WCR3	S30° 26' 30.8" E17° 20' 49.9	Along main road in Mitchell's Bay Mining Complex. At netted 'white sand' dune. The rehabilitation is very successful here.	
WCR4	S30° 26' 34.1" E17° 20' 31.4	At lower sea water intake for Mitchell's bay Mining Complex. This area is disturbed by roads and pipelines as well as soil dumps. It is not well rehabilitated.	

		Spoil heaps near the lower sea water intake have not been revegetated and are rutted from erosion.	
WCR5	S30° 25' 46.9" E17° 20' 47.4	A rehabilitated rounded spoil heap. This heap was ploughed to break up the surface. It has revegetated, with *M. guerichianum* dominant. The local environment is generally disturbed but with some patches of intact vegetation. Other species noted include *Atriplex cinerea, Atriplex lindleyi* subsp. *inflata, Othonna* sp. and *Senecio arenarius.*	

WCR6	S30° 25' 40.4" E17° 20' 43.9	The spoil heap at this location has not been well rehabilitated when compared with that at waypoint WCR5.	
WCR7	S30° 25' 40.0" E17° 20' 28.6	At a slimes dam surrounded by highly disturbed spoil. Rehabilitation is non-existent.	

WCR8	S30° 24' 43.1" E17° 20' 17.4	At old De Beers mining block. The excavation is very deep and there is minimal revegetation. Alongside the main road are patches of intact vegetation consisting of dense low shrubland.	 

WCR9	S30° 24' 24.9" E17° 20' 02.3	Intact Namaqualand Strandveld with low succulent vegetation. The vegetation has a high diversity of species and is ecologically functional (noted: rodents, millipedes, birds). One of the prominent species is *Jordaaniella spongiosa* (opposite) and endemic species on the coastal plain.	 

WCR10	S30° 23' 40.3" E17° 19' 38.3	Near a netted area where restoration is only partial and not good. It could improve with time. The area nearby is in good condition with 1 m tall strandveld vegetation. Abundant birdlife in this area including Malachite Sunbird feeding on *Lycium cinereum*.	
WCR11	S30° 22' 37.6" E17° 18' 35.3	At coffer dam mining site at the coast in Mitchell's Bay Mining Complex. Massive disturbance with the coastal dunes and vegetation totally destroyed.	

		Intact Namaqualand Strandveld was noted inland of the coastal mining zone both to the north and south of this waypoint.	
WCR12	S30° 22' 17.5" E17° 18' 19.2	On road overlooking a mobile sand dune. This is referred to as the Mitchell's Bay Dune Plume by Siteplan. The dunes are hardly vegetated. The main species is *Cladoraphis cyperoides* on hummock-like crests.	

		On the inland (east) side of the road is low to mid-high Namaqualand Strandveld.	
WCR13	S30° 22' 10.0" E17° 18' 03.7	This is a 'bedrock sweeping area' that was mined by De Beers. Soil has washed over part of the area and the vegetation is very sparse.	

WCR14	S30° 22' 03.0" E17° 17' 51.2	Bedrock mining area (De Beers). Highly disturbed and not actively rehabilitated at all.	
WCR15	S30° 21' 51.4" E17° 17' 42.4	A spoil heap has been scarified at this location and it is gradually restoring. At present the vegetation is open but with time it could gain higher cover.	

WCR16	S30° 21' 47.3" E17° 17' 35.7	R1B inland mining area (not far from the sea). Salt water seeps into the diggings. The terrain is totally destroyed with no vegetation left.	
WCR17	S30° 22' 25.7" E17° 19' 01.1	Extensive netted area where rehabilitation has been highly successful.	

WCR18	S30° 21' 46.4" E17° 18' 53.1	At a massive mining pit where there is no rehabilitation. In the area nearby where spoil has been deposited, netting is in place and vegetation restoration is moderate to good.	 

WCR19	S30° 16' 45.9" E17° 17' 35.7	On the main mine road, north of the junction with the Hondeklip Bay road. Some spoil heaps are located to the west but between the road and the dumps the Namaqualand Strandveld is in good condition and ecologically functional.	
WCR20	S30° 15' 54.8" E17° 18' 09.7	At Swartlintjies (SL4-2) – a massive excavation with netted slopes on the east side.	

