

# Bolaven Bauxite Project Progress to 15 May 2008



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Sino Australian Resources (Laos) Co., Ltd

# BOLAVEN BAUXITE PROJECT

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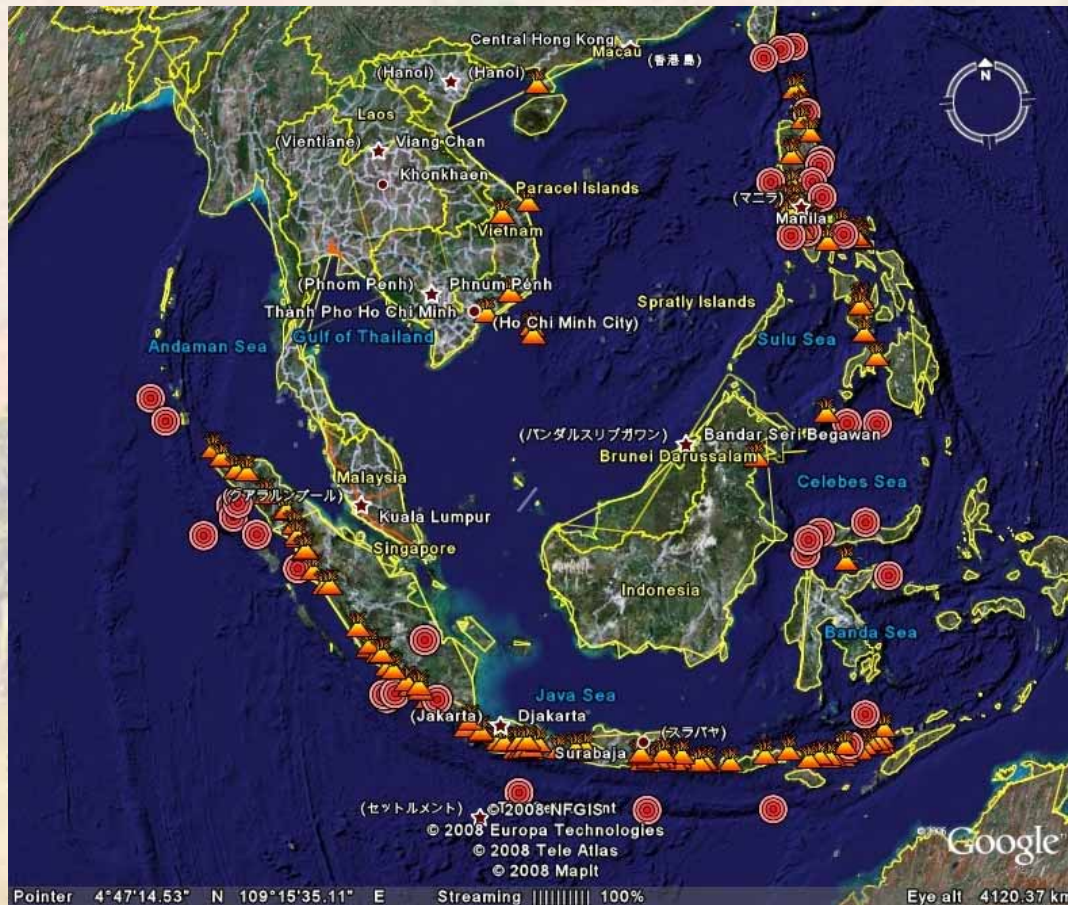


# Bolaven Tenements and SARCO

- SARCO has contractual agreements with the holders of the 138 and Yuqida tenements on the Bolaven Plateau to explore their tenements
- Sarco is a JV company:
- 51% NFC – a major international alumina refinery and aluminium smelter designer, builder and operator
- 49% Ord – an experienced international exploration group with considerable expertise in bauxite, both in house and through its consultants



# Regional Tectonics of Lao PDR



- Lao PDR is located on the Central SE Asia Peninsula
- Subduction zones are located to the south and east of Lao PDR
- Intraplate volcanism is present on the peninsula

