AWE LIMITED

Waitsia – A new onshore gas resource for Western Australia

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GM WA Assets and Engineering

DMIRS Petroleum Day 15th September

AWE

AWE Disclaimers

- This presentation may contain forward looking statements that are subject to risk factors associated with the oil and gas businesses. It is believed that the expectations reflected in these statements are reasonable but they may be affected by a variety of variables and changes in underlying assumptions which could cause actual results or trends to differ materially, including but not limited to: price fluctuations, actual demand, currency fluctuations, drilling and production results, reserve estimates, loss of market, industry competition, environmental risks, physical risks, legislative, fiscal and regulatory developments, economic and financial market conditions in various countries and regions, political risks, project delay or advancement, approvals and cost estimates.
- This presentation may also contain non-IFRS measures that are unaudited but are derived from and reconciled to the audited accounts. All references to dollars, cents or $ in this presentation are to Australian currency, unless otherwise stated.

AWE Reserves & Contingent Resources

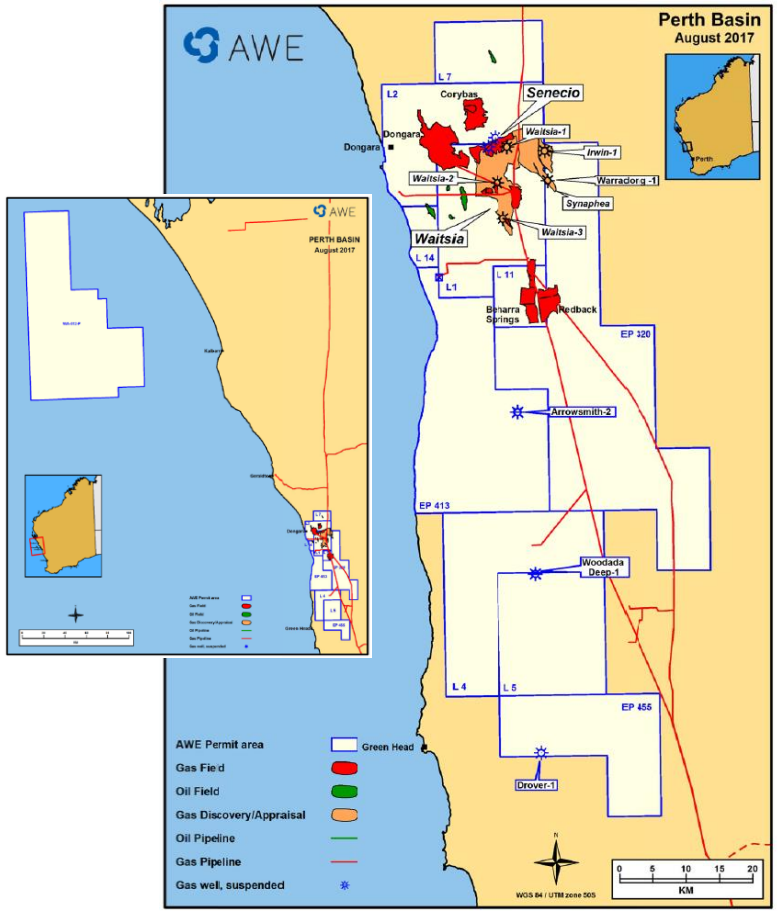
- The Reserves and Contingent Resources in this presentation are based on and fairly represent information and supporting documentation prepared by and under the supervision of qualified petroleum reserves and resource evaluator Dr. Suzanne Hunt, AWE General Manager WA Assets and Engineering. Dr. Hunt, a Petroleum Engineer with a Ph.D. in Geomechanics, is a member of the Society of Petroleum Engineers and has over 20 years' experience in the petroleum sector in geoscience, field development planning, reserves estimation, reservoir production and facilities engineering and 30 years in the resources sector generally. Dr Hunt has consented in writing to the inclusion of this information in the format and context in which it appears.
- AWE reserves and contingent resources are estimated in accordance with the following:
    - SPE/AAPG/WPC/SPEE Petroleum Resources Management System guidelines of November 2011;
    - ASX Disclosure rules for Oil and Gas Entities, Chapter 5; July 2014, and
    - ASX Listing Rules Guidance Note 32, 2013.
- AWE applied deterministic methods for reserves and contingent resource estimation for all assets. The reserves were estimated at the lowest aggregation level (reservoir) and aggregated to field, asset, basin and company levels. Estimated contingent resources are un-risked and it is not certain that these resources will be commercially viable to produce.

Agenda

- AWE in the Perth Basin
- Waitsia Discovery
- Waitsia Development
- Regional Setting
- Summary

AWE

AWE Acreage in WA



- AWE has a substantial acreage position in the onshore North Perth Basin;
- AWE has an interest in a significant number of gas and oil production facilities (Xyris, Dongara, Mt Horner, Beharra Springs, Woodada);
- AWE's acreage has access to both major pipelines (Dampier to Bunbury Natural Gas Pipeline (DBNGP), Parmelia Gas Pipeline) to southern markets;
- AWE actively markets gas to customers (Industrial, Retailers)

Significant Acreage and Facility Position

* Excluding Jingemia Divestment L14

Waitsia Significance

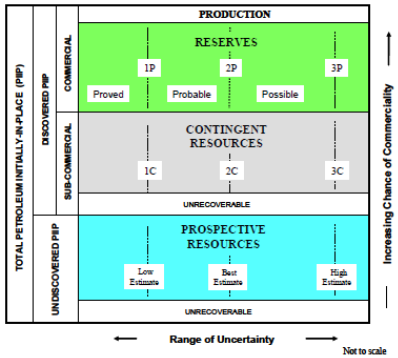
- Largest conventional onshore Australian discovery in 40 years
- Material development with access to existing infrastructure and markets
- New play has re-invigorated Perth Basin exploration and development
- Positive for Mid West and WA – as it provides regional economic benefits; diversity of gas supply; royalty stream.
- Incentive for continued exploration in other onshore Australian basins

Photograph by Roger Xiang

Senecio-3 production test

Significant 2P+2C Reserves/Resources Upside

- Review underway to incorporate results of Waitsia-4
- Significant upside in the basin from both tight gas (e.g. Senecio, Synaphea, Irwin) and new Kingia/High-Cliff plays yet to be drilled.
  - Waitsia Field 2P+2C Reserves/Resources (AWE est.) : 630 bcf (gross), current 2P - 430 Bcf
  - *Independent Expert Reserve Certification 2P+2C (RISC Sept 2016 est) :* *692 bcf (gross)*
  - Senecio/Synaphea/Irwin 2C (AWE est.) : 234 bcf (gross)
  - Total 2P+2C (AWE est.) : 864 bcf (gross)



Post W3 – 2P increased 25% due to reclassification of a portion of contingent resource to 2P. (AWE 50%)

Waitsia 2P as at 30/6/16			Reserve Movements			Waitsia 2P as at 30/6/17		
Sales Gas (PJ)	Condensate (bbls)	Total MMboe	Revisions MMboe	Transfers MMboe	Production MMboe	Sales Gas (PJ)	Condensate (bbls)	Total MMboe
182.18	0.06	30.43	0.05	7.84	-0.23	**228.00**	**0.08**	**38.09**

