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Grande Côte Mineral Sands Project
Senegal, West Africa
Technical Report

Effective Date: 16 June 2010

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GRANDE CÔTE MINERAL SANDS PROJECT, SENEGAL, WEST AFRICA

TECHNICAL REPORT

for

MINERAL DEPOSITS LIMITED

Prepared by AMC Mining Consultants (Canada) Ltd and AMC Consultants Pty Ltd

In accordance with the requirements of National Instrument 43-101, "Standards of Disclosure for Mineral Project", of the Canadian Securities Administrators

Qualified Persons:

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AMC 710016

Effective Date 16 June 2010

EXECUTIVE SUMMARY

Introduction and Ownership

This Technical Report on the Grande Côte Project (GCP) in Senegal, West Africa has been prepared by AMC Mining Consultants (Canada) Ltd (AMC), Vancouver, Canada, on behalf of Mineral Deposits Limited (MDL) of Melbourne, Australia. It has been prepared in accordance with the requirements of National Instrument 43-101 (NI 43-101), “Standards of Disclosure for Mineral Projects”, of the Canadian Securities Administrators (CSA) for lodgement on CSA’s “System for Electronic Document Analysis and Retrieval” (SEDAR). This report is an update of a Technical Report prepared by AMC in November 2007 and was triggered by the public release by MDL on 16 June 2010 of a Definitive Feasibility Study (DFS) and first-time statement of mineral reserves, prepared by AMC’s Melbourne office.

In September 2004, MDL, a company with over 60 years operational experience in mineral sand mining in Australia, was selected by the Government of the Republic of Senegal (GRS) to develop the GCP. Under a Mining Convention, MDL acquired, through the establishment of MDL Senegal Suart (MDL SS), the rights to explore and develop the project.

In 2004 MDL also acquired the Sabodala Gold Project in eastern Senegal and the Sabodala Mine was successfully commissioned in March 2009. Through the development of this mine, MDL has gained considerable knowledge and practical expertise in the development and operation of mining projects in Senegal and has established an excellent working relationship with the GRS.

The Republic of Senegal (Senegal) is located on the western bulge of Africa. Senegal is a stable, democratic republic under multiparty democratic rule based on the French civil law system. The country gained its independence from France in 1960 after about 75 years of French rule. The capital, Dakar, is situated on the most westerly point of the coastline of Africa. The topography of the country is generally low, rolling plains rising to foothills in the southeast. The area to be mined is located on a coastal dune system.

After submission of an Environmental and Social Impact Assessment Study (Etude d’ Impact Environmental et Social, EIES) in December 2005, MDL was granted a Mining Concession on 27 November 2007 for a period of 25 years. The Concession allows for the development, extraction, processing, transport and marketing of zircon, ilmenite, rutile, leucoxene and related minerals. The Concession is renewable and the GRS has entitlement to 10% participation in the exploitation of the project.

In accordance with the Mining Convention and Supplementary Deed No. 2, MDM and the GRS created a separate Senegal based company, Grande Côte Operations SA (GCO), and MDL transferred the mining concession to GCO. GCO is jointly owned, under a shareholders agreement, by MDM (90%) and the GRS (10%) and is required to subscribe to the terms and conditions of the Mining Convention. GCO is the developer and will be the operator of the GCP.

The Grande Cote mineral sands deposits were first recognised in 1945, but it was not until they were acquired by EI du Pont de Nemours and Company Inc (DuPont) in 1989 that systematic exploration was undertaken. On the basis of a substantial drilling campaign over 80 km of strike length, DuPont estimated a substantial mineral resource. However, it relinquished its tenements in 1992 and no further exploration took place on the deposits until MDL Senegal acquired its Exploration Permit in 2004.

Geology and Mineral Resources

The GCP is located on a coastal mobile dune system starting about 80 km north-east of Dakar and extending northward for more than 100 km. The mineralized dune system averages 4 km in width. The project area is 445.7 km^2 and the main heavy mineral (HM) deposits identified to date are Diogo, Mboro, Fass Boye and Lompoul. Other deposits have been partially explored within the Mining Concession and there is potential to identify additional deposits beyond the limits of present drilling.

Both the dunes and the underlying marine sands contain HMs, principally ilmenite with accessory zircon, rutile and leucoxene. Zircon and ilmenite are the main commodities of interest.

Exploration has been conducted with two types of drilling, air core reverse circulation (RC) and hand auger. All holes are vertical. Samples were collected at 1 m intervals from both RC and hand auger drilling. To the end of May 2010, GCO had drilled 8,285 RC holes for 150,665 m and 12,462 hand auger holes for 45,203 m, which combined with 39,063 m of DuPont drilling, gave a combined total of 234,931 m, drilled and assayed.

AMC's Melbourne office estimated a mineral resource for the Diogo, Mboro, Fass Boye and Lompoul areas of the deposit in April 2010 as part of its DFS. The combined GCO and DuPont RC and auger drilling were used in the estimate, see Table 1.

Table 1 Mineral Resource

Resource Category	Tonnes (M)	HM (%)
Measured	980	1.7
Indicated	50	1.8
Measured + Indicated	1,030	1.7

Based on a surface that is 6m below the natural water table with 1.25% HM cut-off grade

A block model was used to define the resource volume and HM grades were estimated into each parent block using ordinary kriging. The resource estimate was based on a cut-off of 1.25% HM and an assumption that the deposit will be mined by dredging where the total thickness of the sand mined is based on the dredge operating at the natural water table and its cutter operating up to 6 m below the water table. Therefore the total sand is accumulated to 6 m below the natural water table,

The resource estimate was originally classified in accordance with the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (the JORC

Code), 2004 Edition. In the Qualified Person's opinion, the definitions of "Mineral Resource", Measured Resource" and "Indicated Resource" in the 2004 JORC Code are sufficiently similar to those in the "CIM Definition Standards on Mineral Resources and Mineral Reserves", 2005 edition (2005 CIM Definition Standards) that AMC's 2010 Measured and Indicated Resource estimates can be considered to be equivalent to Measured and Indicated Resources as classified under the 2005 CIM Definition Standards.

The Qualified Person has reviewed all aspects related to the collection, recording, validation and interpretation of geological and exploration data and is satisfied that the standard of exploration undertaken by both DuPont and MDL has been consistent with, or has exceeded, good industry standards.

Mineral Reserves

Mining will be carried out by dredging a continuous canal (dredge path) through the dunal orebody. The dredge will float in an artificial pond accompanied by a floating spiral concentrator (wet concentrator plant or WCP). To the rear of the WCP a tailings stacker will deposit the tailings to fill the mined canal and achieve a final landform. Tailings represents approximately 98% of all material mined by the dredge. Once the dredge is fully commissioned and operational, the tailings disposal system will be required to place 55 Mt of sand per annum. Vegetation will be cleared in advance of the dredge pond and rehabilitation will be completed on the final landform.

The heavy mineral concentrate (HMC) from the WCP will be pumped to the mineral separation plant (MSP) where by it will be dewatered and stockpiled for batch processing in the MSP.

Based on the drilling to date a mine dredge path for the first 14 years of the operation has been developed and the mineral reserve estimate is shown in Table 2.

Table 2 Mineral Reserves

Reserve Category	Tonnes (M)	HM (%)
Proven	746	1.8
Probable	5	1.7
Proved + Probable	751	1.8

The deposit continues to the north and south on the lease beyond these reserves. Additional mine life will depend on the economics of the project including the mineral distribution, geometry and access. While the current mineral resource has not been defined sufficiently to extend to these areas and additional drilling is required, it could be anticipated that additional mine life beyond the current reserves is feasible.

The mineral reserve estimate was originally classified in accordance with the JORC Code, 2004 Edition. In the Qualified Person's opinion, the definitions of "Ore Reserve", Proved Reserve" and "Probable reserve" in the 2004 JORC Code are sufficiently similar to those in the 2005 CIM Definition Standards that AMC's 2010 Proved and Probable Ore Reserve estimates can be considered to be equivalent to Proven and Probable Mineral Reserves as classified under the 2005 CIM Definition Standards.

Processing and Engineering

An extensive metallurgical testwork program has been completed with the primary aim being to maximize recovery and product quality. The testwork commenced in 2004 and continued to early 2010. The most recent testwork was completed in 2010 using a 1,037 kg bulk sample collected from a trial pit located in the Diogo portion of the deposit.

Testwork results indicate that a product mix of three to four zircon products, two ilmenite products and rutile and leucoxene products is feasible. Overall recovery for HM was 82.6% using a combination of spiral concentrators, wet high intensity magnetic separation, wet tables, high tension roll separators, rare earth roll magnetic separators, electrostatic plate separators and induced roll magnetic separators. Upgrading of the ilmenite to synthetic rutile was also considered but not included in the final treatment flow sheet.

Detailed flowsheets, plant layouts and a plant design basis have been developed, based on a nominal feed tonnage (7,000 t/h) from the dredge and a plant feed HM grade of 2.0%. The Mineral Separation Plant (MSP) consists of three separate circuits: Wet Circuit, Zircon Dry Circuit and Ilmenite Dry Circuit.

Infrastructure

Mill buildings, the power station and fuel storage, administration offices, warehouses and lay-down areas will be located at the MSP site, which is sited near Diogo village, approximately midway along the mining lease. The nearby town of Mboro, 25 km south, is adjacent to the Industrie Chemique Senegal (ICS) phosphate mine which has a railhead and loading facilities. The main highway between Dakar and Saint Louis to the north is located 20 km east of the MSP site.

The maximum power demand for the GCP is 22 MW with a connected load of 27 MW. Annual power consumption is calculated as 141,000 MWh. MDL's power supply strategy is similar to that used in the Sabodala operation, whereby GCO will own and operate a 28 MW dual fuel (Heavy Fuel Oil (HFO)/ natural gas) fired power station.

The liquid fuel farm will have a HFO storage capacity of 1M litres which is sufficient for two weeks supply if straight HFO is burnt in the power station. If required during the wet season, additional storage capacity of 2M litres is available at the Port of Dakar. Gasoil (diesel) is also required to fuel pilot burners on the Dry Mill and the Ilmenite Plant heating equipment. The fuel farm incorporates a gasoil storage tank (100,000 litres).

Ilmenite will be transported in bulk by road to the ICS loading facilities and then by rail to the Port of Dakar while zircon, rutile and leucoxene will be transported in shipping containers by road to the port. Approximately 25 km of the road from the MSP to the Port of Dakar is unsealed, but is currently being upgraded. A new mobile loading facility will be required for loading trains at the ICS rail head and new unloading; storage and ship loading facilities for bulk ilmenite will be constructed at the Port of Dakar.

Water management is one of the key issues affecting the success of the GCP. It is important for the operation of the mine, the transfer of concentrates to the MSP, the mineral separation processes and the needs of the local community. There are three predominant uses of water for the GCP:

- flotation of the mining dredge, surge bin and wet concentrator modules and slurrying of dunal orebody for processing
- pumping mineral concentrates as slurries from the mine to the MSP and waste return to the min,
- processing of mineral streams in the MSP

Extensive modeling of existing water resources and the effects of mining on the water table has been completed. Based on this work the project water requirements are able to be met and the affect on regional water resources is understood.

Environmental and Social

GCO is developing an integrated Management System (ESMS) that incorporates the requirements of a number of international and national standards, including International Finance Corporation (IFC) Performance Standards and the Equator Principles.

The Environmental and Social Management and Monitoring Plan (ESMMP), describes the monitoring, mitigation and management measures required during the construction, operation, decommissioning and rehabilitation phases of the GCP. It is based on commitments made in the Environmental and Social Impact Assessment (EIES) and on requirements of the GRS and financial institutions involved in the project. The ESMMP is a dynamic document subject to updating and adjustment following biennial review and will address the following key environmental and social issues:

- water
- rehabilitation
- avoidance of settlements and appropriate compensation if temporary or permanent resettlement is required

It is estimated that the project will employ directly up to 800 people during construction with a GCO workforce of approximately 280 people plus 130 outsourced roles during operation. It is anticipated that 30% to 40% of the total workforce will be recruited from local communities.

Project Metrics

The key project metrics are summarized in Table 3.

Table 3 Key Project Assumptions and Metrics

Item	Assumption and Metrics
Saleable Products and Average Annual Production Rates	Premium Zircon – 32,000 tpa Intermediate Zircon – 25,000 tpa Standard Zircon – 20,000 tpa (All three of the above major zircon products were independently assessed by TZMI as premium products for its respective market sectors) Secondary Zircon – 2,500 tpa Chloride/Sulphate Ilmenite – 575,000 tpa Rutile – 6,000 tpa Leucoxene –11,000 tpa
Mining Strategy	Owner Mining
Total Metres Drilled (MDL)	150,665 m Reverse Circulation (RC) Drilling. 45,203 m Augur Drilling.
Mineral Resource	Indicated Resource - 50 Mt at 1.8% HM. Measured Resource - 980 Mt at 1.7% HM. Total Indicated and Measured - 1,030 Mt at 1.7% HM.
Mining Rate	55 Mt per year of sand. Average 7,000 tonnes per hour.
Mining Method	Floating cutter section dredging operation.
Ore Reserve	Probable Reserve - 5 Mt at 1.7% HM. Proved Reserve - 746 Mt at 1.8% HM. Total Probable and Proved - 751 Mt at 1.8% HM.
Processing Method	Floating Concentrator featuring banks of gravity-fed High Capacity Spirals, followed by a land-based Mineral Separation Plant (MSP) which includes a Wet High Intensity Magnetic Separation Plant (WHIMS), a zircon wet and dry plant and an ilmenite plant.
Processing Rate	140 tonnes per hour to a maximum of 200t per hour.
Tailings Disposal Method	Cyclone and discharge with tailings stacker.
Product Transport Method	Road transport in containers to Port of Dakar for zircon, rutile and leucoxene. Combination of road and rail transport in bulk to Port of Dakar for ilmenite.
Project Execution Methodology	Engineering, Procurement and Construction Management (EPCM) Contractor.
Construction Start Date	Beginning of 2nd quarter 2011.
Production Start Date	End of 2nd quarter 2013.
Defined Mining Path	Fourteen Years.

Marketing

On a global scale, planned product output from the GCP would represent 8% of the total world zircon production, 1% and 11% of total world rutile and leucoxene production, respectively and 9% and 13% of chloride and sulphate ilmenite, respectively.

Customer benefits are enhanced by the close proximity of the Port of Dakar to the important European and North American markets. Container shipments of zircon will allow just in time inventories to be serviced and new export business to Senegal, filling containers that are currently returned empty after import. This is also expected to enable negotiation of a reasonable freight rate. The large market size for zircon and ilmenite enables the GCP to attract long term contracts and large customers seeking bulk volumes. Contract packaging of rutile and leucoxene to the welding industry enables the product specifications to be tailored to the consumer, opening up niche markets.

MDL's marketing objective is to optimize the sales mix, thereby improving the overall sales price for GCP products. This will be achieved by having a wide customer base and a sales mix for zircon, rutile and leucoxene based on small lot sales by container shipments, enabling sale into a range of niche markets and establishing price competition. In addition, MDL expects to achieve premium prices through targeted product differentiation for selected end use markets, leveraging off a number of product and project benefits. For ilmenite, long term contracts will be developed to secure the position of this high volume bulk shipment product.

MDL (on behalf of GCO) has negotiated sales arrangements with a number of customers covering all of the currently envisaged zircon production. The terms of these arrangements include a pricing mechanism which is renewed on a rolling basis and is subject to final product quality. The agreements will be formalized after completion of further product quality trials and customer evaluations. These trials are well advanced and have demonstrated that the GCP zircon product will have a competitive edge in terms of product quality against other suppliers. Ilmenite marketing is also being progressed with a number of customers having expressed interest in receiving samples.

Capital Cost Estimate

A summary of the capital costs is shown in Table 4. The capital estimate is based on a single contract for EPCM.

Table 4 Capital Cost Estimate

Item	Total Capital US$M
Mining – Dredge and Services	37.9
Wet Concentrator Plant	84.7
Mineral Separation Plant	54.1
Mining – Infrastructure	8.4
Mineral Separation Plant – Infrastructure	5.8
Power Station	45.3
Rail/Port Facilities and Rolling Stock	18.6
Temporary Construction Facilities	21.5
Indirects – EPCM, Commissioning and Project Fee	52.1
Owners Costs	47.0
Estimation/Design Allowance	16.8
Contingency	13.8
Total	406.0

The Base Date for the Capital Costs is 30 November 2009. A provision for escalation beyond the estimate base date has not been included in the estimate. A contingency allowance of $13.8M has been included by GCO and a further $16.8M is included by way of a design allowance. The level of accuracy of the estimate is ±15%.

Operating Costs

A summary of the operating costs is shown in Table 5.

Table 5 Annual Operating Costs

Description	Annual Operating Cost $M
Power and Fuel	23.1
Employee Costs	7.9
Maintenance	13.8
Transportation / Shipping	22.4
Other	8.1
Total	75.3

The Base Date for operating costs is April 2010. No contingency has been included on operating costs. Operating costs estimated by GCO have an accuracy of +/- 15% and include a significant portion of real in-country costs.

Implementation Schedule

GCO proposes to construct the project using a single contract for EPCM with an internationally recognized and experienced engineering company. High quality local and European sourced contractors will be utilized for plant construction.

The Project Execution Schedule assumes that financing for the Project will be completed by the 1st quarter of 2011 and that the EPCM contractor will be selected early in 2011. The schedule indicates a completion data for C1 and C2 commissioning sign off during the first quarter of 2013. The first sales products are scheduled to be produced by June 2013.

Financial Summary

The GCP generates revenue from the sale of the products listed in Table 3. The GCP is exempt from Senegalese Government taxes for a period of 15 years from the start of operation, with provision also made for exemptions during investment and development.

The production ramp up assumes 67% utilization in the first year of plant operation, followed by 85% in the second year and nominally full capacity in subsequent years.

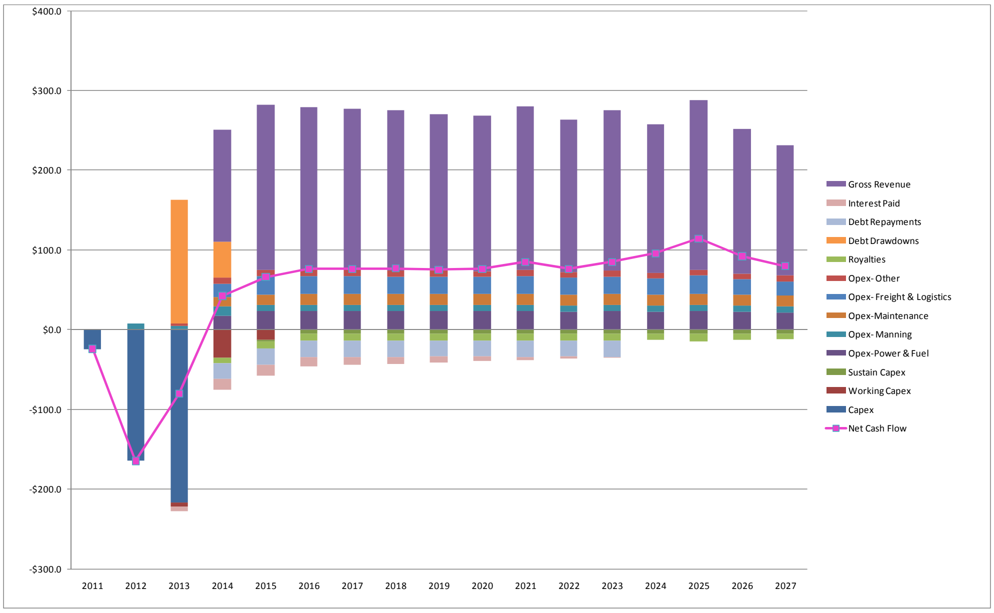
The GCP is forecast to generate total gross revenue of US$2,687M to 2027. Net annual cash flow is positive in 2014 at US$42.3M.

The total amount of saleable product over the first 15 years of mine life is 9,693,900 tonnes. Zircon sales contribute to 56.9% of total gross revenue, ilmenite 37.0%, leucoxene 3.5% and rutile 2.5%.

Total capital costs are US$406M excluding working and sustaining capital and are spread over years 2011 to 2013. Total operating costs are US$1,024.6M to 2027.

The net annual cash flow is positive in 2014, as shown in Figure 1.

Figure 1 GCP Overall Cash Flow (US$M)



The Internal Rate of Return of the GCP to 2027, assuming 50% debt and 50% equity, is 21%. The Net Present Value (NPV) of the Project to 2027 is US$209.3M. The GCP experiences positive payback in 2018

The impact of sensitivity analysis across a range of +/- 10% on IRR is summarised in Table 6.

Table 6 Sensitivity Impact on IRR

Sensitivity	IRR @ 90%	IRR @ 100%	IRR @ 110%	IRR Change +/-10%
Ore Mined (Tonnes)	18%	21%	24%	6%
HM Grades (%HM Grade)	17%	21%	24%	7%
Recovery (Saleable Product '000t)	17%	21%	24%	7%
Commodity Prices (Revenue US$M)	16%	21%	26%	10%
Operating Expenses (Total Opex US$M)	23%	21%	19%	-4%
Capital Expenses (Project Capital US$M)	24%	21%	18%	-6%
All Capital (Total Capital US$M)	24%	21%	18%	-6%
Working/Sustaining Capital (Total W & S Capex US$M)	21%	21%	21%	<-1%

Given that commodity price, heavy mineral grade, recovery and ore mined all result in both increased net revenue and project IRR, the greatest potential upside for the GCP can be achieved by optimizing internal mining and processing practices in a climate of reasonable macro-economic parameters.

Risks and Opportunities

Nine risks (excluding marketing, financing and political considerations), summarized in Table 7 are considered key issues for the project.

Table 7 Summary of Key Issues for Risk Management

Class	Risk Summary	Initial Risk Ranking	Proposed Controls	Owner	Revised Risk Ranking
Mining and mineral processing	Poor operational performance at start up.	High	High level of expatriates with knowledge; budget allowance for ramp up; design mine path for first 12 months to suit less experienced operators; cross training; recruitment policy for expatriates and nationals.	GCO	Low
Health and Safety	Traffic incidents on roads or rail.	Extreme	GCO road to ICS and village bypasses; traffic management plan; community education; Contractor compliance with traffic management plan; logistics contractor selection and management.	GCO	Medium
Health and Safety	Public accidents in mine.	Extreme	Fence during construction and security staff control of boundary post construction.	GCO	Medium
Health and Safety	Malaria, dengue.	High	Identification and treatment; utilise Sabodala malaria control programs; spraying; nets; removal of standing water; education programs.	GCO	Medium
Socio-Economic Impact	Lack of community support.	Extreme	Lessons learned from Sabodala; proactive CA plan run by GCO.	GCO	Low
Socio-Economic Impact	Disruption to livelihood assets.	High	Change in the mining plan; strong community relationships; establishing a base line and a transparent process for compensation from the beginning of the project.	GCO	Low
Project Execution	Forex increasing cost to complete.	High	Hedging; conservative exchange rate assumptions.	GCO	Low
Project Execution	Capital escalation.	High	Firm price contracts; equipment pricing.	GCO	Medium
Project Execution	Under-resourcing of owner's team and/or EPCM/ contractors.	High	Adequate and timely resource planning.	EPCM/ GCO	Medium

Four significant opportunities have also been identified:

- The construction and operation of the GCP is expected to result in very substantial financial and social benefits to surrounding communities. These include direct and indirect job creation, creation of local industry to support the project, and training and skills transfer to local people. Added social benefits include improved health and education levels plus improved local infrastructure such as roads.
- Considerable capital cost savings could be obtained through a fresh look at the MSP design and layout. Rationalization of the structures and facilities including integration of the ilmenite and zircon building at the MSP could result in savings of the order of US$5-10M. In addition, opportunities for further optimization of the major structural sections of the plant such as pontoons allowing easier transportation and assembly were identified.
- Despite repeatable and consistent results the rutile and leucoxene recoveries measured as part of the testwork programme were significantly lower than industry standard recoveries at comparable operations. Therefore there is significant project upside for increased recoveries and revenue from these minerals.
- The DFS scope was based on defining ore reserves for the first 14 years of mine life. There is mineralization within the Mining Concession that has not been fully explored and that could lead to a significant extension of project life.

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FIGURES

DISTRIBUTION LIST

Mr J Williams, Mineral Deposits Ltd, Melbourne
AMC Melbourne office
AMC Vancouver office

1 INTRODUCTION

This Technical Report on the Grande Côte Project (GCP) in Senegal, West Africa has been prepared by AMC Mining Consultants (Canada) Ltd (AMC) of Vancouver, Canada on behalf of Mineral Deposits Limited (MDL) of Melbourne, Australia. It has been prepared in accordance with the requirements of National Instrument 43-101 (NI 43-101), "Standards of Disclosure for Mineral Projects", of the Canadian Securities Administrators (CSA) for lodgement on CSA's "System for Electronic Document Analysis and Retrieval" (SEDAR). This report is an update of a Technical Report prepared by AMC in November 2007 and was triggered by the public release by MDL on 16 June 2010 of a Definitive Feasibility Study (DFS) and first-time statement of mineral reserves, prepared by AMC's Melbourne office.

The names and details of persons who prepared, or on whom the Qualified Persons have relied in the preparation of, this Technical Reported are listed in Table 1.1. The Qualified Persons meet the requirements of independence as defined in NI 43-101.

Table 1.1 Persons who Prepared or Contributed to this Technical Report

Qualified Persons responsible for the preparation of this Technical Report						
Qualified Person	Position	Employer	Independent of MDL	Date of Last Site Visit	Professional Designation	Sections of Report
Mr P R Stephenson	Director, Regional Manager, Principal Geologist	AMC Mining Consultants (Canada) Ltd	Yes	4 -8 May 2007	PGeo, BSc (Hons) MCIM, FAIG FAusIMM (CP)	All sections except 16 and 17 plus overall report
Mr R Webster	Principal Geologist	AMC Consultants Pty Ltd	Yes	No visit	BSc (Applied Geol), MAusIMM	Section 16 Mineral Resource
Mr P Federici	Principal Mining Engineer	AMC Consultants Pty Ltd	Yes	11-12 September 2009	BEng (Mining) MAusIMM	Section 16 Mineral Reserve
Mr S Williams	Principal Mining Consultant	AMC Consultants Pty Ltd	Yes	11-12 September 2009	MBus, BEng (Mining) MAusIMM	Section 17
Other Experts upon whose contributions the Qualified Person has relied						
Expert	Position	Employer	Independent of MDL	Visited Site	Sections of Report	
Mr W J C Meynink	Director	PSM Australia Pty Ltd	Yes	8-18 December 2005	17.7 (Hydrological)	
Dr S Swabey	Principal – Water Resources	Umwelt (Australia) Pty Ltd	Yes	No visit	17.6 (Environmental)	
Mr N Murphy	Director	Earth Systems	Yes	10-16 April 2007	17.6 (Social)	
		Dewey & LeBoeuf LLP	Yes	No visit	Sections 3.2 – 3.12	
Mr P Murphy	Managing Director	TZ Minerals International	Yes	No visit	17.4 (marketing)	

Other Companies upon whose contributions the Qualified Persons have relied					
		Ausenco Limited	Yes	Regularly 2005-2010	17.2 (part), 17.3 (part), 17.8 (part)
		Downer EDI Mining	Yes	No visit	17.3 (part)

The scope of the personal inspection of the property undertaken by the principal Qualified Person (P R Stephenson) covered a visit to the Mboro and Diogo heavy mineral (HM) deposits, inspection of reverse circulation (RC) and hand auger drilling, bulk density measurements, bulk sampling collection, the MDL sample preparation laboratory and sighting of original EI du Pont de Nemours and Company Inc (DuPont) drilling and assaying data. He also Interviewed MDL and ex-DuPont field personnel.

The Technical Report is based on information provided by MDL, a list of which is contained in Section 21, on site visits undertaken by three of the Qualified Persons, and on discussions with MDL personnel in both Melbourne and Senegal.

The exchange rates used for conversion of costs to $US are:

- 1 A$ equals 0.90 US$
- 1 Euro equals 1.50 US$
- 1 CFA equals 0.0022 US$

MDL was provided with a draft of this report to review for factual content and conformity with the brief.

This report is effective 16 June 2010.

2 RELIANCE ON OTHER EXPERTS

The Qualified Persons have relied, in respect of environmental, legal and marketing aspects, upon the work of five Experts as listed in Table 1.1. To the extent permitted under NI 43-101, the Qualified Persons disclaim responsibility for these sections of the Technical Report.

The following disclosure is made in respect of each of these Experts:

Mr W J C Meynink:

- Report, opinion or statement relied upon: Water, hydrology aspects of DFS.
- Extent of reliance: Review of relevant documents with reliance on Mr Meynink's professional knowledge, experience and expertise.
- Portion of Technical Report to which disclaimer applies: Section 17.7.

Dr S Swabey:

- Report, opinion or statement relied upon: Environmental aspects of DFS.
- Extent of reliance: Review of relevant documents with reliance on Dr Swabey's professional knowledge, experience and expertise.
- Portion of Technical Report to which disclaimer applies: Section 17.6.

Mr N Murphy (Earth Systems):

- Report, opinion or statement relied upon: Social aspects of the DFS
- Extent of reliance: Review of relevant documents with reliance on Mr Murphy's professional knowledge, experience and expertise.
- Portion of Technical Report to which disclaimer applies: Section 17.6.

Dewey & LeBoeuf LLP:

- Report, opinion or statement relied upon: Letter from Dewey & LeBoeuf LLP to MDL dated November 2007, entitled "Legal Opinion on Mineral Deposits Limited Grande Côte and Sabodala Projects"
- Extent of reliance: Review of Dewey and LeBoeuf letter, with reliance on that firm's professional knowledge, experience and expertise.
- Portion of Technical Report to which disclaimer applies: Section 3.2 to 3.12.
- Mr P Murphy (TZ Minerals International):
- Report, opinion or statement relied upon: Marketing aspects of the AMC DFS.
- Extent of reliance: Review of relevant documents with reliance on Mr P Murphy's professional knowledge, experience and expertise.

- Portion of Technical Report to which disclaimer applies: Section 17.4.

The Qualified Persons have also relied on the work of two companies for certain technical aspects of the AMC DFS on which this Technical Report is partly based, being Ausenco Limited and Downer EDI Mining. The Qualified Persons have reviewed the input of these companies, are satisfied as to its quality and reliability and accept responsibility for the relevant contributions.

3 PROPERTY DESCRIPTION AND LOCATION

As permitted by Instruction 5 of 43-101F1, this section is presented in a summary form and the reader is referred to more detailed information provided in the previous Technical Report lodged on SEDAR in November 2007.

3.1 Location

Senegal is located on the western bulge of Africa and its capital, Dakar, is on the most westerly point of the coastline of Africa. The country is 196,190 square kilometres (km^2) in area. Senegal has a population of about 12.5 Million (M) people of which 94% are Muslim and 5% percent are Christian (mostly Roman Catholic). While French is the official language, Wolof, Pulaar, Jola, and Mandinka are also spoken.

Senegal gained its independence from France in 1960, after about 75 years of French rule. It is a stable, democratic republic under multiparty democratic rule based on the French civil law system. For this reason, Senegal is the location of choice of many foreign embassies and international banks as the headquarters for the West African region.

The GCP mineral deposits are located on a coastal mobile dune system starting about 80 km north-east of Dakar and extending northwards for more than 100 km (Figure 3.1). The mineralized dune system averages about 2 km wide with some areas extending to up to 4.5 km wide, and contains large un-vegetated sand masses.

3.2 Mining Code

The Mining Code for Senegal is designated as “Le Code Minier – Loi No. 2003-36 du 24 novembre 2003”. It is supplemented by the application procedures (mining regulations), designated as “Decret No. 2004-647 Fixant les modalites d’application de la Loi No. 2003-36 du 24 novembre 2003 Portant Code Minier”. The Mining Code is administered by the Department of Mines and Geology, reporting to the Minister for Mines.

Figure 3.1 Location Diagram

3.3 Mining Convention

MDL Senegal SARL (MDL Senegal), a Senegalese subsidiary of MDL, executed a Mining Convention with the Government of the Republic of Senegal (GRS) on 9 September 2004 and has obtained an official Exploration Permit (Permit de Researche). The convention was formally transmitted by Ministerial arrête No.7474 of 10 September 2004 and recorded in the Journal Officiel (Government Gazette) of 30 October 2004.

An Addendum to the Mining Convention was executed by MDL and GRS on 24 September 2007 and shortly thereafter, a Mining Concession was signed on 27 November 2007. The key terms of the agreement are:

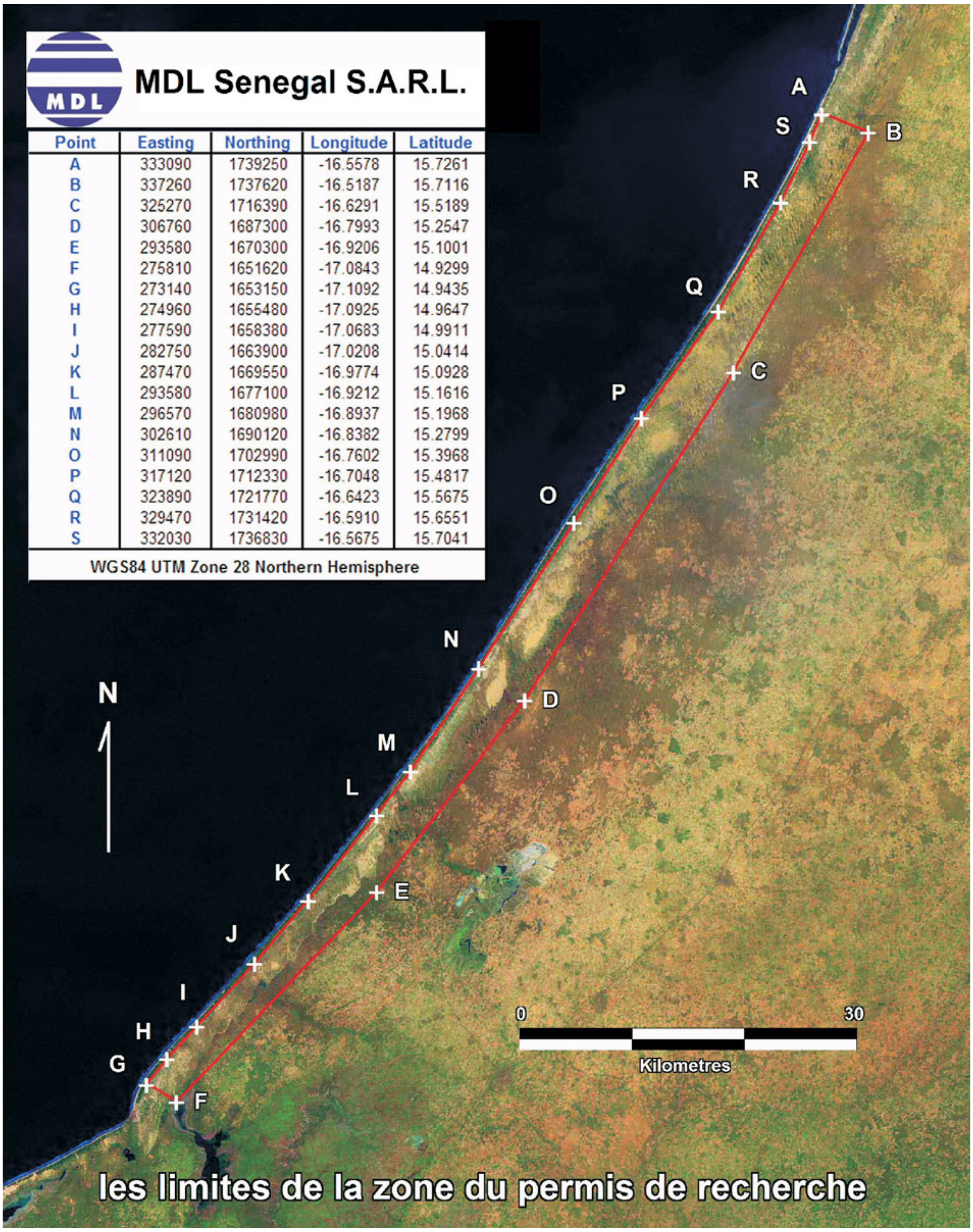
- As part of supporting development of the Grande Côte region, MDL has agreed to spend US$20 million on the New Town and social development in the area of the 446km2 lease (this has been paid).
- The company will expend a further US$150,000 per annum on other agreed social programmes in the Grande Cote area.
- MDL has committed to support training/equipment needs of the Department of Mines and Geology with payments of US$50,000 annually.

- The payment of a 3% gross production royalty to GRS and a further 2% gross production royalty directed to the New Town/social development in the region.
- GRS has the right to acquire 10% of the project's production based on a cost-plus formula.
- GRS is entitled to a 10% free-carried interest in the project operating company and the payment of dividends once the project's capital costs and associated shareholder loans have been recovered.
- MDL will cooperate with GRS and apply world's best practice in environmental protection of the Grande Côte.
- A 25 year mine lease.
- MDL to receive a 15 year exoneration from taxation including Value Added Tax and Company Tax.
- No import duties on MDL-owned or rented equipment or on goods and services.
- GRS or a national Senegalese only has the right to acquire a further 25% contributing interest in the exploitation company. Conditions relating to this acquisition are:
    - Purchase price of shares in the exploitation company based on independent evaluation of the project by an internationally recognised public accountancy firm or investment bank. The independent expert will be selected by MDL subject to the consent of the Minister of Energy and Mines.
    - A proposed buyer will have 30 days to pay for shares calculated from the date on which MDL supplies the prospective buyer with the independent valuation report.
    - Simultaneously and conditional on the payment for the shares and as a prior condition to the allocation of these shares, the buyer will be required to pay an amount proportional to its participation in the capital necessary for the development of the project as has been determined by the offer of bank finance.

The Mining Concession has a length of 106 km and an average width of 4.5 km for an area of 445.7 km^2 (Figure 3.2).

The resource distribution is shown in Figure 3.3. Coloured in yellow is the resource outline defined by the 1.5% HM cut-off and in red the 2.5% HM cut-off (see Section 16 for a description of the mineral resource estimate to which these grades relate).

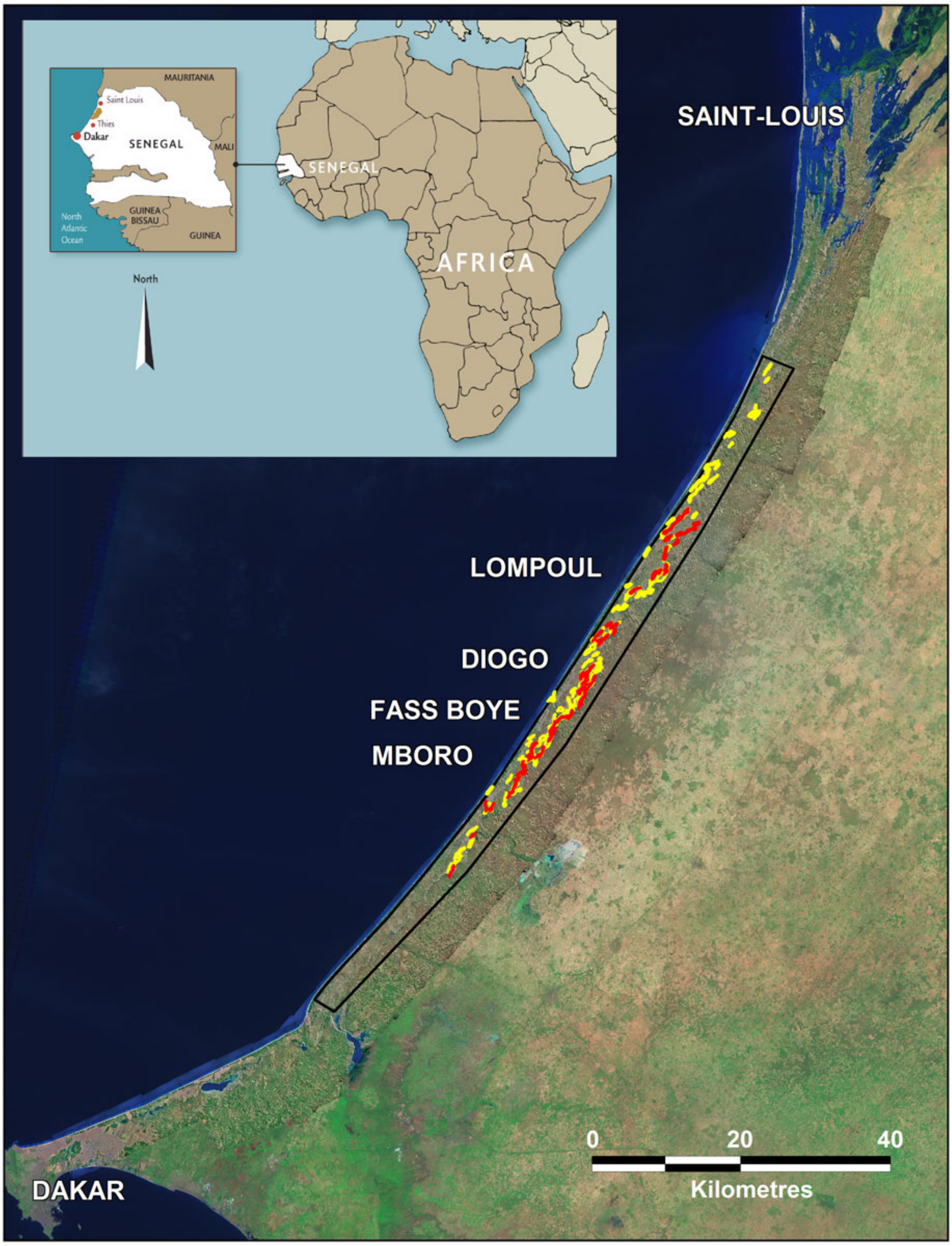
Figure 3.2 Mining Concession Area and Coordinates of Corner Points



Point	Easting	Northing	Longitude	Latitude
A	333090	1739250	-16.5578	15.7261
B	337260	1737620	-16.5187	15.7116
C	325270	1716390	-16.6291	15.5189
D	306760	1687300	-16.7993	15.2547
E	293580	1670300	-16.9206	15.1001
F	275810	1651620	-17.0843	14.9299
G	273140	1653150	-17.1092	14.9435
H	274960	1655480	-17.0925	14.9647
I	277590	1658380	-17.0683	14.9911
J	282750	1663900	-17.0208	15.0414
K	287470	1669550	-16.9774	15.0928
L	293580	1677100	-16.9212	15.1616
M	296570	1680980	-16.8937	15.1968
N	302610	1690120	-16.8382	15.2799
O	311090	1702990	-16.7602	15.3968
P	317120	1712330	-16.7048	15.4817
Q	323890	1721770	-16.6423	15.5675
R	329470	1731420	-16.5910	15.6551
S	332030	1736830	-16.5675	15.7041
WGS84 UTM Zone 28 Northern Hemisphere				

Based on DuPont drilling data, the main HM deposits occur over a strike length in excess of 70 km. The better defined resources are named Mboro, Fass Boye, Diogo and Lompoul after nearby localities.

