

## **Eneabba Gas Limited**

ABN 69 107 385 884

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## **Eneabba planning 2010 exploration programme**

Australian energy company Eneabba Gas Limited (**ASX: ENB**) ("the Company") has completed coal resource definition drilling over the first of the Company's ten Sargon Tenements (E70 / 2758) in the Mid West region of Western Australia. As outlined in our ASX announcement of 30 October 2009, this programme resulted in a JORC Code compliant coal resource of 194 million tonnes.

Since completion of this programme, the Company has sought the opinion of Xstract Mining Consultants Pty Ltd ("Xstract") in regards to;

- The Company's JORC Code Resource Statement;
- Recent transactions related to projects offering underground coal gasification ("UCG") potential; and
- The positioning of the Company's coal resources relative to other UCG participants

Based on Xstract's report (attached key findings), the Company will now be reviewing the recommendations therein, so that the Company's 2010 exploration programme will achieve;

- More detailed UCG sampling within E 70 / 2758;
- Greater geological, geotechnical, hydrological and UCG studies on the coals overburden, and surrounding country rocks; and
- The design of a strategic exploration programme for the remaining Sargon Tenements

It is the intention of the Company in its 2010 exploration campaign to achieve the objectives of the Xstract recommendations.

In discussing the relative positioning of the Company's coal resources relative to other UCG participants, Eneabba notes a recent ASX release by Cougar Energy Limited (dated 29 October 2009). Based on this announcement, **Linc Energy**, **Carbon Energy** and **Cougar Energy** have implied A\$/GJ (for 3P reserves) of A\$0.02 to 0.09 per GJ, based on their Enterprise Value ("EV") and implied recoverable UCG reserves. In addition, offers of up to A\$0.18/GJ have recently been bid for at least two Australian UCG projects.

#### For further information please contact:

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#### **About Eneabba Gas Limited**

Eneabba Gas is focused on the development of the 168MW gas-fired Centauri 1 Power Station on Company-owned land near Dongara in the Mid West of Western Australia. Eneabba Gas proposes to market power from Centauri 1 to the fast growing Mid West region of Western Australia.



30 November 2009

Mr Mark Babidge Managing Director Eneabba Gas Limited Level 1, 30 Ord Street West Perth, WA 6872

Dear Mark

# RE: VALUATION OPINION AND RESOURCE ESTIMATE REVIEW FOR THE SARGON COAL PROSPECT

Xstract Mining Consultants Pty Ltd ("Xstract") was engaged by Eneabba Gas Limited ("Eneabba") to undertake an analysis of the positioning of the Company's coal resources relative to other Underground Coal Gasification ("UCG") participants, and to carry out a high level review of Eneabba's resource statement for its Sargon Coal project tenement E70/2758 prepared by Xenith Consulting Pty Ltd ("Xenith") in accordance with the 2004 Joint Ore Reserves Committee Code ("JORC Code").

The key findings from this review are summarised below.

### **Positioning Relative to other UCG Projects**

- Eneabba's Sargon Group coal seams, as reported in October 2009, are considered by Xstract to be of good quality for a UCG target. The following observations were noted by Xstract:
  - Coal Thickness: coal seams greater than 2 metres ("m") offer the best potential for UCG (other UCG companies report seam thicknesses above 3 m), however the average thickness in C Seam and D Seam are 1.33 m and 2.55 m respectively, and the interburden between these two seams is relatively thin (around 0.9 to 2 m) such that with suitable technology these two seams could potentially be developed together
  - Coal Qualities: the Sargon Coal project coal qualities appear largely amenable for UCG; the ash content is 15% to 40% (including stone bands or partings), the coals tend to have a high reactivity, due to abundant vitrinite and liptinite contents (combined ~ 70%), but with low swelling or coking properties due to low rank (vitrinite reflectance <0.31%). Xstract notes that the same level of coal quality detail is not publically available for other UCG companies</li>
  - Coal Depth: The coal depths appear largely amenable for UCG; coal seams occurring at depths of between 100 and 800 m, preferable between 300 and 600 m, are generally suitable for UCG. Coal seams at depths exceeding 600 m are likely to have low permeability, which decreases the productivity of the process; Linc Energy's recent trial was at approximately 130 m depth, but the gasification did not perform optimally at this shallow depth
  - Coal Tonnage: The reported resource of 194 Million tonnes ("Mt") for E70/2758 is less than that announced by other UCG companies (410 Mt to over 7,000 Mt), however the adjacent Sargon tenements (100% owned by Eneabba) have a targeted coal tonnage of

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- over 1,300 Mt. Xstract notes that the recoverable energy from the 194 Mt resource would be sufficient to power Eneabba's proposed 168 Megawatts ("MW") (or 365 MW upgrade) power station for well over 100 years
- Coal Seam Continuity: the major fault trends appear to be understood which provides for reasonably extensive blocks of coal for development. However, Xstract notes that the seams are relatively thin, therefore the continuity could be disrupted by faults with relatively small throws
- Development Stage: the Sargon Coal project is effectively at a "conceptual" stage of development, whereas other listed UCG companies are reportedly more advanced at "demonstration" or even "construction" status
- There is no point in comparing the Sargon Coal project energy content and implied value for a UCG application with the energy / value available from Coal Seam Gas, Coal to Liquids or Thermal coal projects since these are not comparable coal utilisation projects
- The relative position of the Sargon Coal will depend on how the market perceives the following criteria:
  - The UCG aspect of the project is still at "concept" stage, and therefore may be considered to be of lower value (or higher risk) compared to other more advanced projects given the amount (and cost) of work required to improve its status and confidence; the coal resource must have an intended market in order to assign it a potential value, and in this case its utilisation is to produce UCG as a likely power-station feedstock
  - The UCG process outlined for the Sargon tenements is with air as an oxidant rather than oxygen which will result in a syngas with a higher inert gas content and therefore lower energy content; assuming a 50% conversion from in-situ energy to syngas energy for the Sargon coal project may already account for this difference since the oxygen burn UCG companies apply a 58% conversion assumption from in-situ coal energy to recovered syngas energy
  - There is a good potential to define additional coal resources with UCG potential which mitigates the risk, and enhances the value of the prospect, however at this time Eneabba's JORC Code compliant reported coal resource of 194 Mt is below that of the other UCG companies and this is likely to attract a discount. However, the assumed recoverable energy of 1,520 petrajoules ("PJ") from the Eneabba coal resource is sufficient to power its proposed 168 MW power station for well over 100 years
  - The price of domestic liquefied natural gas ("LNG") gas in Western Australia typically trades at a premium of some two times that of Australia's Eastern States which provides a premium for the potential price of syngas in the Western Australian market
  - Eneabba as a company, and the Sargon prospect area in particular, have many positive features which should enhance the value.