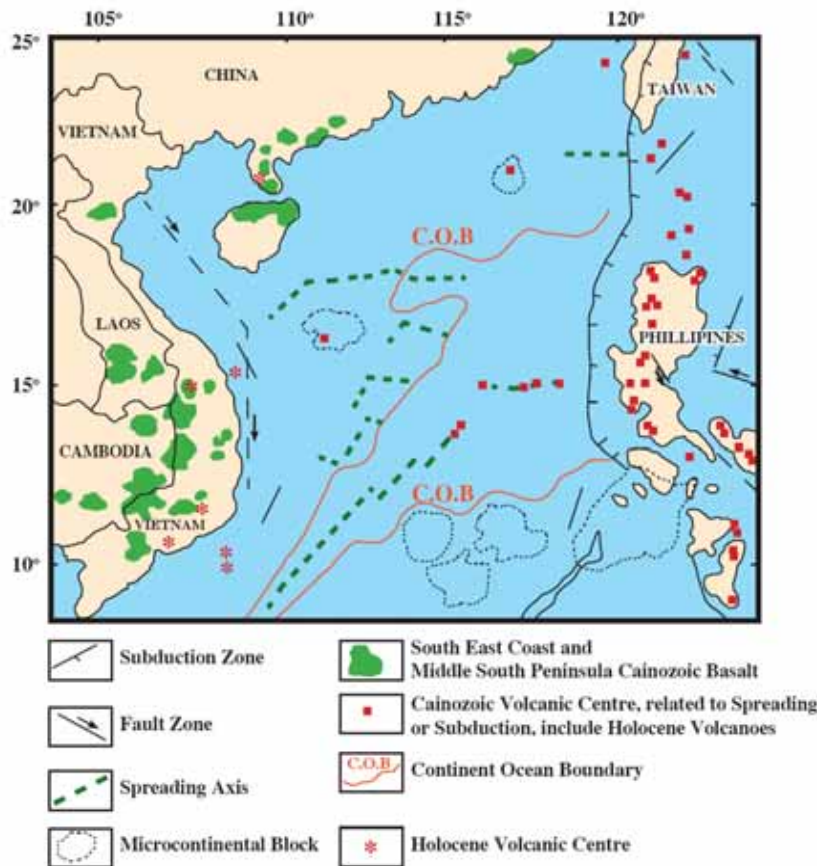




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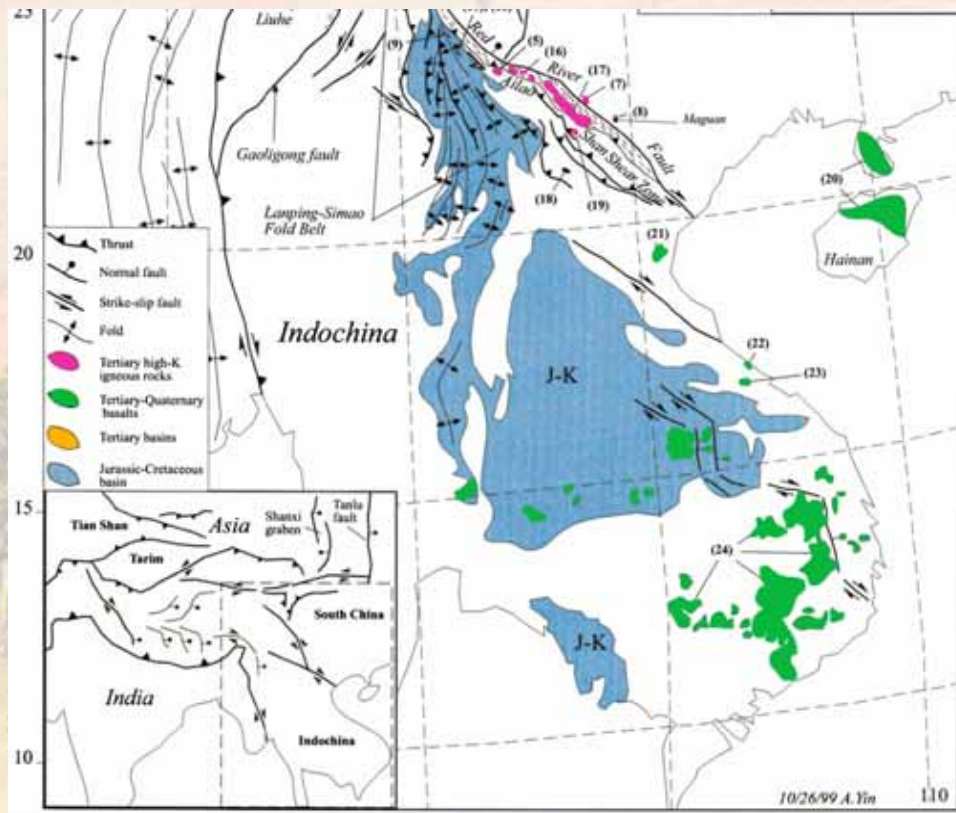
## Central Peninsula Volcanism



- Back arc rifting commenced in the South China Sea about 40 million years ago and ceased about 16 million years ago
- Continental volcanism commenced about 16 million years ago on the South Central Peninsula and is still continuing today
- Volcanism is predominantly basaltic and has been episodic
- The basalts have been very favourable for development of bauxite throughout the region
- A major bauxite province is present in Vietnam, Cambodia and Laos



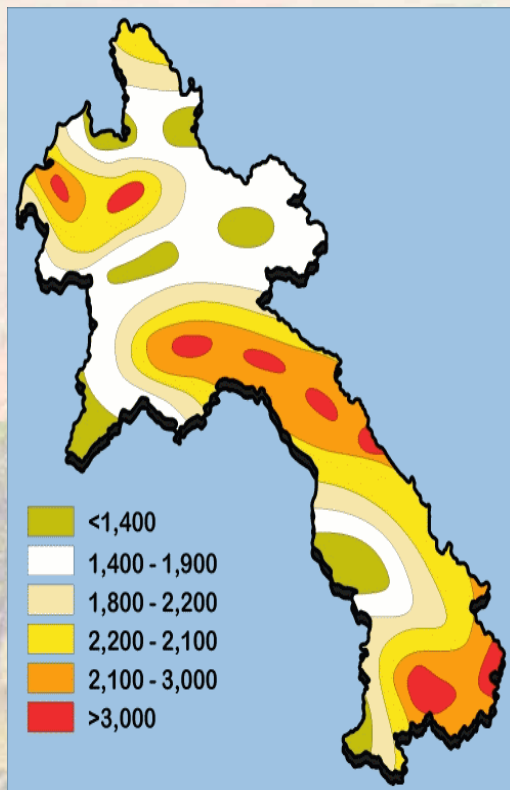
# The Khorat Basin



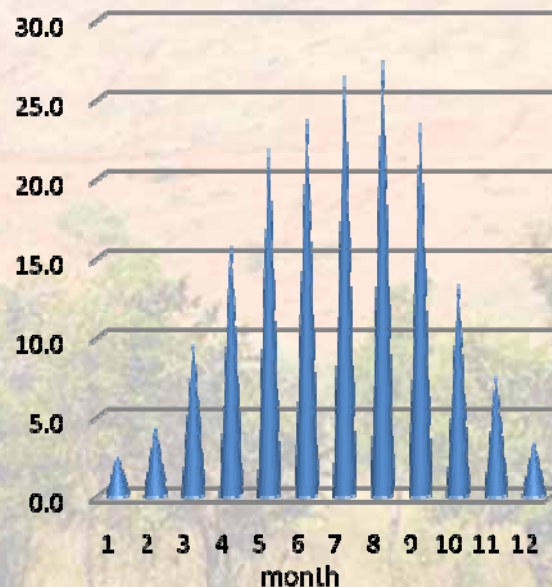
- The Khorat Basin is a continental basin developed following Permo-Triassic orogeny.
- It consists of Triassic marine sequences that became progressively more freshwater in character with time.
- The Khorat Basin underlies the Bolaven Plateau and was gently folded prior to eruption of volcanics in two distinct episodes.
- The youngest volcanism was probably less than 10,000 years ago and is younger than most bauxite formation



# CLIMATE



**Paksong 1997 to 2006  
average Rain Days per  
Month**



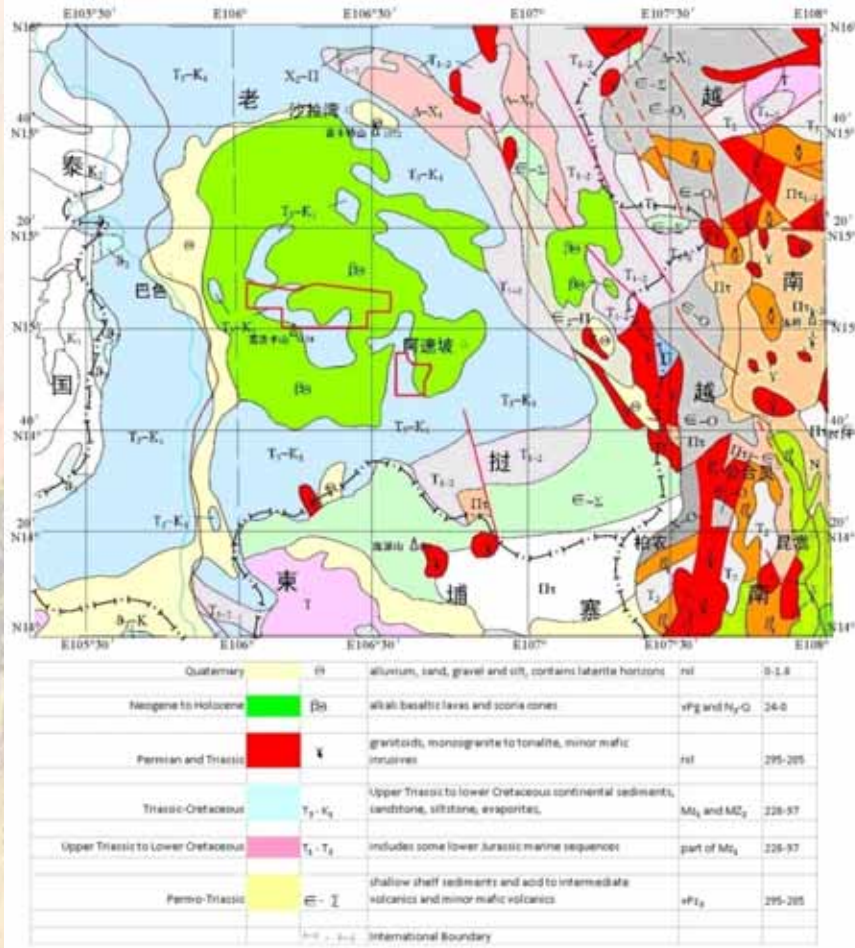
- The Bolaven Plateau is one of the wettest areas of Lao
- There are a large number of rain days per year
- Bauxite needs high rainfall and tropical to subtropical climates to develop



