

APA Group Western Australian business overview and Mondarra Gas Storage Facility site tour

27 and 28 May 2014

### **Presentations and site tour**

### **Presentations**

- Western Australia business
  - Welcome and APA overview Mick McCormack (Managing Director)
  - WA business overview Rob Wheals (Group Executive Transmission)
  - WA Transmission: mining regions Steve Lewis (General Manager WA Transmission)
  - Mondarra Gas Storage Facility Aidan Trend (Mondarra Asset Manager)
  - WA Transmission: south west region Steve Lewis

### Site tour

Mondarra Gas Storage Facility

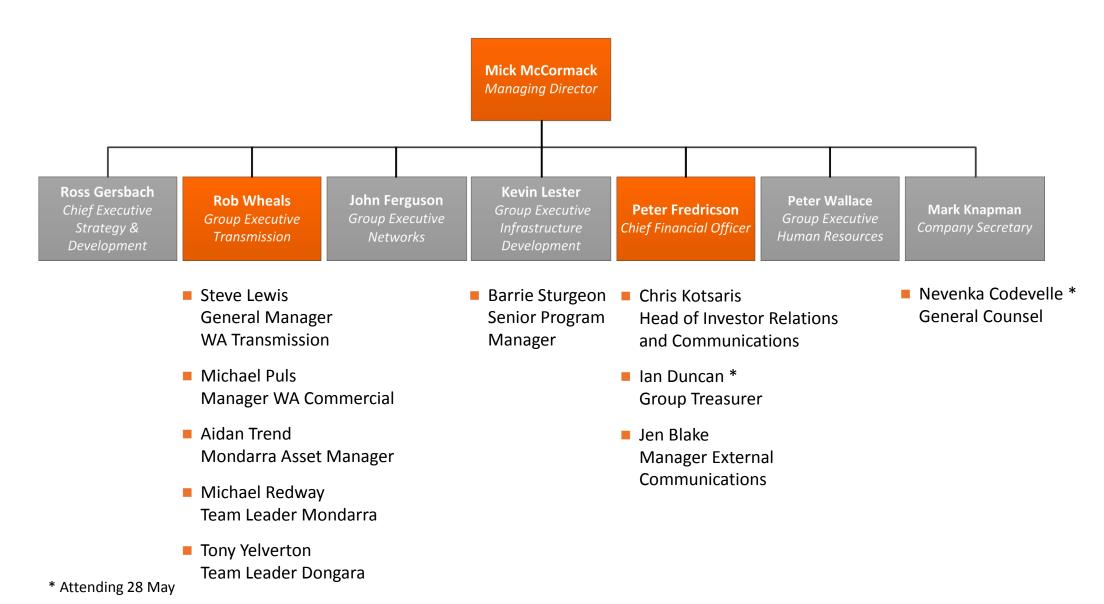


# **APA Group overview**

Mick McCormack
Managing Director and CEO



## APA executive and management – site tour



### **About APA Group**

APA is Australia's largest gas infrastructure business

### Gas transmission pipelines and storage

- Owning and operating two thirds of Australia's onshore pipelines
- Interconnected pipeline networks
- Transporting approximately half the gas used domestically

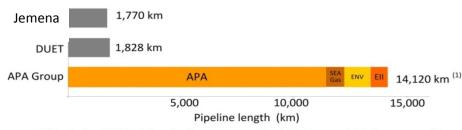
#### Gas distribution networks

 Owning and operating approximately a third of the nation's gas distribution networks

### Other related energy infrastructure

 APA has developed and acquired complementary energy infrastructure, including gas and wind electricity generation, gas processing and electricity transmission

#### Australian gas transmission pipeline ownership



(1) Includes 100% of the pipelines operated by APA Group which form part of its energy investments: SEA Gas, Envestra and Energy Infrastructure Investments.

Source: APA & AER State of the Energy Market 2013

### **APA (23 May 2014)**

# Market capitalisation

A\$5.8 billion

S&P/ASX 50

MSCI All World Index; FTSE All World Index

836 million securities on issue

# Assets owned/ operated

Over \$12 billion

#### **Gas transmission**

14,120 km transmission pipelines Underground and LNG gas storage

#### **Gas distribution**

25,000 km gas network pipelines

1.2 million gas consumers

### Other energy infrastructure

430 MW power generation (1)

239 km HV electricity transmission

Gas processing plants

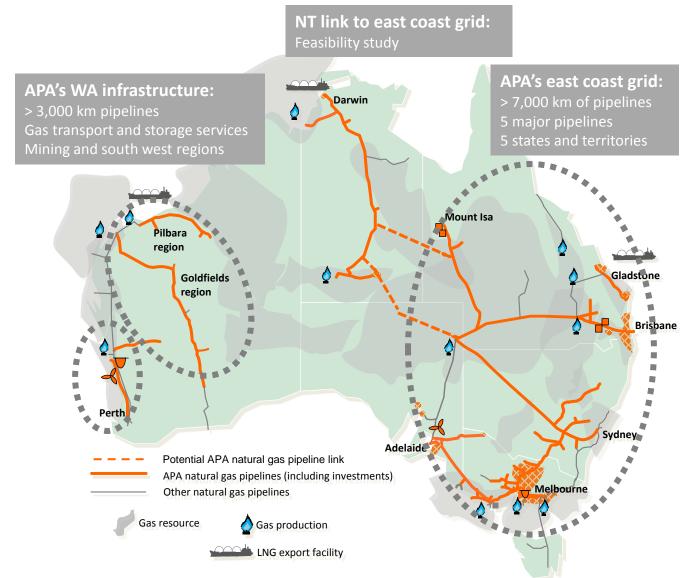
| <b>Employees</b> N | 10re than 1,600 |
|--------------------|-----------------|
|--------------------|-----------------|

### Operator Operator of APA's assets and

investments

<sup>(1)</sup> Includes the Diamantina and Leichhardt power station developments

# National integrated infrastructure portfolio



- West Australian infrastructure
  - Pipelines serving mining regions
  - Interconnected gas storage and transportation to Perth
- East coast grid
  - Interconnected transmission pipelines operating as one system
  - Seamless service capability across 30 receipt points and 100 delivery points
  - Attractive growth and revenue opportunities
- NT pipeline link
  - APA feasibility study:
     Connecting APA's infrastructure
     to facilitate gas flow across
     regions

Seamless gas delivery and storage services



# **APA's long term strategy**

Strategy is focused on our core business of gas pipelines

transmission and distribution infrastructure

Enhancing APA's portfolio of gas infrastructure assets in Australia's growing energy market

Facilitating development of gas related projects that enhance APA's infrastructure portfolio

Capturing revenue and operational synergies from APA's significant asset base

Pursuing opportunities that leverage APA's knowledge and skills base

Strengthening financial capability

### Recent WA highlights

- Goldfields Gas Pipeline expansions
- Commissioning of the expanded Mondarra Gas Storage Facility
- Integration of the Pilbara Pipeline System