Announced to ASX on 9th August 2017

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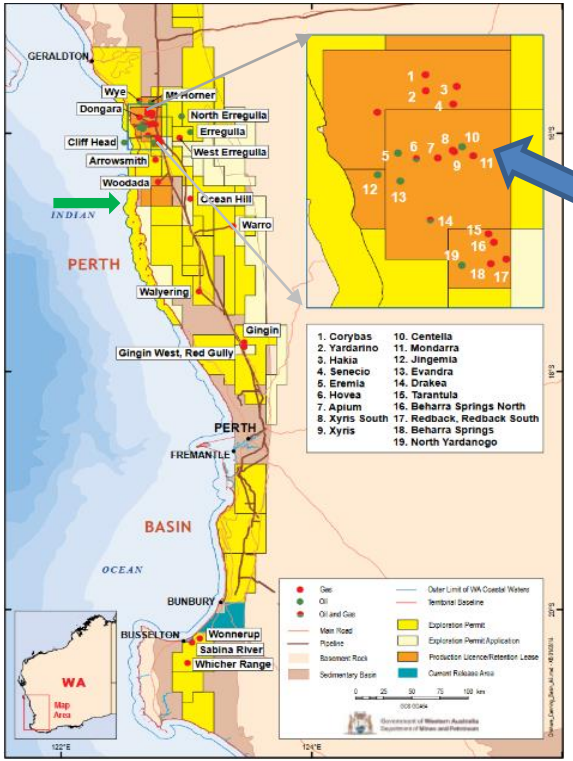
AWE

Onshore Sedimentary Basins and Discoveries

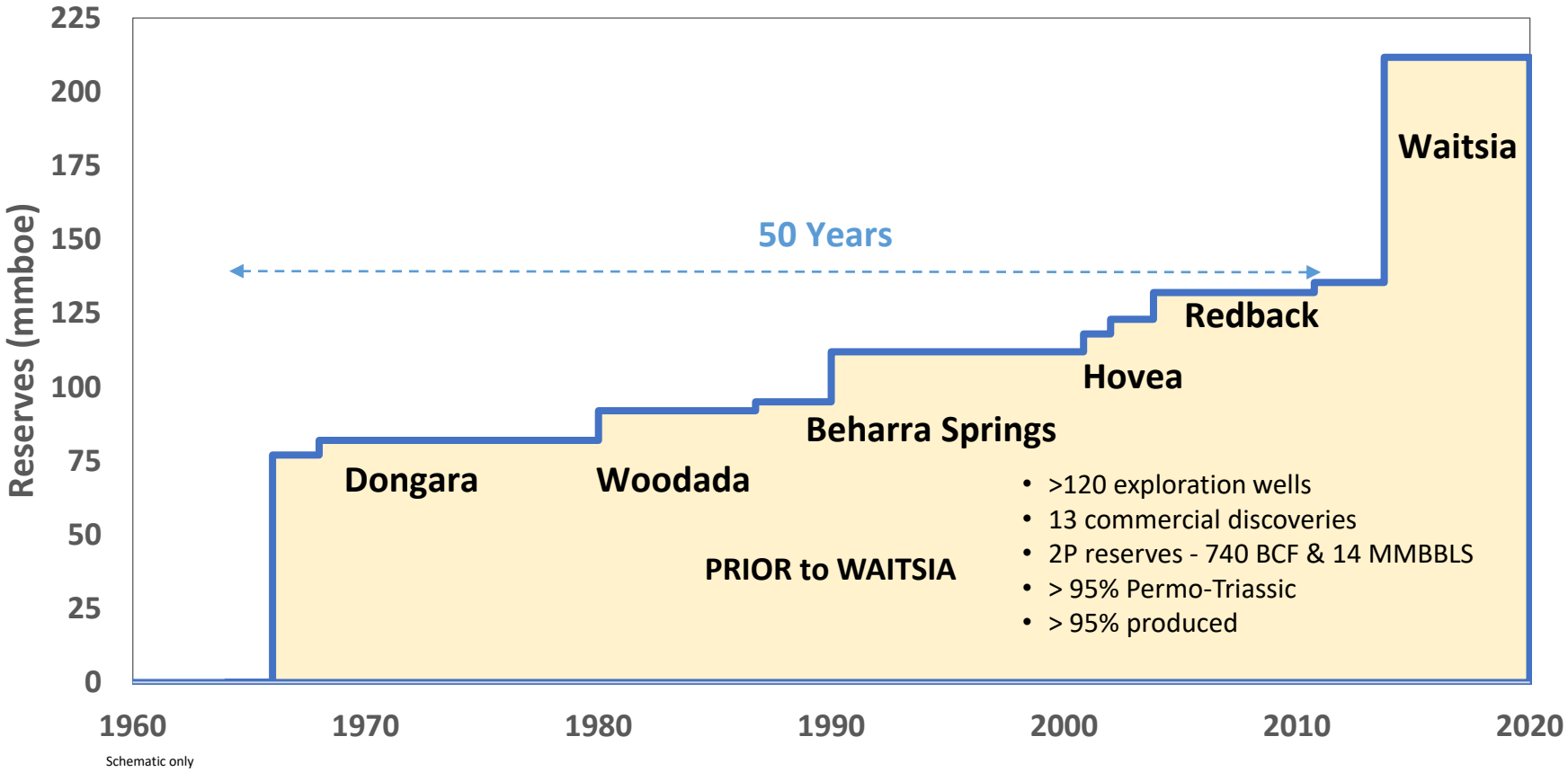
Western Australia's sedimentary basins



Significant hydrocarbon discoveries in the Perth Basin

Extensive oil and gas activity throughout the Perth Basin

Exploration history – onshore North Perth Basin



Schematic only

Waitsia Fundamentals

Permit: L1/L2 Waitsia Gas Project AWE 50% (Operator), Origin 50%

Location: the Waitsia gas field is located on pastoral land in the Shire of Irwin, about 14.5 kilometres east of Dongara and 367 km north of Perth.

AWE has basin-dominant position with multi-TCF potential:

- *Conventional + Tight Sand*
- *Strategy to build a material domestic gas business*
- *Early and low cost development via existing infrastructure*
- *Attractive WA gas market options*
- *Exploration and Appraisal success at Waitsia, Senecio, Synaphea and Irwin.*

