Appendix G

Environmental Management Program

for Final Basic Assessment

Multi-Purpose Lifestyle Complex - Postmasburg

KUMBA IRON ORE

ENDEMIC VISION
ENVIRONMENTAL SERVICES
Responsible. Transferable. Sustainable.

Environmental Management Objective	Avoidance Measures	Reduction Measures	Remedial Measures	Monitoring Measures
Ensure vegetation establishment as soon as possible after clearing.	Demarcate all areas that require vegetation clearance to reduce footprint and peripheral damage.	Limit vegetation clearing to areas that will be impacted immediately.	Ensure all vegetation is stockpiled for re-use in rehabilitation and landscaping. Economically viable biomass should be sold / donated for firewood to take pressure of other tree populations. Shrub material should be mulched for re-vegetation of the site.	Monitor survival rate of transplanted specimens. Monitoring should guide management and maintenance requirements.
Ensure vegetation establishment as soon as possible after clearing.	Limit vegetation clearance only to areas that will be immediately affected. The site is not allowed to be cleared in its entirety. This is to reduce soil / organic material loss as well as dust impacts.	Vegetation clearing to commence only after walk through has been conducted and necessary permits obtained and search and rescue of all protected plants and plants that could survive transplantation.	Ensure concurrent vegetation establishment on cleared areas before next rain season.	
Search, rescue, seed harvest and translocate indigenous vegetation.	Demarcate all areas that require vegetation clearance to reduce footprint and peripheral damage. Avoid any large trees (indigenous or exotic) that could contribute to micro habitats for establishment of other plants.	A search and rescue, translocation procedure should be put in place detailing search, rescue and seed harvesting timeframes; species; temporary storage (in nursery); propagation (from seeds/ cuttings taken from site); and final relocation, maintenance and monitoring of transplanted specimens.	Exotic trees should be used as nursing area for indigenous trees. Once the indigenous trees are large enough, the exotic trees can be removed.	The search, rescue, translocation process should be monitored and documented for application at other future projects in the municipality or other municipalities.
Limit dust impacts from traffic	Travel on demarcated roads only and apply dust suppressant or wetting agent to seal road surfaces.	Maintain speed limits to reduce dust on site and in area.	Dust impacts cannot be remediated.	
Operational Sustainability, Maintenance and monitoring	The municipality should commence resourcing the facility at the start of the initial engagement about this project to ensure successful handover and long-term sustainability of the project. The resourcing plan must be submitted to the project team before construction commence. Sufficient resources, skills, experience and funds must be available to maintain the required monitoring and maintenance, data analysis and management of elements monitored throughout the project.	Local municipal authorities source internally and partner with local expertise to meet the required capacity and intensity of sustainable high-quality operation and maintenance of the site. The Municipality will receive the screening conducted on the Erven that were included as alternative sites for this development from EndemicVision Environmental Services (Pty) Ltd.	Final as-build designs, operational manual, formal handover to competent persons and maintenance plans should be provided by the engineers to the municipality before final sign-off of completed infrastructure. A formal handover process must be documented and implemented without delay by either party within two months of construction completion (construction resources are off site) of the infrastructure. Where this process is delayed, the delaying party will become responsible for the items subject to vandalism or deterioration because of interim lack of ownership.	Operations and maintenance plans adhered for the site during operation and for the rehabilitated areas after operation has ceased.

