

Stranded

A Financial analysis of GVK's proposed
Alpha Coal Project in Australia's Galilee Basin.

“ Although the danger of stranded assets is, accordingly, limited for the [coal] industry as a whole, individual players can still incur substantial losses on sunk investment. This is particularly true for recent investments in fields which also require the large-scale development of railway and handling infrastructure. ”

*IEA Special Report Redrawing
the Energy-Climate Map 10 June 2013*



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For the past six years Tom has run his own company TR Rose Associates. The company has served several clients working to create alternatives to fossil fuel use in the United States. The work has consisted of research, reports, testimony and advice on construction costs of coal plants and alternatives, financial reviews (involving independent owned utilities, cooperatives, public authorities and hybrid organizational structures), credit analysis, coal market and price analyses, rate impact assessments, federal financing, federal coal leases, coal export markets and policy, load forecast reviews, energy contracts and a series of other topics related to electric generation. He has served as a financial advisor to the innovative Green Jobs/Green New York large scale residential energy efficiency retrofit program in New York State. Tom has served on the Advisory Board on the future management of the Long Island Power Authority in New York State. His clients also have included business, labor and community organizations covering a host of public and private finance and policy issues.

From 1990 to 2007, Tom served in senior management positions to the publicly elected Chief Financial Officers of New York City and New York State. From 2003 to 2007, he served as the First Deputy Comptroller for the State of New York. Tom was responsible for a \$150 billion globally invested public pension fund; oversight of state and 1600 units of local government budgets and public debt offerings; audit programs for all state agencies, public authorities (including power generation authorities) and local governments, and review and approval of state contracts. One estimate places the level of public assets under the State Comptroller's watch at over \$700 billion. Due to an early resignation of the elected State Comptroller, Tom, as First Deputy Comptroller, served for a short period as the New York State Comptroller from 2006-07. His most recent publication on New York State government and finance is part of the 2012 Oxford Handbook of New York State Government and Finance.

TIM BUCKLEY

Tim Buckley is an independent financial investment analyst with over twenty five years of experience in analysing major listed companies across a multitude of industries both within Australia and in the global context. Tim was a co-founder of Arkx Investment Management in 2007, a Sydney based fund manager that invests in the leading global listed companies best leveraged to the move to a low carbon economic future. In 2010 Tim became joint-Managing Director and head of Equity Research at Arkx.

Prior to this, Tim was Managing Director, Deputy then Head of Australasian Equity Research at Citigroup from 1998 to 2007. Tim was on the Citigroup Australasian Commitments Committee for five years to 2007 overseeing financial market transactions and underwritings. Tim was a top rated industrial analyst first with Macquarie Equities (1988-91) then County Natwest Securities (1992-96) in Australia, covering the leading industrial conglomerates as well as enjoying a specialization in the forestry, brewing and wine sectors. Tim then moved to Singapore to cover the Asian equity market during 1996-1998 with Deutsche Bank, just in time to experience the Asian Financial Crisis!

Tim has authored a number of financial clean energy articles that have been published over 2011-2012 in RenewEconomy.com and Climate Spectator, Australia's two leading online renewable industry websites.

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Executive Summary

In 2011, GVK Coal Developers (Singapore) Pte Limited (GVK Coal) bought the Alpha Coal Project (the project) from Hancock Prospecting in a US\$1.26bn deal for which GVK Group's Chairman, Dr GVK Reddy was awarded "Asia Deal of the Year".¹ Less than two years later, the US\$10billion project is struggling with little prospect of financial viability.

The project timelines have been shown to be unrealistic, and further delays are likely due to the unprecedented ambition and complexity of an Indian company with no track record of building mines in Australia, building what would be by far the country's largest black thermal coal mine in an area with little water, power, or other service infrastructure. The project could require almost 500km of new rail infrastructure, across floodplains and through important farmland, to a new export terminal proposed to be located in the Great Barrier Reef World Heritage Area. This at a time when most major coal producers are seeking to sell or downscale production due to a weakening global outlook for thermal coal.

Key issues include:

- Despite claiming to be a "leading global infrastructure owner, manager and operator" GVKPIL has no experience operating any business outside of India. It has never successfully built and operated a coal mine – in India or otherwise. GVKPIL has not operated any business in Australia, let alone a US\$10bn greenfield project in the face of massive environmental, operational, logistical and financial challenges.
- GVKPIL are currently committed to no less than 16 greenfield infrastructure projects across six different asset classes. Many are behind schedule and / or over budget.
- The rapid expansion of GVKPIL has resulted in an excessively geared balance sheet. With a market equity capitalisation of only US\$243m, GVKPIL is carrying on-balance sheet net debt of US\$2.8bn.
- GVKPIL has provided guarantees to GVK Coal against off-balance sheet loans in excess of US\$1bn to fund the US\$1.26bn purchase from Hancock Prospecting.
- The Reserve Bank of India has deemed GVKPIL a *Systematically Important Core Investment Company* (SI-CIC), a designation brought into effect on 5 January 2011. However, GVKPIL is currently not in compliance due to excessive financial leverage.

- GVKPIL's share price is at an all time low and has underperformed the Indian index by 80% since 2010.
- GVKPIL's FY2013 earnings before interest and tax (EBIT) interest cover was a very low 0.44x. In addition, a significant portion of interest expense is capitalised against the pipeline of greenfield projects.
- Under existing financial assumptions, the Alpha Project's cost of coal production is likely to render the project uneconomic. The Newcastle free on board (FOB) thermal coal price is currently around US\$88/t, 30% below the peak seen in 2008. This leaves little headroom to move against a largely debt-funded US\$10bn project proposal with a cash cost of production we estimate to be at least US\$70/t – substantially higher than the US\$55/t figure promoted by GVK. We note the energy content of GVK Coal is materially below the Newcastle benchmark, meaning GVK Coal would receive a discounted price.
- Australian mining history suggests capital cost blowouts of over 20% are likely, and have already priced new thermal coal mines out of the money according to the Australian Coal Association.
- Even on the current, in our view optimistic, GVK Coal timetable, this project is scheduled to come up to full 32Mtpa production well beyond 2018, just as China hits a peak in its national thermal coal demand. Thereafter, we project China – the world's largest consumer of coal – will actually reduce its national coal consumption annually, progressively replacing thermal coal power generation with low carbon alternatives and most importantly, enhanced energy efficiency.

Building Australia's largest black thermal coal mine in the untapped Galilee Basin would challenge experienced operators, but the combination of an inexperienced developer, slack demand globally for thermal coal and a deteriorating cost of production scenario in Australia moves the project beyond speculative.

GVK's Alpha project appears likely to remain "stranded in the valley of death".

Section 1

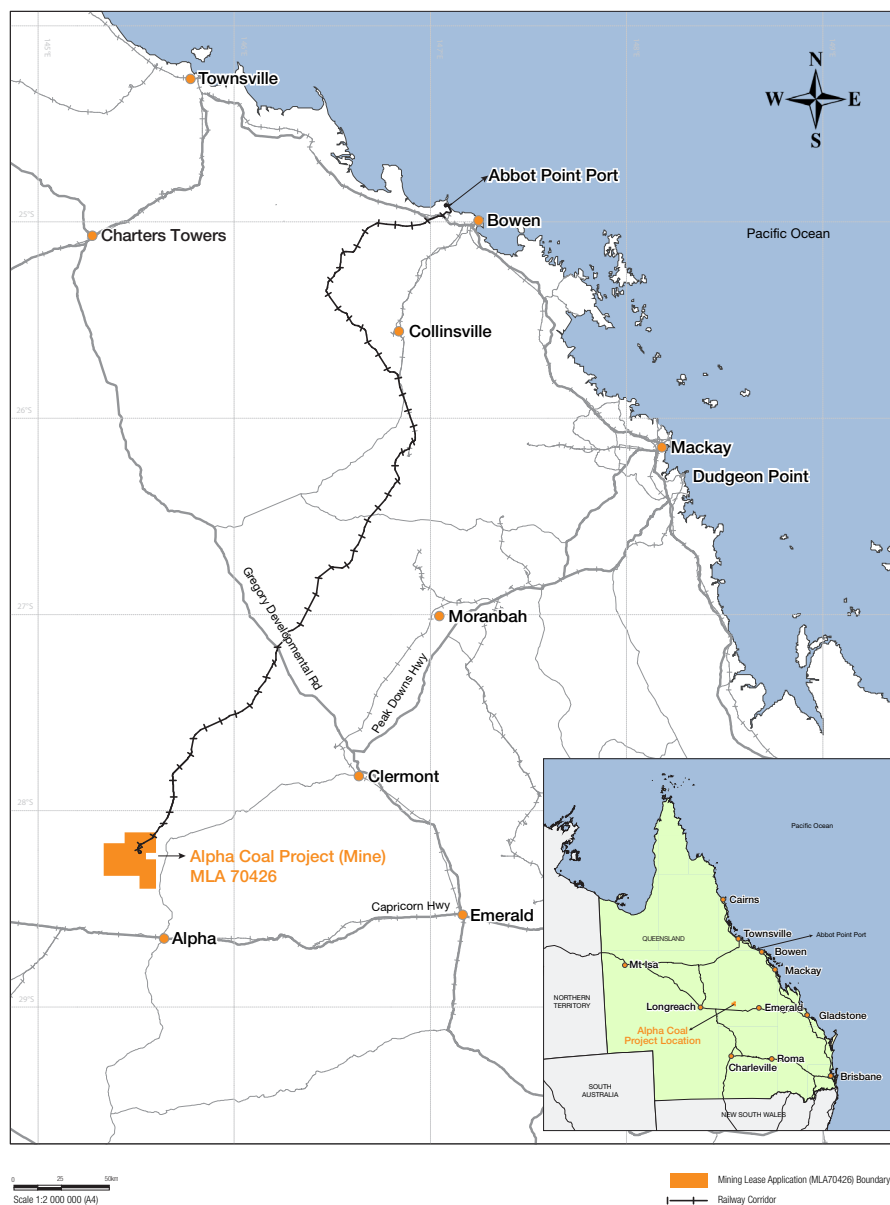
Introduction

The Galilee Basin in central western Queensland has long been known to hold vast reserves of coal. Until now, the lack of infrastructure has meant that these coal reserves have remained untapped, with conventional wisdom being that the Galilee Basin was uneconomic.

In 2010 – 2011, with global coal prices at an all time high, there was a rush to develop mines in the Galilee in the expectation that global coal demand and prices would remain buoyant. At the peak of this cycle, Indian conglomerates GVK and Adani invested significantly in coal reserves in the Galilee, with a view to securing vertically integrated coal supply chains.

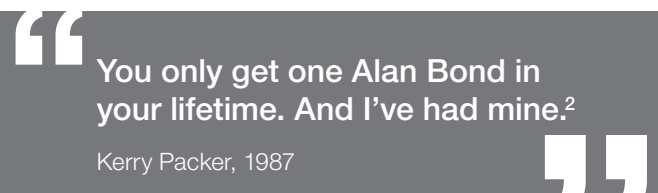
The GVK Alpha Project is widely regarded as being the frontrunner in the ‘race to unlock the Galilee’. It is a highly ambitious greenfield project that would include the development of the largest black coal mine in Australia, a 495km long railway line and new coal export terminal in the Great Barrier Reef World Heritage Area.

While much has been reported about the environmental impacts of the project, this report explores the financial issues surrounding the GVK Alpha coal project, and the risks for potential investors.



Section 2

The 2011 Asian “Deal of the Year”



Hancock Prospecting sold the vast majority of its Galilee Basin coal deposits to GVK at the peak of the global thermal coal market in 2011. While GVK won an award for “Asia Deal of the Year”, Hancock Prospecting made close to A\$1billion in profit from the deal, while GVK is left with a high risk project and a growing interest burden.

Hancock Prospecting Pty Ltd sold the majority of its Hancock Coal business in the Galilee Basin, Queensland, to GVK Coal Developers (Singapore) Pte Limited (GVK Coal) in September 2011 for US\$1.26bn, realising a A\$1bn dollar after tax capital gain in the process.

For this transaction, Dr GVK Reddy, Chairman of GVK Group, was awarded “Asia Deal of the Year”. However, it is now increasingly evident that Hancock Prospecting’s Chair Gina Rinehart may have been the more appropriate recipient.

Hancock Prospecting acquired the Exploration Permit (EPC 570) in October 1994 and Mineral Development Licence in April 1998. For a long time, it was conventional wisdom that the Galilee Basin was uneconomic, however this began to change as the thermal coal price soared to historical highs. At the time of the GVK transaction, the Newcastle thermal coal price was US\$131/t FOB, 50% higher than the US\$88/t today.

We doubt there is any coincidence that the timing of this sale is close to the peak in the thermal coal price cycle, with 2011 being the second highest year for the thermal coal price in a century. Hancock Prospecting booked an A\$1,103 million after tax gain in the 2011/12 year as a result.³ Netting off Queensland coal project development costs expensed in prior years (e.g. an A\$103m net loss in 2010/11), this still leaves close to a A\$1bn net gain overall for Hancock Prospecting.

The deal payment was structured as:

- US\$500m on the close of the deal;
- US\$200m to be paid one year after closing; and
- US\$560m payable on financial close of the project (and no later than 3 years after close of deal).

Even with this staggered payment schedule, GVK Coal would have accrued in the order of US\$70m of interest payments in the 20 months since purchase (with an estimated 6.5% pa cost of corporate debt). With the large scale production still at least 4-5 years away, interest expense will continue to grow significantly in this period.

