

ASX Announcement  
Monday, 5 December 2011

ASX Code: MOU

## MODUN ANNOUNCES 489 MILLION TONNE MAIDEN JORC REPORTABLE COAL RESOURCE AT NUURST PROJECT IN MONGOLIA

### Highlights:

- Maiden JORC Reportable Coal Resource for Nuurst Project of 489 million tonnes (417Mt Indicated, 72Mt Inferred)
- Resource exceeds initial expectations, provides potential for large scale coal mine
- Immediate commencement of Scoping Study and application for mining licence
- 2012 exploration program to target further coal resource, 84% of licence under-explored
- Nuurst located six kilometres from existing rail infrastructure
- Resource defined within six months of Modun acquiring Nuurst

Coal explorer Modun Resources Ltd (**ASX: MOU**) (**Modun**) is pleased to announce a significant maiden JORC Reportable Coal Resource of 489 million tonnes for its wholly-owned Nuurst Project Licence XV-008159 (**Nuurst or the Project**) in central Mongolia.

The Project is located 120 kilometres south of Mongolia's capital Ulaanbaatar and comprises a 34.5 square kilometre licence area.

Modun, which acquired the Nuurst Project in June 2011, said the resource estimate is almost double its previous targets (200-300 Mt, calorific value range  $Q^{daf}$  6,200-6,800 kcal/kg) and confirms the potential for development of a large scale thermal coal mine.

The resource estimation was compiled by consultancy CSA Global Pty Ltd.

| Category     | Resource<br>t<br>(Millions) | Inherent<br>Moisture<br>%<br>adb | Ash<br>%<br>adb | Volatile<br>Matter<br>%<br>adb | Fixed<br>Carbon<br>%<br>adb | Total<br>Sulphur<br>%<br>adb | Calorific<br>Value<br>Kcal/kg<br>adb | Calorific<br>Value<br>Kcal/kg<br>db | Calorific<br>Value<br>Kcal/kg<br>daf | Relative<br>Density<br>g/cm3<br>ad |
|--------------|-----------------------------|----------------------------------|-----------------|--------------------------------|-----------------------------|------------------------------|--------------------------------------|-------------------------------------|--------------------------------------|------------------------------------|
| Indicated    | 417                         | 25.19                            | 13.84           | 36.26                          | 24.60                       | 0.91                         | 4,087                                | 5,960                               | 6,702                                | 1.37                               |
| Inferred     | 72                          | 22.91                            | 13.44           | 36.96                          | 26.70                       | 0.96                         | 4,264                                | 6,039                               | 6,699                                | 1.37                               |
| <b>Total</b> | <b>489</b>                  | <b>24.85</b>                     | <b>13.78</b>    | <b>36.36</b>                   | <b>24.91</b>                | <b>0.92</b>                  | <b>4,113</b>                         | <b>5,972</b>                        | <b>6,701</b>                         | <b>1.37</b>                        |

Modun said nearby rail infrastructure - six kilometres from Nuurst - would provide direct transport to the Chinese border 610 km away. The table below outlines how the Nuurst Project specification compared to its thermal coal peers exploring thermal coal in Mongolia.

| Company         | Project              | Distance to existing Rail km | Resource t (million) | Inherent Moisture % adb | Ash % adb | Volatile Matter % adb | Fixed Carbon % adb | Total Sulphur % adb | Calorific Value Kcal/kg adb | Calorific Value Kcal/kg db | Calorific Value Kcal/kg daf | Relative Density g/cm <sup>3</sup> ad |
|-----------------|----------------------|------------------------------|----------------------|-------------------------|-----------|-----------------------|--------------------|---------------------|-----------------------------|----------------------------|-----------------------------|---------------------------------------|
| Hunnu           | Unst Khudag          | 180                          | 676                  | 18.28                   | 21.30     | 30.07                 | 30.38              | 1.27                | 3,995                       | 4,889                      | 6,612                       | 1.41                                  |
| Modun           | Nuurst               | 6                            | 489                  | 24.85                   | 13.78     | 36.36                 | 24.91              | 0.92                | 4,113                       | 5,972                      | 6,701                       | 1.37                                  |
| Peabody Winsway | Union (M&I resource) | 13                           | 95                   | 13.10                   | 14.40     | 38.00                 |                    | 1.40                | 4,916                       |                            |                             | 1.40                                  |
| Peabody Winsway | Union (Inferred)     | 13                           | 55                   | 10.80                   | 14.20     | 38.00                 |                    | 1.20                | 4,002                       |                            |                             | 1.43                                  |
| Peabody Winsway | erds project         | 75                           | 807                  | 19.25                   | 25.32     | 29.70                 | 25.73              | 1.29                | 3,710                       |                            |                             | 1.55                                  |
| Xanadu          | Galshar              | 65                           | 62                   | 8.24                    | 9.10      | 40.80                 |                    | 0.57                | 5,371                       |                            | 6,476                       | 1.37                                  |
| Xanadu          | Khar Tarvaga         | 45                           | 327                  | 19.25                   | 25.32     | 29.70                 | 25.73              | 1.29                | 3,742                       |                            |                             | 1.54                                  |

