

## September 2014 Quarterly Report

31st October 2014



# **Highlights**

**TP/15:** Planning is underway to drill offshore conventional oil prospect Xanadu, the lead prospect in TP/15, representing the nearterm focus of Norwest's drilling activities in the northern Perth Basin. Xanadu-1 will be a deviated well, drilled from an onshore location.

There is the intention to farm-out a portion of TP/15, with the farm-in party to earn an interest by funding the drilling of Xanadu-1. RFC Ambrian has been appointed to manage the farm-out process. The intention is to drill in mid-2015.

**EP413:** The Arrowmsith-2 evaluation program is now complete, and preliminary planning has commenced for Arrowsmith-3. The regulatory approval process for the 3D seismic program continued, with acquisition anticipated in early 2015.

**EP 492 - formerly STP-EPA-0064 (SPA) :** Subsequent to the end of the September quarter Norwest received and accepted the formal offer by DMP for Exploration Permit 492 and now awaits the issue of the instrument of title and associated documents.

#### **Contact**

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EP413 3D Seismic Survey Scouting Trip, 2014



Yued working party, 2014

## **Petroleum Tenements – Interests**

Permit	Location	NWE (consolidated) interest at the beginning of the quarter	NWE (consolidated) interest at the beginning of the quarter	Movements for the current quarter	NWE (consolidated) interest at the end of the quarter
EP368	Perth Basin, WA	600.3 km²	20%	0%	20%
EP426	Perth Basin, WA	2360.0 km²	22.22%	0%	22.22%
EP413	Perth Basin, WA	508.3 km²	27.945%	0%	27.945%
L14	Perth Basin, WA	39.8 km²	6.278%	0%	6.278%
TP/15	Perth Basin, WA	645.8 km <sup>2</sup>	100%	0%	100%
STP-EPA-0064	Perth Basin, WA	860.0 km <sup>2</sup>	100%	0%	100%



Figure 1. NWE tenements

# **Australian Exploration Program**

## **TP/15**

## (Norwest 100%)

TP/15 is situated approximately 250 kilometres north of Perth, and occupies the three nautical mile wide state territorial waters of Western Australia, adjacent to the township of Port Denison. It covers an area of 645.8 km², and ideally situated within a proven hydrocarbon "fairway" with a number of oil and gas discoveries and producing fields such as Cliff Head in the near vicinity. (Refer Figure 2).

As detailed in the ASX Annoucement dated 29<sup>th</sup> October 2014, Norwest has commenced the planning phase for the proposed drilling of conventional oil prospect Xanadu, located at the southern end of the TP/15 permit.

Norwest had been planning a 200 kilometre, 2D seismic acquisition program over TP/15. However, following a recent detailed independent review of the existing dataset and incorporation of additional historical data, it was concluded that the planned 2D seismic acquisition:

- would be difficult to acquire, due to the shallow water as well as the presence of reefs; and
- would not materially assist in further de-risking the Xanadu prospect, given the nature of the risks.

Accordingly it was decided to bring forward the Year Four drilling commitment and drill Xanadu-1. Lessons learnt from other wells drilled within the permit and in the region, combined with detailed third-party research findings, has provided further evidence to support the drilling of Xanadu-1.

An application to modify the approved permit work program has been submitted to the WA Department of Mines and Petroleum to exempt the 2D seismic survey from the five year work program and bring forward the drilling commitment into mid-2015, the timing of which is dependent upon the approvals process and rig availability, and securing farm-out partner(s).

#### The Xanadu Prospect

Structurally, the Xanadu Prospect is a prominent horst block lying parallel to the coastline in very shallow water. Xanadu-1 will target Permian sands from a depth of approximately 800 metres. Near-shore sands of the Dongara Sandstone represent the primary target, with secondary targets in the fluvio-deltaic Irwin River Coal Measures and the regressive marine sands of the High Cliff Sandstone.

The structural mapping, which is based on good quality 2D seismic data as well as high resolution gravity data resulting from a 2009 airborne 3D Full Tensor Gradiometry Survey, indicates the Xanadu Prospect is geologically similar to both the Cliff Head and Hovea structures. On the basis of good seismic correlations, the stratigraphic section at Xanadu is expected to be very similar to that encountered at Vindara 1, 7 kilometres to the NNW. In estimating potential Xanadu hydrocarbon volumes, the reservoir parameter values observed in Vindara 1 have been the primary reference. Vindara 1, testing a rotated fault block, had only minor hydrocarbon shows. The failure of this well, and similar structural tests further north, is considered to be due to insufficient charge and/or breach of seal resulting from fault re-activation. The Xanadu structure is considered to be more favourably

located for hydrocarbon charge. Additionally, leakage on fault planes is considered less likely because of the interlocking nature of the fault network which gives rise to the Xanadu horst.