As part of the deal GVK Coal acquired 100% of the Kevin’s Corner coal deposit and 100% of the Hancock rail and port infrastructure projects, plus a 79% stake in the Alpha and Alpha West coal deposits. Hancock Prospecting retained a minority 21% stake in the Alpha and Alpha West deposits. Of the three deposits, the Alpha mine is the closest to commercialisation. While Hancock Prospecting retains a stake in any profits generated from the Alpha mine should it ever be built, it is free from the funding commitment in the A\$6bn rail and port infrastructure assets.

As part of the deal Gina Rinehart, Chair of Hancock Prospecting, was invited to join the board of GVKPIL as a non-executive director.⁴ To date this invitation has not been accepted.

Section 3

The Alpha Coal Project Overview

“Significant challenges need to be overcome in order for these projects to be developed and for the region to become a coal producer. These include commercial (finance and cooperation on rail and port alignment), technical (design and coordination of rail and port infrastructure) and marketing (securing off-take agreements with customers) challenges. There are also constraints in terms of social infrastructure (housing, town amenities for workers), water and energy to support large scale projects and infrastructure developments. All of these challenges can be overcome, but they are likely to take time and will involve substantial costs.⁵”

Bureau of Resource Energy & Economics, 2012

In September 2011, the GVK Group, an Indian conglomerate, through its new subsidiary GVK Coal, acquired a controlling stake in three huge thermal coal deposits in the Galilee Basin in Central Queensland, Australia.⁶

The acquisition of the Alpha Project by GVK involves four key assets:

1. A shareholding of up to 79% in each of the **Alpha Coal Project** (Alpha) and **Alpha West Coal Project** (Alpha West) in the Galilee Basin, with Hancock Prospecting retaining the remainder (down to 21%);
2. A 100% shareholding in the **Kevin's Corner Coal Project** (Kevin's Corner), adjacent to Alpha; and
3. A 100% shareholding in the proposed T3 coal export terminal at Abbot Point and the rail line linking the Galilee basin coal deposits with Abbot Point – **GVK Galilee Infrastructure** (see Section 5).

The projects have a combined 7.9bn tonnes of coal compliant with Australia's Joint Ore Reserves Committee (JORC) resource categorisation (see Figure 1). The actual measured resource at Alpha, the coal deposit likely to be progressed first, is 821m tonnes.⁷

Figure 1 GVK Coal Resource Profile (Mt)

Resource (t)	Type	Status	Measured	Indicated	Inferred	Total	Targeted net coal output pa
Alpha	Open cut	BFS Complete	821	700	300	1,821	30
Alpha West	Underground	PFS	0	500	1,300	1,800	30
Kevin's Corner	Open cut & U/G	EIS approved	229	1,040	3,000	4,269	20
Total			1,050	2,240	4,600	7,890	80

The Alpha Coal Project Overview

Refer Figure 2 for the key coal mine statistics. These are sourced from the March and May 2013 GVK Coal presentations.⁸ We would note the strip ratio cited of <6.5:1 is materially more favourable than the 12.2:1 in the 2011 Supplementary Environmental Impact Statement (EIS).⁹ Relative to production of 30Mtpa, overburden is cited as 466Mtpa in 2011 vs the implied 247Mtpa bank cubic metres (bcm) per Life of Mine (LOM) tonne of coal used in the 2013 corporate presentation.

Figure 2 The Alpha Coal Mine Parameters

Reserves	1,193 million tonnes
Reserves & Indicated Resource	1,521 million tonnes
Strip ratio (tonne:tonne)	12.2:1
Strip ratio (bcm: tonne)	<6.5: 1
Overburden removal	466 million tonnes pa
Run of Mine (ROM) Coal	38 million tonnes pa
Average yield	76%
Saleable production	30 million tonnes pa
Life of mine	30 years
Distance from port	495 kilometres
Distance from dam water	220 kilometres

Refer Figure 3 for the key coal statistics. When compared to typical Australian thermal coals, Alpha coal displays a higher than average moisture content (at 16-17% vs 9-10%) but lower ash content (9-10% vs 14-15%). Total sulphur content is in line. The calorific value is 5,847 kcal/kg gross as received (GAR), 7% below the energy content of Newcastle FOB benchmark of 6,300 kcal/kg GAR (6,080 kcal/kg net as received).

Figure 3 The Alpha Coal Mine – Coal Statistics

Calorific value	~5,800 kcal/kg GAR
Total Moisture (TM)	~17%
Ash – as received	8.7% (9.5% air-dried)
Volatile Matter (VM)	30.80%
Total Sulphur	0.51%
Fixed Carbon	44.50%
Gas content	0.20m ³ / t (90% CH ₄)

Hancock Prospecting had plans for export agreements with numerous interested parties. It was reported in 2011 that Korea South-East Power Co and China's Zhejiang Provincial Energy Group Co had signed non-binding letters of intent and satisfactorily tested the coal from the Alpha deposit in commercial quantities.¹⁰ GVK Coal state non-binding agreements are still in place, with letters of intent for the entire Alpha mine's output in place.¹¹

The Galilee Coal Basin has very significant coal deposits, but is well inland far away from both railway and export port facilities. The area is also far away from a major population base (an issue in terms of access to skilled labour) and lacks basic power and water infrastructure. As Figure 4 details, there are at least six major thermal coal resource projects being contemplated by four different consortia. Together, these projects could hypothetically produce 272Mtpa of saleable thermal coal, sufficient to more than double Australia's total thermal coal exports of 171Mt in 2012.

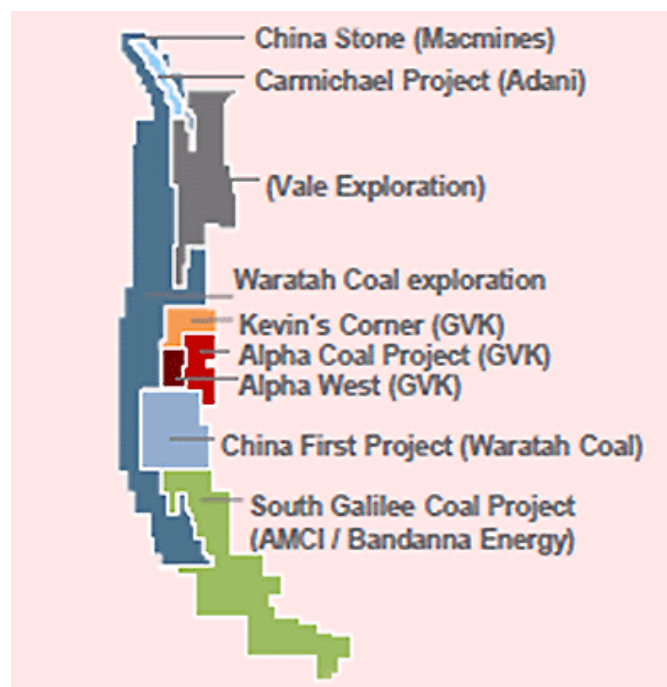
The Alpha Coal Project Overview

Figure 4 The Galilee Coal Basin – Projects

Owner	Project	Type	Status	Targeted net coal output pa	Capex (A\$bn)
Adani Group (India)	Carmichael Coal	Open cut & U/G	EIS active	60	7.1
GVK Coal	Alpha	Open cut	BFS Complete	30	10.0
GVK Coal	Alpha West	Underground	PFS	30	
GVK Coal	Kevin's Corner	Open cut & U/G	EIS active	20	
Waratah Coal P/L (Clive Palmer)	China First	Open cut & U/G	EIS active	40	8.1
AMCI Group & Bandanna Energy Ltd JV	South Galilee Coal	Open cut & U/G	EIS active	17	4.2
Macmines Austasia Pty Ltd	China Stone	Open cut & U/G	EIS active	45	n.a.
Vale SA	Degulla	Open cut & U/G	EIS active	30	8.0
Galilee Basin - Total				272	37.4

Source: Queensland Government – Coordinator-General projects Assessments and approvals

Figure 5 The Galilee Coal Basin – Projects



Source: GVK Coal "Coaltrans Goa" Presentation, 12 March 2013

Section 4

GVK Coal – Project Approval Status



The environmental impacts of the GVK Coal project are significant and bring considerable project risks, in terms of both legal costs and likely delays in achieving final environmental approvals for the mine, rail and port. The location of GVK's proposed T3 coal export terminal within the Great Barrier Reef World Heritage Area has galvanised widespread opposition from the environmental community. At least one legal challenge has been lodged against the Alpha mine and there is currently a Federal Government investigation into GVK over potential 'false and misleading conduct' in relation to the environmental impacts of the proposed T3 coal terminal at Abbot Point.

In Australia, mining projects require a combination of State, Federal and Local Government approvals. In Queensland, it is noteworthy that *"The declaration of the project as a 'significant project' does not indicate support for, or approval of, the project by the Coordinator-General of the Queensland Government. Rather, it is a requirement for the project to undergo a rigorous EIS (Environmental Impact Statement) process."*¹³

The Alpha coal mine, rail line and corresponding coal export terminal at Abbot Point is the most advanced of the GVK Coal's three proposals, with the Alpha West and Kevin's Corner projects following some years behind in the approvals process. For the purposes of government approval processes, the Alpha coal mine and the rail project were treated as a single project. The Kevin's Corner and coal port terminal projects are each subject to separate approvals. No approval process has been initiated for the proposed Alpha West mine.

GVK Coal estimates that together, the Alpha mine, rail and port project will cost in the vicinity of US\$10bn to develop.

In January 2009, the Alpha Project, comprising the mine and rail line, was determined to be a "controlled action" under the federal Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act).¹⁴ The Commonwealth determined that

the project could be assessed under a bilateral agreement between the Commonwealth Government and the Queensland Government, whereby the Queensland Government managed the assessment process on behalf of the Australian Government's Department of Sustainability, Environment, Water, Population and Communities.

In May 2012, shortly after the election of the Liberal National Party into power in Queensland, the Queensland Coordinator General issued a report recommending that the Alpha Project be approved.¹⁵ It was subsequently revealed that this report and the assessment for the Alpha Project had not satisfied the requirements of the Commonwealth Government. The Federal Environment Minister, the Hon Tony Burke MP, exercised his powers under the EPBC Act to secure more time to make his own determination for the project, describing the Queensland Government's environmental assessment of the Alpha Project as a *"shambolic joke"* in the process.¹⁶ In the political maelstrom that followed, the Federal Department of Sustainability, Environment, Water, Population and Communities put forward additional requirements for the assessment, resulting in a delay of several months.

In August 2012, the Alpha Project was given conditional approval under the EPBC Act, with 19 conditions attached. The Federal Environment Minister Tony Burke took the unusual position of requiring that several of the conditions be met prior to construction commencing, with the approval of the Minister required to determine if the work undertaken has met those conditions. The additional environmental conditions that GVK Coal is required to meet relate primarily to supplying information that the Federal Environment Department requested previously be included in the formal assessment documents, including cumulative impacts on water availability in the Galilee Basin, impacts of the mine and rail line on nationally threatened species and the impacts of the rail line on the Caley Valley Wetlands, an area that supports internationally significant migratory and threatened shore bird habitat, and the Great Barrier Reef World Heritage Area.¹⁷ These conditions are considered to be very strict by normal standards and will require additional detailed work to be done by GVK Coal.

GVK Coal – Project Approval Status

In March 2013, the Queensland Government, acting on the Coordinator General's recommendation from April 2012, issued a mining license to GVK Coal for the Alpha mine and a draft Environmental Authority was issued by the Queensland Department of Environment and Heritage Protection.¹⁸

The granting of this Environmental Authority is currently under challenge in the Queensland Land and Environment Court, following objections by several landowners and environmental organisations. The court hearing is set for September 2013.¹⁹

GVK Coal's proposed coal port terminal (Terminal 3, T3) at Abbot Point also received approval under the Federal EPBC Act in October 2012. This approval also requires significant additional information to be supplied on the ecological and heritage impacts of the terminal. Much of this work must be submitted to the Environment Minister for approval prior to work commencing. The Federal Department of Sustainability,

Environment, Water, Population and Communities is now also investigating allegations by Greenpeace that GVK Coal committed an offence under the EPBC Act by failing to include important results of bird surveys in the Caley Valley Wetlands in the documents they prepared for the assessment process.²⁰

It is unclear when the results of that investigation will be made public.

In May 2013 GVK Coal received environmental approval by the Coordinator-General of the Queensland Government for its US\$4.2bn Kevin's Corner mine project, adjacent to the Alpha coal mine project.²¹

The Alpha Project is yet to reach financial close. It is said to be waiting on finalisation of a lease for the Alpha coal mine and completion of necessary approvals for Abbot Point.²²

Section 5

GVK Coal – Project Ownership Structure

“Development of the Galilee Basin looks increasingly remote, Macquarie Group Ltd., Australia’s biggest investment bank, said in a May 1 research note. Prospects for project paybacks look extremely poor, the bank said. Further delays are likely unless ‘deep pocket’ backers are able to ignore conventional economics.”²³

Macquarie Group Ltd, 2013

GVK Group has created a complicated, heavily debt-funded corporate structure that has the effect of keeping GVK Coal off GVKPIL’s balance sheet. A deal with a strong backer such as Aurizon appears to be critical for GVK if they are to have any chance of financing the project.