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## Bolaven Geology



- The Bolaven Plateau is dominated by sandstones and siltstones of the Khorat Basin
- A thin but very variable thickness of basalt overlies a dissected pre basalt landscape





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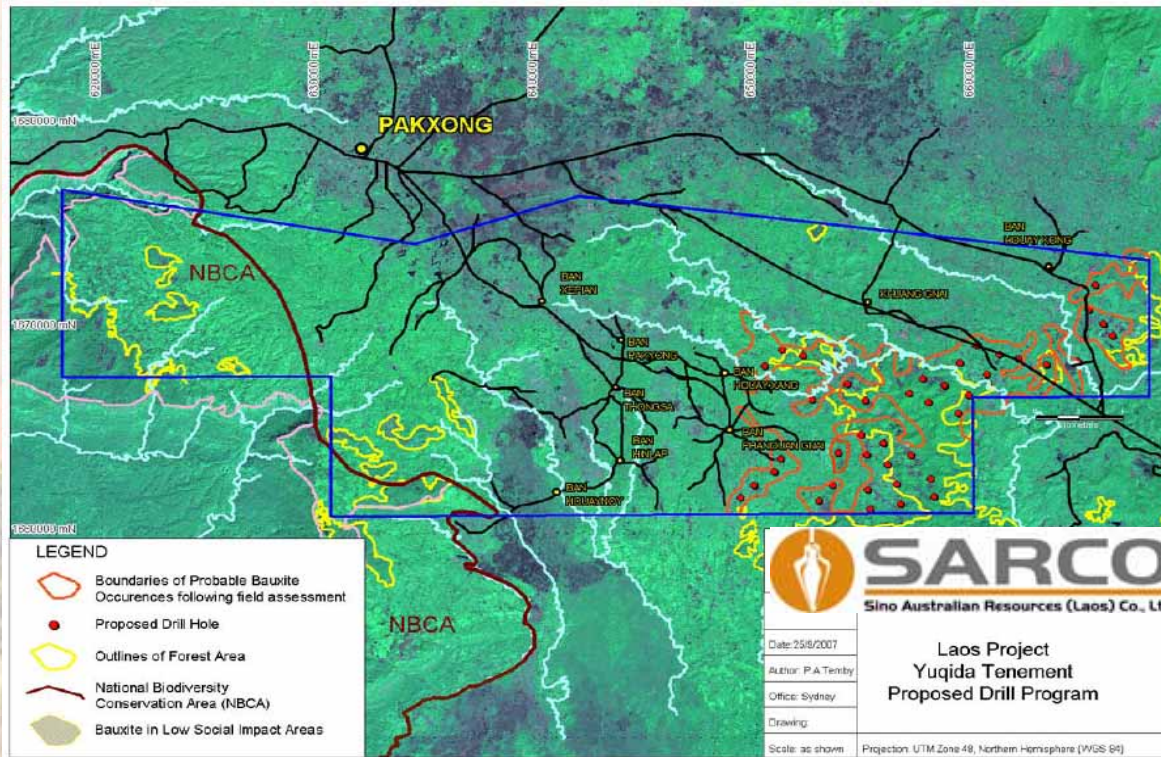
# The Bolaven Volcano



- The original extent of the volcanic complex on the Bolaven Plateau is outlined by both centripetal drainage – Sekong and Mekong rivers, and by radial drainage away from the Paksong area
- Area of preserved basalt is much less than original extent
- The basalts never covered the entire plateau area



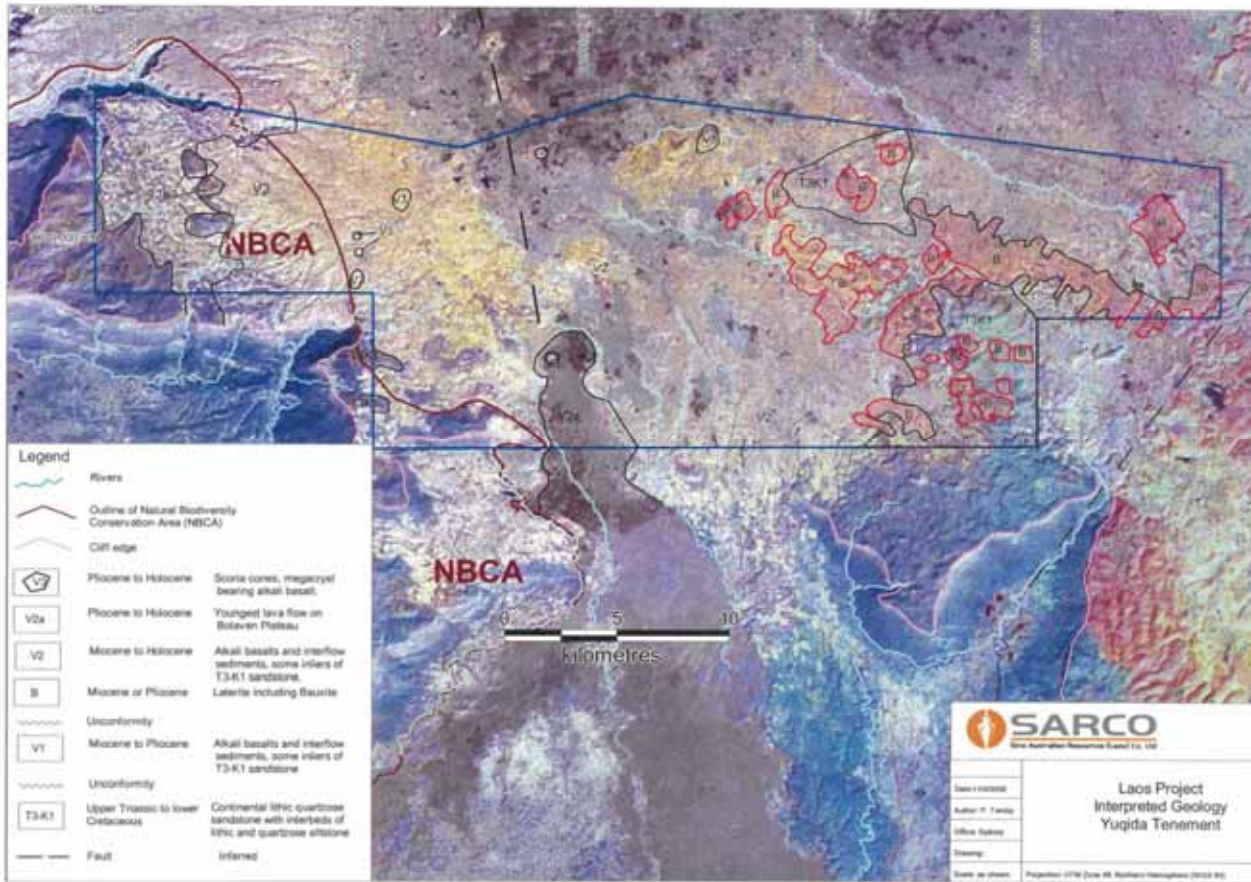
# Satellite Studies



- Initial satellite studies were aimed at defining areas with low intensities of agriculture and at defining bauxite
- Agricultural areas were found to cover most of the Yuqida tenement with small areas of forest still left
- Bauxite was interpreted to be present and an initial drilling program proposed. This program was predominantly designed to look for bauxite in low social impact areas



