
EXPERT WITNESS REPORT OF FRANCOIS FERREIRA

1. I have been instructed by Mishcon de Reya LLP:
 - a. to explain the economic backdrop to the iron ore mining industry as at 2006;
 - b. to describe the role and remuneration of in-country partners of mining companies at that time;
 - c. to give my opinion as to the fair market value of the mining rights held by BSGR as at March 2008; and
 - d. to identify the impact of the current slump in iron ore prices on the viability of the Simandou project as at the present day.
2. I have also been asked to comment specifically on various contentions advanced by Guinea in its Counter-Memorial dated 17 June 2016.
3. I understand that my report is to be put before an ICSID Tribunal in Case No ARB/14/22 between BSG Resources Limited, BSG Resources (Guinea) Limited and BSG Resources (Guinea) SÀRL v. Republic of Guinea.

Documents considered

4. In producing this report, I have reviewed the following documents:
 - 1) BSGR's Request for Arbitration dated 1 August 2014
 - 2) Claimant's Memorial dated 29 February 2016
 - 3) Guinea's Counter-Memorial dated 17 June 2016 (French original together with the English translation)
 - 4) Witness evidence of both BSGR and Guinea;
 - 5) Decree No. 2006/706/MMG/SGG issued by Minister of Mines, dated 6 February 2006 (French original together with English translation)
 - 6) Decree No. 2006/707/MMG/SGG issued by Minister of Mines, dated 6 February 2006 (French original together with English translation)
 - 7) Republic of Guinea Mining Code 1995
 - 8) Services and Co-operation Agreement between BSGR Metals & Mining Limited and Pentler Holdings Limited (stated to be effective from 15 October 2005)
 - 9) Letter from BSG Resources (Guinea) Limited (BVI) to Pentler Holdings Limited dated 14 February 2006 ("the Milestone Letter")

- 10) Shareholders' Agreement between BSGR Steel Holdings Limited and Pentler Holdings Limited dated 19 July 2007, effective as of 10 March 2006
- 11) Memorandum of Understanding between the Republic of Guinea and BSG Resources (Guinea) Limited dated 20 February 2006 (French original together with English translation)
- 12) Share Purchase Agreement between BSGR Steel Holdings Limited and Pentler Holdings Limited dated 24 March 2008
- 13) Annotated copy of the Schedule of the Milestone Letter (Document 12 above), dated 16 July 2010
- 14) Statement of Financial Affairs of BSG Resources (Guinea) Limited of Guernsey dated 31 December 2009
- 15) Presentation by BSGR to Maalot dated October 2007, titled "BSGR - projects in advanced business development stages"
- 16) Decree of 9 December 2008 granting a prospecting permit over Simandou Blocks 1 and 2 (with translation to English)
- 17) Order of 10 June 2009 granting renewal of exploration rights in Simandou North and South (with translation to English)
- 18) Feasibility Study for Zogota (in French) submitted 16 November 2009
- 19) Base Convention between (1) Government of Guinea (2) BSGR Guernsey and (3) BSGR Guinea dated 16 December 2009 (French original with English translation)
- 20) Presidential Decree dated 19 March 2010 awarding mining concession over Zogota (with translation to English)
- 21) Revised Guinea Mining Code 2011
- 22) Feasibility Study for Blocks 1 and 2 submitted 14 September 2011
- 23) Presentation on BSGR Guinea Projects from August 2006 (**Appendix 1** to this report)
- 24) BSG Board Presentation on BSGR Guinea Projects dated 6 September 2006 (**Appendix 2**)
- 25) Spreadsheet of Simandou Drilling Activity during 1st Half of 2008 (**Appendix 3**)
- 26) Report prepared by Iain Bryson, a geologist working for BSGR, in February 2008 on his visit that month to Simandou South (**Appendix 4**)
- 27) Report dated 25 March 2008 by Iain Bryson and Graham Greenaway, titled "Reasons for Moving Drilling Rigs to the Southern Concession" (**Appendix 5**)
- 28) Rio Tinto presentation dated 26 November 2007 from its annual investor seminar in London (**Appendix 6**)
- 29) BSG Investments Presentation from January 2008 (**Appendix 7**)
- 30) Rio Tinto Annual Report 2001 (**Appendix 8**)
- 31) Rio Tinto Annual Report 2005 Extract (**Appendix 9**)

5. I have also relied on the published sources referred to in my report, some of which appear

as appendices to the report.

My background

6. I was brought up in South Africa, where I studied mechanical engineering at Stellenbosch University under the scholarship of DeBeers. While completing my national service in the air force, I studied two further years of economics and accountancy. I was later taken on as management trainee on the Anglo American & De Beers management trainee programme. The training course included accounting training equivalent to that of third year of an accounting degree. Later in my career I also completed a three-year chartered financial analyst accreditation under the CFA Institute in the USA.
7. At Anglo American I spent about four years running a business development company that initiated start-up business opportunities and held minority interests alongside emerging black entrepreneurs. These businesses targeted opportunities around mines and industrial companies, and bid for non-core work these operations were trying to divest from. I was then recruited by Deutsche Bank in South Africa as an equities analyst in mining; this involved broad research on commodities and mining companies, and a major research effort that uncovered the misleading nature of the accounting practice in the platinum industry. This disclosure quickly led to an overhaul of the accounting system used for platinum and gold mining in South Africa. I was later tasked, along with two colleagues to start an asset management business for Deutsche Bank and to work as a fund manager covering the resources, industrials and IT industries in Deutsche Bank's new asset management business.
8. After spending 6 years at Deutsche Bank, I co-founded a software business that supplied software for use in the medical insurance industry. That business was taken over by a large service outsource company called MX Health, which retained me as their new Chief Operating Officer. Later, in 2005 and 2006 I worked as a management consultant for Goldratt Consulting.
9. In 2007 I moved to the UK, where I joined Strata Capital, a company formed by a team at JP Morgan which had moved into the resource development business. At Strata I was responsible for setting up a project in Mozambique, which included the acquisition and early exploration efforts at Ncondezi coalfields; this turned into a project with resource of 4.8 billion tonnes of coal and which was listed on AIM in 2010 as Ncondezi Coal. I also was tasked to set up a company in Congo (Brazzaville) for an iron ore exploration; this project now has a high quality proven iron ore resource of 4.02 Bt and after bringing in Xstrata (Glencore) as a strategic partner, the non-Xstrata interest was listed on AIM in 2010 as Zanaga Iron Ore.

10. In mid-2008 I was recruited to join a new business called African Resource Holdings as CEO. The business holds a significant stake in Zanaga and has also evaluated a number of diverse mining opportunities in Africa, Europe and Asia. I am still an indirect shareholder of this company and continue to conduct ad hoc investigations of investment opportunities.