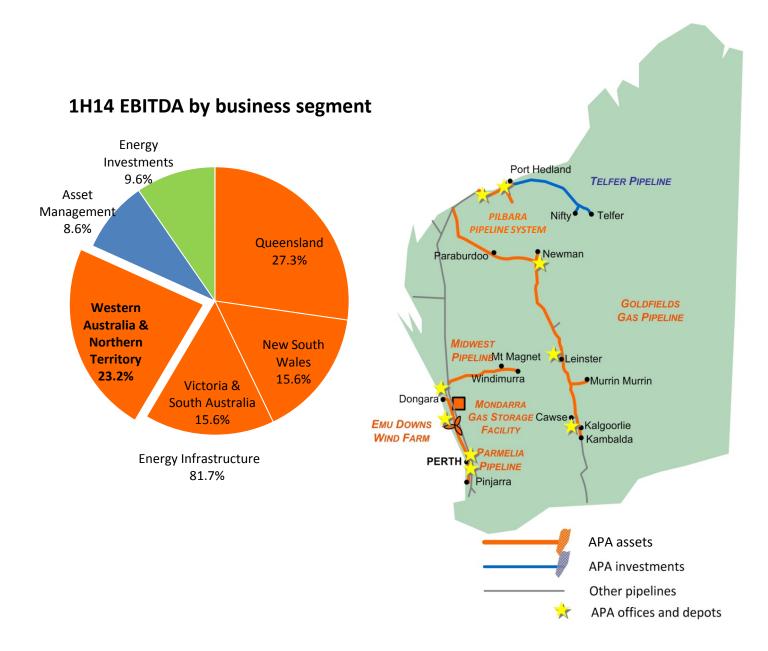
APA's unrivalled asset portfolio across Australia and internal expertise, together with strong industry fundamentals, drive growth opportunities



## **APA Western Australia business overview**

Rob Wheals
Group Executive Transmission

## Western Australia portfolio – significant contribution





Regulator skid at Newman Power Station



Goldfields Gas Pipeline interconnect with Dampier Bunbury Pipeline - Yarraloola



Mondarra Gas Storage Facility



# Western Australia portfolio – strategic infrastructure

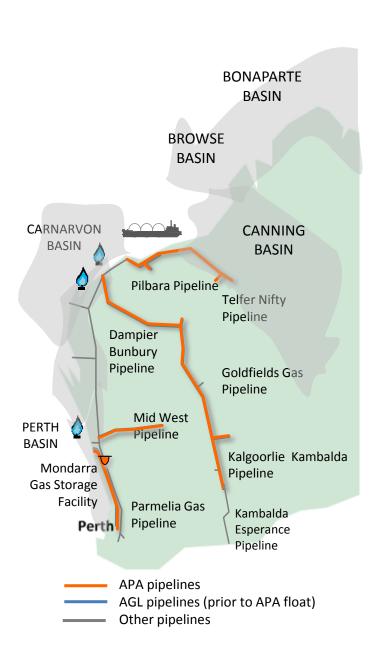
| Assets                                                                         |                                                                                                                                                                                                   |
|--------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Goldfields Gas Pipeline and<br>Newman lateral (88.2%)<br>Other laterals (100%) | <ul> <li>Commissioned 1996</li> <li>1590 km – 2 receipt and 19 delivery points</li> <li>Capacity 175 TJ/d</li> <li>6 compressor sites (11 units)</li> <li>Fully regulated for 108 TJ/d</li> </ul> |
| Pilbara Pipeline System                                                        | <ul> <li>Commissioned 1996</li> <li>329 km - 1 receipt and 7 delivery points</li> <li>Capacity 166 TJ/d</li> </ul>                                                                                |
| Parmelia Gas Pipeline and laterals                                             | <ul> <li>Commissioned 1972</li> <li>448 km - 5 receipt and 14 delivery points</li> <li>Capacity 65 TJ/d</li> <li>3 compressor sites (5 units)</li> </ul>                                          |
| Mondarra Gas Storage Facility                                                  | <ul><li>Expansion commissioned 2013</li><li>15 PJ commercial storage</li></ul>                                                                                                                    |
| Mid West Pipeline (50%)                                                        | <ul><li>Commissioned 1999</li><li>363 km - 1 receipt and 3 delivery points</li></ul>                                                                                                              |
| Kalgoorlie Kambalda Pipeline                                                   | <ul> <li>Commissioned 1996</li> <li>44 km – 1 receipt and 1 delivery point</li> <li>Light regulation</li> </ul>                                                                                   |
| Telfer Nifty Pipeline (19.9%)                                                  | <ul><li>Commissioned 2004</li><li>488 km - 1 receipt and 2 delivery points</li></ul>                                                                                                              |
| Emu Downs Wind farm                                                            | <ul><li>Constructed 2006</li><li>80MW</li></ul>                                                                                                                                                   |

### **Operations**

- 185 employees across 9 operating bases
- Pipeline control centre



# WA gas infrastructure development



#### 1960s

- Gas discovered and developed in the Perth Basin 1970s
- Parmelia Gas Pipeline constructed, delivering gas to Perth 1980s
- Development of the North West Shelf offshore gas fields
- Construction of Dampier Bunbury Pipeline
- Depletion of gas in Perth Basin

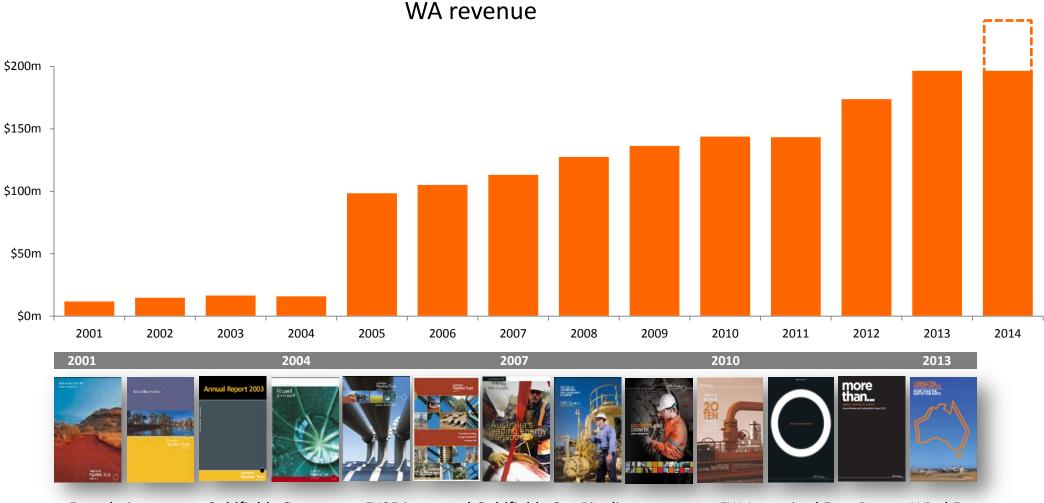
#### 1990s

- Growth of LNG export facility
- Construction of Goldfields Gas Pipeline and Pilbara Pipeline, delivering gas to mining projects
- Construction of Mid West Pipeline and Kalgoorlie Kambalda Pipeline
- Dampier Bunbury Pipeline expansions

#### 2000s

- APA Group formed
- Construction of the Telfer Nifty Pipeline
- Construction of the Kambalda Esperance Pipeline
- Goldfields Gas Pipeline and Dampier to Bunbury Pipeline expansions
   2010s
- Goldfields Gas Pipeline and Dampier to Bunbury Pipeline expansions
- Mondarra Gas Storage Facility expanded
- More producing gas fields in the Carnarvon Basin
- Potential of offshore and onshore gas developments