In estimating the recoverable oil volumes summarised in Table 1 below, a 50% recovery factor has been assumed.

Table 1.

Un-risked Prospective Resource: recoverable volumes oil (mmstb)*						
Reservoir	Low estimate	Best estimate	High estimate			
Dongara Sandstone	3	12	22			
Irwin River Coal Measures	13	88	159			
High Cliff Sandstone	29	60	256			
Total	45	160	437			

\*The estimated quantities of petroleum that may potentially be recovered by the application of a future development project(s) relate to undiscovered accumulations. These estimates have both an associated risk of discovery and a risk of development. Further exploration appraisal and evaluation is required to determine the existence of a significant quantity of potentially moveable hydrocarbons.

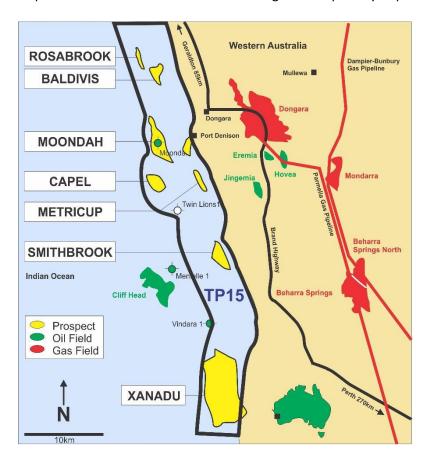


Figure 2 TP/15 permit location highlighting Xanadu prospect

Norwest intends to farm-out TP/15 by seeking a "carry" through the exploration drilling phase, while retaining a meaningful interest in the permit. RFC Ambrian Limited has been mandated to offer the project to interested parties and to manage the farm-out process on behalf of the Company. Norwest holds a 100 per cent interest in TP/15 (via subsidiary Westranch Holdings Pty Ltd).

## **EP413 – Northern Perth Basin shale gas exploration**

## (Norwest 27.945%, Operator)

EP413 (the Arrowsmith Project) is located approximately 250 kilometres north of Perth, predominantly to the western side of the Brand Highway between Eneabba and Dongara (refer Figure 3).

## Q3 CY2014 review

The evaluation program for the Arrowmsith-2 well was finalised during the quarter. The resulting dataset has provided the EP413 JV with the confidence to commit to the planning of a horizontal well (Arrowsmith-3) required to be drilled in the 2015/16 permit year, with timing dependent upon equipment availability and the regulatory approvals timeline.

The final decision on surface location, target formation and lateral extent will be made once the 3D seismic survey acquisition, processing and interpretation cycle is complete, as a clear understanding of the subsurface geology is essential to this process.

### 3D Seismic Acquisition Program – Planning Phase

As operator of the EP413 joint venture, Norwest continued throughout the quarter with the necessary preparations required to undertake a 3D seismic survey. This survey will assess the extent of the resource surrounding the existing Arrowsmith-2 well location and will cover an area of approximately 12,700 Ha (110km²).

During the quarter, Norwest met with relevant officers from the Environmental Protection Authority (EPA), Department of the Environment (DotE) and Department of Mines and Petroleum (DMP) as an ongoing requirement to finalise the approvals process. It is currently anticipated that the proposed acquisition program will be conducted in Q1 CY2015.

The 3D seismic survey will assist in defining the optimal locations / target formation(s) for future wells in the Arrowsmith Field, including Norwest's first horizontal pilot well Arrowsmith-3.

#### **EP413 Joint Venture**

Norwest Energy NL 27.945% (Operator)
AWE Limited 44.252% (via subsidiaries)

Bharat PetroResources Ltd 27.803%

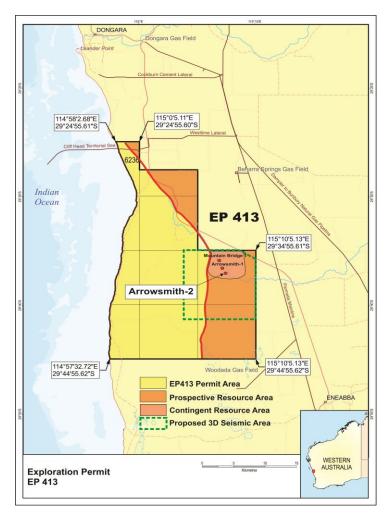


Figure 3. EP413 Location Map showing Arrowsmith-2 location and proposed 3D seismic area

# EP 492 – formerly STP-EPA-0064 Special Prospecting Authority (Exploration Permit Application)

#### (Norwest 100%)

During the June quarter, the negotiation process with the Traditional Owners was finalised and an Exploration Deed was executed. The State Deed was also signed by the DMP, and the regulatory process of conversion to an exploration permit commenced.

