

### **ASX Release**

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**Issued Capital:** 242.1 million shares

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# MAJOR COKING COAL PROJECT ACQUISITION

# **HIGHLIGHTS**

- Acquisition of Rio Tinto Minerals Development Limited's 70% interest in the Altai Nuurs Coal JV Project located in the Gobi Altai Province of south western Mongolia.
- Preliminary test work indicates a premium hard coking coal fraction with the following average parameters:
  - Moisture (%ad): 1.6%
  - Ash (%ad): 10.7%
  - Volatile matter: 18%
  - Calorific Value (Kcal/kg ad): 7,460
  - > CSN: 8.5
  - **Total Sulphur (%ad): 0.48**
  - Phosphorous (%ad): 0.017
  - Alkalinity Index: 0.56
  - Coke Strength Ratio: +70
- Exploration Target\* based on drilling, coal test work and wire frame modelling of between 250Mt and 500Mt. Hunnu Coal will commence JORC modelling at once.
- > 19,437 metres for 107 RC and core drill holes completed.
- > Major drilling programmes planned for 2011.
- Granted Mining Licences with a Fast Track development scenario.
- > Preliminary open cut modelling potentially indicates a low strip ratio of 3.5:1.
- Close proximity to sale points at either mine gate or trucked approximately 250km by road to the Burgastai border crossing into China.
- > This is a major acquisition for Hunnu Coal and represents a clear future growth path for the Company.
- Hunnu Coal has 413Mt of JORC reported Coal Resource across its other projects and has become one of the major explorers for coking and thermal coal deposits in the World Class coal provinces of southern Mongolia.
- > The Company intends to continue its aggressive exploration and acquisition efforts and with the support and expertise of its Strategic Partner Banpu PCL, move from exploration to mine development and then into production, all within this year.

# Summary

The Company is extremely pleased to announce that it has acquired, through its subsidiary Hunnu Investments Pte Ltd, Rio Tinto Minerals Development Limited's subsidiary that has a controlling interest in the Altai Nuurs Coking Coal JV Project through:

- 70% of RioAD LLC, holder of 2 licences in the Gobi Altai.
- 70% of Rio Gobi LLC, holder of 8 licences in the Gobi Altai.

The Altai Nuurs Project comprises six exploration licenses totalling 46,212ha and four mining licenses totalling 202ha with an Exploration Target\* of between 250Mt and 500Mt.

Preliminary test work indicate the coking coal parameters compare favourably with similar coking coal projects elsewhere in the world.

Parameter	Altai Nuurs (HUNNU COAL JV)	Tavan Tolgoi	Moatize (BHP-B)	Peak Downs (BHP-B)
Moisture (% ad)	1.6	n/a	n/a	1.0
Ash (% ad)	10.7	7.8	10.5	9.7
Volatile Matter (% ad)	18.0	26.5	22 – 25	20.5
Cal. Val. (kcal/kg, ad)	7,460	7,770	~7,400	n/a
Crucible Swelling No.	8.5	8	8	8.5
Total Sulphur (% ad)	0.48	0.39	0.8 – 0.9	0.6
Phosphorous (% ad)	0.017	0.06	0.08 - 0.10	0.04
Alkalinity Index	0.56	0.65	n/a	0.66
Coke Strength Ratio	>70 (est)	65 (est)	> 65	74

Table 1: Comparison of key parameters of coal from RC drilling at Altai Nuurs to other coal deposits.

## **Consideration to Rio Tinto**

\$23m cash payment on signing and a further \$17m in deferred payments.

## **Background**

The Altai Nuurs Project is located in the south western Gobi Altai Province of Mongolia (Map 1), approximately 250km by road to the Burgastai border crossing point into China and only 550km to the China rail network (Map 2). Earn-in options were negotiated with two local companies to acquire through exploration and staged payments 70% of the project.



Map 1: Altai Nuurs project map



Map 2: China rail network

Drilling programs completed between 2006 and 2010 totalled 29 diamond drill holes for 6,943 metres and 78 reverse circulation drill holes for 12,494 metres.