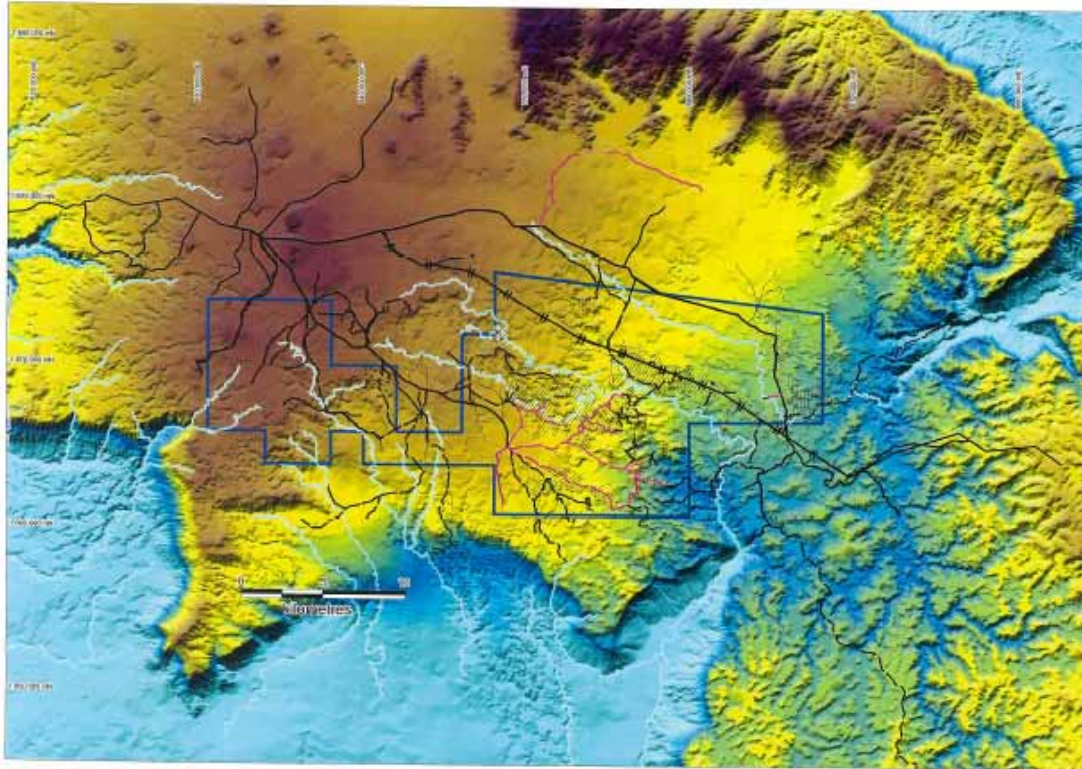
# Satellite Studies



- Aster satellite imagery was interpreted to make a local geological map which has been updated with ground traversing
- Mapped laterite includes substantial amounts of bauxite developed on the older volcanics – V1
- Younger volcanics – V2, partially cover the older volcanics and their laterite weathering surface



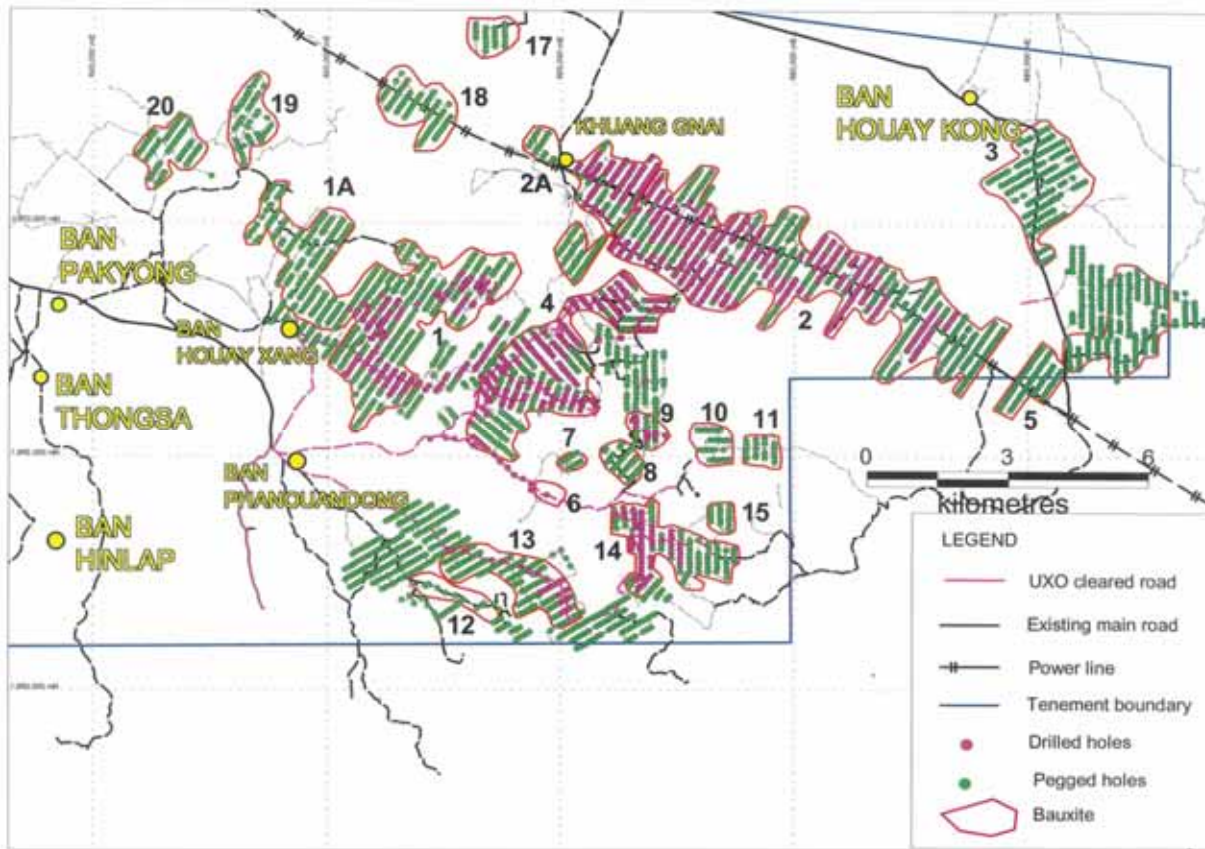
# Topography Studies



- Topography has been very useful to assist in prediction of old surface areas with bauxite potential
- Rough textures indicate older surfaces



# Mapping and Drilling



- Grid mapping was carried out to the edges of bauxite or laterite and drill holes pegged
- UXO clearance was followed by track making and drilling with aircore rigs
- Bauxite boundaries shown are based on mapping and reconnaissance drilling, and will be revised when analyses are interpreted



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## Analyses

- At the 19<sup>th</sup> of February SARCO had received results for only 394 samples in 23 drill holes, with 8,237 samples outstanding.
- As at 22<sup>nd</sup> April SARCO had received 12,830 samples with approximately 9,500 outstanding
- As at 14<sup>th</sup> May SARCO had received 18,004 samples with approximately 9,400 outstanding
- Samples are analysed for Available  $\text{Al}_2\text{O}_3$  and Reactive  $\text{SiO}_2$  which are directly relatable to refinery recoverable alumina and costs.

