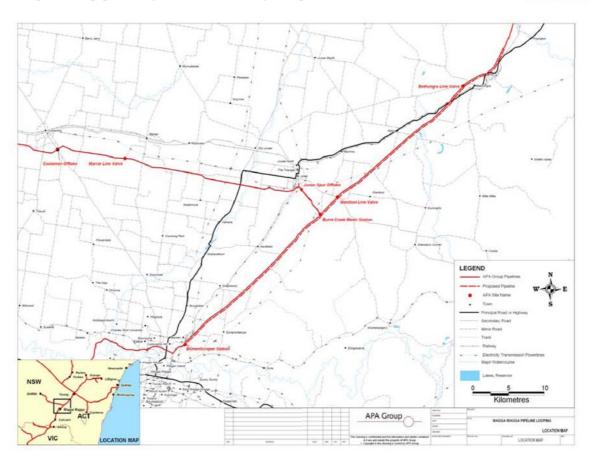
#### Milestones to date are:

<ul> <li>23 March 2009</li> </ul>	Project Development Application submitted to NSW Government
<ul> <li>15 September 2009</li> </ul>	Term sheet executed with Origin Energy
<ul> <li>16 October 2009</li> </ul>	Pipe order placed with Marubeni (JFE Steel Corporation pipe)
<ul> <li>15 February 2010</li> </ul>	Delivery of coated pipe to stockpile commenced
- 1 April 2010	Construction contract executed with WDS Limited
<ul><li>25 May 2010</li></ul>	NSW Department of Planning Project Approval granted
- 11 June 2010	Pipeline License amendment approved

Looping is expected to be commissioned and in operation by the end of September 2010.