Figure 3.3 Location of Mineralized Zones



3.4 Project Company

The company owning the exploration licence is MDL Senegal, with the registration identifier N.I.N.E.A. 24782052F2. Its registered address is Rue 26, N'Gor Dakar Senegal.

3.5 Mining Concession Benefits

The holder of a Mining Concession is exempt from revenue-related taxation and taxation of all kinds. Additionally the holder is exempt from payment of all customs and excise duties, including value added tax (TVA), and the imposition of charges by the Senegalese Council of Shipping Agents (Conseil Sénégalais des Chargeurs - COSEC) and other taxes of all kinds, with the exception of the Statistical Royalties of the West African Economic and Monetary Union (WAEMU), unless this exemption has been specifically set out in the context of an external financial agreement.

Subject to foreign exchange regulations and the provisions of the Mining Code, the holder of an exploration and mining title may freely:

- Import, without charge, materials belonging to it.
- Import to Senegal the goods and services necessary for its activities.
- Export the extracted mineral substances, their concentrates, primary derivatives and all other derivatives after having completed all the legal and regulatory formalities for the export of these substances.

3.6 Water Approvals

The project must comply with the requirements of the Senegal Environmental Code 2001 and with the undertakings made pursuant to the Environmental and Social Impact Assessment Study.

3.7 Government Equity Participation

The GRS has a 10% carried participation in the share capital of the exploitation (e.g. mining or operating) company. MDL is therefore required to finance this participation.

The project will be managed by the MDL group and will be owned by the operating company. The operating company will be Grande Côte Operating S.A, the shareholders in which will be the GRS with a 10% interest and an MDL subsidiary, Mineral Deposits Mauritius Limited, with 90%.

The GRS has the right to reserve for itself, or for the national private sector, up to an additional 25% of the share capital of the exploitation company. The purchase price of these shares is required to be independently evaluated by an expert appraiser appointed by MDL.

3.8 Royalties

MDL shall accept that the mining royalty to be paid pursuant to Article 57 of the Mining Code be 5% of the pithead value. The 2% surplus has been set aside to support the New Town development project.

3.9 Mining Production Bonus Payment

For the duration of the Project, the State shall have the right to acquire ten percent (10%) of the exploitation company's production based on the cost-plus formula. Should the State decide to exercise this right of purchase, it may sell to the exploitation company its production share either at the world reference price or at an average price applicable to the twelve months of the fiscal year ending on 30 June and with a few adjustments agreed on by both parties.

3.10 Obligations

For all purchases of equipment and supplies of goods or services, MDL Senegal and the operating company are obliged to use Senegalese enterprises to the extent that the goods and services are available under competitive conditions of price, quality, quantity, guarantees, delivery times and payment. Where this is not the case, MDL Senegal and the operating company may acquire, import from any point of supply and use in Senegal all goods, raw materials and services necessary in the context of mining operations dealt with under its Convention.

During the period of this convention, MDL Senegal, the operating company and the subcontractors will agree to:

- Accord a preference to Senegalese personnel where qualifications, skills and experience are equivalent.
- Use local labour for all positions which do not require any special professional qualifications.
- Implement a programme for the basic and continuing training and promotion of Senegalese personnel with a view to ensuring the use of this personnel in all the phases and at all the steps of the activities linked to this convention, within the limits of the mining operation requirements.
- Contribute, on the basis of a protocol for a convention to be concluded with the Minister for Mines, to the basic and further training of officers with responsibility for the management and promotion of the Senegalese mining sector.
- Provide housing to workers employed on the site in conditions of hygiene and cleanliness in accordance with the regulations in force or to be enacted.

3.11 Social Support

MDL Senegal or the operating company will agree to contribute to the construction or, where applicable, the improvement or extension of health, educational and leisure infrastructure for workers and the members of their immediate families, taking into account the economic situation of the society and complying with local standards.

3.12 Environmental Issues

The project will be required to comply with the Environment Code for Senegal, designated as "Code de l' environnement – Loi No. 2001-01 du 15 janvier 2001". The code is supplemented by the application procedures (environment regulations), designated as "Decret No. 2001-282 du 12 avril 2001 portant application du code de l'environnement". The Environment Code is administered by the Department of the Environment and Forests, reporting to the Minister for the Environment.

A summary of the environmental activities and studies undertaken to date by MDL is provided in Section 17.6 of this report.

3.13 Qualified Person's Opinion

The Qualified Person reviewed an independent legal opinion on the status of title and related regulatory issues provided by Dewey & LeBoeuf LLP. He is satisfied that the description of these issues in sections 3.2 to 3.12 above is accurate and that MDL / MDL Senegal has the permits required, or has reasonable expectations of acquiring the permits required, to operate the GCP.

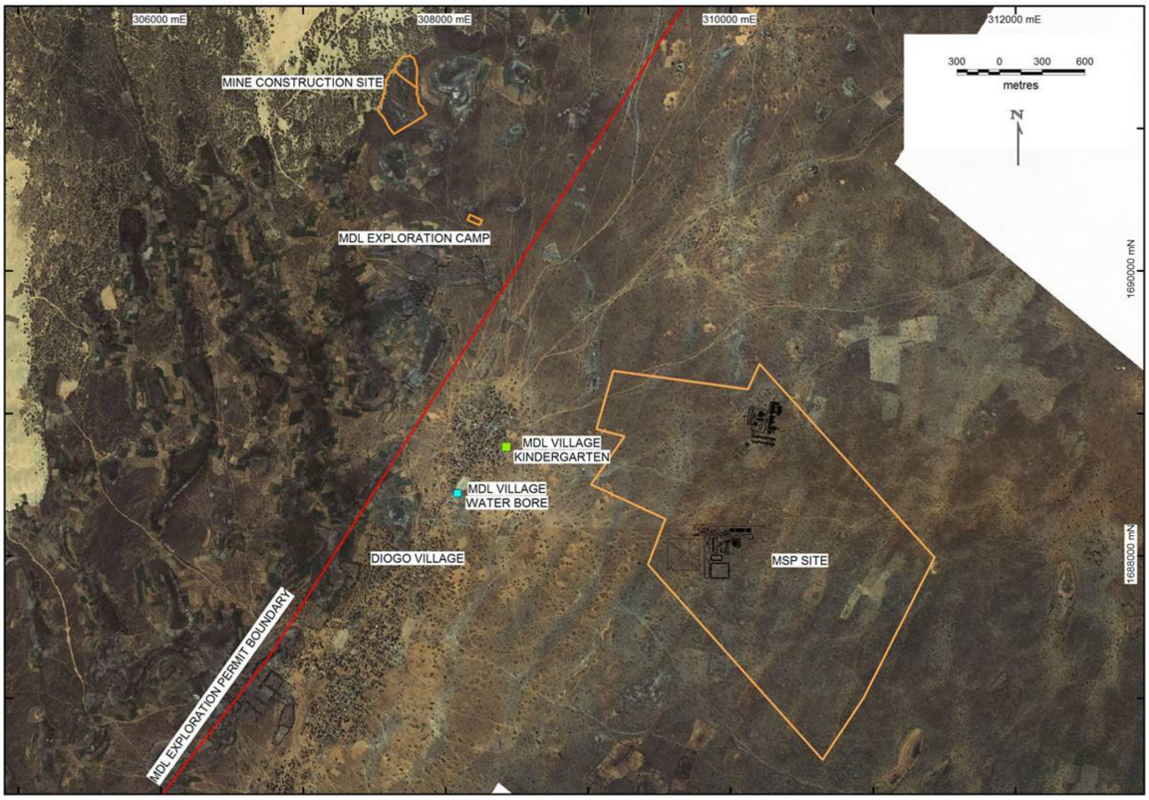
4 ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY

As permitted by Instruction 5 of 43-101F1, this section is presented in a summary form and the reader is referred to more detailed information provided in the previous Technical Report lodged on SEDAR in November 2007.

4.1 Accessibility

Mboro is the main regional centre to the GCP mineral sand deposits, and is located 120 km from Dakar via Thiès and Tivaouane and 90 km via Rufisque and Bayakh. The site layout is shown in Figure 4.1 and the road network is shown in Figure 4.2. A new haul road and access roads will be established by MDL as required. The 354 ha area of land selected near Diogo for the MSP will be sufficient for the future establishment of an ilmenite separation plant and for the possible construction of a synthetic rutile or slag facility for the upgrading of ilmenite.

Figure 4.1 Site Layout Diogo Area – MSP Site



4.2 Physiography

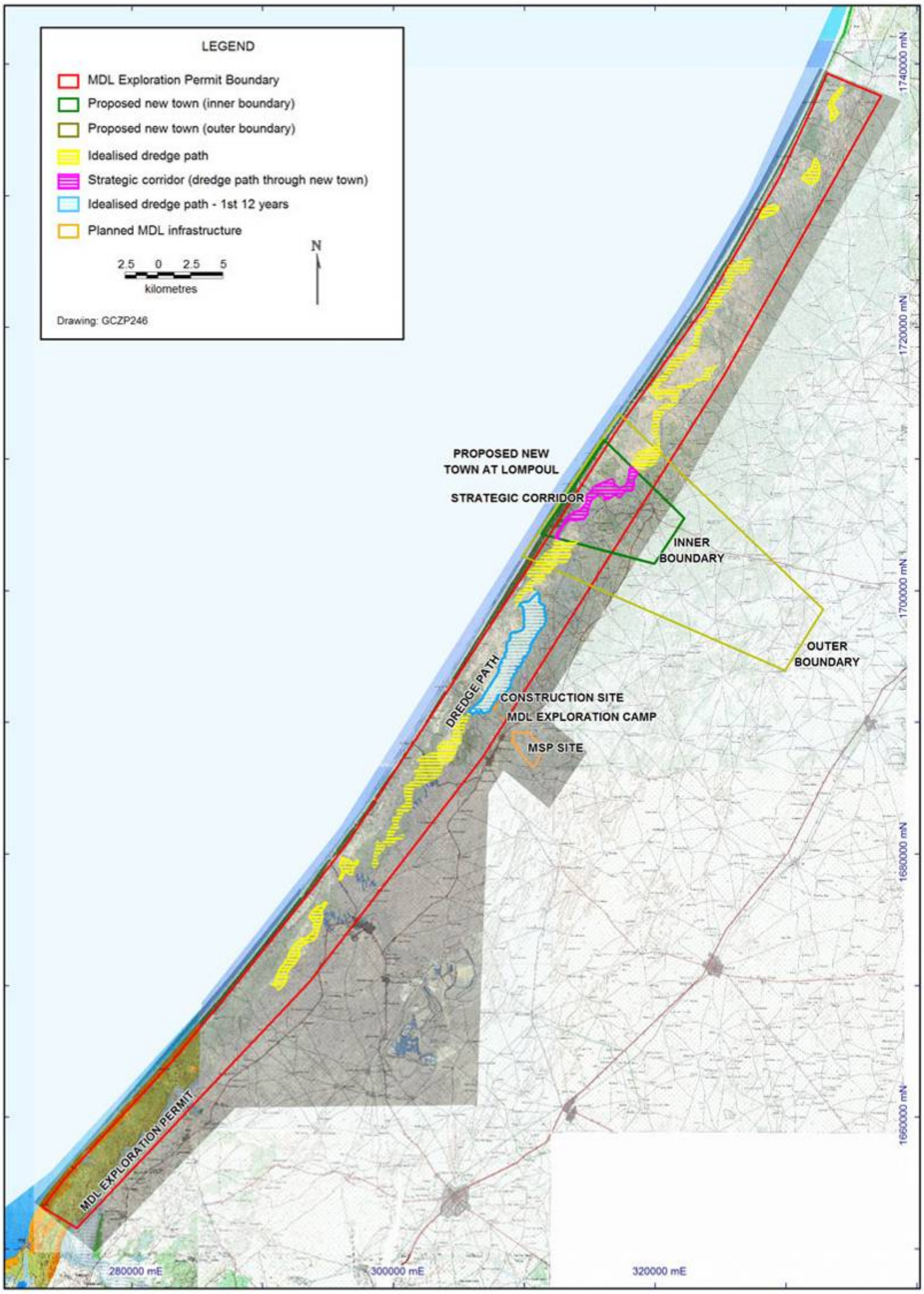
The Senegal region lies within the Sahel, the semi desert or savannah region that forms a broad band across Africa between the Sahara desert to the north and the forested countries to the south. The landscape of the country is generally of low, rolling plains rising to foothills in the southeast. The area planned for mining is located on a coastal dunal system starting about 25 km north of Dakar and extending north-eastwards for more than 140 km. The mineralized dune system averages about 2 km wide with some areas extending to up to 4.5 km wide, and contains very large un-vegetated sand masses.

The project is scheduled to commence at Diogo where the first 12 years of mining will be centred. The government of Senegal has allocated an area near the village of Lompoul for a new town and this area is shown on Figure 4.2. With full support for the government and local communities proposed, MDL has designed a strategic corridor to transit the area.

4.3 Climate

The northeast coastal area of Senegal (Dakar to St Louis) is tropical with distinct wet and dry seasons. The wet season is from June to October with the most rain falling during August. The dry season is from November to May. The annual rainfall in the Mboro area is approximately 425 millimetres (mm) and at Lompoul approximately 350 mm. The Harmattan is a dry wind that blows from the north, usually from December to February. In Dakar average daytime maximum temperatures are around 24ºC from January to March, and between 25ºC and 27ºC in April, May and December. From June to October temperatures rise to around 30ºC.

Figure 4.2 Site of Proposed New Town at Lompoul



4.4 Infrastructure and Logistics

See Section 17.7.

5 HISTORY

As permitted by Instruction 5 of 43-101F1, this section is presented in a summary form and the reader is referred to more detailed information provided in the previous Technical Report lodged on SEDAR in November 2007.

The dunes of the Grande Côte extend from the Pointe des Almadies, on which Dakar is sited, to St Louis 140 km to the northeast. The presence of HMs was first officially noted in Bulletin No. 8 published by the Director of Mines in 1945 (Direction Federale des Mines de L'AOF - DFMG). Sporadic exploration, including some drilling, took place from the 1940s to the 1980s, however it was not until DuPont acquired the area in 1989 that systematic exploration was undertaken. In 1992 DuPont withdrew from the project and no further work took place until MDL Senegal was granted its Exploration Permit in October 2004.

6 GEOLOGICAL SETTING

As permitted by Instruction 5 of 43-101F1, this section is presented in a summary form and the reader is referred to more detailed information provided in the previous Technical Report lodged on SEDAR in November 2007.

6.1 Regional Geology

The Atlantic Grande Côte area of north-west Senegal comprises an assemblage of marine sands remaining after the sea retreated in Recent times. The prevailing weather is from the northwest and this has contributed to the formation of a normal fore dune system and a series of high aeolian – mobile dunes, which trend north-west and extend inland for up to 4.5 km from the beach.

Significant HM deposits are focussed in the area of Mboro, Fass Boye, Diogo and Lompoul over a distance exceeding 50 km. Within the limits of previous reconnaissance drilling, there are other deposits, both to the south-west and north-east for a total strike length drilled of 80 km. There is potential for additional deposits beyond the limits of present drilling.

The deposits are stated as being of Holocene (Recent) Epoch. Both the mobile dunes and the underlying precursor marine sands contain HMs, principally ilmenite with accessory zircon, rutile and leucoxene.

6.2 Project Geology

6.2.1 Dunes

The North Coast mineral sand deposits of Senegal are contained in a series of Recent (4,000 to 2,000 years before present) mobile or semi fixed pale yellow coloured dunes. The mobile dunes range between 5m and 30m above sea level and can reach up to 4.5 km inland. Figure 6.1 shows pale yellow mobile dunes containing ilmenite in the Mboro area, flat-lying swale areas in the foreground containing minor peat.

Figure 6.1 Mboro Area, Looking Eastwards

In general the pale yellow mobile dunes cover littoral white beach sands of Late Quaternary age. This was a time when lagoons, bars, spits and deltas formed along the coast, together with the development of peat in lagoons and estuaries. The present day interface between these two layers is generally a thin (0.5m) humic horizon. The littoral sands contain some HM (strand lines?) and the reworking of this material by longshore currents running north to south, coupled with wave action, is believed to have fractionated the sands to produce thinly bedded HM concentrations reworked as lag deposits in the mobile dunes. In general the littoral white sand horizon is fine grained but at depth (25m to 45m below surface) does contain some lenses of coarse sands and grits which enhance the surficial aquifer. Overall the underlying littoral sand horizon is 30m to 40m thick.

An extensive older back dune system of north-east trending aeolian red or orange coloured sands (rouges) was formed during an Ogolien (20,000 to 11,000 years before present) age regression when the desert of Mauritania spread to this region. The mobile dunes may also be a reworked part of these back dunes. Drilling data indicates the mobile dunes intermittently overlie the back dune sands in the more inland parts of the deposits.

Based on work by the Geological Survey and DuPont, a model of the mineral sand deposits was constructed which suggests three aeolian phases, with the greatest amount of HMs in the oldest which is now the most inland part of the mobile dune system (Figure 7.1).

6.2.2 Water Table

Within the low lying Niaye area there are numerous artisanal wells and pits and by observation the depth to water in these wells varies between 1.5m to 8m below the humic horizon (base of swale) for an average depth of 4m. The present day water table is slightly depressed (approx 0.5m) due to water use by artisanal farmers and seasonal variation (MDL observations, February 2004 - mid dry season).

Data from a Bureau de Recherches Géologiques et Minières (BRGM) 1983 peat study, hydrological report gives a mean annual variation in the depth of the water table of 0.27m. The variation is reported to increase inland. It is noted that ground water is generally suitable for human consumption.

6.2.3 Peat Deposits

The base of the light yellow coloured mobile dunes is commonly marked by a humic horizon approximately 0.5m thick, with white coloured quartz beach sands beneath. Beneath the humic layer (and peat), localised accumulations of fine-grained iron oxide-rich friable sandy clays representing ancient swamps are occasionally present. The ratio of the "swampy areas" to clean white beach sands is difficult to ascertain, but based on reconnaissance appraisal, is considered to be very small.

Some peat is exposed in the inland swale area adjacent to the mobile dune system in the Mboro area. The peat deposits tend to be swampy but when drained and mixed with sand can support local agriculture. MDL's observation of the profile in hand dug wells and pits is that the peat persists away from the major swales as a humic layer averaging 0.5m thick and this layer is considered to extend beneath the mobile dunes. Thicker (+/-10m) deposits of peat are likely to occur, but these deposits are not widespread and not in the mine path but to the east of the dunal system.

7 DEPOSIT TYPES

As permitted by Instruction 5 of 43-101F1, this section is presented in a summary form and the reader is referred to more detailed information provided in the previous Technical Report lodged on SEDAR in November 2007.

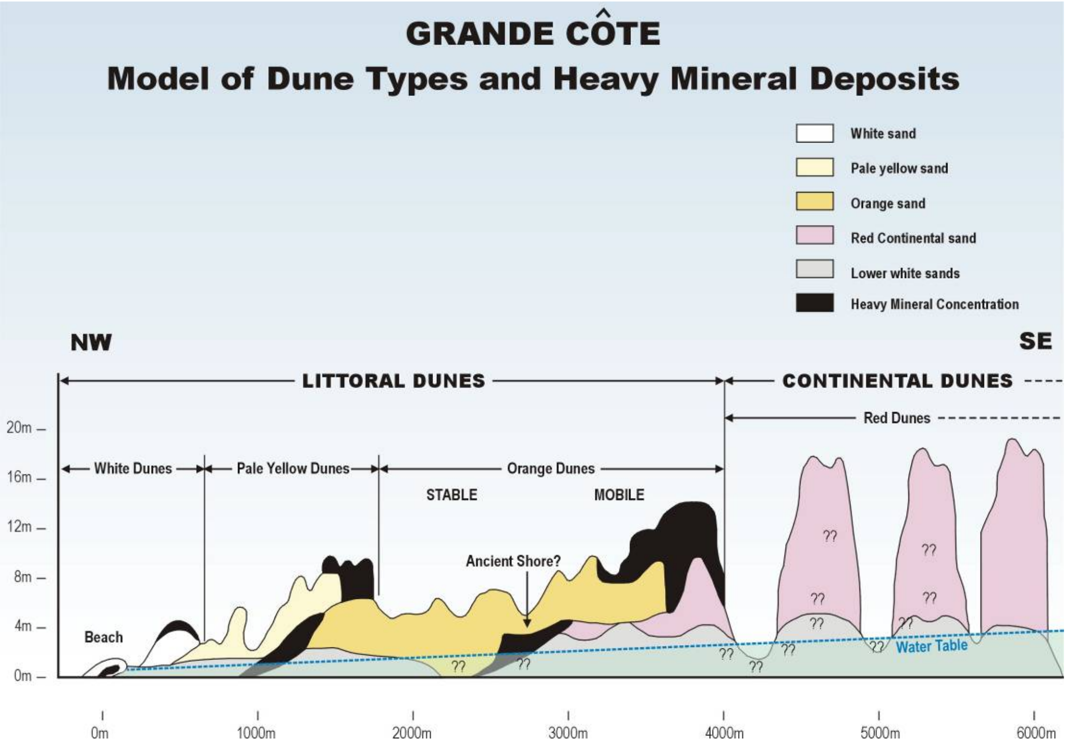
The resource underpinning the GCP comprises a linear series of aeolian sand dunes containing a HM assemblage (~2.0% HM) concentrated by wind action.

The aeolian or mobile dunes overly a substratum of former beach sands representing a recessive littoral environment. These sands also contain HMs (~0.5% HM) but in some cases, apparently thin strand line concentrations of >10% HM are indicated by deeper drilling. The natural water table occurs close to the interface between the mobile dunes and the white sand substratum.

The planned floating dredging and wet recovery plant will require a clearance depth of 6m and so the resource deposit model includes both mobile dune and littoral sand together with occasional peaty materials preferentially located at the dune - littoral sand interface.

Figure 7.1 is a diagrammatic cross section through the GCP deposits (note: horizontal scale ten times vertical scale (common practice in the mineral sands industry).

Figure 7.1 Diagrammatic Cross Section through Grande Côte Deposits



8 MINERALIZATION

As permitted by Instruction 5 of 43-101F1, this section is presented in a summary form and the reader is referred to more detailed information provided in the previous Technical Report lodged on SEDAR in November 2007.

To date, four main HM deposits have been delineated at the GCP (Figure 3.3). They cover a strike length in excess of 50 km and are named (from south to north) Mboro, Fass Boye, Diogo and Lompoul after nearby localities. Within the limits of existing reconnaissance drilling there are other deposits, both to the south-west and north-east for a total strike length drilled of 80 km. There is potential for additional deposits beyond the limits of present drilling.

Between 2006 and 2008, MDL sent various bulk samples and drillhole composite samples taken from the Fass Boye and Diogo deposits for testwork. The mineralogical results varied somewhat from the results obtained from grain counting work in 2006. The main conclusion from this work is that the different sample sizes, locations and methods make the estimation of the average mineralogy throughout the deposit difficult. However, the following ranges are considered to be reasonable estimates (as % of HM):

- Ilmenite: 74.0% to 75.9% with an unweighted average of 74.6%
- Zircon: 8.3% to 11.0% with an unweighted average of 10.6%
- Rutile: 2.1% to 2.8% with an unweighted average of 2.5%
- Leucoxene: 3.0% to 3.4% with an unweighted average of 3.2%.

9 EXPLORATION

Exploration activities are fully described in Sections 5, 10, 11 and 12 of this Technical Report.

10 DRILLING

10.1 MDL Drilling

MDL uses two types of drilling, air core RC and hand auger. All holes are vertical. Samples are collected at 1m intervals from both RC and hand auger drilling.

10.1.1 MDL RC Drilling Procedure

MDL uses in-house RC (aircore) drill rigs mounted on Bombardier Muskeg tracked carriers (Figure 10.1). Drilling rods are 3m in length and based on AQWL size diamond drill rods (44.6 mm diameter) fitted with a proprietary inner tube. Samples are collected every metre. The Bombardier mounted drill rigs traverse the dune sands without difficulty along each line selected for drilling.

The rigs are set up for rapid drilling and there is provision to collect the complete sample with a basic cyclone separation by means of a swivel outlet feeding two alternate sample bags. Face discharge drill bits and low air pressure (15 psi to 20 psi) together with low rotation speed (50 rpm to 60 rpm) provides the most representative sample return.

Figure 10.1 Drilling and Sample Collection – MDL Drill Rig No. 1

Drilling is currently being undertaken on lines at 200m spacing and with holes at 40m intervals across most of the deposits. Drillholes are designed to be completed at a depth of 8m beneath the water table allowing overlap of information for a proposed 6m deep dredge pond. Overall the average hole depth is 15-20m, and as the holes are vertical, all intersections are true width. Hand auger drilling is usually used for infill at 40m intervals, but samples only as deep as the water table as this technology does not work beneath the water table.

10.1.2 MDL Hand Auger Drilling Procedure

MDL uses conventional Dormer brand shell augers for infill drilling. The augers are Australian made and are recognised as the standard for mineral sands drilling. The type used is the 50 mm fine sand auger with 1.5m long extension aluminium coarse thread drill rods.

The sand is wetted to provide for a collar and the hand augering commenced. From experience, the auger shell will fill with two to three rotations for approximately 20 cm advance. The auger is then withdrawn from the hole and the sample poured / pushed directly into a labelled sample bag. A 75 mm PVC collar is placed by hand and the hole re-entered (Figure 10.2). This procedure is repeated until a one metre representative sample is collected per sample bag. Hand auger drilling is not successful beneath the water table.

Figure 10.2 Hand Auger Sample Collection

Between September 2005 to April 2010 MDL drilled 7,750 RC holes totalling 150,66m and 4,569 hand auger holes totalling 45,203m for a grand total of 195,868m (Figure 10.3).

10.1.3 Shaft Sampling

In 2007, MDL also took shaft samples to gather accurate geological information down the sand profile and to perform a comparative analysis of HM percentages from RC and auger drilling results. The shaft samples were generally taken at 0.20m intervals. The shaft assays were composited to 1 m intervals for comparison with the RC and auger drilling.

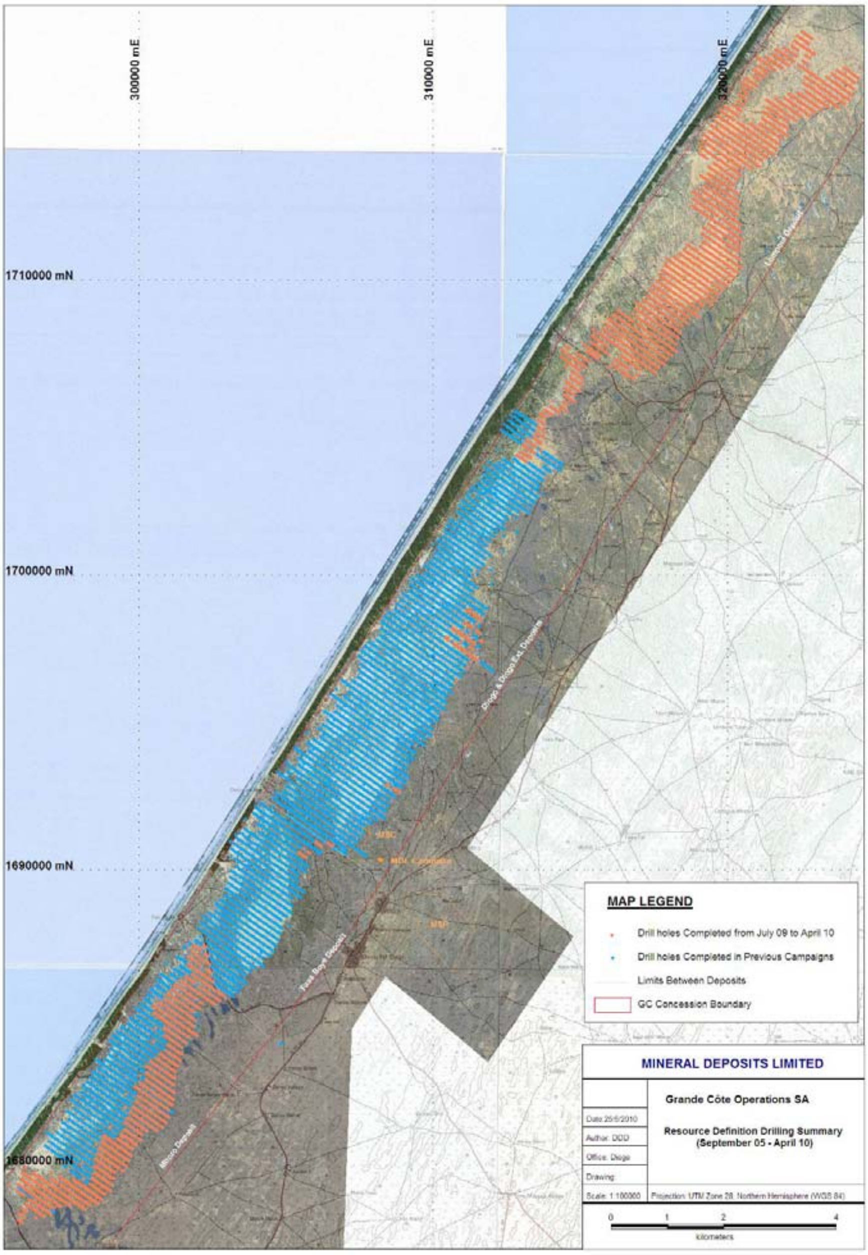
The shaft sampling is considered to be superior to the RC and auger drillhole sampling because the exact location of the shaft and the samples taken from it is known. Also the actual geology is exposed for direct observation on the shaft walls.

10.1.4 MDL Rehabilitation of Drill Sites

The RC drill rigs are designed to be used in very sensitive environments and are based on the Bombardier Muskeg tracked vehicle. This type of vehicle gives a minimal impact on the ground. Grid drilling involves some clearing; bushes and small trees may need to be removed but bigger trees are not removed.

After the drilling, rehabilitation measures include removing all wastes created by the drilling and planting bushes in the area, equivalent to those occurring before the drilling.

Figure 10.3 MDL RC and Hand Auger Drilling Completed to end April 2010



10.2 DuPont Drilling

DuPont also used two types of drilling, water injection RC and hand auger. All holes were vertical, with samples being collected at 1m intervals from both RC and hand auger drilling. The hand auger drilling was conducted on a grid spacing of 400m north-south by 80m east-west, stopping at the water table (sometimes shallower if the hole was fairly deep). The RC drilling was not undertaken on a regular grid, but distributed to achieve a reasonable coverage of the dunes and of the zones beneath the water table (Figure 10.4).

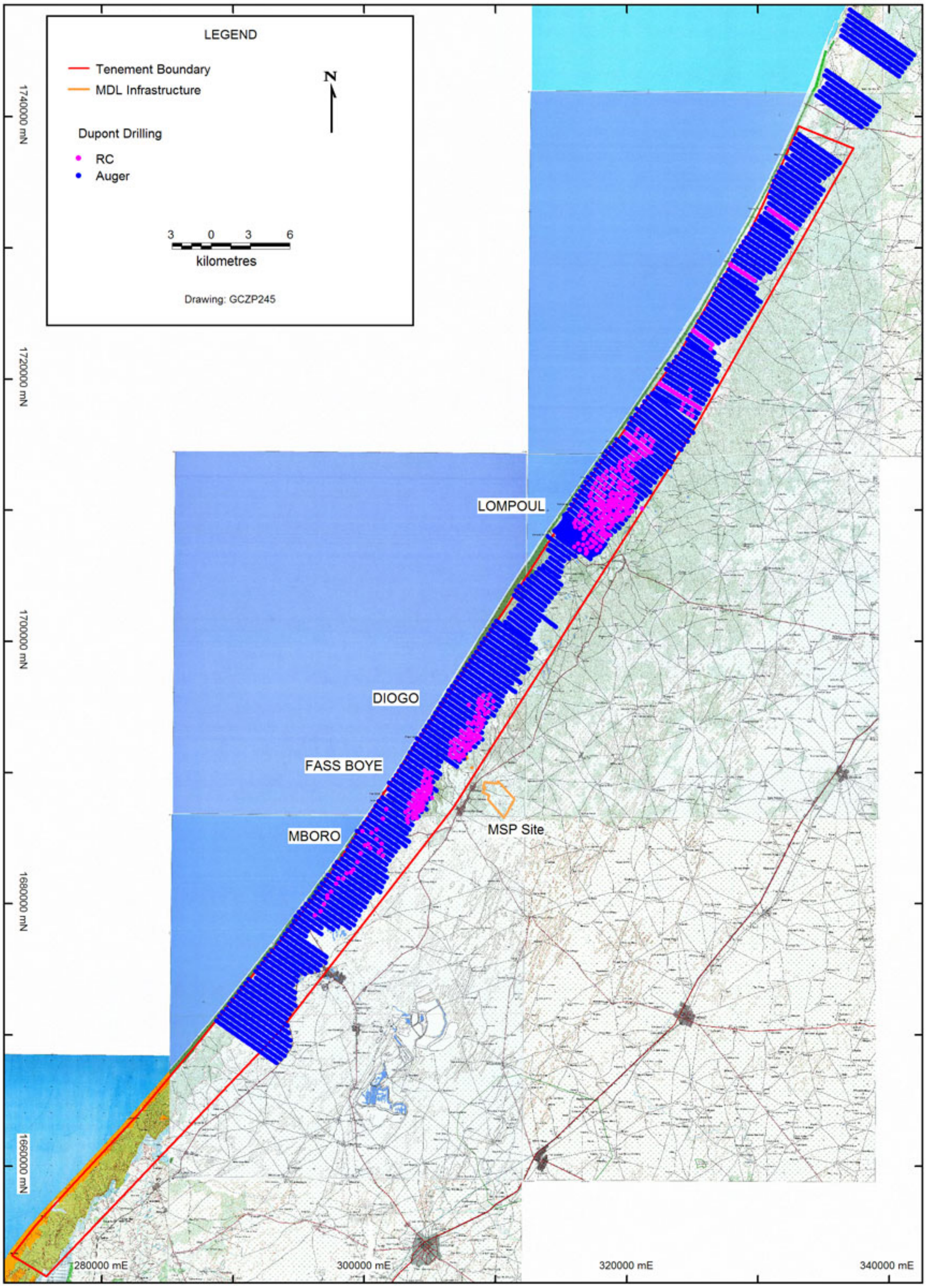
10.2.1 DuPont RC Drilling Procedure

DuPont's RC drilling was undertaken by Victor Drilling of Florida, USA, using a truck mounted rig with large, specially treaded tyres to enable it to operate in sand dune conditions. The RC method used a high pressure pump to force water down the inside of the inner rod and back up though the gap between the two rods, to raise the suspended cuttings that were recovered as a sample. The outer diameter of the outer rod was 1 ¾" or 44.5 mm.

10.2.2 DuPont Hand Auger Drilling Procedure

DuPont's procedure was identical to MDL's procedure. DuPont tested the reliability of the sampling by randomly re-drilling a hole at or very near to the first location. The difference between the geological description and the HM determination of the samples from the two holes was generally found statistically negligible.

Figure 10.4 Extent of DuPont drilling



10.3 Statistical Analyses on Various Drilling Methods

10.3.1 RC and Auger Drilling

In August 2007, AMC carried out a comparative analysis of HM percentage assays on samples taken from RC and auger drilling and compared these results with assay results from shaft bulk samples using an arbitrary (shaft sample) cut-off grade of 1.0% HM.

Table 10.1 shows that the RC drillhole assays differ by 2% to 13%, averaging 7%, and the auger drillhole assays differ by 1% to 3%, averaging 2%, from the shaft samples. It should also be noted that when the zone with the highest difference in the RC drilling versus shaft results (Shaft 4) is removed, the overall average difference is reduced to 4.6%.

Table 10.1 Grade Comparison of Shafts and RC/ Auger Holes

Shaft	Depth (m)	Location	Shaft Average HM%	RC Drillholes		Auger Drillholes		Difference (%)	
				HM%	No. Holes	HM%	No. Holes	RC	Auger
2	2–8	Central	4.43	4.23	14	4.33	10	5	2
2	2–10	Northwest	4.16	3.88	11	4.05	6	7	3
2	2–10	Southeast	4.16	3.60	11	3.77	5	13	9
Average/Total			4.25	3.93	36	4.12	21	8	3
3	0–11	–	1.69	1.66	42	1.71	21	2	1
Average/Total			1.69	1.66	42	1.71	21	2	1
4	0–6	–	2.34	2.04	34	2.30	21	13	2
Average/Total			2.34	2.04	34	2.30	21	13	2
Weighted Average/Total			2.73	2.51	112	2.71	63	9	2

The individual variability of the sampling points is a function of the smaller size of the RC and auger samples when compared with the shaft samples and also may be due to the nature of the deposit where depositional interleaving of heavy minerals is common.

The study shows that average grades estimated from the auger drilling results are closer to the average grades of the shaft samples than the average grades estimated from the RC drilling results. It implies that auger drilling would be the preferred drilling method to assess the grade down to the water table. There is a tendency for the RC drill samples to underestimate the grade above the water table and to overestimate the grade below the water table. An RC sample taken above the water table has a closer correlation to the shaft than a sample taken from below the water table.

10.3.2 DuPont and MDL Drilling

In May 2009, AMC conducted a study to assess the influence the DuPont drilling and MDL drilling was having on the resource estimate. Statistical analysis of the two drillhole databases found differences in HM grades between the DuPont and MDL drillhole databases. Overall, the MDL HM grades are lower than the DuPont HM grades, most likely a result of the earlier holes (DuPont) being widely sampled and possibly preferentially sampling areas of higher grade. See Table 10.2 for results for composited DuPont and MDL drillhole data.

Table 10.2 Sample Statistics for Composited DuPont and MDL Drillhole Data

Dataset	No. Holes	No. Samples	%HM Maximum	%HM Minimum	%HM Mean
DuPont	1,833	15,014	14.77	0	1.51
MDL	7,358	109,843	14.89	0	1.18

As at May 2009

Figure 10.5, Figure 10.6 and Figure 10.7 show the log histogram of HM% for the total DuPont and MDL drillhole database, the HM% for DuPont and MDL auger drillhole database and the HM% for DuPont and MDL RC drillhole database respectively.

Figure 10.5 shows there is reasonable correlation between the distributions, despite the MDL drilling having a lower mean HM% grade. The increase in the mean grade for the DuPont drilling may be due to it preferentially sampling areas of higher grade.

Figure 10.5 Log Histogram of %HM DuPont and MDL Drillholes

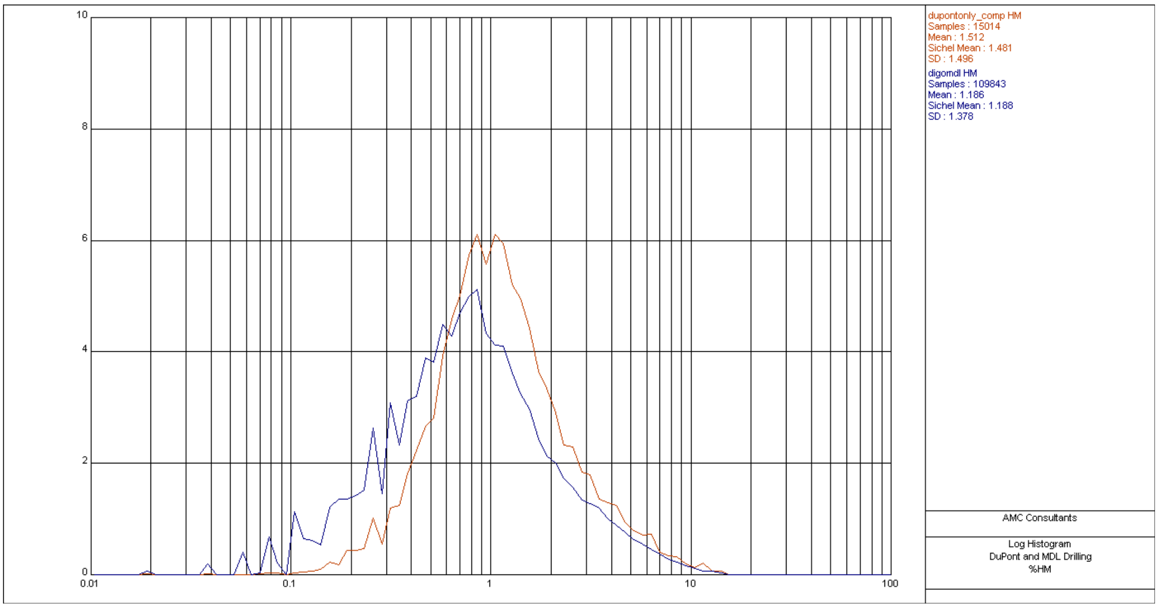


Figure 10.6 shows very good correlation between the MDL and DuPont auger holes. This supports the previous comments that drilling and sampling methods used by MDL and DuPont were identical, and suggests that the hand augering achieves better sample

recoveries and a more representative sample, as overall the HM% grades are higher than the RC drilling results.