		Marginal revegetation on the sides of the pit but no active rehabilitation. The area around the pit supports intact vegetation that is ecologically functional. Birds are active in this area e.g. larks and Ant-eating Chat.	
WCR21	S30° 15' 40.4" E17° 17' 06.8	At Swartlintjies River. This is the only place in the study area where there is Arid Estuarine Salt Marsh. It will not be affected by mining except that the main road that crosses N-S will be regularly used.	

		Arid Estuarine Salt Marsh on the west side of the main road at Swartlintjies River.	
		The river-bed of the Swartlintjies River is impacted by the presence of the main mine road.	

WCR22	S30° 15' 16.8" E17° 15' 32.0	Current beach mining north of Swartlintjies River. The activity has resulted in total loss of any vegetation except in some places where halophytic salt marsh plant species (cf. *Sarcocornia* sp.) have colonized the brack soils.	 

WCR23	S30° 09' 54.3" E17° 13' 25.6	Somnaas area at Coetzee Family graves. To the north of the graves is a huge pit that is now filled with water. The general environment around the mined pit is highly disturbed with random placement of spoil heaps. Vegetation has recolonized in places.	 

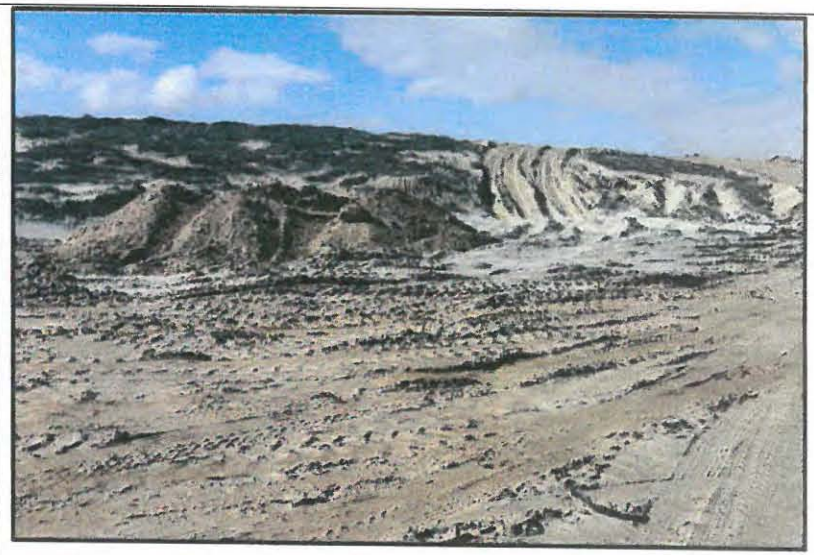
		At the coast near the graves is well-developed Namaqualand Coastal Duneveld grading into Namaqualand Seashore Vegetation. This area is not disturbed and provides a good example of what the coastal environment is like without massive disturbance from mining. Plant species recorded here include, *Amphibolia laevis, Atriplex vestita, Calobotra halenbergensis, Caroxylon aphyllum, Cladoraphis cyperoides, Crassothonna cylindrica, Galenia sarcophylla, Hypertelis angra-pequenae, Lycium cinereum, Stoeberia beetzii, Stoeberia frutescens, Tetragonia fruticosa.*	

WCR24	S30° 10' 04.5" E17° 13' 37.8	Somnaas area, along track. A denuded area with abundant spoil heaps that have not been rehabilitated.	
WCR25	S30° 10' 02.9" E17° 13' 43.9	*Lessertia frutescens* subsp. *frutescens* (Jantjie-Bêrend) growing on spoil heaps with *Cladoraphis cyperoides* (dune grass). This is natural, unaided restoration.	