Dongara Production Facility

Permo-Triassic petroleum system & plays

Kockatea Shale
Regional Seal
Oil and Gas Prone Source Rock
Unconventional target

DONGARA/WAGINA PLAY
12 commercial discoveries

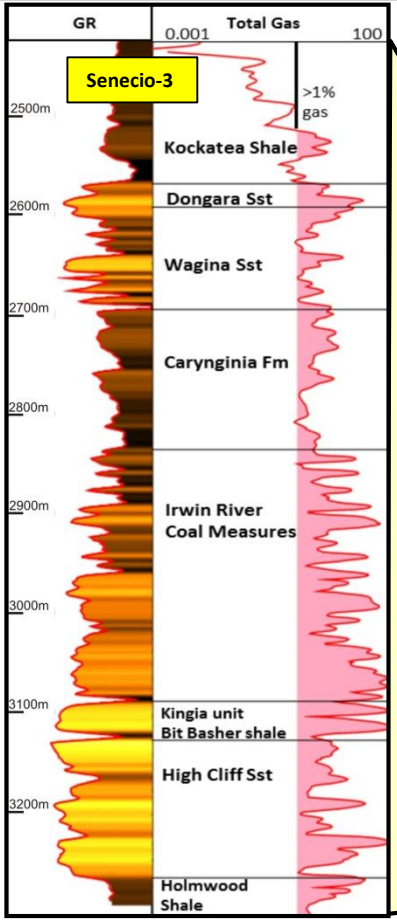
Dongara
Beharra Springs
Senecio/Irwin

Carynginia Formation
Regional Seal
Gas Prone Source Rock
Unconventional Target

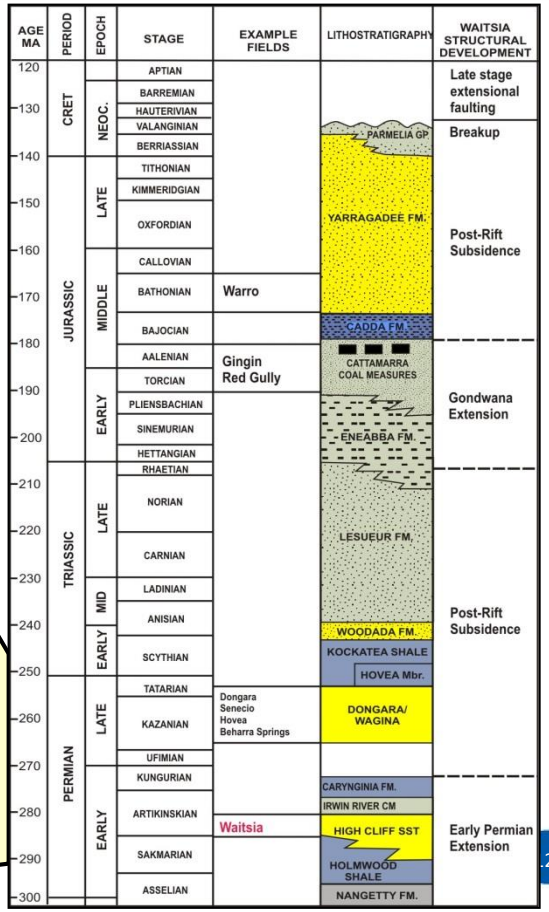
Irwin River Coal Measures
Gas Prone Source Rock
Unconventional Target

KINGIA/HIGH CLIFF PLAY
>20 wells in basin without commercial success

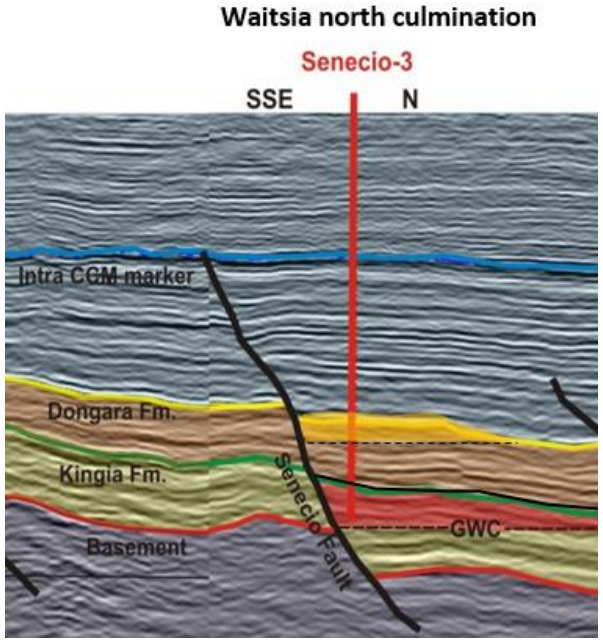
Waitsia

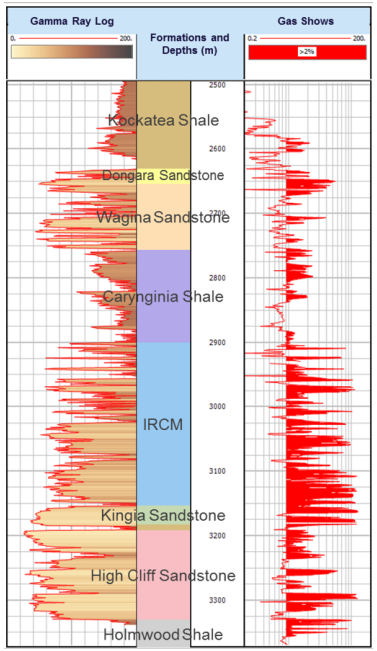


PERMO-TRIASSIC PETROLEUM SYSTEM



The Discovery – How did it happen ?

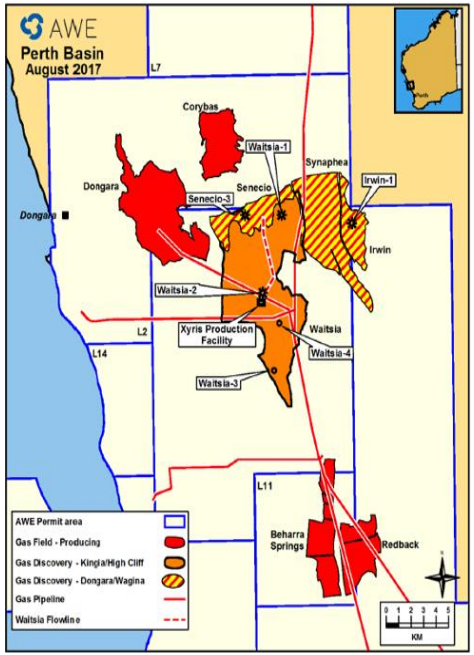




Senecio-3 well targeted the Dongara-Wagina sands. Below this intersection, the team observed further shows of gas. Drill bit was in good condition, well was under budget – decision made to continue.

Discovery Sequence

Date	Activity	Result
2005	Senecio-1/2	• **Dongara** TIGHT GAS discovery
2013	Irwin 3D	• Improved mapping – Senecio ½ in local fault zone
2014	Senecio03	• **Dongara** better quality reservoir (not tested) • Well deepened due to very high gas shows • **Kingia/High Cliff** CONVENTIONAL GAS discovery • Testing confirms high flow potential
2015	Irwin-1	• **Dongara** TIGHT GAS discovery (not tested) • **Kingia** secondary target wet as expected but confirmed good quality reservoir
	Waitsia-1	• Confirmed lateral extent of **Kingia/High Cliff** reservoir • Testing further confirmed high flow potential
	Waitsia-2	• Confirmed field extension and lateral extent of **Kingia/High Cliff** reservoir further south beyond Xyris fault (testing Q4 CY17)
2017	Waitsia-3	• Confirmed field extension further south and lateral extent of **Kingia/High Cliff** reservoir (testing Q4 CY17)
	Waitsia-4	• Confirmed field extension to the east and lateral extent of **Kingia/High Cliff** reservoir (testing Q4 CY17)