**references:**

Hunnu Coal ASX announcement 1 July 2011 - "JORC Resource estimate for the Unst Khudag Thermal Coal Project"

Polo Annual information form, March 29 2010

Xanadu Mines Prospectus

Modun said the Project's significant resource and coal seam thickness (100 metre+ coal sequences) should translate into a low stripping ratio, which lends itself to a large scale, low cost mining operation.

As a consequence of the rapid resource discovery, Modun plans to immediately commence a Scoping Study.

The Company said the JORC Reportable Coal Resource pertained to only 16% of the licence area. Modelling suggests the resource is open to the north and becomes shallower. This area will be a focus of the 2012 exploration program, which will target further coal seams. In addition, the company will progress a mining licence application.

Modun Resources Managing Director Chris Mardon said the 489 million tonne maiden resource, defined only six months after Modun acquired the Project, is a terrific outcome for the Company and its shareholders.

"The JORC Reportable Coal Resource has confirmed our belief that we have a valuable asset to develop. The close proximity to infrastructure and a major coal market adds to the potential for a large scale project.

"These results propel Modun to having one of the largest tonnage coal resources of the ASX-listed companies currently operating in Mongolia.

"Furthermore, we believe we have a substantial project on just 16 percent of the licence area. We also see significant exploration upside - we are yet to unlock the full value of this licence," Mr Mardon said.

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**About Modun Resources**

ASX-listed Modun Resources (ASX: MOU) is developing the 100%-owned Nuurst Project in central Mongolia. Nuurst is a thermal coal project, which encompasses a 34.5 square kilometre licence area. In late 2011, Modun announced a maiden 489 million tonne JORC resource at Nuurst (417 million tonnes Indicated, 72 million tonnes Inferred).

The Nuurst Project is located 120 kilometres south of Mongolia's capital Ulaanbaatar and six kilometres from existing rail infrastructure.

In 2012, Modun will continue its exploration program at Nuurst, as well as a Scoping Study, to drive the Project towards development.

Modun continues to seek further quality coking and thermal coal opportunities in the region.

## A summary of CSA Global's Nuurst Project Coal Resource follows:

PT CSA Global Indonesia (**CSA**) was engaged by Modun Resources Ltd (**Modun**) to complete a Coal Resource estimate for the Nuurst Project (**NP**).

NP is located in the Tuv district of Bayou Province, Mongolia, approximately 120km south of the capital city Ulaanbaatar (Figure 1). Exploration Licence No.XV-008159 (NP) covers an area of 3,451 hectares. The Licence dimensions are approximately 3.4 km x 11.1 km.

On the 6 October 2011 the licence was transferred from East Resource LLC to Modun. The license expires on the 11 August 2013.

NP is situated in Choir-Nyalga Basin where major coal seams are hosted in Lower Cretaceous age sediments of the Zuunbayan Formation (Figure 1). This basin lies in the western portion of the Eastern Mongolia province.

The Choir–Nyalga basin is divided into several fault bounded sub-basins filled with Mesozoic sequences. This basin covers an area of approximately 50,000 km<sup>2</sup>. The thickness of the coal-bearing Zuunbayan group reaches up to 1500 m.

The Zuunbayan is further divided into the lower Shinekhudag Formation, the middle Kukhteg Formation and the upper Baruunbayan Formation. The 900 m thick Shinekhudag formation contains basal sandstones and fine upward to siltstone and mudstone with thick oil shale layers.

The 450m thick Khukhteg coal-bearing formation consists of conglomerate, gravel, sandstone, siltstone and thick lignitic coals. The 150 m thick Baruunbayan Formation is composed of conglomerate, gravel and sandstone



Figure 1- Nuurst Project Location

The coal bearing sequence at NP is hosted in the Kukhteeg Formation and consists of sandstone, siltstone, shale and coal measures with thin gravel, conglomerate and coaly shale.

