INDEPENDENT TECHNICAL REPORT ON THE 7b MARINE DIAMOND CONCESSION, SOUTH AFRICA

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April 2015

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INDEPENDENT TECHNICAL REPORT ON THE 7b MARINE DIAMOND CONCESSION, SOUTH AFRICA

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PREPARED FOR ZONE ONE DIAMONDS (Pty) LTD & MZA DIAMOND RESOURCES (Pty) LTD

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1. SUMMARY

The 7b Marine Diamond concession is held by MZA Diamond Resources (Pty) Ltd., a subsidiary of Zone One Diamonds (Pty) Ltd, a company established in South Africa for the purposes of exploration and mining of diamonds. Sea Concession 7b is located in the mid-waters on the inner shelf portion of the continental shelf of the West Coast of South Africa some 1km offshore between Hondeklip Bay and Kleinzee. This area is particularly well known for its high yield of good quality gem diamonds.

MZA Diamond Resources (Pty) Ltd has a prospecting right and permission to remove and dispose of diamonds granted in terms of the sections 17(1) and 20(2) of the Mineral and Petroleum Resources Development Act. 2002 (Act 28 of 2002) at Sea Concession 7b.

Several decades of large scale diamond mining on the neighbouring marine and land concessions places 7b with its almost completely unexploited diamondiferous gravels in the heart of a renowned diamond mining area.

The water depths range from 12m to over 100m, with the deepest portion being in the north, off Still Bay and in the south, off Hondeklip Bay. However, about 60% of the Concession lies between the 30m and 50m isobaths. Geophysical survey data indicates that the bedrock has a moderate to rugged relief and represents areas where the bedrock micro-relief reached and exceeds 3m. These areas are regarded as areas that impede the sediment transport along the sea bottom by wave action through the creation of physical barriers. The high bed roughness results in turbulent flow conditions where the higher energy turbulence improves the capacity of winnowing the sediment, thereby leaving behind the heavier fraction including diamonds.

Submerged fluvial channels extending seawards from Langklip Bay and between Hondeklip Bay and the Swarttintjies River are clearly indicated by the bathymetry. Elsewhere, channel-like depressions (submerged river valleys) occur off Enkelduin Bay and off Mooordenaars Bay. These pronounced channel-like depressions could be earlier outlets of Megaladon channels. Several of these sediment-filled depressions cut across Concession 7b and continue through this Concession to water depths of at least 100m and beyond. It is therefore likely that these depressions were formed by fluvial erosion during these sea-level regressions, just to be filled again with upward fining sediments during subsequent aggrading conditions during transgressive phases. The rivers would have acted as point sources for diamonds eroded during these sea-level regressions from the emerged marine terraces at higher levels. Gravels found associated with the wave-cut terraces and depressions at water depths associated with sea-level stillstands, could then be expected to be diamondiferous to the same extent as their onshore counterparts. These onshore corresponding deposits have
been mined at the Koingnaas, Hondeklip Bay and Kleinzeee mines for several decades at average grades exceeding 30cpht and locally reaching more than 377cpht.

The broad terraced nature of the seafloor, characterised by a generally low seaward gradient, is particularly evident in the region north of the Swartlintjies River. Farther seaward the bedrock slope increases appreciably below 50m water depth and continues to where the offshore mud-belt covers the steeply dipping bedrock at ~70m below sea level. Curvilinear isobaths in the south off Enkelduin Bay are indicative of the extensive sediment deposit that is situated in this region.

The southern portion of Concession 7b exhibits prominent reefs, expressed as “rugged relief” on the seafloor physiographic maps. The region of the Swartlintjies River is generally of low to subdued relief rendering it highly prospective. More so with its position north of the river mouth, which must be considered to be a point source of diamonds eroded from the high grade raised marine terraces in the vicinity, which improves the probability of finding high grade diamondiferous deposits in this northern portion of the Concession. A prominent submerged river channel about 1km south of the Swartlintjies River, as well as channel features at Moordenaars Bay, are expected to offer similar potential and may be indicative of a meandering Swartlintjies River or its Megaladon predecessor.

Since detailed diamond recovery data from Concession 7b is not available, no specific grade data can be presented for this concession. Neighbouring onshore mines and sea concessions have been mined for years and have been explored in detail. Diamond grades obtained from these adjoining areas show high average diamond grades obtained from the terrace deposits, with even higher grades obtained in the fluvial channels. Diamond grades in marine terraces at the onshore mines average above 30cpht and the onshore components of palaeo-river channels extending into 7b yielded grades exceeding 377cpht.

The location of 7b, and the geological continuity between 7b and its neighbours, places it in a very favourable location to yield comparable diamond grade values as seen in the mines surrounding it.

Creo believes that the surveying and sampling done to date are sufficient to delineate potential exploration targets. Surveying work undertaken indicates good marine terrace and fluvial channel development that should support areas of diamond concentration. Infill and extensional surveying and sampling will improve the geological and resource confidence in these areas identified as targets.
2. **INTRODUCTION AND TERMS OF REFERENCE**

Zone One Diamonds (Pty) Ltd is engaged in the exploration for diamonds in the mid-waters on the inner shelf portion of the continental shelf of the West Coast of South Africa on sea concession 7b through its subsidiary, MZA Diamond Resources (Pty) Ltd.

This report describes the 7b Marine Diamond Concession geology at the hand of historic studies done in this area with specific reference to the sea floor conditions such as bathymetry and sediment characteristics and its influence on the diamond mineralisation in the area. The Zone One Diamonds Board requested the preparation of this report in the form of a Competent Person’s Report on its 7b Concession.

The currency used in this report is expressed in US dollars and, unless specified, all measurements in this report use the metric system. Coordinates used within this report are Universal Transverse Mercator (UTM), and are reported in UTM zone 34S, WGS 84 datum.

The sections on Mining Operations, Process Mineral Recoveries, Markets, Contracts, Environmental Considerations, other Relevant Data and Information, Taxes, Capital and Operating Cost Estimates, Economic Analysis, Payback, and Life of Mine are not applicable to this report. All illustrations are embedded within the body of this report.

### 2.1 Competent Person

Johan Hattingh is employed by Creo as a geologist with more than 20 years of experience and is the author responsible for the preparation of this report. He is a Competent Person (“CP”), as defined by the SAMREC Code issued under the auspices of the South African Institute of Mining and Metallurgy (“SAIMM”).

### 2.2 Site Visits

Johan Hattingh is very familiar with the West Coast geology and has regularly visited the 7b Marine Diamond Concession and neighbouring areas during the last 20 years where he has worked on- and off-shore diamond mines.