Environmental Management Objective	Avoidance Measures	Reduction Measures	Remedial Measures	Monitoring Measures
Manage alien invasive species	Prevent and limit alien invasive species establishing on site by conducting concurrent rehabilitation and vegetating bare areas as soon as possible.	Regular alien clearing should be conducted using the best-practice methods for the species concerned. The use of herbicides should be avoided as far as possible.	Reintroduce local indigenous seed and species during rehabilitation. Vegetate area with specimens rescued from site where possible. This should be done where areas were cleared and where alien species were removed.	Alien vegetation monitoring should be conducted one year after construction and at least every second year after alien vegetation clearance has been completed. The monitoring must lead to eradication measures.
Manage waste cumulation from project	Avoid generating excess waste by buying bulk (reduced packaging), opt for direct delivery of construction material. Using environmentally friendly alternatives where possible.	Waste management hierarchy, sort at source and separation at source should be implemented during construction and operation. Specific effort must be made to ensure sorted waste are directed to potential re-users and not dumped in unsorted waste sites without any benefit of the sorting process applied to site. A register must be kept of organisations / individuals contacted to redistribute sorted waste appropriately.	Emergency response equipment, training and procedures must be in place for hazardous (including hydrocarbon related) incidents and emergencies.	Hazardous material inventory, correlating to the waste generated from these materials, MSDS file and proof of final, legal deposition at a registered hazardous waste facility or temporary storage area must be on site for inspection at all times.
Manage traffic impacts in the area	All construction vehicles should adhere to a low speed limit to avoid collisions with susceptible species such as snakes and tortoises. All wildlife must be recorded and translocated. Wildlife rescue and translocation must be written into the search and rescue procedure.	If the site must be lit at night for security purposes, this should be done with low-UV type lights (such as most LEDs), which do not attract insects.	A traffic management plan must be compiled, clearly indicating traffic zones, pedestrian zones, signage, emergency routes and alternative routes.	The success of the traffic management plan should be reviewed once within six months of operation. This information must be used to improve and update the traffic management plan.
Manage interaction with fauna during construction	Site access should be controlled, and no unauthorized persons should be allowed onto the site.	The collection, hunting or harvesting of any plants or animals at the site should be strictly forbidden. Personnel should not be allowed to wander off the demarcated construction site.	Any fauna directly threatened by the construction activities should be removed to a safe location by the ECO or other suitably qualified person.	
Manage topsoil as soil, seedbank and organic matter resource	Demarcate all areas that require soil clearance to reduce footprint and peripheral damage.	Topsoil must be stored on a previously disturbed area, retained and maintained with organic material for landscaping across the municipality. The location, depth of topsoil to rescue as important resource must be captured in the search and rescue procedure.	Stockpile all topsoil cleared and protect (demarcate, vegetate or netting) topsoil stockpiles for future use.	Topsoil soil samples should be taken to guide amelioration of these soils for landscaping use.

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Manage topsoil as soil, seedbank and organic matter resource	The project site and loose material will not be exposed to rain resulting in excessive erosion, siltation and general disturbance down slope	Provide temporary stabilization of disturbed areas that are not actively under construction. Use dust abatement techniques on unpaved, un-vegetated surfaces to minimize windblown erosion.	Soils should be remediated to such an extent that it can be used as potting / planting soils for landscaping and revegetation. Soil remediation plan and process must be captured in the search and rescue procedure.	The search, rescue, translocation process should be monitored and documented for application at other future projects in the municipality or other municipalities.
Protect indigenous vegetation	An area management plan should be developed for the site, which should include management of biodiversity within the fenced area, as well as that in the adjacent rangeland	Inspect vegetation for protected species and ensure search and rescue before vegetation clearance. Any nationally protected trees within close proximity of the development footprint to be identified as no-go areas or special permits obtained to remove the trees, meeting the obligations of such permits issued	The development footprint should be kept to a minimum and natural vegetation should be encouraged to return to disturbed areas by excluding grazing and trampling while vegetation is establishing	
To minimise destruction or degradation of flora and ensure legal compliance in this regard	All indigenous species is retained as far as possible and where alien species are encountered; they are removed. The selection of laydown areas will consider already disturbed areas first. Any nationally protected trees within close proximity of the development footprint to be identified as no-go areas. All construction staff should undergo an environmental induction from a suitably qualified person regarding the importance of footprint management.	Along areas with deep sandy soils the topsoil should be put aside and replaced after disturbance.	Given the hyper-arid nature of the area active re-vegetation of disturbed areas is not recommended on account of the very low success that is likely to result. It is rather recommended that adequate and appropriate surface preparation which will encourage natural regeneration of the vegetation and ensure long-term vegetation recovery is performed.	