Subsequent to the end of the September quarter Norwest received and accepted the formal offer by DMP for Exploration Permit 492 and now awaits the issue of the instrument of title and associated documents.

The issue of the title instruments will allow Norwest to commence exploration activities that have been suspended during the application period. EP 492 is for a six year term with year one of the work program requiring geological studies to be followed in year two with a 2D seismic survey. Desktop studies completed on the SPA indicate three separate hydrocarbon systems to be prospective in the area – a deep shale gas system, a shallow shale gas system and conventional traps.



Figure 4. SPA Location

## **EP368 and EP426**

## **EP426**

Empire Oil Company (WA) Limited (Operator)	46.91%
ERM Gas Pty Limited	30.87%
Westranch Holdings Pty Ltd (Norwest Energy NL)	22.22%
Allied Oil & Gas Plc	0.00%
(Allied is subject to deemed withdrawal due to default)	

## **EP368**

Empire Oil Company (WA) Limited (Operator)	80.00%
Westranch Holdings Pty Ltd (Norwest Energy NL)	20.00%

Operator of the North Erregulla project, Empire Oil and Gas NL, reports:

"On September 18, 2014 AWE reported a major conventional gas discovery at the Senecio-3 / Waitsia well adjacent to the eastern boundary of EP 368. This discovery is reported by AWE as potentially the largest conventional discovery in the Perth Basin since the 1960's, assigning a 2C (P50) Contingent Resource quoted at 360 bcf.

"Work is underway in EP 368 to determine the extent of the prospective fairway into EP 368. A number of other prospective trends in EP 368, including the North Erregulla trend where oil has been discovered at North Eregulla-1 and Lockyer-1 are also being pursued. It is not planned to acquire 3D seismic over North Erregulla at this stage and we will await the completion of the planned imaging survey to highgrade all leads and prospects in EP 368 and adjacent EP 426".

The imaging survey mentioned above is planned for Q1 CY2015, and will involve the acquisition of airborne gradiometric gravity data. This survey will replace the previously planned 3D seismic survey planned to cover the North Erregulla structure, and will greatly assist in building a rich inventory of plays, leads and prospects whilst accelerating the timing for drilling. It will also circumvent the near term need for ground access which is raising issues with some landholders.

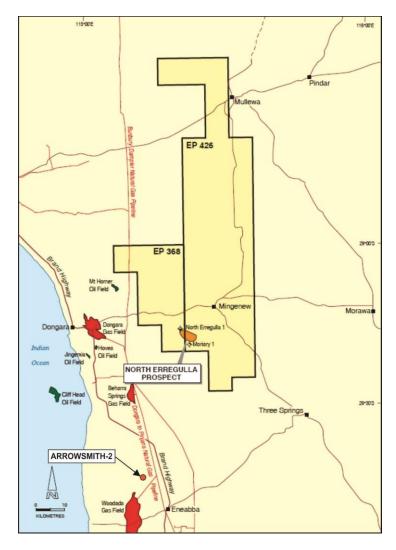


Figure 5. North Erregulla Prospect

## L14 Jingemia Oil Field

## (Norwest 6.278%)

The L14 production licence contains the Origin Energy operated Jingemia oil field. The Jingemia project has now come to the end of its commercial life and has now been placed under care and maintenance, leading to eventual abandonment and rehabilitation. Jingemia is estimated to have initially contained 12 million barrels of oil in place, with 4.6 million barrels produced to date.

## **Timor Sea**

## AC/L6 - AC/P22 - Puffin (Norwest 1.25%, ORRI)

The Puffin Oil field, located in Production Licence AC/L6 and Exploration Permit AC/P22 covers an area of approximately 900km<sup>2</sup>, and is situated in the commonwealth waters of the southern Timor Sea. The Puffin Field is operated by Chinese major Sinopec Limited (60% interest) with AED Oil Limited (Subject to Deed of Company Arrangement) (AED - 40%).