## **Review of October 2009 JORC Code Resource Statement**

- In general, Xstract is of the opinion that, other than a few terminology issues, Eneabba's October 2009 coal resource estimate report meets the minimum 2004 JORC Code requirements for coal resource reporting
- Xstract considers that greater transparency in the data reported could enhance the acceptability of the reported estimate with minimum effort. However, Xstract notes that the level of detail in the report was not particularly different to that provided publically by other Australian UCG companies reporting the coal seam resources on which their UCG potential is based
- Xstract has checked the resource calculations and also carried out a probabilistic assessment to quantify the confidence in the reported in-situ energy content and found the estimate to be reasonable based on the available data.



#### Recommendations

In Xstract's opinion, the following technical work will be required in order to upgrade the confidence in the UCG potential of the Sargon Coal project and hence enhance its recoverable energy value:

- More detailed UCG oriented sampling and testing program for the existing E70/2758 tenement
- More geological and UCG studies on the coals, overburden, geotechnical and hydrological aspects of the project areas
- Strategic exploration and drilling program of other tenements
- More transparency in the reporting of the UCG project's attributes to the market
- Seek government approvals for UCG exploitation.

## **Xstract Mining Consultants**

Xstract is a privately owned and operated mining and resource industry consultancy providing independent, strategic and tactical advice and personalised professional services to exploration and mining companies, engineering firms, financial institutions and investors. We operate through our office in Brisbane. Our corporate services include technical audits, project reviews, valuations, independent expert reports, project management plans and corporate advice.

## **Qualifications of Review Consultants**

#### Jeames McKibben (GM – Corporate Services and Principal Consultant)

During his more than 15 years experience in the mining and mineral industry, Jeames has served in a diverse range of roles including corporate consultant, project manager, geologist and analyst. Jeames' most recent role was as the Divisional Manager for Snowden Mining Industry Consultants Pty Ltd's Corporate Services Division. He has a strong record in project due diligence, independent technical review, valuation, deposit evaluation and the promotion of best practice strategies in the workplace. As a corporate consultant he specialises in valuations and Mineral Expert Reports for equity transactions and Independent Technical Reports in support of project finance. He has assisted numerous mineral companies, financial and legal institutions in securing regulatory approvals for IPOs and other secondary filings on the following international exchanges: Australian Securities Exchange, Alternative Investment Market, London Stock Exchange, Johannesburg Securities Exchange and Toronto Stock Exchange. Other mandates include technical due diligence in support of information memoranda, divestments, acquisitions and mergers, Pre-Feasibility Studies and independent Competent Persons' Reports. Jeames has a MBA and a BSc (First Class Honours), and is a member of the AIG and the Australasian Institute of Mining and Metallurgy ("AusIMM").

#### Alan Bayrak – Associate – Geology (CSG and Basin Analysis)

Alan is a multi-disciplinary exploration geologist with over 16 years of local and international exploration experience in oil-gas and coal areas in various geographical territories, including Queensland, New South Wales, Otway Basin, Irish Midlands, Thrace Basin, Western Black Sea and Carpathians. Alan's experience includes district exploration, target development, reserve assessments and CSG acreage management, Gas-in-Place estimations (deterministic and probabilistic) and technical evaluation of the CSG prospects, qualitative and quantitative analyses of sedimentary basins, analysis of existing geological data, generation of exploration targets and producing technical reports, technical analysis of coals and coal petrography, management of CSG exploration drilling programs, quantitative assessment of the CSG prospects, including desorption, gas composition, adsorption, saturation, coal tests, permeability and reservoir properties. Alan holds a BSc (Geological Engineering), MSc (Petroleum Geology) and a PhD (Exploration Geology).



#### Mark Noppe (Managing Director and Principal Consultant)

Since graduating as a geologist in 1983, Mark worked in South Africa for Anglo American Corporation (1984-1997), and in Western Australia and Queensland for Snowden Mining Industry Consultants (1997-2008) and Mining Associates (2008-2009) in exploration, mining geology, practical geostatistics applications, resource estimation, grade control, mine reconciliation and professional training and mentoring. Mark has been in consulting since 1995 and his technical experience covers a wide range of commodities, geological and mining settings, including coal, gold, nickel laterite and sulphide, alluvial, eluvial and hard rock diamonds, base metals and industrial minerals. He has previously held positions as Chairman of the Southern Queensland branch of the AusIMM, and the Geostatistical Association of Australasia. Mark has a BSc (Geology; Chemistry), MSc (Exploration Geology), post-graduate Diploma (Terrain Evaluation), is a CP (Geo) and a Member of the AusIMM.

Yours sincerely

**Jeames McKibben** 

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