CSA has interpreted normal faults perpendicular to the fold axis and average seam strike (Figure 2). The faults are typically high angle ( $-85^{\circ}$ ).

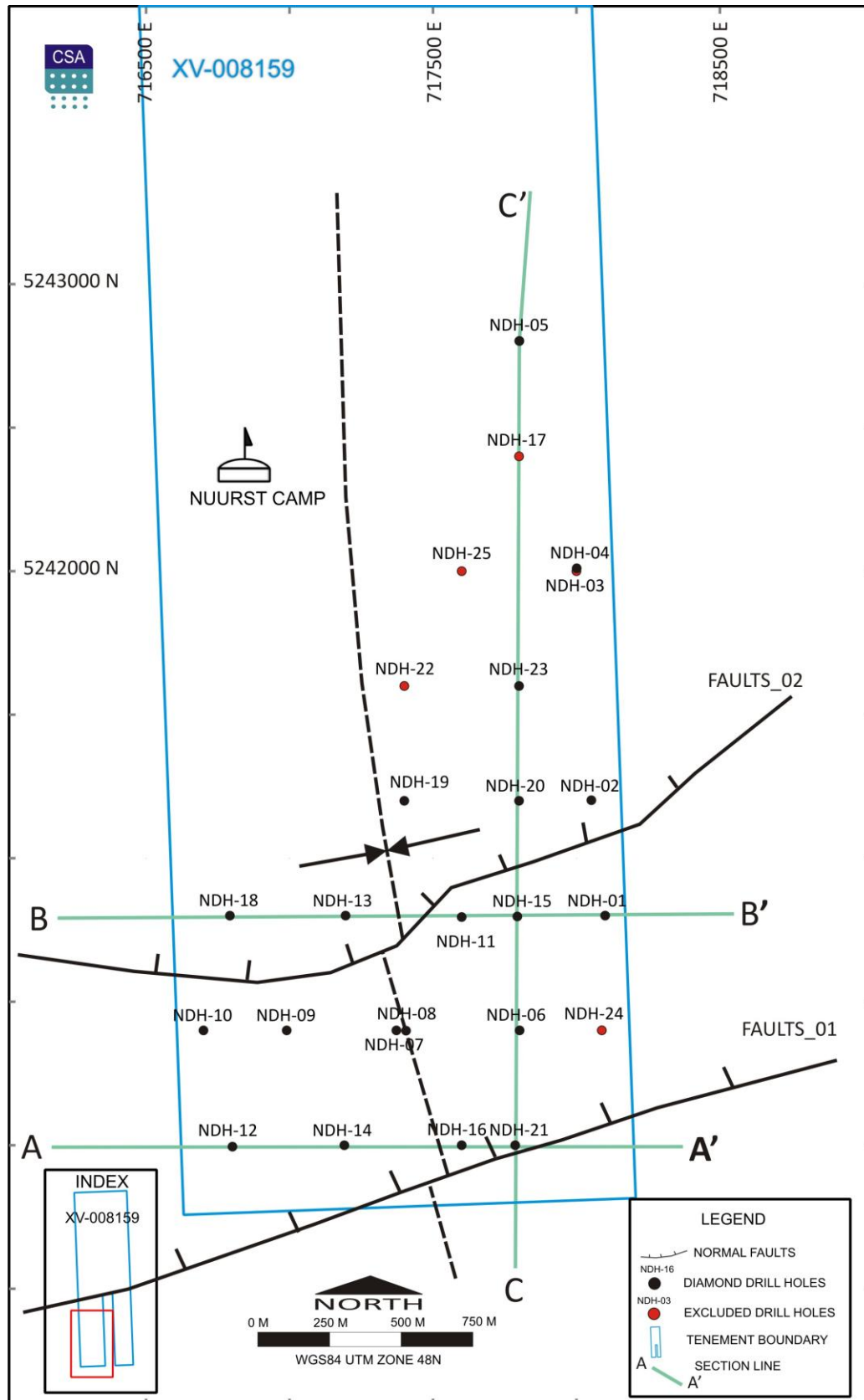
The maximum fault displacement is estimated to be 60m (Figure 2, Figure 3 and Figure 4). Additional drilling will be required to better define faults in the areas of greatest economic interest.

Coal Seam nomenclature and stratigraphy were completed by CSA from sectional interpretations and correlation of geological and geophysical logs.

A total of 81 seams, sub-seams and seam splits have been identified (Figure 3, Figure 4, Appendix 1 and Appendix 2).