The project is being developed by **GVK Coal**, which is in turn owned by various companies owned and/or controlled by the family of Dr G V Krishna Reddy, including the 54% owned, Indian stock exchange listed **GVKPIL**. GVK Coal acquired this project from Hancock Prospecting in 2011 for US\$1.26bn. Hancock Prospecting retained a minority stake in two of the coal deposits, Alpha and Alpha West (owned Hancock Coal Pty Ltd, a subsidiary of GVK Coal).²⁴

In 2010 a WorleyParsons Ltd and Ausenco Ltd joint venture announced it had won an Alpha mine related program management contract (PMC). The actual contract awarded was for the preparation of the engineering, procurement and construction (EPC) contract. The actual mine EPC contract has not been awarded, only the contract to prepare the EPC contract. This supports our premise that further project delays are inevitable (see Section 9).

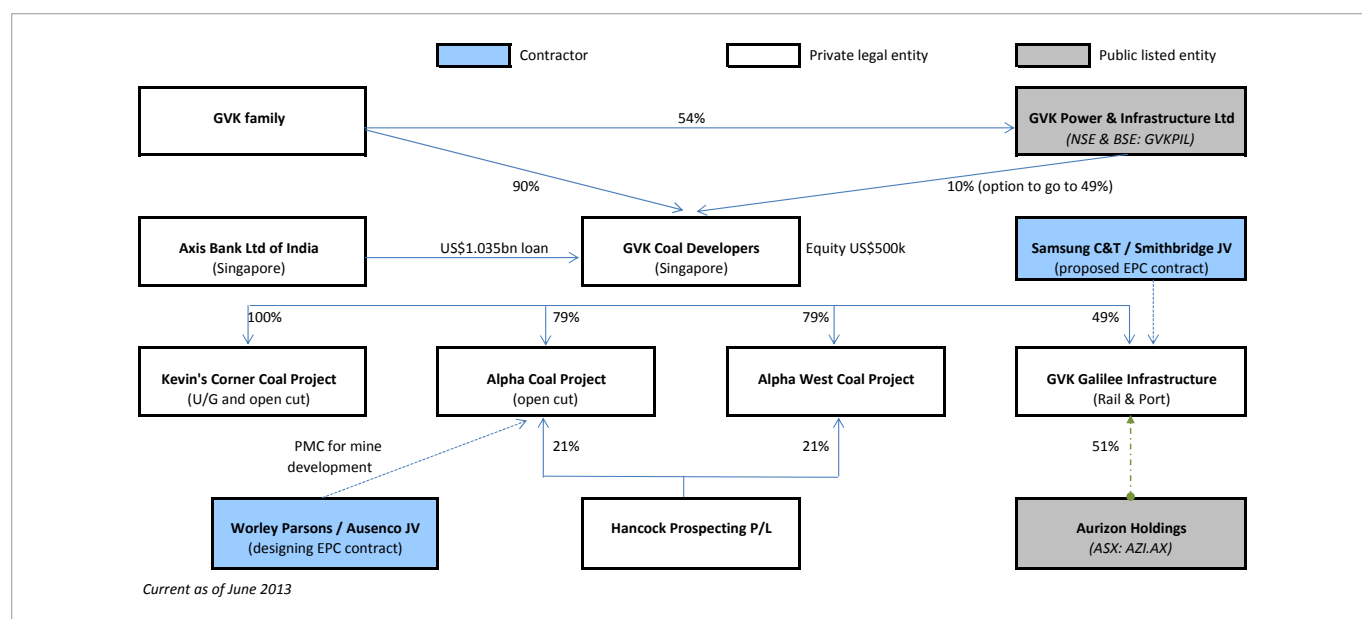
In June 2013 GVK Coal signed an Early Services Agreement with Thiess to be the preferred mine operations contractor for the Alpha coal mine. This requires Thiess to develop a mine plan during the second half of 2013. Again, this does not look like GVK Coal has signed an EPC contract, rather it has signed an early stage planning contract.²⁵

In October 2012 GVK Coal signed a joint venture agreement with Samsung C&T Corp (Korea) and Smithbridge (Australia) to explore the development of an EPC contract for the construction of the greenfield infrastructure T3 port facility at Abbot Point. There has been no further announcement confirming if this EPC contract has been finalised.

In March 2013 GVK Coal signed a non-binding memorandum of understanding with **Aurizon Holdings** (Australia’s largest listed rail freight company) whereby Aurizon would fund a 51% stake in the rail and port development assets.

GVK Coal – Project Ownership Structure

Figure 6 The GVK Coal Project Structure



The company press release announcing the deal interchangeably uses the terms “GVK” and “GVKPIL” (the listed entity, GVK Power & Infrastructure Limited). The corporate description reads: “About GVK: GVKPIL is one of India’s largest infrastructure developer with experience and expertise spanning areas such as Energy, Airports, Roads and Urban Infrastructure. In addition, GVK is also involved in many other businesses held by it privately including Real Estate, Hotels, Pharmaceuticals, Resources, etc.”²⁶ This description, perhaps unintentionally, makes it unclear which businesses are held by the listed entity and which are held privately. The same press release also states that GVK Coal “in joint venture with GVKPIL has entered into various acquisition documents with Hancock Prospecting P/L.” This gives rise to a possible confusion about the delineation of entities, ownership and activities. Some financial implications of this joint acquisition are discussed in Section 7.

Section 6

GVK Power & Infrastructure – Company Performance

GVKPIL is a financially constrained company that is attempting to concurrently build a 16 greenfield projects in 6 different asset classes. A multitude of issues will likely see further project delays, cancellations and/or cost blowouts across this portfolio. GVKPIL has no material experience of construction, or operation, of projects outside of India. The complexity of building the largest greenfield thermal coal mining project in Australia in the remote Galilee Basin would challenge any company, let alone one that is debt constrained and has never operated in the Australian market.

GVKPIL Return on Equity... averaging 1% pa and declining

GVKPIL delivered a return on book value of equity of 5.7% in 2009/10, then 4.7% in 2010/11 and 1.8% in 2011/12, before falling to negative 10.1% in 2012/13 on the back of a net loss for ordinary shareholders of Rs3.4bn (US\$62m).²⁷ This is well below cost of capital, and declining.

GVKPIL Share Price... significant and sustained underperformance

Figure 7 details the share price of GVKPIL over the last five years relative to the iPath MSCI India Index ETN (code: INP). A significant and sustained underperformance is clear, with GVKPIL underperforming the Indian index by 80% in this period.

GVKPIL's market capitalisation has been reduced to US\$243m (see Section 7). This makes any prospective equity raising to pay down some of GVKPIL's US\$2.8bn of net debt highly dilutive to existing shareholders and therefore highly unlikely. This financial leverage will also significantly inhibit GVKPIL's ability to raise further debt or project financing for its US\$20bn pipeline of new projects.

Figure 7 GVK Power & Infrastructure – Relative Share Price Performance



Source: Yahoo Finance

GVKPIL... experience overstated

GVKPIL is a company that describes itself as “a leading global infrastructure owner, manager and operator”.²⁸

Prior to investing in GVK Coal, GVKPIL's entire focus of operations was within India. That is, they did not own any noteworthy business outside of India. GVKPIL does have an office in Indonesia, having won a contract relating to building two greenfield international airports, but has no revenues nor substantive asset base there.

To claim the company is a leading global operator is an overstatement of the firm's international experience. There are significant cultural, staffing, political, financial and environmental risks to this project – the largest of its kind in Australian coal mining history.

GVKPIL goes on to describe itself as “One of India's leading Business Groups” with “significant experience in financing and developing large scale projects”.²⁹

GVKPIL has significant experience in financing proposed large scale projects, but the implication that it has the managerial, staffing and technical abilities to successfully develop a multitude of projects across six dramatically different asset classes simultaneously is a claim yet to be established.

GVK Power & Infrastructure – Company Performance

The 2008/09 annual report states *“Your company has a diversified portfolio of gas based, coal fired and hydro-electric power plants. With over a decade of experience in the power sector, GVKPIL has acquired the technical skills and financial expertise and is now in a position to build on this proven track record.”*³⁰

At the time this statement was made, the company actually only had a single gas power plant of 216MW in operation (Phase One). The two additional gas power plants in Phase Two were unable to be commissioned in 2008/09. They *“remained stranded due to non-availability of gas and incurred cost overrun.”*³¹ The Phase Two expansion of 220MW gas electricity generation was completed by Alstom in January 2006 and handed over to GVKPIL in May 2006. The lack of gas availability meant this facility was immediately mothballed for the next three years.

None of the coal mines, coal fired power stations and hydro electricity power stations referred to have as yet entered into commercial operation, three years after this statement of GVKPIL's expertise.³²

The scale and rate of expansion... creates risk...

GVKPIL has expanded its scope dramatically in the last three years – another central risk. The company has 16 greenfield projects and two brownfield expansions, compared to an existing operating base of only five facilities, four of which were either acquired or commissioned since 2009. The speed, scale and scope of the company's expansion poses significant risks.

GVKPIL has yet to demonstrate a sustained successful ramp-up to full capacity utilisation of some of its first projects, namely the Jegurupadu and Gautami gas-fired power plants. We perceive significant financial and cashflow pressures (see Section 7). Even in isolation, the managerial and operational risks associated with concurrently trying to commission 16 major greenfield businesses across coal mining, expressways, airports, hydro, coal fired power stations, special economic zones, ports and deep sea oil & gas exploration are material (see Figure 8).

The pressures of this excessive rate of expansion are clear:

- The deferral of the 400-800 megawatt (MW) Phase Three expansion of Jegurupadu gas fired power station;³³

- The termination by GVKPIL of the 332km Shivpuri Dewas Expressway concession (a Rs8bn project) on 14 January 2013, a year into the project.³⁴ However, the National Highway Authority of India chairman, R. P. Singh, immediately countered this, saying: *“The notices of GMR Infra and GVKPIL are untenable and their claims for terminating their contracts are incorrect. They can't renege from the contracts... The reality is that both companies had highly leveraged balance sheets and were unable to raise equity which was proving to be a stumbling block in getting a financial closure for the two respective projects”*;³⁵
- The 330MW Alaknanda hydro facility is said to be due for commissioning later in 2013 – more than three decades in planning and construction³⁶ and over two years behind the July 2011 schedule and double the 2006/07 Rs2,069 crore (US\$380m) budget.³⁷ Commissioning is being delayed while GVKPIL seeks a Supreme Court judgement relating to a request to relocate a historic religious temple;³⁸
- The US\$600m Goindwal Sahib 540MW coal-fired power station – 10% over budget and has been undergoing construction for eight years and commissioning scheduled for early 2014;³⁹
- The Goriganga 370MW Hydro Power plant project started in 2008 – and was initially flagged for planning completion in 2010,⁴⁰ its Rs26bn cost is 35% over the initial planned budget, with the 2011/12 annual report suggesting it is still in the government approvals stage and completion possibly by 2015;⁴¹ and
- It was reported that the Indian Government has issued GVKPIL a 'caution notice' in January 2012 for failing to develop coal deposits it has been allocated, with the threat of cancellation. The Central Bureau of Investigation is inquiring into allocation irregularities.⁴²

GVKPIL has rapidly expanded into airports... overpaying and committing to massive capital upgrades

Since its 2006 initial public offering (IPO), GVKPIL has undertaken a series of greenfield expansion programs. GVKPIL has been similarly expanding its equity shareholding in a range of new businesses at the same time.

One recent move was the 2011 decision to acquire the 14% stake in Bangalore International Airport (BIAL) that was put up for sale by Siemens, paying Rs614 crore (US\$114m) under a right of first refusal.⁴³ This took GVKPIL to a 43% ownership position in BIAL.

GVK Power & Infrastructure – Company Performance

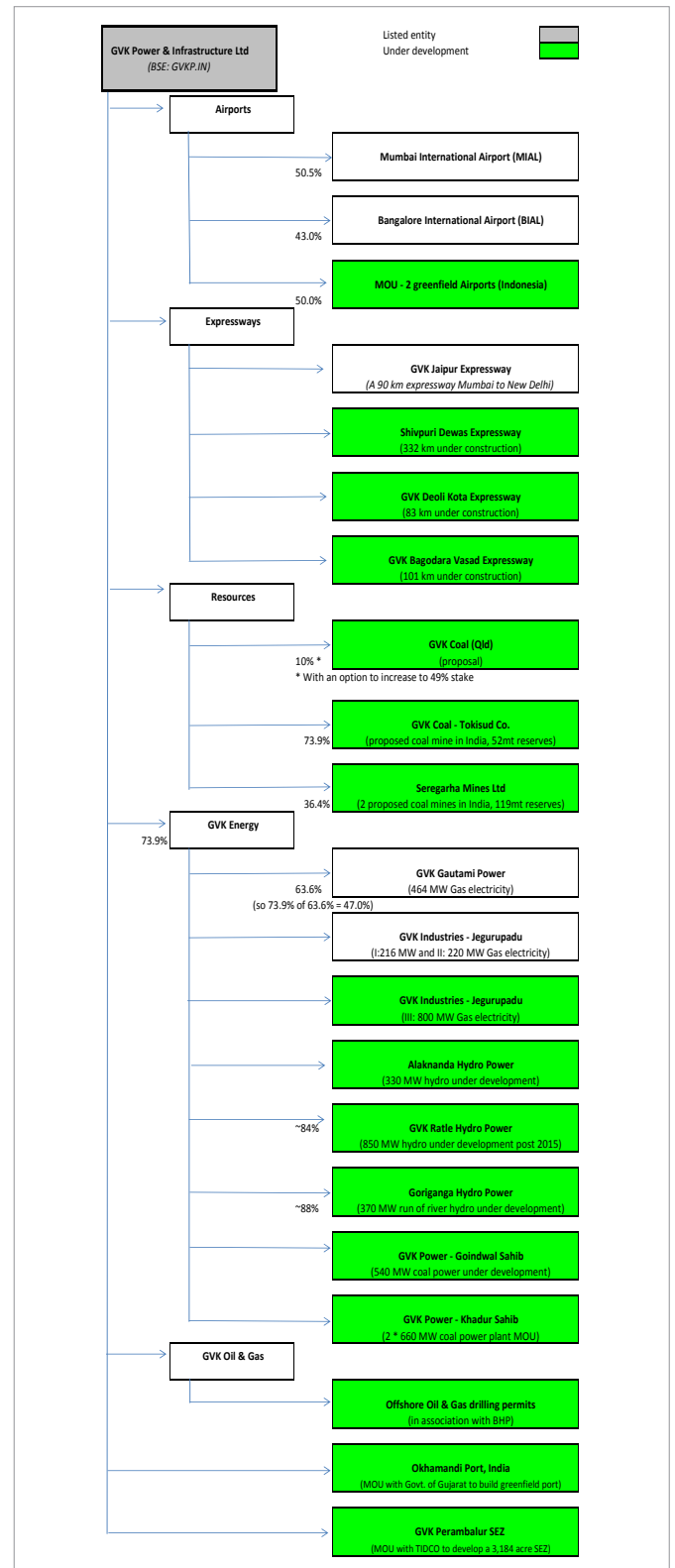
GVKPIL publically expressed the view that this holding “was offering only Rs60 per share as it felt that the (high) 2009 valuations were no longer valid due to change in business conditions”,⁴⁴ but ended up paying Rs114 per share for the extra 14% stake, a 90% premium to what GVKPIL said it was worth.