### 3. RELIANCE ON OTHER EXPERTS

Johan Hattingh, as author of this Technical Report, states that he is a competent person for the areas as identified in the appropriate “Certificate of Competent Person” attached to this report.

Dr Hattingh and co-workers from Creo have followed standard professional procedures in preparing the content of this report. Data used in this report has been verified.
where possible, and this report is based on information believed to be accurate at the
time of its completion. The author has relied on information derived from the reports
pertaining to mineral rights permitting issues supplied by the directors of Zone One
Diamonds (Pty) Ltd.

3.1 Mineral Tenure
Creo’s CP has reviewed the mineral tenure related to the 7b Sea Concession area and
has independently verified the legal status and ownership of the 7b Marine Diamond
Concession area including underlying property agreements.

3.2 Permitting
Regarding the status of the current permit, Creo’s CP has independently verified the
information, opinions and data supplied by Zone One Diamonds (Pty) Ltd representatives as far as possible.

3.3 General
The information mentioned in the above sections was sourced from scans and
photocopies of official documents, which has been supplied by Zone One Diamonds
(Pty) Ltd.

For the preparation of this report, the author has relied on maps, documents, and
electronic files provided by the Zone One Diamonds (Pty) Ltd’s management. To the
extent possible under the mandate of a SAMREC review, the data has been verified
with regard to the material facts relating to the prospectivity of the property reviewed
in this report.

4. CORPORATE STRUCTURE

The 7b offshore diamond concession is held by MZA Diamond Resources (Pty) Ltd. Mza
Diamond Resources (Pty) Ltd is owned 67% by Zone One Diamonds (Pty) Ltd and Zone
One Diamonds (Pty) Ltd is 100% held by the Steenkamp family. A further 30% of the
shares in Mza Diamond Resources (Pty) Ltd is owned by a BEE partner, Vuyo Bavuma
and the remaining 3% of Mza Diamond Resources (Pty) Ltd is held directly by the
Steenkamp family.

5. PROPERTY DESCRIPTION AND LOCATION

5.1 Location
The 7b Concession, the subject of this report, is 108,344 km² in size and is located
along the South African West Coast from just north of the Spoeg River mouth
(6630552.92 S) in the south to just north of Koingnaas in the north (6659621.00 S) -
a distance of approximately 30km. The eastern boundary of the concession is situated on the seaward side of a line 1.0km from the high water mark stretching seawards for 3.5km to its western boundary.

Concession 7b is contiguous with, and seaward of, Concession 7a. It is between 2.5 and 4.0km wide and covers an area of 108 344km² (Figure 1).

Boundary coordinates: NW \( x = 709505.00 \) E \( y = 6659621.00 \) S NE \( x = 724328.75 \) E \( y = 6659621.00 \) S SW \( x = 733818.56 \) E \( y = 6630552.92 \) S SE \( x = 738218.62 \) E \( y = 6630552.92 \) S

The concession is centred on coordinates 6644539.47m S; 711 55.63m E, WGS84 (UTM15).

The coastal towns of Hondeklip Bay and Koingnaas are the nearest towns to the concession. Hondeklip Bay is the closest available port, situated at the southern limit of Concession 7b (Figure 1). It is a small fishing port, accessible to medium-sized vessels, making it suitable for exploration and prospecting vessels up to about 24m in length. Hondeklip Bay, and Port Nolloth to the north, are the only safe anchorages available in the area.

5.2 Property Title and Land Tenure

MZA Diamond Resources (Pty) Ltd., a South African registered company, currently has the rights to prospect for diamonds in Concessions 7b. This prospecting permit has been issued on 14 March 2014, and is renewable after five years subject to conditions set out in the prospecting lease and Sections 17(1) and 20(2) of the Mineral and Petroleum Resources Development Act. 2002 (Act 28 of 2002).

Land ownership of the offshore area within the boundaries of Concession 7b is vested in the Government of South Africa and is regarded as communal area under control of South African maritime law and accessible to the local fishing and mining industry.
Figure 1: Location map of Concession 7b license area.
6. **ACCESSIBILITY, PHYSIOGRAPHY, CLIMATE, INFRASTRUCTURE, AND SECURITY**

6.1 **Access**
Access by road from Cape Town to the 7b area is via the tarred N7 northwards to Springbok. At 6.5 km north of Garies a gravel road to Hondeklip Bay turns off to the west. By following this gravel road for some 80 km the town of Hondeklip Bay is reached, providing access to the project areas via the harbour.

Hondeklip Bay is served by a small fishing port that harbours small diamond mining and fishing vessels. Secondary roads along the coast are good quality dirt roads.

6.2 **Physiography**
The coastal topography around Concessions 7b is generally flat across a ~30 km wide stretch of sandy coastal lowland, which terminates to the east against the mountain-land at the Great Escarpment.

6.3 **Climate**
The climate on the coast is predominantly the result of weather systems in the southern Atlantic and the Southern Oceans. An arid climate prevails along the Southern African West Coast region. Annual rainfall at Hondeklip Bay is approximately 150 mm per year, mainly in the winter months. Average day temperatures range from 30°C in summer to 18°C in winter, whereas the night temperatures range between 17°C in summer to 8°C in winter.

The wind plays a major role in sea conditions and sediment movement on the sea bed. From time to time, the prevailing south-westerly winds, occurring in summer, reach gale force velocities in excess of 70 km/h, producing swells of up to a maximum height of 10 m.

North-westerly winds are the dominant wind in winter when cold fronts reach the coast from the southern Atlantic Ocean. Intense storms associated with passing cold fronts unleash high energy winds and extreme wave regime conditions, a major driving force behind sediment movement. The west coast is further affected by hot, dry easterly katabatic winds that occur mainly during winter. A large volume of sediment is then transported onto the continental shelf by these winds, locally known as "berg winds".

6.4 **Local Resources and Infrastructure**
Hondeklip Bay is the closest available port for Concession 7b, situated some 1 km due east of the central portion of the Concession. As mentioned before, the port is
accessible by up to 16 medium-sized vessels (up to 24m in length), and provides a suitable logistics base for operations on the concessions.

However, since the severe storm on 18 June 2002, the mid-section of the jetty is not in use. Gravel concentrate and fuel is therefore transferred by rubber-duck from the harbour or beach. Port Nolloth offers an alternate viable port for medium-sized diamond mining vessels.

The entire coastline is accessible from a well-kept public dirt road, with smaller roads leading off to the beach areas, where launching is possible. Drinking water is available at Hondeklip Bay from the Kamiesberg Municipality. No national network electricity supply is available in the sparsely populated land region adjacent to Concession 7b, but at both Hondeklip Bay and Koingnaas electricity is available from the Kamiesberg Municipal grid.