Figure 10.6 Log Histogram of %HM DuPont and MDL Drillholes Hand Auger

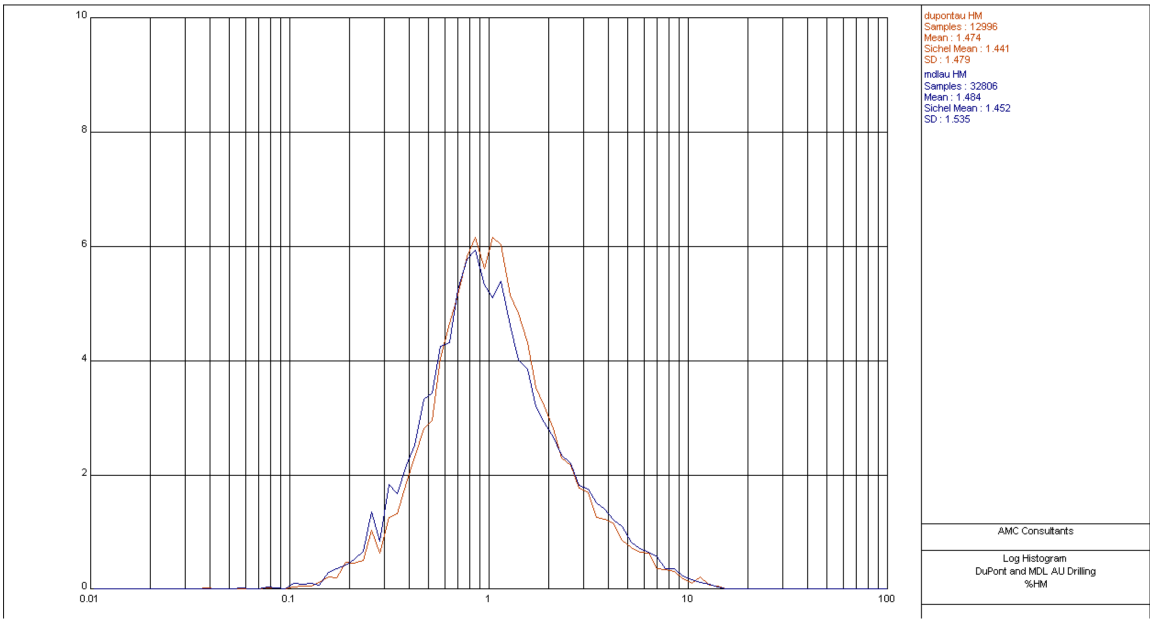
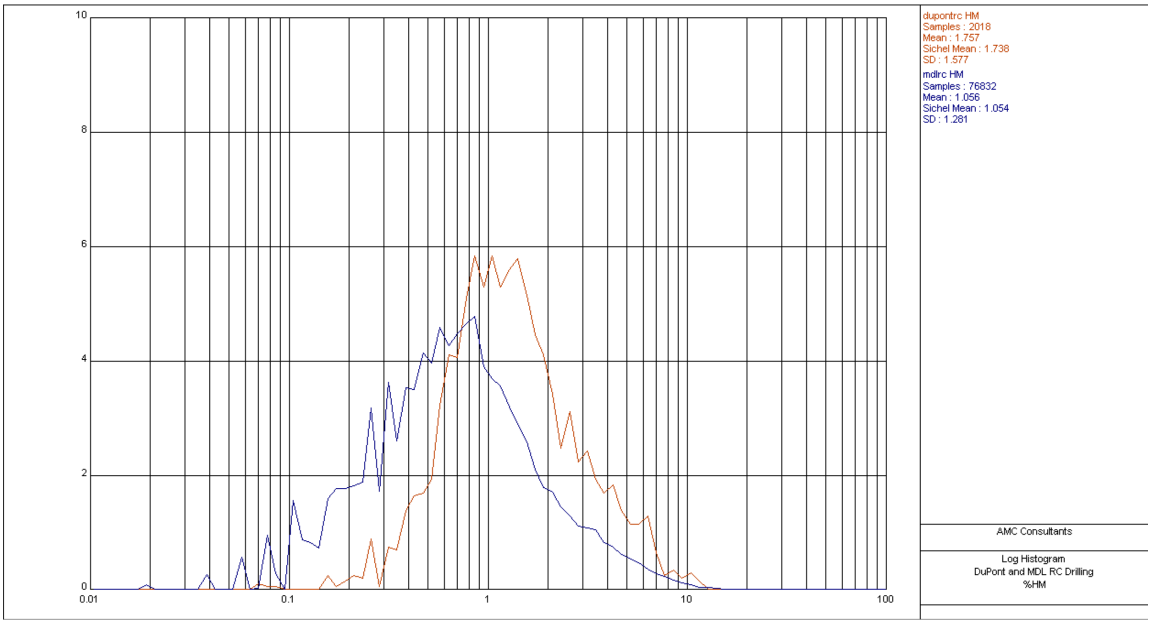


Figure 10.7 shows that the MDL RC drilling has lower HM% grade than the DuPont drilling. MDL use air core RC method, while DuPont used water injected RC method. It has been suggested that the RC drill samples have a tendency to underestimate the grade above the water table and to overestimate the grade below the water table. The reason why the MDL RC holes are lower in grade than DuPont RC is unclear.

Figure 10.7 Log Histogram of %HM DuPont and MDL Drillholes RC



The difference in the average grades for the RC holes prompted the investigation into how much influence these differences were having on the block model grades. The block model estimated using DuPont drilling only resulted in higher total HM grade and tonnes, especially below the water table where only limited RC drilling (with possible overestimated grades) influences the block model. Other reasons for the increase in grade and tonnes using the DuPont RC drillholes only are mainly due to the limited data available for block grade estimation resulting in each hole having an influence on a large area of the deposit.

MDL RC drillhole target depths were 8m below the water table. This provided more data across the deposit and especially at depth. The block model estimated with all available data resulted overall in lower tonnes and HM grades. AMC is confident the combined data (MDL and DuPont) is resulting in a block model that more accurately represents the HM% grade distribution across the deposits as the MDL drilling is generally infill drilling supplying additional data at depth limiting the smearing of the higher grades higher up the sand dune.

10.3.3 AMC Comments

In general, HM grades estimated from the RC and auger drilling results are comparable with the grades returned by the samples from the control shafts and therefore it follows that both types of drillhole data can be used for resource and/or reserve estimation.

The MDL and Du Pont results for hand augering are comparable and appropriate to use in the resource estimates, as they provide the most accurate representative samples, due to good recoveries. The main disadvantage for this method is most auger samples terminate above the water table.

AMC has not found a definitive reason for the difference in the grade distribution of the DuPont and MDL RC drilling.

However, AMC is satisfied that the resource estimation using the combined data (MDL RC and auger and DuPont RC and auger) is resulting in a block model that reasonably represents the HM% grade distribution across the deposits.

10.4 Cadastral Base and Drill Hole Collar Survey

Previous drilling by DuPont was based on a local grid. A number of key points from the DuPont grid were preserved in concrete and re-located by MDL. The Qualified Person saw one of the concrete pegs during his site visit. Registered surveyor Bureau D'Etudes Topographique et Technique (BetPlus) of Dakar was commissioned to locate these tie points in international Universal Transverse Mercator (UTM) Grid, WGS84 Zone 28 N. This enabled the DuPont grid to be reconfigured in the UTM grid. BetPlus also established a number of local base stations for MDL to utilise.

Base sheets for the area were constructed utilising Quickbird landsat data. Quickbird images covering the whole 100 km extent of dune area in the Exploration Permit were acquired and orthorectified by Geoimage of Perth, Western Australia. Some 60 local points were identified and surveyed by BetPlus to provide a base for the

Quickbird orthorectification. All survey data and drilling locations are projected in UTM WGS84 Zone 28 North using the MapInfo and Discover (Encom) programs.

In June 2006, Spectrum Survey & Mapping of Perth audited the existing base station positions as provided by BetPlus using detailed static surveys with MDL-owned Topcon differential GPS. Through the AUSPOS (Australian Government) online GPS processing service, the static readings were converted to eastings, northings and RL. The resultant reading for the Base Station (RR2) was 308253.182E / 1690381.203N and 26.184 RL.

All previous drill collar data was adjusted to comply with the agreed base station. All subsequent surveying including site topographic surveys for the dredge and plant construction is based on the revised Base Station point. It was considered that BetPlus's work was accurate relative to the government trigs. The government trig point error was computed as:7.656 mN, 9.147 mE and 1.185m RL.

All drill collars are set out and subsequently picked up by MDL Topcon Differential GPS.

10.5 Hydrology

The proposed dredging operation is very much reliant on the position of the water table at a suitable depth and also the availability of sufficient make-up water to support the proposed mining rate. The dredge and wet treatment plant are designed to operate in a water depth of 6m and the level of the water table dictates the lower bound of the reserve envelope. A program of piezometer bores at a maximum of 600m by 60m spacing plus readings of nearby artisanal wells define the water table in the resource area. Rising from sea level at the coastline, the water table reaches an RL of some 7m in the main resource area. Even though there are local variations in relief, for resource estimation purposes, the water table is considered as a plane not an irregular surface.

The local geology and hydrology is relatively well understood based on observation of excavations and wells sunk for water by artisanal farmers, water bores and piezometers (infrequent) within the district and the DuPont and MDL resource drilling. Additional information has come from the activities of ICS, which operates a large scale, open cut phosphate mine at Taiba, approximately 25 km to the south of Diogo. At Taiba, ICS produces quality drinking water and water for its phosphoric acid plant from a series of five deep bores (+/- 300 m). These bores tap an excellent aquifer in a Maestritchien age sandstone horizon within a very extensive sedimentary basin. Pumping rates are of the order 100 m^3 /hr.

A program of transmissivity testwork drillholes was undertaken for MDL by a Dakar based geotechnical company and supervised by Australian Groundwater & Environmental Consultants Pty Ltd (AGE), which has also prepared a regional hydrological model. PSM Australia Pty Ltd (PSM) has overall responsibility for project hydrological studies and recommendations.

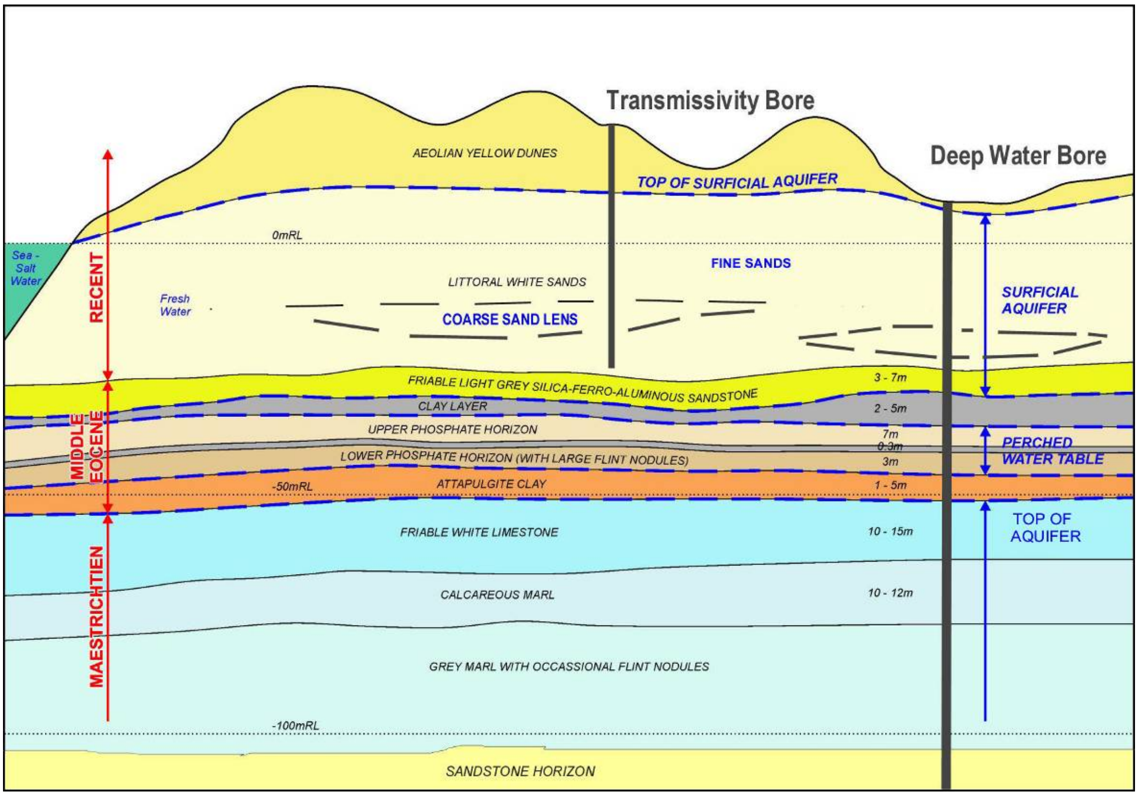
The results of the testwork indicate medium transmissivity at 14m/day, which accords well with geological studies and the observation of recharge rates from pumping from artisanal wells and pits for agriculture. Completion of hydrogeological modelling will provide final estimates on make-up water requirements.

Three aquifers are recognised in the project area (Figure 10.8). The upper one, termed the surficial aquifer, is contained within the 30m to 40m thick littoral white sand environment which is the substratum for the mobile dunes which host the preponderance of the HMs. These littoral sands are relatively fine grained and bimodal in grain size such that the interstices of the larger grains are partly filled by the smaller grains. The net result is low to moderate transmissivity. Coarse grained sand lenses (ancient stream channels) occur sporadically in the lower part of the white sand horizon and, while this material has high transmissivity, it lies well beneath the area likely to be cut by dredging.

A phosphate horizon directly underlies the littoral sands and comprises mainly a series of phosphatic marls and clay layers together with a relatively minor trapped aquifer.

The major aquifer is the deepest of the three and the main water bearing formation is the Maestritchien age sandstones and grits. The upper Lutetian kastic limestone is considered to provide reasonable water flows ($30m^3$ /hr). However the Maestritchien sandstone horizon which lies some 340 m beneath the kastic limestone is recognised to provide better flows ($>100m^3$ /hr). A programme of three exploratory deep water drillholes is in progress to evaluate the availability of makeup water from the Maestritchien aquifer.

Figure 10.8 Local Geological Profile and distribution of Aquifers



10.6 Summary and Interpretation of Results

DuPont's drilling achieved good coverage of the main deposits of Lompoul, Diogo, Fass Boye and Mboro. The quantity, quality and distribution of the drilling was sufficient to enable mineral resource estimates to be prepared by Dupont. The DuPont estimates are not reported in this Technical Report because they predated the NI 43-101 requirements and have, in any event, been superseded by subsequent estimates.

MDL's detailed grid drilling at 200m by 80m, including infill to the water table with hand auger to 40m of the Fass Boye-Diogo-Diogo Extended-Lompoul resource areas, is now complete, and has defined a substantial mineralized sand resource over a strike length of over 40 km at an average width of some 2 km.

The Qualified Person reviewed all aspects related to drilling of the deposits and is satisfied that the drilling methods employed by DuPont and MDL have been, and are, appropriate to the style of deposit, and that the exploration programmes have been undertaken to good industry standards.

11 SAMPLING METHOD AND APPROACH

11.1 MDL RC Sampling Methods

The RC rigs are set up for rapid drilling and there is provision to collect the complete sample with a basic cyclone separation by means of a swivel outlet feeding two alternate sample bags (Figure 11.1). Therefore there is no sample splitting on site.

Figure 11.1 RC Sample Collection Cyclone and Sample Bag – MDL Drill Rig No 1

Theoretical sample weight is 1.8 kg per metre. Each sample is weighed (field weight), and then a handful taken and manually panned to estimate a field log of HM content. Aluminium tags are used for hole number and depth. All samples are geologically logged for colour, material, grain size, clays, humic content and slimes content. Depth of the standing water table is estimated. Additional piezometer drilling is undertaken at approximately one hole per drill line for regular water table measurements.

All data is entered on site into to a master Excel based spreadsheet “drill log template”, which has three main components: Collar, Geology and Assays. Subsidiary tables for Bulk Density and Piezometer readings are incorporated. This data is compiled and validated into Microsoft Access database.

All drill data is compiled into cross sections to assist geological control and resource estimation.

11.2 MDL Hand Auger Sampling Methods

Due to the drilling procedure, progressive intervals of some 20 cm are completed with the rod position marked by chalk. Whenever the rod does not seat at the same depth, it is assumed to be due to dislodged sand accumulating at the bottom of the hole. In this case, the excess interval is measured and this amount of sand is discarded from the top of the auger shell prior to the sample being placed into the bag (Figure 11.2). Each progressive sample is collected in a labelled and aluminium tagged sample bag representing each metre of advance. At completion of each metre sample, a small aliquot is panned and studied for the geological log.

Figure 11.2 MDL Hand Auger Sampling

11.3 DuPont Sampling Procedures

DuPont's sampling procedures were virtually identical to MDL's, the only material difference being that DuPont used water injection in its RC drilling whereas MDL uses air. Its drill log sheets were also almost identical to MDL's.

11.4 Drill Spacing

Previous drilling by DuPont in the early 1990's using a hand auger was on a spacing of 400m north-south by 100m east-west. Holes were vertical. DuPont also carried out some machine RC drilling but not on regular grid intervals. Variogram analysis for the 100m east-west drill hole spacing shows reasonable structure. In the north-south direction however there was very little correlation between samples based on 400m spaced lines. AMC recommended drilling on 200m spaced drill lines to enable resource estimates to be considered for classification as Indicated Resources. MDL agreed with the recommendation and adopted a drill spacing of 200m north-south by 80m east-west for its infill drilling programmes. This spacing is in-filled to 40m intervals. Sample interval is 1m for routine HM determinations while composites are prepared for mineralogy determinations.

11.5 Sample Reliability

See Section 10.3.

11.6 MDL Bulk Density Measurements

MDL's procedure for measuring bulk density is by driving a thin walled, stainless steel tube of uniform diameter into the sand mass, blocking the tube ends and removing the tube without disturbing the entrained sands. The tube is 244 mm long with an internal diameter of 62 mm, giving a volume of 0.737 litres. The entrained sand is dried and its weight recorded for the bulk density determination.

It is conventional in the mineral sands industry for bulk density to be determined dry as the products are sold dry. Measurement of bulk density is an on-going activity. MDL's results to date have varied within a relatively narrow range from 1.67t /m^3 to 1.80t /m^3, averaging around 1.75t /m^3 (Table 11.1).

It appears that DuPont made only limited measurements of bulk density.

Table 11.1 MDL Bulk Density Measurements to end-March 2007

Sample No	Dry Weight (g)	Volume (litre)	Bulk Density (g/ml = t/m^3)
DGBD001	1274.50	0.737	1.73
DGBD002	1293.08	0.737	1.75
DGBD003	1228.62	0.737	1.67
DGBD004	1295.48	0.737	1.76
DGBD005	1313.52	0.737	1.78
DGBD006	1325.84	0.737	1.80
DGBD007	1314.78	0.737	1.78
DGBD008	1271.84	0.737	1.73
DGBD009	1306.14	0.737	1.77
DGBD010	1319.46	0.737	1.79
DGBD011	1267.38	0.737	1.72
DGBD012	1295.64	0.737	1.76
DGBD013	1274.86	0.737	1.73
DGBD014	1317.04	0.737	1.79
DGBD015	1236.46	0.737	1.68
DGBD016	1309.52	0.737	1.78
DGBD017	1323.00	0.737	1.80
DGBD018	1277.68	0.737	1.73
DGBD019	1245.40	0.737	1.69
DGBD020	1273.72	0.737	1.73
DGBD021	1313.58	0.737	1.78
DGBD022	1288.68	0.737	1.75
DGBD023	1232.86	0.737	1.67
DGBD024	1279.06	0.737	1.74
DGBD025	1272.60	0.737	1.73
DGBD026	1312.26	0.737	1.78
Average			1.75

11.7 Piezometer Holes

The GCP is based on dredging and the depth and variances of the water table are very important for designing the eventual dredge path (Figure 11.3).

MDL has drilled a number of piezometer holes using its RC drill rigs on a regular spacing not exceeding a 600m by 600m (as recommended by Consultant Hydrologist AGE). Currently, 326 holes are read by dip meter on a monthly basis. Additionally there is a programme of dip measuring of artisan wells in the Ndiaye area adjacent to the aeolian dune fields and so increasing data coverage.

All piezometer sites are accurately surveyed using Topcon Differential GPS.

11.8 Geological Controls Relevant to Sampling

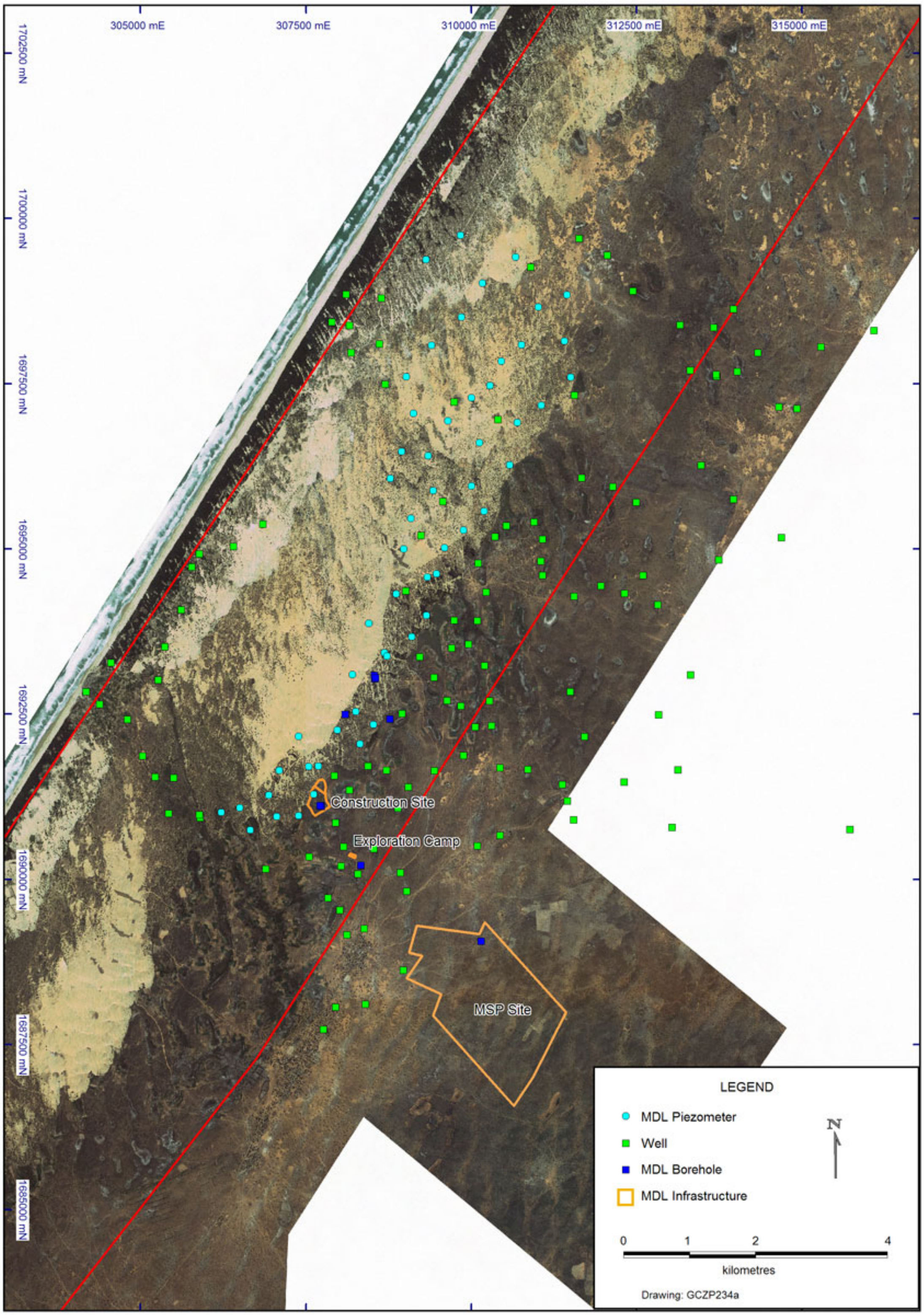
As described in Section 6 of this report, the main geological control on the formation of the deposits is the concentration of HM by wind action in a series of mobile dunes along the north-west Atlantic coast of Senegal. This has resulted in the HM being distributed in relatively flat layers, making vertical drilling the most appropriate exploration technique.

Since it is planned to mine the deposits by dredge, all material from surface to the base of the dredge pond will pass through the dredge and the treatment plant. In such circumstances, although drillholes are sampled at 1m intervals down-hole, it is conventional for resource / reserve estimation purposes to work with down-hole cumulative grades to the base of the dredge pond (refer to Section 16 for further information).

11.9 Opinion of Qualified Person

The Qualified Person reviewed all aspects related to drillhole sampling and bulk density measurement and is satisfied that the procedures are consistent with good industry practice, whilst noting the apparent understatement of RC HM grades discussed in this section.

Figure 11.3 Diogo Resource Area showing Distribution of Piezometer Holes



12 SAMPLE PREPARATION, ANALYSES AND SECURITY

12.1 Introduction

MDL operates its own HM laboratory at the town of Tivaouane located some 25 km south-east of Diogo. The laboratory is the same facility used by DuPont in the late 1980s and early 1990s for its HM determinations. DuPont sample rejects are stored in the factory building.

MDL experimented with the Magstream process used by DuPont for its HM determinations, but found the technique too slow for its requirements. All MDL HM measurements are determined by heavy liquid separation utilising aqueous, non toxic, lithium sodium tri-polytungstate (LST). By late April 2010, MDL had completed 195,870 HM determinations.

QA/QC procedures include the use of internal laboratory standards made from Grande Côte mineralized sands as three bulks; low, medium and high grade. The procedures and results are described in Section 13 of this Technical Report.

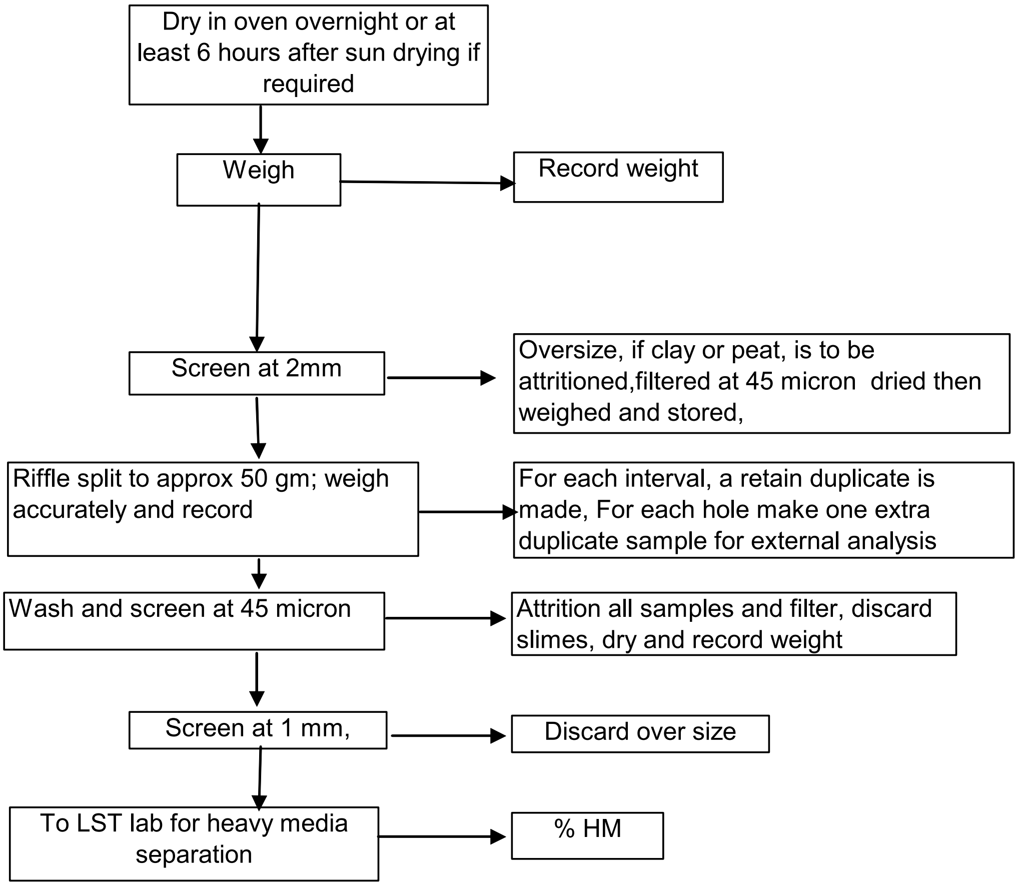
12.2 Sample Preparation

Samples prepared at the Tivaouane laboratory are delivered on a daily basis. Presently this is 13 days out of each two weeks. The number of samples received per day when all rigs are running to target can be up to 600 samples. This is within, but at the limit of, the capacity of the equipment and workforce.

Preparation (Figure 12.1) follows the normal steps of:

- Receipt – confirming sample ID with field notes
- Drying
- Reduction - via riffle splitter to required size for heavy media separation
- Preparation of samples for dispatch to third party laboratory for check assay
- Washing of samples for slimes determination
- Storing of samples for future use
- LST HM determination
- Reporting to data base

Figure 12.1 Schematic of Sample Preparation Process



12.2.1 Sample Receipt and Drying

Samples from the drill rigs are received in assembled drillhole increments with the hole ID and depth indicated on the containing bag. A sample list accompanies each delivery of samples.

When the weather is fine, which is most often the case, advantage is taken to dry the samples outdoors on drying racks. A gas fired oven is available and utilized when required to ensure complete dryness.

The field list accompanying the samples is checked against the sample inventory. From this list after confirmation, work sheets for the sample preparations are prepared.

Figure 12.2 MDL Sample Preparation Laboratory, Tivaouane

12.2.2 Sample Reduction

Sample reduction is by riffle splitting. The first action after weighing and drying is to pass each sample through a 2 mm screen to remove oversize. The +2 mm material weight is recorded.

A 450 mm stainless steel riffle is the primary reducer followed by 200 mm Carpco brand stainless steel riffles to reduce the sample to the nominal 50 g weight required for the laboratory.

12.2.3 Umpire Samples

A duplicate sample of every interval is retained, with a second duplicate of one sample per hole, randomly selected, prepared for dispatch to an outside laboratory for check analysis.

12.2.4 Sample Washing for Slimes Determination

Every sample is attritioned to remove any slime that may be present. The sample is washed through a 45 micron screen after attritioning, filtered and dried, with accurate weights before and after washing recorded.

Sample washing is also necessary to avoid contaminating the LST. Percentage slimes is recorded.

A small number of samples have appreciable humus, or peat, content which has to be removed by a 24-hour treatment with 10% sodium hydroxide. Weights are recorded and the slime or peat is recorded individually.

All samples pass through a 1 mm screen prior to the LST process to break up any clumps. Oversize (if any) is discarded.

12.2.5 Sample Storage

When the sampling process is complete, results assembled and checked, the samples are filed in order of drill hole number.

A complete set of each drillhole is stored in a polythene “rice” bag; the contents of the bag are logged and the bag labelled with a unique number that enables any hole or interval of the hole to be located quickly in the event of further work or checking being required.

12.2.6 LST HM Determination

Nominal 50g samples prepared from each 1m drill interval are separated in conventional separating funnels using LST with a specific gravity (SG) of 2.85 g /ml (±0.03 g /ml). The SG is checked, confirmed and logged for each batch. Floats (silica sand) are washed away and the sinks washed and dried for weighing. Mass of HM sink determines percentage HM present.

The principle of the method is that any sand sample, once placed in a separating funnel with a high density separation medium (in this case, LST), will separate into two fractions: Material with a lower density than the medium (e.g. quartz), generally named the Float Fraction (FF), floats to the top of the funnel and is weighed if a FF% is required (not currently required for the GCP). Materials with a higher density than the medium (e.g. ilmenite, rutile, zircon, and leucoxene), generally named the Heavy Mineral or Sinks Fraction, sinks to the bottom of the funnel and is weighed to determine the HM content.

This procedure meets AS 4350.2 - 999 Australian Standard “Heavy mineral sand concentrates - Physical testing Part 2: Determination of heavy minerals and free quartz - Heavy liquid separation method”.

Water soluble LST is recovered by washing all sample rejects in high purity water, then by removal of excess water.

12.2.7 Database Record

The samples are logged, one hole to a record sheet:

- Hole ID
- Interval
- Total interval sample weight
- Laboratory sample weight
- Laboratory sample

- Weight less slimes
- Laboratory sample weight less peat
- Heavy mineral weight

Calculated columns give the percentage of the slimes, peat and HM, all calculated on an adjusted weight accounting for any +2 mm material removed from the sample. These results are added to a computer file in Excel and logged in 20 drillhole batches for ease of searching for individual results. The results are also logged in a cumulative running database. This information is transferred to the Senior Geologist via a CD and finally compiled in an Access database.

12.3 DuPont Sample Preparation and Analyses Procedures

DuPont's sample preparation procedures were, in all material aspects, the same as MDL's Its HM analysis were undertaken using the Magstream separation process (Magstream Model 100 Separator). The method uses ferro-fluids (Magfluid) and magnetic and centrifugal forces to produce precise split points over a range of specific gravities from 1.5 g/ml to 18.0 g/ml. Once the separation is complete, the Magfluid is reclaimed by filtration. Fluid adhering to the mineral grains and the separation apparatus is washed with water.

12.4 Quality Control / Quality Assurance

See Section 13 of this Technical Report.

12.5 Opinion of Qualified Person

The Qualified Person visited MDL's laboratory at Tivaouane and examined sample preparation procedures in progress. He reviewed all aspects of MDL's sample preparation, analyses and security procedures and is satisfied that they are to good industry standards. He reviewed the documentation on DuPont's sample preparation and analyses procedures and is satisfied that they were also undertaken to good industry standards.

13 DATA VERIFICATION

13.1 MDL's Sampling / Assaying QA/QC Procedures

MDL's on-site training and laboratory setup at Tivaouane was supervised by consultant chemist Mr B Woodward from Perth, Western Australia. Mr Woodward, who has over 30 years laboratory experience, prepared a comprehensive laboratory manual giving clear instructions on procedures for the laboratory quality system.

Laboratory quality control measures include the use of prepared bulk standards for daily laboratory accuracy checks, daily checks of the SG of the LST heavy media fluid, and assaying of a random duplicate from each drillhole by an Australian umpire laboratory. The umpire laboratory uses tetrabromoethane (TBE) for its heavy media separation. Electronic balance equipment is maintained by means of standard weights. Data entry is routinely checked by the laboratory supervisor.

QA/QC procedures include the use of internal laboratory standards made from Grande Côte mineralized sands as three bulks; low, medium and high grade. One standard is chosen at random for a daily check of laboratory accuracy. The laboratory supervisor collates and examines the results for the standards, and prepares a comparative table with a Shewhart chart for examination of the consistency of results.

Figure 13.1 and Figure 13.2 show scatter plots of standards for all low grade HM and medium grade HM standard data to November 2009. The standard HM grade for the medium grade batch is 2.055% with 0.087% standard deviation. The standard HM grade for the low grade batch is 1.065% with 0.075% standard deviation.

The number of low grade HM% standard samples total 1,722. Greater than 85% of the standards fall within two standard deviations of the mean (1,551 samples out of 1,722). This suggests that the laboratory is performing well. The number of medium grade HM% standard samples total 1,425. Greater than 90% of the standards fall within two standard deviations of the mean (1,372 samples out of 1,425). This also suggests that the laboratory is performing well.

Figure 13.1 Scatter plot for Low Grade HM% Standard Checks, Nov 2009

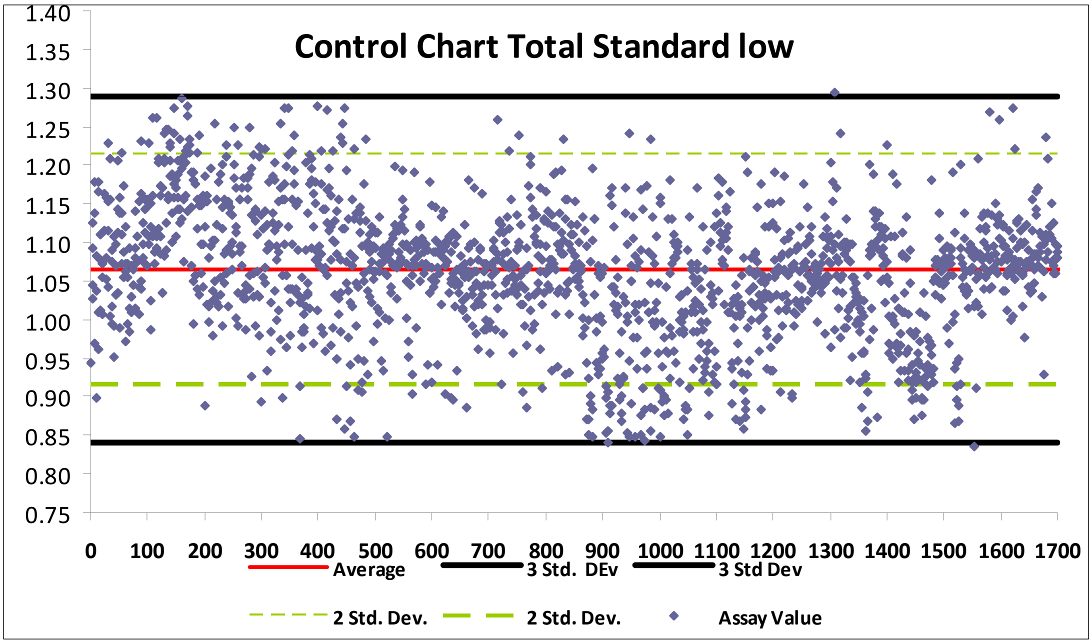
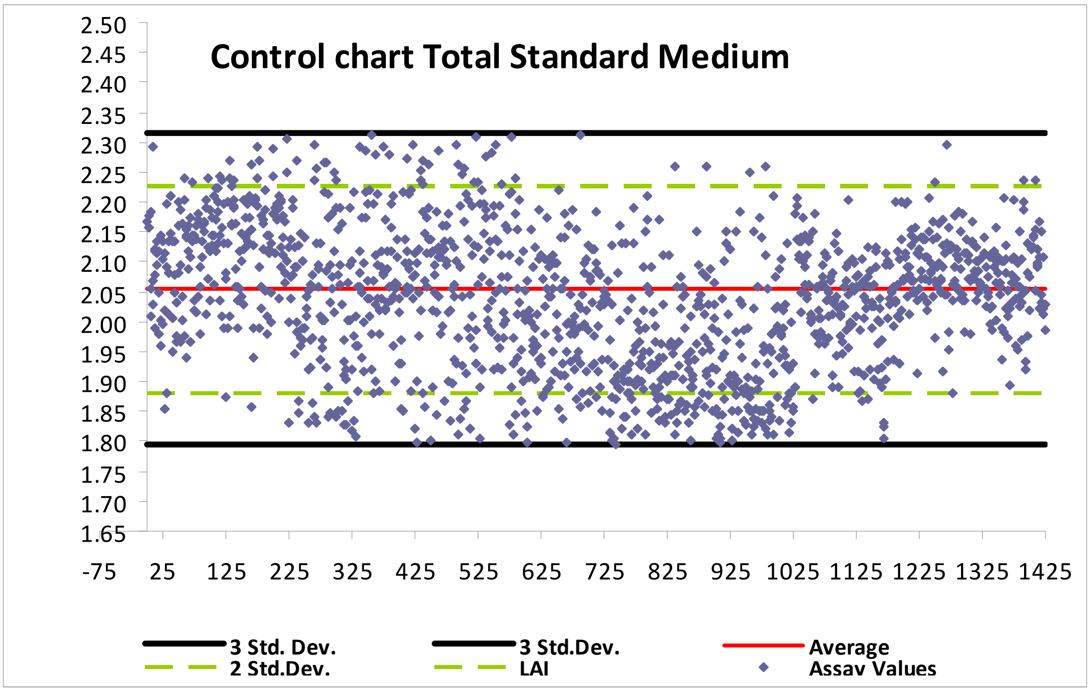


Figure 13.2 Scatter plot for Medium Grade HM% Standard Checks, Nov 2009



To benchmark the results for the standards for the drill program to September 2007, ten of each of the three grades of standard were assayed by contract analytical service Diamond Recovery Services Pty Ltd (DRS), a specialist HM assay facility in Perth, Western Australia. Those results suggested that there may have been a high grade bias in the Tivaouane results. For the second round of drilling from September 2009 to April 2010, benchmark testwork was conducted at Western Geolabs in Perth, Western Australia. This work demonstrated that the Tivaouane HM results fall within an acceptable level confidence

13.2 DuPont's Sampling / Assaying QA/QC Procedures

DuPont undertook rigorous comparative analysis of Magstream results with results using the heavy liquid TBE. Samples were randomly selected and divided into two representative fractions. One fraction was separated using Magstream at a SG split point equivalent to 2.96 g/ml; and the other fraction was separated by sink-float procedures using TBE at a SG of 2.96 at 20ºC. Results displayed excellent comparability, as shown in Table 13.1.