RELEVANT BACKGROUND AND CONTEXT

The Nature of the Resources Sector

11. There are significant known occurrences of the major minerals throughout the world with variable size and quality and many are still to be discovered. The extraction of these minerals is only constrained by the allocation of capital to mine, process and transport the commodities to market and typically it is the projects with better size and quality that are exploited first. However, this may not always be the case as there may be logistical, political and social reasons that stand in the way of an attractive deposit being exploited and, generally, new greenfield projects are a lot more difficult to get off the ground as compared with a known brownfield expansion. Also, deposits often turn out to be significantly more valuable, or less valuable, than originally assumed. It is a high risk, capital intensive industry. During the last half century most major commodities have been in a state of over-supply with production capacity generally exceeding demand. Inadequate transport and distribution infrastructure has created the perception of a shortage in certain markets but this is not due to there being insufficient occurrences of these minerals. Demand for commodities is largely driven by a combination of “On-Going” and “Project-Led” consumption. The major driver is the On-Going consumption requirement and the increasing intensity of consumption in a world that is rapidly becoming more urbanized. Additionally, there are short periods of Project-Led excess demand when the resources sector delivers very high financial returns. However, as the “Project-Led” phase comes to an end, the markets seem to quickly revert to a supply surplus.
12. Traditionally, it has only been during the first half of an economic upswing and during the short, Project-Led demand spikes that producers have been able to make superior profits and allow resource companies to recoup the huge amount of capital invested to build their businesses. This is typical of various industries from paper manufacturers, who in the past experienced increasing demand leading up to an event like the Olympic Games, to cement manufacturers who managed to secure supply contracts for the construction of stadiums for events like the soccer World Cup or for the construction of a new dam.
13. The six-year period between 2005 and 2011 represented one of the most disruptive times in the commodities sector in general and the iron ore sector in particular, characterized by

a scramble for mining assets. To offer comment on how people in the mining industry would be expected to act during that period, it is necessary to review the prevailing economic environment for a contextual understanding of the activities and decisions taken by the governments of resource rich countries, mining entrepreneurs and mining companies during this period.

The interaction between mining companies of different sizes

14. Up until the late 1980s, exploring for minerals was largely the preserve of the major mining companies who had big exploration departments tasked to scout the world for new deposits and to build a resource pipeline for the long term. However, during the 1990s the high costs of running a diversified mining house came under renewed focus and after sustained pressure from investors - who were comparing mining companies to the fast growing IT companies - the major mining companies started to close or downsize their exploration departments. Much institutional knowledge was lost and skilled employees were free to apply their trade by working for new start-up, junior mining companies. After an initial transitional period, these experienced explorers started securing resource assets and exploration permits for the junior mining companies who had taken them in.
15. Given that resource companies perform cyclically they are motivated to take steps to manage prices, hoard assets and actively frustrate new entrants from entering the commodities markets. The high margins achieved by the mining companies during the good times entice new junior mining entrants into the market with the hope of profiting from these bonanza periods. Accessibility to new technology (GPS, satellite imagery, GIS software etc.) has made it easier for junior mining companies, with significantly smaller budgets, to find an economically viable deposit - hoping for a quick onward sale or raising the capital on public markets to build a small project, or to attract a major mining company to fund the project on an equity "earn-in" basis. Junior miners are caught between finding a project that is big enough to attract a major mining company; but not so big as to require an enormous amount of capital and result in the junior miner being diluted to an insignificant residual holding as the major mining company earns an ever increasing share of the project, as capital is invested to bring the project into production (the "earn-in"). The major mining companies are usually very interested in the project offerings brought to them by their nimbler junior mining counterparts, as much of the initial high risk phase is eliminated, and they are able to review the potential of a confirmed discovery without having the risk of early stage exploration and bearing the cost of numerous unsuccessful efforts before finding a sizeable resource.
16. With the emergence of these junior miners, the major mining companies were often more than willing to do deals to acquire a significant project. They also knew that they could ultimately get rid of the junior miner by way of dilution in an earn-in deal, or by stalling the

development timeline and offering to purchase the junior miner's interest in the project and end up owning 100% of the opportunity. No matter how the deal was structured, the major mining companies would only do these deals on the basis that they control the project from the start.

17. There is a natural tension between the parties to these types of deals, as the junior miner is interested in an accelerated development program in order to derive financial benefit as soon as possible, while the major mining company is often more inclined to hold on to the property, doing the minimum to retain ownership and slot the project into its existing portfolio of assets and development timeframe. The major mining companies generally have no interest in getting these projects off the ground for the benefit of a junior partner, or for that matter for the benefit of the host country. They may express a different view publicly but internally they will look to maximize return on capital, favoring brown field expansions at existing production facilities over new developments and generally doing what is in the best interest of their own shareholders.
18. Junior miners, in turn, play a similar game with regard to their relationship to smaller local companies or individual prospectors and concession holders. They are willing to offer reasonably significant shareholding percentages in a potential project to the vendors or in-country partners, in the hope of finding a project with significant potential. However, these offers of significant shareholdings are often not what they seem, as the smaller partner often does not have the capital to continue to fund their pro-rata share of a big project and maintain their percentage holding in the business. The smaller partners do their best to retain as large a position as possible but typically they are cash-starved and unable to make a capital contribution to any joint venture. Additionally, they need to find a source of income to service their everyday needs. It is a very unequal relationship from the start and one which is usually quickly dissolved if no significantly sized project can be identified early on in the relationship. Even if a meaningful project is identified, the local partners are often very happy to sell their holding and lock in a profit for their efforts having observed how many projects fail further down the line. Some local partners manage to negotiate a residual minimum shareholding in a joint venture project up to the end of the feasibility study stage but this will depend on the initial terms of the deal.
19. By agreement, the burden of funding the new company usually falls to all shareholders on a pro-rata basis and inability to make any financial contribution results in the lesser partner dropping out. However, if a local partner does have the means to make a financial contribution this would of course be welcomed as the project risks are highest in the early stages.

Role of Governments

20. The Governments of resource rich countries, which are mostly relatively poor developing countries, often find themselves with a difficult choice to make. They realise that an enormous amount of capital and expertise is required to develop a major project like an iron ore mine and that there is a risk in entrusting the development of a major resource to an unknown and inexperienced company. However, they also instinctively realize, and history has shown, that the major players are not incentivized to invest vast sums of capital to build a new greenfield project when they have existing, under-utilized capacity or lower capital intensive, brownfield expansion options available to them at their existing operations. Traditionally the major mining companies used to hoard these major mining assets for decades without any incentive to develop the resources.
21. However, since the mid 1990's many developing countries followed the example of Australia and other established mining countries and adopted new mining codes and passed legislation that incorporated "use it or lose it" provisions. An example of this was the 1995 mining code adopted by Guinea. The existing concession holders, including the major mining companies, were slow to comply with the accelerated timetables dictated by the new mining framework. Governments too, were slow at enforcing the new regulations, particularly in a tough economic environment. After fresh elections or a change in government there almost invariably is appointed a new minister of mines, followed by a review of the status of all mining concessions and licences. A number of countries started taking action against companies that were not compliant with the new regulations.