Map 3: Drill hole layout for Blocks 1, 2 and 6

Drilling results demonstrate that coal seams are developed over at least 4 km strike and comprise folded and tectonised units. Both structural thickening (in hinge zones) and attenuation (on limbs) are apparent, but the seams are difficult to trace laterally with the current density of drilling. The coal itself comprises a mixture of bright and dull bands interbedded with sandstones and abundant carbonaceous shales. The coal seams vary in thickness from centimetre to decametre scale (apparent).

While the work completed to date has only allowed the definition of a preliminary geological model, it has demonstrated the presence of potentially economic yields over a coherent geographical area. An Exploration Target\* of 250Mt to 500Mt has been determined by Hunnu Coal.

Preliminary test work indicates that coking coal yields average 23.2% at 10.2% ash content, while a further 25% is available as a 22% ash premium thermal product. Limited bulk sampling in order to develop coal specification sheets has been completed. In addition, monitoring programmes for climate, flora and fauna and hydrogeology have been performed and will form the baseline for measuring any future activities within the area.

### **Coal Test Work**

Selected float-sink relative density (RD) cut offs of 1.40, 1.50 and 1.60 are taken as approximate proxies for coking coal, premium thermal and middlings coal products respectively. It should be noted that ash contents at each RD may be quite variable between individual seams and in some cases individual plies, with some returning low ash even at F1.6.

158 individual seam intercepts with an aggregated apparent thickness of 616.1m were intersected including 51 coking coal seams with apparent thickness of 207.2m at 24.2% yield for 10.2% ash and 146 thermal coal seams with an apparent thickness of 566.7m at 27.7% yield for 22.1% ash. Note that 39 of the seam intercepts contain both coking and thermal coal fractions, consequently, the sum of the individual apparent thickness and seam counts does not equate to the combined total. Further, although identified as seam intercepts, for the most part there has not been any established geological correlation between individual seam intercepts thus reflecting the potential significant number of seams in the sequence. Although attempts were made to drill at as obtuse angle as possible to the bedding, this was not always possible and consequently all thicknesses must be considered as apparent thickness only.

Although the market generally expects coking coals to have ash contents of less than 10%, some coals are marketed at higher ash contents because of their specific coking properties. At Altai Nuurs, the excellent coking properties, low sulphur and phosphorous of the coals suggests that significantly higher ash contents may still be marketable.

Similarly, coals with up to 30% ash have still produced coke swelling numbers (CSN) of 9. Although higher ash coals at Altai Nuurs do not universally show such high CSN's, their occurrence does support the potential for a marketable >10% ash coking coal product. Similarly with the premium thermal fraction the relatively high CV and good chemistry of this fraction supports potential for a marketable >22% ash product.

The distribution of potential coking, premium thermal and middling products from Altai Nuurs is similar throughout Blocks 1, 2, 5, 6 and 8 (Figure 1) with relatively equal portions of coking (at ~10% ash) and premium thermal (at ~22% ash) for a combined yield of 40-50%. The one notable exception to this is RC27 for which the combined coking and thermal yields account for 75%.



Figure 1: Distribution of coking and thermal yields within the area of interest.

Air dried moisture varies from 1.4% to 18% across all fractions, although more typically averages 1.6%. This value is consistent with other indicators on the rank of the coal; the higher values are indicative of oxidation of coal seams at relatively shallow depths. Volatile matter (VM) in the RD1.4 fraction shows a variation from around 15% to around 30% (Figure 2). This variation is mostly attributable to coal rank variations across the deposit, with the highest rank coals in the north east and lowest rank in the south west. It is possible that some variation might be due to coal lithotype, although this would be less significant.

A more detailed study of coal rank variation seam-by-seam and hole-by-hole has been completed, however the histograms below show that most of the intersections fall into the prime category of low- to medium-volatile coking coals.







Figure 2: Histograms of ash and yields in different float fractions from the Altai Nuurs 2008 drilling program.

On a dry, mineral matter free (dmmf) basis, the calorific values range form 8,500 - 8,800 kcal/kg (Figure 3). This is a function of rank and is consistent with the variations observed in volatile matter; such values lie within the prime coking coal rank range.