		Lessertia frutescens subsp. *frutescens* (Jantjie-Bêrend) used in traditional medicine for treating cancer, stomach ailments and other illnesses. This leguminous species (nitrogen-fixing) could be successfully used for rehabilitation purposes.	
WCR26	S30° 10' 02.8" E17° 14' 13.3	An area of undisturbed Namaqualand Coastal Duneveld in the Somnaas area on a convex crest next to the road. The vegetation is dominated by low vygies 10 – 75 cm tall. The veld is open to mid-dense and the species recorded include, *Crassothonna cylindrica, Crassothonna sedifolia*, *Ehrharta* sp., *Galenia sarcophylla, Lycium cinereum, Manochlamys albicans, Mesembryanthemum guerichianum, Mesembryanthemum subnodosum, Ruschia* sp. *Stoeberia beetzii, Tetragonia fruticosa, Tetragonia* sp., *Trachyandra falcata, Zaluzianskya* sp., *Zygophyllum cordifolium.*	

WCR27	S30° 10' 38.8" E17° 14' 36.8	Somnaas area on main road, at a large trench. Disturbance is restricted to the area on both sides of the trench. The undisturbed vegetation is Namaqualand Strandveld.	
WCR28	S30° 11' 31.8" E17° 13' 46.6	On coast at Visbeenbaai. Coffer dams have been built here and the coastal environment is extremely disturbed by mining activities. No coastal vegetation remains in the mining footprint.	

		Where the dunes are not disturbed, the dominant species are *Caroxylon aphyllum* and *Cladoraphis cyperoides*. *Senecio arenarius* and *Mesembryanthemum guerichianum* are also present on degraded dunes (i.e. degraded Namaqualand Coastal Duneveld).	
		Very high intensity disturbance with no signs of attempted restoration.	

WCR28-1	S30° 11' 30.1" E17° 13' 43.8	High intensity disturbance along the access road to Visbeenbaai. Note the unnecessary tracks over the dune through Namaqualand Coastal Duneveld.	
WCR29	S30° 11' 58.9" E17° 14' 09.5	An area south of Visbeenbaai where bedrock sweeping was carried out by De Beers. The rock is denuded of soil and hence vegetation.	

WCR30	S30° 12' 15.3" E17° 14' 04.0	A large excavated pit in the near-coastal zone. A wet screening plant was previously located here. The environment is extremely disturbed and not restored at all.	
WCR31	S29° 54' 47.8" E17° 06' 55.0	Samson's Bak. A wide, moderate gradient landscape extends from the Koingnaas—Kleinsee road to the coast. The vegetation is low Namaqualand Strandveld and is dominated by succulent- and sclerophyllous-leaved plant species.	

		A hard gravel track extends from the main road to the bay at Samson's Bak. The Namaqualand Strandveld is low, mid-dense shrubland that uniformly covers an extensive area. Apart from the access roads, mining at Samson's Bak is unlikely to negatively impact this vegetation to any significant extent. The near-shore zone at Samson's Bak supports Namaqualand Coastal Duneveld and Namaqualand Seashore Vegetation.	 

		An important species in the low succulent strandveld shrubland is *Wooleya farinosa*, seen here as a rounded low, grey-leaved shrub (dominant). Other species include, *Arctotis decurrens, Calobotra halenbergensis, Caroxylon* sp., *Cheiridopsis* sp., *Cladoraphis cyperoides, Crassothonna cylindrica, Crassothonna sedifolia, Didelta carnosa, Drosanthemum hispidum, Galenia sarcophylla, Gazania splendidissima, Lycium cinereum, Lycium tetrandrum, Mesembryanthemum guerichianum, Osteospermum oppositifolium Osteospermum oppositifolium,Pteronia onobromoides, Ruschia* sp., *Stoeberia beetzii, Zygophyllum cordifolium, Zygophyllum morgsana.* *Stoeberia beetzii* – co-dominant with *Wooleya farinosa* in the duneveld at Samson's Bak	 

WCR32	S29° 54' 49.7" E17° 06' 53.1	The bay at Samson's Bak that will be mined, with vegetation transitional between Namaqualand Coastal Duneveld and Namaqualand Seashore Vegetation.	
WCR33	S30° 06' 07.9" E17° 11' 30.5	Steep west-facing dune-slopes at Noup. The coastal vegetation has been impacted by use of the area for recreation in the past. It is now restoring naturally.	

