

# West Erregulla independent Reserves certification supports ability to satisfy foundation GSA; results in line with previous certification; potential to grow resources through further exploration in EP469

- Independent Certification of West Erregulla Reserves by NSAI supports ability to satisfy Warrego's foundation Gas Sale Agreement
- Kingia reservoir certified 2P Reserves (proved plus probable) of 300 PJ of gas (gross) with 3P upside of 372 PJ (gross)
- West Erregulla 2C Contingent Resources certified at 128 PJ of gas (gross) with a further 198 PJ (gross) of 2U Prospective Resources
- West Erregulla Reserves certification by NSAI in line with previous Resources certification
- Excellent exploration potential in EP469 to the east and north of West Erregulla

Warrego Energy Limited ("Warrego" or the "Company") (ASX: WGO) today announces details of the independent certification of Reserves for the West Erregulla gas field located in EP469, onshore in the northern Perth Basin, Western Australia.

West Erregulla Reserves and Resources have been independently certified by Netherland, Sewell & Associates, Inc ("NSAI") in accordance with SPE-PRMS guidelines (2018). Reserves were assessed solely from the Kingia reservoir while the Kingia and other formations were evaluated for the purposes of determining Contingent and Prospective Resources. A summary of the findings is below.

# Warrego Energy's Group CEO, Dennis Donald, said:

"The independent Reserves certification by NSAI strongly correlates with the initial Resources certification that RISC Advisory completed for Warrego in May 2020<sup>1</sup> which further enhances our confidence in the production potential of the asset. Confirmed gross 2P Reserves of 300 PJ, and potentially 3P upside of 372 PJ, supports Warrego's ability to satisfy its foundation Gas Sale Agreement.

"A further 128 PJ of gross 2C Contingent Resources and 198 PJ of 2U Prospective Resources were assigned to West Erregulla which gives us the incentive to pursue the full upside potential of this asset, starting with the re-testing of WE-5 and the re-entry of WE-3.

"Beyond that, we are very excited about the exploration potential in EP469 to the east and north of the EP469 permit. The 3D seismic survey planned for the first half of next year will give us a more detailed view of some highly prospective leads. These near-field structures, should they yield discoveries similar to West Erregulla and Lockyer Deep, could form the basis for the next phase of development in EP469."

Kingia reservoir (100% values unless stated)	OGIP Bcf	Bcf gross	Bcf net of shrinkage <sup>2</sup>	PJ net of shrinkage <sup>2</sup>	WGO share (50%) PJ
Proved (1P)	350	229	215	233	116
Proved + Probable (2P)	409	295	277	300	150
Proved + Probable + Possible (3P)	499	365	344	372	186

## Table 1. West Erregulla (EP469) Gas Reserves (unrisked)

<sup>&</sup>lt;sup>1</sup> Refer WGO ASX Announcement of 18 May 2020, Certification confirms West Erregulla 2C of 513 Bscf gross

<sup>&</sup>lt;sup>2</sup> Net gas volumes after a 5.8% deduction for removal of impurities, primarily CO<sub>2</sub> from the Kingia and High Cliff



Reserves are those quantities of petroleum anticipated to be commercially recoverable from known accumulations by application of development projects from a given date forward under defined conditions. Reserves must be discovered, recoverable, commercial, and remaining as of the evaluation date based on the planned development projects to be applied. Proved Reserves are those quantities of oil and gas which, by analysis of engineering and geoscience data, can be estimated with reasonable certainty to be commercially recoverable; probable and possible Reserves are those additional Reserves which are sequentially less certain to be recovered than proved Reserves. The energy content of the gas Reserves is 1.081 PJ per Bcf. In place volumes are reported at surface conditions. The 1P Reserves in Table 1 are inclusive of proved developed non-producing and proved undeveloped Reserves. There are no proved developed producing Reserves at this point in time.

Kingia and High Cliff (100% values unless stated)	OGIP Bcf	Bcf gross	Bcf net of shrinkage <sup>2</sup>	PJ net of shrinkage <sup>2</sup>	WGO share (50%) PJ
Low Estimate (1C)	141	91	86	93	46
Best Estimate (2C)	182	126	119	128	64
High Estimate ( <b>3C</b> )	191	137	129	140	70

Contingent Resources are those quantities of petroleum estimated as of a given date to be potentially recoverable from known accumulations by the application of development projects not currently considered to be commercial owing to one or more contingencies. The Contingent Resources shown in this announcement are contingent upon acquisition of additional technical data that demonstrate producing rates and volumes sufficient to sustain economic viability, and commitment to develop the resources. If these contingencies are successfully addressed, some portion of the Contingent Resources may be reclassified as Reserves. Based on analogous field developments it appears that the best estimate Contingent Resources in Table 2 have a reasonable chance of being economically viable.