Staff accommodation on a temporary or long-term basis is available in Hondeklip Bay and Koingnaas. An abundant supply of manual and semi-skilled labour is readily available from the local population at Hondeklip Bay and Koingnaas.

All roads in and around the mine are gravel and well-maintained. Water bowsers are utilized to spray the roads to limit dust entrainment into the atmosphere during the dry months.

Fuel is delivered to site by petroleum suppliers. Mainly diesel fuel is used and is stored in 23 000l storage tanks at both Hondeklip Bay and Koingnaas.

7. **EXPLORATION HISTORY**

7.1 **Regional History**
In August 1925 Jack Carstens found a diamond at the Buffels River mouth at Oubeep. The year 1926 saw a number of discoveries along the Namaqualand coast and in particular near the mouth of the Buffels River, the site of the present Kleinzee Diamond Mine. Carstens recovered thousands of carats of diamonds near the mouth of the Buffels River and De Beers subsequently obtained all the claims Carstens and his partner owned on the West Coast.

Large and highly profitable mines were established along the coast all the way from the mouth of the Orange River in the north to south of the mouth of the Olifants River. Large scale diamond mining along this entire area started soon after the initial discovery, but was limited to the beach and neighbouring raised marine terrace deposits.
Onland mining takes place along the entire Namaqualand coastal plain. De Beers reports a total of 768 480 carats recovered from their Namaqualand mines by 2010 and a remaining reserve of 10 million carats in their inventory. Alexkor recovered 9.2 million carats at a grade of 10cpht since 1928. The Trans Hex Group (THG) operated mines at Hondekliip Bay and Buffelsbank and is still active on the Lower Orange River valley. Since 1965 THG recovered some 3.7 million carats from its projects on the West Coast (Table 1).

Table 1: Diamond production along the West Coast of South Africa

<table>
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<tr>
<th>Mines</th>
<th>Carats</th>
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<tr>
<td>Lower Orange THG</td>
<td>1800000</td>
</tr>
<tr>
<td>Lower Orange Octha (estimate)</td>
<td>750000</td>
</tr>
<tr>
<td>Hondekliip Bay</td>
<td>703000</td>
</tr>
<tr>
<td>Kleinzee (BMC) / Koingnaas</td>
<td>770000</td>
</tr>
<tr>
<td>Buffelsbank</td>
<td>1200000</td>
</tr>
<tr>
<td>Alexkor</td>
<td>9200000</td>
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Source: Personal communication - Bertus Cilliers (THG) and Jurgen Jacobs (Namdeb)

Only by the 1960’s did the diamonds in the sea along this coastal area start to attract attention. Texan oil lawyer and entrepreneur Sam Collins realised the opportunity in mining diamonds from the sea bed and approached the authorities for permission to mine diamonds in the Southern Namibia shallow to mid-waters in 1961. His first diamonds were recovered in 1964 using primitive barges fitted with airlifts to recover diamonds from the shallower areas along the coast up to Hottentot Bay north of Luderitz. Mr. Collins was able to recover around 788 000 carats of diamonds by the time De Beers bought all the marine mining rights from him in the late 1960’s.

The first sea Concessions in South Africa were issued in the early 1970’s, leading to about 100 land-based diamond divers operating their suction pipes in the shallow water zone on concessions along the coast. However, weather conditions and poor visibility limited operations to an average of 6 days per month. Despite these limitations divers successfully removed hundreds of thousands of carats from shallow water concessions over the past 45 years. Diver-operated mining still takes place in the surf-zone all along the West Coast.

In 1981 the South African government restructured the concessions, and the continental shelf was then subdivided into 20 blocks, each with three marine diamond concessions. These consist of the shallow water "a", the mid-water "b" and the deep-water "c" concession areas (figure 2). In August 1994 ultra deep-water "d" concessions were added, covering the shelf between the 200m and 500m isobaths.
Figure 2: Map of the West Coast of South Africa showing the offshore diamond concessions.
In the early 1980’s De Beers’ emphasis shifted to prospecting in the deeper, mid-shelf areas in water depths of 120m to 150m off the Namibian coast, where the company hoped to locate substantially larger resources that could be exploited more profitably.

By 1990 it had indeed succeeded in delineating large ore reserves and had developed the technology to recover these deposits. In 1991, De Beers Marine changed from an exploration to a mining company producing 170 744 carats in its first year and maintaining annual production increases since then. Offshore diamond production by Namdeb alone reached 497 128 carats in 1998. The steady growth indicates that future emphasis will increasingly be on diamond production from marine resources. In 2009 De Beers Marine Namibia were producing 969 000 carats, and at present marine diamond production by De Beers outperforms land based diamond production in Namibia (Anonymous, 2010).

During the early 2000’s De Beers deployed its first deep sea mining vessel south of the Orange River in South African waters reportedly producing an average of around 20 000 carats of diamonds per month. De Beers recently identified the mid-water areas with its rugged seafloor and multitude of diamond trapsites as a high potential diamond production area. The company announced that it was well advanced in developing specialised technology to mine the mid-water concessions successfully.

Exploration offshore of the South African West Coast has been dominated by the work of De Beers in the deep water “c” Concessions and by the BHP/Benguela Concessions JV in a few mid-water “b” Concessions, while dozens of small operators using smaller centrifugal pumps mined, and continue to mine, the surf zone. Currently prospecting and mining is being undertaken by divers in all the “a” Concessions to the north of Concession 7b, and in Concessions 12a and 13a to the south of 7b (Figure 2).

Recent substantial improvements in marine diamond exploration techniques and mining technology, as well as a better understanding of the depositional environments of diamondiferous deposits, have resulted in renewed interest in the potential of mid-water deposits.

7.2 Property-Scale Exploration History
Limited exploration work has been done in Concession 7b to date. The first work of note was done during two brief reconnaissance surveys by de Beers Marine in the mid-1980’s as part of a regional survey of the area. Samples were taken from 2 cruises in February and August 1985. Exploration work focussed on the evaluation of the physiography of the Concession by the interpretation of side-scan sonar, seismic and bathymetric data and the identification of sampling targets.
These targets encompass a number of features such as palaeo-channels, terraces, and embayments, which form the more probable depositional environments for potentially diamondiferous deposits. Only partial data is available from this survey.

Much more detailed geophysical surveys were completed on Concession 7b by Ocean Diamond Mining Holdings Ltd (ODM) in 1994. The survey line spacing was 20m along a coast-parallel orientation. Coast-perpendicular lines were run at 400m spacing in selected areas where sediment cover warranted these orthogonal lines. Side-scan sonar, high resolution seismics and echosounder data were recovered during the survey.