A3.3.2 Plant species

Since this study was not undertaken over a long period and was not a comprehensive phytosociological survey, a checklist of plant species for the study area was obtained from the South African National Biodiversity Institute SIBIS database (*Accessed through the SIBIS portal, sibis.sanbi.org, 2009-06-01 Note: This database is no longer available and will be replaced by the South African National Biodiversity Institute in due course)* – Appendix 1. The status of the species listed was obtained from the Red List of South African Plants (Raimondo *et al.* 2009; www.redlist.sanbi.org).

Wooleya farinosa (Figure 12) is a Namaqualand Strandveld / Namaqualand Coastal Duneveld endemic species and therefore has important conservation value. It has been impacted by diamond-mining along the Namaqualand coast and is listed as RARE (Raimondo *et al.* 2009) although locally dominant not only on sandy dune substrates but also on granite-gneisses (Low & Desmet, 2007).

Low & Desmet (2007) speculated that several Namibian endemic plant species may occur in the vegetation found at Brazil and by inference could occur southwards in the study area to Rooiwal Bay. Determination of this would require systematic plant collection over a wide area which was beyond the scope of the current project.

Figure 12. *Wooleya farinosa* – a localized endemic species from the Namaqualand Sandveld bioregion (Namaqualand Coastal Plain).

A3.3.3 Summary of vegetation attributes, sensitivity and condition

The vegetation in the area investigated between Mitchell's Bay and Samson's Bak consists of (1) Namaqualand Seashore Vegetation that is limited to a narrow band in the near-shore zone either on consolidated dunes or on loose sand, (2) Namaqualand Coastal Duneveld and (3) Namaqualand Strandveld that extends from the near-shore environment inland on consolidated yellow sandy soils.

Namaqualand Seashore Vegetation is usually completely lost at any site where coffer dams are built and where beach mining occurs e.g. at Visbeenbaai (see waypoint WCR28 in Table 1). The seashore vegetation is not species-rich and is not botanically sensitive. However, it is adapted to the harsh conditions of the seashore and so acts as a stabilizer in a highly dynamic environment, both physically and chemically.

Namaqualand Coastal Duneveld is found on dunes immediately inland of the coastline, mainly on white sandy soils. This vegetation is mapped by Mucina *et al.* 2005, 2009) as occurring as much as 8 km inland from the coast. However, observations in the study area indicate that the vegetation found inland of the dune-fields is Namaqualand Strandveld and not Namaqualand Coastal Duneveld as mapped.

Namaqualand Strandveld is in a less physically and chemically dynamic environment than Namaqualand Seashore Vegetation and Namaqualand Coastal Duneveld. However, it is subject to significant stressors such as wind and low rainfall. Namaqualand Strandveld is highly adapted to its environment, is species-rich and harbours a number of endemic species e.g. *Arctotis decurrens, Jordaaniella spongiosa, Wooleya farinosa* and others. Even though it is resilient, high levels of disturbance from activities such as mining can result in degradation and successive loss of plants species. This can result, for example, from excessive wind-blown sand that arises from disturbance of the beach environment during mining.

The mining that has taken place in the past by De Beers has resulted in extremely high impacts locally. In addition, there has been little to no rehabilitation. Shade-netting has been installed in places but this appears to be a haphazard approach. Apparently, no systematic restoration / rehabilitation programme was implemented. The landscape is thus fragmented by diggings both on the coast

due to beach-mining and further inland due deep pit and trench mining. Many of the areas that could have been rehabilitated were simply left untended and spoil-heaps are found randomly in the landscape. The only positive aspect is that the vegetation that has been most affected by past mining i.e. Namaqualand Strandveld is widespread, uniform and not threatened in any way. Sufficient habitat of this type remains and ecological processes are intact. Nevertheless, that is no excuse for lack of rehabilitation.