Kingia, High Cliff, Dongara, Wagina (100% values unless stated)	OGIP Bcf	Bcf Gross	Bcf net of shrinkage <sup>2,3</sup>	PJ net of shrinkage <sup>2,3</sup>	WGO share (50%) PJ
Low Estimate (1U)	280	142	137	148	74
Best Estimate (2U)	329	189	183	198	99
High Estimate ( <b>3U</b> )	382	245	239	258	129

#### Table 3. West Erregulla (EP469) Prospective Gas Resources (unrisked)

Prospective Resources are those quantities of petroleum which are estimated as of a given date to be potentially recoverable from undiscovered accumulations by the application of future development projects. The Prospective Resources shown in this announcement should not be construed as Reserves or Contingent Resources; they represent exploration opportunities and quantify the development potential in the event a petroleum discovery is made. Based on analogous field developments it appears that the unrisked best estimate Prospective Resources in Table 3 have a reasonable chance of being economically viable.

# **Basis of Preparation Summary**

The West Erregulla Field is an elongated north-south dip closed anticline structure, approximately 10 km long by 4 km wide with a structural relief in the order of 100m. The main conventional reservoirs are Early Permian age Kingia and High Cliff sandstones which display good reservoir parameters and are the principal producing reservoirs at the Waitsia Field and Kingia discovery at Beharra Springs Deep. At West Erregulla, the Kingia is separated from the High Cliff by the Bit Basher shale.

<sup>&</sup>lt;sup>3</sup> Net gas volumes after a 0.38% deduction for removal of impurities from the Dongara and Wagina



At the Kingia and High Cliff levels, the West Erregulla Field is divided into the northern and central areas which are believed to be in communication. West Erregulla Field is generally dip-bounded to the east, fault-bounded to the west, and separated to the south by a saddle.

Secondary discovered gas pools include the shallower Late Permian Dongara and Wagina sandstones. Additional well control and technical information is needed to identify the most likely productive intervals in these sandstones and they therefore have been classified as prospective resources.

Four appraisal wells have been drilled on West Erregulla Field with WE-2 and WE-4 tested and completed for production. Water was encountered at WE-4 at a depth of -4,630m TVDSS. The Operator interpreted this water as a possible perched water zone and drilled the WE-5 well with the intention of testing the interval below this depth. An ineffective completion contributed to a production barrier that was unable to be overcome which led to compromised flow rates and uncertainty in the well test results to date, specifically where the observed flows originated. WE-5 is yet to be re-tested and WE-3, currently suspended, will be re-entered before drilling on to the target formations and subsequent testing. Both WE-5 and WE-3 are intended to be completed for production. For the purposes of this Reserves certification, the 1P cut-off was interpreted at -4,630m TVDSS. The cut-off for 2P and 3P was interpreted between -4,630m TVDSS and -4,650m TVDSS depending on the location across the field.

The Reserves and Resources information in this announcement are derived from the report produced for the EP469 JV by NSAI as at 31 August 2021. The Reserves and Resources assessment was prepared in accordance with the definitions and guidelines set forth in the 2018 Petroleum Resources Management System (PRMS) approved by the Society of Petroleum Engineers (SPE). As presented in the 2018 PRMS, petroleum accumulations can be classified, in decreasing order of likelihood of commerciality, as Reserves, Contingent Resources, or Prospective Resources. Different classifications of petroleum accumulations have varying degrees of technical and commercial risk.

The Reserves, Contingent Resources, and Prospective Resources shown here have been derived using probabilistic and deterministic methods. Production forecasts are based on well test analysis. Recoverable volumes per well are based on applying recovery factors to estimates of OGIP. Estimates of OGIP are based on geological mapping of gross volumes in-place or areas, and applying probabilistic analysis to other geological, petrophysical, and engineering parameters. Ranges of expected net-to-gross or net thickness, porosity, water saturation, and formation volume factor were defined based on well log, test, and sample data. Estimates of recovery factors are based on performance data, planned abandonment conditions, and analogy to fields and reservoirs with similar characteristics.

#### **Competent Person statement**

The information in this announcement that relates to oil and gas Reserves, Contingent Resources and Prospective Resources estimates as at 31 August 2021 for the West Erregulla Field is based on, and fairly represents, information prepared by, or under the supervision of, Mr John Hattner, Senior Vice President, Netherland, Sewell & Associates Inc. Mr Hattner holds a MBA from Saint Mary's College, California, a MS from Florida State University and a BS from the University of Miami, Florida, and is a member of the Dallas Geological Society, Houston Geological Society, American Association of Petroleum Geologists, Rocky Mountain Association of Geologists, Dallas Geophysical Society, Society of Petroleum Engineers, Australian Institute of Mining and Metallurgy, and Society of Exploration Geophysicists. Mr Hattner is not an employee of Warrego and has worked in the petroleum industry as a geophysicist and resource certifier for over 40 years. Mr Hattner has reviewed the Reserves and Resources disclosures in this release and consents to the presentation of the information in the form and context in which it appears.