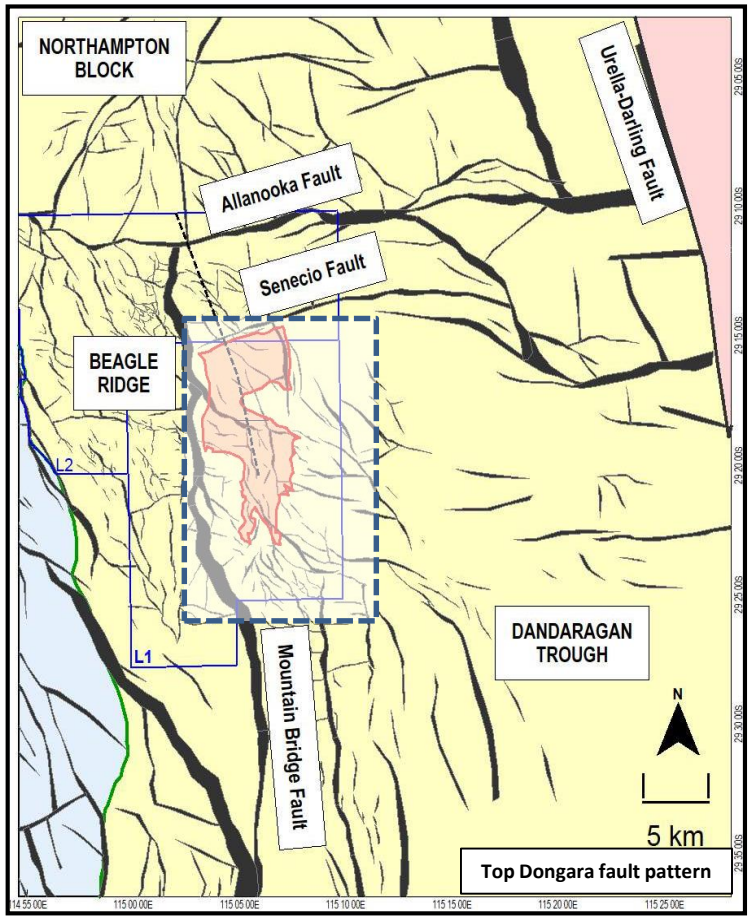


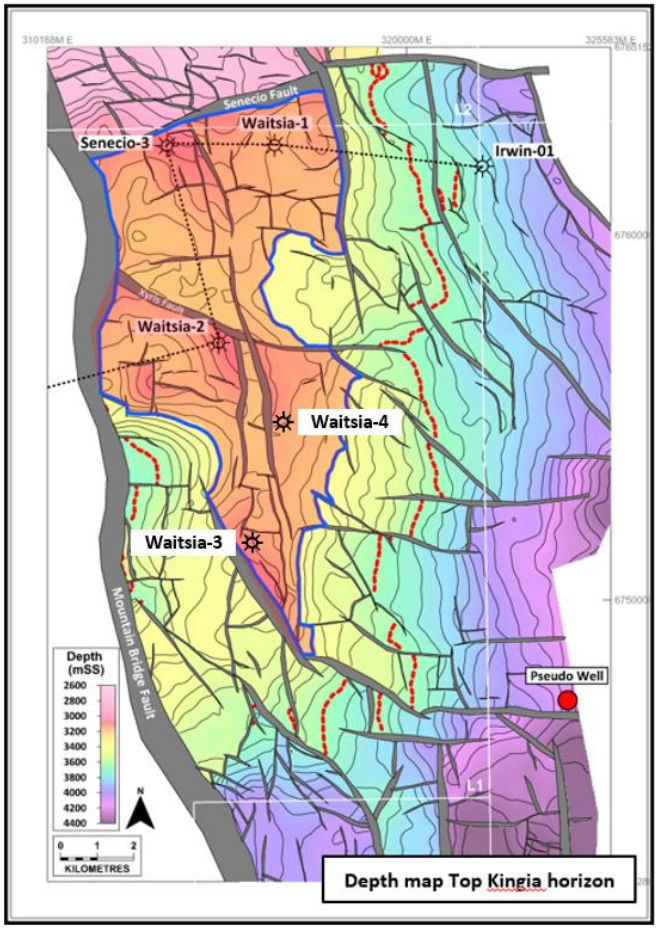
Pre-Senecio-3

- 19 wells drilled for Dongara targets in Waitsia area but terminated before reaching Kingia/High Cliff
- Perceived poor reservoir quality and problem with fault seal

Prior perceptions proved inaccurate as reservoir development is extensive

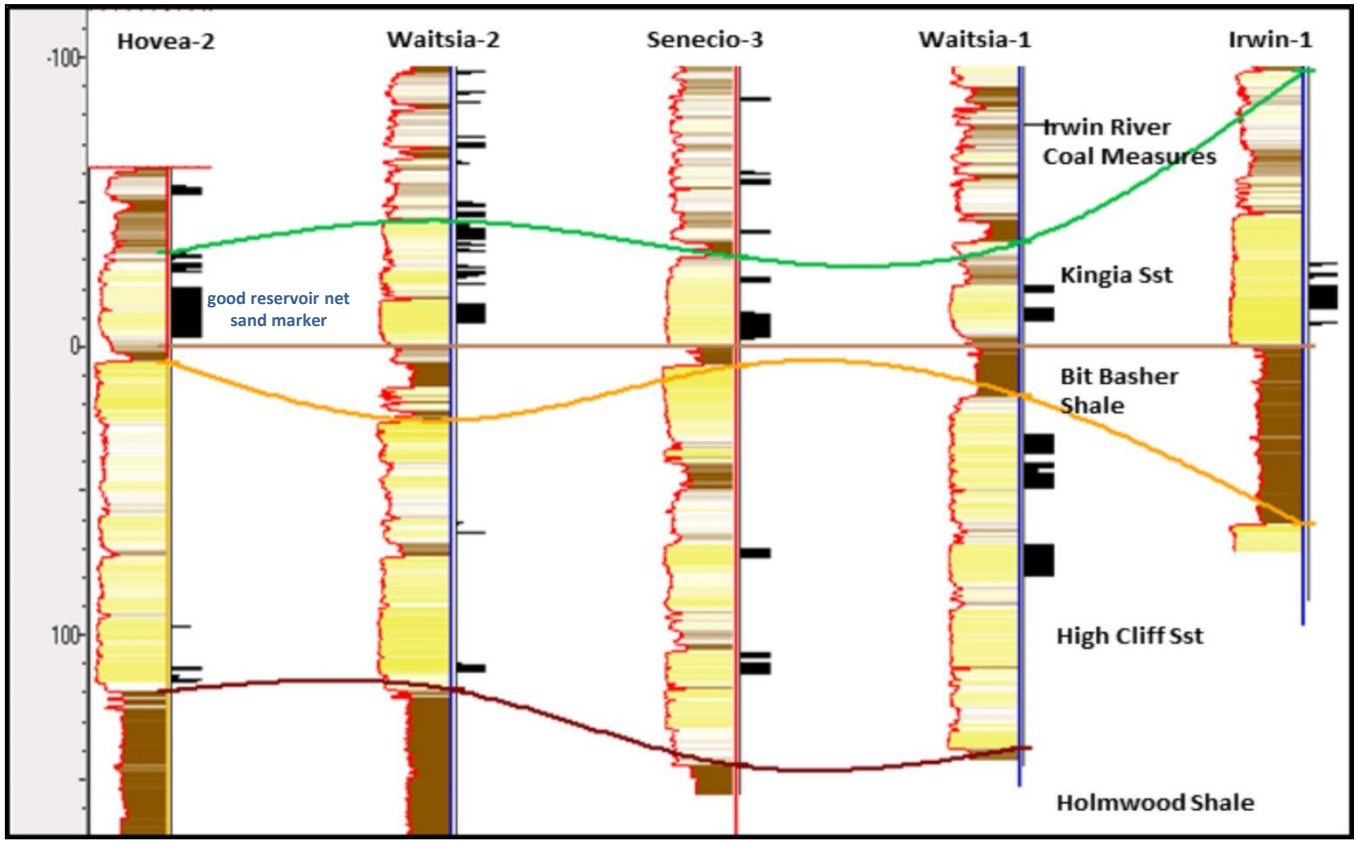
Structure



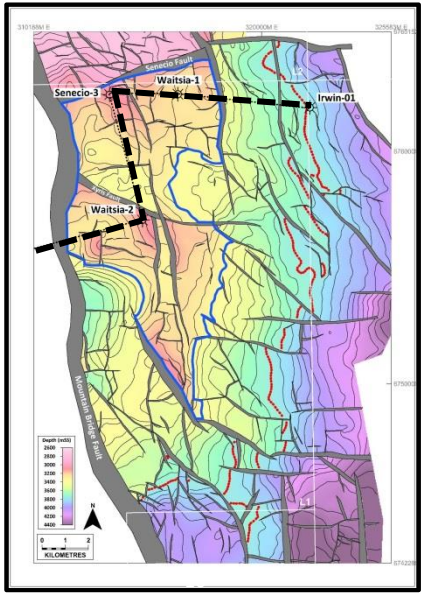


- Low-side fault closure of ~50 km2
- Crest at 3000m with 350m gross gas column
- Trap defined by Mountain Bridge & Senecio faults
- Senecio fault seals despite small throw
- Stress suggests W-E faults prone to re-activation – not the case.