## Successful strategy implementation in WA



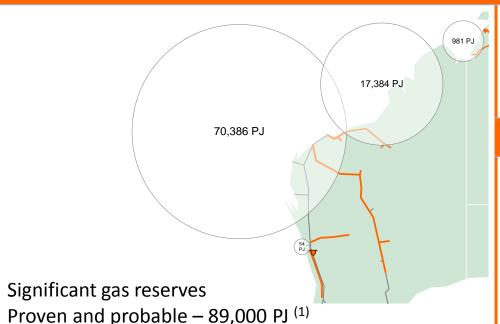
- Foundation assets: Goldfields Gas Pipeline (39.7%) and Midwest Pipeline (50%)
- FY03 increased Goldfields Gas Pipeline interest to 48.5%
- FY05 increased Goldfields Gas Pipeline interest to 88.2%, and acquired Parmelia Gas Pipeline and Mondarra Gas Storage Facility
- FY07 acquired Murrin Murrin lateral
- FY09 Goldfields Gas Pipeline expansion

- FY11 acquired Emu Downs Wind Farm
- FY13 acquired Pilbara Pipeline System
- FY14 Mondarra Gas Storage Facility expansion
- FY14 Goldfields Gas Pipeline expansions
- **....**



### WA business fundamentals

### **Abundant gas supply**



Contingent – over 300,000 PJ (2)
 Questions about availability for WA's domestic market

### Steady gas demand

 Steady domestic gas demand, increasing in mining regions

### **Strategic assets**

- Well positioned long life assets
- Skilled and experienced workforce

#### Secure revenue

- Creditworthy customers
- Long term contracts and/or regulatory certainty
- Capacity based revenue contracts, relatively unaffected by volume variability
- Developing integrated and flexible services



GlencoreXstrata







<sup>(1)</sup> EnergyQuest February 2014

<sup>(2)</sup> Australian Gas Resource Assessment 2012, BREE

## WA portfolio serving mining regions

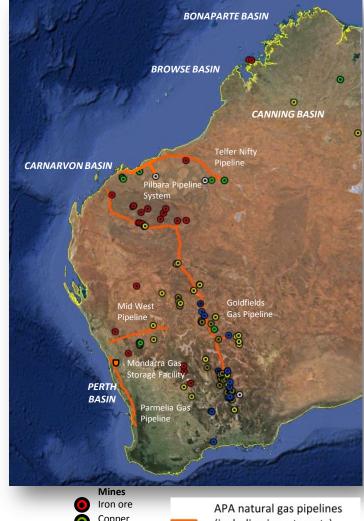
Major gas pipeline infrastructure serving the Pilbara and Goldfields mining regions

- Contract renewals
  - Murrin Murrin Operations (GlencoreXstrata) 15-year gas transportation contract for the Goldfields Gas Pipeline and lateral
- Capacity expansion
  - Two expansion projects on the Goldfields Gas Pipeline capacity increase of 28%, underwritten by 20-year and 15-year contracts
- Growth drivers
  - New mine developments
  - Existing mine expansions
  - Existing mines reducing cost via fuel conversion from diesel to gas for power generation

### Strategically located infrastructure

Infrastructure is close to new and potential gas sources – Carnarvon, Gorgon and Canning basins

#### Gas basins and operating mines near APA's pipelines, WA



(including investments)

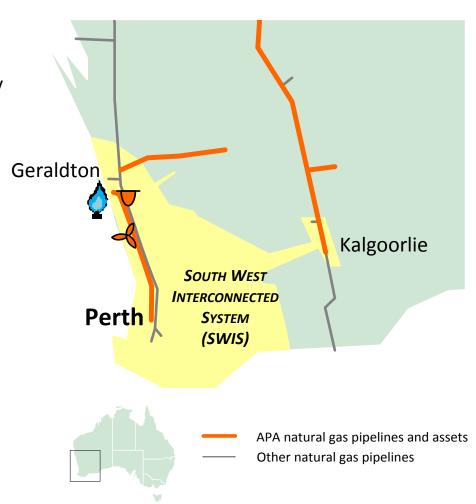
Source: APA: Australian Mines Atlas



## WA portfolio serving Perth and southwest regions

- Mondarra Gas Storage Facility providing gas supply security for Perth and the south west region
  - Expansion completed mid 2013
  - Connected to major pipelines
  - Providing services to four customers, including Synergy
  - Majority of capacity contracted underpinned by
     20 year contract with Synergy
- Providing flexible, integrated gas transport and storage services and competitive tariff structures







# **WA Transmission: mining regions**

Steve Lewis General Manager WA Transmission



### **Contents**

- WA Market
  - Overview
  - Gas supply and demand
  - Current issues
- Mining region
  - Goldfields Gas Pipeline
  - Pilbara Pipeline System

... after Mondarra Gas Storage Facility presentation

- South west region
  - Mondarra Gas Storage Facility and Parmelia Gas Pipeline

### WA market – overview

### Economic growth is still healthy ...

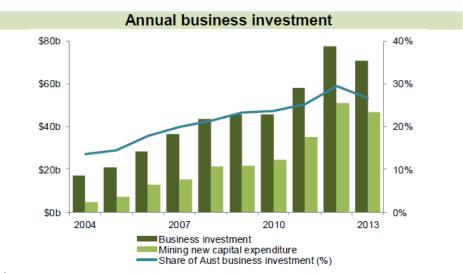
- WA Gross State Product (GSP) expected to grow at 3.8% from 2015
- Based on continuing growth in quantity of merchandise exports (6.5% increase in 2013-14) as new projects enter production phase
- Population growth at 3.5% pa with unemployment rate at 4.9% (March 2014)

### ... but investment is in decline

- Business investment in decline as current projects near completion are not replaced with new investment
- And the value of those exports has declined sharply with the largest annual fall in commodity prices in two decades

Note – Forecasts start in 2013-14.

Source: ABS 5220.0 State Accounts and 5204.0 National Accounts; Western Australia 2013-14 Government Mid-Year Financial Projections Statement; and Australia 2013-14 Budget and Mid-Year Economic and Fiscal Outlook.



<sup>&</sup>lt;sup>1</sup> Excludes new capital expenditure in the industries of agriculture, forestry and fishing; public administration and safety; education and training; health care and social assistance; and superannuation funds.
Source: ABS \$206.0 National Accounts, 5220.0 State Accounts and 5625.0 Private New Capital Expenditure.

Source: WA Economic Profile – April 2014, WA Government Department of State Development



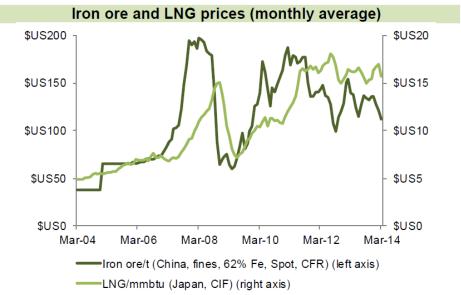
## WA market – resources dependent

Resources continues to be the key growth driver

- The mining/resources industry accounted for 29% of WA's GSP in 2012-13
- Resources projects committed or under construction totals \$149 billion (March 2014)
- China remains WA's key export market
- Iron ore and LNG dominate exports based on historically high commodity prices
- Resource owners searching for lower cost project development options
- Existing projects focused on brownfield expansions and reducing operating costs



Source: ABS 5368.0 International Trade in Goods and Services



Western Australia 2013-14 Government Mid-Year Financial Projections Statement
 World Bank Commodities Price Forecasts.

Source: World Bank, Commodity Price Data (monthly prices in nominal US dollars)

Source: WA Economic Profile – April 2014, WA Government Department of State Development



### WA market – gas supply

### Abundant reserves

- WA proven and probable gas reserves total 89,000 PJ<sup>(1)</sup>
  - WA domestic gas use for 2012-13 was 326 PJ (2)
  - and 1,090 PJ <sup>(1)</sup> of gas was used for LNG export

But how much is available for the domestic market?