Authorised by the Board of Warrego Energy Limited and issued in accordance with the Company's disclosure policy.

#### The Joint Venture Partners in EP469 are:

Warrego Energy Limited (via subsidiaries)50%Strike Energy Limited (via subsidiaries)50%, Operator

### **About Warrego Energy Limited**

Warrego Energy is focused on the development of onshore assets in Australia, primarily in Western Australia. It holds a 50% interest in EP469, including the West Erregulla Gas Field, and 100% of STP-EPA-0127, potentially the largest exploration block in the Perth Basin. Warrego was admitted to the ASX All Ordinaries Index in June 2020.

#### Glossary

1P, 2P, 3P	Levels of Reserves classification
1C, 2C, 3C	Levels of Contingent Resources classification
1U, 2U, 3U	Levels of Prospective Resources classification
3D	Three-dimensional seismic survey
Bcf	Billion cubic feet
CO <sub>2</sub>	Carbon Dioxide
EP	Exploration Permit
EPA	Exploration Permit Application
GSA	Gas Sale Agreement
JV	Joint Venture
Km	kilometres
m	metres
NSAI	Netherland, Sewell & Associates, Inc
OGIP	Original Gas In Place
PJ	petajoules
PRMS	Petroleum Resources Management System
SPE	Society of Petroleum Engineers
TVDSS	Total Vertical Depth Subsea
WE-2,3,4,5	West Erregulla wells

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### **Important Notices**

#### Additional Information in respect to Reserves and Resources required by the ASX Listing Rules (LR):

The reported Reserves, Contingent Resource and Prospective Resources in the Kingia, High Cliff, Wagina/Dongara within Exploration Permit EP469 have been estimated by Netherland, Sewell & Associates, Inc. (NSAI) based on data as at 31st August 2021.

The Reserves and Resources have been prepared in accordance with definitions and guidelines in the Society of Petroleum Engineers (SPE) 2018 Petroleum Resources Management System (PRMS), and have been categorised and reported in the most specific category that reflects the degree of uncertainty in the estimated quantities, that is 1P, 2P and 3P in the case of Reserves, low (1C), best (2C) and high (3C) in the case of Contingent Resources, and low (1U), best (2U) and high (3U) in the case of Prospective Resources. The Contingent and Prospective Resource estimates are un-risked and have a risk of development.

Oil and gas reserves and resource estimates are expressions of judgment based on knowledge, experience and industry practice. Estimates that were valid when originally calculated may alter significantly when new information or techniques become available. Additionally, by their very nature, reserve and resource estimates are imprecise and depend to some extent on interpretations, which may prove to be inaccurate. As further information becomes available through additional drilling and analysis, the estimates are likely to change. This may result in alterations to development and production plans which may, in turn, adversely impact the Company's operations. Reserves estimates and estimates of future net revenues are, by nature, forward looking statements and subject to the same risks as other forward looking statements.

In respect to the Reserve estimates:

- LR 5.26.1 Warrego has a high degree of confidence in the commerciality of the project and evidence of the economic producibility of the reservoir.
- LR 5.26.4 (Lease Fuel) The Reserves estimates does not include fuel and flare gas consumption. Warrego
  estimates that approximately 2.7TJ/d will be required by the gas processing facilities. Shrinkage of sales gas
  from raw gas was estimated at 5.8% in NSAI's report with the energy content of the gas 1.081 PJ per BCF
  measured at a standard temperature and pressure;
- LR 5.26.5 (Reference Point) The reference point at which these reserves have been estimated is the inlet to the Dampier to Bunbury Natural Gas Pipeline on the outlet of the AGIG export pipeline and processing facilities;
- LR 5.26.7 and 5.26.8 (Aggregation) The Reserves have been aggregated by arithmetic summation by category, that is 1P, 2P and 3P. As recommended by the PRMS, the 1P, 2P and 3P Reserves have been aggregated beyond the project level by arithmetic summation, hence the aggregate 1P may be a very conservative estimate and the aggregate 3P may be a very optimistic estimate due to the portfolio effects of arithmetic summation;
- LR 5.31.1 (Material economic assumptions) All economic assumptions that form the basis of the commerciality test were provided as actual or planned expenditures and revenues by Strike Energy Limited, on behalf of the EP469 JV, to NSAI. Any assumptions on capital or operating costs were based on authorisations for expenditure or actual costs, or near final agreed pricing. These assumptions are commercially sensitive. Economic consideration has been applied for all State based royalties and federal taxes when assessing the resulting net project cashflows.
- LR 5.31.2 (Joint Venture interest) Warrego has a 50% interest in the EP469 West Erregulla Project.
- LR 5.31.3 (Permits) Warrego holds Exploration Permit EP469 in respect of the reported Reserves in joint venture with Strike West Pty Limited.
- LR 5.31.4 (Description of analysis of Reserves) The reserves were deemed commercial as screened against the economic assumptions for the West Erregulla Phase 1 conventional gas project to generate net project cashflows with conservative assumptions around capital, abandonment and ongoing operating costs. These assumptions are commercially sensitive. The cashflows were generated from the known sales quantities of gas to the existing offtakers of the project at estimated screening level pricing.
- LR 5.31.5 (Estimated Quantities to be recovered) All reserves listed under the NSAI report are deemed as 'under development' and the resulting recoverable quantities of gas reflect the ultimate recoveries of the