A4. Conservation Status

The principal vegetation types in the study area, namely Namaqualand Seashore Vegetation, Namaqualand Coastal Duneveld and Namaqualand Strandveld have been assigned the status of Least Threatened in the Nation List of Threatened Ecosystems (Government Gazette, 2011). However, the entire coastal zone and immediate inland zone from Mitchell's Bay in the south to Samson's Bak in the north is within either a Critical Biodiversity Area (1) [CBA1] or Critical Biodiversity Area (2) [CBA2] according to the Critical Biodiversity Map for the Northern Cape Province (available for download from https://cirrus.nmmu.ac.za/index.php/s/20fe43905396fca0025948bc0d3b514d) This means that any mining-related activities resulting in habitat loss would negatively affect the conservation targets for habitats on the Namaqualand Coast.

In addition, numerous plant species, genera or families e.g. Aizoaceae (vygies) and Aloaceae are specifically protected under the **Northern Cape Nature Conservation Act, 2009 (Act No. 9 of 2009) and Regulations (2011).** Authorisation and permits would thus be required from the Department of Environment and Nature Conservation (Northern Cape Province) for the removal or translocation of protected plant species as well as a general permit for the clearing of natural vegetation.

A5. Impact Assessment

A5.1 'No Go' Alternative

The 'No Go' alternative would mean that there would be no further mining the in the Koingnaas Mining Rights area. It would mean that there would be no further disturbance of the natural environment. However, it would also mean that no

remedial action would be implemented to rectify unacceptable practices that have negatively impacted the environment from past mining. The opportunity to mine into the future comes with the responsibility to rehabilitate as much of the despoiled landscape as possible. The responsibility would be negated if there was to be no further mining.

A5.2 Direct Impacts

The two main direct impacts on the vegetation and flora would firstly be the destruction of plant communities at the beach-mining / coffer dam sites and loss of vegetation due to construction of new roads. This would principally affect Namaqualand Seashore Vegetation and Namaqualand Coastal Duneveld (**High Negative** impact) but to a lesser extent, Namaqualand Strandveld (**Medium Negative** impact). Secondly, the construction of new roads would result in **High Negative** impact on all of the above vegetation types (Table 2).

Table 2. Direct impacts on natural plant communities

Impact Description: Direct impacts on vegetation would occur due to mining-related habitat loss (mining activities and roads)						
	Extent (Spatial Scale)	**Duration**	**Severity**	**Probability**	**Status**	**Significance**
Without Mitigation	Local	Long-term	High	Highly Probable	-ve	Medium
With Mitigation	Local	Long-term	Medium	Probable	-ve	Medium-Low
	Mitigation: 1) New and existing mining pits should be backfilled with existing spoil and any new spoil generated according to a systematic plan. 2) New soil dumps should not be within areas of intact habitat adjacent to mining pits, but should be used to backfill or rehabilitate existing disturbed areas. 3) Existing roads should be used wherever possible. The number of access roads at the mining sites should be reduced and they should be constructed so as to avoid undisturbed habitat. 4) An ECO must be appointed who will be involve with planning of roads and other infrastructure and who will monitor and audit impacts on the undisturbed natural environment.					

	5) A long-term monitoring program should developed for the site that monitors and should aim to quantify changes in habitat.	
	Impact to be addressed/ further investigated and assessed in Impact Assessment Phase?	The vegetation (habitat) present in the Mining Rights Area will be described in more detail for specific mining sites and sensitive habitats identified and delineated.

A5.3 Cumulative Impacts

Significant disturbance of the natural environmental has historically taken place in the area investigated. Further mining would no doubt contribute negatively to the cumulative impacts on the vegetation and habitat (Table 3). Every measure possible should be implemented to avoid past negative practices and to implement good environmental governance to ensure that negative cumulative impacts are minimized.

Table 3. Cumulative impacts on natural plant communities

Impact Description: Cumulative impact on CBAs with respect to terrestrial plant communities. Cumulative impacts on the CBA 1 and CBA2 along the Namaqualand coast in the study area are **High Negative** due to historical mining and lack of restoration. Habitat loss due to future mining will contribute to the negative cumulative impact that will result from increased habitat fragmentation.						
	Extent	**Duration**	**Severity**	**Probability**	**Status**	**Significance**
Without Mitigation	Local	Long-term	High	Probable	-ve	High
With Mitigation	Local	Long-term	Medium	Probable	-ve	Medium-Low
	Mitigation: 1) Minimise the mining footprint, especially with regards to roads which should be carefully planned with the input of an environmental officer. 2) Ensure that waste-rock and soil is not dumped in undisturbed areas, but are rather used to fill existing pits and trenches or used to aid rehabilitation of previously disturbed areas. 3) An integrated monitoring plan should be developed for the mining sites that makes provision for evaluating habitat and ecological status over the lifespan of the mine.					