Table 13.1 DuPont, Comparison of Magstream and TBE Results

	Magstream	Heavy Liquid (TBE)
Average H.M. (%)	2.64	2.64
Variance	0.75	0.8
Standard Deviation	0.86	0.89
Relative Std. Dev.	0.326	0.337

13.3 Validation of DuPont Drillhole Database

The DuPont drill hole database was validated by MDL using both automated and manual procedures. The process was greatly assisted by having access to the original DuPont drill logs, survey records, sample sheets and assay sheets and to original DuPont plans. All DuPont assay record sheets were scanned and are available in digital form. Geological logs have yet to be scanned.

- Automatic testing of hole-spacing consistency for adjacent line-hole numbers located a number of coordinate data entry errors. These were corrected using original hard copy data.
- Assay from / to sequences and HM% calculations from Magstream feed and product weights were checked and found to be mostly free from errors. Errors detected were corrected.
- Validation of the location of early RC holes drilled on an irregular pattern was difficult. Some locational errors were found and corrected, however there are instances where collar RLs of RC holes appear incompatible with those of proximal hand auger holes. Field checking is resolving these wherever possible.
- As discussed in Section 10.3 of this Technical Report, a number of key points from the DuPont grid were preserved in concrete and re-located by MDL. Registered surveyor BetPlus located these tie points enabling the DuPont grid to be reconfigured in the UTM grid.

Overall the quality of the DuPont data and in particular the assay tables were found to be of a high standard with very few identifiable errors. There is still some doubt surrounding the accuracy of the location and RL's of some early RC drill holes, but these do not impact materially on mineral resource estimates.

13.4 Opinion of Qualified Person

The Qualified Person examined QA/QC data at MDL's Tivaouane laboratory and reviewed all aspects of MDL's data verification procedures. He is satisfied that the procedures are being implemented to good industry standards and that the results demonstrate that MDL's HM determinations are reliable and an appropriate basis for mineral resource estimation and project development. He also reviewed the documented results for DuPont's QA/QC procedures and is satisfied that the DuPont HM determinations are reliable and an appropriate basis for mineral resource estimation and project development.

All reasonable efforts have been made by MDL to validate the DuPont exploration data and, in the Qualified Person's opinion, the data can be relied upon.

14 ADJACENT PROPERTIES

There are no adjacent properties, information on which is of material relevance to this Technical Report.

15 MINERAL PROCESSING AND METALLURGICAL TESTING

See Section 17.3.

16 MINERAL RESOURCE AND MINERAL RESERVE ESTIMATES

16.1 Mineral Resource Estimate

16.1.1 Introduction

A mineral resource was estimated for the Diogo, Mboro, Fass Boye and Lompoul areas of the deposit as at April 2010 by AMC Principal Geologist R Webster. Mr Webster prepared the previous resource estimate reported in the November 2007 Technical Report.

Combined MDL and DuPont RC and auger drilling was used in the estimate. The topographic surface was based on accurate surveyed data and the depth of the water table on 337 piezometer holes. A block model was used to define the resource volume and HM grades were estimated into each parent block using ordinary kriging (OK).

The resource estimate has been reported assuming that the deposit will be mined by dredging, where the total thickness of the sand will be extracted to 6m below the water table.

16.1.2 Geological Model

The area consists of a mobile dunal sand system, typically asymmetric, rising from about 10m immediately inland from the fore dune area to an average of 20m before terminating at a high and steep-faced inland dune. Heights are variable and may reach more than 35m. The average height of the topography in the dunal area is 13.3m. The average width of the dune field is 2 km and reaches up to 4.5 km inland. The dunes and the sand mass in general appear to increase in size and height north-eastwards from Mboro to Lompoul.

16.1.3 Drill Hole Database

Details of the drillhole sample data using in the resource estimate are listed in Table 16.1. Drillhole collars that were more than 3m above or below the topographic wireframe surface (numbering 261) were considered to have errors in their collar position and were therefore removed from the dataset before estimation.

Table 16.1 Drillhole Data used in April 2010 Resource Estimate

Type	Dupont			MDL			Total		
	No. of Holes	Metres Drilled	Ave. hole length	No. of Holes	Metres Drilled	Ave. hole length	No. of Holes	Metres Drilled	Ave. hole length
RC	535	10,211	19.1	7,750	150,665	19.6	8,285	160,876	19.6
Auger	7,893	28,852	3.7	4,569	45,203	9.9	12,462	74,055	5.9
Total	8,428	39,063		12,319	195,868		20747	234,931	

16.1.4 Geological Modelling (3D Shape Generation)

It was not considered necessary to subdivide the sand for resource estimation based on the different sand units following a review of the results of dividing the sand into the upper unit (yellow sand) and lower unit (white sand).

The deposit was divided in the north direction into three domains for modelling to allow for minor changes in the mineralization (Figure 16.1).

16.1.5 Coordinate Units

All coordinate units used in this report are in metres. Two coordinate systems are mentioned in the report. The dataset was provided to AMC in Universal Transverse Mercator, Northern Hemisphere Projection, Zone 28, WGS84 Datum.

For modelling purposes, AMC subtracted one million from the north coordinate, contained in dataset to prevent errors due to rounding of large numbers. All data was also rotated by -35° around the Z plane, so that it was orthogonal to the coordinate system. Coordinates in the RL direction (Z plane) were not changed. Details of the rotation are contained in Table 16.2.

Figure 16.1 Plan Showing Domain Boundaries

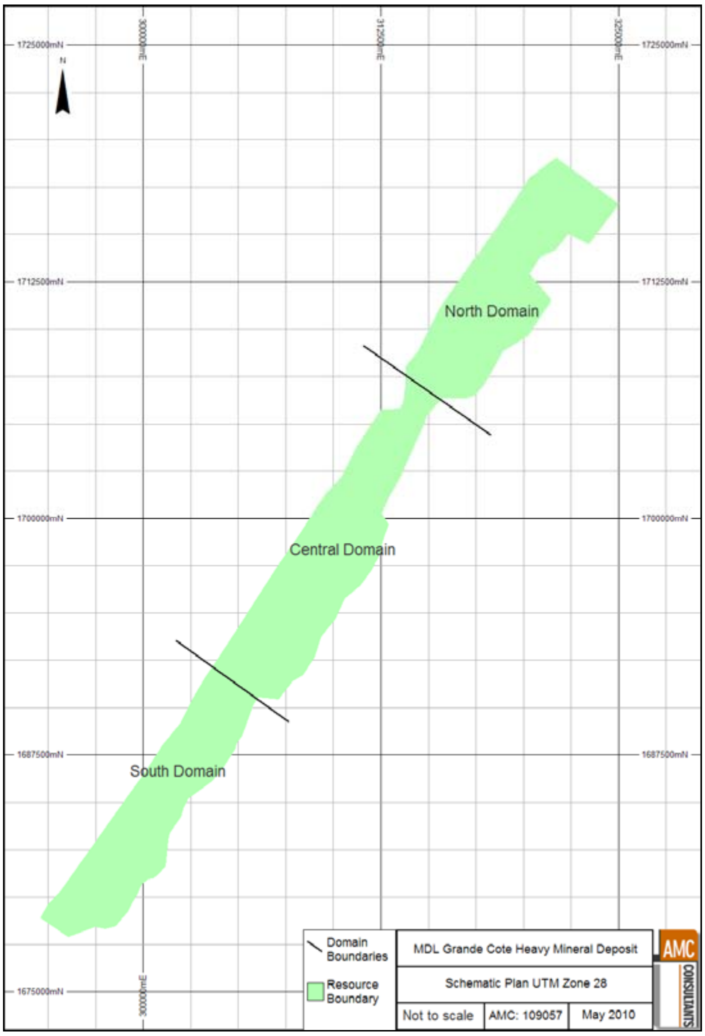


Table 16.2 Rotation Summary

Rotation	-35° Azimuth
Original X coordinate	310,339.8
Original Y coordinate	169,7683
Rotated X coordinate	296,831.3
Rotated Y coordinate	703,160.3

16.1.6 Topography

A detailed digital terrain model was produced by MAPS Geosystems of Dubai – a division of Fugro. This DTM was based on detailed aerial photography of the entire Exploration Permit area, flown by MAPS in early 2008.

Colour aerial photography was undertaken at a scale of 1:12,000 (approx) with GPS location based on surveyed ground control points. MAPS utilized a refined automated procedure for the measurement of automated terrain models using Autometric's

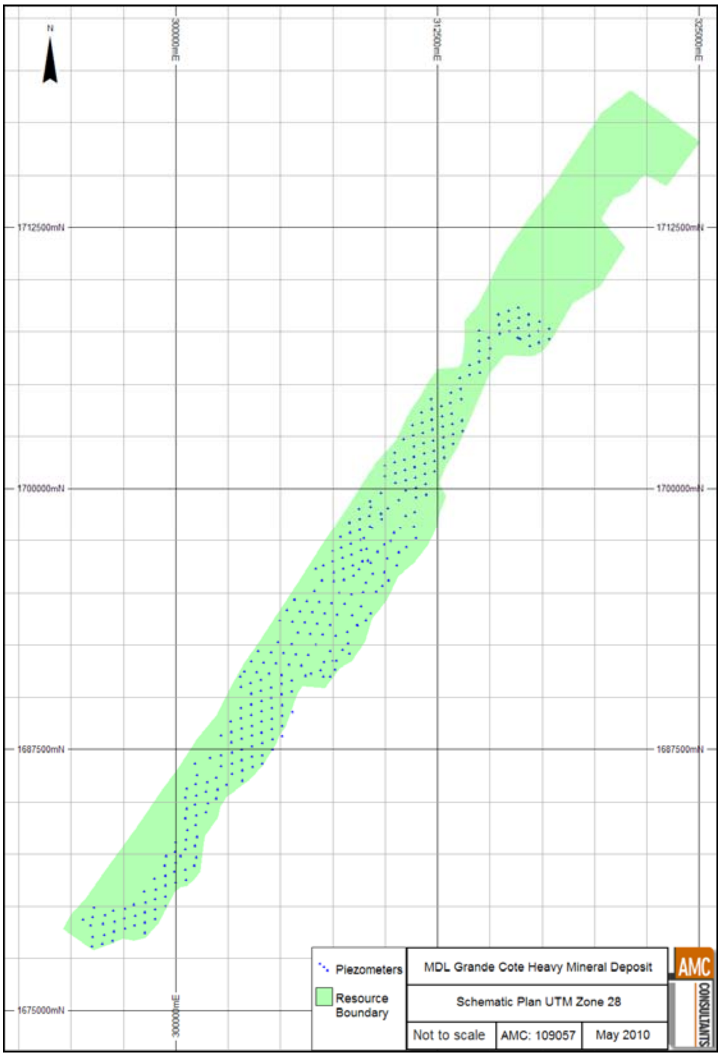
SoftPlotter software, by which a very dense grid of points is measured and then, using distance and correlation coefficient weighting, sub-sampled to the required grid spacing. The large redundancy of measurements and conditional filtering allowed a high accuracy to be achieved. Scanning of the aerial photography with a resolution of 15 μm (microns) created a grid of points with a grid spacing of 20m. The data was also processed to form contour lines at 2m intervals.

16.1.7 Water Table

The water table used to report resources is a based on a wireframe surface modelled on the average of 326 piezometer readings for the year from 31 March 2009 to 31 March 2010. The piezometer locations are shown in Figure 16.2. There are no piezometer readings north of 1,708,600 mN UTM Zone 28 (715,650 mN in the translated coordinate system). For this northern area, the cross section of the water table at approximately 715,000 mN was projected northward and a surface was modeled using the projected data.

Two drill holes, DIRC0169 and DGRC2569, are associated with piezometer readings that are outside the trend observed in the adjacent data. They were considered to be outliers and were removed from the dataset before generating the wireframe surface.

Figure 16.2 Plan Showing Piezometer Locations



16.1.8 Raw Assay Statistics

The HM grade statistics for the raw drillhole 1m samples are shown in Table 16.3.

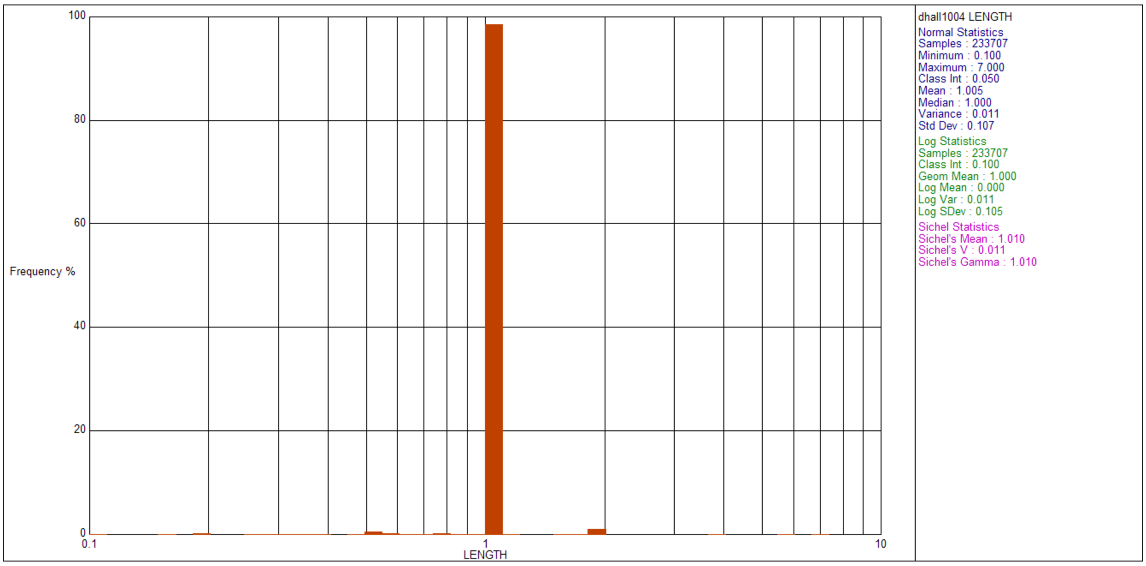
Table 16.3 HM Grade Statistics for the raw Drillhole Data (1m samples)

No. of Samples	Minimum	Maximum	Mean	Median	Std. Dev.	Coefficient of variation
233,178	0	42.15	1.2	0.7	1.5	1.2

16.1.9 Sample Compositing

Sample compositing was not conducted as more than 98% of the drillhole intervals were sampled on 1m intervals the size of the blocks in the vertical direction used to model the deposit (Figure 16.3).

Figure 16.3 Log Histogram of Sample Lengths for all Drillholes used in the Resource Estimate



16.1.10 Correlations

MDL requested AMC to conduct a resource estimate for total HM grade only, and therefore it was not necessary to investigate any grade correlations.

Plotting northings against HM% indicates that there are two natural breaks in the HM grades located at 713,200 mN and 694,700 mN (Figure 16.4). These northings were used to divide the dataset into the Northern, Central and Southern domains during resource estimation. No other domains were indicated from the scatter plots of eastings versus HM grade (Figure 16.5) or RL versus HM grade (Figure 16.6). The scatter plot of HM grade versus depth indicates that most of the higher grades are encountered near the surface (Figure 16.7).

Figure 16.4 Scatterplot of Northing versus HM%

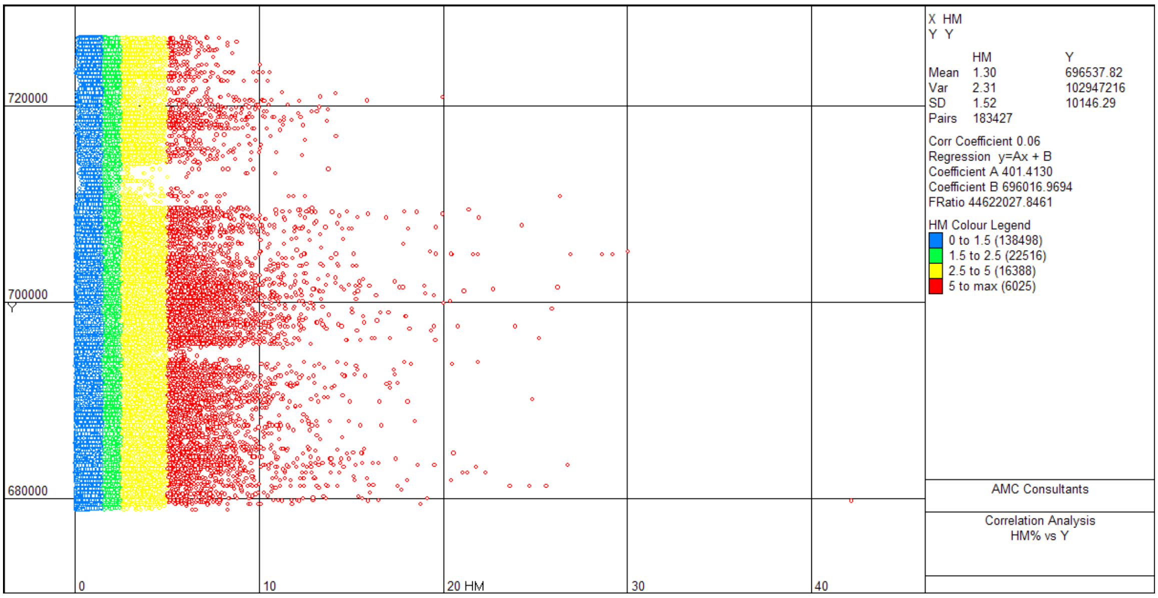


Figure 16.5 Scatterplot of Easting versus HM%

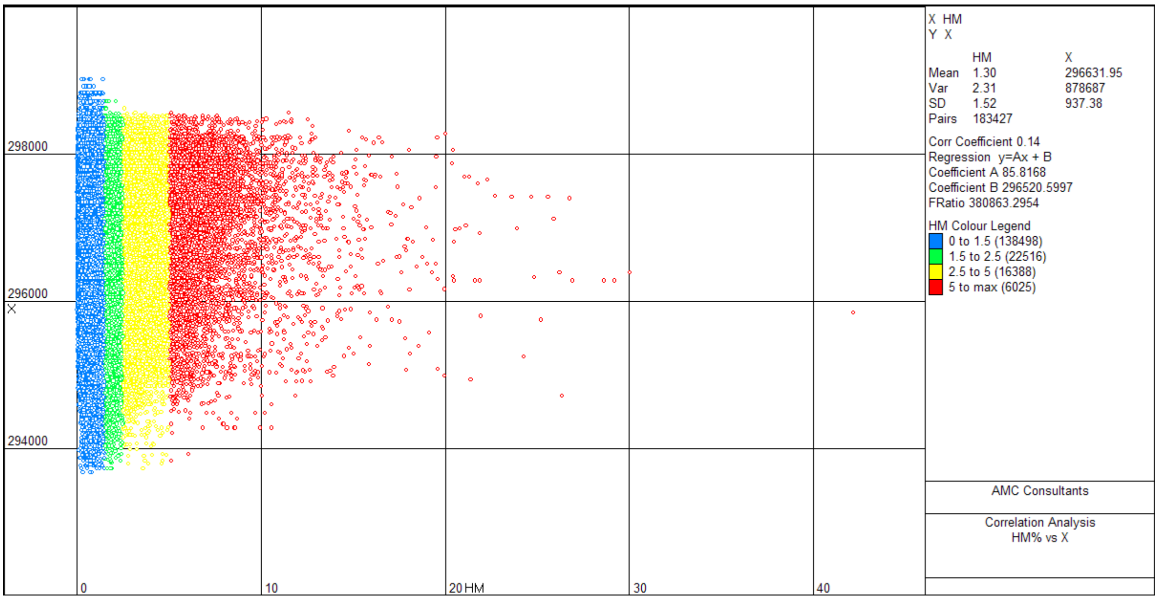


Figure 16.6 Scatterplot of RL versus HM%

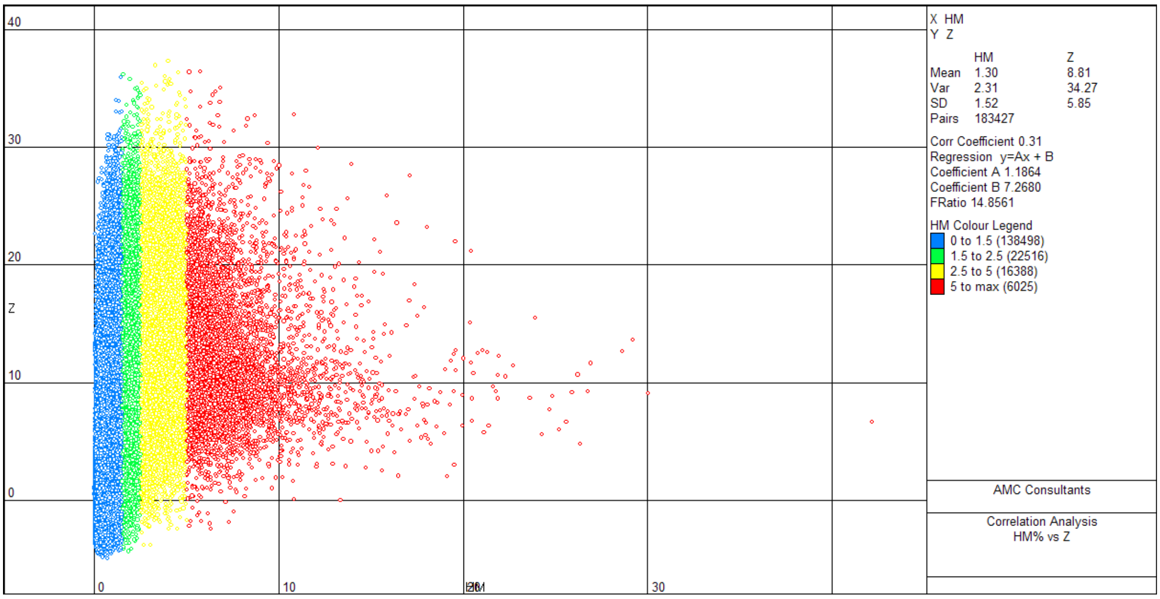
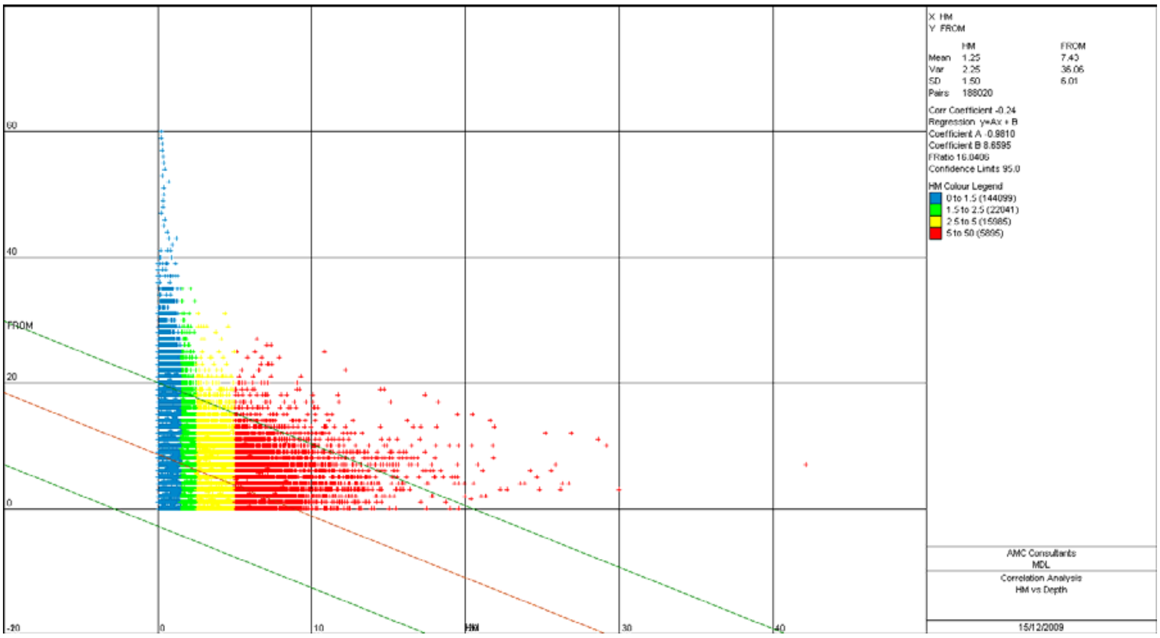


Figure 16.7 Scatterplot of HM Grade versus Sample depth



16.1.11 Top Cutting

The log histogram and log probability plots of HM% in the northern domain (Figure 16.8) indicate that no top cut is necessary for this domain. The log histogram and log probability plots of HM% in the central domain (Figure 16.9) and southern domain (Figure 16.8) indicate that a top cut at 20% HM is appropriate for these domains.

Sample HM grade statistics before and after top cutting, in each domain, are summarised in Table 16.4.

Figure 16.8 Log Histogram of HM% in the Northern Domain

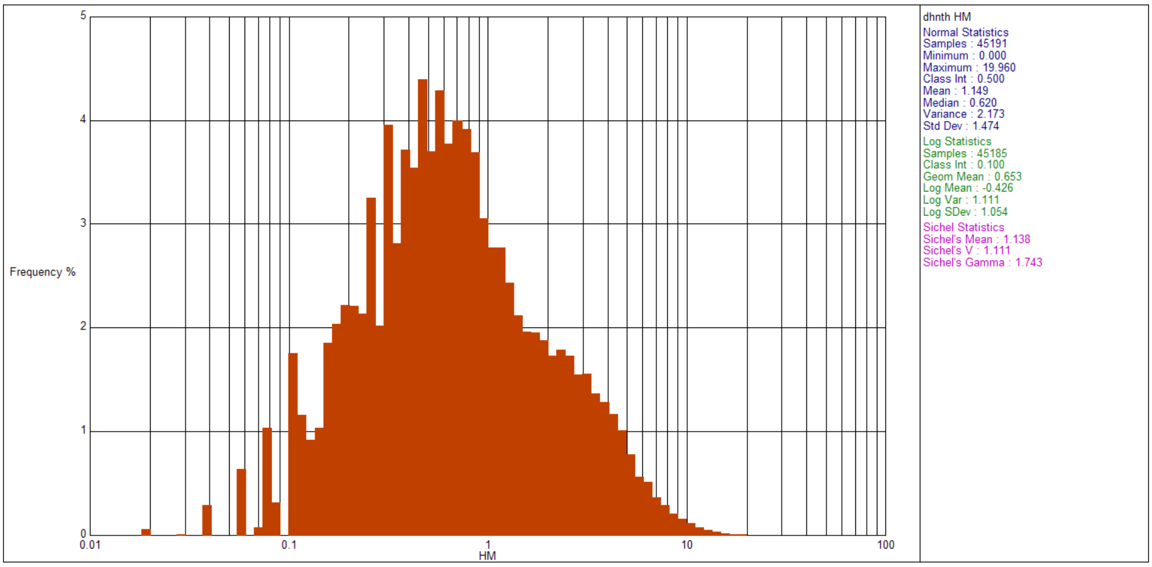


Figure 16.9 Log Histogram of HM% in the Central Domain (before top cut)

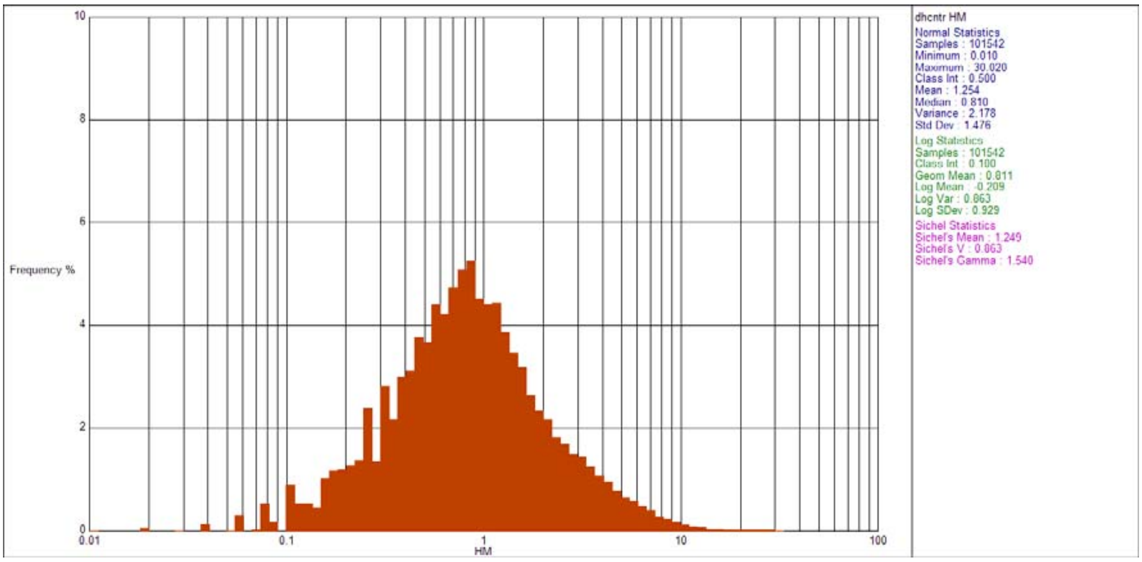


Figure 16.10 Log Histogram of HM% in the Southern Domain (before top cut)

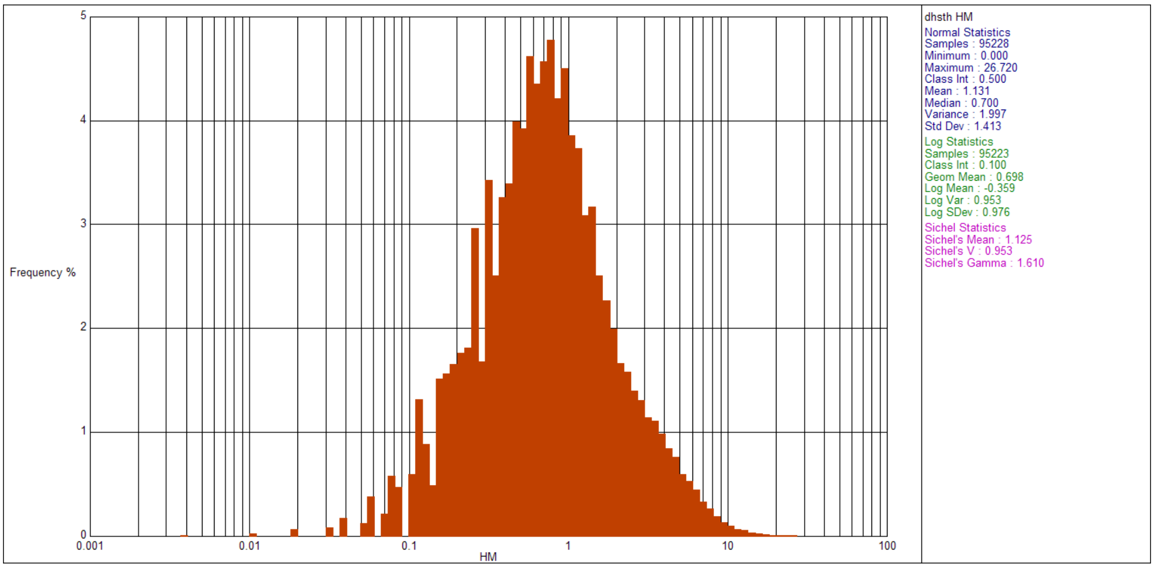


Table 16.4 HM Grade Statistics by Domain

Domain	Top cut	Number	Minimum	Maximum	Mean	Median	Std Dev	Coeff Var
North	none	45,191	0.0	20.0	1.1	0.6	1.5	1.3
Central	no top cut	101,542	0.01	30.0	1.3	0.8	1.5	1.2
Central	20% HM	101,542	0.01	20.0	1.3	0.8	1.5	1.2
South	no top cut	95,228	0.0	26.7	1.1	0.7	1.4	1.3
South	20% HM	95,228	0.0	20.0	1.1	0.7	1.4	1.2

16.1.12 Geological Solids and Solid Validation

No geological solids were used in this resource estimate.

16.1.13 Variogram Analysis

Variogram analysis was conducted separately for each domain after top cutting the HM grades where necessary. Analysis was conducted using Isatis software. Experimental variograms with modelled are shown in Appendix 1. A summary of the variography parameters used in the resource estimate is presented in Table 16.5.

Table 16.5 Summary of Variography Parameters

Area	Nugget	Structure 1					Structure 2			
		Model type	Range East	Range North	Range Vertical	Sill	RangeE ast	Range North	Range Vert	Sill
North	0.23	Spherical	100	200	4	0.4	220	600	13	1.6
Central	0.30	Spherical	40	200	4.0	0.89	180	200	15	1.0
South	0.30	Spherical	40	50	3.5	0.69	205	220	15	1.1

16.1.14 Kriging Neighbourhood Analysis

Kriging neighbourhood analysis is used to assess the impact on the estimate by changing key kriging parameters as a means of identifying the better parameters to use during estimation. The object of the analysis is to find optimum parameters that find a balance between minimizing conditional bias, allowing realistic block selectivity and minimizing the impact of negative weights.

Three different block sizes were investigated at the sample spacing of 40 mE x 200 mN x 1m vertical, half the sample spacing at 20 mE x 100 mN x 1m vertical, and quarter the sample spacing at 10 mE x 50 mN x 1 m vertical. Three different search neighbourhoods were investigated at 1.5 times the sample spacing, the range of the variogram and twice the range of the variogram. Nine different maximum number of samples were investigated at 4, 6, 8, 10, 12, 14, 16, 18, 20. Each combination of these parameters resulted in 81 estimates. The slopes of the regression for the different cases are summarized in Figure 16.11, while the percent of negative kriging weights for the different cases are summarized in Figure 16.12.

A block size that is one quarter of the sample spacing in the central domain tends to give better slopes than the other two cases that were investigated, however, the sample spacing in the northern domain is approximately 80 mE x 400 mN and so the 20 mE x 100 mN x 1m vertical block size was selected for the block size.

Search neighbourhoods at 1.5 times to twice the sample spacing were selected for the final estimate after the estimation results from different cases were visually compared. It was found that, although searching to the range or twice the range of the variogram gave better slopes, there was too much smoothing of the estimates. Similarly, a maximum of 10 samples per estimate was chosen to minimize smoothing of the estimate, while still adequately reducing conditional bias.

The percent of negative weights was negligible for all cases except for the smallest block size, with the maximum number of samples set to greater than approximately 16.

Figure 16.11 Slope of the Regression Results

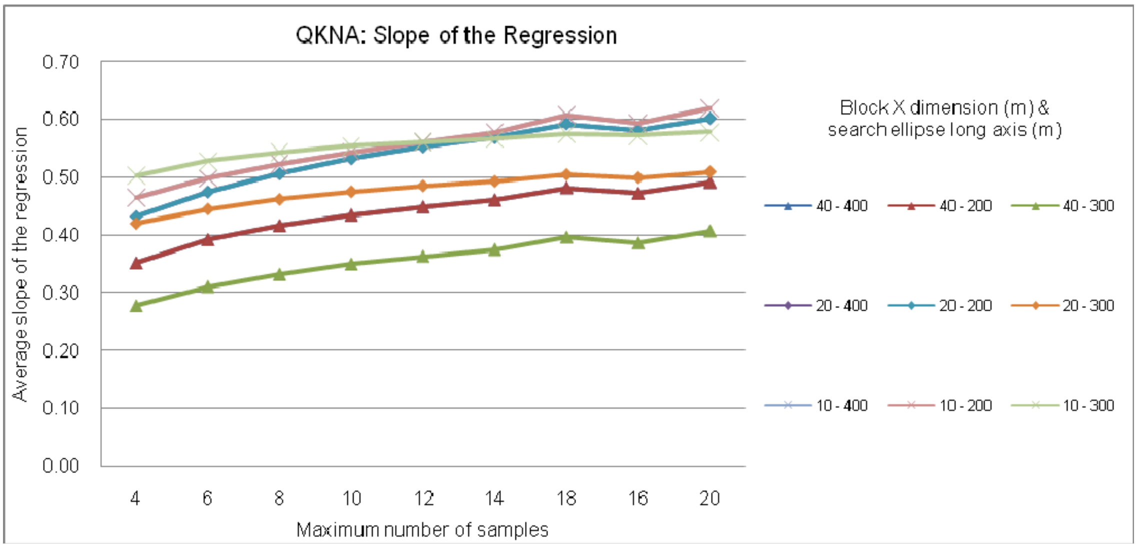
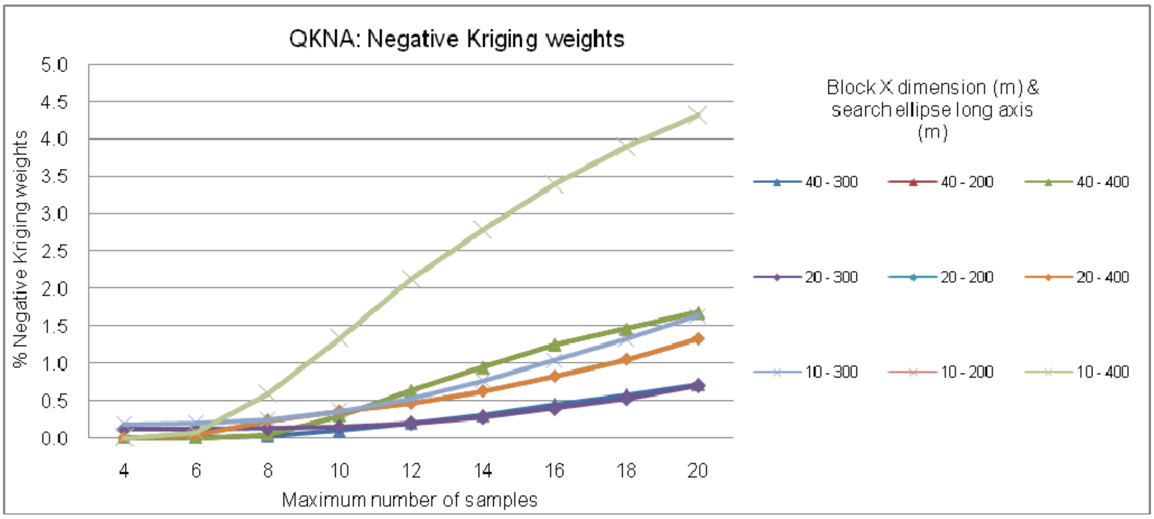


Figure 16.12 Negative Kriging Weights Results



16.1.15 Block Model

The resource estimate was conducted after rotating the dataset from its original coordinate system of Universal Transverse Mercator, Northern Hemisphere, Zone 28, WGS84 Datum by -35° azimuth to make it orthogonal to the coordinate system, and subtracting one million from the northings to increase the location precision.

Table 16.6 presents the block model origin after rotation back into the original coordinate system and the parent block sizes and number of blocks in each direction.

Table 16.6 Block Model Summary

	Easting	Northing	RL
Origin	293,441.85	1,679,532.70	-30
Parent block size	20	100	1
Sub cell	20	25	0.5
Number of blocks	308	500	80

Grades were estimated into parent blocks with dimensions of 20 mE x 100 mN x 1 m vertical. These parent blocks were sub-celled in the north direction to 25 m and vertically to 0.5m, to more accurately model the surface geometry of the deposit. Estimates were conducted in each domain after applying a top cut in the central and southern domains at 20% HM. The parameters used for the estimation of the block HM% grades are listed in Table 16.7. Grades were estimated using three passes with the search parameters progressively increasing with each pass. Blocks were left as absent HM% grade if they did not have grades estimated after the third pass.

An outer perimeter based on the area of drilling was used to define the area to be included in the resource estimate.

Table 16.7 Estimation Parameters

Area	Search pass	Range			Minimum samples	Maximum samples	Maximum Samples per hole
		East	North	Vertical			
North	1	100	250	3	6	10	2
	2	150	375	4.5	6	10	2
	3	300	750	9	4	10	2
Central	1	100	250	3	6	10	3
	2	150	375	4.5	6	10	3
	3	300	750	9	4	10	3
South	1	60	250	3	6	10	3
	2	90	375	4.5	6	10	3
	3	180	750	9	4	10	3

16.1.16 Resource Classification

The resource classification was based on the drill hole spacing (Table 16.8). The resource is classified as Measured where the drill spacing is approximately 40m across strike and 80m along strike. Outside these areas, the resource is classified as Indicated.

16.1.17 Resource Estimate

The Measured and Indicated Mineral Resources were estimated from the block model by accumulating the averaging grade in 20 mE x 25 mN columns of sand (based on grades estimated into 20m x 100m x 1m blocks) above a surface that is 6m below the modelled water table (based on the average piezometer readings from 31 March 2009 to 31 March 2010).