Managing Director of BIAL, Sanjay Reddy, was quoted at the time as saying: “BIAL is an important and strategic asset for us and when Siemens had an offer of Rs114 per share, we had no choice but to exercise that right [of first refusal].”⁴⁵ This US\$114m incremental acquisition was both a massive premium and served to further leverage GVKPIL’s already distressed balance sheet, particularly in light of GVKPIL’s intent to invest Rs4,000-5,000 crore (US\$740-925m) to expand BIAL (see Section 7.)

Further, in October 2011, GVKPIL acquired another 13.5% stake in the Mumbai International Airport Limited (MIAL) at a cost of US\$231m, raising its holding to 50.5%.⁴⁶

In November 2010, India’s Ministry of Environment and Forests approved construction of the Rs150bn (US\$2.7bn) Navi Mumbai airport to help ease congestion at the main Mumbai Airport. According to Bloomberg, the Government had set a goal to complete the first phase of the new airfield by 2014, but land acquisition delays have stalled the work.⁴⁷

Figure 8 GVK Power & Infrastructure – Structure



Section 7

Power & Infrastructure – Financial Leverage

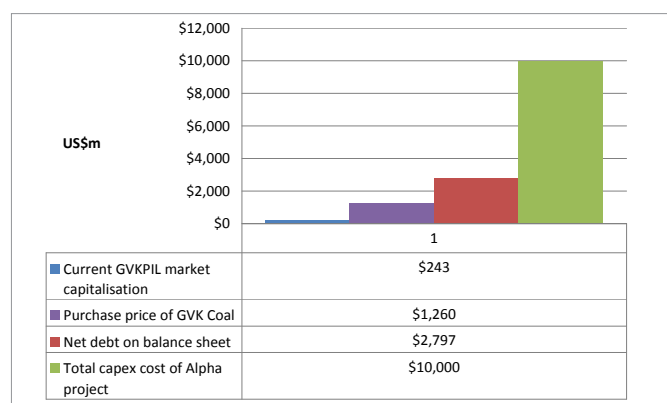
The massive scale, speed and scope of GVKPIL's expansion has put the company in a highly leveraged position, raising serious alarm bells about the prudence and viability of GVK's commitment to raise the US\$10bn capital cost of the Alpha Coal, Rail and Terminal Project. With a market capitalisation of only US\$243m, GVKPIL has a net debt of US\$2.8bn. As a result, it will be increasingly difficult for GVK Coal to raise the finance for the Alpha Coal Project. Aurizon will need to convince itself and its bankers that any take-or-pay contract with GVK Coal is practically enforceable and backed by a vehicle with sufficient equity capital. The Reserve Bank of India may suggest otherwise.

GVKPIL... overcommitted to 16 greenfield projects concurrently

*"Committed investments of over US\$20bn globally with a pipeline of US\$6.6bn in India and US\$10bn of investment plans in Australia."*⁴⁸

The magnitude of GVK's US\$20bn pipeline of 16 greenfield projects currently under development can only be described as ambitious. However, the underlying assets of GVKPIL now produce a market capitalisation of only US\$243m.⁴⁹ This level of financial leverage is unlikely to be acceptable in a post 2008 debt crisis marketplace – refer Figure 9.

Figure 9 GVK Power & Infrastructure – Financial Leverage



GVKPIL... significant operational cash flows still some way off

GVKPIL references "Cumulative capacity of 6,000 MW",⁵⁰ leaving it to a footnote to clarify that this 6,000 MW includes capacity that is operational, under construction and in the development stage. The corporate presentations provide pictures of gas, coal and hydro electric power plants, plus coal mines and offshore oil production platforms apparently in operation. Only 914 MW of this stated capacity are revenue producing assets. The majority of these assets have been operating well below design capacity for much of the last five years due to the inability of GVKPIL to access sufficient natural gas.⁵¹

Debt to equity ratio... excessive even at the reported level

GVKPIL has an estimated net debt of Rs151bn⁵² (US\$2.8bn) as of March 2013, up Rs28bn (US\$500m) from March 2012. Relative to a current ordinary equity capitalisation of Rs13bn (US\$243m), this is a net debt to equity ratio of 1,149% (see Figure 10). With financial market forecasts suggesting a further Rs32bn (US\$585m) of capital expenditures in 2013/14, this extreme level of gearing is forecast to materially increase again in the next financial year.

The use of current equity market capitalisation makes this net gearing calculation look worse than would be the case if we used the last reported book value of equity (at Rs31bn (US\$582m)).⁵³ However, GVKPIL shares are currently trading at only half book value, and have consistently traded at around a 58% discount to book value over the last year. We view the Rs21bn (US\$390m) of intangibles included on the balance sheet as likely to prove hard to realise in any financially distressed sale of assets. As such, we consider the share price a better reflection of current equity value than book value suggests.

Power & Infrastructure – Financial Leverage

Figure 10 GVK Power & Infrastructure – On-Balance Sheet Financial Leverage

As at 31 March		IR Lakhs 2010 Act.	IR Lakhs 2011 Act.	IR Lakhs 2012 Act.	IR Lakhs 2013 Act.	US\$m 2011 Act.	US\$m 2012 Act.	US\$m 2013 Act.
Long term debts		444,548	421,133	1,109,444	1,502,360	779	2,052	2,779
Short term debts		0	114,849	279,010	206,160	212	516	381
Other ST debts (classified as other)		161	21,704	40,790	40,790	40	75	75
Defined benefits liability		184	296	817	817	1	2	2
Less Cash and bank balances		-5,081	-32,820	-172,626	-208,016	-61	-319	-385
Short term loans and advances		-7,736	-3,550	-21,022	-30,403	-7	-39	-56
Net Debt		432,076	521,612	1,236,413	1,511,708	965	2,287	2,797
Exchange rate – INR : USD	54.05							
Market cap. of ordinary equity @	8.33				131,531			243
Ordinary shareholders funds (BV)		315,597	338,678	348,137	314,531	627	644	582
Minority Interests		25,000	115,336	311,678	331,884	213	577	
Net Debt to Book Value of Equity		137%	154%	355%	481%	154%	355%	481%
Net Debt to Market Capitalisation					1149%			1149%

Source: GVKPI annual reports

Minority Interests of Rs15bn... with a put option

GVKPIL's net debt to market value of equity referred to above at 1,149% is before consideration of a Rs15bn (US\$278m) financial transaction undertaken over 2010/11 and 2011/12 that would have significant financial consequences for GVKPIL if the associated five year 20% pa IRR put option were to be effected.

The transaction was initiated in November 2010 between GVKPIL and three private equity firms: 3i India Infrastructure Fund; Actis Infrastructure India PCC Limited; and an affiliate of the Government of Singapore Investment Corp. GVKPIL has received a cash injection against a book value of Rs15bn (US\$278m) of "minority equity".⁵⁴ The private equity firms are entitled to a 25% equity share of GVK Energy Limited⁵⁵ and its subsidiaries. At face value, this looks like a prudent equity raising to diminish GVKPIL's financial leverage.

However, a reference in the back of the 2010/11 annual report⁵⁶ details that the private equity firms hold a put option that if exercisable would require GVKPIL to repay the entire Rs15bn plus a compound 20% interest for five years i.e. Rs37bn (US\$691m).

Under the terms of the transaction, GVKPIL has committed to float the GVK Energy group via a qualified initial public offering (QIPO) within five years of the transaction. Failure to do a QIPO would entitle the private equity investors to then exercise their put – that is, they would be entitled to have their original cash injection returned in addition to interest of 20% pa for the five years. In GVKPIL's currently leveraged financial position and negative free cashflow, the exercise of this put would make GVKPIL unsustainable in its current form.

Power & Infrastructure – Financial Leverage

GVK Coal... a US\$1.26bn transaction, almost entirely off-balance sheet, for now

The financial reports for GVKPIL understate the financial leverage resulting from the GVK Group's US\$1.26bn purchase of a controlling shareholding in GVK Coal. GVK created GVK Coal Developers (Singapore) Pte Limited, which in turn set up a loan agreement for US\$1.035bn with Axis Bank Ltd of India (Singapore)⁵⁷ to fund the purchase of a majority stake in Hancock Coal. Given GVKPIL only holds a paid-up equity stake of 10% in GVK Coal Developers (Singapore), the financial accounts of this publicly listed entity do not include any of this off-balance sheet debt, for now.

GVK Coal... huge loans, minimal equity

GVK Coal has an ordinary equity base of 500,000 shares fully paid-up to US\$1 per share i.e. US\$0.5m, with GVKPIL holding a 10% stake worth US\$50,000.⁵⁸ However, the accounts clearly state that GVKPIL holds *"an option to increase its stake up to 49%."*⁵⁹

The accounts also state *"The Company has given an undertaking to infuse equity aggregating to Rs229,590 Lakhs in GVK Coal Developers (Singapore)..."*⁶⁰ This represents Rs23bn or US\$425m at current exchange rates (Rs54.05 per US\$). The nature of this callable equity undertaking suggests the 49% is truer reflection of GVKPIL's economic exposure to GVK Coal than the 10% figure used. A guarantee from GVKPIL for 49% of the outstanding facility amount includes the pledge of the shares of its subsidiaries GVK Energy Limited and GVK Transportation Limited to secure the equity requirements of the debt service.

Were GVKPIL to provide a more transparent accounting of its holdings and associated liabilities it would account for the total nature of its financial relationship with GVK Coal. GVKPIL could be required to use equity consolidation to include GVK Coal more fully in its reports, bringing on balance sheet its associated 49% share of US\$1bn plus of borrowings and amounts outstanding, an amount that will be growing daily given the US\$10bn capex program underway.

The GVKPIL annual report details that a substantial number of GVKPIL subsidiaries' shareholdings have been pledged as collateral for loans outstanding to GVK Coal. Again, this clearly gives the financial effect that GVKPIL is carrying a substantial economic exposure and financial risk relating to GVK Coal. This is well beyond the current financial resources of the listed company as it is currently configured, and contrary to GVK Coal's current presentation in GVKPIL's accounts.

Thin Capitalisation Rules... Changes in the 2013 Australian Budget

One of the many ways large foreign investors limit their liability for Australian tax is to create an onshore legal structure with as little equity and as much debt as the banks will allow. Generally secured against hard assets like a mining project to keep the banks happy, the result is a large tax deductible interest expense at Australian taxpayers' expense.

As noted above, GVKPIL's last annual report states GVK Coal had a paid up ordinary equity base of US\$0.5m. Against this, there are lines of debt in excess of US\$1bn. The Australian Government has put forward changes to the thin capitalisation rules to reduce foreign firms' ability to exploit this loophole by capping the tax deductibility of interest for such structures. In a briefing note on the change, the international corporate law firm Allens stated that *"Therefore, for income years commencing on or after 1 July 2014, interest deductions will be denied to the extent that the interest-bearing debt of foreign-controlled entities... exceeds the new safe harbour limits."*⁶¹

GVK's effective after-tax cost of debt will increase materially, potentially requiring GVK and GVKPIL to increase equity funding to pay down some of this off-balance sheet debt.

Sale of assets... pressure to sell not evident, yet

GVKPIL's Chief Financial Officer, Issac George, has suggested the group is looking at asset sales to address excessive gearing, stating: *"As a standard policy, we will offload stake in our subsidiaries to raise equity and reduce debt as and when the opportunity comes up."*⁶² Since the firm's IPO in 2006, with the exception of the proposed deal with Aurizon (see Section 7), GVKPIL has been constantly acquisitive. The company's actions to-date do not suggest the critical nature of the financial distress has been acknowledged to any material extent.

In May 2013 Paul Mulder, Managing Director of GVK Coal, was quoted as saying that GVK was in discussions with potential buyers to sell a stake in the Alpha mine.⁶³

Power & Infrastructure – Financial Leverage

Net interest expense... Not covered by EBIT

Another perspective on financial leverage is provided by a review of net interest expense and how that sits relative to the EBIT. GVKPIL's interest expense in the year to March 2013 rose an estimated 56% year-on-year to Rs6.7bn (US\$125m). By comparison, EBIT in the same period was Rs2.9bn (US\$54m) – insufficient to cover the reported interest expense.