The use of local partners

22. By mid-2005, the Junior Mining companies were beginning to sense that a recovery in the resources sector was well under way and that there might be significant opportunities in the sector. The economic potential of these opportunities would not have been known, and the very existence of such an opportunity would still need to be verified, particularly in developing countries with poor records of past exploration efforts. There was no on-line system to consult and what little information was available was invariably of poor quality. Some Governments – for example Mozambique - had started inviting bids from existing mining companies for known assets, but generally all information had to be gathered in country from largely underfunded, understaffed and ineffective Administrations.¹
23. The offer of information leading to a meaningful project and direct engagement with the right officials would be very valuable to a junior mining company. Without the help of an

¹ In contrast, the major mining companies often did have access to much of this information, gathered from decades-long engagement in exploration throughout Africa, and from the acquisition of colonial period data, housed by various agencies in Europe and North America. This knowledge was carefully protected and shielded from the Juniors and in many instances also from the Governments of the countries that hosted these deposits.

established local team this process would have taken too long and would have involved spending large sums of money up front with no certainty that any meaningful progress would be made in gathering the right information and support.

24. 'Local partners' often helped navigate these rocky waters. They provided ongoing liaison with the local Administration and offered a local address for a junior mining company, who needed to establish its own credibility as a committed investor into the country. They also often acted as interpreter during meetings where the junior miners came to a country where they did not speak the local official language. At the outset the aim was to convince a skeptical Mining Ministry that, despite not being a recognized major producer, the new junior mining company was a competent party, able to take on a mining project of significant size, and capable of raising the required capital and deploying an experienced execution team to execute the project. In many cases these were audacious initiatives, but the conditions were ripe for this new approach to be considered.
25. A number of entrepreneurs or "facilitators" with local connections were doing the rounds during this time, offering a number of "potential opportunities" in almost every African country. As a result, a junior miner would have been shown or introduced to many such "opportunities" to evaluate and be invited to "get involved" in the project. Many of these entrepreneurs had very little knowledge or understanding of the projects, almost none of them had any mining experience, and most "opportunities" would have been discarded after spending time and money (travel costs, consultant fees, document fees etc.) in evaluating the potential, and most would have been found to lack any real economic potential.
26. By 2005 a practice had emerged amongst most junior miners to limit the amount of money paid up front to the numerous local 'partners', as there had been so many disappointments. During this investigative stage and before any confirmed business opportunity, the payment of up-front fees or retainer arrangements was replaced with the more acceptable practice of taking on people on short term contracts and compensating the local partner for the direct expenses actually incurred and making any further reward / remuneration conditional on confirming (1) that an opportunity had the chance of being proven to be economically viable; and (2) that there was a clear route to being granted a reconnaissance permit, followed by an exploration licence or mining licence over any of the potential target opportunities.

Risk and Reward

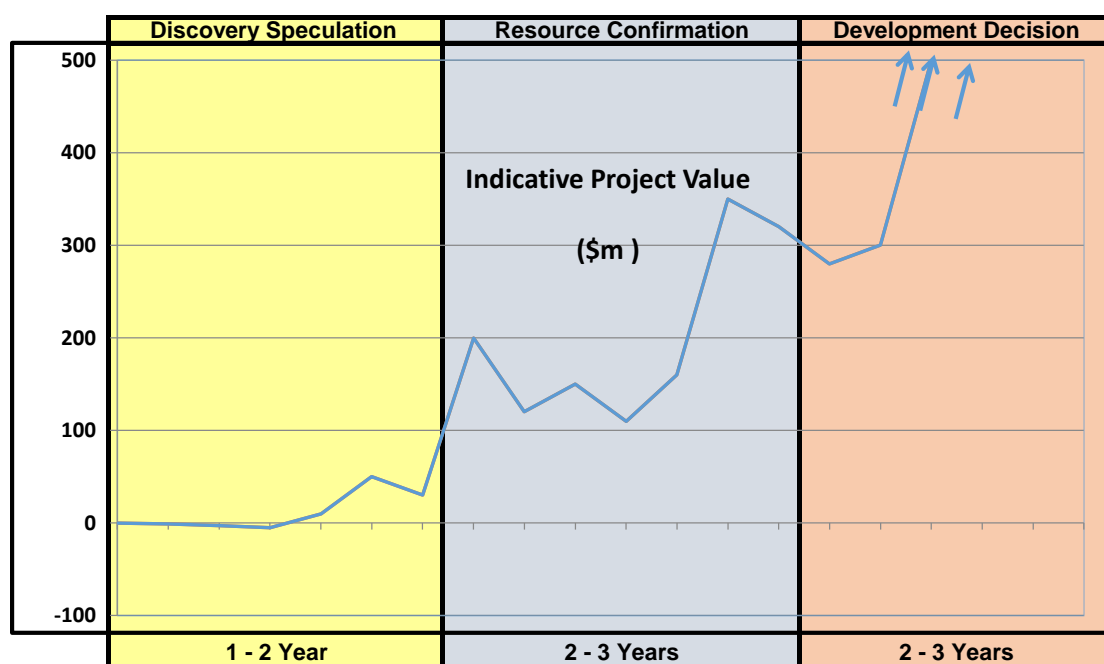
27. The defining feature of the mining industry is the need to explore in order to find an economic resource on which a mining project can be built. The success rate of exploration efforts is very small and large amounts of risk capital are required by a company in advance of finding a sizable deposit and demonstrating that the project, if built, could produce a

potential economic return. The success rate of finding an economic project is generally considered to be less than one in ten. On the other hand, entrepreneurs can earn more than a tenfold return on their investments by identifying and securing an economically viable asset.

28. In the case of iron ore there is the added complexity of product quality. Because iron ore is used largely in its natural form in the iron and steel making process, if deleterious minerals that are naturally associated with iron ore are above certain levels, this can have an adverse effect on the iron and steel making process and therefore on the salability of the product. The three key minerals that have a negative effect on quality are silicon, alumina and phosphorous. Depending on the quantities of these minerals, the selling price achieved by a producer can be either at a premium or significant discount to the reference benchmark price; and in some cases, the intermediate high-cost processing step required for the product may render it unsaleable. This can have a significant impact on the potential viability of the project. The risk of not finding a resource of significant size is therefore compounded in the case of iron ore by product quality considerations.
29. Whilst it can be argued that resource companies are not good long term investments, the short term gains can be spectacular. Similarly, when a successful discovery is made and subsequently proven to be economically viable, there is a tremendous jump in the value of the project. It is this bonanza type return that continues to attract entrepreneurs to the risky end of the industry, namely exploration, project scoping and completing a technical and economic feasibility study, referred to as a Bankable Feasibility Study ("BFS") or a Definitive Feasibility Study ("DFS").
30. There are strict criteria laid down by industry bodies and regulators of the major stock exchanges, which companies are required to meet in order to claim a positive feasibility study. In essence, a project so defined must have a confirmed resource with a verifiable size and quality, a fully costed technical plan and a confirmed marketing solution, and must have secured all the regulatory approvals required to commence construction. The development of the project should be subject only to raising the required capital.
31. The figure below illustrates the typical project phases and the potential value uplift during this high risk, high reward period (figures for illustrative purposes only).