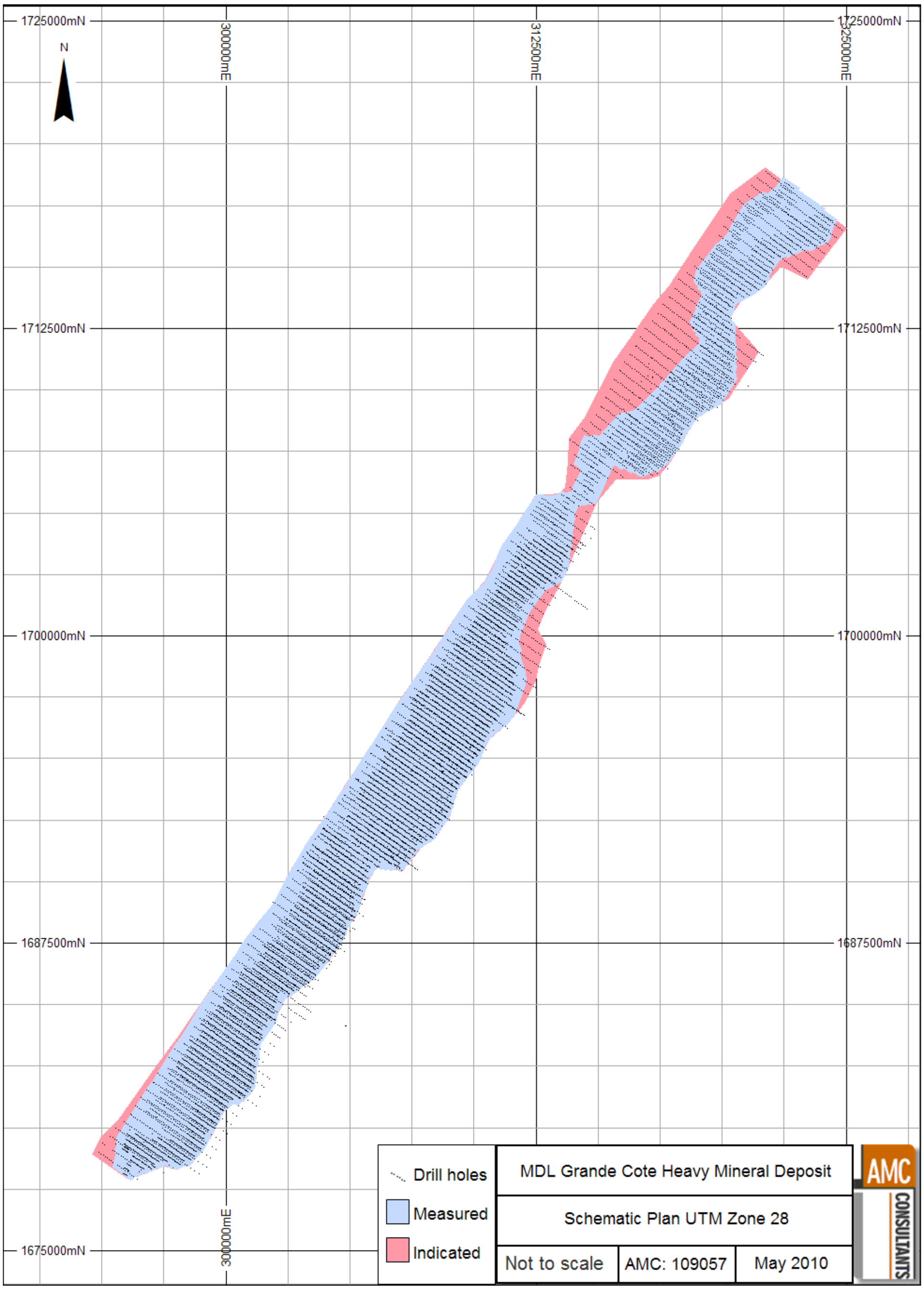
The Measured and Indicated Mineral Resource at a cut-off grade of 1.25% HM accumulated to 6m below the water table is listed in Figure 16.13.

Table 16.8 April 2010 Mineral Resource Estimate

Area	Resource Category	Tonnage (M)	HM (%)
Mboro	Measured	175	1.74
	Indicated	0.6	1.43
	Total	175	1.74
Fass Boye	Measured	124	1.70
	Indicated	0.2	1.52
	Total	174	1.70
Diogo	Measured	324	1.78
	Indicated	0.6	1.47
	Total	325	1.78
Diogo Extension	Measured	80	1.77
	Indicated	6	1.65
	Total	86	1.76
Lompoul	Measured	279	1.66
	Indicated	39	1.73
	Total	318	1.67
Total	Measured	980	1.73
	Indicated	50	1.72
	Measured + Indicated	1,030	1.73

Above surface 6m below water table and 1.25% HM cut off

Figure 16.13 Resource Category Boundaries



16.1.18 Grade Tonnage Curves

Grade tonnage curves for the Measured and Indicated Mineral Resources at a range of HM% cut-off grades accumulated to 6 m below the water table are displayed in Figure 16.5 and Figure 16.5.

Figure 16.14 Grade Tonnage Curve for the Measured Resource

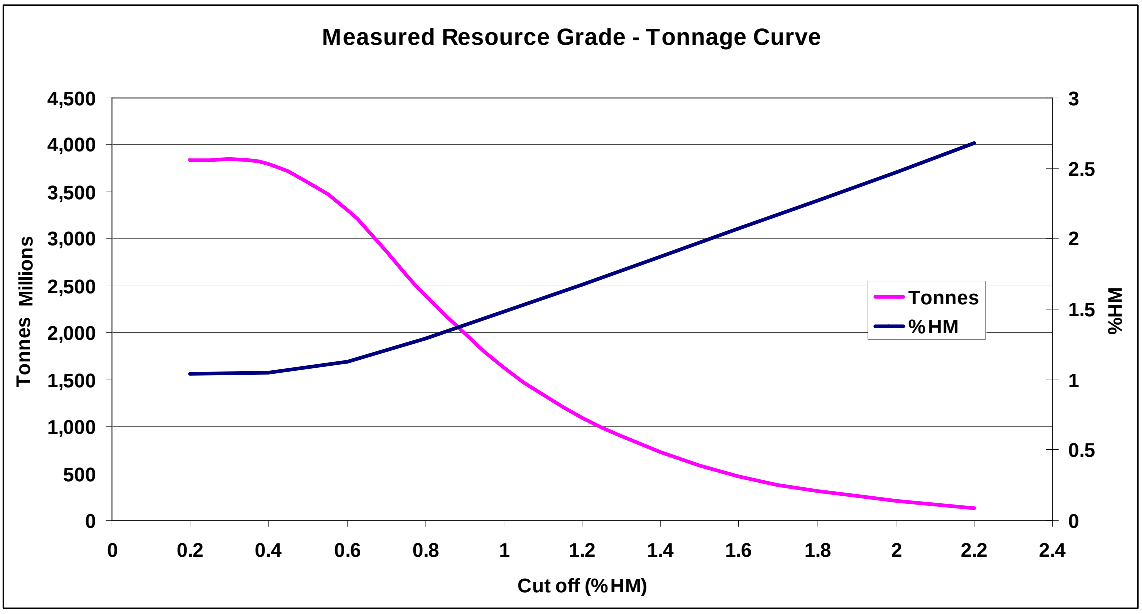
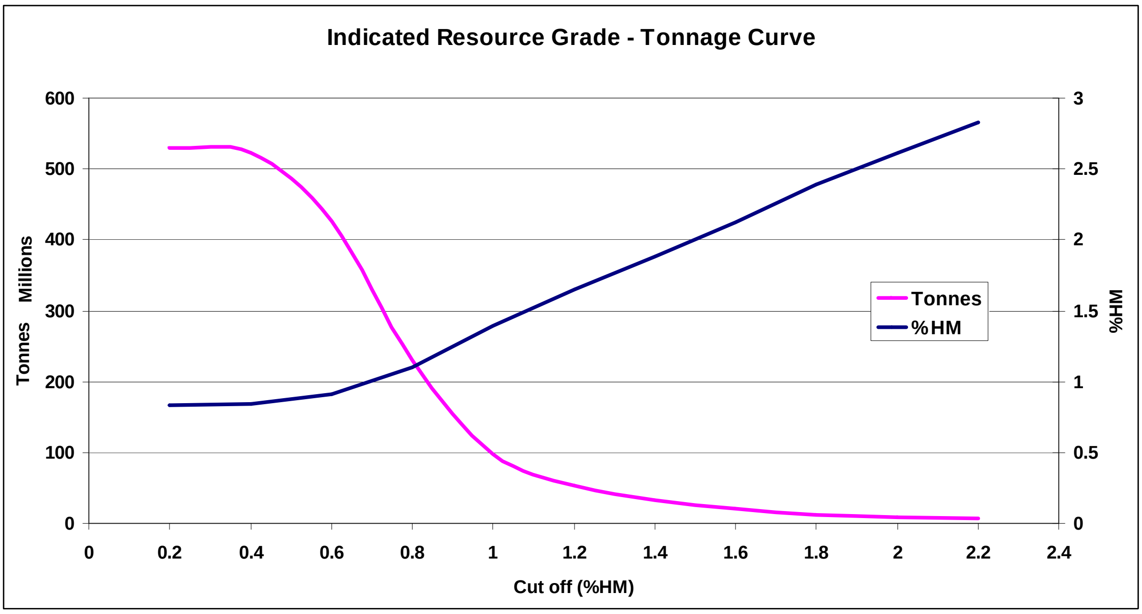


Figure 16.15 Grade Tonnage Curve for the Indicated Resource



16.1.19 Model Check

The block model was checked by:

- Comparing global statistics between drillhole data and the block model estimate.
- Visually comparing drillhole data and the block model grade estimates in cross section.

- Comparing trends in the north direction between the drillhole data and the block model grade estimate using a swath plot.
- Comparing the current block model estimate with the previous block model estimate conducted by AMC.

The naive global statistics are similar with the estimated mean grade of 1.18% HM approximately 7% lower than the top cut mean grade of 1.27% HM.

The distributions are similar with the block model displaying less variance due to its larger support (Figure 16.16 and Figure 16.17).

Figure 16.16 Log histogram of HM% for Drillhole (top cut) and Block Model

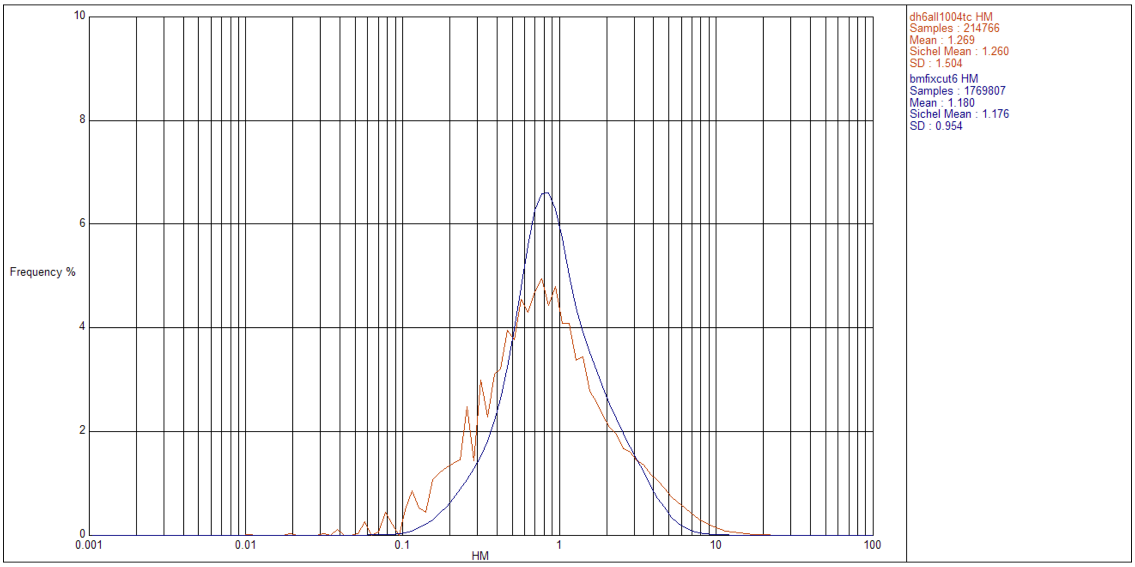
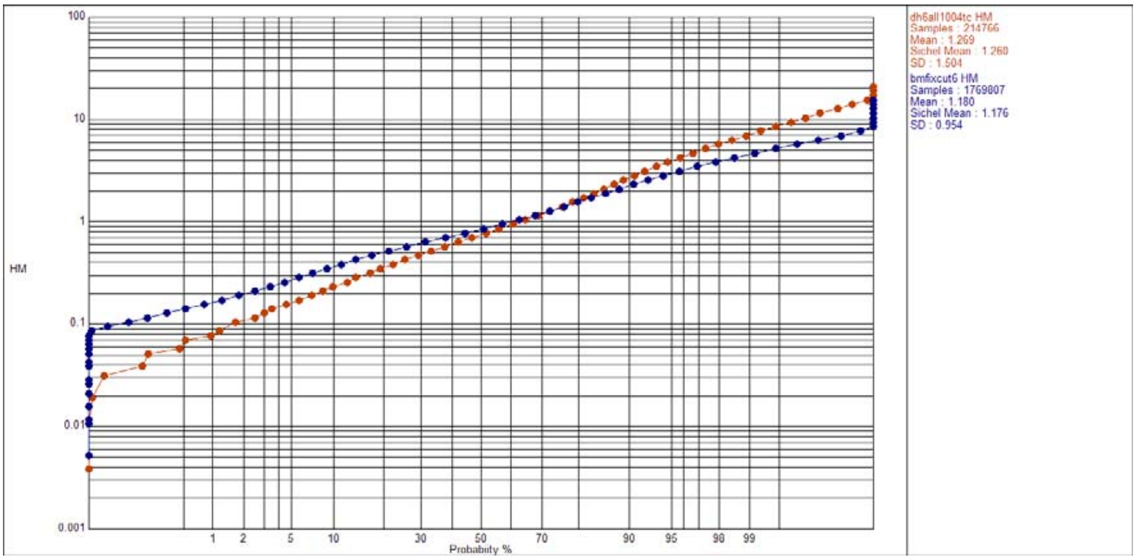
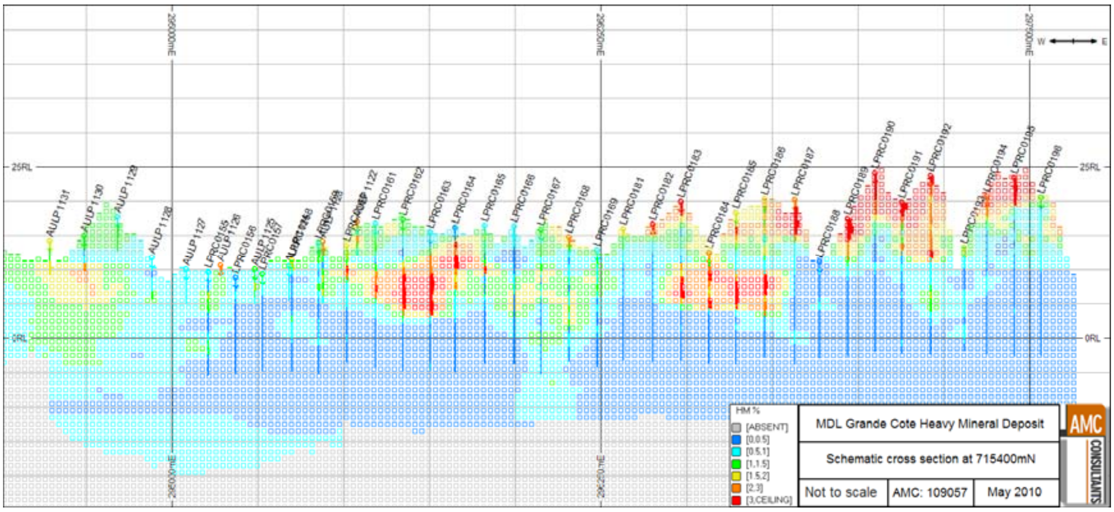


Figure 16.17 Log Probability Plot of HM% for Drillhole (top cut) and Block Model



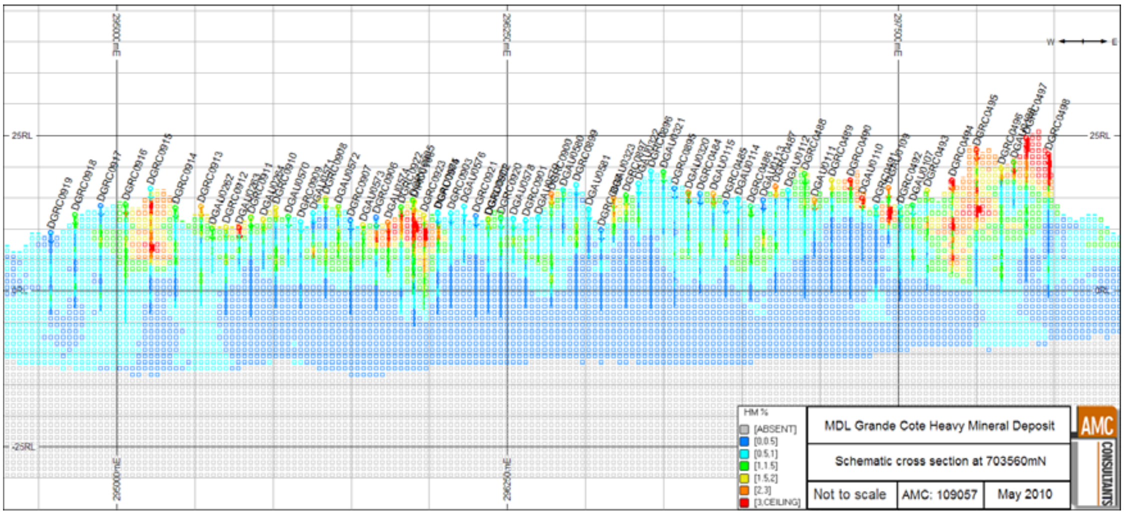
Cross sections display close agreement between the drillhole and the block model grades and demonstrate that limited smoothing has occurred (Figure 16.18, Figure 16.19 and Figure 16.20).

Figure 16.18 Cross Section – Northern Domain Displaying Drillhole and Block Model HM Grades



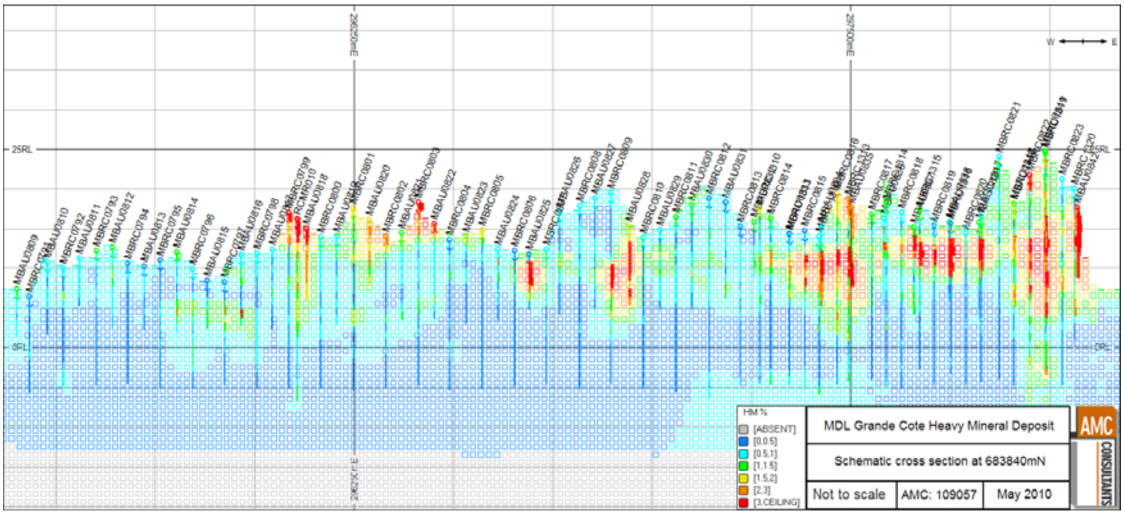
Note: 20x vertical exaggeration

Figure 16.19 Cross Section – Central Domain Displaying Drillhole and Block Model HM Grades



Note: 20x vertical exaggeration

Figure 16.20 Cross Section – Southern Domain Displaying Drillhole and Block Model HM Grades



Note: 20x vertical exaggeration

The swath plots (Appendix 2) display HM% grades in the drill holes and block model against northings at 20m RL, 10m RL, 0m RL, -5m RL, and -10m RL. These plots show good agreement between the drill holes and block model between 10 and 0 RL, with the drill holes displaying greater variability than the block model. At -5 RL the model underestimates the HM% grade displayed in the drill holes and at -10 RL the model overestimates the HM% grade displayed by the drillholes. This is a result of smoothing of the HM% grade, which decreases rapidly with depth. The crests of the sand dunes generally coincide with 20m RL in the eastern half of the resource, where the drillholes show that the HM% grade is relatively high and variable. These factors have led to the block model generally underestimating the grade at this elevation due to smoothing of the HM% from lower elevations.

Plots of RL against HM% at various northings (Appendix 3) generally show close agreement between the drill holes and the block model from 15m RL to -5m RL. Significant disparities occur above 15m RL and below -5m RL due to lack of drillhole data.

16.1.20 Comparison with Previous Estimates

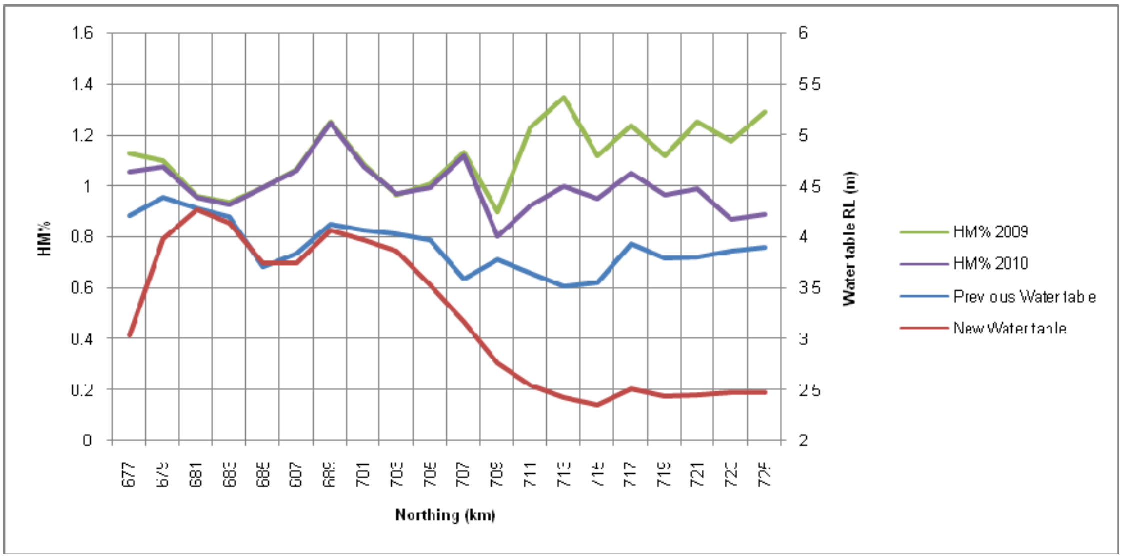
AMC's previous estimate in 2009 is compared with the current estimate in Table 16.9. The drilling completed since the previous estimate has increased the confidence in the resource in the northern domain, which has resulted in an upgrade from the Inferred Resource classification in this area to Measured and Indicated. The increased drilling in the northern domain also resulted in a decrease in the estimated HM % grade, which has also resulted in decreased tonnage above the 1.25% HM cut off. Additionally, new water table data has shown the depth of the water table in the northern domain is lower than previously estimated. This has also decreased the estimated grade, as the lower water table resulted in the inclusion of additional low grade material at lower elevations during the accumulation process (Figure 16.21).

Table 16.9 Comparison of April 2010 Resource Estimate with 2009 Estimate

Model	Resource Category	Tonnage (Mt)	HM (%)
2009	Measured	668	1.76
	Indicated	61	1.75
	Inferred	579	1.83
	Total	1,308	1.79
2010	Measured	980	1.73
	Indicated	50	1.77
	Total	1,030	1.73

Above surface 6m below water table and 1.25% HM cut off

Figure 16.21 HM % and Water Table for 2009 and 2010 Estimates by Northing



16.1.21 Reconciliation of April 2010 GCP Mineral Resource Estimate to 2005 CIM Definition Standards

Table 16.10 sets out the definitions for "Mineral Resource", Measured Mineral Resource" and "Indicated Mineral Resource" as contained in the 2005 CIM Definition Standards and the 2004 JORC Code.

In the Qualified Person's opinion, the respective definitions are sufficiently similar that the GCP Measured and Indicated Resources reported in this Technical Report, which were originally classified under the 2004 JORC Code, can be considered to be equivalent to Measured and Indicated Resources as classified under the 2005 CIM Definition Standards.

Table 16.10 CIM and JORC Mineral Resource Definitions

2005 CIM Definition Standards	2004 JORC Code
Mineral Resource Definition	
A Mineral Resource is a concentration or occurrence of natural, solid, inorganic or fossilized organic material in or on the Earth's crust in such form and quantity and of such a grade or quality that it has reasonable prospects for economic extraction. The location, quantity, grade, geological characteristics and continuity of a Mineral Resource are known, estimated or interpreted from specific geological evidence and knowledge.	A 'Mineral Resource' is a concentration or occurrence of material of intrinsic economic interest in or on the Earth's crust in such form, quality and quantity that there are reasonable prospects for eventual economic extraction. The location, quantity, grade, geological characteristics and continuity of a Mineral Resource are known, estimated or interpreted from specific geological evidence and knowledge. Mineral Resources are sub-divided, in order of increasing geological confidence, into Inferred, Indicated and Measured categories.
Measured Resource Definition	
A 'Measured Mineral Resource' is that part of a Mineral Resource for which quantity, grade or quality, densities, shape, and physical characteristics are so well established that they can be estimated with confidence sufficient to allow the appropriate application of technical and economic parameters, to support production planning and evaluation of the economic viability of the deposit. The estimate is based on detailed and reliable exploration, sampling and testing information gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings and drill holes that are spaced closely enough to confirm both geological and grade continuity.	A 'Measured Mineral Resource' is that part of a Mineral Resource for which tonnage, densities, shape, physical characteristics, grade and mineral content can be estimated with a high level of confidence. It is based on detailed and reliable exploration, sampling and testing information gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings and drill holes. The locations are spaced closely enough to confirm geological and grade continuity.
Indicated Resource Definition	
An 'Indicated Mineral Resource' is that part of a Mineral Resource for which quantity, grade or quality, densities, shape and physical characteristics, can be estimated with a level of confidence sufficient to allow the appropriate application of technical and economic parameters, to support mine planning and evaluation of the economic viability of the deposit. The estimate is based on detailed and reliable exploration and testing information gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings and drill holes that are spaced closely enough for geological and grade continuity to be reasonably assumed.	An 'Indicated Mineral Resource' is that part of a Mineral Resource for which tonnage, densities, shape, physical characteristics, grade and mineral content can be estimated with a reasonable level of confidence. It is based on exploration, sampling and testing information gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings and drill holes. The locations are too widely or inappropriately spaced to confirm geological and/or grade continuity but are spaced closely enough for continuity to be assumed.

16.1.22 Impact of Non-Geological Factors on Resource Estimate

To the best of the Qualified Person's knowledge, all non-geological factors likely to impact materially on the mineral resource estimate of the GCP HM deposits are covered in the following section on Mineral Reserves and in Section 17.

16.2 Mineral Reserves

16.2.1 Mine Design Assessment

Mine planning and scheduling was completed by AMC and included the following activities:

- Compile the mineral resource block model to obtain total grade columns from the base of mining.
- Complete first pass 2D dredge path designs in plan.
- Evaluate the 2D design in sections to establish the preliminary design.
- Convert the design from a 2D design into a 3D design by incorporating slope angles and adjustment for depth.
- Evaluate the contents of the 3D design against the mineral resource block model at a range of depths (0m, 3m and 6m above the natural water table).
- Design of the tailings surface over the dredge path to calculate the volume of re-mined material and amount of tailings requiring off dredge path disposal.
- Schedule the results of the evaluation at the required production rates.
- Produce summary tables with quantities and grades by period.

16.2.2 Dredge Path Design

The 14 year dredge path design is shown in coloured by year in Figure 16.22. Figure 16.23 shows a cross section through the centre of the deposit.

Figure 16.22 Dredge Path Coloured by Year

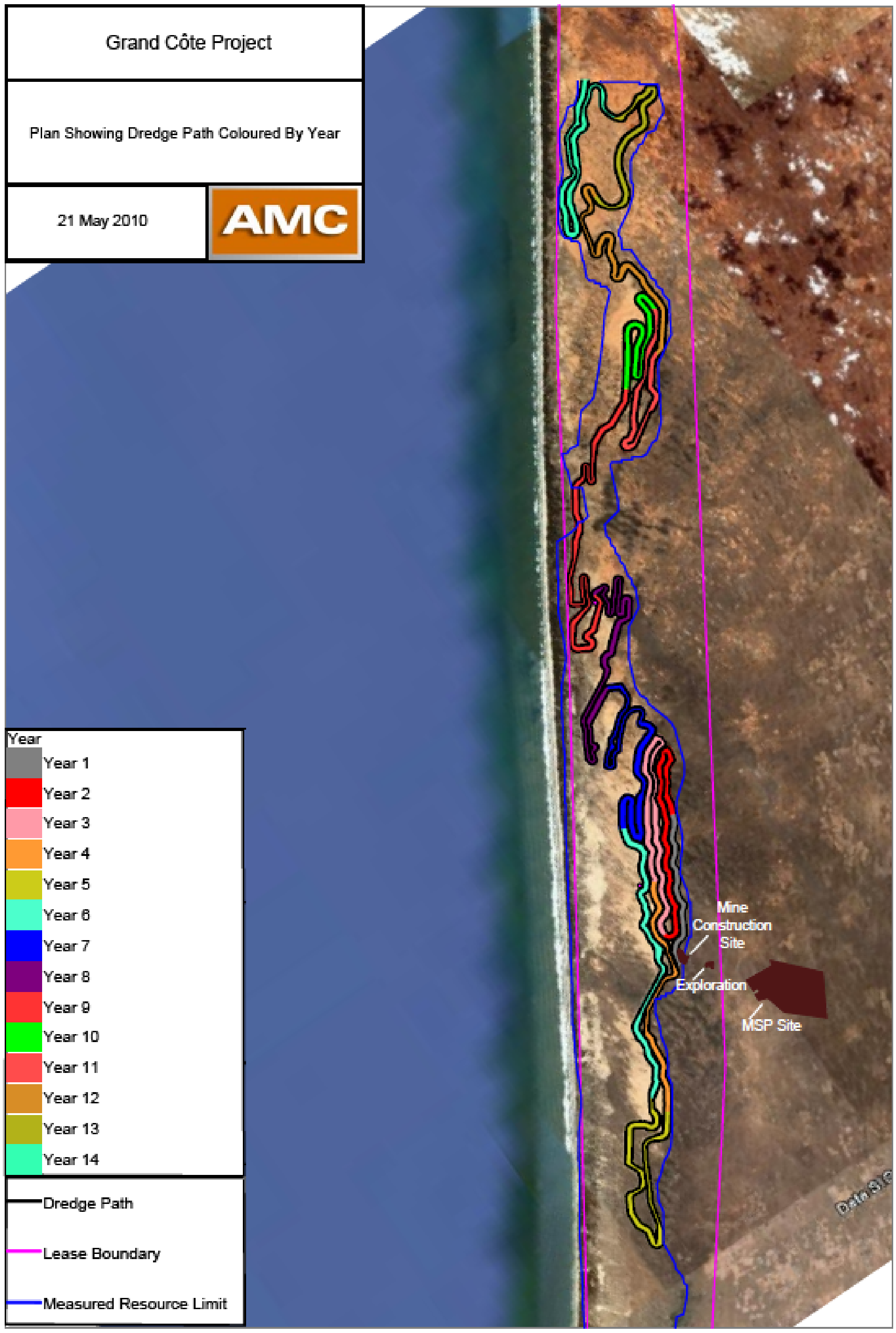
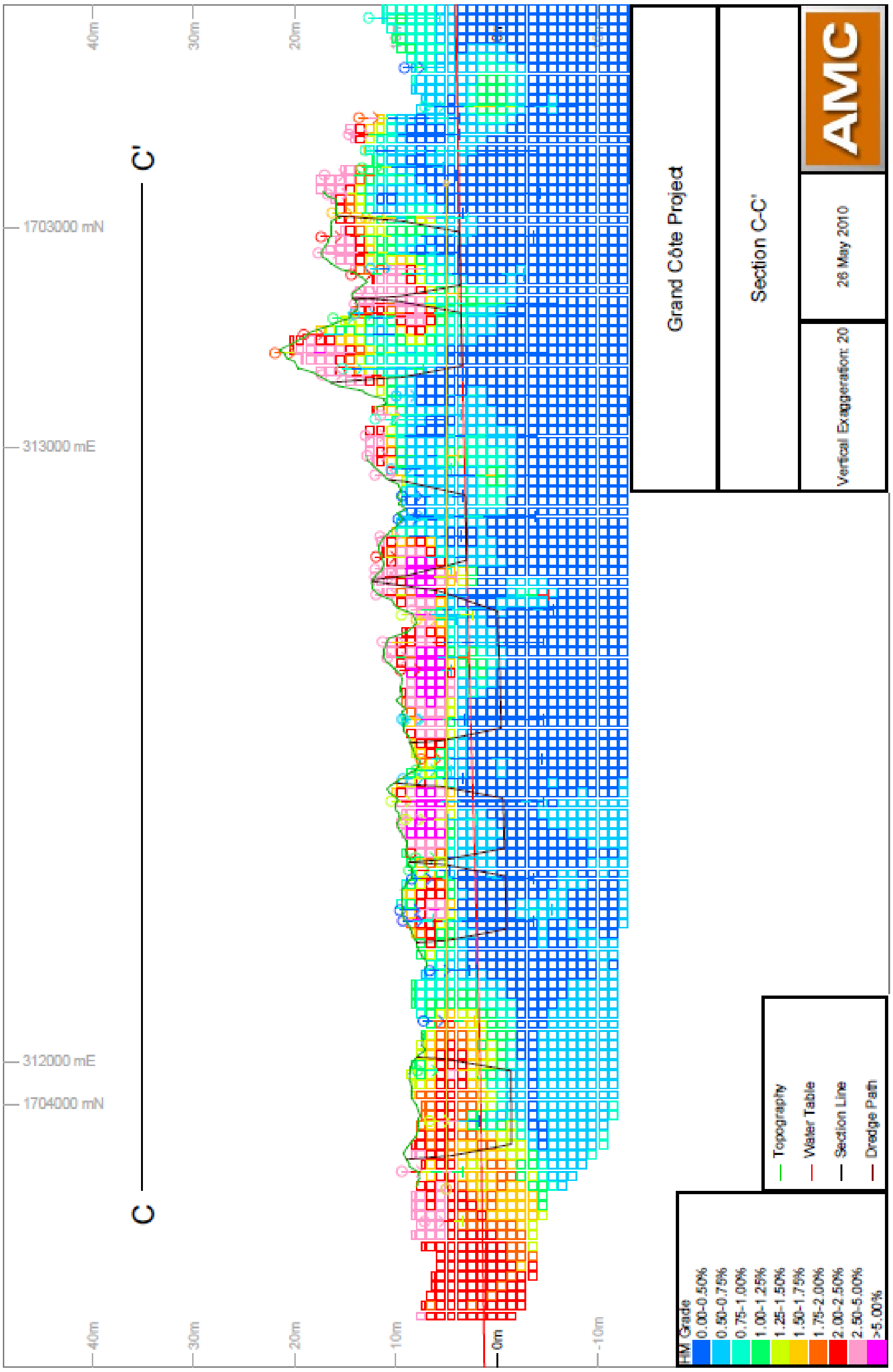


Figure 16.23 Section through Centre of Deposit



The dredge path was designed based on the following criteria:

- Fourteen years of initial dredge path
- Maximising the head grade for first 14 years of operation.

- All mining activities are within the Mining Concession.
- Only material with a mineral resource classification of Measured is included in the dredge path.
- A minimum width of 130m, governed by the dimensions of the floating plant and angles of the pond below the water surface.
- A maximum width of 270m (at the pond level), governed by the mechanical capacity of the winches selected for the dredge.
- To the extent possible, maintaining the mining face high and wide to allow the dredge to work to optimum efficiency.
- Reducing the mining face in low grade areas, where multiple passes of a wide dredge path would incur additional dilution.
- Avoiding significant domiciles and cultivated areas. Areas avoided by the dredge path design include three cemeteries, the town of Foth, and settlements at Diournel and Thiakmat.

The dredge path commences on the southern end of the eastern side of the dunal system. This position has the following benefits:

- It is close to the zone containing the most heavy mineral.
- It is close to the MSP.
- It is located in a flat wide swale, minimizing earth works prior to dredge and concentrator construction.
- It is adjacent to a natural valley allowing tailings to be deposited away from the pond negating many of the initial operational issues associated with tailings at the commencement of mining activities.

16.2.3 Geotechnical

The slope angles used for the dredge path design and tailings deposition were based on a geotechnical assessment undertaken by AMC. The criteria used are:

- The dredge path has 35° slopes above water.
- The dredge path has 15° slopes below water.
- Tailings will have an average deposition angle of 17° (22° above water and 8° below).

A 6m pond depth was used to provide sufficient draft for efficient mining and processing.

The angle of repose of the sand dunes was measured at 30°. The designed angle is steeper as it is expected that the slope will not reach the final angle of repose until after the dredge has passed.

16.2.4 Depth of Dredging

To determine the best depth of dredging several designs were evaluated against the resource block model. The three scenarios analysed were:

- Mining with the dredge pond level at the current water table level.
- Mining with the dredge pond level 3 m above the current water table level.
- Mining with the dredge pond level 6 m above the current water table level.

Table 16.11 summarizes the results of the assessment.

Table 16.11 Pond level Assessment

Scenario	Tonnes (Mt)	Grade (HM %)	Design Life (years)
Pond at water table (0m)	1,047	1.5	19.5
Raise pond 3m above the current water table	863	1.7	16.1
Raise pond 6m above the current water table	684	1.9	12.8

These results indicate that the overall head grade can be increased by the raised pond level. This is because the greater portion of the HM occurs in the upper portions of the sand dunes. Further financial and hydrogeological analysis has supported the elevation the pond level.

As the local topography does not always have sufficient altitude to support the raising of the pond level (it will overflow), some areas have been elevated only to the maximum level practicable. Furthermore, the dredge pond level, along the eastern edge of the dune, will be progressively raised towards the end of the first year of operation so that in the second year of mining, the dredge pond will be 6m above the natural water table. This practice will ensure that the elevated water table does not overly affect communities adjacent to the dredging operation and will provide initial operating experience at the lower pond level.

16.2.5 Mineral Reserves

The mineral reserves have been estimated by applying modifying factors to the material contained within the dredge path design. Modifying factors typically include mining dilution and ore loss. Dilution (sub economic material, unavoidably mined as ore) has been incorporated within the dredge path design.

The deposit continues beyond these reserves to both the north and south and at lower grade adjacent to the designed mine path. Additional mine life will be dependent on the marginal project economics, mineral distribution, geometry and land access. Additional drilling will also be required in some areas to expand the resource base. However, it could be reasonably anticipated that additional years of mine life beyond the current reserves would be exploited in the Mining Concession.

Table 16.12 is a summary of the mineral reserve estimate. For reporting, the mineral reserves have been divided into mining locations. The extents of these locations are shown.

Table 16.12 Mineral Reserves

Location	Reserve Category	Tonnes (Mt)	HM (%)	HM (Mt)
Mboro	Proven	30	1.9	0.6
	Probable			
	Proven + Probable	30	1.9	0.6
Fass Boye	Proven	81	1.8	1.5
	Probable			
	Proven + Probable	81	1.8	1.5
Diogo	Proven	273	1.8	5.0
	Probable			
	Proven + Probable	273	1.8	5.0
Diogo Extension	Proven	69	1.9	1.3
	Probable	5	1.7	0.1
	Proven + Probable	74	1.9	1.4
Lompoul	Proven	293	1.7	4.9
	Probable			
	Proven + Probable	293	1.7	4.9
TOTAL	Proven	746	1.8	13.2
	Probable	5	1.7	0.1
	Proven + Probable	751	1.8	13.3

16.2.6 Reconciliation of April 2010 GCP Mineral Reserve Estimate to 2005 CIM Definition Standards

Table 16.13 sets out the definitions for “Mineral Reserve”, Proven Mineral Reserve” and “Probable Mineral Reserve” as contained in the 2005 CIM Definition Standards and for “Ore Reserve”, Proved Ore Reserve” and “Probable Ore Reserve” as contained the 2004 JORC Code.

In the Qualified Person’s opinion, the respective definitions are sufficiently similar that the GCP Proved and Probable Reserves in this Technical Report, which were originally classified under the 2004 JORC Code, can be considered to be equivalent to Proven and Probable Mineral Reserves as classified under the 2005 CIM Definition Standards.