Kingia & High Cliff correlation



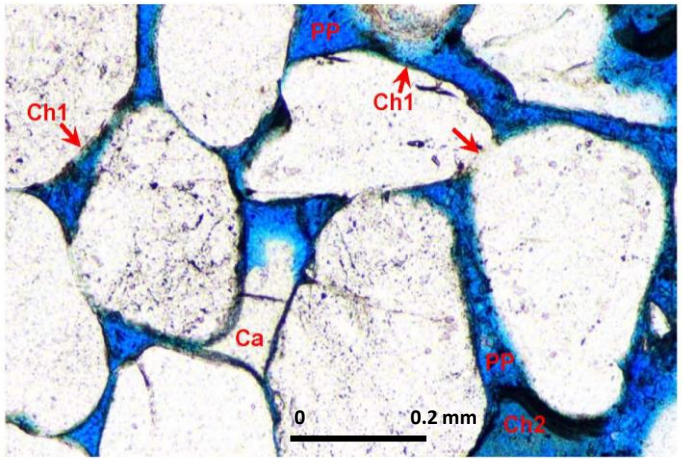
- Gross thickness 150-200m
- Beach & shoreface setting
- Quartz sand composition
- Intervals of good porosity >11% in Kingia & High Cliff



High Perm. vs Low Perm. Sandstone Comparison

Waitsia Field
Kingia/High Cliff Reservoir
Clay Rims prevent Quartz Cementation & preserve abundant primary porosity (blue)

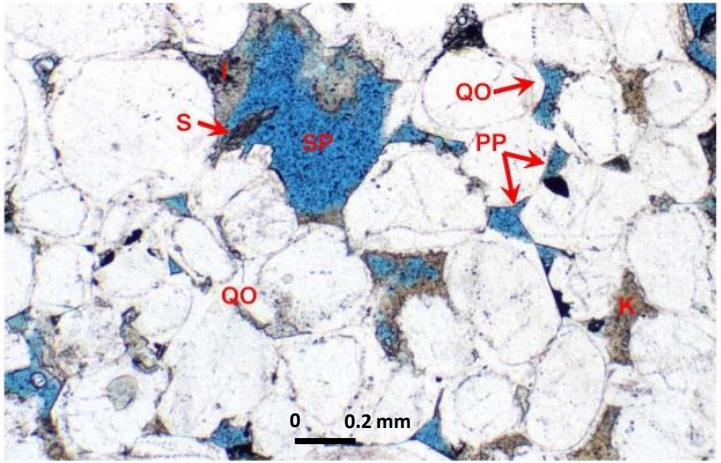
PLATE 64: Senecio-3 SWC #3 3176.5m (cont.)



Porosity >11%; Permeability 10 - 100+ mD

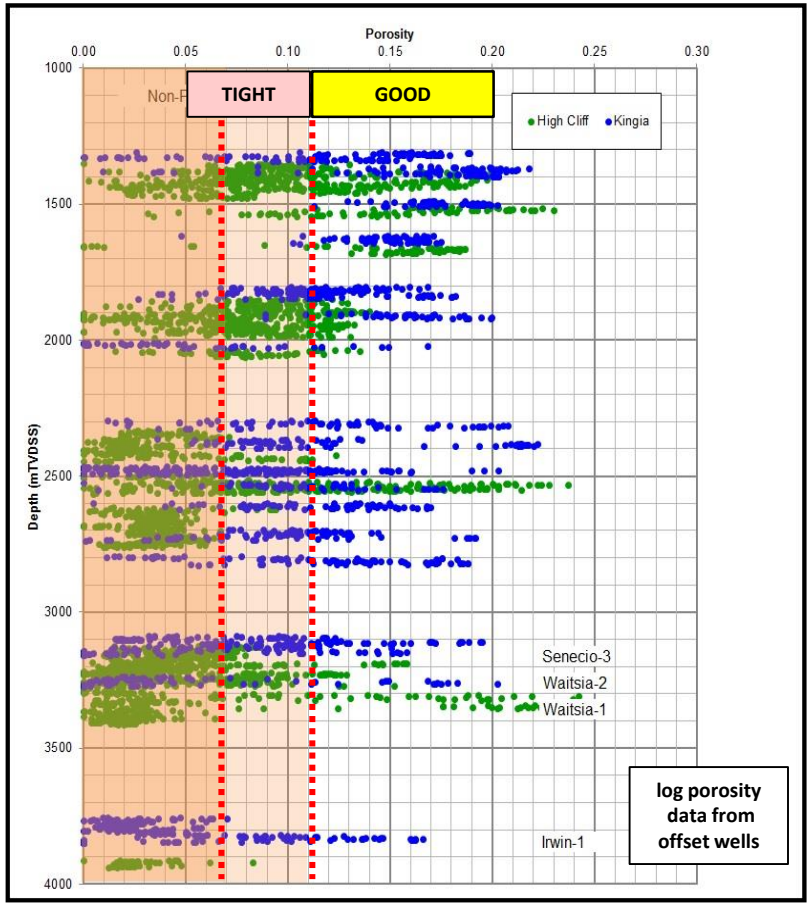
Senecio/Synaphea/Irwin Fields
Dongara/Wagina Reservoir
Pervasive Quartz Cement with localised primary but common secondary porosity (blue)

PLATE 16: Senecio-3 #49A 2651.76m (cont.)



Porosity 5-11%; Permeability 0.1 - 10 mD

Good reservoir is diagenetically controlled



- Porosity controlled by diagenesis NOT depth
- Clay rim formation likely to be influenced by depositional environment
- Most Kingia wells have some good reservoir – deepest to date 3750m
- High Cliff more variable
- Wagina reservoir in Beharra Springs field is a direct analogue