As part of a review of 7b, de Decker (1997) analysed and re-interpreted the data recorded by ODM. The echosounder data was digitised and used to produce a bathymetric chart at 5m isobath intervals (Figure 3).

High resolution seismic data, obtained from a 12.75 kHz transducer, gave seismic profiles that showed penetration into unconsolidated sediment of up to 3m and generally over 10m penetration in the muds on the seaward, and on the boundary of the Concession. The seismic data obtained along the coast-perpendicular lines were used to determine the distribution of unconsolidated sediment thicker than 5m (Figure 4).

No record of sampling data is available.

8. GEOLOGICAL SETTING

8.1 Geomorphology
Shaping of the landscape and coastal platform features on the West Coast were initiated with the fragmentation of Gondwana. By ~150Ma, rifting of the Gondwana supercontinent was well advanced resulting in fault-bound grabens that developed parallel to the approximately north-south basement structural grain along the newly formed coastline. This was associated with the intrusion of dolerite dykes along the faults and lineaments in the basement with volcanic activity in places. Faulting resulted in the westward rerouting of drainage courses and with it sediment transport to the down-faulted crustal blocks, and of the new coastline and beyond into the newly formed Orange River Basin (Rogers et al., 1990). In southern Namaqualand, the rifting volcanic activity had a counterpart at depth involving the intrusion of granite and numerous dykes and plugs. This Koegel Fontein Complex (De Beer, 2010) consists principally of the Rietpoort Granite that is dated at ~133Ma. It is exposed in the coastal hinterland hills north of the Sout River.

By ~130Ma, new oceanic crust was being generated in the opening Atlantic and the separation of Africa from South America was in an advanced stage. High energy
erosion by rivers cutting back into the escarpment during the Cretaceous exposed the coastal bedrock of meta-sediments and gneisses from beneath a cover of Karoo and Nama rocks. The unroofed Rietpoort Granite is testimony of considerable erosion during the retreat of the escarpment and the formation of the coastal plain. The eroded material was fed offshore into the Orange River Basin.

The last volcanicity affecting Namaqualand took place east of Kotzesrus, where a cluster of small plugs of olivine melilitite, the Biesjes Fontein Suite (De Beer, 2010), intruded the Rietpoort Granite. These volcanoes are of late Cretaceous to early Tertiary age. The Sandkopsdrift Complex, a larger volcano north of Rietpoort, was evidently the final eruption.

At the end of the Cretaceous (65Ma ago), enormous volumes of sediment had been eroded from the subcontinent, and the basic topographic elements of the Great Escarpment and interior and coastal ‘African’ surfaces of southern Africa had taken shape (Partridge 1997). This landscape evolution took place throughout the late Cretaceous and Palaeogene times, with marked fluvial incision during the Oligocene regressions, having a lasting effect in providing the “antecedent” topography for subsequent Tertiary sedimentation (Pether, 1994).

Evidence suggests that the coastal plain was transgressed during Cretaceous high sea-levels. Transgressive Eocene events also affected the coastal plain, and deposits of this period are found in southern Namibia. This earlier marine record, with palaeo-shorelines that are now uplifted to 150 to 250m amsl., have been eroded from the Namaqualand coastal plains, but its resistate heavy mineral content (including diamonds) was eroded and eventually deposited in Oligocene fluvial palaeo-channels, the so called Megaladon channels.

Incised into the coastal platform on a weathered land surface are remnants of Megaladon channels, whose in-fills have also been kaolised, disguising their presence. Horizons of pedogenic silcrete have also formed within the channel deposits in places. These channel sediments consist of sub-angular quartz para-conglomerates, locally rich in diamonds, overlain by layers of clayey sand, clay and carbonaceous, peaty material. Previously referred to as the “Channel Clays” by De Beers’ geologists, these deposits are now proposed as the Koingnaas Formation (De Beer, 2010).

These landscape shaping events left a prominent escarp in the hinterland formed by river denudation cutting into the highland in the interior, leaving a well developed coastal platform onto which rivers drain to the coast. Some of the river channels are deeply incised into the coastal platform in response to a combination of tectonic tilt and sea level decline.
Figure 3: Bathymetry of Concession 7b (after de Decker, 1997).

Figure 4: Bed morphology and sediment map of Concession 7b (after de Decker, 1997).
8.2 Regional Geology

The oldest basement rocks of the coastal plain are comprised of metamorphic formations (meta-sediments), gneisses and granites of the Namaqualand Metamorphic Province (1200Ma to 1000Ma old). These rocks are locally overlain by meta-sediments (quartzites, schists, phyllites and marbles) of the Gariep Supergroup, between 770Ma and 550Ma old. Sandstones and shales of the Nama Group and the Vanrhynsdorp Group occur inland below the escarpment. These sediments are generally well-preserved and deposited during the Precambrian-Cambrian boundary of around 540Ma (De Beer, 2010).

Recently discovered Oligocene river systems that are buried by younger sediments were found to host enormous alluvial deposits. The deposits were christened "Megalodon" after Carcaradon Megalodon, the largest shark that ever lived. Fossilised remains of the shark - including its teeth - have been found during mining operations by De Beers in the area (Pether, 1994). These channels are mainly parallel to the coast and in places they curve westward to meet the coast line. Airborne geophysical surveys delineated the complex pattern of these river channels in the Buffets Marine Complex (BMC) and Koingnaas areas. In places the channels can be followed for up to 90km and was shown by drilling to extend down to more than 200m below surface. Channels meeting the coastline have produced exceptional diamond grades during recent onshore mining operations.

Studies by De Wit (1993) and Van der Westhuizen (2012) show that the Palaeo-Orange River switched direction at the Prieska fluvial junction from northward to southward during the very humid Late Cretaceous period to culminate at what is now the Olifants River Mouth. During the subsequent Oligocene to early Miocene periods, the palaeo-Orange drainage system migrated along a relic glacial valley, the Koa River Valley, to exit once again at the present Orange River Mouth. The tremendous role of the Orange River System and other westward draining rivers in delivering vast quantities of diamonds to the West Coast was emphasized by Gurney et al., (1991); De Wit (1993) and Van der Westhuizen (2012).

By the mid-Pliocene, the mid-Orange River switched completely to the north at the Prieska junction to move to its present-day course. During this period river systems on the coastal platform of the West Coast were actively cutting into the Great Escarpment and by doing so, managed to cut into the diamondiferous terrace deposits left by the migrating palaeo-Orange River in the Namaqualand interior. This process accounts for the widespread occurrence of diamonds along the South African West Coast, between the Olifants River in the south and the Orange River in the north.