Table 16.13 CIM Mineral Reserve and JORC Ore Reserve Definitions

2005 CIM Definition Standards	2004 JORC Code
Mineral Reserve Definition	**Ore Reserve Definition**
A Mineral Reserve is the economically mineable part of a Measured or Indicated Mineral Resource demonstrated by at least a Preliminary Feasibility Study. This Study must include adequate information on mining, processing, metallurgical, economic and other relevant factors that demonstrate, at the time of reporting, that economic extraction can be justified. A Mineral Reserve includes diluting materials and allowances for losses that may occur when the material is mined.	An 'Ore Reserve' is the economically mineable part of a Measured and/or Indicated Mineral Resource. It includes diluting materials and allowances for losses, which may occur when the material is mined. Appropriate assessments and studies have been carried out, and include consideration of and modification by realistically assumed mining, metallurgical, economic, marketing, legal, environmental, social and governmental factors. These assessments demonstrate at the time of reporting that extraction could reasonably be justified. Ore Reserves are sub-divided in order of increasing confidence into Probable Ore Reserves and Proved Ore Reserves.
Proven Mineral Reserve	**Proved Ore Reserve**
A 'Proven Mineral Reserve' is the economically mineable part of a Measured Mineral Resource demonstrated by at least a Preliminary Feasibility Study. This Study must include adequate information on mining, processing, metallurgical, economic, and other relevant factors that demonstrate, at the time of reporting, that economic extraction is justified.	A 'Proved Ore Reserve' is the economically mineable part of a Measured Mineral Resource. It includes diluting materials and allowances for losses which may occur when the material is mined. Appropriate assessments and studies have been carried out, and include consideration of and modification by realistically assumed mining, metallurgical, economic, marketing, legal, environmental, social and governmental factors. These assessments demonstrate at the time of reporting that extraction could reasonably be justified.
Probable Mineral Reserve	**Probable Ore Reserve**
A 'Probable Mineral Reserve' is the economically mineable part of an Indicated and, in some circumstances, a Measured Mineral Resource demonstrated by at least a Preliminary Feasibility Study. This Study must include adequate information on mining, processing, metallurgical, economic, and other relevant factors that demonstrate, at the time of reporting, that economic extraction can be justified.	A 'Probable Ore Reserve' is the economically mineable part of an Indicated, and in some circumstances, a Measured Mineral Resource. It includes diluting materials and allowances for losses which may occur when the material is mined. Appropriate assessments and studies have been carried out, and include consideration of and modification by realistically assumed mining, metallurgical, economic, marketing, legal, environmental, social and governmental factors These assessments demonstrate at the time of reporting that extraction could reasonably be justified.

17 ADDITIONAL REQUIREMENTS FOR TECHNICAL REPORTS ON DEVELOPMENT PROPERTIES AND PRODUCTION PROPERTIES

17.1 Project Development Studies

Since the granting of the Mining Concession, GCO has progressed the development of the GCP. Additional drilling, sampling and assaying were completed between September 2005 and April 2010. A total of 150,665 metres have been RC drilled with a further 45,203 metres of hand auger work has been carried out by GCO and this has been added to the 39,063 metres of drilling by DuPont.

Other studies conducted since 2005 have considered all aspects related to the development of the project, including mining, metallurgical, marketing, environmental, legal, economic, social and governmental, based predominantly on producing saleable zircon. Further detailed work in late 2007 was also undertaken to consider the production of ilmenite concurrently with zircon.

These development studies have shown that the project can be optimized as a dredging operation, with mineralized sand being treated in a conventional floating spiral pre-concentrator, a separate wet concentrator and a dry mineral separation plant. Detailed engineering work undertaken by Ausenco Limited (Ausenco) in 2006 and 2007 was initially based on reusing a substantial portion of equipment from MDL's decommissioned Hawks Nest and Viney Creek operations in Australia. However inspection of this equipment and the decision to substantially increase the throughput rate resulted in the decision to build a new plant for the complete process from dredging to final product separation and grading.

Testwork on a series of bulk samples has determined that the project can yield a high quality zircon product and an ilmenite product along with small amounts of rutile and leucoxene products. In 2007 long lead time items, including the main dredge pump, cutter gearbox and tower crane for the feed bin, were purchased. Purchased equipment is currently in storage in Scotland, Belgium and Perth awaiting shipment to Senegal.

The key project metrics are summarised in Table 17.1.

Table 17.1 Key Project Assumptions and Metrics

Item	Assumption and Metrics
Saleable Products and Average Annual Production Rates	Premium Zircon – 32,000 tpa Intermediate Zircon – 25,000 tpa Standard Zircon –20,000 tpa Secondary Zircon – 2,500 tpa Chloride/Sulphate Ilmenite – 575,000 tpa Rutile – 6,000 tpa Leucoxene – 11,000 tpa
Mining Strategy	Owner Mining
Total Metres Drilled (MDL)	150,665 m Reverse Circulation (RC) Drilling. 45,203 m Augur Drilling.
Classified Resource	Indicated Resource - 50 Mt at 1.8% HM. Measured Resource -980 Mt at 1.7% HM. Total Indicated and Measured - 1,030 Mt at 1.7% HM.
Mining Rate	55 Mt per year of sand. Average 7,000 tonnes per hour.
Mining Method	Floating cutter section dredging operation.
Classified Reserve	Probable Reserve - 5 Mt at 1.7% HM. Proved Reserve - 746 Mt at 1.8% HM. Total Probable and Proved - 751 Mt at 1.8% HM.
Processing Method	Floating Concentrator featuring banks of gravity-fed High Capacity Spirals, followed by a land-based Mineral Separation Plant (MSP) which includes a Wet High Intensity Magnetic Separation Plant (WHIMS), a zircon wet and dry plant and an ilmenite plant.
Processing Rate	140 tonnes per hour to a maximum of 200t per hour.
Tailings Disposal Method	Cyclone and discharge with tailings stacker.
Product Transport Method	Road transport in containers to Port of Dakar for zircon, rutile and leucoxene. Combination of road and rail transport in bulk to Port of Dakar for ilmenite.
Project Execution Methodology	Engineering, Procurement and Construction Management (EPCM) Contractor.
Construction Start Date	Beginning of 2nd quarter 2011.
Production Start Date	End of 2nd quarter 2013.
Defined Mining Path	Fourteen Years.

17.2 Mining Operations

Mining will be carried out by dredging a continuous canal (dredge path) through the dunal orebody. The dredge will float in an artificial pond accompanied by a floating spiral concentrator (WCP). To the rear of the WCP a tailings stacker will deposit the tailings to fill the mined canal and achieve a final landform. Tailings represents approximately 98% of all material mined by the dredge. Once the dredge is fully commissioned and operational the tailings disposal system will be required to place 55 Mt of sand per annum. Vegetation will be cleared in advance of the dredge pond and rehabilitation will be completed on the final landform.

The heavy mineral concentrate (HMC) from the WCP will be pumped to the mineral separation plant (MSP) whereby it will be dewatered and stockpiled for batch processing in the MSP. The dredge, WCP and MSP design and engineering have been undertaken by Ausenco.

Based on the drilling to date a mine dredge path for the first 14 years of the operation has been developed and the mineral reserve estimate is shown in Table 17.2.

The deposit continues to the north and south on the Lease beyond these mineral reserves. Additional mine life will depend on the economics of the project including the mineral distribution, geometry and access. While the current mineral resource has not been defined sufficiently to extend to these areas and additional drilling is required, it could be anticipated that additional mine life beyond the current mineral reserves is feasible.

A dredge production schedule for the first 14 years of the mine life is shown in Table 17.2.

Table 17.2 Mining Schedule

Year	Tonnes Mt	Grade (HM %)	Mineral (HM Mt)
1	41	1.8	0.76
2	52	2.0	1.04
3	55	1.8	1.01
4	55	1.8	0.99
5	55	1.8	0.99
6	55	1.8	0.97
7	55	1.8	0.96
8	55	1.8	1.01
9	55	1.7	0.94
10	55	1.8	0.99
11	55	1.7	0.92
12	55	1.9	1.04
13	55	1.6	0.89
14	55	1.5	0.77
Total	748	1.8	13.3

***Note Mining tonnes in years 1 and 2 reflect ramp up allowances*

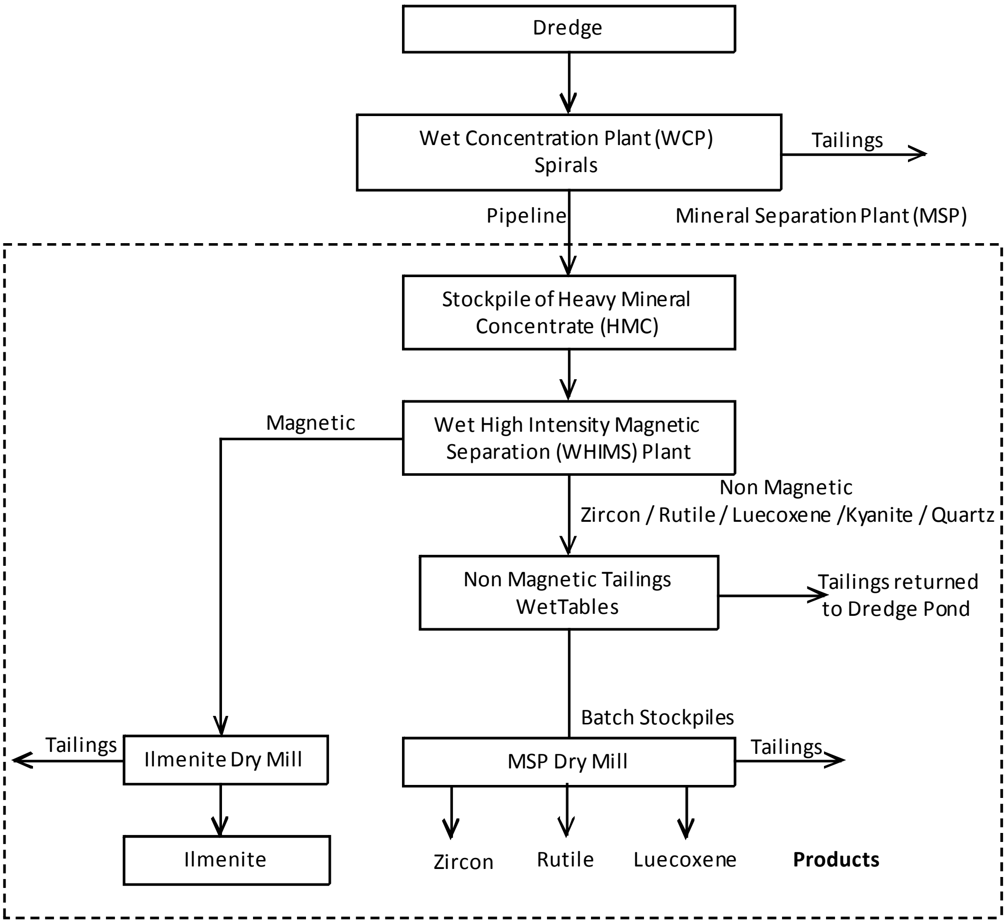
17.3 Processing and Engineering

An extensive testwork program has been completed with the primary aim being to maximise recovery and product quality. The testwork commenced in 2004 and continued to early 2010. The most recent testwork was completed by Downer EDI in 2010 using a 1,037 kg bulk sample collected from a trial pit located in the Diogo portion of the deposit.

Testwork results indicate a product mix of three to four zircon products, two ilmenite products and rutile and leucoxene products is feasible. Overall recovery for HM was 82.6% using a combination of spiral concentrators, wet high intensity magnetic separation, wet tables, high tension roll separators, rare earth roll magnetic separators, electrostatic plate separators and induced roll magnetic separators. Upgrading of the ilmenite to synthetic rutile was also considered but not included in the final treatment flow sheet.

Detailed flowsheets, plant layouts and the plant design basis have been developed by Ausenco. A high level flow sheet is shown in Figure 17.1. The flowsheets for the mine and WCP present mass balances using the nominal feed tonnage (7,000 t/h) from the dredge and a plant feed heavy mineral (HM) grade of 2.0%. The Mineral Separation Plant (MSP) consists of three separate circuits: Wet Circuit, Zircon Dry Circuit and Ilmenite Dry Circuit.

Figure 17.1 High Level Process Flow Sheet



17.4 Marketing

Testwork on a series of bulk samples has determined that the GCP can yield a product mix of three to four zircon products, two ilmenite products and small amounts of rutile and leucoxene. Estimated average annual production rates are:

- Zircon: 79,500 tonnes (Premium 32,000t, Intermediate 25,000t, Standard 20,000t, Secondary 2,500t)
- (Note: All three of the major zircon products have been independently assessed by the independent analyst TZMI as premium products for its respective market sectors).

- Ilmenite: 575,000 tonnes (Chloride/Sulphate 400,000t, Chloride 175,000t)
- Rutile: 6,000 tonnes
- Leucoxene: 11,000 tonnes

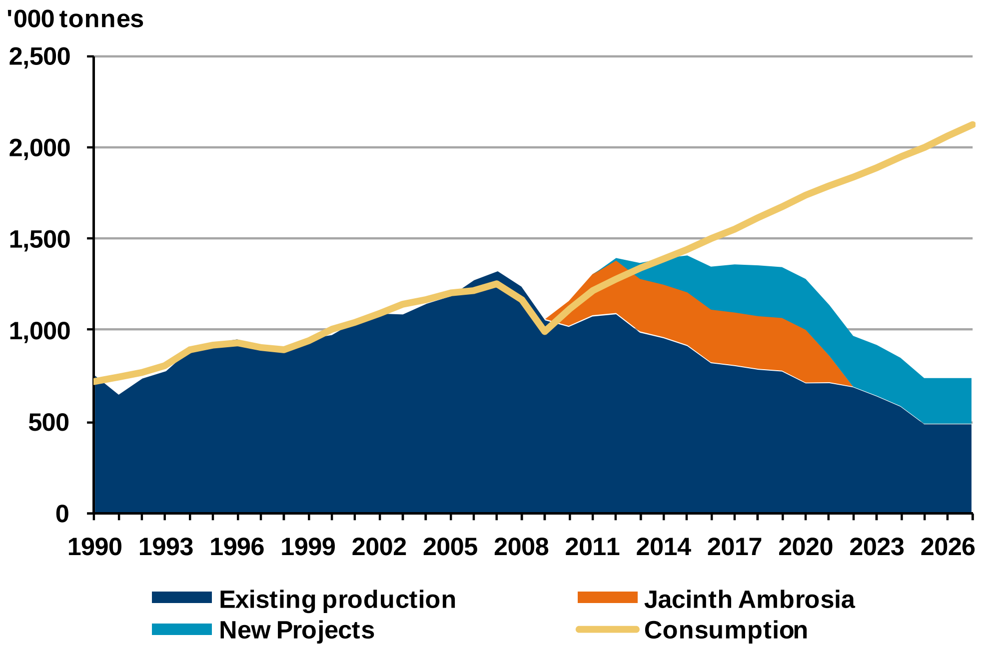
On a global scale, planned product output from the GCP would represent approximately 7% of the world zircon production and around 10% of world ilmenite production.

TZMI is forecasting long term deficits in each of the zircon, ilmenite, rutile and leucoxene markets. This is driven by a progressive decrease in supply from existing producers, coupled with a lack of new projects and ongoing growth in consumption. These supply deficits can only be met by the discovery and development of new resources such as the GCP.

In the case of the GCP, the marketing position is enhanced by the close proximity of the Port of Dakar to the important European and North American markets, particularly for the main commercial product, zircon. Dakar is a large container port and the existing service from Dakar provides for shipments every 7 to 10 days to Europe and every 7 to 14 days to North America which assists customers in maintaining just in time inventories. The container requirements of the GCP can also be expected to attract interest from shipping lines because Dakar has a long history of having to export containers empty due to lack of export cargoes.

The GCP is planned to enter the market in 2013 and TZMI forecast that the zircon market dynamics from 2012 will be increasingly dominated by tight supply, with the degree of undersupply dependent on the success of bringing new projects into operation. From 2015 onwards the expectation is for a widening deficit, mainly as a result of major losses of production from existing suppliers and a lack of new projects entering the market, see Figure 17.2.

Figure 17.2 TZMI Global Zircon Supply/Demand to 2027 Showing New Projects Including Grande Côte



TZMI also anticipates significant supply gaps to occur for sulphate and chloride ilmenite (see Figure 17.3 and Figure 17.4), as well as for rutile and leucoxene, for similar reasons for the forecast deficits of zircon, i.e. a progressive decrease in supply, a lack of new projects and ongoing growth in consumption.

Figure 17.3 Forecast Supply/Demand for Sulphate Ilmenite to 2027 Including Grande Côte

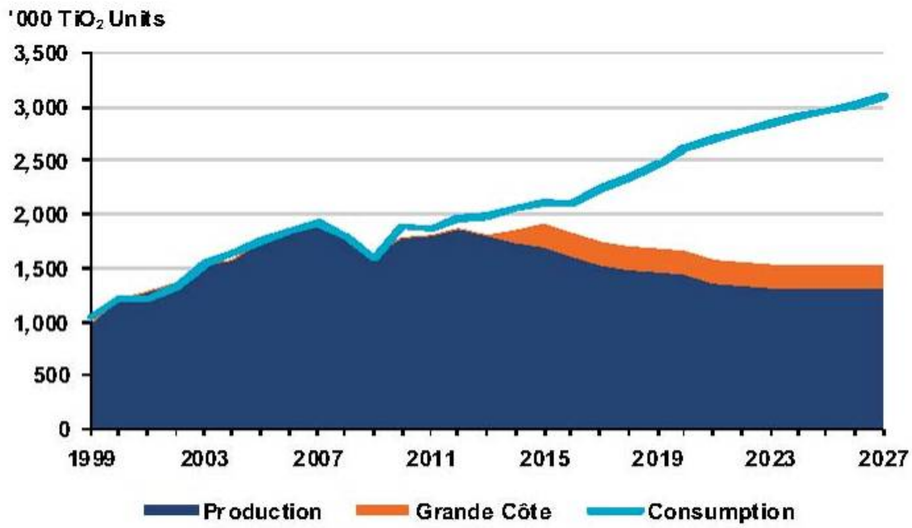
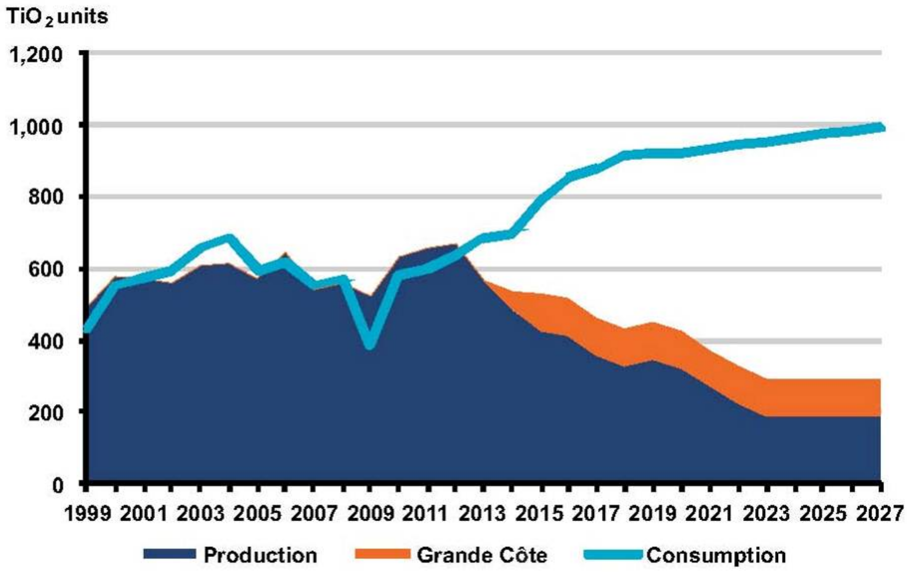


Figure 17.4 Forecast Supply/Demand for Chloride Ilmenite to 2027 Including Grande Côte



MDL's marketing objective is to optimize the sales revenue for all products. In the case of zircon, rutile and leucoxene, this will be achieved through a widely based sales mix based on using container shipments, enabling products to be sold into a range of niche markets. MDL's opinion, supported by TZMI, is that premium prices will be achieved for zircon, rutile and leucoxene by way of sale by container into selected end use markets. Ilmenite trades differently to zircon, rutile and leucoxene. Ilmenite is a high volume, low value product and is shipped in bulk shipment under long term sales arrangements at prevailing market prices for bulk shipment.

Zircon is the single most important commercial product of the project with revenues representing 57% of the total. Ilmenite contributes 36% and about 7% is split about equally between rutile and leucoxene.

MDL (on behalf of GCO) has sales arrangements in place with a number of customers covering all of the currently envisaged zircon production. The terms of these arrangements include a pricing mechanism which is renewed on a rolling basis and is subject to final product quality. The agreements will be formalized after completion of further product quality trials and customer evaluations. These trials are well advanced and have demonstrated that the GCP zircon product will have a competitive edge in terms of product quality against other suppliers. Ilmenite marketing is also being progressed with a number of customers under the customary process of evaluation subject to confidentiality agreements.

17.5 Contracts

GCO has a number of existing contracts are in place, these include:

- Employment contracts with Senegal Nationals directly through GCO.
- Employment contracts with expatriates through MDM.
- Contracts with service providers for consulting services related to the development of the GCP.
- Service contract with Connecteo for provision of internet bandwidth and Vigassistance for security guards.

MDL has confirmed there are no caveats outstanding on the project or any legal disputes relating to the development and operation of the project.

17.6 Environmental and Social

GCO is committed to developing and maintaining an integrated Management System (ESMS) that incorporates the requirements of the following standards:

- International Finance Corporation (IFC) Performance Standards.
- Equator Principles.
- AS/NZS ISO 14001 (2004) Environmental management systems – Specification with guidance for use.
- AS/NZS 4801 (2001) Occupational health and safety management systems – Specification with guidance for use.
- AS/NZS 4360 (2004) Risk Management.

The Environmental and Social Management and Monitoring Plan (ESMMP), describes the monitoring, mitigation and management measures required during the construction, operation, decommissioning and rehabilitation phases of the GCP. It is based on commitments made in the Environmental and Social Impact Assessment (EIES) and on requirements of the GRS and financial institutions involved in the project. The ESMMP provides a framework for ongoing environmental and social management and sets guidelines for development of management plans and standard operating procedures that will be developed as part of the ESMS. The ESMMP is a dynamic document subject to updating and adjustment following biennial review. The ESMMP will address the following key environmental and social issues:

- Water
- Rehabilitation
- Avoidance of settlements and appropriate compensation if temporary or permanent resettlement is required

It is estimated that the project will employ directly up to 800 people during construction with a GCO workforce of approximately 280 people plus 130 outsourced roles during operation. It is anticipated that 30% to 40% of the total workforce will be recruited from local communities.

17.7 Infrastructure

Infrastructure and services required includes:

- Buildings and Storage Facilities.
- Power Station and Liquid Fuel Storage
- Information and Communications Technology
- Road and Rail Infrastructure
- Port and Harbour Facilities

Mill buildings, the power station and fuel storage, administration offices, warehouses and lay-down areas will be located at the MSP site.

The maximum power demand for the GCP is 22 MW with a connected load of 27 MW. Annual power consumption is calculated as 141,000 MWh. MDL's power supply strategy is similar to that used in the Sabodala operation, whereby GCP will own and operate a 28 MW dual fuel (Heavy Fuel Oil (HFO)/ Natural gas) fired power station. Given the long life of the operation, MDL considers this a more economic option than other power supply options investigated. The installation of a natural gas compatible power station will also provide opportunity for utilization of a local energy source with the added benefit of potential carbon credits under the clean development mechanism.

The liquid fuel farm will have a HFO storage capacity of 1M litres which is sufficient for two weeks supply if straight HFO is burnt in the power station. If required during the wet season, additional storage capacity of 2M litres is available at the Port of Dakar. Gasoil (diesel) is also required to fuel pilot burners on the Dry Mill and the Ilmenite Plant heating equipment. The fuel farm incorporates a gasoil storage tank (100,000 litres).

The existing Information Technology (IT) infrastructure at the Exploration Camp and in GCO's Dakar offices will be upgraded during development of the GCP. The key elements will be similar to those of the Sabodala operation and include voice and data communications, wide and local area infrastructure, PCs and specialist software.

The MSP is located near Diogo village, approximately midway along the mining lease to enable access to nearby infrastructure including major highways, roads, railways and the Port of Dakar. The nearby town of Mboro, 25 km south, is adjacent to the Industrie Chemique Senegal (ICS) phosphate mine which has a railhead and loading facilities. The main highway between Dakar and Saint Louis to the north is located 20 km east of the MSP site.

Ilmenite will be transported in bulk by road to the ICS loading facilities and then by rail to the Port of Dakar while zircon, rutile and leucoxene will be transported in shipping containers by road to the port. Of the approximate 125 km of road from the MSP to the Port of Dakar, 25 km is unsealed, however government funding is in place and work is currently well advanced to repair and seal the entire road during the second quarter of 2010.

Wagons will be purchased and running rights have been negotiated for their operation on tracks held as concessions by ICS and Transrail. A new mobile loading facility will be required for loading trains at the ICS rail head and new unloading; storage and ship loading facilities for bulk ilmenite will be constructed at the Port of Dakar.

Plant construction materials and equipment for the mine, MSP and the power station, liquid fuel (if required) for the power station, operating supplies and maintenance components will be transported to site by road from Dakar. Dakar is the main West African base for well equipped, international freight logistics companies. MDL successfully used a number of these companies during the construction of the Sabodala Project. The EPCM Contractor will conduct a detailed transport and logistics study for project construction items, to ensure the timely low cost delivery of equipment and materials to site.

Water management is one of the key issues affecting the success of the GCP. It is important for the operation of the mine, the transfer of concentrates to the MSP, the mineral separation processes and the needs of the local community who depend on it for their survival. There are three predominant uses of water:

- Flotation of the mining dredge, surge bin and wet concentrator modules and slurrying of dunal orebody for processing
- Pumping mineral concentrates as slurries from the mine to the MSP and waste return to the mine
- Processing of mineral streams in the MSP

Extensive modeling of existing water resources and the effects of mining on the water table has been completed by PSM Australia Pty Ltd. This modelling incorporating regional data such as rainfall, irrigation practices plus a project based weather station data. Based on this work the project water requirements are able to be met and the affect on regional water resources is understood.

17.8 Capital Cost Estimate

The capital estimate was prepared by Ausenco and is an update to the capital cost estimate prepared in August 2006. The primary changes to the 2006 estimate have been that the previously tendered equipment prices were revalidated and Sabodala Project experience was used for estimating owner's costs, subcontract and material rates, productivity factors and EPCM manning requirements. Additional scope changes resulting from the recent testwork have also been incorporated into the plant design and the capital estimate.

A summary of the capital costs is shown in Figure 17.3. The capital estimate is based on a single contract for EPCM.

Table 17.3 Capital Cost Estimate

Item	Total Capital US$M
Mining – Dredge and Services	37.9
Wet Concentrator Plant	84.7
Mineral Separation Plant	54.1
Mining – Infrastructure	8.4
Mineral Separation Plant – Infrastructure	5.8
Power Station	45.3
Rail/Port Facilities and Rolling Stock	18.6
Temporary Construction Facilities	21.5
Indirects – EPCM, Commissioning and Project Fee	52.1
Owners Costs	47.0
Estimation/Design Allowance	16.8
Contingency	13.8
Total	406.0

The exchange rates used for conversion of costs to $US are:

- 1 A$ equals 0.90 US$.
- 1 Euro equals 1.50 US$
- 1 CFA equals 0.0022 US$

When unit rates from the Grande Côte Zircon Project August 2006 estimate have been used they have been increased by 25% to allow for escalation. This is consistent with the average for equipment price increases from the tender price validation.

For construction activities craft base wages are based on current gang rates applying to other project estimates within the region. Where unit rates from the Sabodala Project have been used, they have been increased by 15% to allow for escalation. This is based on the labour index increasing by 25% over the period, while bulk commodity prices have remained flat.

A 2.5% duty is payable on ex-works value of all goods entering Senegal.

Costs for construction accommodation are based on 400 persons for year one and 800 persons for year two of construction. Provisions have been included for spare parts and first fill consumables.

An EPCM fee of 3% of direct costs under management by the EPCM contractor has been included in the estimate. Owner's Costs include the GCO's representatives during construction, accommodation, transport, IT and communications, social and environmental programs, studies and costs associated with local and statutory requirements.

The capital cost estimate excludes demurrage for capital freight, working capital (which is included in the overall project financial model) withholding taxes and other similar Senegalese taxes, and corporate costs. Sustaining or deferred capital costs are included in the financial model.

The Base Date for the Capital Costs is 30 November 2009. A provision for escalation beyond the estimate base date (30 November) has not been included in the estimate. A contingency allowance of $13.8M has been included by GCO in the capital estimate. In addition to the owner contingency a further $16.8M is included by way of a design allowance. The level of accuracy of the estimate is ±15%.

17.9 Operating Costs

Operating costs have been prepared for the mining, wet concentrator, mineral separation processing operations, transportation and the supporting services required for the operations at Grande Côte. A summary of the operating costs is shown in Table 17.4.

Table 17.4 Annual Operating Costs

Description	Annual Operating Cost $M
Power and Fuel	23.1
Employee Costs	7.9
Maintenance	13.8
Transportation / Shipping	22.4
Other	8.1
Total	75.3

Fuel is required for power generation, gasoil for drying and mobile equipment. For power generation the unit rate cost estimation was based on the Sabodala power station fuel/ lubricant consumption rates, downtime and performance. The inputs for the fuel cost estimation are based on the Senegal Government fuel pricing schedule and the offer from natural gas supplier Fortesa which is linked to this pricing via like for like energy content.

The human resources strategy and costs for the GCP draw on the considerable expertise built up over the past five years by MDL in Senegal. Expatriate and national salaries are based on the current operation at Sabodala. Average salaries are used for expatriate employees while the national labour rates are as regulated by the government and gazetted by Decree 2006-1262 dated 15 November 2006. All employee costs include on-costs.

Maintenance labour is included in the labour rates. Maintenance unit rate costs are based on benchmarks for similar operations and include the dredge and wet plant, MSP and the ilmenite plant.

Transport of GCP zircon, rutile and leucoxene final products will be via sealed road in 20” containers to the port of Dakar for dispatch by sea. Ilmenite in bulk will be trucked to the nearby ICS rail head and then transported to a bulk load out facility at the Dakar Port for shipments to customers. All costs are on a Freight On Board (FOB) basis.

The Base Date for operating costs is April 2010. No contingency has been included on operating costs. Operating costs estimated by GCO have an accuracy of +/- 15% and include a significant portion of real in country costs.

17.10 Royalty and Taxation Agreements

The royalty and taxation arrangements for the GCP are detailed in Mining Convention and Supplementary Deed No.1. Specific articles which relate to project cash flows and expenditures are detailed in Table 17.5.

Table 17.5 Royalty and Taxation Arrangements

Topic	Article	Description
Tax Exemptions during Investment Period	Article 24: Clause 24.1 of the Mining Convention	During the investment and production launch period of new exploitation or the extension of the production capacity of pre-existing exploitation, the holder of the mining exploitation permit or mining concession, in addition to enterprises working on its behalf, benefits from an exemption from all excise and import duties including value added tax (VAT), COSEC charges and other taxes of all kinds, with the exception of the Statistical Royalties of the West African Economic and Monetary Union (WAEMU), unless this exemption has been specifically set out in the context of an external financial agreement, for: - Equipment, materials, supplies, machines, heavy machinery, plant and work vehicles included in the authorized programme and to be used directly and definitively for mining operations. - Fuel and lubricants supplied to fixed facilities, drilling equipment, machines and equipment for use in mining operations. - Petroleum products used to produce energy for the undertaking of the authorized exploitation programme. - Spare parts for machines and equipment specifically intended for the undertaking of mining.
Tax Exemptions during Operation	Article 10 of Supplementary Deed No. 1 being new Article 25.2 of the Mining Convention	Over a period of fifteen (15) years calculated from the date of issue of the Mining Concession, not counting the two-year investment period, and subject to the provisions of Article 26 of this Convention, the holder of the Mining Concession shall benefit from a total taxation exemption, including: - Exemption from value-added taxes on goods and services acquired from local suppliers or service providers based outside of Senegal. - Exemption from exit taxes and duties. - Exemption from the default minimum revenue taxation charges. - Exemption from trading licenses and land and property taxes for property on which structures have been, are being, will be or may be built, with the exception of residential buildings. - Exemption from default tax payments for employers. - Exemption from taxes and duties imposed on deeds registering the incorporation of companies and capital increases. The provisions of this Article shall also be applicable to subcontractors.
Exemption Period for Company Tax	Article 12 of Supplementary Deed No. 1 being new Article 16.2 of the Mining Convention	“The holder of the mining concession benefits over a period of fifteen (15) years from an exemption from company tax, calculated from the date of issue of the Mining Concession.”
Requirement for Social Development Funds	Article 16 of Supplementary Deed No. 1 supplementing Article 31 of the Mining Convention	“Over the entire period of validity of the Mining Concession in both its pre-production and production phases, the exploitation company shall agree to contribute to the social development of local communities in the Grande Côte region, which are located in areas surrounding the exploitation site. Thus, it shall agree to invest an amount of $US150,000 per year for this purpose.”

Topic	Article	Description
Contribution to basis and further training of Senegalese Ministry of Mines Personnel	Article 17 of Supplementary Deed No. 1 replacing Article 31.3 of the Mining Convention	"- contribute, on the basis of a protocol to be concluded with the Ministry for Mines, to the basic and further training of Senegalese officers responsible for the management and promotion of the mining sector and logistical support to the technical services of the Ministry for Mines; to this end, the exploitation company[1] shall agree to allocate the sum of $US50,000 per year for each year of production."
Mining Royalty	Article 23 of Supplementary Deed No. 1	MDL shall accept that the mining royalty to be paid pursuant to Article 57 of the Mining Code be 5% of the pithead value. The 2% surplus has been set aside to support the New Town development project.[2]

These royalty and taxation requirements have been included in the capital and operating cost estimates developed in the DFS.

17.11 Implementation Schedule

GCO proposes to construct the project using a single contract for EPCM with an internationally recognised and experienced engineering company. High quality local and European sourced contractors will be utilized for plant construction. This strategy was successfully employed for the construction of the Sabodala Gold Project.

A high level project development schedule has been developed by Ausenco and GCO and is shown in Table 17.5. The Project Execution Schedule assumes that financing for the Project will be completed by the 1st quarter of 2011 and that the EPCM contractor will be selected early in 2011. The schedule indicates a completion data for C1 and C2 commissioning sign off during the first quarter of 2013. The first sales products are scheduled to be produced by June 2013.

The schedule is high level at this stage and will require further detailing as a part of the development of the Project Development Plan. The Schedule does not include any float for unscheduled delays.

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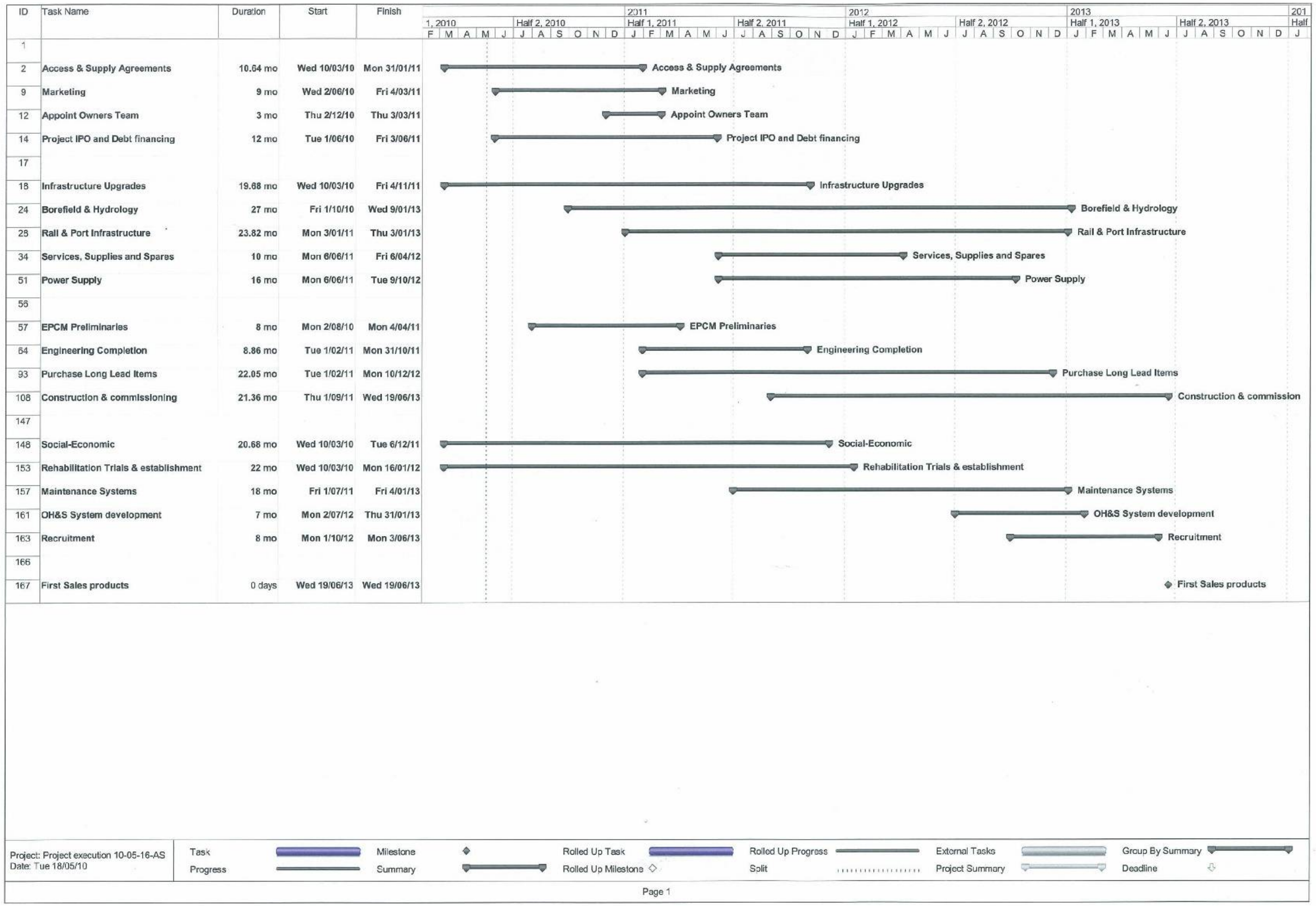
[1] GCO

[2] The 2% for the New Town development is included in the 5% total.

Figure 17.5 High Level Project Execution Schedule



ID	Task Name	Duration	Start	Finish
1				
2	Access & Supply Agreements	10.64 mo	Wed 10/03/10	Mon 31/01/11
9	Marketing	9 mo	Wed 2/06/10	Fri 4/03/11
12	Appoint Owners Team	3 mo	Thu 2/12/10	Thu 3/03/11
14	Project IPO and Debt financing	12 mo	Tue 1/06/10	Fri 3/06/11
17				
18	Infrastructure Upgrades	19.68 mo	Wed 10/03/10	Fri 4/11/11
24	Borefield & Hydrology	27 mo	Fri 1/10/10	Wed 9/01/13
28	Rail & Port Infrastructure	23.82 mo	Mon 3/01/11	Thu 3/01/13
34	Services, Supplies and Spares	10 mo	Mon 6/06/11	Fri 6/04/12
51	Power Supply	16 mo	Mon 6/06/11	Tue 9/10/12
56				
57	EPCM Preliminaries	8 mo	Mon 2/08/10	Mon 4/04/11
64	Engineering Completion	8.86 mo	Tue 1/02/11	Mon 31/10/11
93	Purchase Long Lead Items	22.05 mo	Tue 1/02/11	Mon 10/12/12
108	Construction & commissioning	21.36 mo	Thu 1/09/11	Wed 19/06/13
147				
148	Social-Economic	20.68 mo	Wed 10/03/10	Tue 6/12/11
153	Rehabilitation Trials & establishment	22 mo	Wed 10/03/10	Mon 16/01/12
157	Maintenance Systems	18 mo	Fri 1/07/11	Fri 4/01/13
161	OH&S System development	7 mo	Mon 2/07/12	Thu 31/01/13
163	Recruitment	8 mo	Mon 1/10/12	Mon 3/06/13
166				
167	First Sales products	0 days	Wed 19/06/13	Wed 19/06/13

17.12 Financial Summary

The GCP generates revenue from the sale of the following products:

- Premium Zircon 32,000 tpa
- Intermediate Zircon 25,000 tpa
- Standard Zircon 20,000 tpa

(All three of the above major products have been independently assessed by TZMI as premium products for its respective markets).

- Secondary Zircon 5,000 tpa
- Chloride/Sulphate Ilmenite 575,000 tpa
- Rutile 6,000 tpa
- Leucoxene 11,000 tpa

For all products TZMI price analysis and forecasts to 2027 have been used. While financing options have not been assessed in the project financial evaluation, a debt/equity ratio of 50/50 was used.

The GCP is exempt from Senegalese Government taxes for a period of 15 years from the start of operation, with provision also made for exemptions during investment and development.

The production ramp up assumes 67% utilisation in the first year of plant operation, followed by 85% in the second year and nominally full capacity in subsequent years. The average HMC feed processing rates at full production capacity are approximately:

- 240,000 tpa through the Wet Mill
- 105,000 tpa through the Dry Mill
- 680,000 tpa through the Ilmenite Dry Plant

The GCP is forecast to generate total gross revenue of US$2,687M to 2027. Net annual cash flow is positive in 2014 at US$42.3M.