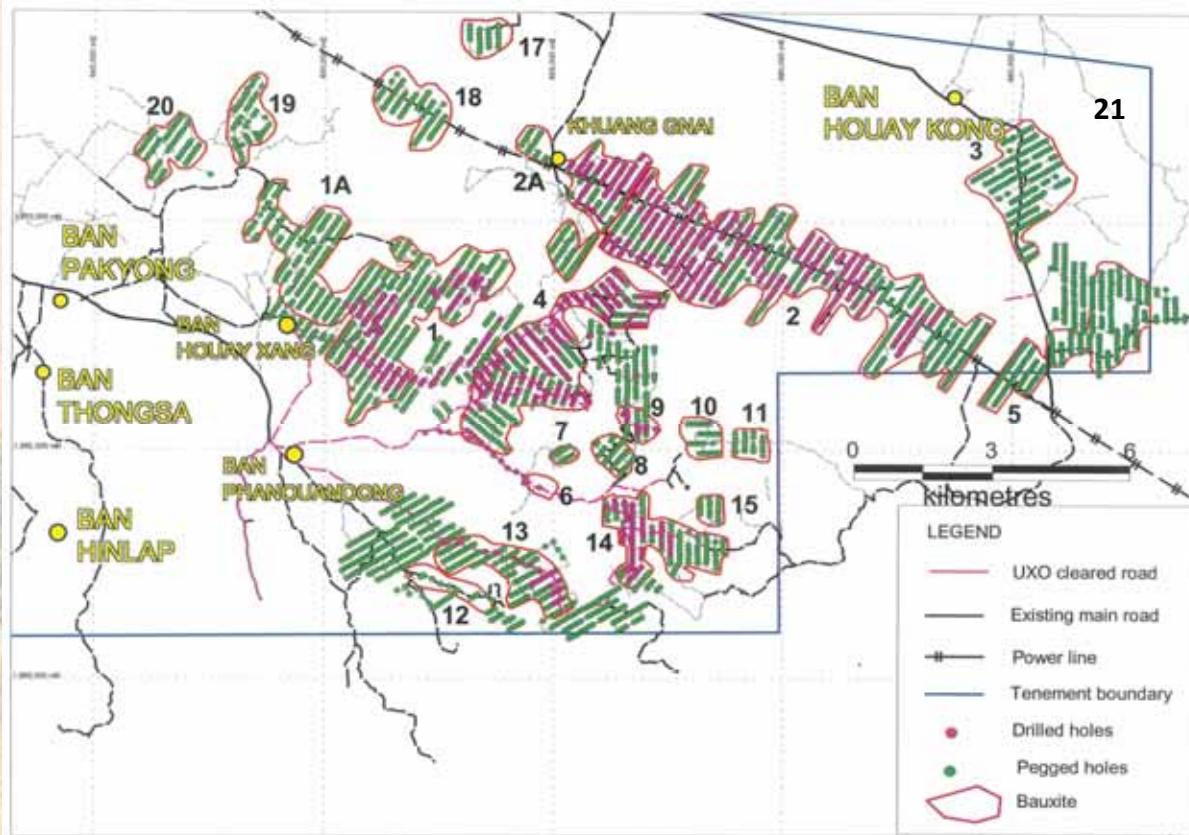




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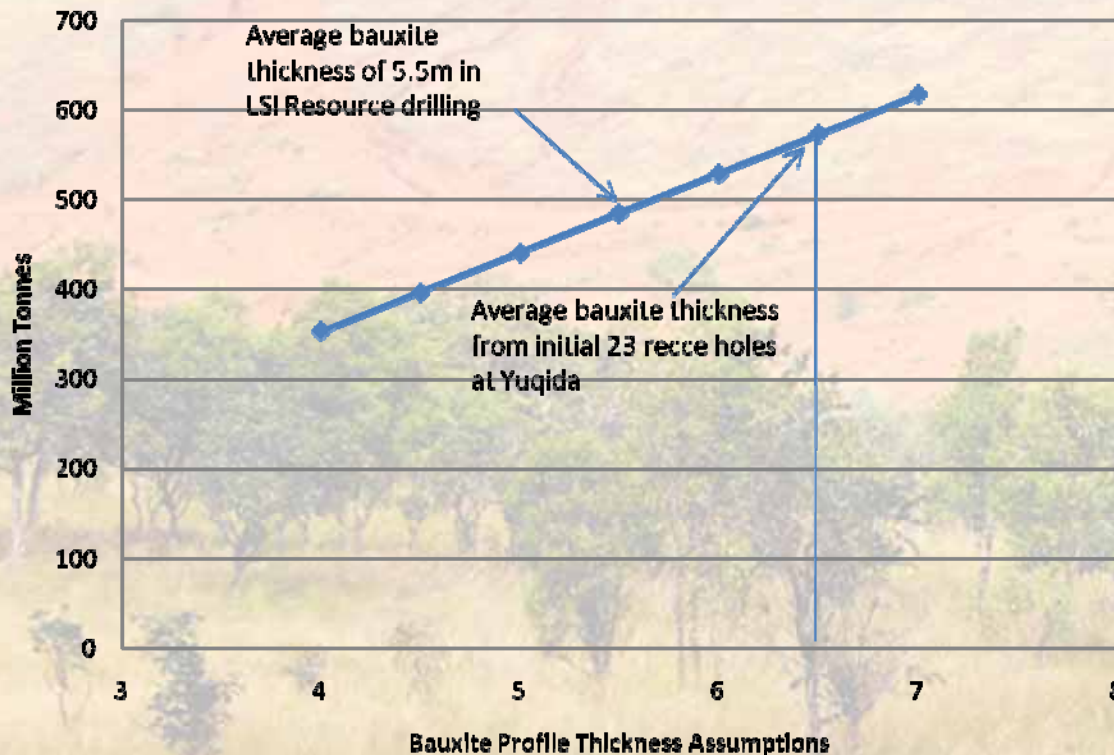
## Exploration Target Estimation



- Exploration target estimation to determine whether a substantial body of bauxite mineralisation may be present.
- Mapping, initial drill results, visual interpretation of drill logs and regional knowledge were used to assess potential present
- The range interpreted on areas 1-15 assuming thickness of 5.0-6.5 metres average was 390-510 tonnes gross, at 19<sup>th</sup> February. This has now been updated to 440-570 million tonnes on areas 1-21 (22/4/08)
- Drilling and analysis results may not confirm these estimates and an economic resource may not be proven to be present