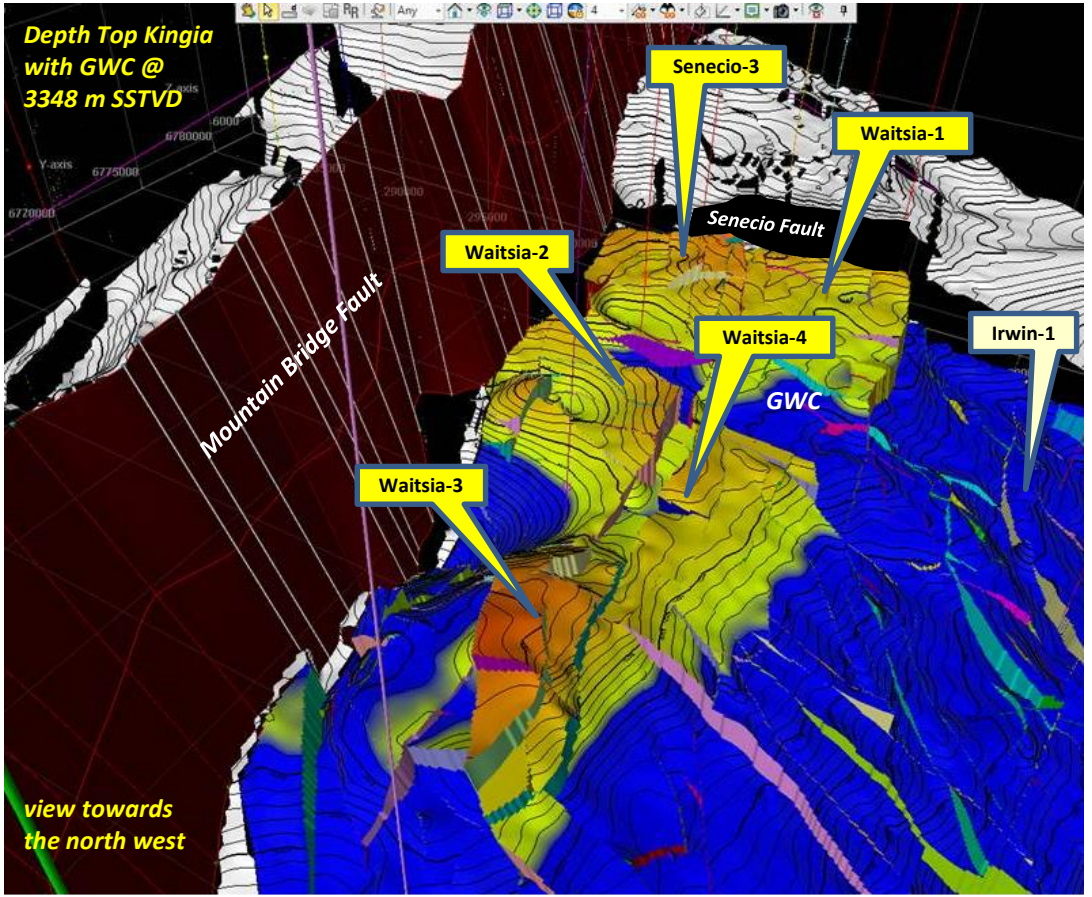
Waitsia Field

Kingia/High Cliff 3D Model

- Gross gas column of 350m
- Area 50 km^2

Status: Further Appraisal & Development Planning

- Early start-up with connection of S-3, W-1 to existing Xyris Facility



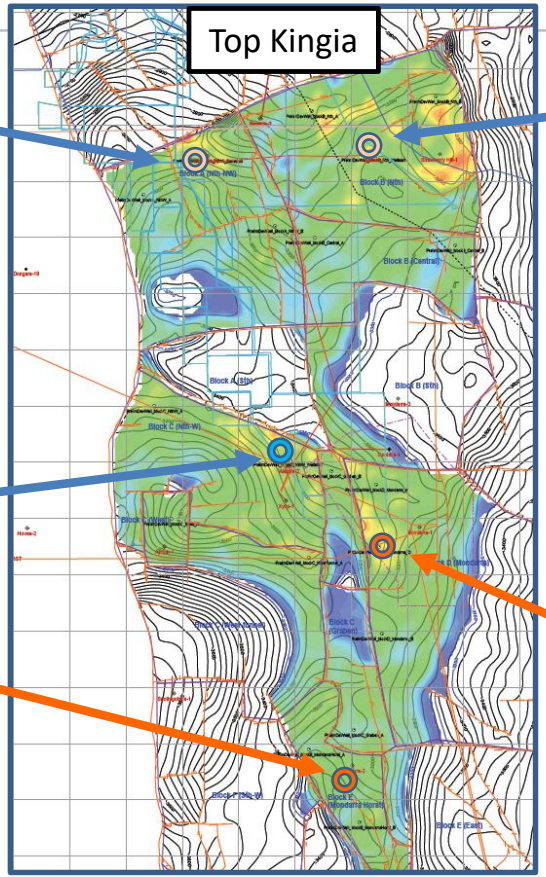
S-3 & W-1 Well Test Results & Productivity

Senecio-3 Kingia: 16.0 MMscf/d (peak)
Senecio-3 HCSS: 0.3 MMscf/d

Senecio-3 Kingia Test – flare shown @ 10.0 MMscf/d

Waitsia-2 Test Planned Q4 2017
Best Kingia reservoir encountered to date

Waitsia-3: Test planned Q4 2017
Appraise southern limit



Waitsia-1 Kingia: 25.7 MMscf/d (tubing constrained)
Waitsia-1 HCSS: 24.7 MMscf/d (tubing constrained)

Waitsia-1 Kingia Test – flare shown @ 17.5 MMscf/d

Waitsia-1 HCSS Test – flare shown @ 15.5 MMscf/d

Waitsia-4: Test planned Q4 2017*
Appraise eastern limit

Currently Producing in Stage 1A

Existing Appraisal Well

Appraisal Well

*Well test contingent on successful appraisal result

Excellent well test results to date demonstrating high productivity and some of the best results seen in onshore Australia. Waitsia-1 well test was tubing constrained; larger casing and tubing planned for future wells.

Stage 1A EPT Well Performance Results

Stage 1A Extended Production Test Objectives

- **Gather long term well and field production behaviour for input into full field development**
- **Firm up min connected gas volume, well count, phasing and P50 recovery estimates**

Well Test vs. Extended Production Test Results

S-3 Kingia: Kingia zone is the poorest Kingia penetration in Waitsia field – 16.0 MMscf/d (peak rate)

- Discovery well in sub-optimal location
- EPT pressure build-up analysis indicates better reservoir quality away from well (similar to W-1 & W-2 quality)

W-1 HCSS: Best HCCS penetration to date – 24.7 MMscf/d (tubing constrained)

- HCSS reservoir connectivity extent unknown due to limited well test volume
- EPT result shows excellent reservoir quality and broad connectivity in B Block

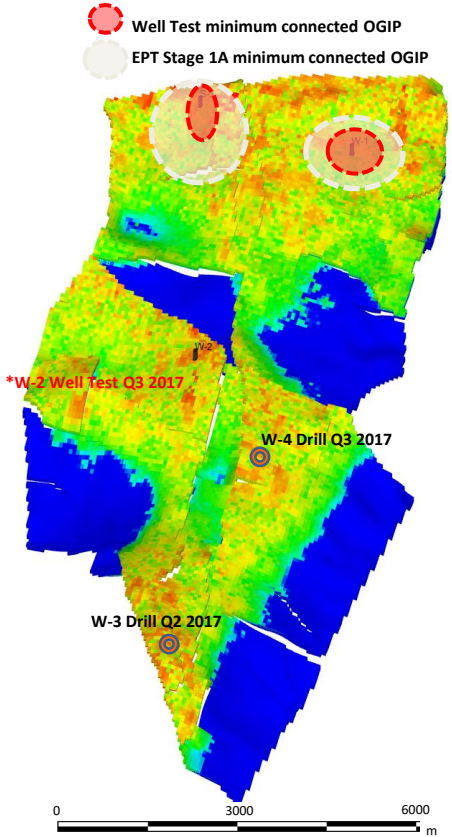
W-1 Kingia: Best Kingia test result to date – 25.7 MMscf/d (tubing constrained)

- Excellent reservoir quality and connectivity from well test result
- EPT of W-1 Kingia to commence FY 2018

Table 1. Well Test results v Extended Production Test preliminary results^

	Senecio-3 (Kingia)	Waitsia-1 (HCSS)	Waitsia-1 (Kingia)
Estimated connected OGIP from well test	18-65 Bcf of gas	16-47 Bcf of gas	49-59 Bcf of gas
Preliminary connected OGIP from EPT	45-80 Bcf of gas	>50 Bcf of gas	Not yet tested

^See ASX Announcement on 22 December 2016: "Waitsia Stage 1A well performance exceeds expectations"



Stage 1A EPT well results have met and exceeded expectations - firming up minimum connected volumes and long term production behaviour and deliverability

Waitsia-3 Result

ASX Announcement
4 July 2017

Waitsia-3 gas discovery confirms extension to Waitsia Field

- Successful appraisal of southern extension of the Waitsia Gas Field
- Strong gas shows across 150 m interval of Kingia and High Cliff Sandstone reservoirs
- Kingia reservoir considerably thicker and better quality than predicted
- Gas observed in High Cliff Sandstone below the lowest known gas observed in previous wells in the field
- Waitsia-3 has been suspended for future testing and production
- Anticipate booking additional Waitsia 2P Reserves in second half of CY 2017

Resource to Reserve Changes Achieved 2P Reserves increased by 25%

Waitsia-4 Result

ASX Announcement
22 August 2017

Waitsia-4 well exceeds expectations & confirms further extension to Waitsia Gas Field

- Successful appraisal of eastern extension of the Waitsia Gas Field confirms Waitsia as one of the largest conventional onshore gas discoveries in Australia
- Strong gas shows across 150 m interval of Kingia and High Cliff Sandstone reservoirs
- Excellent Kingia reservoir properties consistent with Waitsia-3; both the best intersected in the field
- Waitsia-4 has been cased for future testing and production
- No further appraisal drilling required for Waitsia Field prior to FID
- Anticipate booking additional Waitsia 2P Reserves in 2017