The total amount of saleable product over the first fifteen years of mine life is 9,693,900 tonnes. Total revenue is split between these different products, with zircon sales contributing to 56.9% of total gross revenue, ilmenite 37.0%, leucoxene 3.5% and rutile 2.5%. Revenue is shown in Figure 17.6.

Total capital costs are US$406M excluding working and sustaining capital and are spread over years 2011 to 2013. Total operating costs are US$1024.6M to 2027. Operating and Capital Costs are shown in Figure 17.7.

Figure 17.6 GCP Production and Revenue

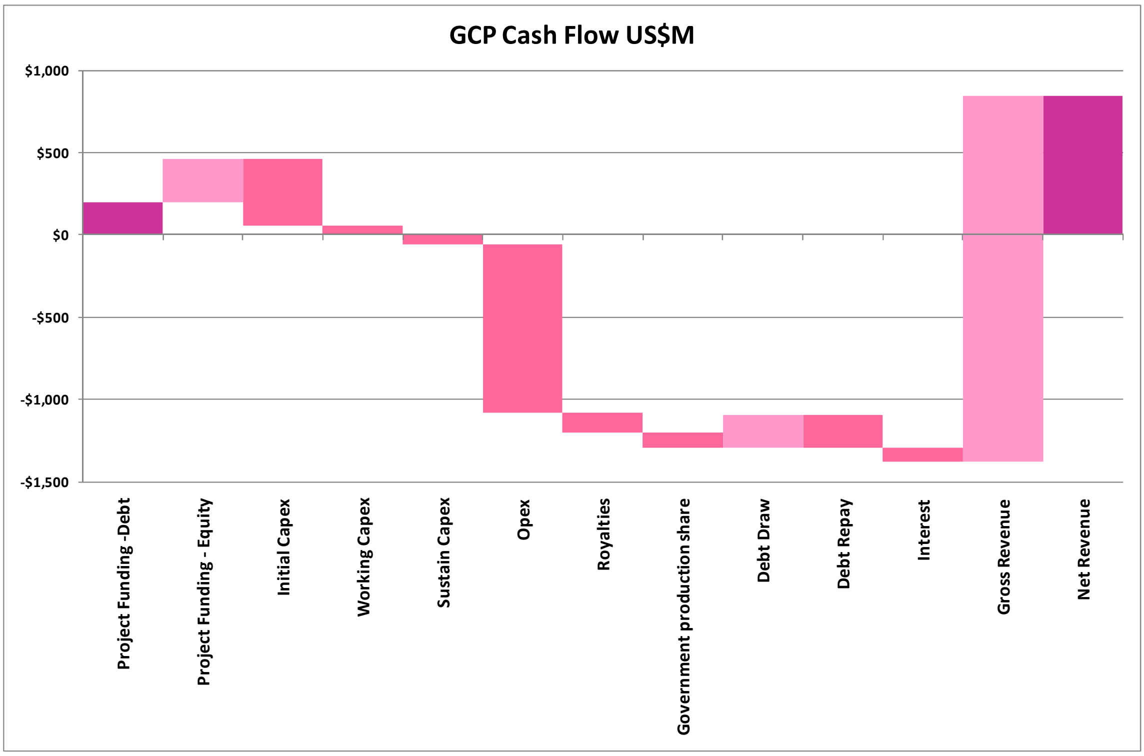
Y/End 30 June	Input	Units	2009	2010	Total/Av	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Year						-2	-1	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Resource																						
Ore Mined		'000t			748,104	0	0	0	41,084	52,122	54,575	54,575	54,575	54,575	54,575	54,575	54,575	54,575	54,575	54,575	54,575	54,575
Grades																						
Heavy Mineral (HM)		% in ore			1.8%	0.0%	0.0%	0.0%	1.8%	2.0%	1.8%	1.8%	1.8%	1.8%	1.8%	1.9%	1.7%	1.8%	1.7%	1.9%	1.6%	1.5%
Zircon		% in HM			10.7%	0.0%	0.0%	10.7%	10.7%	10.7%	10.7%	10.7%	10.7%	10.7%	10.7%	10.7%	10.7%	10.7%	10.7%	10.7%	10.7%	10.7%
Rutile		% in HM			2.5%	0.0%	0.0%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%
Leucoxene		% in HM			3.2%	0.0%	0.0%	3.2%	3.2%	3.2%	3.2%	3.2%	3.2%	3.2%	3.2%	3.2%	3.2%	3.2%	3.2%	3.2%	3.2%	3.2%
Ilmenite		% in HM			74.5%	0.0%	0.0%	74.5%	74.5%	74.5%	74.5%	74.5%	74.5%	74.5%	74.5%	74.5%	74.5%	74.5%	74.5%	74.5%	74.5%	74.5%
Overall Recovery																						
Zircon		%			81.3%	0.0%	0.0%	0.0%	81.3%	81.3%	81.3%	81.3%	81.3%	81.3%	81.3%	81.3%	81.3%	81.3%	81.3%	81.3%	81.3%	81.3%
Rutile		%			24.9%	0.0%	0.0%	0.0%	24.9%	24.9%	24.9%	24.9%	24.9%	24.9%	24.9%	24.9%	24.9%	24.9%	24.9%	24.9%	24.9%	24.9%
Leucoxene		%			30.9%	0.0%	0.0%	0.0%	30.9%	30.9%	30.9%	30.9%	30.9%	30.9%	30.9%	30.9%	30.9%	30.9%	30.9%	30.9%	30.9%	30.9%
Ilmenite		%			84.1%	0.0%	0.0%	0.0%	84.1%	84.1%	84.1%	84.1%	84.1%	84.1%	84.1%	84.1%	84.1%	84.1%	84.1%	84.1%	84.1%	84.1%
Saleable Product																						
Premium, Intermediate, Standard Zircon		'000t			1,127.0	0.0	0.0	0.0	64.1	87.9	85.1	84.2	83.8	81.9	81.4	85.6	79.6	83.8	77.7	88.4	75.4	68.0
Secondary Zircon		'000t			28.6	0.0	0.0	0.0	1.6	2.2	2.2	2.1	2.1	2.1	2.1	2.2	2.0	2.1	2.0	2.2	1.9	1.7
Zircon total		'000t			**1,155.6**	**0.0**	**0.0**	**0.0**	**65.7**	**90.2**	**87.3**	**86.4**	**85.9**	**84.0**	**83.5**	**87.8**	**81.6**	**85.9**	**79.7**	**90.6**	**77.3**	**69.7**
Rutile		'000t			81.9	0.0	0.0	0.0	4.7	6.4	6.2	6.1	6.1	5.9	5.9	6.2	5.8	6.1	5.6	6.4	5.5	4.9
Leucoxene		'000t			131.5	0.0	0.0	0.0	7.5	10.3	9.9	9.8	9.8	9.6	9.5	10.0	9.3	9.8	9.1	10.3	8.8	7.9
Subtotal		'000t			1,369.0	0.0	0.0	0.0	77.9	106.8	103.4	102.3	101.7	99.5	98.9	104.0	96.7	101.7	94.4	107.4	91.6	82.6
Ilmenite		'000t			8,324.9	0.0	0.0	0.0	473.5	649.6	628.9	622.1	618.7	605.0	601.6	632.3	587.9	618.7	574.2	652.8	557.1	502.5
Total Saleable Product		'000t			**9,693.9**	**0.0**	**0.0**	**0.0**	**551.3**	**756.4**	**732.3**	**724.4**	**720.4**	**704.5**	**700.5**	**736.3**	**684.6**	**720.4**	**668.7**	**760.2**	**648.8**	**585.1**
Revenue																						
Premium, Intermediate, Standard Zircon		US$M			1,509.1	0.0	0.0	0.0	78.5	114.3	114.9	113.7	113.1	110.6	109.9	115.6	107.4	113.1	104.9	119.3	101.8	91.8
Secondary Zircon		US$M			19.1	0.0	0.0	0.0	1.0	1.5	1.5	1.4	1.4	1.4	1.4	1.5	1.4	1.4	1.3	1.5	1.3	1.2
Zircon total		US$M			**1,528.2**	**0.0**	**0.0**	**0.0**	**79.5**	**115.8**	**116.4**	**115.1**	**114.5**	**112.0**	**111.3**	**117.0**	**108.8**	**114.5**	**106.3**	**120.8**	**103.1**	**93.0**
Rutile		US$M			68.2	0.0	0.0	0.0	3.8	5.2	5.2	5.1	5.1	5.0	4.9	5.2	4.8	5.1	4.7	5.4	4.6	4.1
Leucoxene		US$M			96.3	0.0	0.0	0.0	5.3	7.4	7.3	7.2	7.2	7.0	7.0	7.3	6.8	7.2	6.7	7.6	6.5	5.8
Subtotal		US$M			1,692.7	0.0	0.0	0.0	88.7	128.4	128.9	127.5	126.8	124.0	123.3	129.6	120.5	126.8	117.7	133.8	114.2	103.0
Ilmenite		US$M			994.3	0.0	0.0	0.0	52.1	78.0	75.5	74.7	74.2	72.6	72.2	75.9	70.5	74.2	68.9	78.3	66.9	60.3
Total Revenue		US$M			**2,687.0**	**0.0**	**0.0**	**0.0**	**140.7**	**206.4**	**204.3**	**202.1**	**201.0**	**196.6**	**195.5**	**205.4**	**191.0**	**201.0**	**186.6**	**212.1**	**181.0**	**163.2**

Figure 17.7 GCP Cash Flows

Y/End 30 June	Input	Units	Total	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Year				-2	-1	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Resource																				
Ore Mined		'000t		0	0	0	41,084	52,122	54,575	54,575	54,575	54,575	54,575	54,575	54,575	54,575	54,575	54,575	54,575	54,575
Saleable Product																				
Premium, Intermediate, Standard Zircon		'000t	1,127.0	0.0	0.0	0.0	64.1	87.9	85.1	84.2	83.8	81.9	81.4	85.6	79.6	83.8	77.7	88.4	75.4	68.0
Secondary Zircon		'000t	28.6	0.0	0.0	0.0	1.6	2.2	2.2	2.1	2.1	2.1	2.1	2.2	2.0	2.1	2.0	2.2	1.9	1.7
Zircon total		'000t	**1,155.6**	**0.0**	**0.0**	**0.0**	**65.7**	**90.2**	**87.3**	**86.4**	**85.9**	**84.0**	**83.5**	**87.8**	**81.6**	**85.9**	**79.7**	**90.6**	**77.3**	**69.7**
Rutile		'000t	81.9	0.0	0.0	0.0	4.7	6.4	6.2	6.1	6.1	5.9	5.9	6.2	5.8	6.1	5.6	6.4	5.5	4.9
Leucoxene		'000t	131.5	0.0	0.0	0.0	7.5	10.3	9.9	9.8	9.8	9.6	9.5	10.0	9.3	9.8	9.1	10.3	8.8	7.9
Subtotal		'000t	1,369.0	0.0	0.0	0.0	77.9	106.8	103.4	102.3	101.7	99.5	98.9	104.0	96.7	101.7	94.4	107.4	91.6	82.6
Ilmenite		'000t	8,324.9	0.0	0.0	0.0	473.5	649.6	628.9	622.1	618.7	605.0	601.6	632.3	587.9	618.7	574.2	652.8	557.1	502.5
Total Saleable Product		'000t	**9,693.9**	**0.0**	**0.0**	**0.0**	**551.3**	**756.4**	**732.3**	**724.4**	**720.4**	**704.5**	**700.5**	**736.3**	**684.6**	**720.4**	**668.7**	**760.2**	**648.8**	**585.1**
Revenue																				
Premium, Intermediate, Standard Zircon		US$M	1,509.1	0.0	0.0	0.0	78.5	114.3	114.9	113.7	113.1	110.6	109.9	115.6	107.4	113.1	104.9	119.3	101.8	91.8
Secondary Zircon		US$M	19.1	0.0	0.0	0.0	1.0	1.5	1.5	1.4	1.4	1.4	1.4	1.5	1.4	1.4	1.3	1.5	1.3	1.2
Zircon total		US$M	**1,528.2**	**0.0**	**0.0**	**0.0**	**79.5**	**115.8**	**116.4**	**115.1**	**114.5**	**112.0**	**111.3**	**117.0**	**108.8**	**114.5**	**106.3**	**120.8**	**103.1**	**93.0**
Rutile		US$M	68.2	0.0	0.0	0.0	3.8	5.2	5.2	5.1	5.1	5.0	4.9	5.2	4.8	5.1	4.7	5.4	4.6	4.1
Leucoxene		US$M	96.3	0.0	0.0	0.0	5.3	7.4	7.3	7.2	7.2	7.0	7.0	7.3	6.8	7.2	6.7	7.6	6.5	5.8
Subtotal		US$M	1,692.7	0.0	0.0	0.0	88.7	128.4	128.9	127.5	126.8	124.0	123.3	129.6	120.5	126.8	117.7	133.8	114.2	103.0
Ilmenite		US$M	994.3	0.0	0.0	0.0	52.1	78.0	75.5	74.7	74.2	72.6	72.2	75.9	70.5	74.2	68.9	78.3	66.9	60.3
Total Revenue		US$M	**2,687.0**	**0.0**	**0.0**	**0.0**	**140.7**	**206.4**	**204.3**	**202.1**	**201.0**	**196.6**	**195.5**	**205.4**	**191.0**	**201.0**	**186.6**	**212.1**	**181.0**	**163.2**
Costs																				
Unit Operating Cost		US$/t	1.36	0.00	0.00	0.00	1.59	1.45	1.38	1.37	1.36	1.35	1.34	1.37	1.32	1.35	1.31	1.38	1.29	1.24
Operating Expenses		US$M	(1,024.7)	0.0	0.0	(7.4)	(65.4)	(75.4)	(75.2)	(74.7)	(74.4)	(73.6)	(73.2)	(74.7)	(72.3)	(73.7)	(71.3)	(75.3)	(70.4)	(67.7)
Capital Expenses		US$M	(406.0)	(24.2)	(164.7)	(217.1)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Working Capital		US$M	(53.6)	0.0	0.0	(4.8)	(35.6)	(13.3)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sustaining Capital		US$M	(60.3)	0.0	0.0	0.0	0.0	(1.5)	(4.9)	(4.9)	(4.9)	(4.9)	(4.9)	(4.9)	(4.9)	(4.9)	(4.9)	(4.9)	(4.9)	(4.9)
Royalties		US$M	(120.9)	0.0	0.0	0.0	(6.3)	(9.3)	(9.2)	(9.1)	(9.0)	(8.8)	(8.8)	(9.2)	(8.6)	(9.0)	(8.4)	(9.5)	(8.1)	(7.3)
Government production share		US$M	(90.6)	0.0	0.0	0.0	(2.6)	(7.3)	(7.1)	(7.0)	(7.1)	(6.8)	(6.9)	(7.8)	(6.7)	(7.6)	(6.4)	(8.3)	(5.5)	(3.5)
Interest		US$M	(84.4)	0.0	0.0	(6.2)	(13.4)	(13.6)	(12.0)	(10.4)	(8.8)	(7.2)	(5.6)	(4.0)	(2.4)	(0.8)	0.0	0.0	0.0	0.0
Tax		US$M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Debt Drawdowns		US$M	200.0	0.0	0.0	155.0	45.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Debt repayments		US$M	(200.0)	0.0	0.0	0.0	(20.0)	(20.0)	(20.0)	(20.0)	(20.0)	(20.0)	(20.0)	(20.0)	(20.0)	(20.0)	0.0	0.0	0.0	0.0
Annual Net Cash Flow		US$M	**846.4**	**(24.2)**	**(164.7)**	**(80.5)**	**42.3**	**66.0**	**76.0**	**76.0**	**76.8**	**75.2**	**76.1**	**84.8**	**76.1**	**85.0**	**95.6**	**114.1**	**92.0**	**79.8**
Cummulative Net Cash Flow		US$M		**(24.2)**	**(188.9)**	**(269.4)**	**(227.1)**	**(161.1)**	**(85.1)**	**(9.1)**	**67.7**	**142.9**	**219.0**	**303.8**	**380.0**	**464.9**	**560.5**	**674.6**	**766.6**	**846.4**
IRR				**21%**																

The GCP has a net cash flow equal to US$846.4M to 2027 (see Figure 17.7 and Figure 17.8).

Figure 17.8 GCP Overall Cash Flow (US$M)



The net annual cash flow is positive in 2014, as shown in Figure 17.9 and Figure 17.10.

Figure 17.9 CP Net Annual Cash Flow

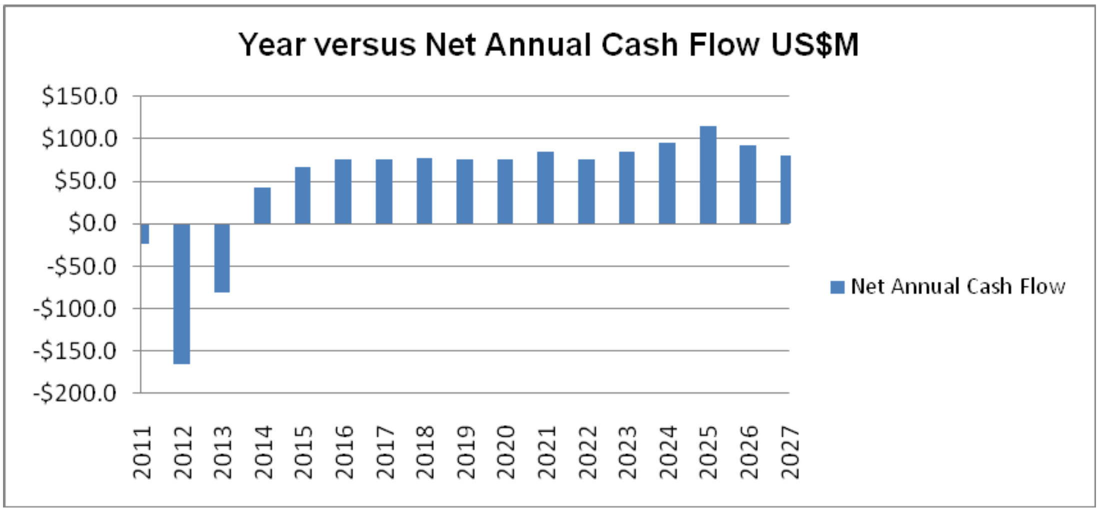
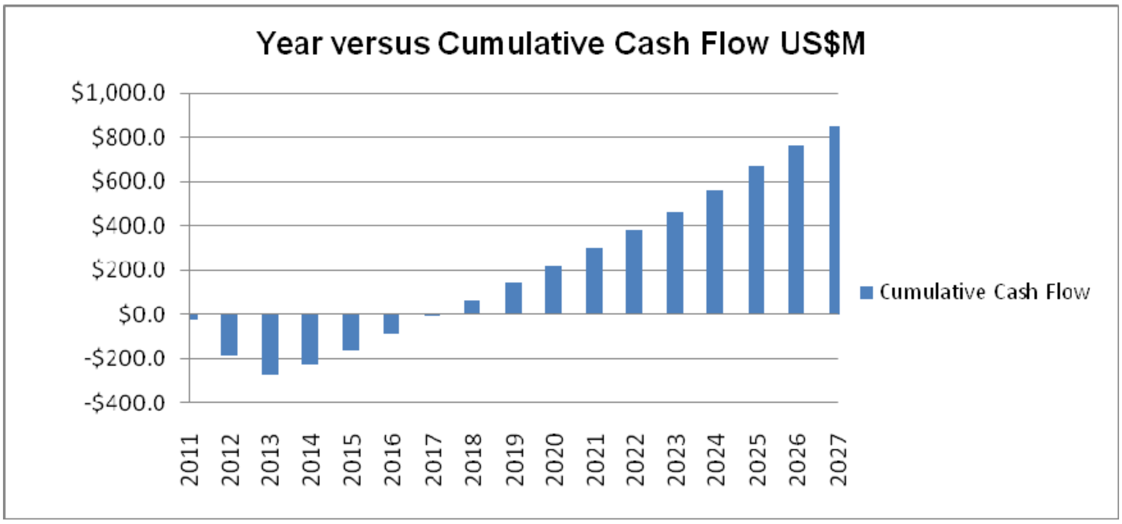


Figure 17.10 GCP Overall Cash Flow (US$M)

The Internal Rate of Return of the GCP to 2027, assuming 50% debt and 50% equity is 21%. The Net Present Value (NPV) of the Project to 2027 is US$209.3M.

The GCP experiences positive payback in 2018, shown in Figure 17.11, with cumulative revenue of US$67.8M in that year.

Figure 17.11 GCP Cumulative Cash Flow

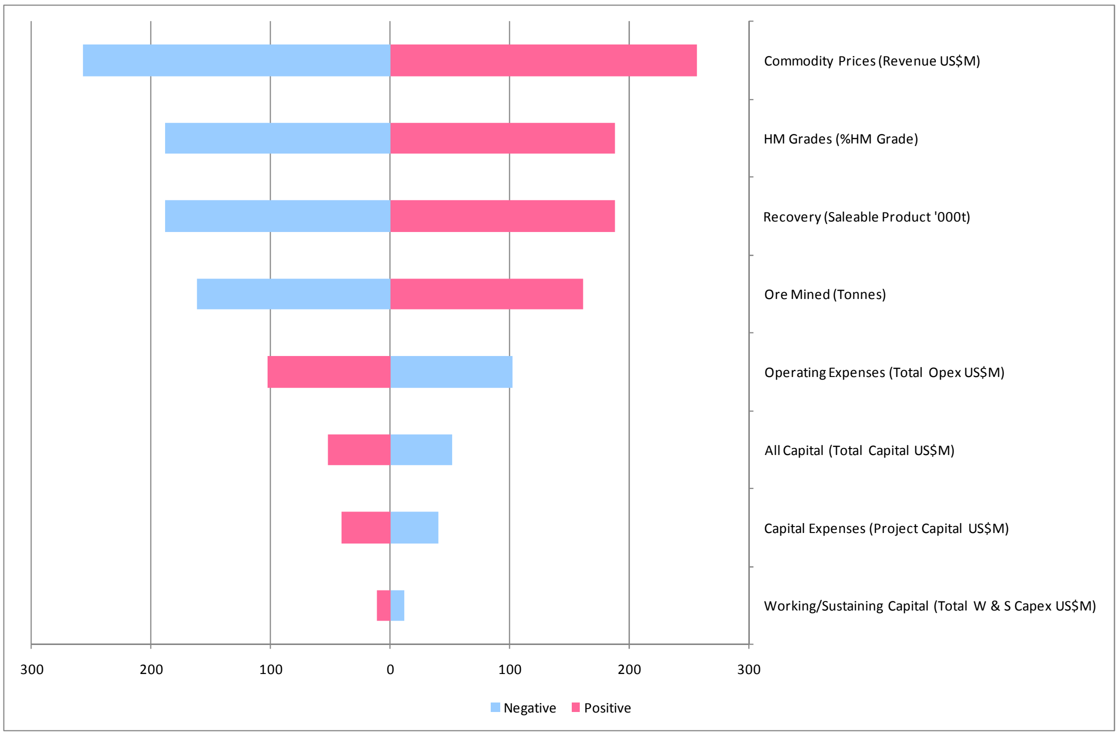


Single point deterministic sensitivity analysis was conducted whereby a parameter was varied in isolation to all other parameters and the economic performance of the project determined. The parameters that have been selected for single point sensitivity analysis represent those which could be considered to have a material impact on the project value, either in isolation or combined with other factors. In some cases, such as heavy mineral grade, commodity price, operating and capital costs, the multiple entries were varied as a single entity.

Sensitivities have been evaluated across a range of +/- 10%. In terms of net revenue, and shown in Figure 17.12, the GCP is most sensitive to:

- Commodity Price
- Heavy Mineral Grade
- Recovery
- Ore mined
- Operating Expenses
- All Capital Expenditure
- Fixed Capital Expenditure
- Working and Sustaining Capital Expenditure

Figure 17.12 GCP Sensitivity Analysis Impact on Net Revenue



The impact of sensitivity analysis across a range of +/- 10% on IRR is summarised in Table 17.6.

Table 17.6 Sensitivity Impact on IRR

Sensitivity	IRR @ 90%	IRR @ 100%	IRR @ 110%	IRR Change +/-10%
Ore Mined (Tonnes)	18%	21%	24%	6%
HM Grades (%HM Grade)	17%	21%	24%	7%
Recovery (Saleable Product '000t)	17%	21%	24%	7%
Commodity Prices (Revenue US$M)	16%	21%	26%	10%
Operating Expenses (Total Opex US$M)	23%	21%	19%	-4%
Capital Expenses (Project Capital US$M)	24%	21%	18%	-6%
All Capital (Total Capital US$M)	24%	21%	18%	-6%
Working/Sustaining Capital (Total W & S Capex US$M)	21%	21%	21%	<-1%

The greatest negative IRR impacts are from:

- All Capital Expenditure
- Fixed Capital Expenditure
- Operating Expenses
- Working and Sustaining Expenditure

The greatest positive IRR impacts are from:

- Commodity Price
- Heavy Mineral Grade
- Recovery
- Ore mined

Given that commodity price, heavy mineral grade, recovery and ore mined all result in both increased net revenue and project IRR, the greatest potential upside for the GCP can be achieved by optimizing internal mining and processing practices in a climate of reasonable macro-economic parameters.

17.13 Risks and Opportunities

The risks facing the project were identified and assessed by GCO and the project team in two risk workshops. A risk register was developed that identified each risk, assigned a risk rating based on the likelihood and consequences of the risk event occurring and identified appropriate control measures to mitigate and manage the risks. Marketing, financing and political risk consideration was not within the scope of the risk assessment workshops.

A total of 92 risks were identified and assessed, the majority of which are associated with project execution. Of these, the nine risks are summarised in Table 17.7 and considered key issues for the project.

Table 17.7 Summary of Key Issues for Management of GCO Identified in Risk Profile

Class	Risk Summary	Initial Risk Ranking	Proposed Controls	Owner	Revised Risk Ranking
Mining and mineral processing	Poor operational performance at start up.	High	High level of expatriates with knowledge; budget allowance for ramp up; design mine path for first 12 months to suit less experienced operators; cross training; recruitment policy for expatriates and nationals.	GCO	Low
Health and Safety	Traffic incidents on roads or rail.	Extreme	GCO road to ICS and village bypasses; traffic management plan; community education; Contractor compliance with traffic management plan; logistics contractor selection and management.	GCO	Medium
Health and Safety	Public accidents in mine.	Extreme	Fence during construction and security staff control of boundary post construction.	GCO	Medium
Health and Safety	Malaria, dengue.	High	Identification and treatment; utilise Sabodala malaria control programs; spraying; nets; removal of standing water; education programs.	GCO	Medium
Socio-Economic Impact	Lack of community support.	Extreme	Lessons learned from Sabodala; proactive CA plan run by GCO.	GCO	Low
Socio-Economic Impact	Disruption to livelihood assets.	High	Change in the mining plan; strong community relationships; establishing a base line and a transparent process for compensation from the beginning of the project.	GCO	Low

Class	Risk Summary	Initial Risk Ranking	Proposed Controls	Owner	Revised Risk Ranking
Project Execution	Forex increasing cost to complete.	High	Hedging; conservative exchange rate assumptions.	GCO	Low
Project Execution	Capital escalation.	High	Firm price contracts; equipment pricing.	GCO	Medium
Project Execution	Under-resourcing of owner's team and/or EPCM/ contractors.	High	Adequate and timely resource planning.	EPCM/ GCO	Medium

The workshop also identified four opportunities for the project. These opportunities are centred on maximising socio-economic benefits, value engineering to reduce capital costs, improved mineral processing recoveries and longer mine life. In summary:

- The construction and operation of the GCP is expected to result in very substantial financial and social benefits to surrounding communities. These include direct and indirect job creation, creation of local industry to support the project, and training and skills transfer to local people. Added social benefits include improved health and education levels plus improved local infrastructure such as roads.
- During the DFS Ausenco identified considerable capital cost savings that could be obtained through a fresh look at the MSP design and layout. Rationalisation of the structures and facilities including integration of the ilmenite and zircon building at the MSP could result in savings of the order of US$5-10M. In addition, opportunities for further optimisation of the major structural sections of the plant such as pontoons allowing easier transportation and assembly were identified. Funds and schedule allowances are included as part of the project execution phase to realise these opportunities.
- Despite repeatable and consistent results the Rutile and Leucoxene recoveries measured as part of the testwork programme were significantly lower than industry standard recoveries at comparable operations. Therefore there is significant project upside for increased recoveries and revenue from these minerals.
- The DFS scope was based on defining Reserves for the first 14 years of mine life. There is a significant portion of the ore body within the Mining Concession that has not been fully explored. Based on existing geological and exploration data a further 10+ years of project life can be reasonably expected.

18 OTHER RELEVANT DATA AND INFORMATION

All data and information necessary to make this Technical Report understandable and not misleading is included elsewhere the report.

19 INTERPRETATION AND CONCLUSIONS

Since acquiring the right to develop the GCP in 2004, MDL has advanced the project through successive technical and economic studies ranging from exploration to a Definitive Feasibility Study and is now ready to commence development of a major new mineral sands mining and processing operation on the west coast of Senegal. Construction is planned to start in the second quarter of 2011 with first production scheduled for second quarter of 2013 (calendar years).

Exploration has been conducted with two types of drilling, air core reverse circulation (RC) and hand auger, employing sampling and assaying methods that are standard for the mineral sands industry. To the end of May 2010, GCO had drilled 8,285 RC holes for 150,665 m and 12,462 hand auger holes for 45,203 m, which combined with 39,063 m of DuPont drilling, gave a combined total of 234,931 m.

The Measured plus Indicated Resource estimate as at April 2010 is 1,030 Mt averaging 1.7% HM at a cut-off of 1.25% HM and to 6 m below the water table. Standard block modelling techniques were used. The resource estimate was classified in accordance with the JORC Code and reconciled with the 2005 CIM Definition Standards

The Proven plus Probable Reserve estimate as at April 2010, based on an initial mine life of 14 years, is 751 Mt averaging 1.8% HM. The reserve estimate was classified originally in accordance with the JORC Code and reconciled with the 2005 CIM Definition Standards. Mining is planned to be undertaken by a cutter section dredge floating in an artificial pond accompanied by a floating spiral concentrator and producing 55 Mtpa of sand.

Extensive metallurgical testwork on drill hole and bulk samples indicate that a mix of three to four zircon products, two ilmenite products and rutile and leucoxene products is feasible. Overall recovery for HM was 82.6% using standard processing techniques (spiral concentrators, wet high intensity magnetic separation, wet tables, high tension roll separators, rare earth roll magnetic separators, electrostatic plate separators and induced roll magnetic separators). Assumptions include 7,000 tph feed tonnage from the dredge and a plant feed HM grade of 2.0%.

The main infrastructure, comprising mill buildings, power station, fuel storage, administration offices, warehouses and lay-down areas, will be located at the MSP site near Diogo village. The town of Mboro, 25 km south, is adjacent to the Industrie Chemique Senegal (ICS) phosphate mine which has a railhead and loading facilities. Ilmenite will be transported in bulk by road to the ICS loading facilities and then by rail to the Port of Dakar while zircon, rutile and leucoxene will be transported in shipping containers by road to the port. Modeling of water resources and the effects of mining on the water table has shown that the project water requirements (main the dredge pond and processing plant requirements), are able to be met and the affect on regional water resources and the needs of the local community is understood.

GCO has developed, or is currently developing, the environmental plans and systems required under its Mining Concession and is complying with a number of international and national standards, including International Finance Corporation Performance Standards and the Equator Principles.

Annual production is expected to be 575,000 t of ilmenite (400,000 t sulphate and 175,000 t chloride) and 77,000 t of primary zircon and lesser amounts of secondary zircon, rutile and leucoxene. This would represent 8% of the total world zircon production, 1% and 11% of total world rutile and leucoxene production respectively and 9% and 13% of chloride and sulphate ilmenite respectively.

Sales arrangements have been negotiated with a number of customers covering all of the currently envisaged zircon production. The agreements will be formalized after completion of further product quality trials and customer evaluations. These trials are well advanced and have demonstrated that the GCP zircon product will have a competitive edge in terms of product quality against other suppliers. Ilmenite marketing is also being progressed with a number of customers having expressed interest in receiving samples.

Total capital costs are US$406M excluding working and sustaining capital and are spread over years 2011 to 2013. Total operating costs are US$1,024.6M to 2027. The GCP is exempt from Senegalese Government taxes for a period of 15 years from the start of operation, with provision also made for exemptions during investment and development.

The GCP is forecast to generate total gross revenue of US$2,687M to 2027. Net annual cash flow is positive in 2014 at US$42.3M. The total amount of saleable product over the first 15 years of mine life is 9,693,900 tonnes. Zircon sales contribute to 56.9% of total gross revenue, ilmenite 37.0%, leucoxene 3.5% and rutile 2.5%. The Internal Rate of Return to 2027, assuming 50% debt / 50% equity, is 20.9%. The Net Present Value to 2027 is US$209.3M. The project experiences positive payback in 2018.

The Qualified Persons have reviewed or been involved in the preparation of all aspects of the GCP and are satisfied that the technical and economic basis for the project is sound, that all technical work has been undertaken to standards that are consistent with, or exceed, those commonly used in the industry for similar projects and that the economic analyses and forward projections are reasonable based on information currently to hand.

20 RECOMMENDATIONS

No material recommendations.

21 REFERENCES

AGEC 2009: Regional Groundwater Modelling. Grande Cote Zircon Project Diogo Resource, Senegal. Australian Groundwater & Environmental Consultants Pty Ltd. 2009.

AMC Consultants Pty Ltd, August 2007: Comparative analysis of Mineral Sands assays between bulk samples from shaft, RC and auger drilling.

AMC Consultants Pty Ltd, May 2007: Mineral Sand Resource Estimate, Grande Cote.

AMC Consultants Pty Ltd, May 2007: Technical Report for Mineral Deposits Limited, Grande Cote.

AMC Consultants Pty Ltd, September 2006: Mineral Sand Resource Estimate, Grande Cote.

Anon 2002: Roasting testwork on Senegal Ilmenite, Outukumpu, 02/MVHC/10.

Aral, H, et al, 2007: Removal of chromium from Diogo ilmenite, initial four tests, CSIRO, DMR-3335.

AUSENCO 2009a: Mineral Deposits Grande Cote Operations SA – Grande Cost Project DFS – Site Water Balance. Project No. 1938 Rev 1. 24/09/09.

AUSENCO 2009b: Grande Cote Project - Process Control Philosophy Wet Concentration Plant (WCP). File No. 1938-PCP-0001 Rev A. 22/12/09.

AUSENCO 2009c: Grande Cote Project - Process Control Philosophy Mineral Separation Plant (MSP). File No. 1938-PCP-0002 Rev A. 24/12/09.

AUSENCO 2010: Grande Cote Project Process Design Criteria. Specification No. 1938-DC-001 Rev B. 18-Jan-10.

Australian Groundwater and Environmental Consultants Pty Ltd, 2 June 2006: Proposed Grande Cote Seep Test Bores Investigation.

Australian Groundwater and Environmental Consultants Pty Ltd, 9 March 2006: Proposed Grande Cote Hydraulic Conductivity Investigation.

Barrett, P, and Wickham, P, 1993: Appraisal of DuPont heavy mineral sand deposits, Senegal, West Africa, Consolidated Rutile Ltd Report No 93.GEO.5.

BEC 2010: Electrical Equipment Loadings and Maximum Demand Assessment. BEC Engineering, Energy & Control Systems. Document No. 1938-CE-001. 14/01/2010.

BRGM 1983: Hydrogeological Study M'Boro-Lompoul Sector Senegal prepared by D Fohlen and Y Lemordant. Bureau de Recherches Géologiques et Minières, Orléans, France.

Cardrelli, F, 2008: Materials handbook, A concise desktop reference (Second edition), Springer.

Cleaves, C, and Webb, C, 2003: Senegal mineral sands evaluation, Outukumpu, TI-4595.

DAMCO, 2009: Service Offer. Local Service proposal MDL – Querry. Word Document.

Earth Systems 2007: Land, Asset and Livelihood Baseline Study – Grande Côte Zircon Project, October 2007. Prepared for Mineral Deposits Limited Senegal.

Earth Systems 2009: Land Asset and Livelihood Baseline Study – Grande Côte Project.

Earth Systems 2009: Land, Asset and Livelihood Baseline Study – Grande Côte Zircon Project Draft Report, December 2009. Prepared for Grande Côte Operations SA (GCO), Senegal.

Earth Systems 2009: Land, Asset and Livelihood Impact Assessment and Management Strategy – Grande Côte Zircon Project Draft Report, January 2010. Prepared for Grande Côte Operations SA (GCO), Senegal.

Earth Systems 2010: Land, Asset and Livelihood Assessment and Management Strategy – Grande Côte Zircon Project, January 2010. Prepared for Mineral Deposits Limited Senegal.

Earth Systems 2010: Land, Asset and Livelihood Baseline Study – Grande Côte Zircon Project, January 2010. Prepared for Mineral Deposits Limited Senegal.

EMRC 2009: Post mining rehabilitation operations – general considerations, suggested approach and recommended design of rehabilitation trials. Environmental Management and Research Consultants (EMRC). Prepared for Mineral Deposits Limited Grande Côte Zircon Project.

Fallows, A, et al, 2006: WCP and MSP flowsheet confirmation and development testwork on 80 tonne and 40 tonne bulk samples, Roche Mining (MT), MS.06/81339/1.

Gamma Logistics, 2010: Proposal for the Trucking of 600,000 Tons of Ilmenite. NosRef. ADD/3005-08, Dakar, 30 May 2010.

Germain, M, 2008a: WCP flowsheet confirmation on a 40t ROM "Sample A", Downer EDI Mining, MS.08/81724/1.

Germain, M, 2008b: WCP flowsheet confirmation on a 40t ROM "Sample B" using HC1RS spiral separators, Downer EDI Mining, MS.08/81738/1 Rev 1.

Gibson G. 2009: Personal Communication ref. seismicity in Africa.

JKMRC Technology Transfer June 2005: Several reports on MLA analysis of samples from the GCZP Diogo, April 2005 and MLA analysis of samples Lompoul North, Lompoul South, Fass Boye and Mboro.

Kruger, A, and MacHunter, R, 2002: Production of primary grade zircon from Senegal sands material, Roche Mining (MT), Report No 02/80747.

MacHunter, R, 2001: Generation of ilmenite type product from a sample of mineral sand originating from Senegal France. MD Metallurgical Services Report No MS.01/80490/1.

McDonald, K, et al, 2002: Mineral separation and Becher upgrading testwork on Senegal ilmenite concentrates, CSIRO, DMR-2066.

MDL 2006: Marketing Report.

MDL 2007: Managing Sustainability. (Available from MDL website).

MDL December 2009: Grande Côte Transport Strategy Document.

MDL June 2007: Grande Côte Zircon Project Senegal- on the Coast north of Dakar.

MDL October 2008: Grande Côte Zircon & Ilmenite Project- Project Summary.

MDL, Triggs July 2008: ICT Requirements and Implementation Plan.

Meyerhof G. G., 1963: Some Recent Research on the Bearing Capacity of Foundations. Canadian Geotechnical Journal, Vol. 1, No. 1, 1963, pp. 16-26.

November 2009: Sabodala Strategy Papers; Grande Côte Power Station Strategy Paper.

Peck R.B., Hanson W.E. & Thornburn, T.H., 1974: Foundation Engineering. John Wiley & Sons, New York.

Port Authority Dakar 2006: Charges Applicable to Ships. Port Authority, Dakar. Port Charges-1.pdf.

Pownceby, M, et al, 2002: Distribution of chromium in a Senegal ilmenite concentrate - characterisation and acid digestion testwork, CSIRO, DMR-2011.

PSM 2010: Draft Grande Cote Mineral Sands Mining - Water Requirements and Regional Groundwater Impacts. PSM Australia Pty Ltd. Report No. 349.01. March 2010.

Sall, M & Vanclooster, M. 2009: "Assessing the well water pollution problem by nitrates in the small scale farming systems of the Niayes region, Senegal" Agricultural Water Management 96, 1360–1368.

Selvey, B and MacHunter, R, 2004a: Mineral Deposits Ltd (MDL) Senegal attritioning testwork for the reduction of iron in zircon, Roche Mining (MT), MS.04/80989/1.

Selvey, B and MacHunter, R, 2004b: Mineral Deposits Ltd (MDL) Senegal wet plant and drymill bulk sample processing, Roche Mining (MT), MS.04/80950/1.

Selvey, B, et al, 2004: MDL Senegal wet-mill and dry-mill circuit revision testwork, Roche Mining (MT), MS.04/81042/1.

Selvey, B, et al, 2005: Mineral Deposits Limited Diogo mineral sands project, Senegal 50kg sample, Roche, MS.05/81313/1.

SGO, 2010: Structure des prix des produits petroliers, Comite National Des Hydrcarbures, Ministere De L'Energie. "Structure des prix du 20 février 201011.pdf".

Shaw, M, and van Wyk, M, 2002: Senegal sands investigation, Kumba Resources, Report No 2002-07-15.

SHELL 2010: Gasoil diesel and FO prices and specs (Shell) Feb 2010.xls.

Stephenson 2007: Technical Report for Mineral Deposits Limited (Available from MDL website).