INDICATIVE PROJECT DEVELOPMENT ROADMAP

	Reconnaissance	Exploration	PFS	DFS	Development
Plant & Infrastructure	<ul style="list-style-type: none"> * Preliminary Infrastructure Survey * Transport & Site Services 	<ul style="list-style-type: none"> * Power & logistics options * Logistical option selection * Scoping Study 	<ul style="list-style-type: none"> * Preliminary Engineering Study * Gvmt. Approvals 	<ul style="list-style-type: none"> * Engineering Study * Bulk Sample 	<ul style="list-style-type: none"> * Raise Capital * Construction * Production
Exploration & Development Activity	<ul style="list-style-type: none"> * Desk study + capture historic data * Exploration Licence Awarded * Prelim Mapping & Rock Chip Sampling * Soil Geochem survey, trenching & pitting * Airborne Magnetics, EM & Radiometric * Exploration Drilling * Prelim. Metallurgy 	<ul style="list-style-type: none"> * Resource Drilling * Resource Model 	<ul style="list-style-type: none"> * JORC Resource * Reserve Calc. 	<ul style="list-style-type: none"> * Mining Permit. * Development 	
Time Line [Cumulative time]	6 months [6m]	18 - 24 mnts [2 - 2.5 yrs]	12 - 18 m [3-4 yrs]	12 - 18m [4 - 5.5 y]	18 - 24 m [5.5 - 7.5 y]
Costs Guidance (\$m) [Cumulative Cost]	\$1.0 [\$1]	\$15 [\$16]	\$10 [\$26]	\$60 [\$86]	\$1,500 [\$1,586]



China and the OECD – influences on the Iron Ore market 2000 - 2010

32. The general economic trend in developed economies and investment in the expansion of industrial production in developing countries has, and continues to be, the major driver for commodities. During the early 2000's, mining companies therefore were focused on OECD growth and early signs of growth in China, on which to base their future business prospects.²
33. Some companies were of the view that the mining industry had matured and that companies were better able to respond to supply/demand imbalances. However, this view appears to have been only partially correct, as subsequent market experience suggests that this only holds true during periods of relative stability, when there are small changes in supply and demand.
34. The initial signals of phenomenally strong economic growth out of China started to emerge from 2004 onwards. With hindsight it is now possible to better identify this as the start of what I refer to as the "Chinese Super Project" where centralist planning led to unimaginable levels of investment in infrastructure and industrial development assets in China. The mining industry was not prepared or able to adequately respond to the associated rapid increase in demand for all commodities.
35. The economic upswing was well underway by 2005 with the world's economy growing at 4.3% on a purchasing power parity basis, on top of the 5.1% recorded in 2004. China grew by 9.5% and Asia as a whole grew by 4.5%. China's growth was investment-led and provided the momentum in demand for commodities. Prices for most metals and minerals rose rapidly and remained well above average historic price levels. Seaborne iron ore imports into China grew by 32% in 2005 compared with the previous year and iron ore price increases in excess of 70% were achieved by producers who struggled to keep up with the increased demand.³

The China Effect

36. As the scale and magnitude of China's Super Project started to manifest itself, many economists and analysts argued that this was more than a multi-year phenomenon and that it was the start of a decades long "super Cycle" spurred on by an awakening China and soon to be followed by a similar trend in India and other major developing nations.
37. The rapid expansion in Chinese demand opened a window that many entrepreneurs had

² See for example the Chairman's letter, pp.2-3 of the Rio Tinto Annual Report for 2001 (extract at Appendix 8)

³ Rio Tinto Annual Report 2005, p. 12 (extract at Appendix 9)

been waiting for. Entrepreneurs of every ilk, exploration geologists, engineers, project managers and traders all piled in. Along with them came the associated middlemen – agents, investment bankers, trade financiers, relationship managers, government advisors etc. Old historic reports and exploration data, often dating back to colonial periods, suddenly had enormous value. Technical experts who had many years of exploration experience and who had worked for the major mining companies were set loose to find resources and help secure access to exploration properties in many countries across African, South America and Asia. Australians, Canadians, Frenchmen and South Africans arrived, armed with the new accurate and reliable GPS technology, satellite images and electronic maps, and were able to capture data on new, electronic Geological Information Systems (“GIS”), giving them the tools to quickly assess the economic potential of a deposit or the attractiveness of a prospect.

38. By the end of 2007 many economists had started to argue that the emerging countries were starting to witness a structural change in their economies. It was argued that the BRICS nations (Brazil, Russia, India, China and South Africa) would transform from consuming a small amount of commodities, on a per capita basis, to being consumers at significantly higher levels, approaching the consumption intensity of the USA and other developed economies. Everyone, including the major mining companies, was influenced by these arguments, and talk of a multi-year super cycle and spectacular results from the majors, further fueled the frenzy. This is reflected, for example, in Rio Tinto’s 2007 annual report, which highlights how mining companies interpreted events and their thinking on how this might impact on their business:

“Forward outlook

We are seeing a dramatic change in the world’s centres of economic power, with rapid growth, urbanisation and industrialisation in many parts of the developing world. We expect a large part of the world’s population – billions of people – to move through increasingly metal intensive phases of economic development. This will transform our industry and underpin future growth in markets.

*Commodity markets are entering the fifth straight year of growth with mineral and metal prices at levels well above their long term average. **Projections for Rio Tinto’s main product groups – iron ore, aluminium and copper – suggest that demand could potentially triple over the next 25 years.***

While it is premature to say that the current price cycle has peaked, we are mindful of short term risks associated with the expected slowdown in the US economy. However, the US is now somewhat less important in world commodity demand than it was five

years ago. Our analysis suggests a sharp slowdown in the US would have only a modest impact on growth in China and India.

In the short term, with low commodity stocks and a likely continuation of supply side challenges, we expect solid global economic growth, led by China, to support strong increases in demand for most metals and minerals during 2008 and 2009.”⁴

Attempts by Resource Companies to Maintain Stable Prices

39. Resource companies need minimum, stable prices to be economically viable over the long term and existing players therefore try to keep newcomers out of the market with the hope of being the sole beneficiaries during supply squeezes and when super profits are made. This, after all, is potentially their only chance of recouping their capital investment. The massive capital investment required and the long-term nature of their businesses lead mining companies to prefer long term supply contracts with stable pricing regimes to pay for their investments, which may include investments into their own logistical assets like railways lines, rolling stock, port terminals and in some cases, e.g. Vale, their own bulk iron ore carrier ships. Alternatively, they seek to create marketing channels and logistical solutions that are collectives, clubs or simply cartels. Mechanisms existed for the major producers to publish contract prices where there was no active, publicly accessible spot market, as a form of managing minimum prices between competitors in the downturn and for attracting additional supply contracts during good periods.