The six main diamond-carrying rivers of Southern Africa are the Orange River, 130km north of the Buffels River, 68km north of the Swartlintjies River, 25km north of the Spoeg River, 50km north of the Groen River, and 120km north of the Olifants River.
The Swartlintjies River, which exits into Concession 7a, is surrounded by high-grade marine terraces and palaeo-river channels on land, which were intensively mined by De Beers Namaqualand Mines at their Koingnaas Mine.

The Spoeg River, which exits into the northern part of Concession 8a, is similarly surrounded by high-grade marine terraces on land, which were also intensively mined by De Beers Namaqualand Mines at their Mitchells Bay Mine, south of Hondeklip Bay.

All these rivers acted as point sources introducing diamonds to the coast from where it was distributed northward by long shore drift processes. Keyser (1972) discovered the significance of river mouths acting as point sources for diamond enrichment on the adjacent marine terraces, in particular on the northern down-current side.

9. WAVE REGIME OF THE WEST COAST

Since the South Atlantic Anticyclone became established during Tertiary times as the dominant weather pattern impacting upon the West Coast of Southern Africa, prevailing wind and wave direction ranged between south and west, and in particular south-southwest to west-southwest.

Wave currents therefore move sediment primarily in a northeasterward direction, upslope upon the West Coast shoreface, while gravity backwash pulls sediment back downslope in a westward direction. The resultant zigzag motion progresses steadily northward.

In the nearshore environment, wave-induced bottom-currents are powerful enough down to 10m depth, to regularly move entire bodies of coarse-grained and sand-sized sediment down to 23m depth during winter storms.

Storms during winter with strong north-westerly winds also succeed in moving gravel in a southerly direction, all the time concentrating heavy minerals into trapsites. The overall effect of these weather forces is to supply the driving force behind migration of large diamondiferous gravel bodies along the coastline, which is predominantly northward. This creates ideal winnowing conditions where the lower density sediment is entrained more readily, leaving behind a lag deposit of higher density minerals including diamonds in trap sites.

10. SEA LEVELS

Tectonic movements since the Oligocene and the climatic conditions, in particular glacial and interglacial events during the Pleistocene, caused sea level stands to rise
and fall repeatedly during the early history of the West Coast development. The resulting shift of shorelines superimposes a terrestrial depositional environment upon the shallow and mid-water marine zone.

Sea levels have fluctuated widely since the Cenozoic, ranging from more than 200m below present levels to 300m above present levels (Siesser and Dingle, 1981). Today there are numerous different levels – ranging from 8 to 130m – below present sea level, in which continuous wave-cut terraces can be traced over much of the length of the west coast of Southern Africa, all potentially holding diamonds.

At sea level stillstands (highstands & lowstands), which mark the turning points between transgressive and regressive phases, shorelines cut platforms (gravel-terraces) at different elevations, terminating on the landward side at the base of wave-cut cliff-lines, and sometimes stretching along the entire coastline.

The result of sea level variations has been to distribute diamonds across the vertical range from 120m above to 150m below present sea level, and to concentrate the diamonds in gravel terraces at the specific elevations of sea-level stillstands.

For the 7b Concessions area, these levels are found from high to low within a 2 - 5m range from the following elevations: -13m, -22m, -29m, -32m, -36m, -42m, -47m, -60m and -130m.

11. CONTINENTAL SHELF SETTING

The continental shelf extends up to 230km offshore and lies as deep as 500m below sea level. The continental shelf consists of three morphological regions, namely an inner shelf, a middle shelf and an outer shelf. The inner shelf consists of a narrow, rugged and generally sediment-free rocky "platform" with an average depth of 30m. It extends up to 8km offshore and is marked on the seaward side by a steep gradient that ranges between 1.1° and 1.9°.

The continental shelf is very different from any other depositional environment. One of the most distinctive features of shallow marine sedimentation is the frequency of depositional and erosional cycles superimposed upon any given stretch of coast over relatively short periods of geological time. Another distinctive feature is the general tendency of marine sediments to remain unconsolidated for much longer periods than their sub-aerially exposed counterparts. This facilitates relatively high sediment mobility in an environment of continuous wave energy.

In the shallow-marine environment, hydrodynamic boundaries control sediment transport and deposition. Boundaries in turn are controlled by the interaction between homogenous deep wave fronts and coastal bathymetry, resulting in differentiation of
wave energy. The combination of hydrodynamic boundaries and coastal bathymetry creates the conditions where kinetic energy can be deployed to move sediment bodies, selectively entrain lower density material and ultimately create diamond placer depositional environments that can act as targets for diamond deposition. Such resource polygons are sub-areas within which sediments have been deposited under similar conditions.

12. SEDIMENTARY CYCLE

The total sedimentary cycle of the South African West Coast near-shore region includes the following:

- Supply of sediment to the marine environment by river-mouths acting as point sources during all phases of the sea level change cycle.
- Introduction of coarse and medium-grained sediment into the energetic 0m to 20m water-depth zone, and settling of fine-grained sediment in deeper water with the return of sand to be deposited onto beaches from where wind action transports the sand to coastal dune fields.
- Liberation of coarse-grained sediment from submerged palaeo-channels and valleys by wave-induced currents in the near-shore environment during transgression of sea levels.
- Northward transport of coarse-grained sediment by littoral drift mechanisms, and entrapment of part of the coarse-grained sediment in catchment morphologies during transport. The very coarse-grained cobble and boulder fractions tend to be moved only during storms, and do not travel far from their sources, acting as entrapment frameworks for pebble-sized material.
- Concentration of the heavy mineral fraction by aeolian deflation mechanisms during the regression of sea levels. Weathering of coarse-grained and high density sediment from sub-aerially exposed marine terraces and aeolian valleys, and reconcentration of the weathered material into reactivated fluvial channels where it concentrates during this phase.

13. CORRELATION WITH ONLAND TERRACES

Exploration work done along this section of the West Coast that carry diamonds on one of the palaeo-shoreline levels has shown that, almost without exception, they also carry diamonds on most of the other levels. Therefore, where a diamond source is present in the form of a river-mouth, such as the Buffels, Swartlintjies, Spoeg or Groen Rivers (and their palaeo-distributaries), the diamonds get vertically displaced and reconcentrated on all the available terrace levels by marine action over geological time, as a result of reworking during sea level fluctuation.
This is a highly significant consequence, because it enables correlation between emerged and submerged gravel terraces in terms of diamond potential. Thus, a positive correlation between emerged terraces at De Beers’ Koingnaas Mine, less than 1.5km from Concession 7b, and the submerged terraces in 7b, may be drawn. This comes with the added advantage of currents and wave action that removes much of the overburden covering marine diamond-bearing gravels. It should be noted that surveys on 7b have recorded four major river channel features. Diamondiferous terraces comparable to those mined on land should therefore also exist along the boundaries of these submerged river valleys.