In addition there are high dmmf calorific values within the thermal coal fractions, despite medium to locally high ash values. The majority of the F1.5 coal falls within the range of 7,000 - 7,500 kcal/kg (Figure 3).



Figure 3: Histograms of calorific values in different float fractions, Altai Nuurs.

The crucible swelling number (CSN) values obtained for the F1.40 fractions are consistent with the corresponding volatile matter values and calorific values, except where weathering is apparent (and as a result samples have little or no caking properties). Only medium and low-volatile coking coals can have CSN values greater than 8, of which a high proportion of the Altai Nuurs coal falls into that category. Lower values correspond to shallow weathered intersections.



Figure 4: Histograms of crucible swelling numbers in different float fractions, Altai Nuurs. Note no clipping of data for high-ash fractions undertaken

As shown in Figure 5, approximately half of the analyses lie within the low phosphorous range (<0.02% P), with the other half in the low to medium phosphorous range (0.02% - 0.04% P). Significantly, only 3 samples returned >0.1% phosphorous of which two are within the "premium thermal" population, with only one within the "coking coal" population.



Figure 5: Phosphorous (in coal) calculated for coal samples, Altai Nuurs.

The distribution of phosphorous in different float fractions shown in Figure 6 demonstrates that phosphorous in coal is low within the coking (F1.4) fraction, with typical values of 0.02% P. This is only slightly increased in the thermal (F1.5) fraction.



Figure 6: Phosphorous (in coal) by float fraction, Altai Nuurs

Sulphur is present in coal in three forms; organic sulphur, pyritic sulphur, and as sulphates. The forms of sulphur were not analysed during this programme, although will be carried out in future programmes on diamond core, which will allow more discriminant analysis. Nevertheless, the skewed distribution of sulphur into the less dense fractions (refer Figure 8) suggests that most of the sulphur is organic and concentrated in the least dense fraction.

During logging, rare disseminated grains of pyrite were noted within the coal and in the immediate margins of the coal seams within the host rock. However, nowhere was this seen to be more than 0.5%. In more than 1,000 analyses completed for all fractions, the distribution of sulphur is remarkably consistent (refer Figure 7). While the form of sulphur is likely to be organic at an average of 0.6% elemental sulphur, it will not be problematic in acid generative capacity or in emission pollutants during burning or in coke consumption rates in steelmaking.





Figure 7: Distribution of S for coal samples, Altai Nuurs



Given this general uniformity in ash chemistry, "typical" data is presented in Table 1. A high proportion of metal oxides may result in low ash fusion temperatures, causing slagging and fouling for thermal coals and raising coke reactivity leading to low coke strength in blast furnaces. A measure of this is the Alkalinity Index (AI) and values of AI up to 1.0 have little effect on coke reactivity (CRI) coke strength (CSR) indices, but coke strength drops off drastically for values above 1.0.

Element	Average Value
$SiO_2(\%)$	80.2
$Al_2O_3(\%)$	11.36
$Fe_2O_3(\%)$	1.27
$P_2O_5(\%)$	0.287
$TiO_2(\%)$	1.16
CaO (%)	0.84
MgO (%)	0.39
$K_2O(\%)$	2.01
$Na_2O(\%)$	1.25
$Mn_{3}O_{4}(\%)$	0.01
BaO (%)	0.08
SrO (%)	0.06
ZnO (%)	0.00

Table 1: Metal oxide chemistry of ash, Altai Nuurs (percussion drilling).

While there is a clear positive relationship between ash content and alkalinity index (Figure 9), the average AI value for the F1.40 fraction was about 0.75%, with a majority less than the critical 1.0 value (Figure 10). This increases to 1.0 in the F1.5 float fraction (Figure 10), chiefly owing to higher ash. There is little change in the relative proportions of alkaline and acid constituents. Nevertheless, coke strength and reactivity does not play a role in this nominal "thermal coal" fraction.

Given that sampling variance will most likely account for most of the variation, the ash analyses indicate that the coking fraction has a sufficiently low AI at Altai Nuurs.