- Gas Reservation Policy requires 15% of reserves to be used in the WA domestic market
- NWS Project with capacity of 660TJ/d is more than 60% of available production capacity
- NWS has LNG alternative and has met WA State
   Agreement obligations to supply WA market
- Recently developed Reindeer field, plus Macedon and Gorgon Phase 1 gas projects domestic gas obligations will provide gas supply relief
- Shale gas development potential in Canning Basin for the longer term

Gorgon Reindeer Macedon



Source: WA Government, Department of Mines and Resources

<sup>(1)</sup> EnergyQuest February 2014

<sup>(2)</sup> Gas Statement of Opportunities, Independent Market Operator, January 2014

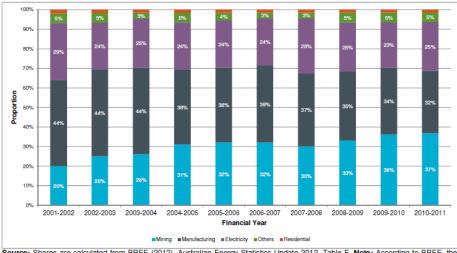
### WA market – gas demand

Gas demand increasing in mining regions ...

- WA total gas demand expected to grow at 1.5–2% per annum to 2024
- This is low by historical standards but reflects significant gas price increases that commenced from 2005
- Gas demand in the south-west of WA has fallen since 2005 (power generation and mineral processing sectors)
- Gas demand in regional WA remains strong (mining sector)
- Reflects price elasticity of demand and alternatives
  - Coal (south west)
  - Diesel (mining regions)

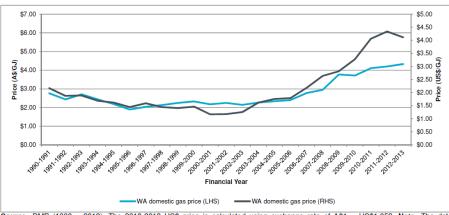
... and demand remains for gas storage and transportation services that reduce costs and risks

Figure 25 – Share of Gas Consumption, Western Australia, 2001-2002 to 2010-2011



Source: Shares are calculated from BREE (2012), Australian Energy Statistics Update 2012, Table F. Note: According to BREE, the manufacturing segment includes ferrous and non-ferrous minerals processing, iron and steel processing, petroleum (oil and gas processing, chemicals, ceramics, glass, lime, concrete and plaster production, but does not include gas as feedstock.

Figure 11 - Western Australian Average Natural Gas Prices (nominal), 1990-1991 to 2012-2013



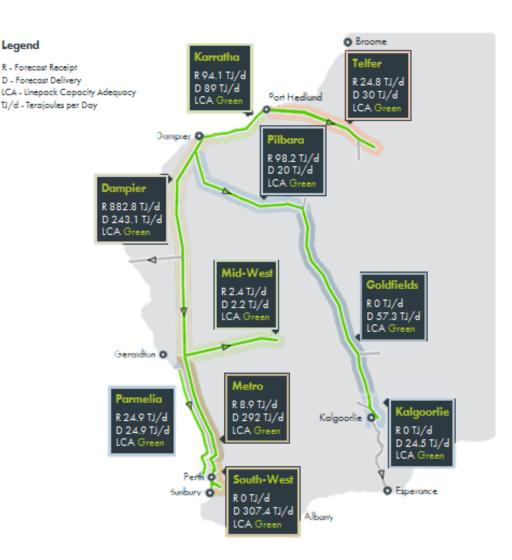
Source: DMP (1990 – 2013). The 2012-2013 US\$ price is calculated using exchange rate of A\$1 = US\$1.052. Note: The data represents a volume weighted average price of all existing gas sales contacts. See the July 2013 GSOO for estimates of some contract prices for new contracts executed in the period 2007 to 2011.

Source: Gas Statement of Opportunities, January 2014, Independent Market Operator



# WA market – gas industry developments

- The good old days of low gas price are gone ... but the market is adjusting to the price shift
- Gas supply reserves are aplenty ... but gas availability depends on price
- Discussions continue on the future of domestic gas reservation and broadened gas specification
- WA energy market review underway with the government getting ready to hand generation and retail risk to the private sector
- A more liquid market emerging, with gas trading, gas storage and retail competition

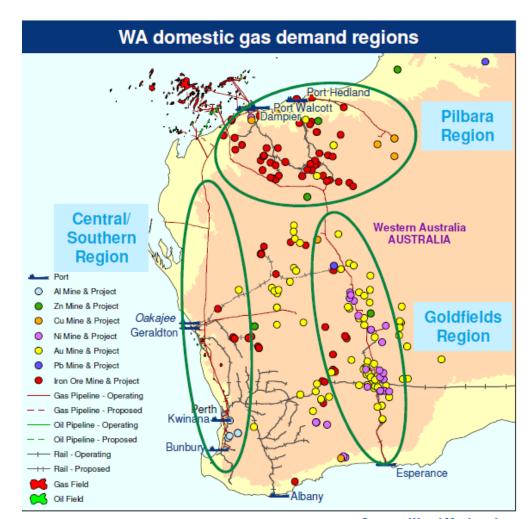


IMO Gas Bulletin Board



### **APA WA Transmission – mining regions**

- APA infrastructure well placed to supply growing gas demand in mining sector
- Goldfields region
  - Goldfields Gas Pipeline
  - Mid West Pipeline
- Pilbara region
  - Goldfields Gas Pipeline
  - Pilbara Pipeline System
  - Telfer Nifty Pipeline
- Secure long term revenue
  - Creditworthy customers
  - Long term take-or-pay, capacity based agreements
- APA also provides 3<sup>rd</sup> Party O&M services to customers laterals and gas delivery stations



Source: Wood Mackenzie

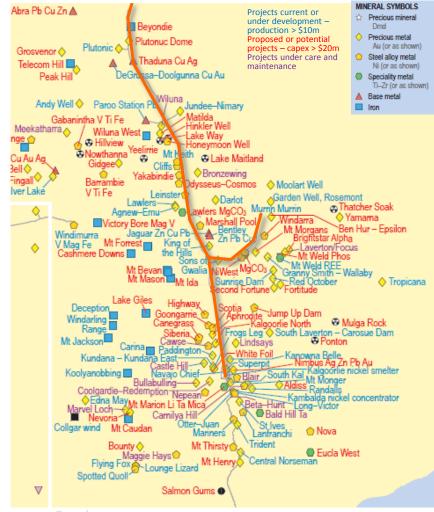
### **Goldfields Gas Pipeline**

- Fully contracted until 2018
  - Average contract term: >19 years
- Revenue mix
  - Regulated 37%; unregulated 63%
- Contract renewal continues
  - Murrin Murrin Operations
  - Discussions with other customers
- Pipeline expansions completion in FY14
  - Rio Tinto and Mt Newman JV
- Customers
  - BHP BillitonRio Tinto
  - Murrin Murrin Operations(GlencoreXstrata)Alinta

### Growth opportunities

- Greenfield mines
- Brownfield expansion of mines
- Fuel conversion from diesel to gas for electricity generation and mine operation