An additional Booking of 2P Reserves is anticipated in 2017

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Major success at Senecio-3 and Waitsia-1

- Senecio-3 – Kingia Fm. - March 2015
  - 3173-3183m
  - Primary target Kingia achieves 12.3 MMscf/d

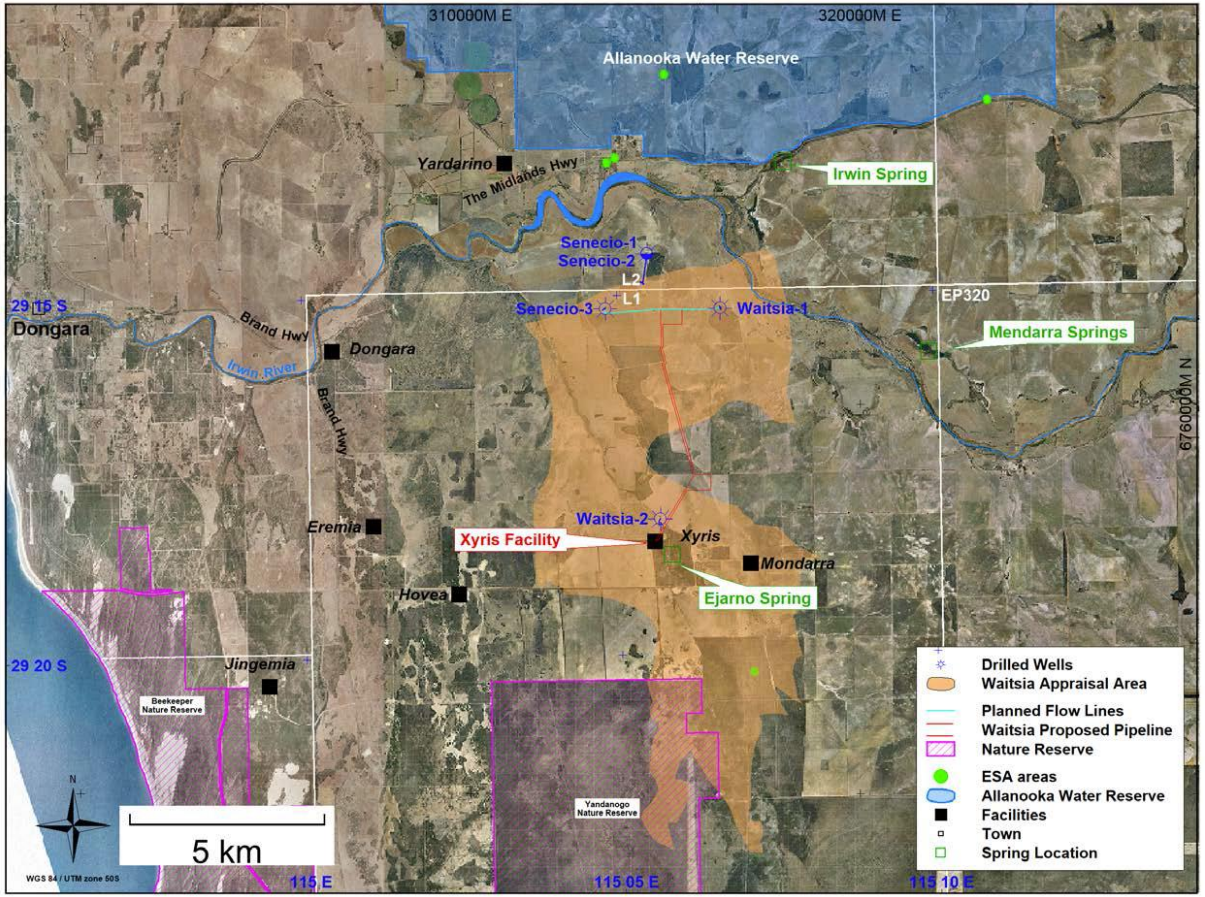
- Waitsia-1 – HCSS – Oct 2015
  - 3382.2 – 3405.5mMDRT (23.5m)
  - After an 7 hour clean-up period, the well flowed at an average rate and pressure of 24.7MMscf/d and 1330 psig, constrained by tubing size, on a 60/64” choke for 1hr.
  - Average Perm 12.5md from test
  - Accessed OGIP from test ~45Bscf

- Waitsia-1 – Kingia Sst– Oct-Nov 2015
  - 3333 - 3348mMDRT (15m)
  - After an 8 hour combined clean-up and well test period, the well flowed at an average rate and pressure of 25.7MMscf/d and 1530 psig, constrained by tubing size, on a 56/64” choke for 1hr.
  - Average Perm 137md from test
  - Accessed OGIP from test ~50Bscf

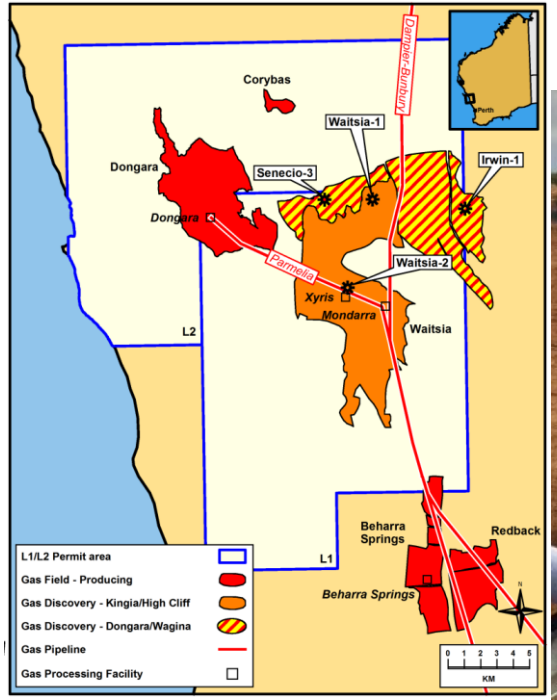
Total combined flow rate > 50MMscf/d from Kingia and HCSS

Waitsia Stage 1A – Refurbished Xyris Production Facility

- Stage 1A involved the construction of new flow lines and infrastructure to connect the Senecio-3 and Waitsia-1 wells to the refurbished Xyris Production Facility with the capacity to produce up to 10 TJ/d.
- AWE purchased Irwin Park farm (AWE 100%). Waitsia is located predominantly under the farm.
- Stage 1A was completed on time and under budget and first gas was achieved on schedule in August 2016.
- Gas from Waitsia Stage 1A is transported south via the Parmelia pipeline to Alinta under a GSA for 9.6 TJ/d for 2.5 years