Figure 9: Alkalinity Index calculated for coal samples, Altai Nuurs,



Figure 10: Alkalinity Index by float fraction (F1.4, F1.5), Altai Nuurs

# Bulk Sampling

Two bulk samples were taken from the existing pits. The sample from the eastern (Hujirt) pit was cut approximately 9m long at the base of the pit and approximately 2m from each wall of the pit. The trench was excavated to a depth that varied from 3.4m (in the southern part of the trench) to a minimum of 1.8m (in the northern part of the trench).

A second sample was taken from the Western pit. Owing to safety concerns, no access was available in the main pit, so a secondary pit to the north was used.

Preliminary tests were undertaken on a sub-sample of each drum to determine whether the samples were unoxidised and suitable for the carbonisation testwork, consisting of CSR (Coke Strength after Reaction) and CRI (Coke Reactivity Index), and to indicate whether the clean coal yield is sufficient for these tests.

Only one drum from Hujirt pit proved suitable for further testing, with sufficient clean coal yield and Gieseler Fluidity consistent with coal rank and type, indicating that the coal is unoxidised. Although the Western pit samples had high clean coal yield (around 50%) all samples proved to be oxidised and therefore unsuitable for the CSR testwork.

The carbonisation and associated testwork shows that:

- Hujirt is a prime mid-volatile hard coking coal, with CSR at the high end of the range (65.4).
- The coal has strong caking properties with both a high CSN and Gray-King index (8<sup>1</sup>/<sub>2</sub> and G10)
- Gieseler Fluidity is very high (9,000 ddpm)
- Phosphorus is low (0.024%)
- Alkalinity Index is low (0.74)

The combination of high CSR and high fluidity is exceptional, and reinforces the outstanding quality of Altai Nuurs coking coal. Given that the average Altai Nuurs coal is of low volatile rank, CSR for most of the deposit is expected to be in the order of 70.

A third party consultant noted the Altai Nuurs coals to be generally high in rank, bright, low in sulphur (about 0.6% for a 10% ash product), of variable but low phosphorus (about 0.015% for a 10% ash product), and capable of producing a low ash product with a CSN of 9 and low alkalinity index. In some cases a CSN of 9 was still achieved with an ash as high as 30%. The Seyler's plot showed the rank to be quite variable between bores, with dry, mineral matter-free volatile matter values ranging from about 17% to 33%. The ash analyses showed the ash to have an uncommonly high proportion of free silica.

This is a major acquisition for Hunnu Coal and represents a clear future growth path for the Company. Hunnu Coal has over 413Mt of JORC reported Coal Resource across its Projects and has become one of the major explorers for coking and thermal coal deposits in the World Class coal provinces of southern Mongolia. The Company intends to continue its aggressive exploration and acquisition efforts and with the support and expertise of its Strategic Partner Banpu PCL, move from exploration to mine development and then into production, all within this year.

George Tumur Managing Director

#### **Competent Person Statement**

The information in this report that relates to Exploration Results, Exploration Targets\* and Coal Resources are based on information compiled by Mr George Tumur who is a Member of the Australasian Institute of Mining and Metallurgy. Mr Tumur is the Managing Director of Hunnu Coal Limited. Mr Tumur 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 Tumur consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.

#### **Exploration Target\***

This work has not resulted in the definition of any resource which is compliant with the JORC Code but has identified an Exploration Target. With further exploration, this target has potential for between 250Mt to 500Mt of coal. Hunnu Coal is currently reviewing previous exploration and test work. The potential quantity and grade is conceptual in nature and there has been insufficient exploration to define a Mineral Resource in accordance to the JORC Code. As such it is uncertain if further exploration will result in the determination of a Mineral Resource. Further Hunnu cautions that in order to achieve this target, substantial exploration is required to further geologically map, detect, trench and drill test the defined conceptual target. On this basis, Hunnu considers that further work is warranted beyond that previously conducted.

#### **JORC Resource Summary**

Tsant Uul Deposit

	Tonnes
<b>Resource Category</b>	Mt
Measured	34.3
Indicated	27.7
Inferred	27.7
TOTAL	89.7

Unst Khudag (Har Toirom Deposit)

	Tonnes
<b>Resource Category</b>	Mt
Measured	18.85
Indicated	207.4
Inferred	98
TOTAL	324