Marketing channels

40. The marketing of commodities in each mining company is structured such that each product group is responsible for the marketing and sale of their respective metal and mineral production. In markets where international reference market prices do not exist or are not transparent, the business unit will negotiate product prices on an individual customer basis and sell their metal and mineral production direct to end users under long term contracts. Prior to 2008 there was practically no spot market for iron ore and the vast majority of iron ore was sold under these long term contract arrangements. The structure of these contracts is that volumes are established within an agreed range on a multi-year basis and prices are renegotiated annually according to prevailing market conditions. The iron ore market was particularly opaque but the three major iron ore producers (Rio Tinto, Vale and BHP Billiton) would put out public announcements disclosing just enough information after each annual settlement, sending an important signal to the peer group. Subsequent settlements were concluded close to the first announced contract settlement price. It was a rather cozy situation for the major producers and customers were uncomfortable with it but they had

⁴ Rio Tinto Annual Report 2007, Chairman’s Statement, page 5; emphasis added (Appendix 10)

no meaningful alternative source of supply.

41. Other mining businesses have similar price stabilization mechanisms and each function with varying degrees of success depending largely on the number of sizeable producers and geographic concentration of the mineral occurrence. These include the oil, fertilizer materials and cement industries. De Beers used to manage a “single channel marketing” mechanism for selling diamonds before regulators forced the company to abandon the practice. The company was often forced to buy excess supply to support a minimum price that ensured producers did not go out of business in tough times.
42. New entrants usually offer customers lower prices to get a foothold in the market and disrupt the stability of long term supply agreements between major suppliers and their major customers. This is particularly relevant for bulk commodities like coal, bauxite and iron ore.

Iron Ore Producers and International Trade

43. The more visible component of the iron ore industry is seaborne iron ore – the exported iron ore that is moved in seaborne trade over long distances. This excludes exports that are made by local transport within regions, such as between Canada and USA and between the countries of Eastern Europe. About 93% of exported iron ore is seaborne and 49% of total iron ore is seaborne. In 2007 the top ten companies comprised 91% of the capacity for seaborne iron ore iron and the top three had 76%.⁵
44. By 2007 it was evident that some new projects (FMG in Australia at 45m t/y and MMX in Brazil at 26.6m t/y) would be sufficiently large that, when completed, those companies would immediately be in the top 10 of the world’s producers, with a potentially significant impact on the structure of the market. The big three producers talked about their own expansion plans in the hope of warning off new entrants and Rio Tinto finally disclosed the real potential of its Simandou project in response to a bid by BHP Billiton (see further below).
45. The discovery / announcement of yet another world class iron ore project was seen as a potential threat to the marketing and pricing mechanism which had hitherto worked well for the three major producers, who had significant influence on the price of iron ore. The majors realised that another world class project might attract the required capital to build a new project and bring additional (unwanted) supply onto the market. However, as these project announcements coincided with accelerating Chinese demand there was less panic than would otherwise have been the case.

⁵ See Metal Bulletin Aug 2007, page 24 (Appendix 11)

Customers

46. The major customers who for many years were beholden to the big three producers started to show interest in the new west African discoveries and expressed their willingness to provide these new producers with some of the capital required to build a new project. Additional to a potential direct return on their investment, these customers regarded this as an opportunity to secure an independent source of supply through off-take agreements and have an additional supplier(s) to play off against the existing incumbents during price negotiations.

BHP Billiton makes a bid for Rio Tinto

47. Spurred on by the rapid increase in Chinese demand for commodities, mining companies - large and small - competed aggressively for resources from 2007 through to 2011. On November, 8th 2007 BHP Billiton approached Rio Tinto, proposing a combination of the companies. This was rejected by Rio Tinto's board on the basis that the offer significantly undervalued Rio Tinto's assets and future prospects. In February 2008, BHP Billiton announced a pre-conditional takeover offer for Rio Tinto of 3.4 BHP Billiton shares for each Rio Tinto share.⁶ The board concluded that this higher offer still significantly undervalued Rio Tinto and unanimously rejected the offers as not being in the best interests of Rio Tinto shareholders. As justification of its claims, Rio Tinto was obliged to fully disclose some of the assets that it had tucked away and which the market had little or no information about as a basis for allocating value. Most surprising to the market was the Simandou iron ore project in Guinea, a world class asset that Rio Tinto had kept under wraps for close on a decade.⁷

Junior Miners Enter the Fray

48. By the mid 2000's the junior mining companies sensed that the scramble was on. A number of companies targeted specific commodities while others focused their efforts on certain geological formations and hence specific countries. Others still adopted an ad hoc opportunistic approach and pursued opportunities based on information provided by the droves of entrepreneurs who were looking to benefit from the potential inward investment into various countries. Technical consultants were able to command huge fees for their services, having previously worked for the major mining companies and having the required skills and knowledge to appraise a new resource opportunity. Junior companies did not

⁶ "BHP Billiton launches hostile bid for Rio Tinto", Daily Telegraph, 6 February 2008 (<http://www.telegraph.co.uk/finance/newsbysector/energy/2783932/BHP-Billiton-launches-hostile-bid-for-Rio-Tinto.html>)

⁷ See Rio Tinto Investor presentation 26 November 2007, slide 19 (Appendix 6)

have the resources for a comprehensive, “bottom up” appraisal of the legal frameworks, fiscal arrangements, available mineral opportunities and appropriate investment strategy for each country. Neither did they have the time. The race was on to establish whether there were any meaningful opportunities and benefit from first mover advantage over others in the race.

49. Much of this information and access was secured by engaging “a good local partner” who sourced or sold information, provided support services and promised quick access to the correct government departments, government officials and navigating the Administration labyrinth.
50. Generally speaking, the junior mining companies had to establish credibility and trust in the eyes of the Government and the Ministry of Mines. Initially the local agents / partners provided access to the right people in the right departments. They hoped (although they could not be sure) that the in-country partners would assist in initially bridging the trust / credibility gap between the junior mining company and the Administration. As a sign that it was committed to the country, the junior mining company was required to have a local address and office presence. Its representatives would hope to meet with influential people in that all-important networking hall – the lobby of a top international hotel or the international departure lounge. Junior miners therefore needed someone to secure membership to and pay for access to VIP lounges, be seen to be transported in smart looking motorcars and generally to portray an image as a successful business. Without a good local partner to help, this would have been almost impossible for junior miners to achieve.
51. However, once the junior companies had decided to commit to a country, they usually quickly set up their own offices and staffed it with their own representatives. By this time they would have been introduced to the influential decision makers and would be more comfortable with local legislation and protocol. It was considered important to have “your own man” to front discussions with Government and to represent the company to potential future funders and investors when and if the time came to develop a project.
52. These parachuted management teams were however still oblivious to local customs and social norms and needed continued local assistance to operate in country whilst continuing to build good relationships with local businesses, suppliers and local communities.
53. Once exploration or mining licences were granted, the next wave of local bureaucracy needed to be tackled, ranging from obtaining work permits and visas for expatriate staff to paying duties or being granted exemption for equipment imports, dealing with the tax office, environmental ministry officials etc. The junior mining company, now localized, usually

needed to find local staff, local interpreters, suppliers, accountants and lawyers to be able to commence operations and present itself as a company of substance, worthy of being granted an exploration licence and following the presentation of a positive feasibility study, the granting of a mining licence.