GVKPIL capitalises a significant amount of interest expense against assets yet to be commissioned. This is a standard and accepted accounting practice meaning that recognition of the interest expense in the financial statements can be deferred,

but the magnitude of interest being capitalised is reflective of the excessive rate of expansion relative to current cashflows. In 2011/12, capitalised interest was Rs5.4bn (US\$101m), in addition to the Rs4.3bn (US\$80m) net interest expense. This means that GVKPIL's net cash interest paid to banks was Rs9.7bn (US\$180m) last financial year, double the reported net interest expense.

Figure 11 details GVKPIL's net interest expense for FY2010/11 and FY2011/12. For FY2012/13, we have made an estimate using the preliminary financial results released 17 May 2013. We have provided a US dollar equivalent using the current rate of Rs54 to US\$1 for ease of reference.

Figure 11 GVK Power & Infrastructure – On-Balance Sheet Net Interest Ratios

As at 31 March	IR Lakhs 2010 Act.	IR Lakhs 2011 Act.	IR Lakhs 2012 Act.	IR Lakhs 2013 Act.	US\$m 2011 Act.	US\$m 2012 Act.	US\$m 2013 Act.
Finance costs	21,710	26,314	46,727	70,793	49	86	131
Less: Interest income	-677	-984	-3,462	-3,462	-2	-6	-6
Net Interest Expensed	21,033	25,330	43,265	67,331	47	80	125
Plus Interest capitalised on capex	82,143	20,087	54,685	54,685	37	101	101
Total Net interest	103,176	45,417	97,950	122,016	84	181	226
Net interest paid (as per cashflow statement)	19,913	44,332	97,393	n.a.	82	180	n.a.
EBIT	35,173	35,021	43,510	29,391	65	80	54
EBIT / Net Interest	167%	138%	101%	44%	138%	101%	44%
EBIT / Cash net Interest	177%	79%	45%	24%	79%	45%	n.a.
Net interest expense – increase yoy		20%	71%	56%			

Assumption - FY2013 capitalised interest and interest income equals FY2012 rate

Source: GVKP&I annual reports

GVKPIL's high leverage makes it non-compliant with RBI rules

The Reserve Bank of India (RBI) has deemed GVKPIL a Systematically Important Core Investment Company (SI-CIC), a designation brought into effect on 5 January 2011. Companies designated as such are required to apply for registration with RBI within six months. GVKPIL has applied for such registration, but according to the company's last two annual reports, is not in compliance with the requirements of the designation due to excessive financial leverage.⁶⁴ The RBI guidelines do not detail the implications for such non-compliance.

Section 8

GVK Coal and Aurizon (a White Knight?)

GVKPIL's high levels of debt, combined with the delays and complexities of the US\$10bn Alpha Coal Project mean that they are seeking a 'white knight' investor to underwrite the financial viability of the project. Australian rail operator, Aurizon, is in negotiations with GVK over the construction of a single-purpose thermal coal export rail and port facility at a cost of US\$6bn to be fully operational towards 2020 and with a life of 50-plus years. Given general market trends this project runs the risk of becoming a stranded legacy asset.

Aurizon and GVKPIL... a non binding term sheet

On 11 March 2013 GVK Coal and Aurizon Holdings jointly announced they have signed a *"non binding term sheet to jointly progress the development of rail and port infrastructure to unlock Galilee Basin coal reserves"*.⁶⁵

Under the proposed framework, Aurizon would acquire a majority (51%) interest in Hancock Coal Infrastructure P/L, which owns GVK Coal's potential 60Mtpa rail and port projects at a construction cost in the order of US\$6bn.

This transaction is non-binding to both parties: *"Completion of the proposed transaction, including the (still unquantified) upfront consideration from Aurizon, would be subject to the satisfaction of a number of conditions including satisfactory due diligence, final Board approvals, third party approvals (some of which are outside of the control of the parties) and negotiation of final terms and definitive documentation."*⁶⁶

The rail project location is yet to be determined, with two alternatives:

- A. A direct greenfield standard gauge 495km line across a number of floodplains as originally envisaged by Hancock Prospecting (independent of and not connecting to the existing Queensland narrow gauge rail system). This option has received EPBC approval and is one of the rail corridors for the Galilee Basin defined by the Queensland Government;⁶⁷ or
- B. A combination greenfield/brownfield narrow gauge line named *"Central Queensland Integrated Rail Project"*. This would be integrated into Aurizon's existing system that already facilitates the rail shipment of the coal produced in the Bowen Basin.

To appreciate the size of this rail project, Option A involves a 60Mtpa greenfields railway line. This 495km railway would require 20 major bridges and 127km of culverts.⁶⁸ Phase II of the project plans to double this to 120Mtpa, envisioning the development of other GVK Coal and possibly the Waratah Coal and/or South Galilee Coal Project. Each train would carry 25,000 tonnes of coal on 240 wagons with a train length of 4 km pulled by three 4,400 hp locomotives travelling at a fully loaded average speed of 50km/hour.⁶⁹

Apart from thermal coal from the Galilee Basin, there is no other commodity that this rail line or the proposed T3 export terminal at Abbot Point would service. In light of the coal market trends outlined in section 10, this increases the risk that the investment may become a stranded asset. Aurizon's latest presentation suggests it is heavily pushing for a more progressive brownfields/greenfields version based around Option B. Aurizon states *"Expanding the brownfield Central Queensland Coal Network is a commercially sensible solution"*.⁷⁰

Aurizon... to vertically integrate into ports?

Should Aurizon move forward with this proposal, it means a move outside its core competency of rail freight into a totally new field of port ownership and operation. Additionally, we note that Abbot Point port has handled 10-12Mtpa of coal exports over the last decade. To step up to the 200Mtpa being reviewed currently is a 2,000% expansion – a move involving considerable risk of delay, cost blow-outs and/or difficulties.

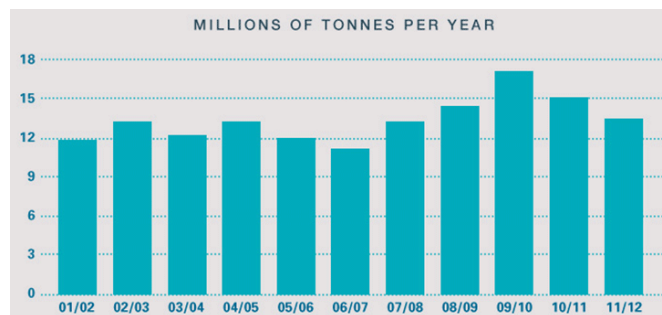
The port facility at Abbot Point (25km north of Bowen) is in the middle of its second major transformation, changing the port dramatically. For the last decade it was a small Queensland Government-owned port exporting 10-12Mtpa of coal. In 2011 the 3km long existing terminal (T1) completed a major expansion of its rated capacity to 50Mtpa (refer Figure 12). However, to-date it is still only operating at half its rated capacity (see Figure 13). In support of this expansion, Aurizon completed the A\$1.1bn Goonyella to Abbot Point Expansion (GAPE) rail project in December 2011.

GVK Coal and Aurizon (a White Knight?)

Figure 12 Abbot Point Port with the Existing T1 Rail and Coal Loading Facilities⁷¹



Figure 13 Abbot Point – Coal Exports by financial year



Source: North Queensland Bulk Ports

Adani Enterprises (of India) acquired a 99 year lease over the existing 50Mtpa Abbot Point coal terminal in April 2011 from the Queensland Government for A\$1.8bn.⁷²

The Abbot Point port has proposals underway to more than quadruple coal export capacity in a move from one to potentially four terminals. Having acquired a long-term lease on the existing port, Adani Abbot Point Terminal is planning to add a second terminal (T0) adjacent to T1 to the South, with a proposed capacity of 70Mtpa as part of its own plans to open up part of the Galilee Coal Basin via its Carmichael Project. To the immediate north, BHP Billiton has paused but not withdrawn plans to develop T2, a 60Mtpa coal facility. Alongside this is GVK Coal's proposal for T3, a fourth facility with 60Mtpa rated capacity. All proponents seeking to build this mega-billion dollar complex *"recognise the sensitivity of the marine environment of the Great Barrier Reef World Heritage Area"* (GBRWHA).⁷³

The Australian Government has come under heavy criticism from the UN's World Heritage Committee for allowing continued coastal development in the Great Barrier Reef World Heritage Area, including, most recently, the conclusion that "some of the actions of the State Party [Australia] appear inconsistent with the requests made by the World Heritage Committee".⁷⁴

The T3 port expansion and coal storage facility will lie directly adjacent to the 5,154 hectare Caley Valley Wetland and the assorted threatened bird, reptile, mammal and flora species, including a nationally significant population of a species listed as endangered under the EPBC Act. The rail loop for the Alpha coal project and T3 coal terminal would develop and enclose part of this wetland.

Section 9

Project Risks

“Greenfields are risky. Greenfields do have capital over-runs. Greenfields do have delays that kill the NPV on those projects... They may be good projects afterwards and they do generate good cash because they are lowest quartile in the area, but returns for the original investors (are) not so pretty.”

Glencore CEO Ivan Glasenberg, April 2013⁷⁵

GVK Coal faces a significant number of risks in bringing to fruition what would prove to be the largest black coal mine in Australia's history. The ability of resource firms to deliver major capital projects on time and on original budget is highly questionable and evidence to-date would suggest GVK Coal is no different. Full production before 2018 is unlikely. GVK Coal's US\$55/t cash cost estimate is outdated in our view. Power and water infrastructure is critical but not expected any time soon. Any outsourcing of the rail and port infrastructure projects to the Aurizon joint venture (JV) is likely to see the Alpha Project cash cost rise to at least US\$70/t, more in line with Australia thermal coal averages and far above the price which has formed the basis of the project's public disclosures.

Probably the largest risk for GVK Coal is the ability to finance this US\$10bn project, given the heavily constrained financial position of GVKPIL (as discussed in Section 6). We address a selection of other project risks below, particularly in relation to:

1. project timing.
2. capital costs; and
3. operating costs.

GVK has set an aggressive timetable, with GVKPIL Vice Chairman Sanjay Reddy in March 2013 stating *“I expect construction on the projects to commence by FY-end.”* (This implied the project would start by March 2014.) Asked when GVK Coal would start yielding coal to GVKPIL's Indian coal-fired power plant, Reddy continued *“Yes, it is a three year construction period. We expect that before the end of this year, we should start construction.”*⁷⁶ However, in September 2011 GVK stated *“First coal production is expected in 2014.”*⁷⁷ So two years on GVK Coal is three years behind schedule. And we note that a recent Right to Information release by

Queensland Treasury suggests first coal exports are only expected in 2019 at 1.6Mt, rising slowly to 15Mt by 2022, this suggests another three years delay ahead.⁷⁸

Given the size of this project and the associated rail and port infrastructure project requirements, plus outstanding environmental, regulatory and legal issues yet to be resolved, there is a high probability of delays to GVK Coal's plan is to start construction at the beginning of 2014. These delays suggest that a meaningful volume of coal exports is unlikely until 2018 at the very earliest.

With interest expenses of some US\$5m per month this year, rising to some US\$10m per month next year and rising with every step forward, the cash drain of the upfront US\$1.26bn purchase plus the US\$10bn of (currently unfunded) capex will really stack the odds against this project seeing a profitable outcome for shareholders.

In addition to the expected delays, there is also a high risk of capital cost over-runs, combined with the likely underestimation of operating costs for the mine. GVK estimates the production costs for the Alpha mine to be in the order of \$55 per tonne, well below the industry average. However our analysis, based on standard industry factors indicates that the production costs are likely to be in the order of \$70 per tonne. Mounting interest expenses will create an additional burden.

Timing is likely to be optimistic... expect delays

Building a \$10b integrated mine, rail and port project would be challenging for even the most experienced operator. However, there are a number of environmental factors that combine to amplify the risks of prolonged delays for GVK's Alpha Coal Project.

While concerns have been raised over the likely water impacts of the mine and rail line, as well as flooding risks, perhaps the most significant environmental risks relate to GVK's proposed T3 coal export terminal which is located within the Great Barrier Reef World Heritage Area.

Project Risks

The T3 port expansion and coal storage facility will lie directly adjacent to the 5,154 hectare Caley Valley Wetland and the assorted threatened bird, reptile, mammal and flora species, including a nationally significant population of a species listed as endangered under the Federal Environmental Protection and Biodiversity Conservation (EPBC) Act. The rail loop for the Alpha Coal Project and T3 coal terminal would develop and enclose part of this wetland.

The Federal Environment Department is currently investigating allegations of ‘false and misleading conduct’ by GVK’s “Hancock Coal Pty Ltd” following the release of documents obtained under Freedom of Information by Greenpeace. The investigation centres on the alleged omission of important ecological data relating to bird surveys of the Caley Valley Wetland from the environmental assessment submitted by the company.⁷⁹ At the time of writing, this investigation was still underway.

In addition to this investigation, the granting of an environmental authority of the Alpha Coal Project (mine and rail) is being challenged by a number of environmental groups and landowners in the Queensland Land and Environment Court.⁸⁰ The court hearing is set for September with a ruling not due for several months afterwards.