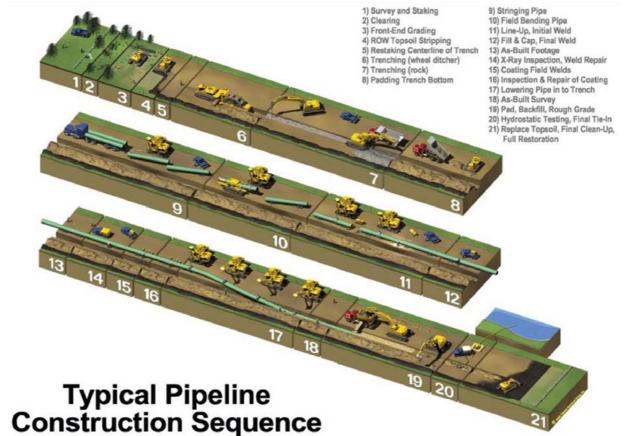


## **Young Wagga Pipeline Looping (cont)**

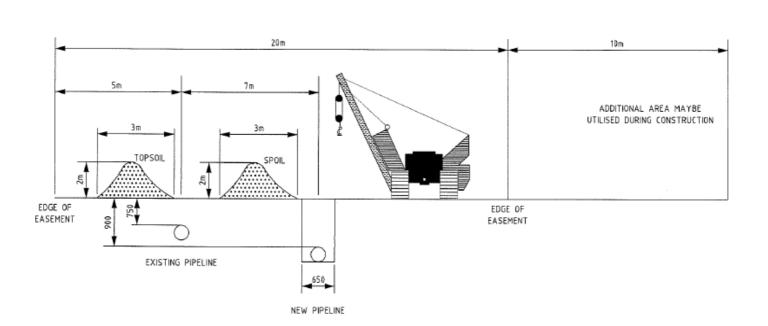




## **Building a new pipeline**



## **Young Wagga Pipeline Looping (cont)**



#### **NSW-Victoria Interconnect**



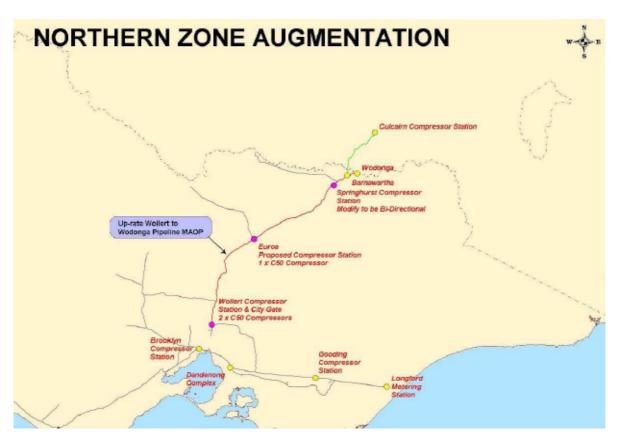
#### Background

- The NSW portion of the Interconnect was constructed by East Australia Pipeline Ltd as 88 km of 450mm NB, Class 600 (10.2 MPa) pipeline from Wagga to Culcairn and commissioned in 1998. Capacity limited by the 300mm NB Young to Wagga pipeline.
- The Victorian portion of the Interconnect was constructed by GasNet as 63 km of 450mm NB, Class 600 (10.2 MPa) pipeline from Barnawatha to Culcairn and commissioned in 1998.
  Capacity limited by the 300mm NB Wollert to Barnawatha pipeline.
- Current Young to Wagga Looping will increase the capacity available to the Interconnect in the north and this capacity can be incrementally expanded by further looping when required.
- Current upgrading of the Wollert compressor station, re-configuration of the Springhurst compressor station to be bi-directional and pressure upgrade of a section of the Wollert to Barnawatha pipeline will increase the capacity available to the Interconnect in the south and this can be further incrementally expanded by compression and pressure upgrades when required.

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#### **NSW-Victoria Interconnect (cont)**

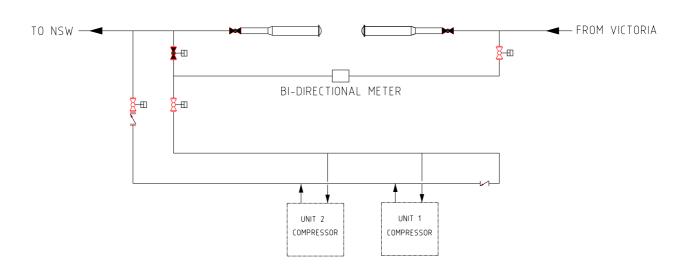








#### FLOW INTO NSW

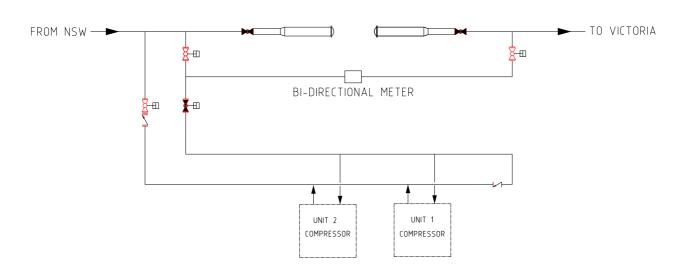


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## **NSW-Victoria Interconnect (cont)**



#### FLOW INTO VICTORIA







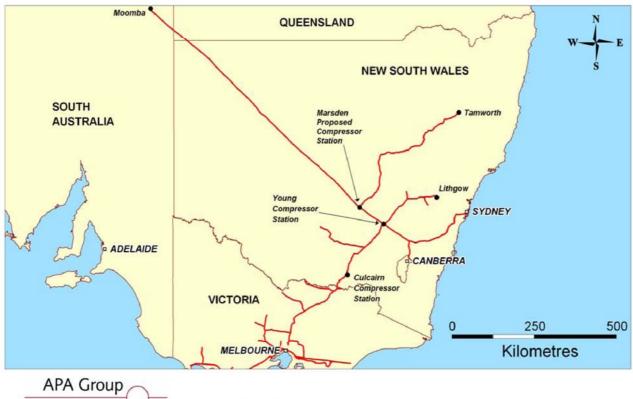
The Moomba Sydney Pipeline capacity upgrade is made up of a number of projects:

- A 5-year program of integrity upgrades to allow the operating pressure of the pipeline to be increased delivers increased throughput and storage capacity.
- Construction of a new compressor station at Marsden
  - Existing compressor relocated from the Young site to Marsden used to compress the Young to Lithgow pipeline but became too small for that service
  - Currently the 850mm NB MSP mainline must operate at a high enough pressure at the Marsden off-take to supply the Marsden to Dubbo to Tamworth load.
  - The compressor will boost pressure into the Marsden to Dubbo to Tamworth system this will provide additional throughput capacity to these regional areas
  - The MSP will be able to operate at a lower pressure at the Marsden off-take
- Configuration of the two Young mainline compressor units to be able to operate in series increasing pipeline pressure and hence capacity
  - Additional capacity to meet Sydney and Canberra supply requirements while the mainline upstream
    of Young is operated at lower pressures once the Marsden compressor station is operational.
- Installation of a bigger compressor on the Young to Lithgow pipeline to provide additional throughput capacity to these regional areas