Government Reaction

54. Most governments were unprepared for the onslaught. Mining entrepreneurs were offering to invest funds into the host country that were almost equal in size to their entire annual economic activity. New companies promised rapid development timetables and promised to move away from the foot dragging behavior of the existing majors. Big steel mills and major Asian industrial companies were lending their support to these newcomers and major international banks were fronting for sovereign wealth funds, all joining the scramble for resources opportunities.
55. However, local Government Administration was ill equipped (most countries did not even have an electronic mining cadaster until as late as 2010). The mining departments had hitherto been sleepy backwaters in the national government offices and were usually stuck away in poor accommodation and officials jealously presided over dust covered hard copies of historic exploration reports. There was no up-to-date index of information and reports were often saved on a microfiche storage system, or reported to have been lost or “disappeared” when lent to someone to copy and never returned.
56. The lack of resources in the Mining Ministries was responsible, in part, for the lack of enforcement of the new mining laws.

OPINION

57. I see from paragraphs 208-217 of Guinea's Counter-Memorial that Guinea suggests that it is not credible that Pentler as in-country partner should have received a 17.65% interest in BSGR Guinea BVI as compensation for introducing BSGR to Guinea and helping set up BSGR's operations on the ground in 2006.
58. I do not find the grant of a 17.65% shareholding to Pentler at all surprising. My experience is that transactions were concluded in and around that period with local partners being offered anything between 10% and 25%. As I have sought to explain above, the reality was that an initial shareholding of this sort would rapidly be diluted if an economically viable deposit was identified, because the in-country partner would invariably not have the resources to contribute to the capital investment required to drive the project forward.
59. Nor do I find it surprising that, in addition to its shareholding Pentler was paid fees. It was

commonplace for fees to be paid for a range of services, including finding accommodation and the collation of data and historic reports relating to a mining project. The de facto position in less developed countries such as Guinea was that it could take several visits, often spanning several weeks, to get access to information, and that the result of these visits was often the discovery that the information was incomplete or of little value. It would take what seemed like an age to get the simplest of tasks accomplished in-country even with the assistance of a local team. Non-French speaking foreigners would have had significant difficulties successfully establishing themselves in-country in a Francophone country without incurring huge costs and taking an unaffordable length of time. Further, the junior miners required a vast range of other ongoing and ad hoc services. Most of these would have been secured by the local partner and charged to the junior miner / joint venture company. The arrangement would often be effected through a separate services agreement but many were ad hoc arrangements. The local partners effectively acted as labour brokers to secure the services of and pay for local labour and a plethora of service providers who mostly would only accept cash. It would take several months and sometimes years before suppliers were prepared to open accounts for settlement purposes. I would have expected that Pentler would have been asked to provide a broad range of services as discussed in paragraph 24 above.

60. Similarly, milestone payments were not at all unusual, and the payments set out in the Milestone Letter are certainly within the range of what might have been expected in terms of milestones themselves. These marked discrete steps towards securing a mining license and coincided with a potentially enormous incremental value uplift for the project. The amounts would have been set in accordance with the targeted resource, targeted size and a guess at the value of the ultimate prize that might be won. Given the value that would have been created if an economically viable iron ore discovery was made, these milestone values would have been considered fairly modest. If progress was not made towards successfully securing the project these milestone payments would not be payable and the partnership would have been dissolved.
61. As to the fair market value of Pentler's 17.65% interest in BSGR BVI held as at March 2008, this date was close to the eye of the storm, with iron ore prices increasing rapidly from the end of 2007 and into 2008.⁸ The bullish mood at that time is exemplified in a research note published by Pareto Securities in January 2008 which anticipated an increase of 40-50% to iron ore contract price for 2008.⁹ The final settlement was an increase of 66%.
62. Additionally, the view that the emerging market economies were undergoing a period of structural transformation suggested a long period of strong demand for metals and minerals. With potentially a sizable, high grade, high quality resource and the prospect to

⁸ See table of Iron Ore prices for 2003-2009 at Appendix 12

⁹ See Pareto Securities research note dated 18 January 2008 (Appendix 13)

ship iron ore through Liberia, substantially reducing the transport component (capex and operating costs), BSGR's holdings would have been highly valued despite the early stage status of the project.

63. In the BSGR site visit report dated February 2008 (Appendix 4), it was evident that the discovery at Simandou South, in all likelihood, was big enough to justify the building of an iron ore mine. Additionally, BSGR had discovered a Canga field in the southern part of Simandou South, near the village of Zogota. Canga is a high grade iron ore material which in this case had a grade of 63.7% and which could be used to produce lump ore which traded at +25% premium to the benchmark price. This is also referred to as direct shipping ore (DSO), as it can be fed directly into the steel making process without the requirement of any additional upgrading or processing. The lump ore from the Canga cap could potentially deliver early cash flows and high margins.
64. A significantly sized magnetic anomaly had been identified by Fugro, from the airborne aeromagnetic survey flown over the area. These magnetic high signals give a subsurface indication of the structure of the deposit, highlighting the presence of a high magnetic itabrite formation. The targeted nonmagnetic hematite typically is associated with and sits above this magnetic footprint. (See Appendix 5)
65. In BSGR's report dated 25 March 2008 by Iain Bryson and Graham Greenaway, titled "Reasons for Moving Drilling Rigs to the Southern Concession" it was evident that BSGR had conducted geological mapping over ~50% of the strike length indicated by the southernmost target zone – the Zogota magnetic anomaly, a length of 3.75km. A further 4km strike was still to be mapped in this target and it appeared from the aeromag plots and various Google Earth satellite images that this "finger print" continued along strike for another ~4km. Additional magnetic anomalies were also indicated further north in the license area which had been identified as potential targets but not yet been followed up.
66. The BSGR geologists' pragmatic guess at the size of the hematite deposit, over 50% of the Zogota magnetic target, suggested a resource of 1.1 Bt (billion tonne) of ore. At this early exploration stage the geological team would be working towards establishing a preliminary geological model of the occurrence. With initial assay results to hand confirming a high quality, high grade material the focus would have been on establishing continuity and the size of the orebody. Iron ore deposits are bulk structures with reasonably high structural consistency. Sufficient mapping had been completed to ascertain that the mapped outcrop delineated an orebody with a width of between 3,700m and 2,000m. Using the results from outcrop mapping which had been completed over 3,750m of strike (and open to the north and at depth) there appeared to be the potential for several billion tonnes of high grade hematite.