Power infrastructure is not in place – further costs and risk of delay

GVK Coal is most likely to source electricity via a purpose built 160-200km high voltage greenfields power line linked up to the Lilyvale Substation⁸¹ (see Figure 14). This again adds to the challenges and cost of establishing this greenfield project, particularly given that Powerlink Queensland is not planning to finish construction of the transmission line until 2016/17⁸² (see Figure 15).

Figure 14 Proposed Powerlink Galilee Basin Transmission Line Project

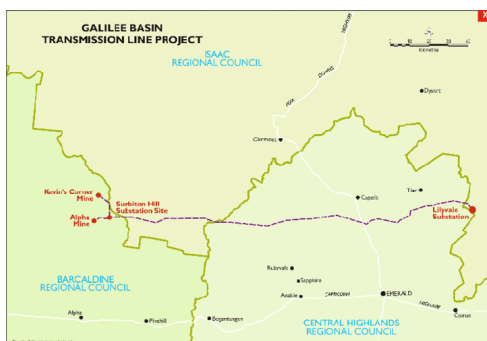


Figure 15 Proposed Powerlink Galilee Basin Timeline



Lack of water infrastructure... further costs and risk of delay

The Alpha Coal mine would be expected to consume more than 8,000m litres of water per annum at peak production.⁸³ Together with Kevin’s Corner, the two mines would be expected to consume over 11,000m litres per annum at peak.⁸⁴

The original plan for mine water was based on SunWater’s proposed A\$1.2-2.0bn Connors River Dam and Pipeline project, but in July 2012 SunWater announced it had decided not to proceed with this work: “A number of changes to our customers’ project timeframes and investment horizons have resulted in an incompatibility of timing for customer financial commitments to the project priorities.”⁸⁵ GVK Coal was the key proposed customer, proposing to take a significant portion of the pipeline’s capacity.

Following the cancellation of the Connors River Dam and Pipeline, GVK Coal has proposed to source water for the mine and associated coal washing and coal dust suppression systems via a purpose built 220km water pipeline from the Fairbairn Dam.⁸⁶ However, we understand this proposed pipeline (to be developed by the Queensland Government owned SunWater) is not yet in the public planning system, suggesting construction of this key infrastructure is some way off.

Capital costs... likely to be significantly under-estimated

The history of large resource projects is littered with significant cost overruns relative to the original feasibility budget. Figure 16 takes a small sample of major mining projects from the last decade, with average 20-30% capital cost blowouts. Given in excess of US\$100bn of investments in liquid natural gas export terminals currently underway in Queensland, the scope to add another US\$10bn of capital expenditure for the GVK Coal project would add upward price pressure on an already tight regional construction market. Rio Tinto and Hancock Prospecting recently lifted their estimate of their Hope Downs 4 iron ore project in Western Australia by 30% to US\$2.1bn, in part due to the strength of the Australian dollar.⁸⁷

Project Risks

Figure 16 Recent Major Mining Project CAPEX Overruns

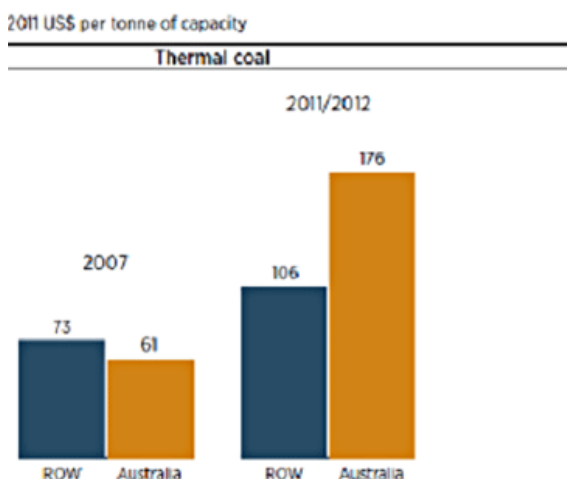
Project	Country	Company	Feasibility budget cost	Actual / forecast cost overrun
Ravensthorpe/Yabilu expansion	Australia	BHP Billiton	A\$1.40 bn	30%
Spence	Chile	BHP Billiton	US\$0.99 bn	10%
Telfer Mine	Australia	Newcrest	A\$1.19 bn	18%
Stanwell Magnesium	Australia	AMC	A\$1.30 bn	30%
Boddington	Australia	Newmont	A\$0.87 bn	100%
Goro Project	Indonesia	Inco	US\$1.45 bn	15%
Prominent Hill	Australia	Oxiana	A\$0.35 bn	51%

Source: D.J.Noort and C.Adams 2006

The Australian Coal Association (ACA) has also warned that the thermal coal industry in Australia is not competitive in the global context for new mines, in May 2013 citing *“a recent study by Port Jackson Partners, capital costs for Australian thermal coal projects are 66% above the global average... Energy and transportation costs are also much higher in Australia than in competitor countries.”*⁸⁸

The ACA cites Port Jackson Partners as saying the cost of building a new thermal coal mine in Australia in 2012 has risen to US\$176/t of capacity⁸⁹ (more than double the 2007 cost of US\$61/t of capacity) – Figure 17. This suggests the 32Mtpa Alpha mine alone will have a capital cost approaching US\$5.6bn, before the rail, water and port infrastructure capital cost is added. This compares to the A\$3.4bn cited in the May 2012 Queensland Coordinator-General’s report.

Figure 17 Capital Spend to Build a Tonne of New Capacity



Source: Australian Coal Association, May 2013 – referencing Port Jackson Partners September 2012 page 26 “Opportunity at Risk”

Remote operation of the mine... new and largely untested

GVK Coal, having never operated a coal mine, proposes to build the biggest black thermal coal mine in Australian history. While this is a massive challenge in itself, GVK faces several other technical challenges including its requirement to operate the mine remotely, as cited in Ausenco’s Case Study on the Alpha Coal Project:⁹⁰

“The Owner requires to operate this plant from a remote operations centre several hundred kilometres away from the site, which introduces some unique challenges in automation and the application of cutting edge technologies.”

Building a mine in an area prone to flooding... risking a repeat of Ensham?

Ausenco’s Alpha Case Study goes on to say the project has another key challenge:

“The plant site is located in an area where black soils present unique construction challenges and a degree of seasonal variability in access conditions to work areas. January 2011 saw the minesite and surrounding areas isolated by floodwaters.”

Black soils are highlighted due to their high clay content making unsealed roads impassable after even light rain, making weather interruptions to work progress inevitable and unpredictable.

We are reminded that in January 2008, the Ensham mine in central Queensland was inundated by floodwaters which filled two of its six coal pits with more than 100,000 megalitres of water due to underestimation of flood risks. Damage was estimated at \$300m,⁹¹ ignoring the uncalculated cost of all the coal pollutants that were washed into the Queensland water system.

Project Risks

Figure 18 Ensham Coal Mine 2008



Figure 19 Ensham Coal Mine 2008



Coal production costs... likely to be materially underestimated

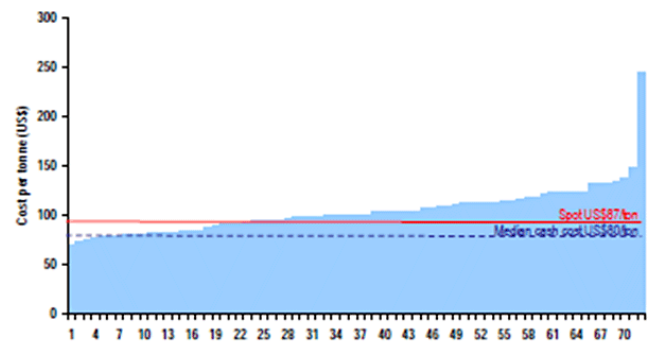
The financial viability of any project to open up the Galilee Basin to coal mining for export has been long debated. Most recently, commentators observed, *“The (Galilee) basin holds vast quantities of thermal coal but analysts estimate the economics do not stack up with thermal coal prices needing to rise above US\$120 a tonne (to make any project viable).”*⁹²

The managing editor of Platts International Coal Report, James O’Connell, was quoted by Forbes India as saying Australian thermal coal production costs are about US\$70/t.⁹³

Figure 20 provides the current cost curve for Australian thermal coal producers and indicates a median cash cost of US\$80/t.⁹⁴ Morgan Stanley suggests the cost curve has increased from an average of US\$70/t to US\$80/t over the last twelve months,

leaving cash costs not far short of the current US\$88/t spot price. This would suggest that the US\$55/t cash cost estimate published by GVK Coal in February 2013⁹⁵ could be optimistic and require updating given the significant resource sector cost inflation over the last few years.

Figure 20 Australian Thermal Coal Mines Cash Cost vs Spot (US\$/t)



Source: Wood Mackenzie, Morgan Stanley Research

Freight costs... double the distance of the Queensland average

Aurizon publishes its Queensland Coal Rail divisional sales and volumes – as per Figure 21. We estimate Aurizon will generate an average A4.3c/km per tonne of coal transported in FY2013 and its average coal shipment is 224km. By comparison, the Galilee Basin is 495 km from Abbott Point using the more direct route, more than double the average for Queensland. Assuming the economies of scale will more than offset the higher capital costs of the greenfields nature of this potential new contract, we have allowed a 10% discount for scale, giving A3.9c/km/t over 495km gives cash cost of A\$19.30/t for the transportation of coal from the Alpha mine to the port at Abbot Point.

From Aurizon’s perspective, GVK’s 32Mtpa would generate annual revenues of A\$618m. At Aurizon Coal Rail’s current EBIT margins of 14%, this would equate to A\$86m EBIT, generating a 4% pre-tax return on an estimated A\$2bn investment (under rail Option B). Aurizon would be counting on additional coal tonnage from other mines in the Galilee (refer Figures 4 & 5) and scope to lift its EBIT margins closer to Tier 1 US rail freight levels of 20% in order to ensure an adequate return on investment.

Project Risks

Figure 21 Rail Costs per Tonne (A\$/t)

Aurizon - Coal	FY2011 Est.	FY2012 Est.	FY2013 Est.
Tonnage (million)	181.6	185.6	194.0
ntk (billion)	40.9	41.9	43.4
Revenue (\$m)	1,691	1,828	1,880
Km / tonne	225	226	224
Revenue (per ntk)	\$0.041	\$0.044	\$0.043
Alpha to Abbott Point			495
Rail cost per tonne (A\$)			\$21.44
Rail cost – assuming a 10% discount (A\$/t)			\$19.30

ntk - revenue per net tonne km

Source: Aurizon annual report 2012, own estimates

When GVK Coal stated its target cash cost of production was US\$55/t, we assume this reflects the rail and port costs being carried on internally 100% owned facilities, i.e. mostly of a capital nature, with limited cash operating costs. Outsourcing the rail and port operation to an Aurizon-led joint venture could take GVK Coal's estimate of US\$55/t up to US\$70-80/t and in line with average Australian thermal coal cash costs. With the Aurizon JV, the Alpha mine would bear the full A\$19/t in cash costs of rail plus an estimated A\$5/t in port charges.

Taxes on coal... inevitably will continue to increase

In his February 2013 budget speech the Indian Finance Minister, Palaniappan Chidambaram, stated that the *“Overseas purchases of steam and bituminous coal, both used by power producers, will attract a customs duty and a countervailing duty of 2% each.”*⁹⁶ While only small, this is the second increase in this import tax in the last few years. In our view, this tax will continue to increase as a source of funding for the rollout of renewable energy and upgraded transmission grid infrastructure in India, plus as a means to combat the significant health effects of coal-fired power station and coal dust pollution.

Taxes are increasingly being levied both by the importing nations, and those allowing the mining and export of coal. In Australia, over the longer term GVK Coal will be subject to the Mining Rent Resources Tax, introduced 1 July 2011, unless it is repealed following a change of Government.

However, the much more significant tax imposed is the Queensland Government royalty on coal, which is currently set at a rate 7% of coal revenue up to A\$100/t. But from 1 October 2012, beyond A\$100/t the rate was increased from a flat 10% to the new rate of 12.5% and then 15% of

incremental revenue, not profits⁹⁷ (see Figure 22). This royalty is possibly the third largest cash cost component of production behind labour and rail freight.

Figure 22 Queensland Government Coal Royalties

Coal price range	% royalty
A\$0-100/t	7.0%
A\$100-150/t	12.5%
>A\$150/t	15.0%

China has a surcharge applied to all electricity usage, with all the proceeds used to fund the rollout of renewable energy infrastructure. Created under the *China Renewable Energy Law* in 2006,⁹⁸ this surcharge was doubled in December 2011 from Rmb0.004/kWh to Rmb0.008/kWh, creating a fund flow we estimate at Rmb43bn (US\$7bn) annually by 2013. We understand China is expecting again *“to double the current renewable energy surcharge levied on all consumers in 2015 to Rmb0.016”*⁹⁹ We estimate this would generate US\$16bn pa.

An import tax on coal, and/or a carbon tax is also likely to be implemented in the next 2-3 years, again as a measure designed to reduce China's coal consumption and to encourage the development of nuclear, natural gas, renewable generation and energy efficiency (see Section 10).

Project Risks

China's National Energy Administration has also released draft regulations proposing to ban the importation of low-quality coal in May 2013. Low quality coal is defined in the proposal as imported coal with a calorific count of less than 4,544kcal/kg, or an ash content more than 25% or sulphur more than 1%.¹⁰⁰ This is yet another measure China will use to reduce its reliance on coal and reduce atmospheric pollution.