# Yuqida Tenement Exploration Target

## Exploration Target – Yuqida Tenement March 2008



Target may not be proven by drilling and analysis

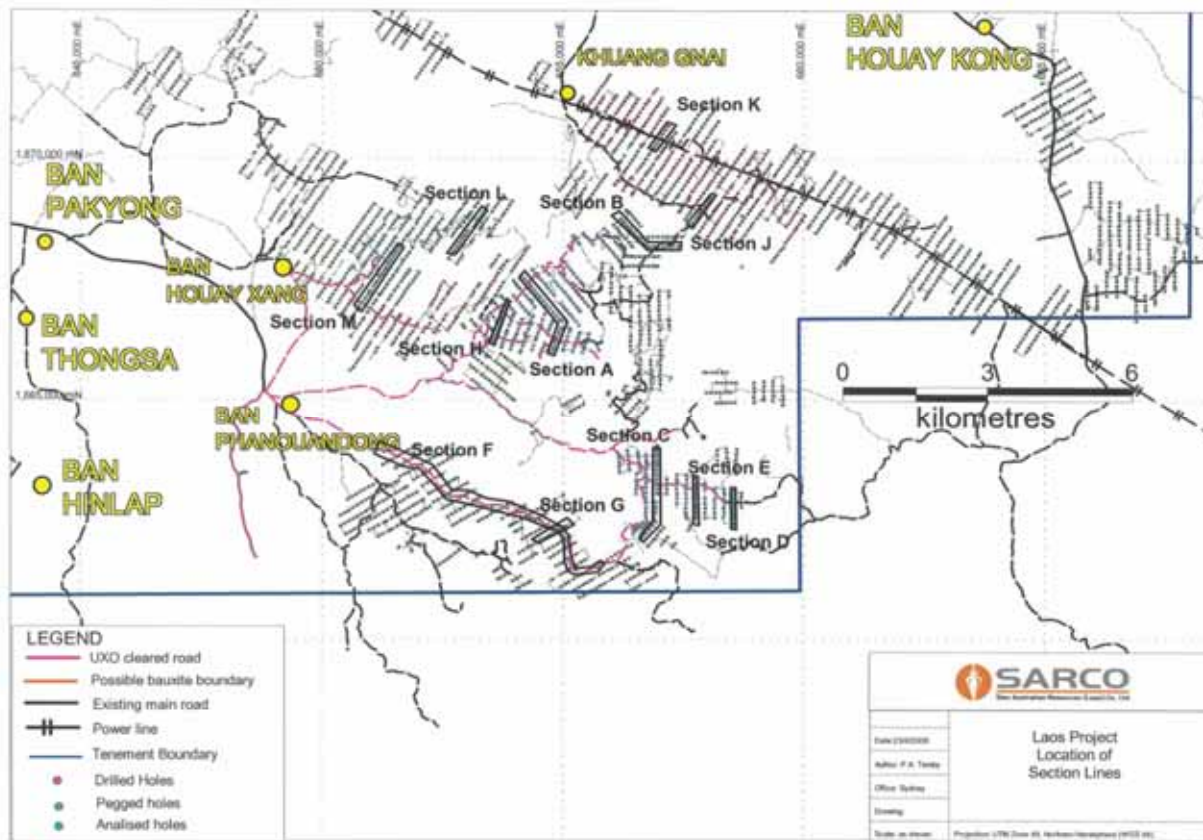
Target is based on surface mapping and reconnaissance drilling and analysis

Target uses data from the 138 area and the 589 area

Thickness assumptions will be revised following analysis and interpretation of all samples.

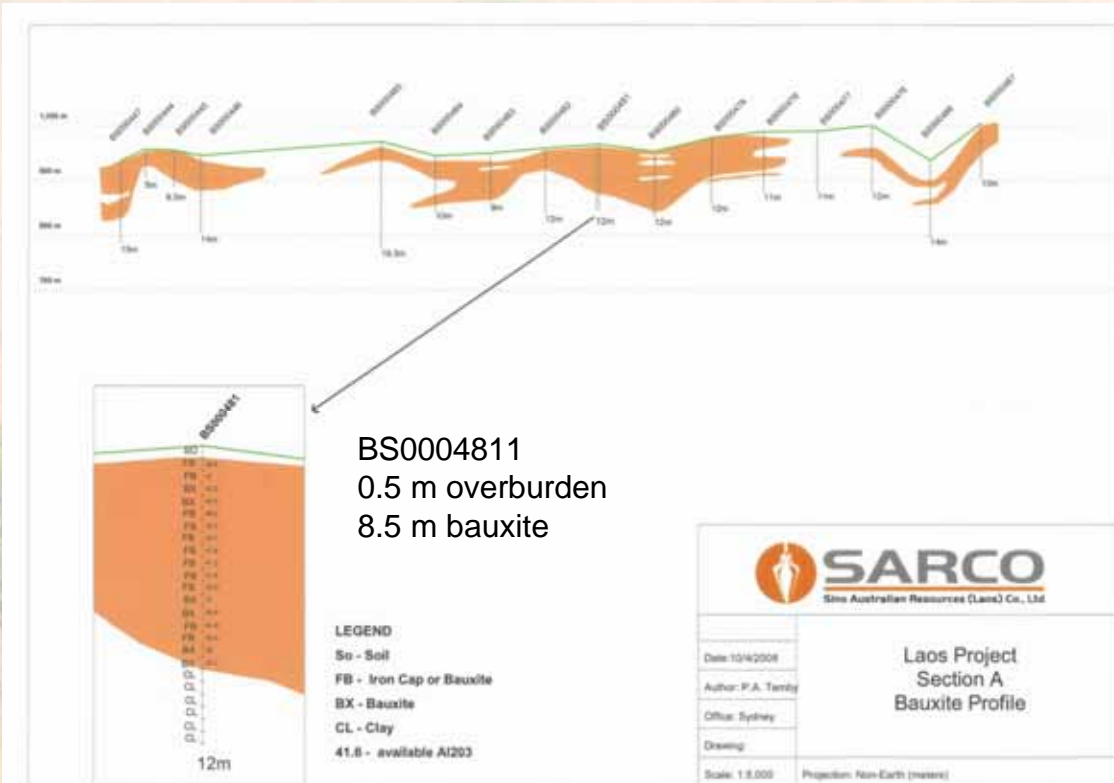


# Drill Section Key Map



- Preliminary sections have been drawn at the locations shown labeled Section A to Section M
- Modeling of the analytical data is in progress and is undertaken using a geologically and topographically controlled program

# Drill Sections



- Section A illustrates typical features of the laterite profile on the Bolaven Plateau. Bauxite is not the total laterite profile present
- Bauxite thickness can vary rapidly due to variable Al<sub>2</sub>O<sub>3</sub> and SiO<sub>2</sub> content.
- Bauxite is defined here by cutoff grades of >27% Av Al<sub>2</sub>O<sub>3</sub> and <5% Rx SiO<sub>2</sub>
- Actual cutoff grades will be determined by modeling and feasibility studies





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# Staffing – 2007-8 dry season

SARCO Employees or Contractors	Number	Nationality and details
<b>SARCO</b>		
Geologists	14	13 Lao Nationals, one Australian part time
Drillers	2	1 Lao trainee, 1 Australian trainer
Field support staff	9	Lao Nationals
Admin/office Manager	1	Lao National
Accountant	1	Lao National
Office assistants and maid	2	Lao National (local)
Maintenance man	1	Lao National
Cooks	12	Lao Nationals including 10 local area recruits
Project Manager	1	Australian Lao speaking
Technical manager/trainer	1	Australian learning Lao
<b>Milsearch (Lao company)</b>		
Supervisors-managers	3	New Zealand, Australian and US Nationals
Drivers	12	Lao Nationals
UXO Clearance personnel	165	Lao Nationals including 26 local area recruits
<b>Earthmoving Contractors</b>		
Bulldozer and Excavator drivers	5	Lao Nationals
<b>Totals</b>	<b>229</b>	<b>223 Lao Nationals, 6 foreigners</b>

- SARCO uses Lao nationals in as many positions as possible
- Regular formal training sessions are held with the geologists
- Our contractors staff are mostly Lao nationals

# Expenditure

- SARCO spent a total of US\$2.8 million on the Yuqida project from March 2007 to 31 March 2008
- SARCO spent a total of US\$2.2 million on the 138 project from November 2006 to 31 December 2007
- Proposed Yuqida project expenditure for the June, September and December Quarters 2008 is a total of US\$4.8 million, excluding scoping, environmental and feasibility studies