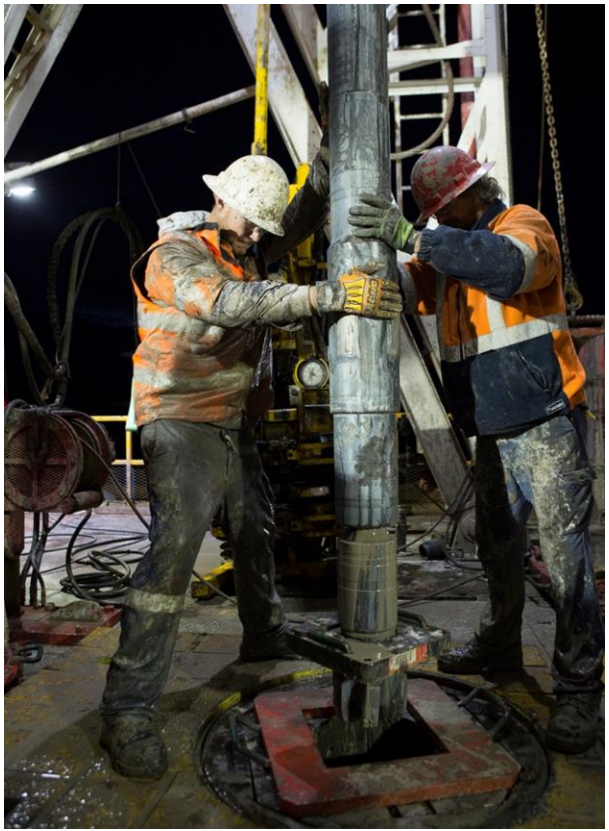


Waitsia-1A first gas on time and budget



First gas from Waitsia Stage 1A (10 TJ/d) achieved in August 2016

Waitsia Stage 2 - full field development



- 430 Bcf of gas gross 2P Reserves
- The Waitsia joint venture completed the concept select process and agreed to progress directly to a 100 TJ/d Stage 2 full field development.
- This approach delivers considerably higher economic value than a phased development alternative due to lower overall costs and capture of the anticipated improvement in gas pricing and strong customer demand in 2020 and beyond.
- AWE is aiming to contract substantial gas volumes in 2017 ahead of an FID, subject to joint venture and regulatory approval.
- Waitsia-3 and Waitsia-4 were the last appraisal wells to be drilled prior to FID. These wells will assist in the evaluation the southern extent of the field which allow conversion of significant contingent resources to reserves.

* Waitsia field reserves upgraded on 3 June 2017

Moving directly to Stage 2 (100TJ/d) development maximises project returns

2017/2018 Budget Program

- Waitsia-3 and Waitsia-4 drilling (complete) from May to August 2017.
  - *These are the final appraisal wells prior to the stage 2 development, they have provided valuable data which is currently being integrated into the Field Development Plan.*

- Well Test of Waitsia-2, 3 and 4. All target formations were successfully intersected, and cores cut over the Kingia and High Cliff Sandstones. The well completion and testing program will progress from Early October.

- Project on track and AWE is targeting a final investment decision by the end of 2017.

Waitsia Stage 2 development program on track

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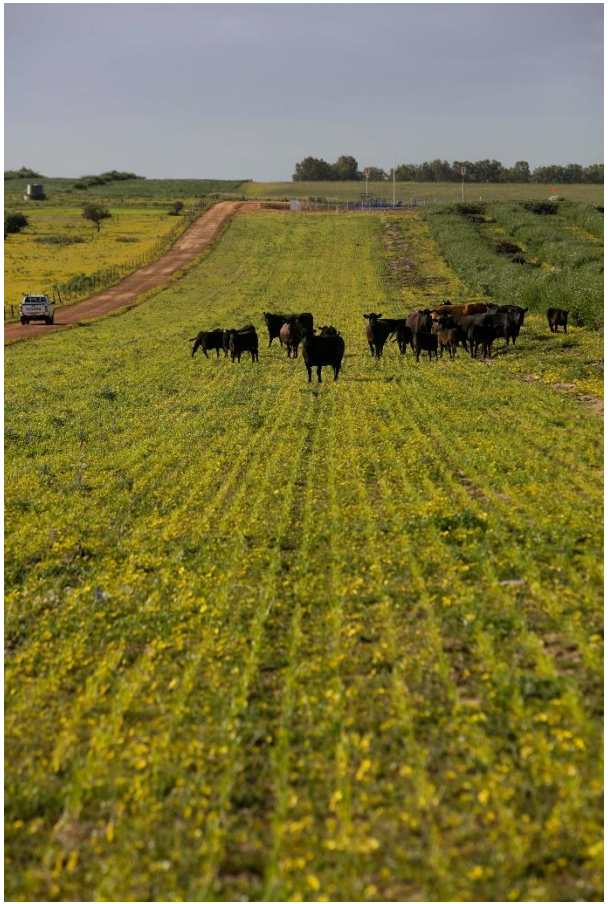
Environmental Setting



- Environmental
  - Development activity is predominantly in cleared, agricultural land so no potential significant environmental impacts
  - Low density and low traffic project area so minimal social amenity impacts
  - Conservation Reserves in the region with high ecological value accommodated in planning and management measures
- Regulatory setting
  - Strong environmental legislation requiring public consultation by proponent
- Community
  - Gas sector coexists amongst broad scale agriculture businesses and some intensive horticulture ventures
  - Longstanding presence of industry is recognised by locals as an important part of regional economy
  - Unemployment and limited business growth in the region are impacting local communities. Local employment practice makes a positive and welcome impact.

Stakeholder Engagement

- AWE recognises “social licence” as an integral part of good business practice
- Social licence is maintained by demonstrating:
  - ✓ compliance within regulatory framework
  - ✓ striving for HSE excellence
  - ✓ disclosure and transparency
  - ✓ proactive community engagement
  - ✓ listening and responding to evolving community concerns
  - ✓ social investment
- AWE has a comprehensive stakeholder management plan in place
- Responding to growing concerns and opposition about perceived impacts

Stage 1A launch event

AWE’s approach to community and stakeholder engagement is open and transparent

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Summary

- Waitsia Stage 1A well performance in its year of operations exceeded AWEs pre-production expectations and confirmed high quality conventional reservoir system with excellent connectivity.
- Pre-FEED work for Waitsia Stage 2 development is completed and FEED has commenced.
- Final Stage 2 appraisal wells are complete, data currently being integrated and an additional Booking of 2P Reserves is anticipated in 2017.
- Waitsia gas sales process making good progress ; one term sheet agreed and others to follow before FID.
- Work is underway to mature additional significant Waitsia- style prospects in the Kingia and High Cliff sandstones held in AWE's Perth Basin portfolio.

Up to date information is available at:
http://www.awemidwest.com.au or email Midwest@awexplore.com

A more complete description may be found in:
"The Waitsia Field, onshore North Perth Basin, Western Australia", Tupper et al., APPEA Journal 2016, June 2016.

Project on track and Operator targeting FID in late 2017

Questions?

Waitsia Stage-1A Flowline under construction May 2016

Conversion Tables

Volume

1 cubic metre = 1 kilolitre = 35.3 cubic feet = 6.29 barrels
1 megalitre = 1,000 cubic metres

Energy Value

1,000 standard cubic feet of sales gas yields about
1.055 gigajoules (GJ) of heat
1 petajoule (PJ) = 1,000,000 gigajoules (GJ)
1 gigajoule = 947,817 British Thermal Units (BTU)

Barrel of Oil Equivalents (BOE)

Sales Gas: 6PJ = 1 MMBOE
LPG: 1 tonne = 11.6 BOE
Condensate: 1 barrel = 1 BOE
Oil: 1 barrel = 1 BOE

Decimal Number Prefixes

kilo = thousand = 10^3
mega = million = 10^6
giga = 1,000 million = 10^9
tera = million million = 10^{12}
peta = 1,000 million million = 10^{15}

Glossary

1H	First Half
2H	Second Half
2P	Proved and Probable Reserves
2C	Contingent Resources
AAL	Ande Ande Lumut
AMI	Area of Mutual Interest
Bcf	Billion cubic feet
BOE	Barrels of Oil Equivalent
Bbls	Barrels
Bopd	Barrels of oil per day
Capex	Capital expenditure
CY	Calendar Year
EBITDAX	Earnings before interest, tax, depreciation, amortisation and exploration expenses
FID	Final Investment Decision
FPSO	Floating Production Storage and Offloading
FY	Financial Year
GM	General Manager
LPG	Liquefied Petroleum Gas
LTI	Lost Time Injuries
MLE	Mid Life Enhancement
mmboe	Million Barrels of Oil Equivalent
mmscf/d	Million Standard Cubic Feet of gas per Day
Opex	Operating expenditure
p.a.	Per annum
P&L	Profit & Loss Account
PJ	Petajoules
PSC	Production Sharing Contract
SA	South Australia
TJ	Terajoules
TJ/d	Terajoules per day
WA	Western Australia
WHP	Well head platform