The seams occur in 3 major groups with Seam Group A being the most economically significant.

Coal measures at NP have been gently folded into a syncline which strike N-S (Figure 2). Dips to the W or E vary from  $-6^{\circ}$  to  $-52^{\circ}$ .



• Figure 2 - Nuurst Project Structure, Drill Hole Locations and Section Lines

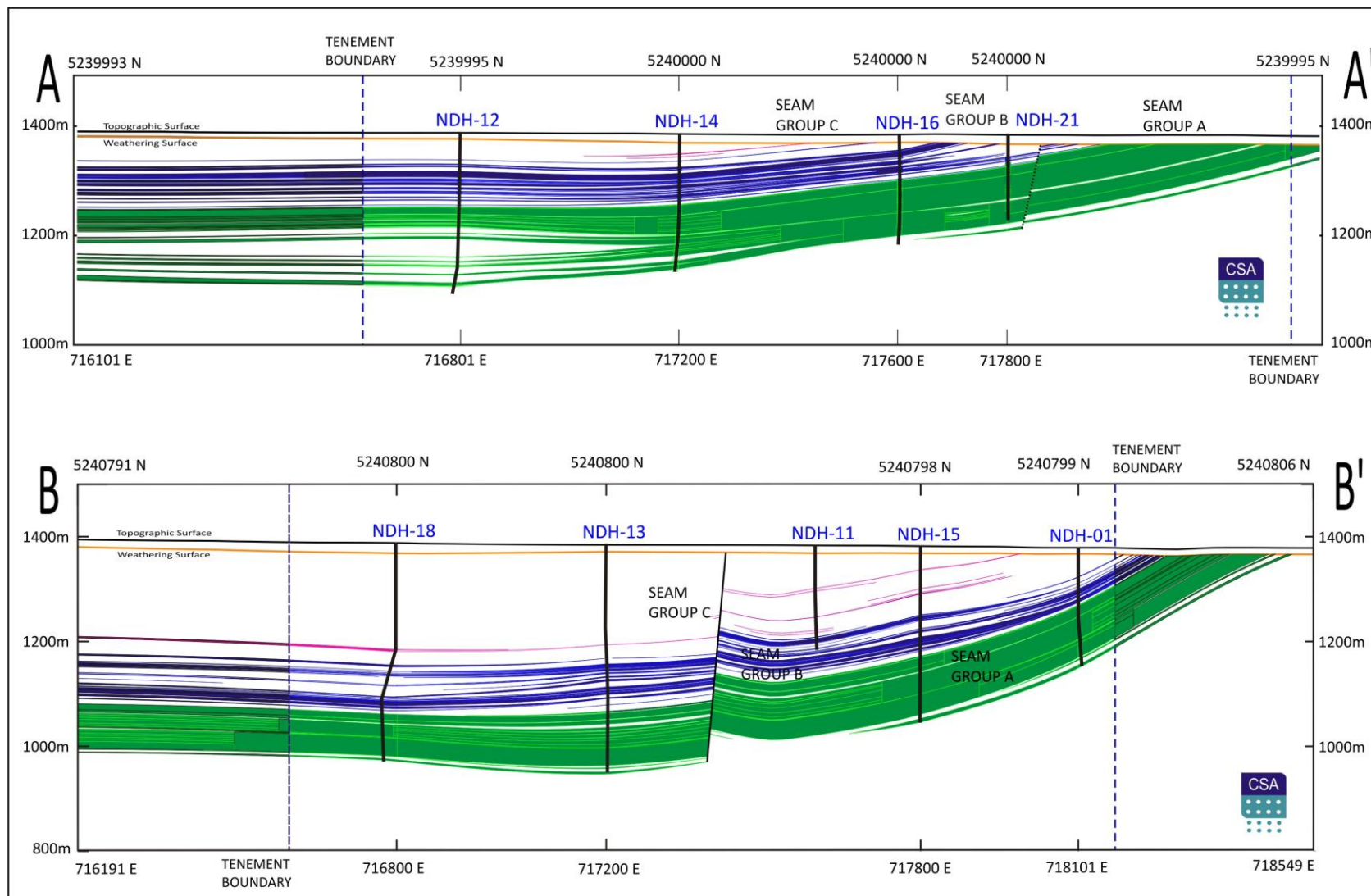


Figure 3 - Nuurst Project Section A-A' and Section B-B'