#### Major Resource Projects - March 2014 (Goldfields region)





Goldfields Gas Pipeline

Source: WA Government, Department of Mines and Resources



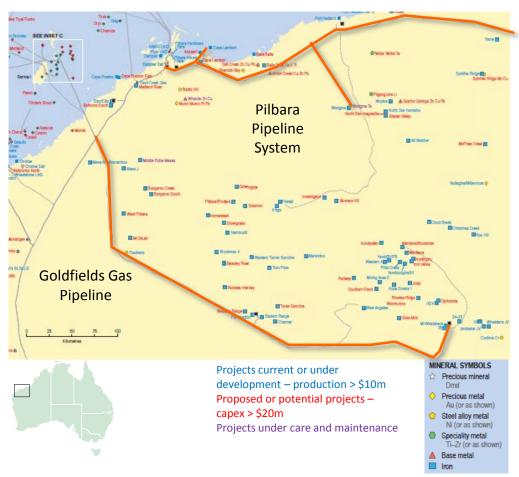
## **Pilbara Pipeline System**

- Acquired December 2012
- Integration complete APA as operator
- Capacity re-contracted after expiry of foundation contract
  - Revenue preserved
  - Additional capacity available
  - Contracts average term: >10 years
- Multiple customers
  - BHPB; Horizon Energy, Newcrest, Apache
- Supplying mines in the Pilbara and power stations in the North West Integrated System
- Successful completion of pipeline lowering

### Growth opportunities

- Greenfield iron ore mines
- CNG opportunities

#### Major Resource Projects - March 2014 (Pilbara region)



Source: WA Government, Department of Mines and Resources



# **Mondarra Gas Storage Facility**

Aidan Trend Mondarra Asset Manager

### **Contents**

- Gas storage
- Use of gas storage
- Mondarra history
- Site suitability
- Concept development

- Reservoir modelling
- Drilling
- Construction
- Commissioning
- Operation





### **Gas storage**

- Three types of storage
  - Pipeline storage e.g. APA pipelines
  - Above ground storage e.g. Dandenong LNG Facility
  - Underground storage e.g. Mondarra Gas Storage Facility
- Most common type of underground gas storage site in Australia is depleted gas reservoirs
- The most important characteristics of a storage facility
  - Volume capacity the amount of natural gas that can be stored for future use
  - Delivery rate how quickly gas can be withdrawn

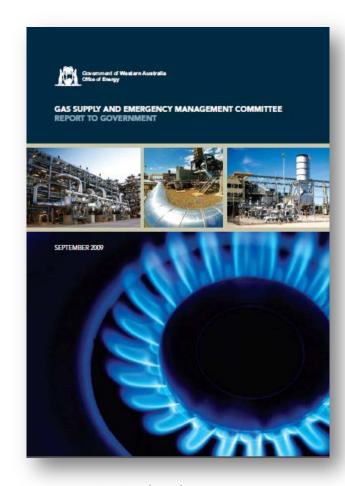
|                 | Pipeline | LNG storage | Reservoir |
|-----------------|----------|-------------|-----------|
| Volume capacity | Low      | Medium      | High      |
| Delivery rate   | High     | High        | Medium    |

Long term storage

Short term storage

## Why gas storage is required

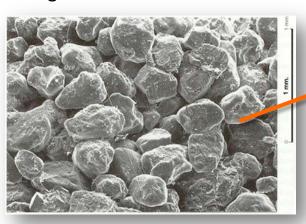
- Security of supply
  - Back up gas supply in case of upstream events
  - Multiple transport options
- Seasonal and short term services
  - Management of peak demand
  - Mitigates short term supply risks
  - Take advantage of short term and spot market trading opportunities
- Support management of upstream and downstream assets
  - Manage commissioning, ramp up and maintenance periods
- Flexible contracting
  - Limit take-or-pay obligations through optimum (risk-weighted)
     level of firm supply and/or spot purchases and/or gas loan
  - Allows arbitrage through periods of variable demand levelling production capacity and pipeline transport

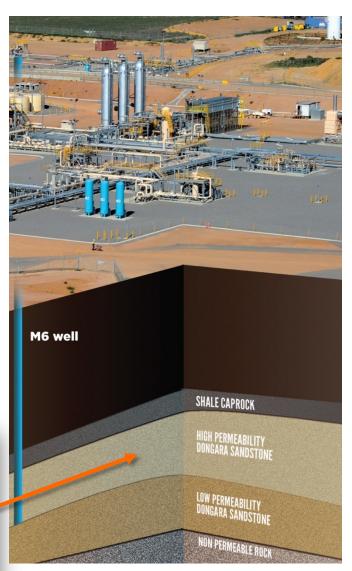


WA Gas Supply and Emergency Management Committee established in 2008 to review and provide advice on the state's gas supply security and gas supply disruptions management

## Underground gas storage

- Storage provided by the depleted gas reservoir
- Gas is stored in the porous rock sandstone, limestone
- Gas is kept in place by impermeable cap rock shale, clay
- Gas is re-injected into the porous rock like a 'sponge absorbing water'
- Geological properties determine the characteristics of the reservoir
  - Porosity the capacity of the rock to hold gas
  - Permeability the ability of the rock to transmit gas
  - Integrity the ability to contain the gas
- Surface facilities to inject and withdraw gas
  - Compression
  - Gas treatment





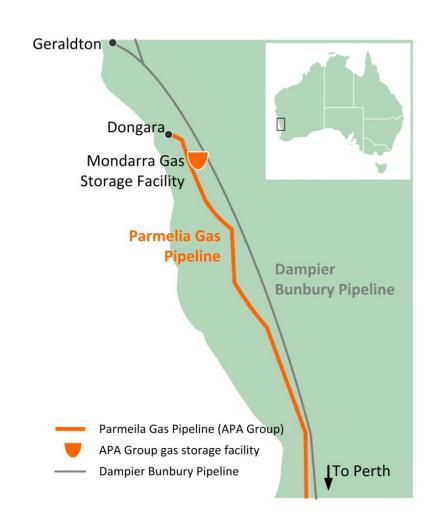


# **Mondarra history**

| 1968                      | Mondarra gas reservoir discovered by WAPET (West Australian Petroleum Pty Ltd)                                  |
|---------------------------|-----------------------------------------------------------------------------------------------------------------|
| 1972 -1994                | Mondarra produced 25 PJ of gas                                                                                  |
| 1994                      | Converted to gas storage facility with limited capacity and interconnection                                     |
| 1997                      | CMS Energy Corporation acquired Mondarra and the Parmelia Gas Pipeline                                          |
| 2003                      | Mondarra upgraded to improve performance                                                                        |
| 2004                      | APA acquired Mondarra and Parmelia Gas Pipeline as part of the CMS acquisition                                  |
| 2006                      | APA expanded Mondarra capacity with an additional well and compression upgrade                                  |
| January 2008<br>June 2008 | Perth energy crises following the North West Shelf Group Dampier Domgas outage and the Varanus Island explosion |
| 2010                      | APA sub surface appraisal to underpin expansion                                                                 |
| May 2011                  | Long term foundation contract signed with Synergy (previously Verve Energy)                                     |
| July 2013                 | Expanded facility commenced commercial operations                                                               |
|                           | Providing storage and transport services for Synergy and other Western Australian customers                     |

# Site suitability

- Strategically located
  - Intersection of WA's two major pipelines
  - Both pipelines feed the Perth market
- Appropriate gas reservoir
  - Size allows gas volume stored to mitigate short term security of supply risk without needing large volumes of cushion gas
  - Excellent reservoir characteristics of permeability and integrity
- APA ownership and operation
  - Commercially operated open access
  - Provide a suite of tailored services storage and transportation – to meet customer requirements