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## MSP capacity upgrade (cont)





## **East coast transmission operations**



- East Coast Operations
- Young Site Visit

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#### What we do: Transmission



#### Manage and operate

- APA Group owned assets across Australia<sup>(1)</sup>
- Envestra (APA 30.2%) Gas Distribution Networks and pipelines in South Australia, Victoria, Southern NSW, Queensland and the Northern Territory.
- Energy Infrastructure Investments (EII) (Marubeni 49.9%, Osaka Gas 30.2%, APA 19.9%) assets across Australia.
- Ethane Pipeline Fund (APA 6%) owned Moomba to Sydney Ethane pipeline.

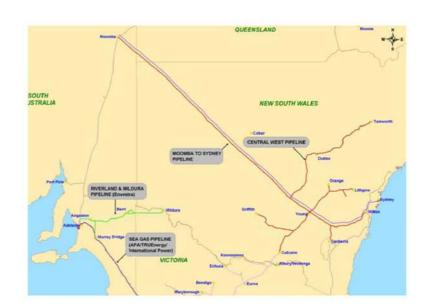
#### Provide field operation services

- SEA Gas pipeline. (APA 33.3% ownership)
- A range of third party owned small pipelines and related assets.



## **Operational overview – NSW operations**

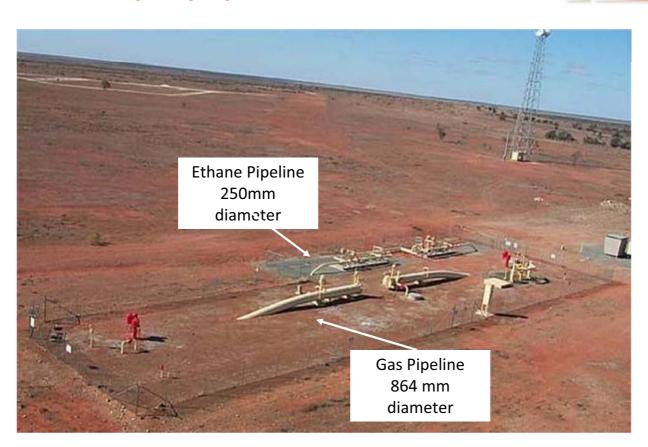
- Manage and operate the Moomba Sydney Pipeline, including laterals
- Manager and operate the Ethane Pipeline which runs in the same easement as the MSP mainline
- Main base at Young, which includes control centre
- Minor bases at Cobar and Wilton
- Compressors at:
  - Young and Cobar (mainline)
  - Culcairn and Young (north-south laterals)
  - Marsden (Central West and Central Ranges Pipelines)



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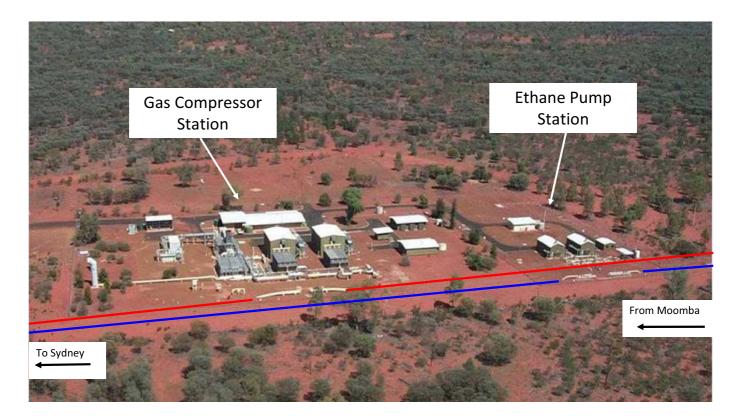
## APA Group