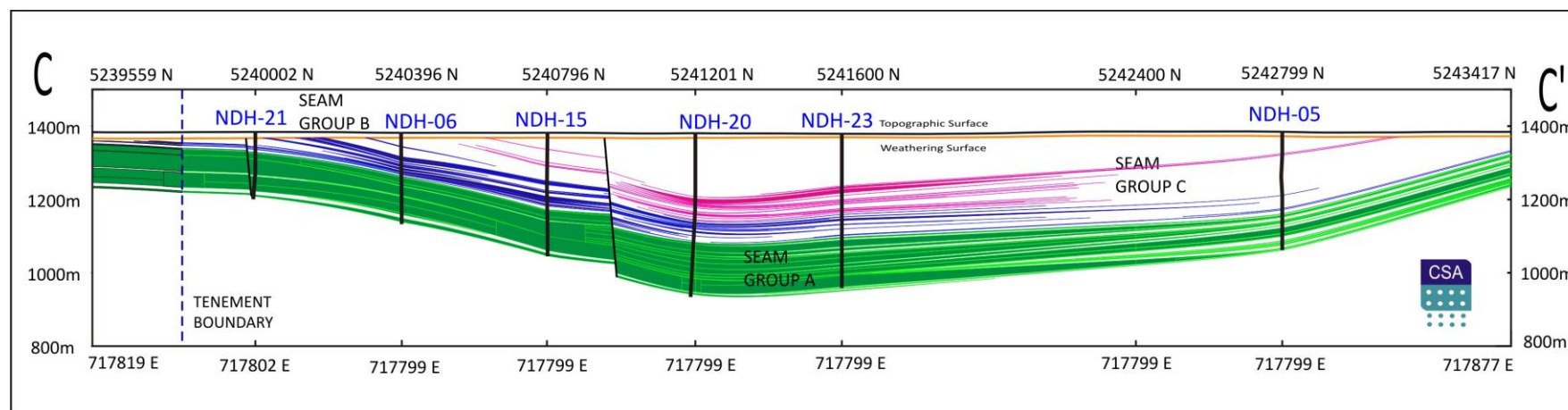


Figure 4- Nuurst Project Section C-C

**The Coal Resource estimate completed by CSA is summarised as follows:**

- Resources are based on data acquired up to the 21 November, 2011.
- Modun Resources Ltd. supplied tenement details, standard operating procedures (SOPs), survey data, geological data, down hole geophysical data, sampling data and coal quality analysis laboratory certificates.
- The coal resource occurs within Exploration Licence XV-008159.
- CSA imported the supplied drill hole data into Minescape 4.118 software for geological modelling.
- Coal Seams nomenclature and stratigraphy were generated by CSA from sectional interpretations.
- The geological model was derived from a 400m × 300m and 400m x 400m drill pattern (Figure 1).
- The total area modelled was 1,490 hectares.
- The drilling data base comprised of 25 drill holes for a total of 7,402m; however 4 drill holes (NDH-17, NDH-22, NDH-24 and NDH-25) were excluded from the geological model because core logs and geophysical logs were unavailable as of the 21 November 2011 (Figure 2). One (1) drill hole, NDH-03, was excluded from the model because the data was inconsistent with adjacent drilling and redrill hole NDH-04.
- A total of 21 holes were geophysically logged.
- All 25 drill holes were cored by diamond drilling.
- The assigned minimum mining thickness was 0.5 metres.
- A maximum depth of 500 metres was adapted for the purpose of establishing a global Coal Resource.

The resource type category used to determine the confidence level for all points of observation are summarised in Table 1.

Drill holes were classified as valid points of observation for determining resource status if the following criteria were achieved:

- The entire seam was cored;
- Core recovery for the seam was ≥95%;
- The drill hole was geophysically logged.

All criteria are Moderate (Table 1) therefore search radii for Indicated and Inferred categories were deemed to be respectively 500m and 1000m. Cut off parameters used to estimate resources are summarised in Table 2.

The method of Inverse Distance Squared (ID<sup>2</sup>) was used to estimate the volume and quality of the coal seams. Search ellipses were orientated parallel to the coal seams i.e. conformable to the sedimentary basin.

The in situ Relative Density (RD) factor was calculated from laboratory measured Relative Densities (RD) using the Preston Sander Formula.