In May 2013 the National Energy Administration has also proposed a new taxation law that for the first time includes carbon tax into the existing environmental protection taxation system. In addition, the rates of pollutant discharge fees and related taxes have been increased as compared with the ongoing pollution charges.¹⁰¹

Cash cost of production... more like US\$70/t than US\$55/t

GVK have repeatedly claimed a cash cost of production from the Alpha mine of US\$55/t. However, given the factors and costs outlined above, we estimate a cash cost of production of at least US\$70/t (see Figure 23), even before the interest costs on this US\$1.26bn purchase and US\$5bn of mine development capital expenditure is taken into account. Excluding the interest expense generated by the Aurizon JV rail and port infrastructure, the interest costs to GVK Coal could be over US\$400m pa by 2018 (US\$5bn of capital expenditure on the mine plus US\$1.26bn on purchase @ 6-7% cost of borrowings) – on 30Mtpa this is another US\$13.56/t cash cost that needs to be covered by the project. For the project to make GVK Coal a commercial return on its capital will require a sustained thermal coal price well in-excess of the current spot rates of US\$88/t FOB Newcastle.

Figure 23 US\$70/t Estimated Cash Cost of Production – Post-Aurizon JV

Cash cost of production	A\$/t	US\$/t	% of cash cost	% of revenue
Labour & Overheads	11.50	11.15	16%	13%
Water/Electricity/Explosives/Consumables	19.46	18.88	27%	21%
Diesel (assume 1.9L/tonne of ROM coal)	3.81	3.69	5%	4%
Coal preparation	5.00	4.85	7%	6%
Rail costs	19.30	18.72	27%	21%
Port costs	5.15	5.00	7%	6%
Marketing cost (assume 2% of revenue)	1.81	1.76	3%	2%
State Govt. Royalty	6.13	5.95	8%	7%
Cash cost per tonne	72.17	70.00	100%	
Interest expense (on \$5bn + \$1.26bn @ 6.5%)	13.98	13.56		
Cash cost including cash interest	\$86.15	\$83.57		95%
Interest expense (on \$5bn + \$1.26bn @ 6.5%)	\$90.72	\$88.00		
Cash cost including cash interest	0.97			

We note that the most recent GVK Coal presentation on 2 May 2013 for the first time refers to a ~US\$75/t “2019 Australia FOB Cost Curve – Energy Adjusted” for Alpha.¹⁰² This presentation is indistinct as to if this assumes the rail and port costs are primarily of a capital or operating cash cost per tonne basis.

Section 10

Thermal Coal Market Outlook

“Investors need to challenge the assumption that coal demand will continue to rise in China and elsewhere, otherwise billions of dollars of taxpayer, superannuation and shareholder funds will be wasted in assets linked to unburnable carbon.”¹⁰³

James Leaton, Research Director, Carbon Tracker, 2013

With global demand for thermal coal lower than previous market expectations and export supply expanding, thermal coal prices are more than 30% below the 2008 peak. The substitution of coal by natural gas and renewable energy is expected to accelerate over the medium term, capping the thermal coal price to levels around the current spot price at best. In particular, we project that China's total thermal coal consumption will peak by 2018, and progressively decline thereafter, a fundamental trend reversal compared with the last four decades. Renewables will have an increasingly deflationary impact on global energy prices. In the current market a surplus of Australian coal would act to depress Australia's export terms of trade to the economic benefit of coal importing nations like India and China.

Project cancellations... coming rapidly across the resource sector

There has been a raft of resource project cancellations and deferrals over the last year, reflecting the end of the commodity price boom. Rio Tinto, BHP Billiton, Glencore Xstrata and Woodside have led this process. This was recently highlighted by ANZ Research's report "Bracing for Change" which stated:

*"We have again revised lower the potential pipeline of major projects in Australia to AUD440bn as at March 2013 from... AUD498bn in July 2012. An estimated AUD75bn of mining projects have been removed from the potential investment pipeline over 2013-2016."*¹⁰⁴

Since this report was published, Glencore Xstrata announced the cancellation of a US\$1bn 35Mtpa coal export terminal at Balaclava Island, just north of Gladstone in Queensland. *"This decision has been made as a result of the poor current market conditions in the Australian coal industry, excess port capacity in Queensland, specific shipping limitations and concerns about the industry's medium-term outlook."*¹⁰⁵

Macquarie Group recently stated:

*"hopes for the Galilee Basin development look increasingly remote. With huge upfront capex to build the >500km rail lines and coal quality which compares poorly to peers, at current ~85-90/t FOB pricing and a flat market outlook project paybacks look extremely poor. Unless conventional economics are ignored due to deep pocket financial backing, further delays to Galilee development look certain."*¹⁰⁶

The Australian Coal Association summarises the current state of the industry in their May budget report:

*"The Australian coal industry is experiencing the most difficult operating conditions in ten years, with the suspension of major projects, the closure of mines and some 9,000 jobs shed over the past 12 to 15 months."*¹⁰⁷

China... coal demand should decline post 2017, way earlier than most forecast

China's future coal consumption will be dramatically impacted by a moderation of economic growth, improved energy efficiency and rapid development of renewable and low carbon energy sources. As the largest coal producing nation (Figure 24) accounting for 45.7% of global coal production and consuming 49% of global coal supply, even small shifts in domestic Chinese demand has the potential to significantly impact the global market.

Thermal Coal Market Outlook

Figure 24 Global Coal Production, Largest Producers

Million tonne	1981	1991	2001	2011	Change '11 vs '01	Share of total 2011
China	622	1,087	1,472	3,520	139%	45.7%
United States	747	904	1,023	993	-3%	12.9%
India	130	240	342	588	72%	7.6%
Indonesia	0	14	93	325	251%	4.2%
Russia	n/a	353	270	334	24%	4.3%
Australia	127	218	335	415	24%	5.4%
South Africa	130	178	224	255	14%	3.3%
Germany	493	346	202	189	-7%	2.5%
Rest of World (ROW)	1,587	1,216	959	1,077	12%	14.0%
Total	3,836	4,557	4,918	7,695	69%	100.0%

Source: BP Statistical Review 2012

The rate of coal consumption growth in China is driven by three key factors:

1. The rate of economic growth;
2. The rate of energy efficiency improvement; and
3. The rate of development of alternative energy sources.

Rate of economic growth: Graham Kerr, CFO of BHP Billiton was quoted saying that for China *“Their moderated growth is around the 7-8% mark for the next couple of years, then trending down towards the 6% mark.”*¹⁰⁸ Even this rate of growth may prove optimistic given the increasing propensity for China's new leadership team to focus on the quality of growth over quantity. Air pollution and declining coal consumption is a key measure of success in this major economic reform. The years of double digit annual Gross Domestic Product (GDP) growth rates are history for China, to the sustainable benefit of the nation.

Rate of energy efficiency improvement: China has set a target of 3% pa for energy efficiency improvements – 16% over the 12th Five Year Plan for 2011-2015. This translates into a 17% reduction in carbon intensity (carbon emissions per unit of GDP).¹⁰⁹

The rate of development of alternative energy sources: In the interests of energy security, new industry development, employment growth and increased self-reliance in energy policy, China is developing low-carbon energy alternatives to coal faster than any country in history. We forecast that China will

commission ~6 gigawatts (GW) of nuclear annually over the next five years, plus 18 GW of hydro-electricity, 11-12 GW of solar, 17 GW of on-shore wind, 1-2 GW of offshore wind and 2 GW of biomass/EfW (see Appendix A).

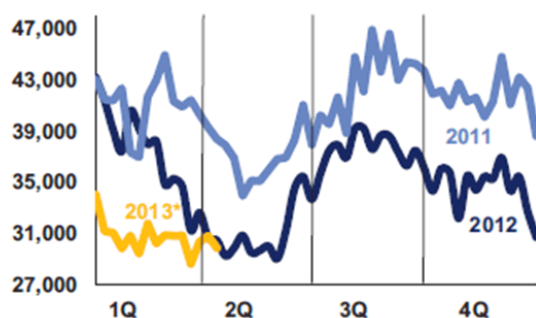
The net result of the interplay of these factors is that China will progressively reduce its reliance on coal (as a percent of total electricity production), an acceleration of the trend evident over the last five years. By 2017, China's total coal consumption for electricity is likely to peak in absolute terms, and steadily decline thereafter.

United States... reduced domestic coal uses increases export availability

The US is the second largest producer of coal at 12.9% of global production. A combination of the US Environmental Protection Agency's tightening of its Mercury and Air Toxics Standards¹¹⁰ and the US shale gas boom, improved energy efficiency and renewable energy investments are causing many coal-fired power station proposals to be scrapped. By the end of 2012, the US had a cumulative installed capacity of 60 GW of wind farms (13.4 GW of installs in 2012 alone), plus 7.7 GW of solar capacity (3.2 GW in 2012 alone). This is considered likely to permanently displace domestic demand for coal. Figure 25 shows the weekly US carload shipments of coal, clearly showing the 25% step down in demand between 2011 and 2013 to below 30,000 carloads per week.

Thermal Coal Market Outlook

Figure 25 US Coal Shipments (Weekly Carloads)



Source: Union Pacific Corp, 18 April 2013

With this fall in domestic demand, US coal producers have intensified their efforts to place more U.S. coal production on the global market. According to the United States Energy Information Administration:

*"This increase in exports marks a significant reversal from the general downward trajectory of U.S. coal exports beginning in the early 1990s... Coal exports in 2011 rose 171% from 2002, with only a brief interruption by the global recession. Export growth accelerated after the recession...Current data for 2012 (through August) show coal exports are growing even faster and should more than double 2009 export levels, buoyed by growth in U.S. steam coal."*¹¹¹

Arch Coal, a leading U.S. coal producer optimistically estimates that coal export capacity in the United States will double by 2020.¹¹² Industry analysts warn of an oversupply of coal in the seaborne markets going forward.¹¹³

India... increasing chance India will bypass coal as it did with fixed line phones

India is an increasingly significant player in the global coal market with 7.6% of total world production in 2011 and 12% of world seaborne trade in thermal coal. Despite having the fifth largest thermal coal reserves at 60bn tonnes, India's coal is generally of very low calorific value and high ash content making it less efficient and more polluting than other coal. Much of India's coal reserves are located either under significant population masses or in national parks that are covered by the Wildlife Protection Act (1972), creating environmental permitting difficulties and causing social tension around coal mining development. This is leading to considerable domestic coal supply constraints.

This may help explain why the Indian Government is supportive of GVK Coal, Adani and Reliance's push to develop Australian coal deposits for export. The more the global supply, the lower the total import costs of thermal coal to India.

Additionally, the continued rapid expansion of coal fired power generation in India is far from certain given conflicts over water availability, land access, fuel constraints, pollution and increasing financial distress in the Indian power sector. The Reserve Bank of India has flagged it will not intervene to bailout defaults on new power sector loans.¹¹⁴ Should current disruptions with respect to coal fired power generation continue, it is increasingly likely India will increasingly bypass coal in favour of developing a distributed solar with storage energy system, backed up by centralised hydro and wind energy generation.

Coal demand falling in Europe... the fossil fuel model is broken – where is next?

Moody's April 2013 report: *"European Utilities: Wind and Solar Power Will Continue to Erode Thermal Generators' Credit Quality,"* encapsulates the change underway in European energy markets:

"Large increases in renewables have had a profound negative impact on power prices and the competitiveness of thermal generation companies in Europe. What were once considered stable companies have seen their business models severely disrupted and we expect steadily rising levels of renewable energy output to further affect European utilities' creditworthiness."

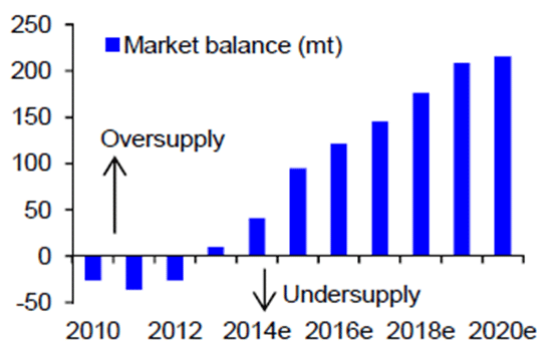
The dramatic decline in market value of German fossil fuel utilities over the last five years is in our view a precursor to the transformation of the European Union and then the global electricity sector. With the continued rise of gas and renewable energy generation globally as an increasing substitute to coal fired electricity generation, the outlook for the thermal coal export industry is in our view troubled.

Former Saudi Oil Minister Sheikh Yamani once said *"the stone age didn't end because we ran out of stones."* The world is moving beyond the coal age, not because we are running out of coal, but because the market is increasingly turning to cleaner and/or self generated alternatives. At the same time, significant new supply of coal is opening up to the export market, with significant increased supply from the US as the shale gas boom permanently displaces domestic demand for coal. Market forecasts for the outlook for thermal coal prices are increasingly reflecting lower demand combined with higher supply.

Thermal Coal Market Outlook

Deutsche Bank's May 2013 report provides a market outlook for coal demand, supply and hence thermal coal pricing that reflects these new realities. Titled "*Commodities Special Report: Thermal Coal at a Crossroads*", Deutsche forecasts a significant oversupply of thermal coal globally, building progressively through 2020¹¹⁵ (see Figure 26).

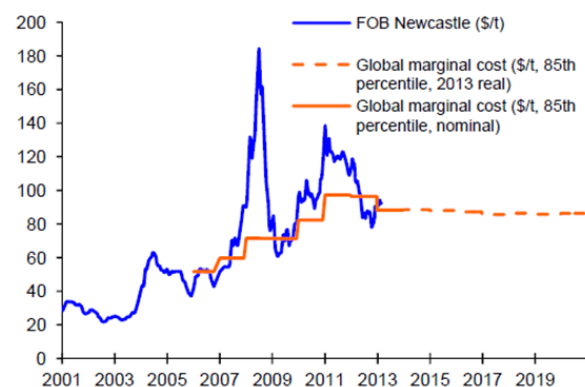
Figure 26 Market Balance to 2020, Thermal Coal



Source: Bloomberg Finance LP, Deutsche Bank

The conclusion of this is that thermal coal prices are likely to continue to track the global marginal cost curve, as Deutsche Bank's analysis highlights (see Figure 27).