A6. MITIGATION MEASURES FOR INCLUSION IN DRAFT ENVIRONMENTAL MANAGEMENT PLAN

A list of generally applicable mitigation measures that should be included in the draft Environmental Management Plan are as follows:

Objective: Minimization of impacts on natural vegetation namely due to mining on the coastline and immediately inland			
Project components	(1) Building of coffer dams (2) On-land location of screening plant (3) Construction of internal access roads (4) Stockpile areas (5) Construction of pipelines (6) Dumping of spoil		
Potential impact	Removal and loss of Namaqualand Seashore Vegetation and Namaqualand Coastal Duneveld.		
Activity / risk source	Non-compliance with recommended mitigation measures		
Mitigation: Target / Objective	The target would be to minimize loss of natural vegetation. This could be achieved by AVOIDANCE of disturbance in the first place and secondly by restoration (rehabilitation) of the vegetation.		
		Responsibility	**Timeframe**
Mitigation: Action / Control	➢ The first principal must be to ensure that only carefully demarcated areas are accessed i.e. areas not directly involved with a mine operation should be avoided	Mine management	Pre-mining, operational phase
Mitigation: Action / Control	➢ An on-site environmental control officer should be consulted at each step of the operation i.e. from planning to operation.	Mine management	Pre-mining, operational phase
Mitigation: Action /	➢ An important objective should be	Mine	Operational

Control	to reduce negative edge effects e.g. no unnecessary tracks or roads should be permitted.	management	phase
Mitigation: Action / Control	➢ There should be no random traversing of the natural vegetation off designated mining areas and roads.	Mine management / ECO	Operational phase
Mitigation: Action / Control	➢ Material for coffer dams should be sourced from existing disturbed sites. No new sites for rock material should be opened.	ECO in conjunction with mine management.	Operational phase
Mitigation: Action / Control	➢ Where possible access roads should follow existing roads. If new roads are required they should be planned to take the least damaging routes.	ECO in conjunction with mine management	Pre-mining and operational phase
Mitigation: Action / Control	➢ Stockpile areas should be carefully sited on existing disturbed areas so as not to further damage	ECO in conjunction with mine management	Operational phase
Mitigation: Action / Control	➢ Any areas that can be restored after mining must be identified and actively rehabilitated under the direction of a qualified restoration practitioner.	Environmental Control Officer (ECO) with restoration specialist and mine management	Post operational phase

Performance indicators	Compliance with recommended mitigation measures. ECO to keep a log of activities which must be inspected and signed off once monthly by the relevant manager. The mine should appoint a suitably qualified restoration specialist to compile a vegetation rehabilitation plan for areas deemed necessary. The restoration specialist must submit the vegetation rehabilitation plan to the ECO and mine management for approval. The vegetation rehabilitation plan should include: Seed collection, harvesting methods and seed storage methods; Handling of plant material suitable for restoration purposes; Establishment of a holding area or nursery from which plants to be used for restoration can be sourced; Report to the ECO on progress, obstacles etc. Re-vegetation of areas disturbed by mining or roads should take place as soon after completion of mining at a particular site as possible. No vehicles, equipment and unauthorized people to be allowed into areas that have been re-vegetated.
Monitoring	It would be the responsibility of the ECO to ensure compliance of the restoration specialist with recommended mitigation measures and to monitor the outcomes. Six-monthly reporting would be required.
Monitoring	Disturbed areas should be monitored for at least three years after the rehabilitation is initiated to check on progress of vegetation rehabilitation and any alien invasion. Areas that show signs of poor re-vegetation should be treated to enhance vegetation re-

	establishment.