**Table 1 - Resource Type Category**

| CRITERIA               | SIMPLE | MODERATE | COMPLEX |
|------------------------|--------|----------|---------|
| Sedimentary setting    |        | √        |         |
| Structural setting     |        |          | √       |
| Coal quality variation |        | √        |         |

**Table 2 - Cut Off Parameters**

| CUT OFF PARAMETER                             | CSA  |
|-----------------------------------------------|------|
| Minimum coal seam thickness                   | 0.5m |
| Maximum coal seam internal dilution (parting) | 0.1m |
| Minimum Seam Calorific Value Kcal/kg (% adb)  | 3500 |
| Coal seam cut by base of weathering (BOW)     | YES  |

The Nuurst coal resources have been classified and reported in accordance with the 2004 Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (JORC Code). Resource classification is based on confidence in the geological domaining, drill spacing and geostatistical measures.

A range of criteria has been considered in determining the classification including:

- Geological continuity;
- Data quality;
- Drill hole spacing;
- Modelling technique;
- Estimation parameters including search strategy, number of samples, and average distance to samples to blocks.

Based upon these considerations coal resource categories Indicated and Inferred were defined. A minimum of 2 points of observation were required to classify coal resources. The classification process was based upon interpolation distance and minimum samples within the search ellipse as defined by a Minescape macro as follows:

- **Inferred** – if the average weighted sample distance was greater than 500m and less than 1000 m ( Radius 1000m);
- **Indicated** - if the average weighted sample distance was less than 500m (Radius 500m)

## Coal Resource Estimation

Total resources for Nuurst to a depth of 500m are estimated to be 489.3 Mt of which 417.4 Mt is Indicated, and 71.9 Mt is Inferred (Tables 3 & 4 ).

All coal quality data has been modelled on an air dried basis (adb). Relative density and tonnage have been converted to an *in situ* basis using the Preston Sanders Formula. All quality have been modelled on a ply-by-ply basis and then combined into seam composites.

The coal resource area contains 81 seams in 3 seam groups (Group A, Group B and Group C), varying in thickness from 0.06m to 56.49m. (Appendices 1 and 2)

**Table 3 - Nuurst Coal *in situ* Resources (Minescape Model)**

| CATEGORY/<br>DEPTH     | VOLUME<br>(X1000<br>BCM) | MASS<br>(X1000<br>Tonnes) | Seam<br>Minimum<br>True<br>Thickness<br>(m) | Seam<br>Maximum<br>True<br>Thickness<br>(m) | Seam<br>Average<br>True<br>Thickness<br>(m) | Number of<br>Seams |
|------------------------|--------------------------|---------------------------|---------------------------------------------|---------------------------------------------|---------------------------------------------|--------------------|
| <b>INDICATED</b>       | <b>305,657</b>           | <b>417,410</b>            | <b>0.6</b>                                  | <b>27.3</b>                                 | <b>10.6</b>                                 |                    |
| M100                   | 30,674                   | 40,972                    | 0.6                                         | 26.7                                        | 10.4                                        | 44                 |
| M200                   | 76,815                   | 104,389                   | 0.7                                         | 28.5                                        | 11.9                                        | 48                 |
| M300                   | 87,915                   | 121,278                   | 0.6                                         | 30.0                                        | 10.4                                        | 48                 |
| M400                   | 65,149                   | 89,805                    | 0.6                                         | 24.3                                        | 9.5                                         | 38                 |
| M500                   | 45,104                   | 60,966                    | 0.5                                         | 24.6                                        | 10.9                                        | 30                 |
| <b>INFERR</b>          | <b>51,767</b>            | <b>71,841</b>             | <b>0.7</b>                                  | <b>18.4</b>                                 | <b>8.4</b>                                  |                    |
| M100                   | 4,696                    | 6,492                     | 0.6                                         | 18.3                                        | 6.7                                         | 17                 |
| M200                   | 6,423                    | 8,904                     | 0.6                                         | 15.9                                        | 6.4                                         | 18                 |
| M300                   | 6,842                    | 9,482                     | 0.5                                         | 17.1                                        | 9.2                                         | 21                 |
| M400                   | 10,231                   | 14,152                    | 0.8                                         | 18.1                                        | 9.8                                         | 19                 |
| M500                   | 23,576                   | 32,810                    | 0.7                                         | 19.5                                        | 8.5                                         | 21                 |
| <b>Grand<br/>Total</b> | <b>357,424</b>           | <b>489,251</b>            | <b>0.6</b>                                  | <b>26.0</b>                                 | <b>10.3</b>                                 |                    |