existing well inventory including the deepening of WE3, recompletion of WE5 and future drilling of WE6 (location TBC).

- LR 5.31.6:
  - Status of the project –The West Erregulla Phase 1 Project is in the pre-development phase and remains contingent on finalising a project financing facility, securing all requisite permits and approvals, execution of definitive gas processing development and services agreements with Australian Gas Infrastructure Group and the taking of a final investment decision by the EP469 Joint Venture. Warrego believes there is now sufficient technical data available and sufficient reserves certified to proceed to take the development forward and progress each of these development pre-conditions.
  - Development timeline Construction of the upstream gathering network and midstream processing facilities is expected to commence in 2H 2022 following the endorsement of upstream and midstream final investment decisions and receipt of necessary permits and approvals, with first gas expected in 2H 2023
  - Marketing arrangements that justify development Foundation gas supply contracts with Wesfarmers subsidiary, CSBP Limited, and Alcoa Limited.
  - Access to transportation infrastructure The 87 TJ/day gas processing plant to be built, owned and operated by Australian Gas Infrastructure Group within the EP469 permit area will directly tie into the Dampier to Bunbury Natural Gas Pipeline (DBNGP).
  - Environmentall approvals required Approvals pursuant to the Part IV of the Environmental Protection Act 1986 (WA) for the upstream gathering network and for the midstream processing facilities. Applications for the Part IV approvals have been submitted and are currently under assessment.

In respect to the Contingent Resource estimates:

- LR 5.27.3 and 5.27.4 (Aggregation) The Contingent Resources have been aggregated by arithmetic summation by category, that is 1C, 2C and 3C. As recommended by the PRMS, the 1C, 2C and 3C Contingent Resources have been aggregated beyond the project level by arithmetic summation, hence the aggregate 1C may be a very conservative estimate and the aggregate 3C may be a very optimistic estimate due to the portfolio effects of arithmetic summation.
- LR 5.33.2 (Basis for confirmation of hydrocarbons and discovery) The existence of potentially moveable hydrocarbons and the determination of a discovery in the Kingia and High Cliff formations was via petrophysical analysis and, in the case of the Kingia, flowing of gas to surface.
- LR 5.33.3 (Analytical procedures and key contingencies) The estimates have been determined using a combination of deterministic and probabilistic methods based on the data generated from the West Erregulla exploration and appraisal program, this includes interpretation of porosity, hydrocarbon saturation and net reservoir thickness from the logging program, the analysis of potential hydrocarbon columns from the pressure data and the fluid properties derived from the gas samples and applied to the structure map with recovery factors calculated using analogues and industry standards. The key contingencies that prevent the Contingent Resources from being classified as Reserves are (1) acquisition of additional technical data that can demonstrate producing rates and volumes sufficient to sustain economic viability; and (2) commitment to develop the resources.

In respect to the Prospective Resource estimates:

• LR 5.35.2 (Basis of estimation and further exploration activities) - The Prospective Resource estimates have been determined using a combination of deterministic and probabilistic methods based on the data generated from the West Erregulla exploration and appraisal program, this includes interpretation of porosity, hydrocarbon saturation and net reservoir thickness from the logging program, the analysis of potential hydrocarbon columns from the pressure data and the fluid properties derived from the gas samples and applied to the structure map with recovery factors calculated using analogues and industry standards. Activities that may be required to generate conversion of the prospective Resource to a degree of higher classification include, the drilling of a down dip well to test the lower horizons, acquisition of the Natta 3D seismic, production data and a pressure sample from all or individually the High Cliff, Wagina and Dongara formations.



 LR 5.35.3 (Chance of discovery and development) – NSAI have listed the Prospective Resources as unrisked. Warrego estimates that these Prospective Resources have a high degree of confidence in being discovered or confirmed with each individual Prospective Resource from each horizon having a different degree of probability based on reservoir makeup, gas water contacts, reservoir productivity and gas consumption. The probability of success for each horizon has not been quantified at this time.

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