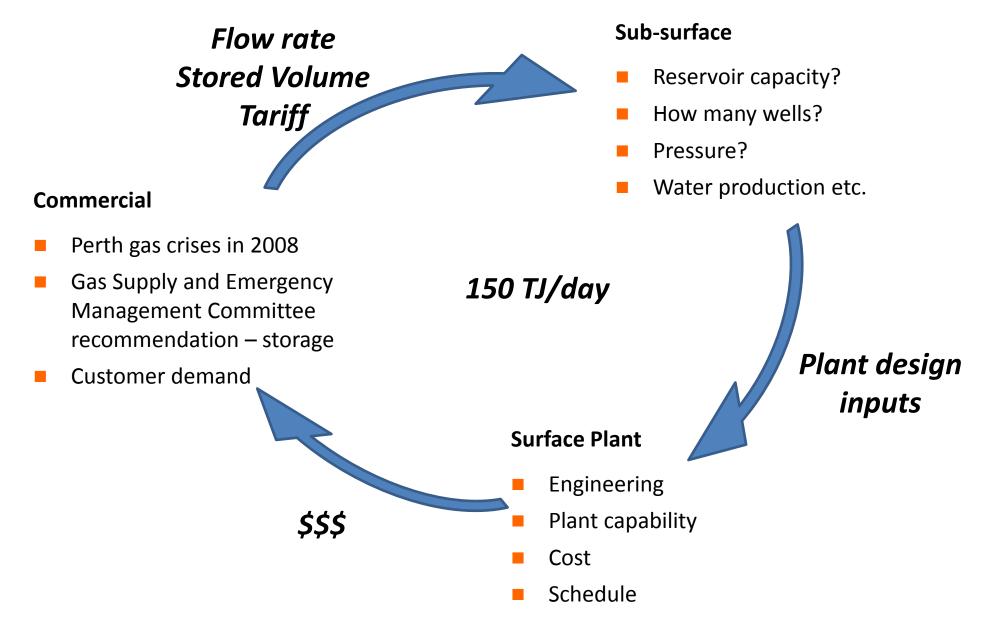


Mondarra is one of two commercial storage facilities in Australia

# Location

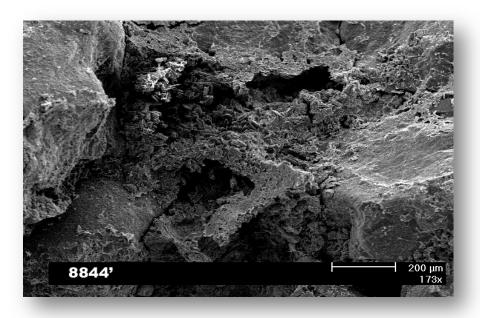


## **Concept development**



### **Sub-surface studies**

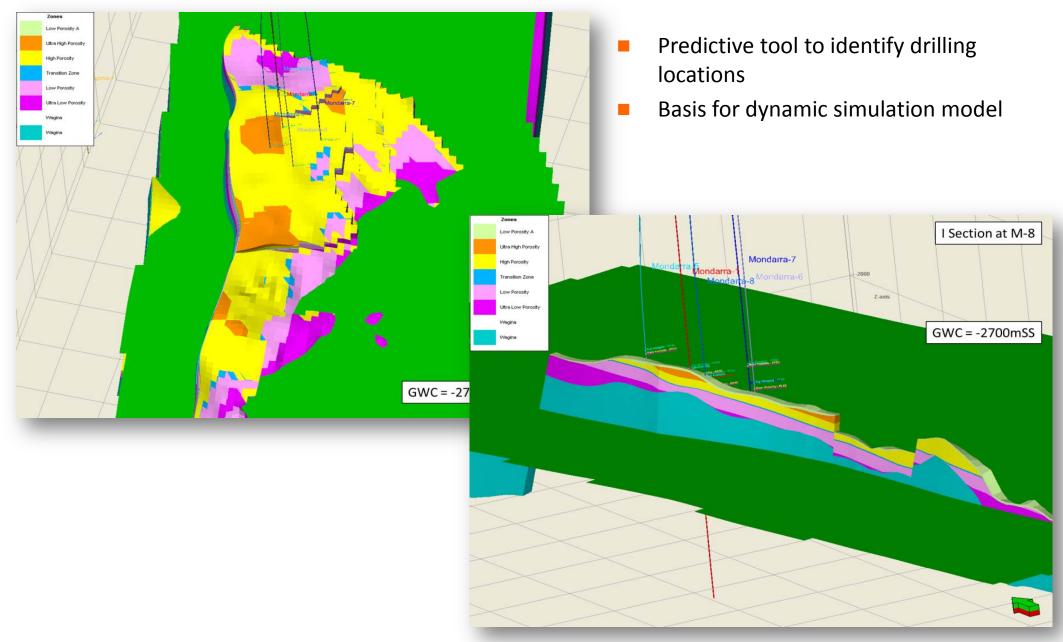
- Build of 3D static and dynamic simulation reservoir models
- Rock mechanics studies ensured competent rock in reservoir during pressure cycling
- Seismic reprocessing and quantitative interpretation to identify high porosity reservoir sections
- Geophysical review
- Extensive drilling fluid design studies
  - The challenge was to drill into a depleted reservoir with minimal fluid loss and skin damage



| Reservoir key facts            |                    |
|--------------------------------|--------------------|
| Reservoir depth                | 2,700 m            |
| Reservoir thickness            | 50 m               |
| Porosity                       | Up to 18%          |
| Reservoir temperature          | 120° C             |
| Maximum reservoir pressure     | 4,100psi (28.3MPa) |
| Original gas in pace           | 25PJ               |
| Commercial storage             | 15PJ               |
| Injection and withdrawal wells | 3                  |

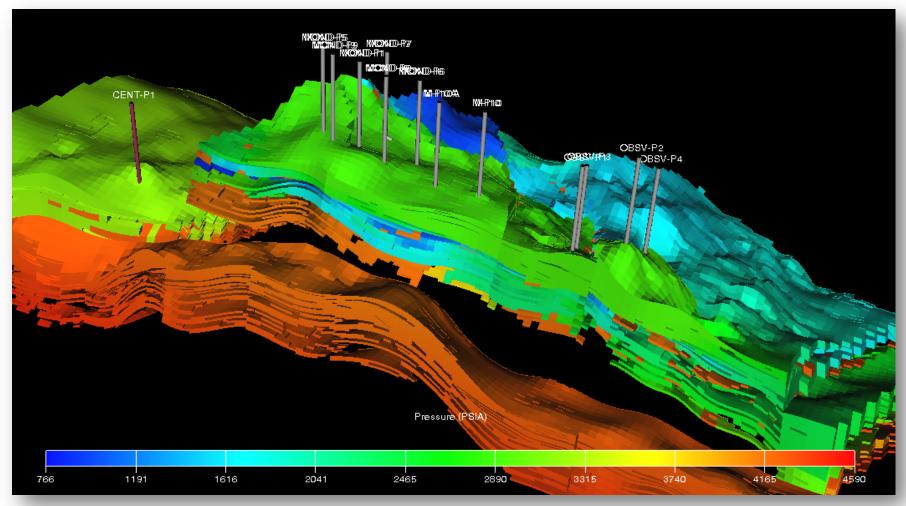


### 3D static reservoir model



## **Dynamic reservoir model**

- Production history matched
- Forecasting of reservoir performance
- Predictive tool for future operational scenarios