A7. MANAGEMENT PLAN

From a botanical viewpoint the major concerns are (1) loss of sensitive plant communities and (2) loss of Red List plants species. The main objectives would be to (1) minimize general disturbance as far as possible; (2) avoid sensitive plant communities; (3) relocate sensitive plant species if possible or if they cannot be avoided, and (4) rehabilitate disturbed areas post-mining wherever these areas are not required for other purposes. The overriding principal would be to implement recommended mitigation measures as strictly as possible.

OBJECTIVE 1: Limit loss of natural vegetation at mining sites		
Project component/s	Mining in Namaqualand Seashore Vegetation and Namaqualand Coastal Duneveld	
Potential Impact	Unnecessary loss of natural vegetation	
Activity/risk source	Mining operations	
Mitigation: Target/Objective	Correct alignment of roads to minimize impacts would be essential. All mining activities must be contained within designated areas.	
Mitigation: Personnel should not routinely enter or use areas outside strictly demarcated construction areas.	Responsibility ECO and mine management	Timeframe From project inception to closure
Performance Indicator	Minimize loss of natural vegetation	
Monitoring	Bi-annual audit of condition of vegetation at mining sites	

OBJECTIVE 2: Limit loss of botanically sensitive plant communities		
Project component/s	Mining and road construction in Namaqualand Seashore Vegetation and Namaqualand Coastal Duneveld	
Potential Impact	Loss of botanically sensitive plant communities e.g. where *Wooleya farinosa* occurs	
Activity/risk source	Mining and road construction	
Mitigation: Target/Objective	AVOID botanically sensitive areas	
Mitigation: Adjust roads routes to accommodate sensitive vegetation	Responsibility ECO / Mine management	Timeframe Mining operational phase
Performance Indicator	Limited loss of botanically sensitive habitat	
Monitoring	Post-mining audit	

OBJECTIVE 3: Relocation of sensitive plant species and / or Red List species	
Project component/s	Mining and road construction in Namaqualand Seashore Vegetation and Namaqualand Coastal Duneveld
Potential Impact	Loss of sensitive (protected) plant species e.g. *Wooleya farinosa*
Activity/risk source	Mining operation including roads

Mitigation: Target/Objective	Where possible relocate species that can be transplanted (Not all species will be successfully transplanted). Collect cuttings / seed of rare species for propagation in a nursery.		
Mitigation: Relocate sensitive plant species to safe areas in similar habitat		Responsibility ECO, min management and restoration specialist	Timeframe Operational phase to post-mining phase
Performance Indicator	Limited loss of sensitive plant species		
Monitoring	Post-mining audit		

OBJECTIVE 4: Rehabilitate disturbed areas post-construction wherever these areas are not required in the operational phase			
Project component/s	Mining and road construction in Namaqualand Seashore Vegetation and Namaqualand Coastal Duneveld		
Potential Impact	Removal of natural vegetation to make way for roads and mining		
Activity/risk source	Mining operation including roads		
Mitigation: Target/Objective	Restore all areas post-mining to attempt to rehabilitate the original plant community to ensure minimal degradation of habitat		
Mitigation: Re-vegetate disturbed areas		Responsibility Construction / ECO in collaboration with restoration specialist and mine management	Timeframe Operational phase to post-mining phase
Performance Indicator	Successful re-establishment of natural shrubland		
Monitoring	Post-mining audit		

A8. CONCLUSIONS

The area of the Namaqualand coast between Mitchell's Bay in the south and Kleinsee in the north has been poorly explored and documented botanically due to restricted access over many years. However, a limited number of botanical studies have shown that apart from some localized 'special' plant communities, large areas are covered by one or a few types of vegetation. This is true in the study area where the vegetation is mainly Namaqualand Strandveld with limited areas of Namaqualand Coastal Duneveld and Namaqualand Seashore Vegetation. It is contended that there are no botanical fatal flaws for the area investigated but that there are 'red flags'. Certain plant communities and plant species within the general vegetation matrix **are sensitive**. These plant communities and species are described in the report and it is essential that these are noted and that the recommended mitigation measures are implemented as per the management plan. If this happens satisfactorily the impacts on the vegetation and flora can be reduced from potentially **High negative** to **Medium negative** and the proposed future mining becomes more acceptable within the described botanical context.