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# Proposed Program

- Reconnaissance mapping over approximately 200 km<sup>2</sup>
- Complete drilling on all pegged holes - total 2,995 sites
- Analyse all samples, some for multi elements
- Complete modeling on all results received
- Carry out density and moisture profiling on at least 15 sites
- Carry out Scoping Study on the Bolaven Bauxite project
- LIDAR Survey over bauxite bearing areas, subject to availability of aircraft and tenement grant times
- Environmental and Social Impact studies
- Feasibility Studies and Refinery Design



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## Equipment to be Used

- Four wheel drive vehicles and trucks for personnel, fuel, supplies and sample transport
- Bulldozers – 3 full time, Excavator – 1 part time
- Surveying – high precision GPS and Total Station instruments
- Drill rigs – 1 SARCO rig, 1 Boart Longyear rig
- Density and moisture measuring instrument
- LIDAR equipment and Aircraft



# SARCO Drill Rig 1



- Purpose designed for bauxite drilling
- Manufactured in Australia by specialist rig builder
- Ideal for rapid reconnaissance drilling and steep terrain
- Modified to better suit local conditions



# Boart Longyear Aircore Rig



- Suitable for gently to moderately sloping ground
- Good sample recovery and fast drilling rates
- Cannot drill in steep terrain and needs SARCO rig to infill drill steeper areas
- Reliable rig with excellent support when required





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## Top of Bauxite Profile



- Outcropping rubble of ferruginous bauxite on top of ridge in well drained area.
- No massive iron cap is developed
- Yellow tones suggest it is rich in gibbsite



## Base of Bauxite Profile



- Concentric zoning around weathered corestone
- Centre is saprolite after basalt
- White layer is kaolin rich
- Surrounding corestone is bauxite



# Younger Basalt Profile



- Layers of fresh basalt core stones
- Dark basalt clay over corestones



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# Youngest Basalt Profile



- Layers of fresh basalt core stones
- Skeletal soils over jointed basalt.
- Jointing typical of a thin lava flow



# Ban Phanuandong Camp



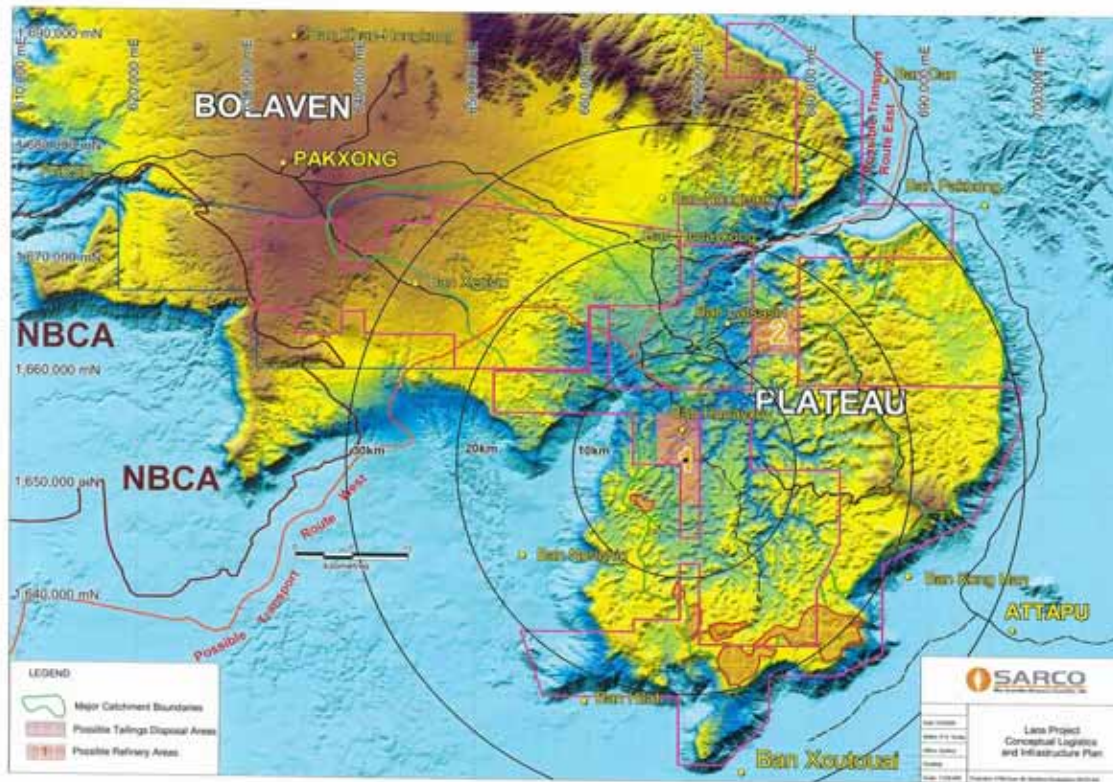
During construction



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## Bolaven Logistics Initial Proposal



Refinery sites proposed for tenement application areas

Possible alternate transport corridor to NE to Vietnam

Refinery sites near several hydropower sites on the Bolaven Plateau

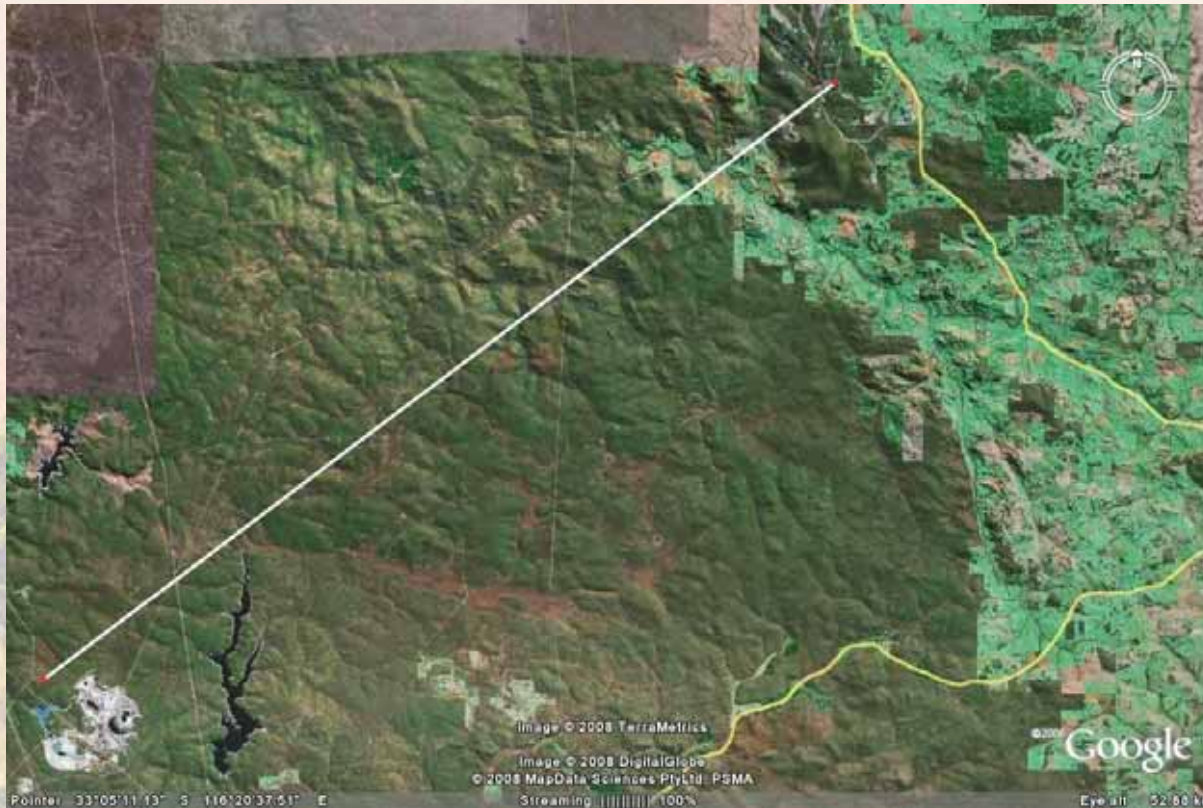
Sites probably suitable for tailings disposal areas identified