14. PROPERTY GEOLOGY

14.1 Marine Geology
Sediments at Concession 7b have been deposited on a gently westward sloping Pre-Cambrian crystalline substrate platform with several flights of marine terraces cut into it (Section 10). This platform has also been incised by several, now drowned, river valleys accommodating thick valley-fill sediments. Sedimentary facies deposited on the platform consist of fine-grained sediment, coarse-grained sediment and rippled coarse-grained sediment. Much of the sediment presently found in bedrock depressions and palaeo-channels is second or third cycle deposits, in other words reworked from pre-existing deposits accumulated on the inner shelf. Depressions on the inner-shelf platform are filled, or partially filled, with shelly, quartzose sands and gravelly sands (O'Shea, 1971; de Decker, 1987).

Along the seaward boundary of the inner shelf region, between 40m and 120m water depths lies an elongated belt of muddy sediments of Quaternary to Holocene age that extends almost continuously along the West Coast (de Decker, 2000). This offshore sediment wedge varies between 15m and 60m in thickness. It comprises a series of seaward-thinning sedimentary units.

14.1.1 Seafloor Morphology
The water depths at 7b range from less than 12m to over 100m, with the deepest portions being in the south, off Hondeklip Bay and north, off Still Bay. However, about 60% of the concession lies between the 30m and 50m isobaths. The data indicates that the bedrock has a moderate to rugged relief, with some lines showing local changes in water depths of up to 5m.

Contouring of the fair chart data collected during the survey in 1994 was done by de Decker (1997) at 2m intervals using the sonograph interpretation as a basis. This allowed for a geological bias to be placed on water depth values, resulting in a geologically meaningful bathymetry map. The bathymetry of the concession is illustrated in Figure 3. There is only limited data for the areas shallower than 20m as the survey vessel could not cover the shallow water regions. The data indicates that approximately 14% of the concession area is shallower than 30m, 55% is in water
depths of between 30m and 60m, 30% is in water depths of 60m to 90m and 1.5% of the concession area is deeper than 90m.

Channels extending from Langklip Bay and between Hondeklip Bay and the Swartlintjies River are clearly indicated by the bathymetry. The broad terraced nature of the seafloor characterised by a generally low seaward gradient is evident in the region north of the Swartlintjies River. Further seaward the bedrock slope increases appreciably below 50m water depth, and continues further to where the offshore mud-belt covers the steeply dipping bedrock at ~70m below sea level. Isobaths indicates that the southern part of the concession, in particular south of Enkelduin Bay, is predominantly sediment-covered (de Decker, 1997).

In the shallower portion of the Concession the seafloor is characterized by low relief. This corresponds with the low gradients found from the bathymetry. Moderate relief occurs where the gradient is higher, particularly on the seaward edge of the bedrock outcrop. Locally, as found off Hondeklip Bay, the seafloor relief is generally higher and “rugged relief” is commonly found. Associated with the relief, is the occurrence of sediment-filled depressions. This type of terrain presents numerous small trap sites where diamondiferous deposits can be found. Seafloor micro-relief is a characteristic of potentially prospective areas, since diamonds will become entrapped in regions that display sufficient relief to prevent further transport of the stones. Seafloor “micro-relief” includes “subdued relief” (less than 1m), “low relief” (generally 1m), “moderate relief” (between 1m and 3m) and “rugged relief” (greater than 3m). Micro-relief is measured as the change in seafloor elevation over distances of tens of metres.

Several depressions filled with a thin cover of sediment cut across the Concession (Figure 4). Those in the vicinity of the Swartlintjies River are interpreted to be the palaeo-channels of this river or its Oligocene predecessor. These channels were cut into the bedrock by fluvial erosion during sea level lower stands. The most recent regression occurred about 18 000 years ago, when the sea receded to about 100m below the present shoreline (Siesser and Dingle, 1981). Elsewhere, channel-like depressions occur off Langklip Bay and also trending southward from Enkelduin Bay. Off Moordenaars Bay, there is a pronounced channel-like depression which could be an earlier outlet of the Swartlintjies River. Surveys also indicate a river channel feature about 1km south of the submerged Swartlintjies channel (Figure 4).

The terrain underlain by “low relief” bedrock on the platform is commonly covered by a thin veneer of sediment. Sonograph mosaics presented by de Decker (1997) indicate coarse-grained textured material for much of this veneer, which is interpreted as a coarse-grained gravel with cobbles and boulders. The sediment may be terrigenous, consisting of eroded country rock fragments and minerals such as jasper, agates, quartzite, and epidote. Reefs, expressed as “rugged relief” on the seafloor physiographic map, are restricted to the southern half of the Concession.
The region west of the Swartlintjies River mouth is generally of low to subdued relief. This renders the area a high priority diamond exploration target. The position north of the river mouth, which must be considered to be a point source of diamonds eroded from the raised diamond bearing marine terraces in the vicinity, improves the probability of finding diamondiferous deposits in this northern portion of the Concession. The “moderate” and “rugged” relief areas, i.e. where the bedrock micro-relief reaches and exceeds 3m, are regarded as areas that might impede the sediment transport along the sea bottom by wave action by creating a physical barrier. It is also a focusing point for incoming waves that refract around the shoals to produce higher energy waves through the super-imposition of wave fronts. These higher energy waves improve the capacity of winnowing the sediment, thereby leaving behind the heavier fraction including diamonds.

14.1.2 Sedimentary Facies
Survey data analysed by de Decker (1997) indicates that approximately 52% of the seafloor in Concession 7B consists of bedrock outcrop, including a sediment veneer of less than 1m thick. The remaining 48% is underlain by sediment of variable thicknesses, of which about 65% is greater than 5m thick. Most of the area with sediment thickness of greater than 5m occurs as the mud-belt along the seaward boundary of the Concession (Figure 4).

The large sediment deposit off Enkelduin Bay mostly exceeds 5m in thickness. It is provisionally interpreted as a sediment wedge covering a terrace complex that ranges between 35m and 65m below sea level. Elsewhere thick sediment occurs off Platklip Point, and this deposit is interpreted to be a channel-fill sequence. Sediment of between 1m and 5m thickness covers approximately 17% of the Concession. This fraction has been included as part of the area considered prospective.