## **Moomba Sydney Pipeline**





## **Bulla Park Compressor Station**



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#### Laterals



#### Laterals to:

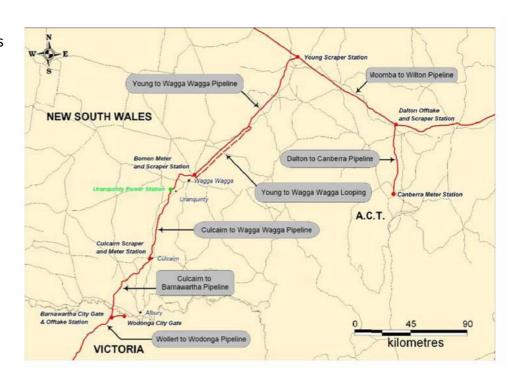
- Northern Lateral (Young to Orange/Lithgow)
- Southern Lateral (Young to Wagga/Griffith)
- Central West (Marsden to Dubbo)
- Central Ranges (Dubbo to Tamworth and operated by Jemena)
- Interconnect (Wagga to Culcairn)



#### **NSW - Victorian Interconnect**

APA Group

- Interconnect to Victoria is bi-directional in flow
- Culcairn Compressor currently compresses gas from South to North
- APA operation response to Culcairn can be from either Victoria or NSW



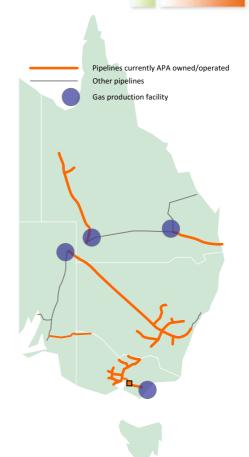
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#### East coast gas security

- Prior to 1998 there were no east coast interstate pipeline connections
- The NSW to Victoria interconnection was commissioned early in September 1998 and provided emergency gas to Victoria during the Longford outage of that date
- The Eastern Gas Pipeline (EGP) from Longford to Sydney was commissioned in 2000.
- The SEA Gas Pipeline (Iona to Adelaide) was commissioned early in January 2004 and provided emergency gas to Adelaide during the Moomba outage of that date.
- The Epic QSN Link (Ballera to Moomba) interconnect was commissioned in December 2009.



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# APA Group

#### East coast gas grid providing security



- Gas restriction at Moomba plant for 4 days (late April 10)
  - no Moomba gas delivered into the MSP (27 April) or Moomba Adelaide Pipeline (MAP) (28 April)
  - potential gas curtailment in NSW, ACT and SA markets
- Market participants worked together quickly and efficiently to limit gas curtailment with
  - a) additional gas from Vic delivered to NSW via APA's NSW-Vic interconnect and Eastern Gas Pipeline, and to SA via SEA Gas Pipeline
  - b) Qld coal seam gas (CSG) delivered to NSW and SA via the QSN, MSP and MAP first time Qld CSG delivered to the Sydney market
  - c) additional Qld CSG directed into NSW and SA from production at Santos operated fields and spare line-pack gas from Roma Brisbane Pipeline
- Moomba gas supply recommenced 1 May no material disruptions to customer gas supplies over the 4 day outage
- Gas security was the priority for all market participants
  - APA put in place interim emergency arrangements to allow for alternate gas supply and receipt by shippers, and

## **Young Control Centre**

APA Group

- Mainline compressor station and lateral compressor station
- Odourant facility
- Gas scraper station
- Workshop
- NSW Gas Control room
- Young Hub
- Ethane scraper station



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## **Young Control Room**

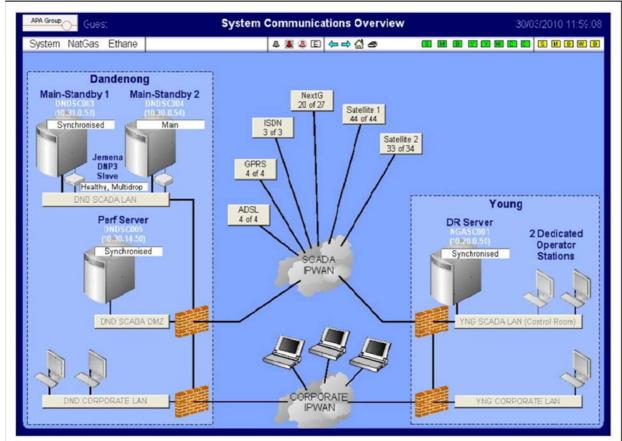
#### SCADA – Supervisory Control and Data Acquisition

- Monitor flows, pressures and temperature
- Start and stop compressors
- Remote close of valves
- Execute response to alarms
  - Emergency
  - Routine
- Personnel on site monitoring and operating on a 24 x 7 basis
- Overnight monitors for APA's Northern Territory and Queensland pipelines