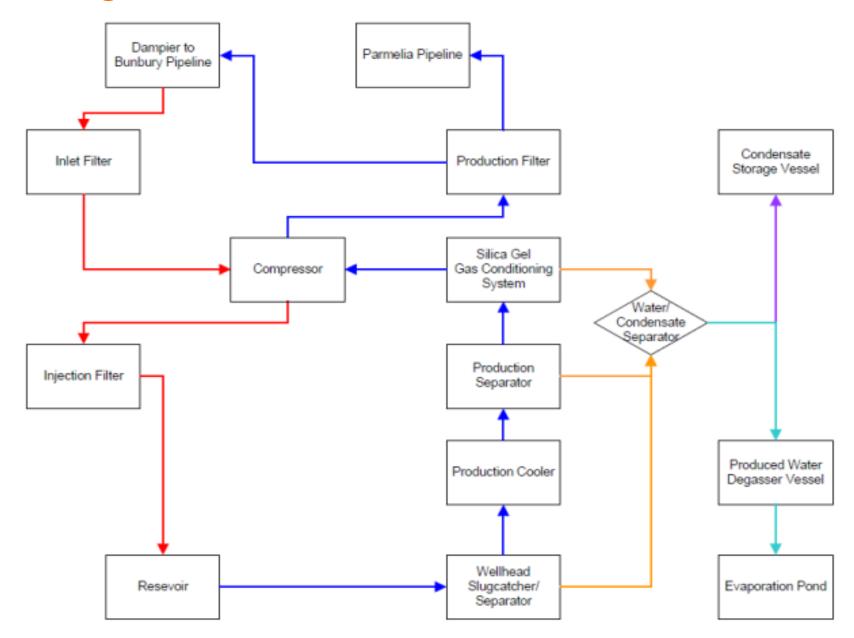


## **Drilling**



- 2 well drilling campaign commencedSeptember 2010
- Successful drilling of 2 new gas storage wells
  - Validated reservoir models
  - Underpinned major expansion project

## **Plant design**



#### **Construction**

- 15 months from construction mobilisation to practical completion
- Size and complexity of plant
  - 28 ha site
  - 3,300 m<sup>3</sup> concrete
  - 10.5 km pipe
  - 1.1 km duplex pipe, mainly class 2500
  - 129 km cable
  - 1200 valves
- >300 people on site at peak construction
  - Logistics, camp, IR challenges



### **Compressors**

- 70 TJ/day injection rate
- Up to 150 TJ/day withdrawal rate
- Flow range 10 to 150 TJ/day
- Pressure range 4,500kPa to 23,500kPa





- 2 x Cat 3612 engines driving Aerial recip. compressors. – 3500 HP each
- Compressors used for both injection and withdrawal
- Vibration! foundations 1.8m thick

## **Compressor lifts**

Compressor skid weight 160 tonnes each





 Custom lifting arrangement required as the lift was outside the capacity of any available crane

### **Commissioning**

- Large and complex plant:
  - Over 2000 I/O's
  - 14 different modes of operation
  - Complex control system
  - 332 transmitters
  - 1,200 valves
- Balancing:
  - Technical requirements of commissioning
  - Well performance testing
  - Commercial desire to commence services
- Early commissioning of injection side of plant to inject cushion gas
  - Day time commissioning, night time injection of cushion gas





# **Earthworks – February 2012**



# **Construction progressing – June 2012**







## **Ariel overview – October 2012**





## **Construction nearing completion – January 2013**



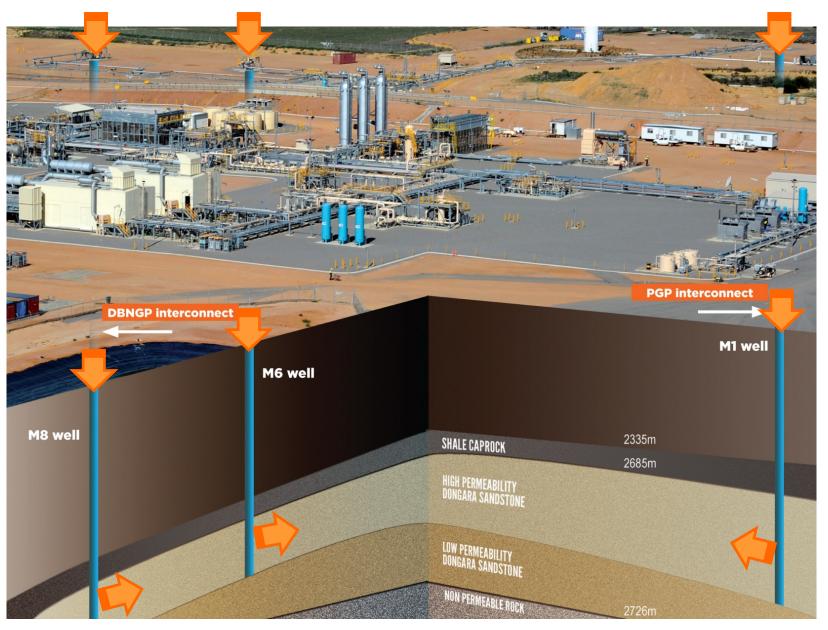


## Finished site – July 2013



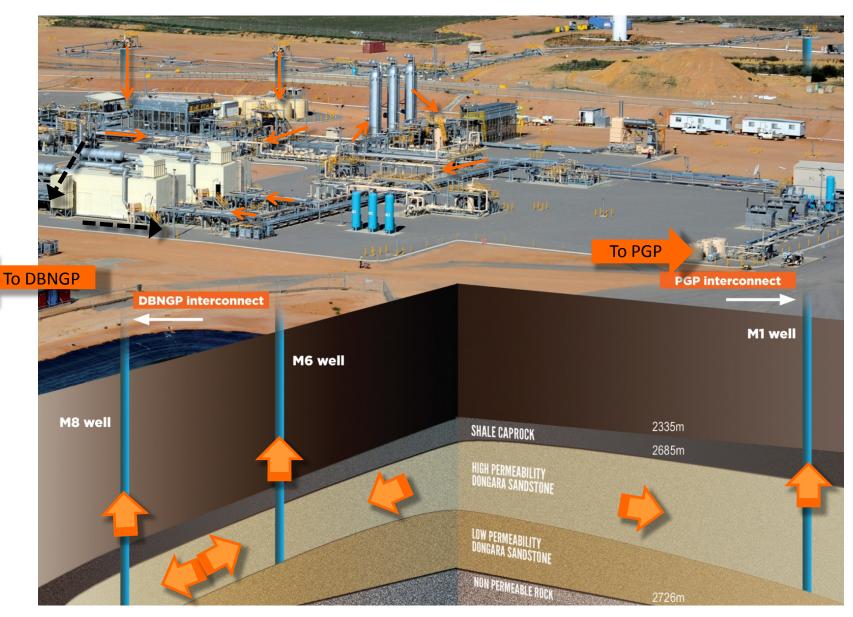
## Mondarra – how it works "injection"

Gas is injected into the reservoir via three wells



#### Mondarra – how it works "withdrawal"

Gas can be withdrawn from the reservoir via three wells and transported through one or both of the pipelines