The main textures noted within the sedimentary facies are fine-grained sediment, coarse-grained sediment and rippled coarse-grained sediment. Patches of medium-grained sediment occur, and in the northern portion of the concession area there is an extensive section of fine-grained sediment with coarse-grained sediment streamers 100's of metres in length, and narrow (few metres) ribbons of coarse-grained sediment. In addition, areas on exposed bedrock are covered with a veneer of coarse-grained sediment.

The main sediment facies components are:

**Fine-grained sediment** - generally consisting of mud and silt and is distributed predominantly as the mud-belt on the seaward (western) side of the concession and as large sediment-covered areas off Hondeklip Bay. Fine-grained sediment occurs predominantly at water depths of greater than 80m, but is found at
shallower depths (>40m) particularly in the southern portions of the survey area.

**Coarse-grained sediment** - usually comprises coarse-grained sand to coarse-grained gravels (i.e. cobbles and boulders <0.5m in diameter). It is found mostly in the southern section of the concession area fringing subdued relief and low relief rock outcrops. Coarse-grained sediment is absent at depths of greater than 90m and is found most often between 60m and 90m.

**Coarse-grained sediment veneer** - discontinuous coarse-grained gravel to boulder deposits, less than 1m thick that occur on bedrock. It occurs predominantly as discontinuous deposits in bedrock depressions or as patches stretching into fine-grained sediment. The largest continuous patch of coarse-grained sediment veneer occurs on the seaward side of the concession area off Still Bay and the Swartlintjies River. Coarse-grained sediment veneer is practically absent at depths of greater than 70m. This facies is important as it includes lag gravels, which are often diamondiferous.

### 14.1.3 Bedrock Facies

Bedrock sonograph facies are based on micro-relief textures that were interpreted from side-scan sonar records by de Decker (1997). These are changes in bedrock relief over distances of ~10m.

The main bedrock facies components are:

**Subdued relief rock** - bedrock with less than 1m relief with a sediment veneer. Subdued relief occurs most frequently at water depths of less than 50m, but smaller outcrops are seen between 50m and 70m. Very little subdued relief is seen at depths of greater than 70m.

**Low relief rock** - bedrock with less than 1 m relief and sediment veneer. Low relief bedrock outcrops extensively on the landward side of the concession area from south of the Swartlintjies River Mouth. Smaller outcrops of low relief rock occur between 60m and 80m, but is scarce at depths of greater than 80 m.

**Moderate relief rock** - bedrock with between 1m and 3m relief. Moderate rock predominates in the northern half of the concession area, north of the Swartlintjies Mouth, where it is found at depths ranging from 20m to 80m. Moderate relief rock is scarce between 80m and 90m and is virtually absent at depths of greater than 90m.

**Lineaments** - Bedrock lineaments are continuous, linear reflectors that cut across the exposed bedrock image. Lineaments are interpreted to be formed by
bedrock fractures or joints, gullies, scarps and faults. They occur on low relief and moderate relief rocks in various parts of the concession area. Lineaments are important, because they are potential trap sites for diamonds being transported over the rock surface. Depending on their orientation relative to water movement (and hence diamond transport), certain lineaments will be more favourable as trap sites than others (de Decker, 2000).

14.2 Diamond Mineralisation
In terms of potentially diamondiferous environments, the subdued and low relief facies are considered to be surfaces across which sediments are, or have been, transported. Moderate relief and rugged relief facies hinder sediment movement across the surface, but lend themselves to the entrapment of sediment and therefore local enrichment in diamonds.

South of the Swartlintjies River Mouth a large sediment-filled depression extends across the entire width of the concession area. The sediment-filled depressions extending from the river mouths are believed to have a significant terrigenous gravel component, making them preferred sampling targets to locate diamondiferous deposits. The sediment-filled depressions that cut across Concession 7b continue through this Concession to water depths of at least 100m and beyond. It is therefore likely that these depressions were formed by fluvial erosion during these sea-level regressions that fell to below 100m. These would have acted as point sources for diamonds eroded during these sea-level regressions from the emerged marine terraces at higher levels. Gravels found associated with the wave-cut terraces and palaeo-rivermouths at water depths associated with sea-level stillstands, could then be expected to be displaying above average grade diamond deposits.

Most of the area north of Hondeklip Bay deeper than 50m is sediment covered. South of Hondeklip Bay sediment cover extends southwards in a narrow belt on the seaward edge of the concession area at water depths of 70m and deeper. Exposed low relief and subdued relief bedrock occurs on the landward side of the concession area north of Hondeklip Bay. This is reflected in the convoluted nature of the isobaths. Moderate and rugged relief rocks are found more towards the southern portion of the area, but north of Hondeklip Bay. The data in this area also indicates continuous linear features that have been interpreted as gullies or channels (de Decker, 1997). These features and the bedrock relief provide a favourable environment for diamond entrapment.

The significance of the gravel deposits and bedform fields will encourage local diamond mineralisation. The areas in deeper water concessions that have been identified as high priority areas are the 15m to 40m range and deeper than 40m areas in particular (Gurney et al., 1991). Submarine terraces (e.g. at 20m - 30m at the southern border of 7b and at 40m - 45m south of Hondeklip Bay) and embayments
(particularly south and west-facing, such as off Still Bay) are well developed features that potentially have diamondiferous deposits. Terraces indicate a significant sea level stillstand, which would have allowed for erosion and deposition of various deposits at those particular depths. Embayments facing dominant swell directions are potential diamond deposition areas. The northern side of south-facing embayments are potential trap sites to sediment transported northwards by littoral currents.

15. MINERAL RESOURCE AND MINERAL RESERVE ESTIMATES

15.1 Geological interpretation
The texture, thickness and stratigraphy of the sediments contained in a possible target feature are important factors that need to be considered when delineating target features. Coarse-grained sediment veneer would rank higher than a continuous cover of fine-grained sediment. Similarly, two metres of fine-grained sediment cover over favourable bedrock terrain would be preferred to two metres of silt or mud.

Rivers that drain onto the West Coast are considered to be “point sources” responsible for the redistribution of diamonds eroded from emerged marine deposits by re-introducing the fluvially concentrated diamonds at the mouth of the river. Locating targets close to river mouths and in particular the northern side of submarine palaeo-channels of the rivers would therefore be a high priority prospecting target.

The geological setting, sediment characteristics and sea floor morphology of Concession 7b is very similar to the neighbouring mid-water concessions. The biggest distinguishing feature is the large number of prominent river channels that cut across this concession. The large channel just north of the Swartlintjies River mouth, has demonstrated exceptional diamond yields during mining of the onshore section of this channel at the Koingnaas beach and further inland (Figure 5). It is expected that the other three submerged channels in 7b will be as prospective.