**Table 4 - Nuurst Coal Quality Resource Summary (Minescape Model)**

| CATEGORY/<br>DEPTH | TM           | IM           | ASH          | VM           | FC           | TS          | CV          |             |             |
|--------------------|--------------|--------------|--------------|--------------|--------------|-------------|-------------|-------------|-------------|
|                    | %ar          | %adb         | %adb         | %adb         | %adb         | %adb        | %adb        | %db         | %daf        |
| <b>INDICATED</b>   | <b>31.44</b> | <b>25.19</b> | <b>13.84</b> | <b>36.26</b> | <b>24.60</b> | <b>0.91</b> | <b>4087</b> | <b>5960</b> | <b>6702</b> |
| M100               | 35.68        | 28.42        | 13.25        | 35.67        | 22.67        | 0.78        | 3918        | 6091        | 6716        |
| M200               | 33.06        | 26.84        | 13.57        | 35.74        | 23.37        | 0.84        | 3966        | 5924        | 6655        |
| M300               | 30.74        | 24.63        | 14.25        | 36.39        | 24.73        | 0.91        | 4092        | 5908        | 6695        |
| M400               | 29.69        | 23.62        | 14.38        | 36.52        | 25.48        | 0.98        | 4160        | 5916        | 6710        |
| M500               | 29.78        | 23.58        | 13.07        | 36.87        | 26.48        | 1.05        | 4287        | 6105        | 6768        |
| <b>INFERRED</b>    | <b>29.38</b> | <b>22.91</b> | <b>13.44</b> | <b>36.96</b> | <b>26.70</b> | <b>0.96</b> | <b>4264</b> | <b>6039</b> | <b>6699</b> |
| M100               | 28.74        | 22.06        | 14.50        | 35.82        | 27.62        | 0.98        | 4219        | 5921        | 6651        |
| M200               | 28.99        | 22.42        | 14.22        | 36.31        | 27.05        | 0.96        | 4227        | 5952        | 6671        |
| M300               | 29.29        | 22.99        | 13.16        | 36.46        | 27.39        | 0.95        | 4275        | 6045        | 6695        |
| M400               | 29.35        | 22.89        | 13.34        | 36.79        | 26.98        | 0.99        | 4265        | 6036        | 6687        |
| M500               | 29.66        | 23.19        | 13.14        | 37.57        | 26.09        | 0.94        | 4280        | 6085        | 6723        |
| <b>Composite</b>   | <b>31.14</b> | <b>24.85</b> | <b>13.78</b> | <b>36.36</b> | <b>24.91</b> | <b>0.92</b> | <b>4113</b> | <b>5972</b> | <b>6701</b> |