Majority of bauxite well within the normal transport distances for bauxite at Australian mines

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# Worsley Refinery and Mine



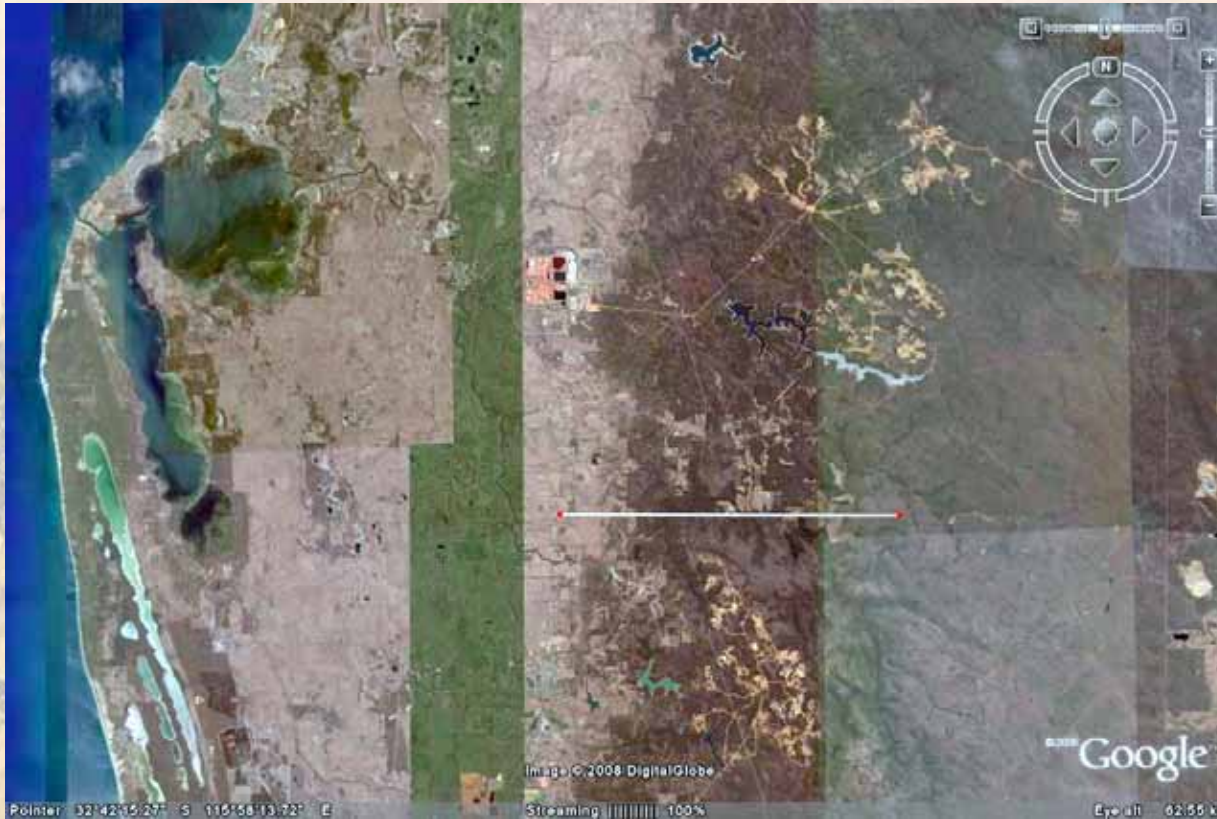
Refinery site 50 km from the mining area

Conveyor can be seen coming from mining area crushing station to refinery

Longest travel distances for any integrated bauxite – refinery complex in Australia

Scale bar is 50 km

# Pinjarra Refinery and Mine



Refinery site 20 km  
from the mining  
area

Conveyor can be  
seen coming from  
mining area  
crushing station to  
refinery

Scale bar is 20 km



# Gove Refinery and Mine

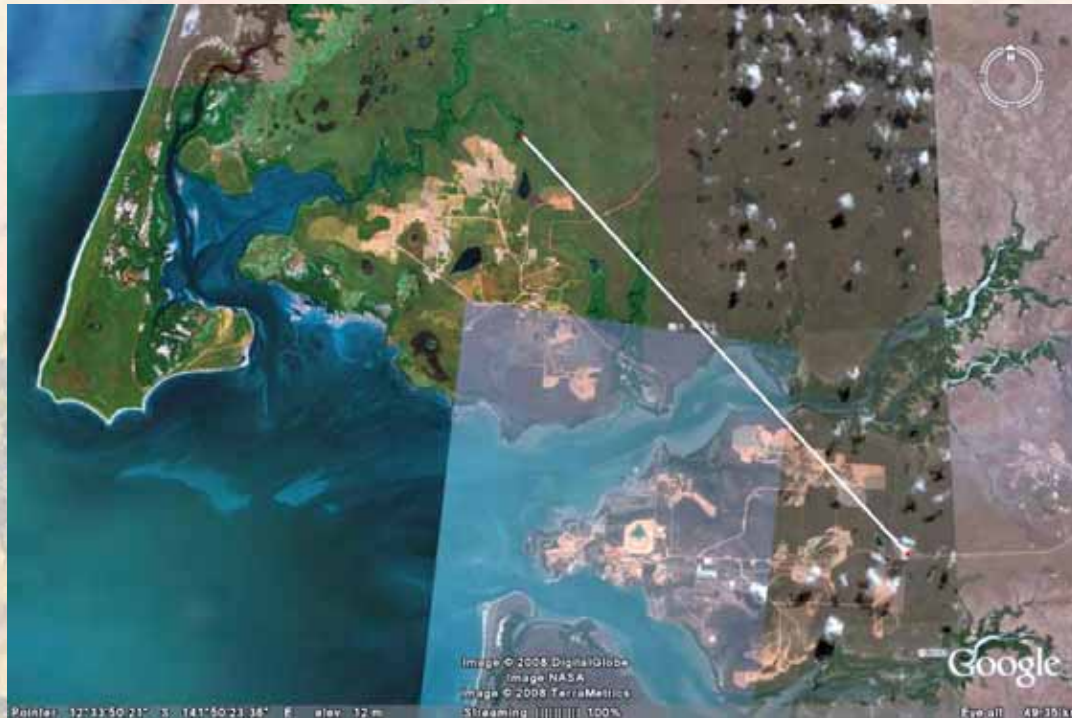


Refinery site 20 km  
from the mining area

Conveyor can be  
seen coming from  
mining area crushing  
station to refinery

Scale bar is 20 km

# Andoom and Weipa Mines



All bauxite exported from the mining areas by ship

All bauxite exported from loader at Weipa drawing from stockpiles on the peninsula

Scale bar is 30 km