Accurate resource estimation at 7b is not possible at this stage, however, the interpretation of the geophysical surveys (Section 14.1) do provide some indication of a resource in the order of 6.4 million to a 8.6 million square meters of coarse-grained sediments and channel-fill area that could potentially be diamond bearing. This equates to a total tonnage of approximately 48 million to 65 million ton of diamond bearing sediment.

15.2 Grade Profile
Since no record of diamond recovery from Concession 7b could be found, no specific grade data can be presented for this concession. Neighbouring concessions have been mined for years and have been explored in detail. Diamond grades obtained from these areas are presented in Table 2.
Table 2: Overview of diamond grade profiles of neighbouring onshore mines.

<table>
<thead>
<tr>
<th>Mine</th>
<th>Grade cpht</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hondeklip Bay¹</td>
<td>31 to 70</td>
</tr>
<tr>
<td>Koingnaas ²</td>
<td>32.1</td>
</tr>
<tr>
<td>Avontuur ³</td>
<td>4 to 25</td>
</tr>
</tbody>
</table>

Source: 1 - THG Annual report  
2 - De Beers Annual report  
3 - Firestone Annual report

Based on the location of 7b and the geological continuity between 7b and its neighbours, 7b is placed in a very favourable location to yield comparable diamond grade values as seen in the mines surrounding it.

15.3 Resource Classification
The sediments on Sea Concession 7b are considered to be potentially economically mineralised and there are prospects for reasonably justifiable extraction of diamonds. As an occurrence of material of economic interest in such form, quality and quantity, showing reasonable and realistic prospects for economic extraction, this deposit can be termed a diamond target.

This diamond target for which tonnage, densities, shape, physical characteristics, grade and average diamond value cannot be estimated within a reasonable level of confidence at this stage, cannot be classified as a ‘Diamond Resource’ at present. It is instead classified as a diamond target based on the lack of sampling and surveying information gathered through appropriate techniques at this stage.

16. CONCLUSIONS AND RECOMMENDATIONS

As a first phase of further exploration, additional bathymetric and geophysical surveys are required. The latter should comprise high-resolution seismic and side-scan sonar data acquisition in areas identified from the interpretation of the previous survey.

The survey should be undertaken along coast-parallel as well as coast-perpendicular lines that will allow complete sonographic coverage of the seafloor at a scale that permits the identification and detailed interpretation of small-scale bedrock structures such as gullies, cliffs and minor channels. Simultaneously, high resolution seismic data should be captured to identify the stratigraphy and thickness of the unconsolidated sediment cover to bedrock. Penetration to bedrock is important to determine the bedrock morphology in detail, since it is the latter that controls the nature of the
diamondiferous deposit. Based on the information obtained, a prospecting programme should be established to undertake systematic bulk sampling in selected target features in these Concessions.

It would be necessary to undertake a bulk sediment sampling survey to establish the diamond grade in the selected target features. In order to establish the grade, the sampling tool will need to be able to penetrate to bedrock, and then to clear an area of about 10m$^2$ at each sample site.

Figure 5: The onshore component of the Oligocene channel at Koingnaas mapped and mined by de Beers with its offshore component as indicated by bathymetry surveys on 7b. Grades of up to 377cph was realised during the onshore mining of the channel. The location of this mining can still be seen on the image just beyond the beach north of the Swartlintjies River mouth.

Sampling of the diamondiferous gravels should be undertaken from an anchored platform, such as a vessel. The gravels will need to be screened and the diamond content be determined using a combination of pulsation jigs, dense-media separation, X-ray fluorescence or grease tables. The grade must be expressed in terms of both stones and carats per tonne of screened plant-feed.

For this purpose a vessel of about 50 to 100 Grt. will be sufficient and a catamaran design has proved to be ideal in terms of available deck space and loading capacity.
The sampling should be of two kinds:

1. The first entails sampling by divers at specific locations considered from the interpretation of the geophysical data to be representative of different geological environments to determine their potential for trapping diamonds. This sampling would also characterise the diamondiferous sediments in these depositional environments.

2. This should be followed by regular grid sampling for the purposes of reserve estimation using a remote operated sampling system from a suitable platform. On board a dense-media separation plant, capable of treating up to 10t/hour of screened plant feed, will be required. A vessel of at least 500 Grt will be essential to manage the HMS plant and airlift/bottom crawler equipment. This phase should also be used to undertake trial mining using the equipment intended for the mining operation itself.

If the vessels and mining equipment are acquired at the outset, the first significant diamond recoveries can be expected within 18 months after the geophysical survey has been completed. These diamond recoveries could be close to a scale anticipated to be achieved during the mining phase.
17. CERTIFICATE OF QUALIFIED PERSON

Johan Hattingh
I, Johan Hattingh of Stellenbosch, South Africa, do hereby certify that as the author of this Independent Technical Report on the 7b Concession, South Africa, dated April 28 2015, hereby make the following statements:

- I am a Principal Resource Geologist with Creo Design (Pty) Ltd. with a business address at Unit 17, 9 Quantum Street, Techno Park, Stellenbosch, South Africa.
- I am a graduate of Stellenbosch University (B.Sc., 1985; B.Sc. Hons., 1988) and University of Port Elizabeth (M.Sc., 1992; Ph.D. Geology, 1996).
- I am a member in good standing of the Geological Society of South Africa and I am registered with The South African Council for Natural Scientific Professionals (Registration #400112/93).
- I have practiced my profession in the mining industry continuously since graduation.
- I did visit the property regularly during the past 20 years.
- I have read the definition of “Qualified Person” set out in SAMREC and certify that, by reason of my education, affiliation with a professional association (as defined in SAMREC), and past relevant work experience, I fulfil the requirements to be a “Qualified Person” for the purpose of SAMREC.
- My relevant experience with respect to resource modelling includes 23 years’ experience in the mining sector covering exploration geology, mine geology, grade control, and resource modelling. I was involved in numerous projects around the world in both base metals and precious stone and metal deposits.
- I am responsible for the entire content of this technical report titled “Independent Technical Report on the 7b Concession, South Africa,” dated April 28, 2015”.
- I have no prior involvement with the property that is the subject of this Technical Report. As of the date of this Certificate, to my knowledge, information, and belief, this technical report contains all scientific and technical information that is required to be disclosed to make the technical report not misleading.

Signed and dated this 28th day of April 2015.

J. Hattingh
Ph.D. Geology, Pr. Sci. Nat.

J. Hattingh
18. REFERENCES