Notes: TM – total moisture

IM – inherent moisture

ASH – ash content

VM – volatile matter

FC – fixed carbon

CVadb

M100 – Interval depth 0m-100m below topographic surface

M200- interval depth 100m-200m below topographic surface

M300- interval depth 200m-300m below topographic surface

M400- interval depth 300m-400m below topographic surface

M500- interval depth 400m-500m below topographic surface

TS – total sulphur

CV – calorific value

adb – air dried basis, laboratory report

db – dry basis, calculation,  $db = [100/(100-IM)] \times CVadb$

daf – dry ash free, calculation,  $daf = [100/(100-IM-ASH)] \times CVadb$

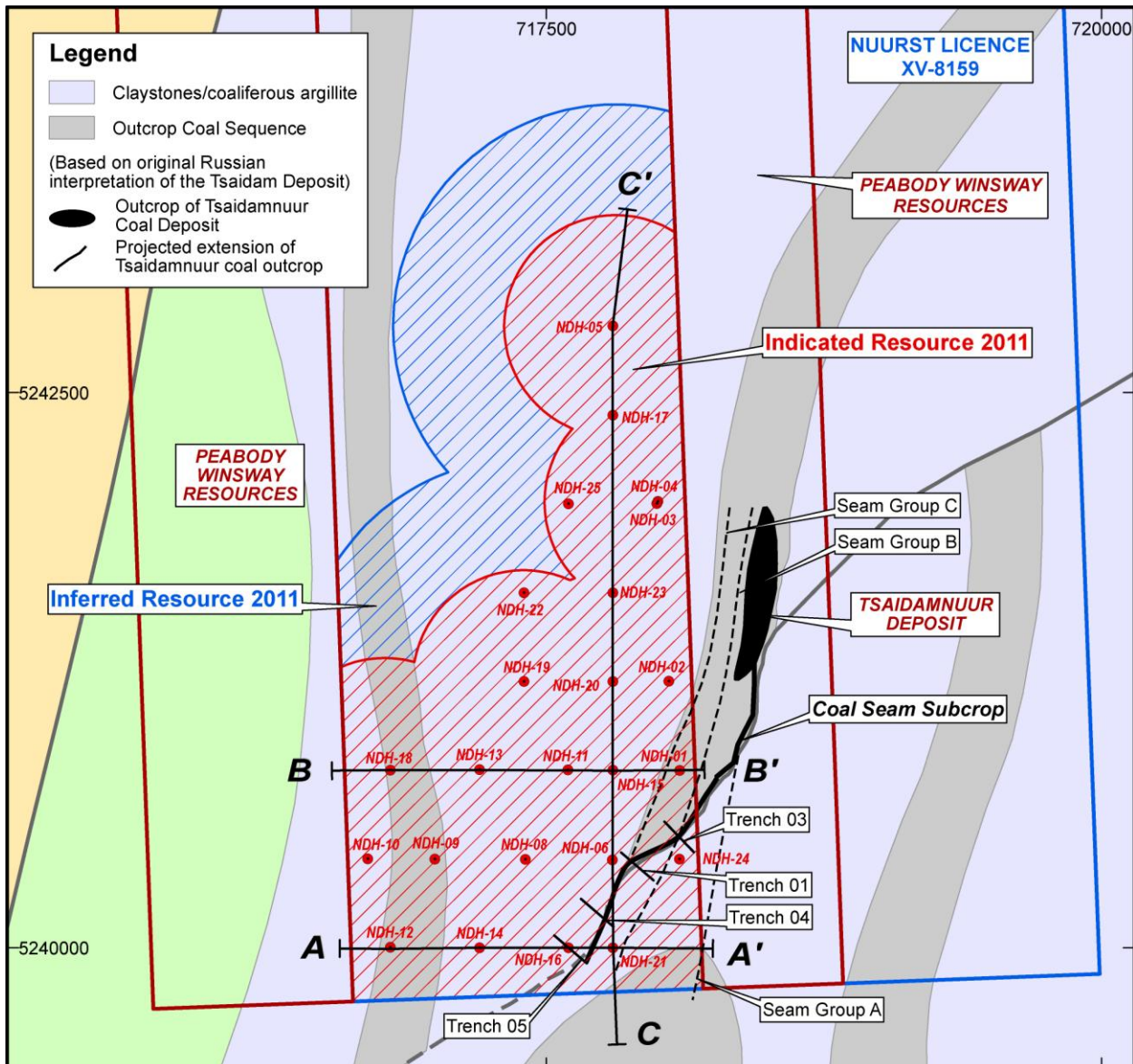


Figure 4 – Nuurst Project Geology and 14000 Seam Resources Category

## Recommendations

CSA recommends that Modun should consider the improving the quality of the NP geological model and resource estimate by undertaking the following activities:

- The collection of basic geotechnical data as part of the core logging procedure to assist in identifying offsetting faults.
- Topographic ground surveys must be conducted to obtain an accurate digital terrain model (DTM) for the resource model.
- Seam splitting is common in the NP area. Continuing the 400m x 400m drill pattern and selected 200m x 200m infill drilling is highly recommended.
- A detailed geotechnical study is recommended.
- A detailed hydrology study is recommended to better understand the ground water regime.

- Washability test work should be considered to determine if coal washing can successfully reduce the ash content and thereby increase the coal calorific value.
- Shallow high resolution seismic lines across the syncline structure to check for throw faults along the flanks of the syncline.

### **Competent Person Statement**

*The information in this report that relates to Mineral Resources is based on information compiled by Mr Dwiyoiko TU. Taruno who is a member of the Australasian Institute of Mining and Metallurgy.*

*Mr Dwiyoiko TU. Taruno has sufficient experience relevant to the style of mineralisation and type of deposit under consideration and to the activity which he is undertaking to qualify as a Competent Person as defined in the 2004 Edition of the "Australasian Code for Reporting of Mineral Resources and Ore Reserves". Mr Dwiyoiko TU. Taruno consents to the inclusion of such information in this report in the form and context in which it appears.*

*The information in this announcement that related to exploration results is based on information obtained from the vendor and Cadastral archives in Mongolia and recent drilling and trenching activities on site. This information has been reviewed by Mr Geoff Richards of CSA Global Pty Ltd, Western Australia. Mr Richards is a member of the Australian Institute of Geoscientists and has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity which he is undertaking to qualify as a competent person as defined in the 2004 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves'. Mr Richards consents to the inclusion in the report of the matters based on his information in form and context in which it appears. Gerry Fahey, is both a Non-Executive Director of Modun Resources Ltd and a Director CSA Global Pty Ltd.*