67. A few months previously Rio Tinto released a first public disclosure revealing the wonderful quality, size and continuity of its Simandou project which would have been close enough geographically to invite a guess by a non-geologist that the Zogota project would bear similar characteristics (a step that would have been rejected by the geologists who are trained to seek verifiable confirmation). However, there was enough evidence that BSGR's new, greenfield discovery had the potential to turn into something special. The market for iron ore was tight, customers were discussing getting involved in upstream mine investments and prices were forecast to remain at elevated levels for several years as China demanded ever increasing volumes of iron ore.
68. A crude but relatively conservative calculation to identify the potential size of the prize would have looked something like this:
- a. Assume a high grade (62% Fe) high quality (confirmed by Rio Tinto's Simandou) hematite product with pockets of DSO. At 1.1Bt the resource would support a 40 mtpa (million tonnes per annum) mine for more than 25 years. Production costs would be expected to be below \$45/t CFR (estimate) and given long term price expectations for this product of \$75/t mined there would be an operating margin of \$30/t (40%) against Rio Tinto Iron Ore's +52.5% EBITDA margin in 2007 and an industry margin of 171% for lump ore. At this margin and production rate the project would generate EBITDA of \$1.2bn annually and deliver a payback in less than 4 years on \$4.7bn capital investment, which I would consider to be a rough estimate of the investment required (mine \$1bn, port \$0.6bn, rail \$1.5bn, infrastructure \$1bn, power \$0.6bn). This approach would have suggested that a strong argument could have been made to continue to expend funds on the exploration effort.
 - b. The value of a project at that time and in the absence of project data to use in income based valuation methods would have been calculated using a multiple in the range of US\$ 0.98 – US\$ 1.23 per tonne of resources, which was the range at which other similar projects, in places without an established iron ore industry, were being valued at that time. However, that range assumes a defined resource. A project which had a well understood and typically consistent geological structure, but which had not yet undergone an extensive drilling campaign (as would be required under reporting codes), would reasonably expect to have commanded a price which was 25% of the price per tonne of a project that had reached the pre-feasibility study stage.
 - c. Given the circumstances in the market, the very positive price action at the start of 2008 and the very positive – albeit very limited – geological information that was available, my view is that an approximate value would have been between US\$/t 0.25 and US\$/t 0.30, suggesting a value of around \$280m - £330m. The Canga cap would have been estimated to contain 40 million tonnes of ore. This lumpy ore traded at a significant

premium, which at the time delivered an average 171% operating margin,¹⁰ and would have had the potential to generate early cash flow. My view is that this Canga pocket would reasonably be valued at US\$/t 0.30 - US\$/t 0.35 of resource for an approximate value of \$11.5m - \$13.5m. The total approximate value would therefore have been in the range of \$290m - \$350m.

On that basis, Pentler's 17.65% interest would have been valued at between about \$44.1m and \$53m. If the Government was potentially entitled to a 15% share of the exploitation of the rights (as suggested by the wording of the February 2006 Memorandum of Understanding) the range of valuation would have been further reduced to between about \$37.5m and \$45m.

69. It is not known what information in addition to the cited documentary evidence (if any) had been available at the time of negotiating the purchase price but given the circumstances, I do not agree with Guinea's statement at paragraph 217 of its Counter-Memorial that the price of US\$22 million paid by BSGR to acquire Pentler's shareholding in BSGR Guinea BVI was "disproportionate". To the contrary, I consider the price to have been reasonable; and if by that time further scouting had confirmed the occurrence of hematite outcrops further along the ridge, and thus the continuity of the orebody along the strike, then the negotiated price would have been considered very keen.

Viability of the Simandou project as at the present day

70. I should summarise what I understand to be the context of this question. In paragraphs 1141-1150 of its Counter-Memorial, Guinea contends that BSGR deprived Guinea of developing its iron ore deposits. Therefore, I am asked to consider the hypothetical situation of whether Guinea could have developed its iron ore deposits successfully assuming BSGR had not been involved.
71. On that hypothesis, the questions are:
- a. Would the project currently be viable?
 - b. What are the conditions an iron ore mining project would have had to meet in order to be viable and potentially profitable?
 - c. What is the impact of the current state of the iron ore market and investor confidence?
72. From around the start of 2014 the commodities markets have been in desperate shape. The major producers are in a battle for survival having to sell their underperforming assets, cut jobs and shelve capital projects. Despite the enormous barriers to closing production, including Governments responses to loss of jobs, production cuts are starting to materialize

¹⁰ See Metal Bulletin Aug 2007, page 14 (Appendix 11)

around the world throughout the production pipeline. The status quo is that the investment world hates commodities in general and among commodities, the iron ore market has been among the worst affected, with the steel industry suffering a major downturn.

73. A swift return to the high Chinese demand levels experienced a couple of years ago now seems increasingly unlikely as many have come to recognise the rapid growth phase in China as a debt funded, centrally orchestrated, investment Super Project - in other words, a bubble.¹¹
74. Under normal circumstances, a new bulk mining project such as an iron ore mine, would be considered viable / potentially profitable / to have value if and only if the project met each of the following conditions as minimum condition:
- a. The cost per tonne of the project is projected to be within the range of the lowest quartile of production costs within the industry;
 - b. A significant portion of its production was committed to off-take agreements with customers;
 - c. Economic conditions predicated long term prices that could support an IRR in excess of 15%, depending on the company's cost of capital;
 - d. Medium term price forecasts confirmed that the project would deliver a 6 – 8 year payback on capital invested;
 - e. The project was located in a stable host country with the required long term confidence of security of tenure and ownership, and
 - f. The producer could clearly demonstrate the ability to raise the required capital to build the project with a commensurate low project risk premium.
75. The current predicament of the Simandou project is such that only the first condition is fulfilled.¹² It follows in my opinion that the project cannot be considered viable in the current market.
76. The position is vividly illustrated in the recent announcement by Rio Tinto that it is walking away from its own Simandou project after an investment in excess of \$2bn and a 19-year

¹¹ Prof. Michael Pettis, Professor of Finance, Guanghua School of Management, Peking University expressed what was happening in China along the following lines: "All the big growth miracles with an investment driven growth model have ended up with a debt crisis. In the early stages growth is powered with investment, if not from the private sector then the state gets involved in building manufacturing capacity. Savings of the country, accumulated into the banking system, are directed into areas decided by economic policy makers. With low interest rates the build programme continues until the projects are no longer economically viable as debt rises quickly and debt servicing costs start to exceed the levels of economic value creation. The problems caused by the inability to service these high debt levels led to the insolvency of Germany in the early 1940's, the technical bankruptcy of the Soviet Union in the 1970's, the Brazilian debt default in the 1980's and the Japanese debt crisis of the 1990's." (Paper presented by Prof. Pettis in 2012 on "Global imbalances and the decoupling myth- China's role in the world economy" (Appendix 14))

¹² This, assuming – as I am asked to do – that it would have been possible to export the iron ore via Liberia.

involvement in the project.¹³ Rio Tinto's announcement follows the collapse of a number of West African iron ore projects, many of which have shares trading in the market at less than 2% of their 2011 peak values.¹⁴ This underscores the risks associated with the mining sector in general and exploration and greenfield projects in particular. When these projects do get the timing right and when they do benefit from a few early, profitable production years then the profits and return on capital can be spectacular. However, if the timing is wrong and / or the project gets delayed, the outcome can be disastrous. "Life and death" for a company in the resources sector is significantly a matter of timing.