Figure 27 Global Thermal Coal FOB Cash Costs, Real 2013 US\$/t

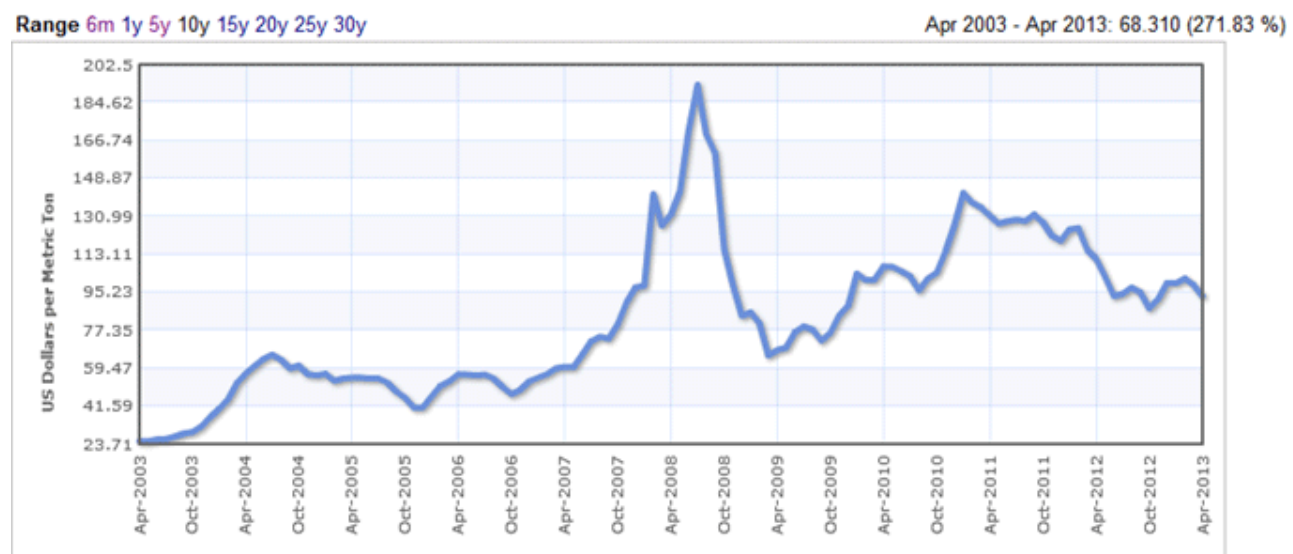


Source: AME, Deutsche Bank Research

Australian prices... following international trends

Figure 28 details the 10 year Australian thermal coal price chart to April 2013. Prices are reported to be 5% weaker to-date in May 2013, with spot currently at US\$88/t.

Figure 28 Australian Thermal Coal Export Price, Newcastle FOB (US\$/t)



Description: Coal, Australian thermal coal, 12000- btu/pound, less than 1% sulfur, 14% ash, FOB Newcastle/Port Kembla, US Dollars per Metric Ton
Source: Indexmundi.com

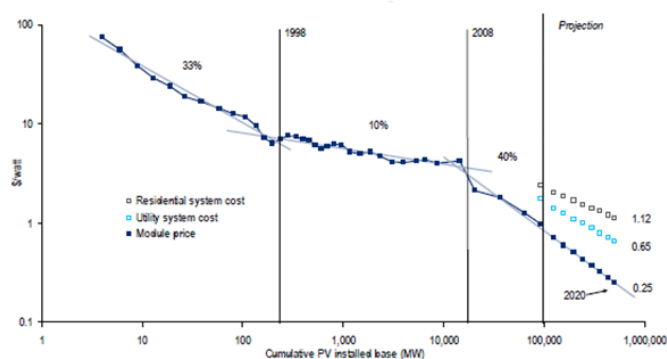
Thermal Coal Market Outlook

The shifting dynamics in the global coal market are set to place Australia, as the second largest exporter of thermal coal in the world, as a price taker in an increasingly oversupplied market across the period of operation of the proposed Alpha project. The likely timeframe for the ramp-up to full production of GVK Coal will be parallel to China's projected peak in demand. Falling global demand as coal is displaced by gas and renewables, combined with surplus supply is likely to see real thermal coal prices falling further, diminishing the likely returns for large, capital intensive, long term thermal coal infrastructure projects such as GVK's Alpha project.

We do not doubt coal will remain a significant if declining energy source for the next few decades. However, the shift in China away from coal is likely to be replicated globally. We expect developing countries to adopt a variety of distributed, low-carbon renewable energy sources in a similar way they have adopted mobile telephones, increasingly skipping the need to develop a massively capital intensive grid model reliant on centralised generation.¹¹⁶ One of the world's best sources of information on this energy revolution is Bloomberg New Energy Finance, who recently wrote that they "project that 70% of new power generation capacity added between 2012 and 2030 will be from renewable technologies (including large hydro)."¹¹⁷

We view this as a highly probable scenario, with scope for this 70% to be well exceeded should energy efficiency initiatives really take off, combined with further big strides in solar technology and economies of scale. We see a global 'solar with storage' energy revolution really starting to bloom, as a recent Citi report¹¹⁸ detailed (see Figure 29).

Figure 29 Solar System Costs (In Recent Years the Learning Rate has Accelerated to 40%)



Source: Citi Research, Bloomberg New Energy Finance

As distributed solar electricity generation becomes cheaper than delivered coal-fired power, the demand for new coal power stations will correspondingly diminish. Further, as existing coal fired power stations become obsolete and are closed, demand for thermal coal will diminish.

The financial markets are increasingly likely to devalue the legacy fossil fuel assets, railway and port infrastructure such as that being proposed for GVK Coal.

Unburnable coal... Australia's carbon bubble

The concept of unburnable carbon is based on a scientific analysis that burning more than 886 Gt of CO₂ between 2000-2050 will result in more than 2°C of global warming, triggering dangerous climate change. By 2011, globally, over one third of this carbon budget of 886 Gt CO₂ had already been burnt. The known fossil fuel reserves owned by resources companies if exploited and burnt would easily exceed the remaining allowance. The reserves beyond this limit are increasingly being referred to as "unburnable carbon". To stay within the carbon budget only 20-40% of existing coal, gas and oil reserves can be burnt.

Australia's known coal reserves alone, if burnt represent almost 25% of the global carbon budget.

As the consequences of global warming become more apparent, it is likely that there will be increasing public pressure for political and regulatory change. Europe, Australia, and some U.S. states are already supporting emissions trading schemes. Reports last month suggested China is considering capping emissions in its next five year plan (2016-2020). There will be increasing global pressure to leave these unburnable reserves of coal in the ground.

Companies currently holding coal assets, face an increasing political risk of those reserves being stranded by a dramatic global shift to limit carbon emissions and domestic policy changes to support these demands. As a result, long-term thermal coal investments such as GVK's Alpha Coal Project face long term climate related (regulatory) risks.

Section 11

Conclusion

The proposal by GVK to build a \$10bn greenfield thermal coal project in Australia's remote Galilee Basin at a time of a global downturn in coal markets is a high risk proposition.

The project timelines have been shown to be unrealistic, and further delays are likely due to the unprecedented ambition and complexity of an Indian company with no track record of building mines in Australia, building what would be by far the country's largest thermal coal mine in an area with no water, power, or other service infrastructure. The project would require almost 500km of new rail infrastructure, across floodplains and through important farmland, to a new export terminal proposed to be located in the Great Barrier Reef World Heritage Area. This at a time when most major coal producers are seeking to sell or downscale production due to a weakening global outlook for thermal coal.

While the project would be ambitious even for an experienced developer with a strong balance sheet, GVK are attempting to develop the US\$10bn Alpha Coal Project at a time when they have a total of 16 greenfield infrastructure projects under development across 6 different asset classes.

It is likely that both capital and operating costs have been under-estimated, while project timelines are expected to continue to slip.

In the context of the longer term trend towards low carbon energy and increased regulation and restrictions over coal use in China, the US and in other countries, the investment in thermal coal export infrastructure in the Galilee Basin runs a risk of becoming a stranded asset.

Appendix A: China's Electricity Sector Transformation: 2008-2020

Fuel Breakdown – PRC Net Capacity Additions (GW)	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	% of 2020 total
Coal	586	632	683	733	777	819	849	876	893	900	897	889	876	49%
Natural Gas	15	20	26	33	39	46	54	63	72	82	93	104	115	6%
Hydro	172	197	216	231	246	267	284	301	318	335	352	369	386	22%
Nuclear	9	9	11	13	13	17	21	28	28	28	28	28	28	2%
Wind Power – onshore	12	26	43	60	74	92	110	127	144	160	176	191	205	12%
Wind Power – Offshore	0	0	0	0	0	1	1	3	5	9	13	19	27	2%
Solar Power	0	0	1	3	8	17	27	39	52	65	80	95	111	6%
Other (Biomass, EfW, CHP)	2	3	4	5	6	7	9	11	13	16	19	23	30	2%
Year End	796	887	984	1,077	1,164	1,265	1,354	1,448	1,526	1,596	1,658	1,717	1,778	100%

Fuel Breakdown – PRC Net Capacity Additions (GW)	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Coal	49.2	71.9	62.2	54.0	44.6	42.0	30.0	27.0	17.0	7.0	-3.0	-8.0	-13.0
Natural Gas	0.0	5.0	6.4	6.2	6.0	7.0	8.0	9.0	9.5	10.0	10.5	11.0	11.5
Hydro	23.2	25.3	19.3	14.5	15.5	21.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0
Nuclear	0.0	0.2	1.7	1.7	0.7	3.2	4.0	7.0	0.0	0.0	0.0	0.0	0.0
Wind Power	4.7	13.8	17.0	17.6	13.8	17.7	17.7	17.7	17.0	16.2	15.5	14.7	14.0
Wind Power – Offshore					0.2	0.5	0.5	1.5	2.5	3.5	4.5	6.0	8.3
Solar Power	0.0	0.0	0.5	2.0	5.0	8.7	10.3	12.3	12.8	13.3	14.3	15.3	15.8
Other (Biomass, EfW)	1.0	-1.9	1.0	1.0	1.1	1.3	1.6	2.0	2.4	2.8	3.2	3.6	4.0
Year End	78.1	114.3	108.2	97.0	86.9	101.4	89.1	93.5	78.2	69.8	62.0	59.6	57.5

Fuel Breakdown – PRC Hours pa operation	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Coal	4,911	4,839	5,031	5,294	5,135	5,042	5,080	5,100	5,100	5,100	5,100	5,100	5,100
Natural Gas	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,040	3,080	3,120	3,160	3,200
Hydro	3,621	3,264	3,404	3,028	3,000	3,263	3,263	3,263	3,263	3,204	3,204	3,204	3,210
Nuclear	7,731	7,914	7,924	7,772	7,772	7,823	7,823	7,823	7,823	7,838	7,823	7,806	7,817
Wind Power	2,046	2,077	2,047	1,907	1,892	1,949	2,036	2,048	2,078	2,108	2,138	2,168	2,200
Wind Power – Offshore					3,000	3,200	3,200	3,200	3,200	3,200	3,200	3,200	3,200
Solar Power	0	0	1,400	1,500	1,500	1,500	1,500	1,500	1,520	1,540	1,560	1,580	1,600
Other (Biomass, EfW)	3,750	3,750	3,750	3,750	3,750	3,750	3,750	3,750	3,750	3,750	3,750	3,750	3,750

Fuel Breakdown – PRC M MWh	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	% of 2020 total
Coal	2,759	2,884	3,281	3,737	3,878	4,026	4,239	4,401	4,513	4,574	4,585	4,557	4,503	64%
Natural Gas	45	53	70	89	107	126	149	174	205	237	273	310	350	5%
Hydro	579	601	702	676	715	837	899	955	1,010	1,046	1,101	1,155	1,212	17%
Nuclear	68	71	79	91	101	117	145	188	215	216	215	215	215	3%
Wind Power	20	39	70	98	103	130	185	231	271	312	352	393	435	6%
Wind Power – Offshore					0	1	3	6	13	22	35	52	75	1%
Solar Power	0	0	1	3	8	18	33	50	69	90	113	138	164	2%
Other (Biomass, EfW)	5	15	13	17	21	25	31	38	46	56	67	80	105	1%
Power production (M MWh)	3,476	3,663	4,216	4,711	4,932	5,280	5,683	6,041	6,342	6,553	6,740	6,899	7,058	100%
Electricity Output Growth*	5.7%	5.4%	15.1%	11.7%	4.7%	7.1%	7.6%	6.3%	5.0%	3.3%	2.9%	2.4%	2.3%	
GDP Growth	9.0%	8.7%	10.3%	9.2%	7.5%	7.0%	6.8%	6.6%	6.3%	6.0%	5.6%	5.2%	4.8%	
Electricity Output vs GDP Growth*	0.63	0.62	1.47	1.28	0.63	1.01	1.12	0.96	0.79	0.56	0.51	0.45	0.49	

* Net of energy efficiency gains of 3% pa or 16% over the 2015 vs end 2010 levels (12th Five Year Plan)

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