Strathearn 2010: Construction and Operational Insurance Programme for Mineral Deposits Limited, Grande Cote Mineral Sands Project – Senegal. April 2010. Strahearn Insurance Brokers, 8 Kings Park Road, West Perth WA.

Terzaghi K. & Peck R.B., 1967: Soil Mechanics in Engineering Practice. 2nd edition, John Wiley & Sons, New York.

Transrail 2010: Direction Generale, No 000297. Quotation. 26th April, 2010. Lettre N°000297.pdf.

Tropica 2005: Etude d'Impact Environnementale et Social Projet Zircon de la Grande Côte. Prepared for Mineral Deposits Limited Sénégal S.A.R.L. by Tropica Environmental Consultants.

TZMI 2006: RMB Resources Limited: Independent Market Study of Mineral Deposits Limited Grande Côte Zircon Project.

TZMI 2009: Mineral Sands Annual Review June 2009.

TZMI 2009: The Global Zircon Industry: The New Decade.

TZMI 2010: Grande Côte Market Report: Bankable Feasibility Study for Mineral Deposits Limited.

Umwelt 2009: Grande Côte Zircon Project Conceptual Closure Plan, Draft Report, November 2009. Prepared for Grande Côte Operations SA (GCO), Senegal.

Umwelt 2009: Grande Côte Zircon Project Conceptual Closure Plan, Draft Report, November 2009. Prepared for Grande Côte Operations SA (GCO), Senegal.

Umwelt Environmental Consultants, 2010a: Draft Grande Cote Project Environmental and Social Monitoring Manual. Prepared by Umwelt (Australia) Pty Limited on behalf of Grande Cote Operations. Report No. 2261/R03/V4. March 2010.

Umwelt Environmental Consultants, 2010b: Draft Proposed Groundwater Quality Monitoring Plan – Grande Cote. Prepared by Umwelt (Australia) Pty Limited on behalf of Grande Cote Operations. Report No. 2261/R11/V3. March 2010.

Wärtsilä October 2009: Proposal "Offer for Grande Côte Project in Senegal".

Webb, C., 2001: Ilmenite evaluation from Senegal, Outukumpu, TI-4463.

Zircon Grande Côte Mining Project, Logistics Proposal Solutions, Bollore - Division Terrestre International.

22 DATE AND SIGNATURE PAGE

Signed by:

P R Stephenson
Principal Geologist, Regional Manager, AMC Mining Consultants (Canada) Ltd
[Signed and sealed]

S Williams:
Principal Mining Consultant, Group Manager, Mine Analytics, AMC Consultants Pty Limited
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R Webster:
Principal Geologist, AMC Consultants Pty Limited
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On 28 July 2010

Effective date of report 16 June 2010

23 QUALIFIED PERSONS' CERTIFICATES

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1. I, Patrick Roger Stephenson, PGeo, BSc (Hons) FAusIMM (CP), MCIM, FAIG, do hereby certify that I am Principal Geologist and Regional Manager of AMC Mining Consultants (Canada) Limited, Suite 1330, 200 Granville Street, Vancouver, British Columbia V6C 1S4.
2. I graduated with a BSc (Hons) in Geology from the University of Aberdeen, Scotland in 1971.
3. I am a Fellow of The Australasian Institute of Mining and Metallurgy (Chartered Professional), a Member of the Canadian Institute of Mining, Metallurgy and Petroleum and a Fellow of the Australian Institute of Geoscientists.
4. I have worked as a geologist for a total of 39 years since my graduation from university.
5. I have read the definition of "Qualified Person" set out in National Instrument 43-101 ("NI 43-101") and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "Qualified Person" for the purposes of NI 43-101.
6. I am responsible for the preparation of the technical report titled "Grande Côte Zircon Project, Senegal, West Africa. Technical Report for Mineral Deposits Limited", and dated 16 June 2010 (the "Technical Report") relating to the Grande Côte Zircon Project. I visited the Grande Côte Zircon Project on 4 May 2007 for four days.
7. I have had prior involvement with the property that is the subject of the Technical Report. The nature of my prior involvement is that I authored a Technical Report on the property for Mineral Deposits Limited dated 8 November 2007.
8. I am not aware of any material fact or material change with respect to the subject matter of the Technical Report that is not reflected in the Technical Report, the omission to disclose which makes the Technical Report misleading.
9. I am independent of the issuer applying all of the tests in section 1.5 of National Instrument 43-101.
10. I have read National Instrument 43-101 and Form 43-101F1, and the Technical Report has been prepared in compliance with that instrument and form.

11. I consent to the filing of the Technical Report with any stock exchange and other regulatory authority and any publication by them for regulatory purposes, including electronic publication in the public company files on their websites accessible by the public, of the Technical Report.

Dated 28 July 2010.

Patrick Roger Stephenson

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1. I, Rodney L Webster, BappSc, MAusIMM, do hereby certify that I am Principal Geologist of AMC Consultants Pty Ltd, Level 19, 114 Williams Street, Melbourne, Victoria, Australia 3000.
2. I graduated with a BSc in Geology from the Royal Melbourne Institute of Technology, Melbourne, Victoria, Australia in 1979.
3. I am a Member of The Australasian Institute of Mining and Metallurgy.
4. I have worked as a geologist for a total of 30 years since my graduation from university.
5. I have read the definition of "Qualified Person" set out in National Instrument 43-101 ("NI 43-101") and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "Qualified Person" for the purposes of NI 43-101.
6. I am responsible for the preparation of Section 16 of the technical report titled "Grande Côte Project, Senegal, West Africa. Technical Report for Mineral Deposits Limited", and dated 16 June 2010 (the "Technical Report") and have relied on other experts and contributors as listed in preparing the report. I have not visited the site.
7. I have had prior involvement with the property that is the subject of the Technical Report. The nature of my prior involvement is that I have prepared mineral resource estimates and authored relevant reports for Mineral Deposits Limited dated from 2005 to 2010.
8. I am not aware of any material fact or material change with respect to the subject matter of the Technical Report that is not reflected in the Technical Report, the omission to disclose which makes the Technical Report misleading.
9. I am independent of the issuer applying all of the tests in section 1.5 of National Instrument 43-101.
10. I have read National Instrument 43-101 and Form 43-101F1, and the Technical Report has been prepared in compliance with that instrument and form.

11. I consent to the filing of the Technical Report with any stock exchange and other regulatory authority and any publication by them for regulatory purposes, including electronic publication in the public company files on their websites accessible by the public, of the Technical Report.

Dated 28 July 2010.

Rodney Webster

S Williams
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1. I, Stephen Morrice Williams, BEng (Mining) (Hons), MBus (Organisational Dynamics), MAusIMM, do hereby certify that I am Principal Mining Consultant and Group Manager – Mine Analytics for AMC Consultants Pty Limited, Level 19, 114 William Street, Melbourne, Victoria, Australia 3000.
2. I graduated with a BEng (Hons) in Mining from The University of Melbourne in 1985.
3. I graduated with a MBus in Organisational Dynamics from Swinburne University in 2002.
4. I am a Member of The Australasian Institute of Mining and Metallurgy.
5. I have worked as a mining engineer for a total of 22 years since my graduation from university.
6. I have read the definition of “Qualified Person” set out in National Instrument 43-101 (“NI 43-101”) and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a “Qualified Person” for the purposes of NI 43-101.
7. I am responsible for the preparation of the technical report titled “Grande Côte Project Definitive Feasibility Study – Engineering and Technical, Technical Report for Mineral Deposits Limited”, and dated June 2010 (the “DFS”) relating to the Grande Côte Project. I visited the Grande Côte Project on 11 September 2009 for two days.
8. I am not aware of any material fact or material change with respect to the subject matter of the Technical Report that is not reflected in the Technical Report, the omission to disclose which makes the Technical Report misleading.
9. I am independent of the issuer applying all of the tests in section 1.5 of National Instrument 43-101.
10. I have read National Instrument 43-101 and Form 43-101F1, and the Technical Report has been prepared in compliance with that instrument and form.

11. I consent to the filing of the Technical Report with any stock exchange and other regulatory authority and any publication by them for regulatory purposes, including electronic publication in the public company files on their websites accessible by the public, of the Technical Report.

Dated 28 July 2010.

Stephen Williams

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Australia

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1. I, Pier Sileno Federici, BEng (Mining Eng), MAusIMM, do hereby certify that I am Principal Mining Engineer, AMC Mining Consultants Pty Ltd, Level 19, 114 William Street, Melbourne, Victoria, Australia 3000.
2. I graduated with a BEng (Mining Eng) from Curtin University, Kalgoorlie, Western Australia in 1991.
3. I am a Member of The Australasian Institute of Mining and Metallurgy.
4. I have worked as a mining engineer for a total of 19 years since my graduation from university.
5. I have read the definition of “Qualified Person” set out in National Instrument 43-101 (“NI 43-101”) and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a “Qualified Person” for the purposes of NI 43-101.
6. I am responsible for the Mineral Reserves in the technical report titled “Grande Côte Project, Senegal, West Africa. Technical Report for Mineral Deposits Limited”, and dated 16 June 2010 (the “Technical Report”) relating to the Grande Côte Project. I visited the Grande Côte Project on 11 September 2009 for two days.
7. I have had prior involvement with the property that is the subject of the Technical Report. The nature of my prior involvement is that I authored the mining sections of the June 2010 Definitive Feasibility Study prepared by AMC Consultants Pty Ltd.
8. I am not aware of any material fact or material change with respect to the subject matter of the Technical Report that is not reflected in the Technical Report, the omission to disclose which makes the Technical Report misleading.
9. I am independent of the issuer applying all of the tests in section 1.5 of National Instrument 43-101.
10. I have read National Instrument 43-101 and Form 43-101F1, and the Technical Report has been prepared in compliance with that instrument and form.

11. I consent to the filing of the Technical Report with any stock exchange and other regulatory authority and any publication by them for regulatory purposes, including electronic publication in the public company files on their websites accessible by the public, of the Technical Report.

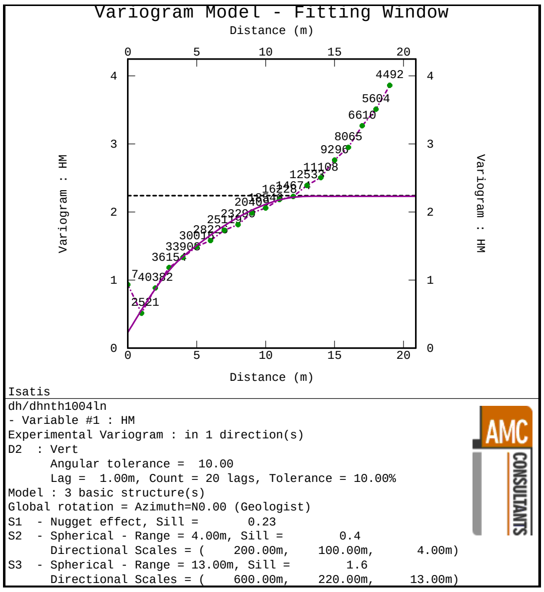
Dated this 28 July 2010.

Pier Federici

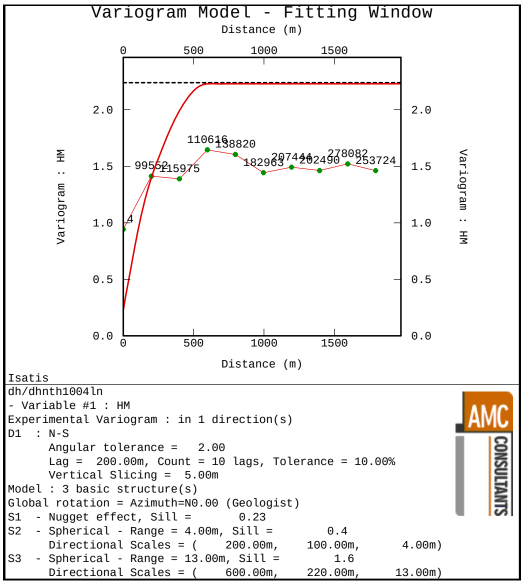
APPENDIX 1

VARIOGRAMS

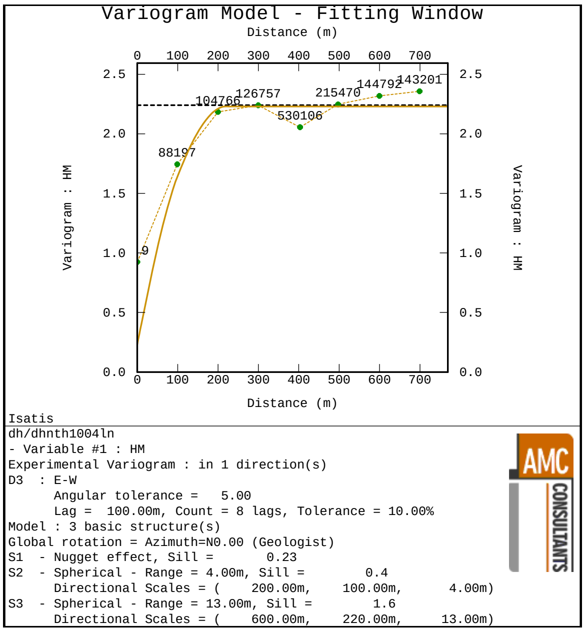
Vertical Variogram – Northern Domain



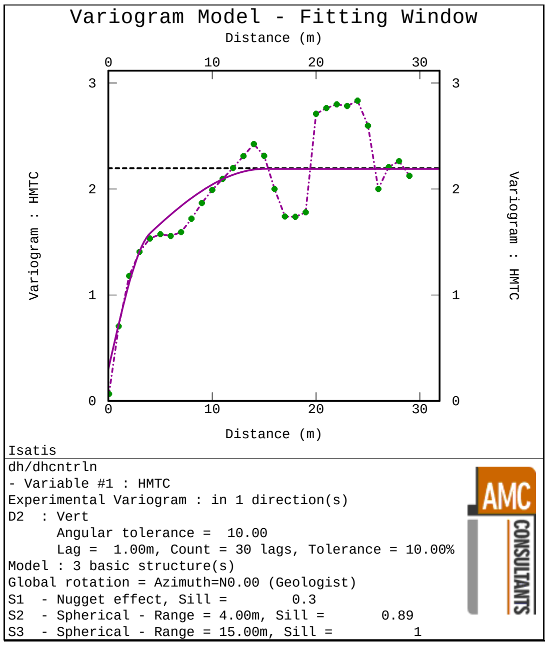
North-South Variogram – Northern Domain



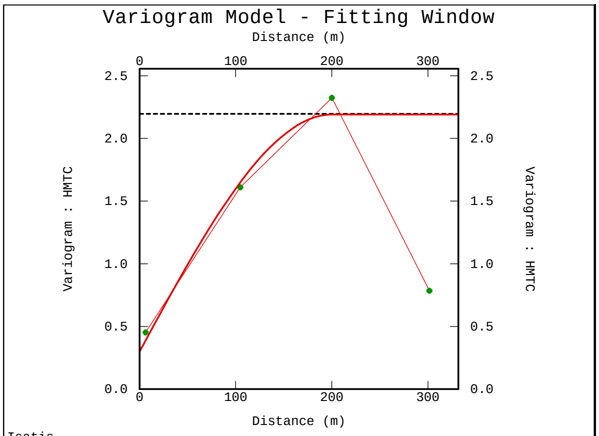
East-West Variogram – Northern Domain



Vertical Variogram – Central Domain

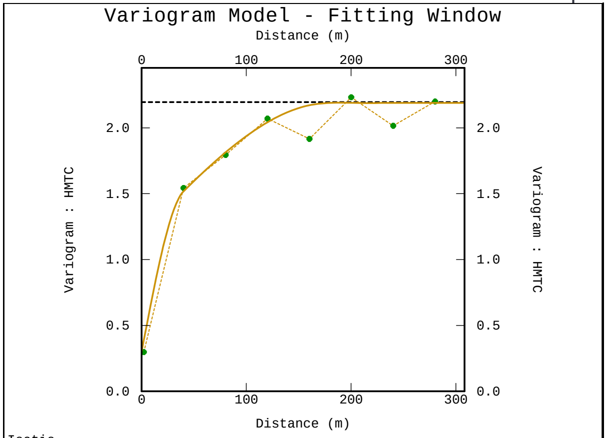


North-South Variogram – Central Domain



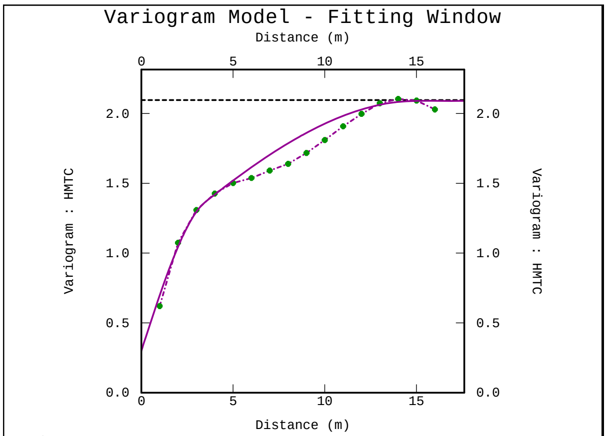

```
Isatis
dh/dhcntrln
- Variable #1 : HMTC
Experimental Variogram : in 1 direction(s)
D1   : N-S
      Angular tolerance =  10.00
      Lag =  100.00m, Count = 4 lags, Tolerance = 10.00%
      Vertical Slicing =  5.00m
Model : 3 basic structure(s)
Global rotation = Azimuth=N0.00 (Geologist)
S1  - Nugget effect, Sill =        0.3
S2  - Spherical - Range = 4.00m, Sill =        0.89
      Directional Scales = (    200.00m,      40.00m,       4.00m)
S3  - Spherical - Range = 15.00m, Sill =           1
      Directional Scales = (    200.00m,     180.00m,      15.00m)
```

East-West Variogram – Central Domain




```
Isatis
dh/dhcntrln
- Variable #1 : HMTC
Experimental Variogram : in 1 direction(s)
D3   : E-W
      Angular tolerance =  10.00
      Lag =  40.00m, Count = 8 lags, Tolerance = 10.00%
Model : 3 basic structure(s)
Global rotation = Azimuth=N0.00 (Geologist)
S1  - Nugget effect, Sill =        0.3
S2  - Spherical - Range = 4.00m, Sill =        0.89
      Directional Scales = (    200.00m,      40.00m,       4.00m)
S3  - Spherical - Range = 15.00m, Sill =           1
      Directional Scales = (    200.00m,     180.00m,      15.00m)
```

Vertical Variogram – Southern Domain

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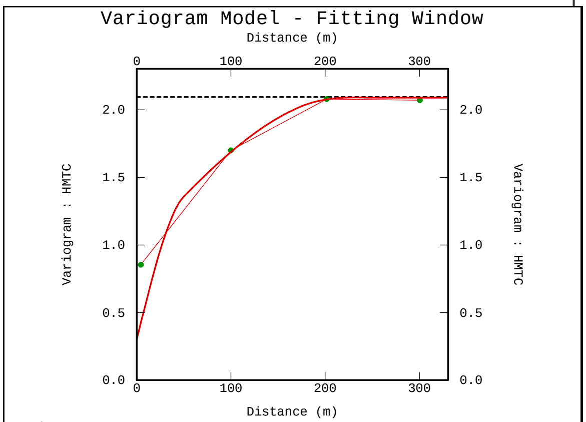
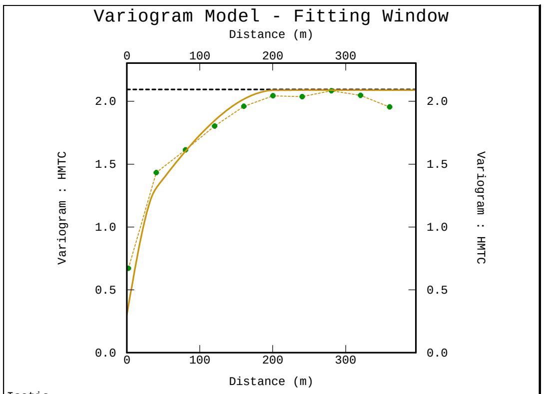
Isatis
dh/dhsthln
- Variable #1 : HMTC
Experimental Variogram : in 1 direction(s)
D2   : Vert
      Angular tolerance =  10.00
      Lag =  1.00m, Count = 17 lags, Tolerance = 10.00%
Model : 3 basic structure(s)
Global rotation = Azimuth=N0.00 (Geologist)
S1  - Nugget effect, Sill =        0.3
S2  - Spherical - Range = 3.50m, Sill =        0.69
      Directional Scales = (     50.00m,      40.00m,       3.50m)
S3  - Spherical - Range = 15.00m, Sill =         1.1
      Directional Scales = (    220.00m,     205.00m,      15.00m)
```

North-South Variogram – Southern Domain




```
Isatis
dh/dhsthln
- Variable #1 : HMTC
Experimental Variogram : in 1 direction(s)
D1   : N-S
      Angular tolerance =  10.00
      Lag =  100.00m, Count = 4 lags, Tolerance = 10.00%
      Vertical Slicing =  1.00m
Model : 3 basic structure(s)
Global rotation = Azimuth=N0.00 (Geologist)
S1  - Nugget effect, Sill =        0.3
S2  - Spherical - Range = 3.50m, Sill =        0.69
      Directional Scales = (     50.00m,      40.00m,       3.50m)
S3  - Spherical - Range = 15.00m, Sill =         1.1
      Directional Scales = (    220.00m,     205.00m,      15.00m)
```

East-West Variogram – Southern Domain

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Isatis
dh/dhsthln
- Variable #1 : HMTC
Experimental Variogram : in 1 direction(s)
D3   : E-W
      Angular tolerance =  10.00
      Lag =  40.00m, Count = 10 lags, Tolerance = 10.00%
Model : 3 basic structure(s)
Global rotation = Azimuth=N0.00 (Geologist)
S1  - Nugget effect, Sill =        0.3
S2  - Spherical - Range = 3.50m, Sill =       0.69
      Directional Scales = (      50.00m,      40.00m,       3.50m)
S3  - Spherical - Range = 15.00m, Sill =        1.1
      Directional Scales = (     220.00m,     205.00m,      15.00m)
```
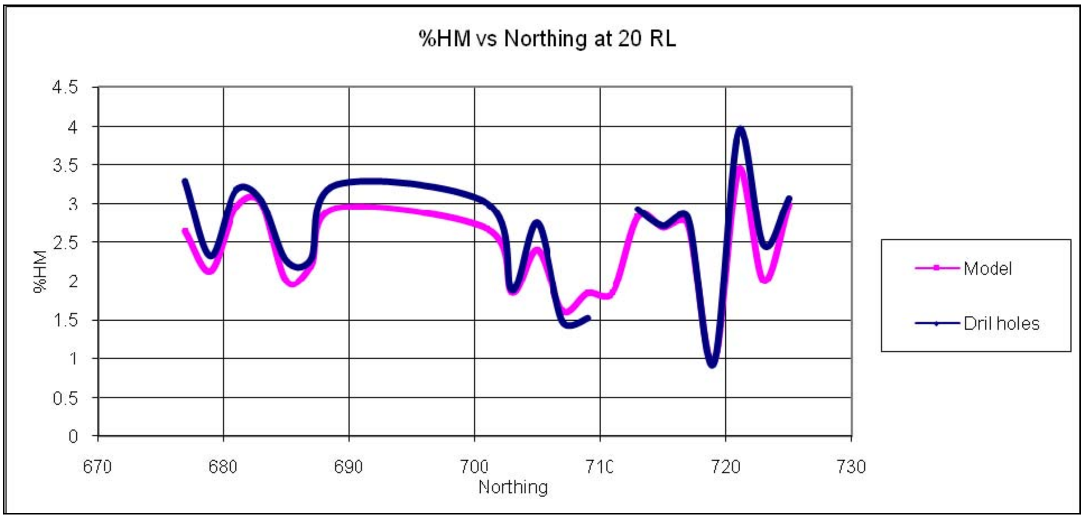
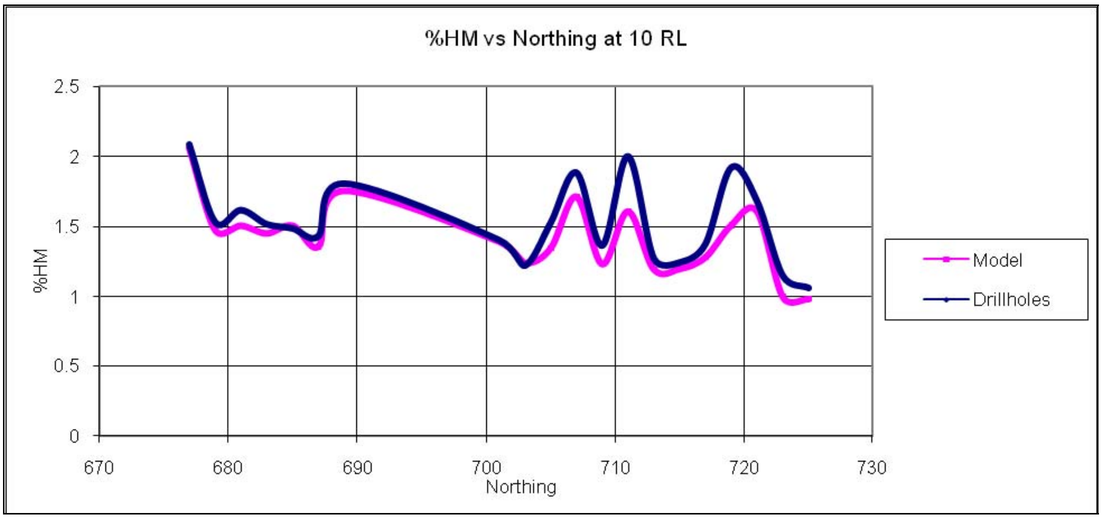

APPENDIX 2

SWATH PLOTS

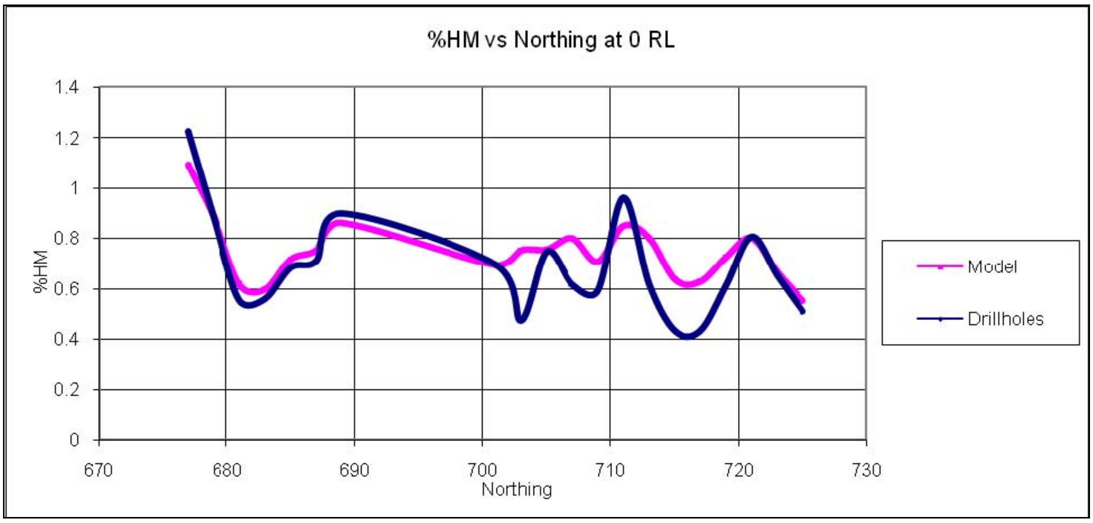
North-South Swath Plot at 20m RL



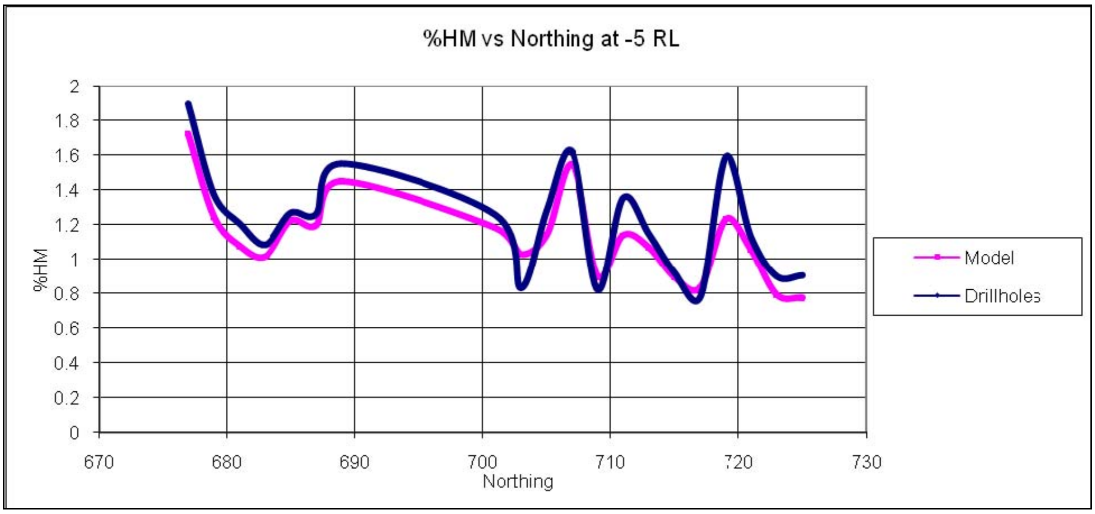
North-South Swath Plot at 10m RL



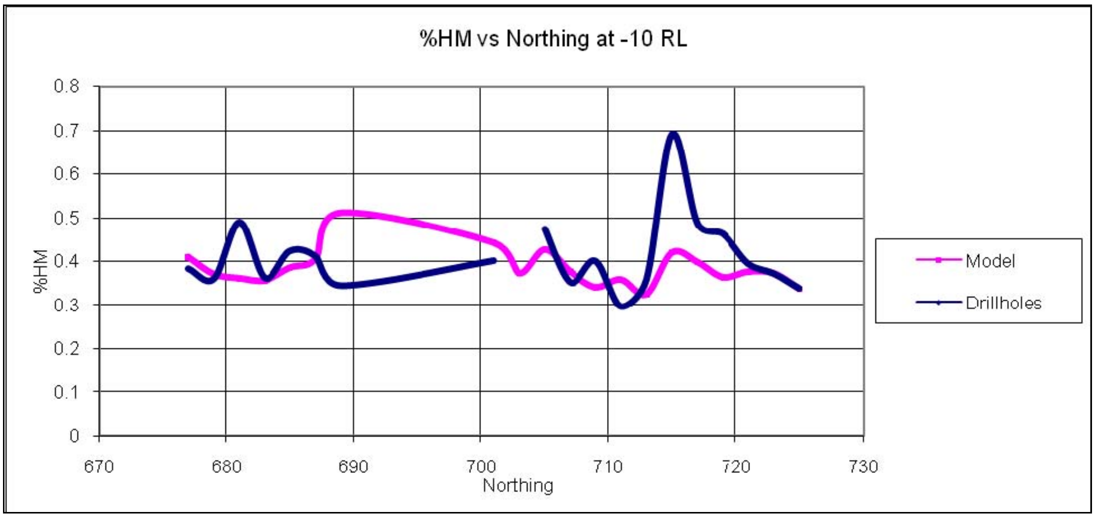
North-South Swath Plot at 0m RL



North-South Swath Plot at -5m RL



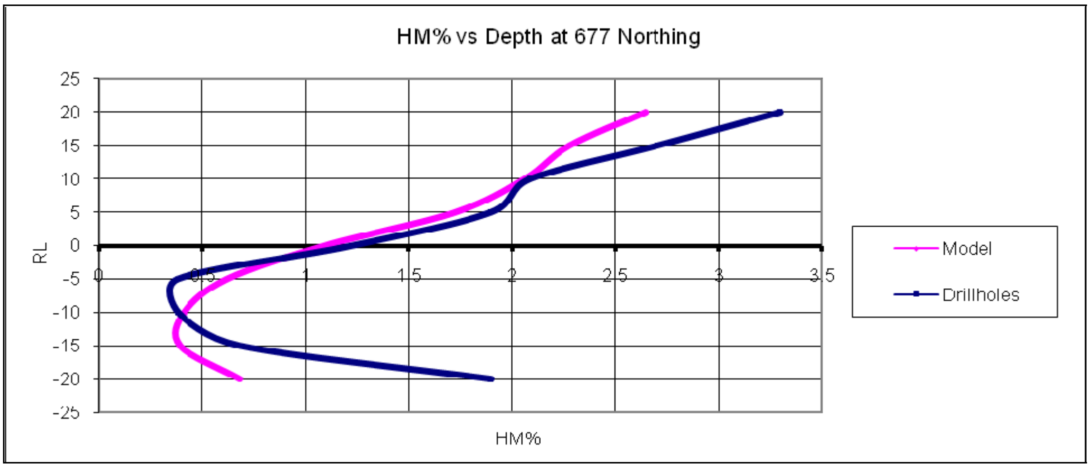
North-South Swath Plot at -10m RL



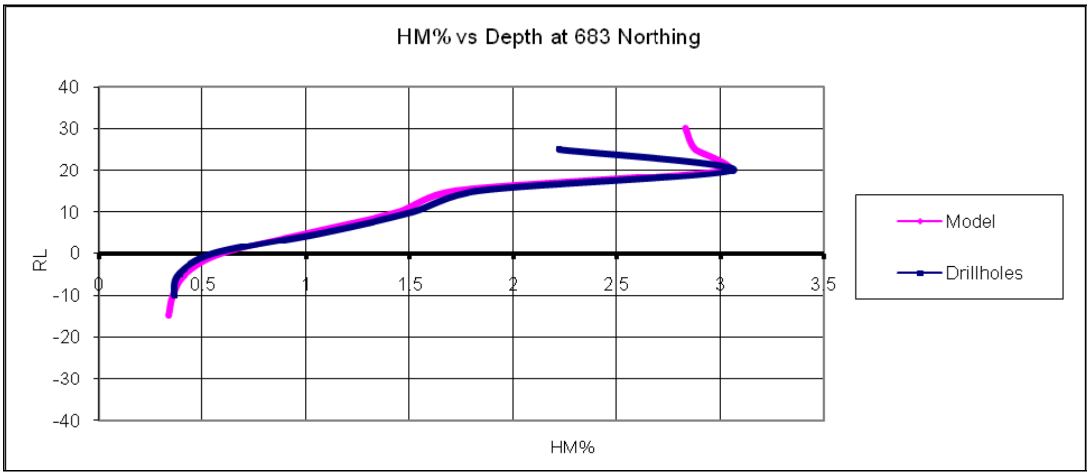
APPENDIX 3

RL V HM PLOTS

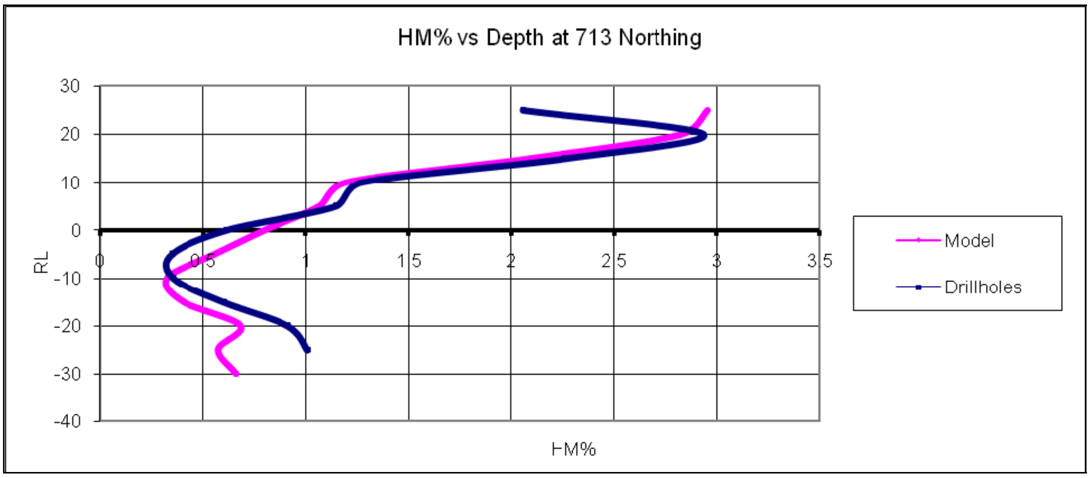
RL vs HM% at 677,000mN



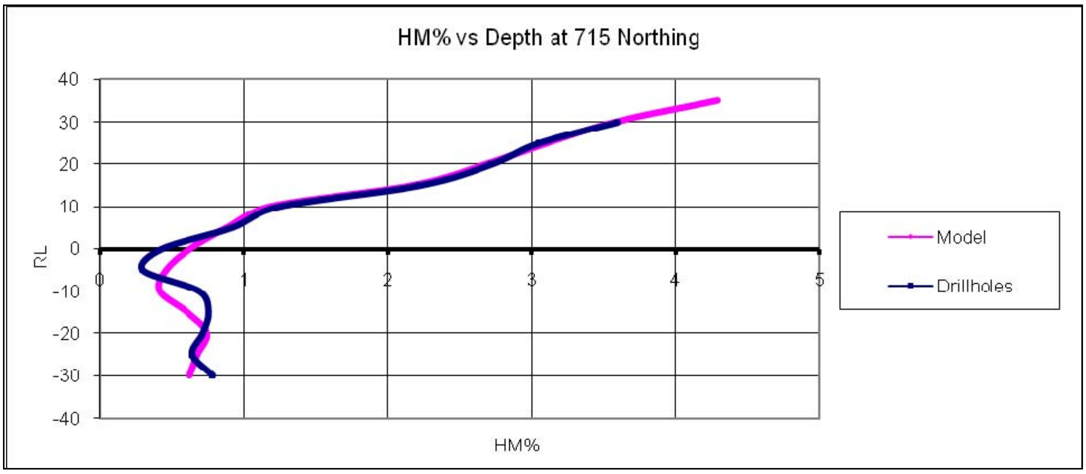
RL vs HM% at 683,000mN



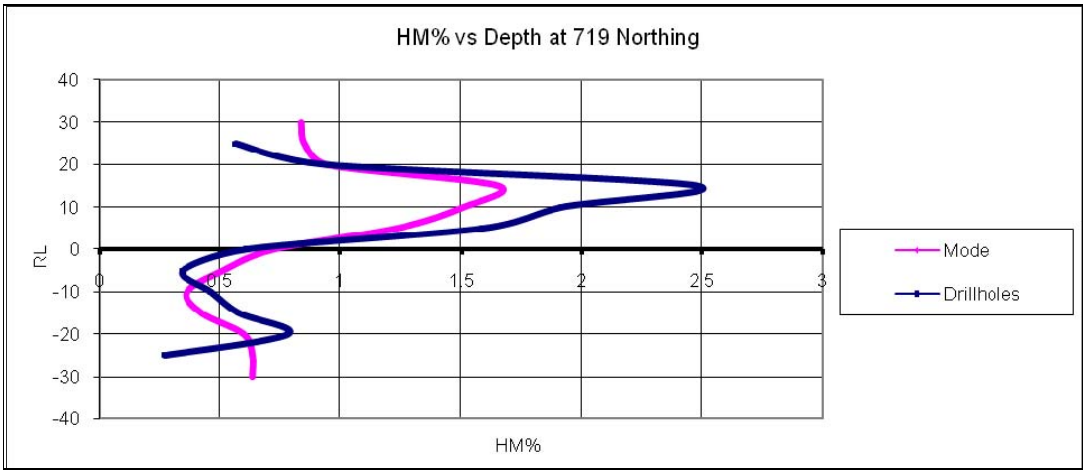
RL vs HM% at 713,000mN



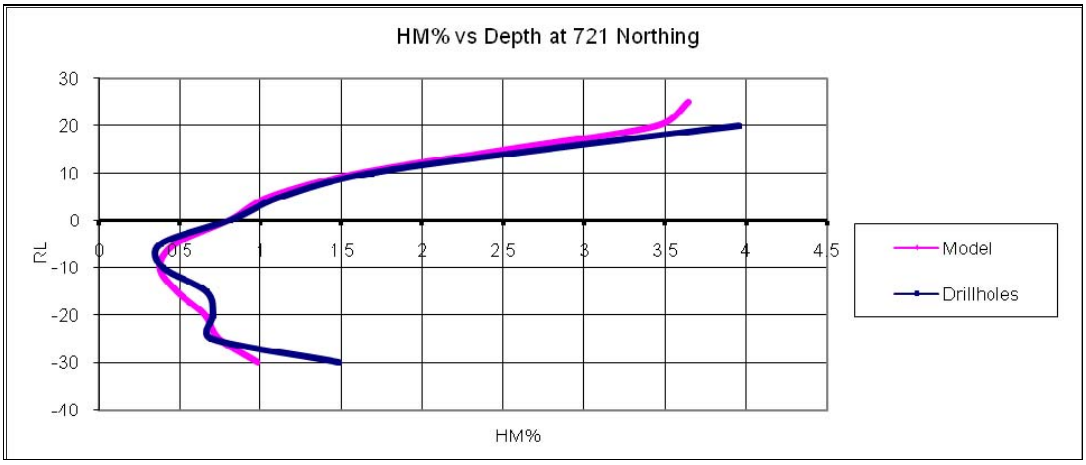
RL vs HM% at 715,000mN



RL vs HM% at 719,000mN



RL vs HM% at 721,000mN



RL vs HM% at 723,000mN