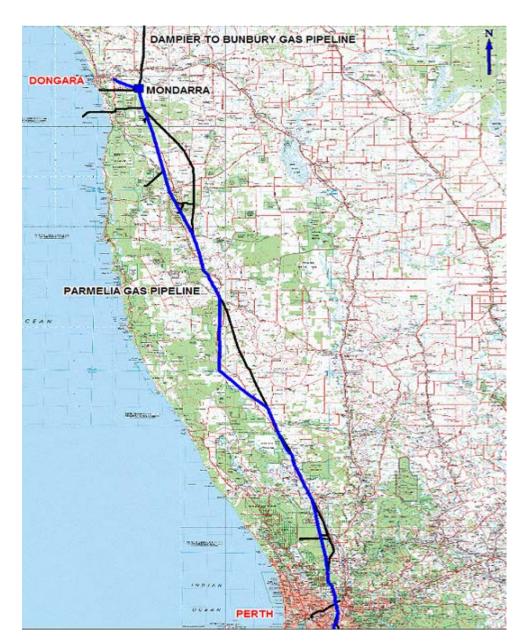


## WA Transmission: south west region

Steve Lewis General Manager WA Transmission

### **APA WA Transmission – south west region**

- South west region gas market
  - Power generation
  - Large industrial users
  - Retail/commercial
- Parmelia Gas Pipeline and Mondarra Gas
   Storage Facility provide gas supply security for
   Perth and the region
  - Mondarra expansion completed mid 2013
  - Connected to major pipelines
  - Providing services to four customers, including Synergy
  - Majority of capacity contracted underpinned by 20 year contract with Synergy
- Able to offer flexible, integrated gas transport and storage services and competitive tariff structures



#### **Mondarra and Parmelia services**

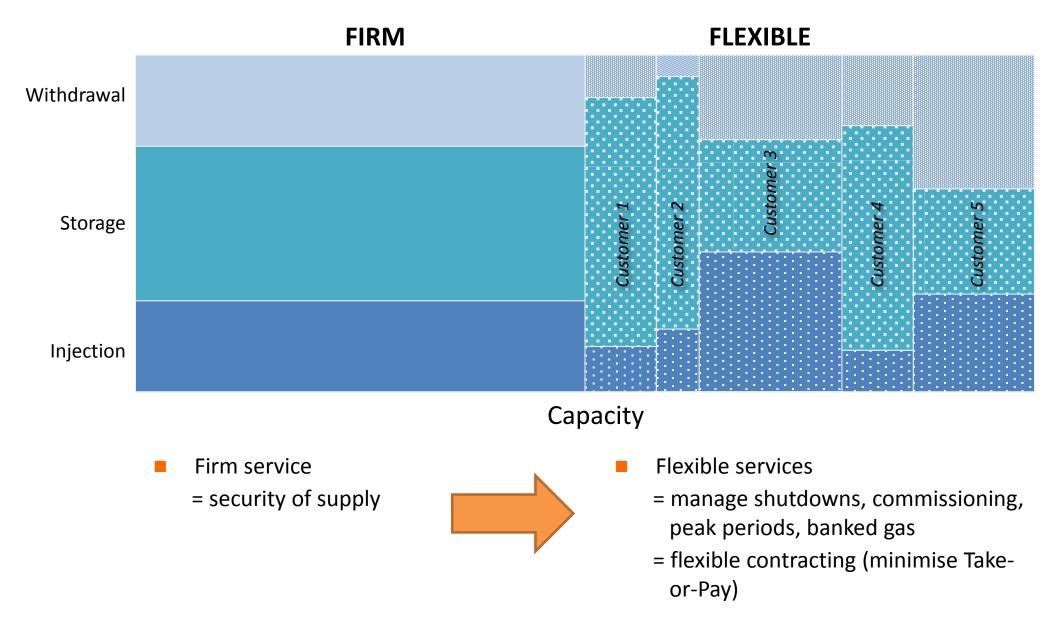
- Storage services:
  - Flexible approach: services tailored to suit customer requirements

| Injection  | Firm | As available |
|------------|------|--------------|
| Storage    | Firm | As available |
| Withdrawal | Firm | As available |

- Transport services
  - Access to swaps and other secondary market transport options
- Gas loan service
  - Provides access to up to 100TJ of gas per customer in an emergency



## Mondarra commercial offer





### Flexible services – customer focus

#### **Current contracts**

- Sectors include Power Generation, Gas Retail, Industrial/Minerals Processing
- Currently ~33% of domgas users (by volume)
   have Mondarra contracts

#### **Prospects**

- As above + Mining + Oil/Gas
- Offers made to the majority of domgas users (by volume)
- Ongoing discussions with potential customers

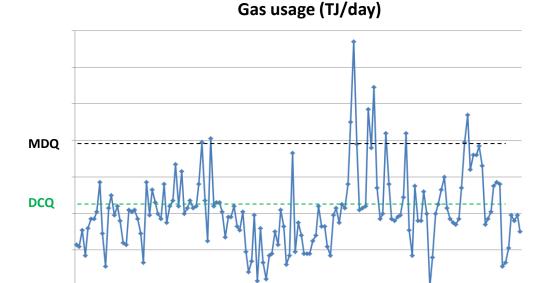
#### Offer intent

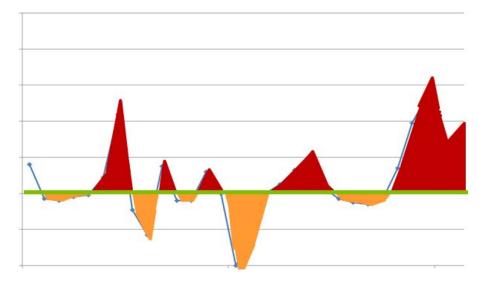
- Increasing services:
  - Flexible, tailored services
  - Gas loan
- Increasing reach:
  - Secondary market transport
  - Swaps
- Increasing liquidity:
  - WA spot gas market (MGSF one of two locations under consideration in IMO report to GAB)



## Flexible contracting

- Typical gas usage in a gas fired power station fluctuates
- Gas is contracted to match required high daily quantities (MDQ)
- Storage provides buffer for low and high demand periods
- Injection in low demand periods (orange) and withdrawal in high demand periods (red)
- Customers are then able to contract gas supply at average daily quantities (DCQ)
- Reduces customers overall gas costs & provides flexibility

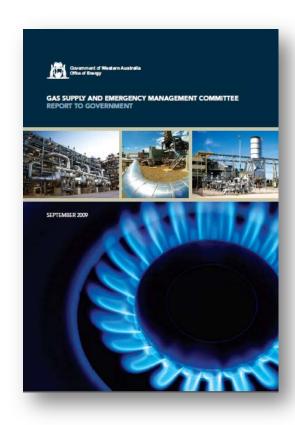






## **Delivering supply security**

- NWS currently provides 55% of WA's domestic gas supply (actual WA Gas Bulletin Board data May23rd). NWS domestic gas plant is now in its 30<sup>th</sup> year of operation having been commissioned in 1984.
- Synergy receives 165 TJ/d under existing NWS contract used for power generation in the SWIS
- NWS required to maintain infrastructure which could cause supply restrictions (or unplanned outage as experienced in 2008)
- Synergy is now able to withdraw up to 90TJ/d from storage to mitigate the risk of loss of upstream gas supply & maintain power generation to commercial, industrial and residential users in the SWIS. For example, APA recently provided 50TJ of unscheduled gas withdrawal services to meet Synergy's daily power generation needs.
- This meets a key recommendation of the Gas Supply & Emergency Management Committee set up by the WA Government in the wake of the Varanus crisis to ensure security of energy supply to WA.





## **Mondarra Gas Storage Facility site tour**

Aidan Trend Mondarra Asset Manager

## Mondarra site plan

Evaporation pond

Compressors

Silica gel gas conditioning system

Mondarra site pre expansion

Parmelia Gas Pipeline interconnect



wells

**Production cooler** 

**Production separator** 

Wellhead slug catcher/separator

Dampier Bunbury
Pipeline interconnect

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