77. As at 2010 VBG's (Vale and BSGR) Guinean projects showed all the necessary ingredients for creating a world class iron ore business, particularly given that the joint venture had apparently secured the option to route iron ore by rail through Liberia, cutting the transportation costs and ensuring the project would be in the lowest quartile on the world cost curve when it came on line.
78. However, in the current economic environment the project is not financeable and would remain so for a very long time given the outlook for steel and iron ore to at least the end of the decade. Despite recent price appreciation to above \$80/t, the consequence of stock movements in China, the average iron ore price is forecast to remain below \$60/t to the end of this decade.¹⁵
79. For VBG's projects in Guinea, or for that matter any other undeveloped west African iron ore project, to be considered valuable there would need to be a consensus expectation that iron ore prices can be sustained at an average price above \$80/t - \$85/t for a minimum 10 years. However, the current consensus is that prices will average \$50/t over the longer term, whilst some argue that \$40/t could become the 'new normal'.¹⁶
80. When the market does start to recover, the supply gap will first be filled by bringing back mothballed capacity and then by the big three iron ore producers (Vale, BHP and Rio Tinto) who will look quickly to add incremental capacity to their existing production facilities over and above the current capacity expansion programs. It is only when this capacity expansion is in place, and there is still demand, that these companies may contemplate taking on a project of the size and difficulty of the VBG Guinean projects.
81. I should add that even the mothballing of a project such as Simandou is not without

¹³ See "Rio Tinto walks away from \$20bn deal to develop vast African iron ore mine", published in *The Times*, 4 July 2016 (Appendix 15); Rio Tinto Annual Report 2015, particularly pages 130 and 160 (Appendix 16)

¹⁴ See table of share price changes at Appendix 17 (source: Google Finance)

¹⁵ See Iron ore price forecasts by quarter, p.2 of Macquarie Research Commodities Comment 16 May 2016 (Appendix 18)

¹⁶ See for example CRU Iron Ore Market Outlook published June 30 2016: "We maintain our view of prices in the 40s by year end."(<http://www.crugroup.com/market-analysis/products/IronOreMarketOutlook>)

substantial cost. Ongoing expenditure is required to keep the asset on 'care and maintenance' for a decade, which further erodes its holding value. There is the additional risk that 'mothballing' might not be permitted under the prevailing "use-it or lose-it" approach of the government of Guinea.

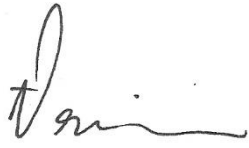
82. The dramatic fall in demand and the price of iron ore since early 2014 is indicative of a major slowdown in the Chinese infrastructure build program. It has been a volatile period for iron ore from the highs of early 2011, with the price trend being predominantly negative.¹⁷
83. Despite the significant oversupply situation in the market, the three major iron ore producers continue to build additional capacity thereby increasing supply further. MMX in Brazil and Fortescue in Australia also have additional capacity. There is no investor confidence in the sector and certainly no appetite to invest large sums of capital into an industry that has been so volatile, and has gone from boom to bust over the last decade. In summary therefore, I do not consider that the project is currently economically viable. Had VBG been able to retain its rights, it would have been obliged to develop the mine and associated infrastructure for Blocks 1 and 2 within two years of completing the feasibility study. This multi-billion dollar investment would have been incurred and the project would have come on stream just as prices started their dramatic collapse. VBG would have been in a worse position having committed more capital to the project, and would have been at risk of not being able to service debt obligations associated with the project or recoup the expenditure incurred on the project, not at least not for the foreseeable future.
84. Analysts and shareholders of the major mining companies do not foresee the big West African iron ore projects coming on stream for another decade.¹⁸

Expert Declaration

I understand that my duty is to assist the Tribunal and that this duty overrides any obligation to any party by whom I am engaged or who has paid or is liable to pay me. I have complied and will continue to comply with this duty. I confirm that my fees are not dependent on the outcome of this case. I confirm that I have made clear which facts and matters referred to in this report are within my own knowledge and which are not. Those that are within my own knowledge, I confirm to be true. The opinions I have expressed represent my true and complete professional opinions on the matters to which they refer.

¹⁷ See graph illustrating the dramatic fall in iron ore prices between 2011 and the end of 2015 at Appendix 19 (source: <http://www.indexmundi.com/>)

¹⁸ See for example "Rio Tinto's Simandou iron ore dream looks like it is dying", *Australia Financial Review* 15 February 2016 (Appendix 20)

A handwritten signature in black ink, appearing to read 'Francois', with a stylized flourish at the end.

SIGNED:

Francois Ferreira

DATED: 7 January 2017

APPENDICES TO FRANCOIS FERREIRA'S EXPERT REPORT

APPENDIX	DOCUMENT	DATE
1	Presentation on BSGR Guinea Projects	August 2006
2	BSG Board Presentation on BSGR Guinea Projects	6 September 2006
3	Report prepared by Iain Bryson, a geologist working for BSGR on his visit to Simandou South	February 2008
4	Spreadsheet of Simandou Drilling Activity	1 st Half of 2008
5	Report by Iain Bryson and Graham Greenaway, titled <i>"Reasons for Moving Drilling Rigs to the Southern Concession"</i>	25 March 2008
6	Rio Tinto presentation from its annual investor seminar in London	26 November 2007
7	BSG Investments Presentation	January 2008
8	Rio Tinto Annual Report	2001
9	Rio Tinto Annual Report	2005
10	Rio Tinto Annual Report	2007
11	Metal Bulletin	August 2007
12	Table of Iron Ore prices for 2003-2009	2003-2009
13	Pareto Securities Research Note	18 January 2008
14	Paper presented by Professor Michael Pettis (Professor of Finance, Guanghua School of Management, Peking University) on <i>"Global imbalances and the decoupling myth - China's role in the world economy"</i>	2012
15	The Times, <i>"Rio Tinto walks away from \$20bn deal to develop vast African iron ore mine"</i>	4 July 2016
16	Rio Tinto Annual Report	2015
17	Table of Share Price Changes (Source: Google Finance)	
18	Macquarie Research Commodities Comment, Iron ore price forecasts by quarter	16 May 2016

19	Graph illustrating the dramatic fall in iron ore prices between 2011 and the end of 2015	
20	Australia Financial Review, <i>"Rio Tinto's Simandou iron ore dream looks like it is dying"</i>	15 February 2016