## **NSW SCADA system**





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## **Visit to Young Control Centre**



- Upon arrival
  - Go to Administration Building
  - Freshen up, tea and coffee
- Safety Briefing
- Site tours 3 groups will simultaneously visit/inspect
  - Control Room
  - Maintenance Facilities
  - Compression Equipment
- In the event of an emergency alarm
  - Assembly point is the main front gate you entered through

NOTE: Please do not leave the Administration Building unescorted

#### **APA 2010 Site Visit**



**Funding growth** 

Peter Fredricson Chief Financial Officer

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#### **Investment criteria**



APA rigorously assesses any potential investment/divestment from a strategic, risk and economic and funding viewpoint

#### **Strategic**

 APA remains focused on gas and related infrastructure to deliver value to security holders and investments consistent with APA Group strategy – core, leverage opportunity

#### **Economic**

 Cash flows over the life of the project with positive impact on APA Operating cash flow and project returns which meet hurdle or target rates commensurate with risk

#### Risk

APA has the proven internal capabilities, policies and processes to assess all key risks ...
 financial, operational, project delivery, counterparty, regulatory, reputational and business

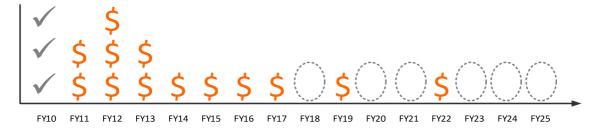
#### **Funding**

Optimal funding - options that at a minimum maintain investment grade credit rating





- Managing APA's balance sheet to maintain minimum BBB / Baa2 investment grade credit rating metrics
- DRP and SPP equity funding supports growth capital expenditure and lower level investment
- Significant capital investments will be supported with equity to maintain investment grade rating metrics as publicly stated
- Better alignment of debt maturity profiles with long term asset profiles extending the term of APA's debt commitments



 Distribution and investment policies consistently reviewed to ensure distributions are covered by free operating cash flows (after SIB capex)

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## **APA** funding capacity for growth projects



- APA has a number of sources of funds and options for funding growth projects
  - APA balance sheet for core assets
    - Separate vehicle (to hold lower growth type assets where we leverage skills/portfolio) eg vehicles like EII
- Core assets funding mix
  - Operating cash retained within the business
  - Equity raised via the DRP and SPP
  - Debt facilities

in line with capital management strategy



## **Funding for FY10 growth capex (estimate)**

Capital expenditure for FY10		
Organic growth projects	\$110 million	
Berwyndale Wallumbilla Pipeline acquisition	\$83 million	
HDF equity interest (17%)	\$114 million	
	\$307 million	
Funds		
Free operating cash flow retained in the business (OCF less distributions and SIB capex)	\$ 74 million	24%
Equity raised through - DRP - SPP	\$ 57 million \$ 85 million	
	\$142 million	46%
Debt funding required	\$ 91 million	30%
	\$307 million	

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## **Refinancing update**



- Second credit rating with Moody's (Baa2, stable outlook) provides APA with the flexibility to access wider debt markets
- In line with APA's conservative approach to financial risk management and in recognition of current credit market conditions, APA targets achieving refinancing of maturing debt 9-12 months ahead of the scheduled maturity
- Upcoming debt refinancing
  - A\$102 million 2003 USPP maturing in September 2010 covered with current debt facilities (effectively refinanced)
  - A\$515 million first tranche of refinanced facility maturing July 2011
  - A\$165 million bilateral facilities maturing July 2011

#### **APA 2010 Site Visit**



**Concluding remarks** 

Mick McCormack
Managing Director and CEO

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#### **Concluding remarks**



- Natural gas is providing more of Australia's energy
  - Use of natural gas is expected to more than double over the next 20 years, with gas fired power generation a key growth driver
- By virtue of its portfolio APA has access to unique growth opportunities
  - APA is currently delivering gas from all major gas sources to all major markets, and is able to incrementally expand capacity on its pipelines in line with demand
- APA has the internal capabilities to deliver this growth
  - Operational, commercial and development expertise, and funding capability
- APA is responding to a dynamic gas industry
  - Developing infrastructure and services which facilitate competition, flexibility and efficiency, by delivering on APA's vision of a seamless experience for all shippers on the east Australian gas grid

# Celebrating a decade of delivering Australia's energy



#### For further information contact

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or visit APA's website

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