On 21<sup>st</sup> July 2014 AED Oil Limited announced that Sinopec Oil and Gas Australia (SOGA), the manager of the Puffin Oil Field joint venture had completed an extensive evaluation of exploration permit AC/P 22, and recommended to AED Oil and the administrators that in the absence of identifiable robust exploration targets likely to produce economic outcomes, that AC/P 22 be surrendered. The Surrender Application was accepted by the National Offshore Petroleum Titles Administrator (NOPTA).

The key work commitment that will not be undertaken as a result of the relinquishment is the drilling of a well, which was required to be drilled prior to licence expiry on 8<sup>th</sup> May 2015.

Norwest was holder of a 1.25% overriding royalty interest (ORRI) on the AC/P 22 permit, and any production derived from within the permit boundary, which entitled Norwest to a gross royalty on all revenue derived from the sale of hydrocarbons without deduction of operating costs.

The AC/L6 production permit remains current, however discussions continue between the operator and the regulators with regard to a future work program and status of the permit. Oil production from the Puffin Oil Field ceased in 2009, and so a review of the license status is required within 5 years of this event. Norwest still holds a 1.25% ORRI on the AC/L6 production permit.

# **United Kingdom Exploration Program**

## P1928 - Offshore Wessex Basin

Petroleum law in the United Kingdom establishes certain offshore licences that are defined as a "promote licence", the category under which P1928 was awarded. Under this category, an initial term of two years is granted, during which time the licence holder is required to conduct the work specified in the conditions of award and to obtain a farm-in partner to commit to fund and drill a well based on that data.

In Q4 CY2013 the P1928 joint venture (NWE Mirrabooka (UK) Pty Ltd and Wessex Exploration PLC) successfully completed a 2D seismic acquisition program and reprocessed a substantial volume of existing 2D and 3D seismic across the licence area.

As a firm commitment to drill was required by 1st February 2014, it was agreed that time constraints limited the ability to successfully prove up the prospects, select a drillable target and find a farm-in partner in the necessary timeframe. As such the joint venture agreed to early relinquishment of the permit by 2013 year end, thereby enabling the joint venture to reapply for the more prospective parts of P1928 (and drop the least prospective parts) under the current 28th Seaward Licencing Round. This application was lodged earlier this year and Norwest and its UK JV partner Wessex are awaiting advice if the application was successful. In the event of the application being successful, the joint venture will have two years to complete the evaluation, select a drillable target and find a suitable farm-in partner.

## PEDL238 / 239 – Onshore Wessex Basin

As per the P1928 licence, the PEDL238 & PEDL239 joint venture (NWE Mirrabooka (UK) Pty Ltd and Wessex Exploration PLC) agreed, after discussion with the Department of Energy & Climate Change to early relinquishment.

The applications for blocks in the 14<sup>th</sup> Landward Licencing Round closed on 28<sup>th</sup> October and after detailed review and discussion with joint venture partner Wessex Exploration, it was agreed not to reapply for any onshore licences in this Licensing Round. This decision was based both on technical merit and the current environment in the UK with regards to onshore exploration, and significant barriers envisaged in obtaining a social licence to operate.

This decision will allow Norwest to focus on the conventional targets within P1928 (if successful in the current 28<sup>th</sup> Seaward Licencing Round), and our portfolio of northern Perth Basin assets.

## **About Norwest Energy**

Norwest Energy NL (ASX: NWE) is an Australian-based oil and gas company focused on the strategic exploration and development of its asset portfolio in Western Australia.

Norwest's core strategy is to explore the potential of its permits in the northern Perth Basin, where the Company holds net basin acreage of 2,295 square kilometres. This acreage includes both conventional and shale gas opportunities. The key projects being progressed are the conventional oil target Xanadu in the offshore Perth Basin and continuing along a pathway to commercialisation at the shale gas Arrowsmith Project in the onshore Perth Basin.

Norwest is using its position as one of the earliest movers in the onshore shale and tight gas plays in Western Australia to build on the knowledge, experience and technical expertise that will see the Company progress from exploration through to development at its world-class projects.

The Company is committed to the ongoing development and assessment of its current portfolio and new opportunities that provide the ability to diversify and enhance Norwest's portfolio, with the aim of delivering value to its shareholders.

#### For further information, please contact:

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## **Competent Person**

The information on the Xanadu prospect is based on information compiled by Mr. Dean Powell of Powell Seismic Services. Mr. Powell holds a Bachelor Degree of Applied Science (Physics) and is a member of the Society of Exploration Geophysicists. He has over 40 years of experience in petroleum exploration.

Mr. Powell has consented in writing to the inclusion of the information stated in the form and context in which it appears.