

## MPM Consolidated Management Measures

Ref Nr	Management measures/ actions	North	Plant	Central	South 1	South 2	Construction	Operational	Closure and Decommissioning	Post Closure
		Area of Mine to which management measures apply					Project Phase			
<b>Geology</b>										
G1	Mining will be conducted in such a manner so as to prevent the sterilisation of other mineral reserves.				X			X		
<b>Topography</b>										
T1	When the underground workings are decommissioned, the decline and ventilation shafts will be sealed with approved seals designed by a professional engineer and in accordance with specifications provided by the DMR.	X							X	
T2	Extraction of ore from the open cast pit will be done in stepped benches or slopes to simplify the subsequent rehabilitation. The areas mined out will be backfilled after mining.					X		X		
T3	Waste rock and overburden material will be utilised to backfill the opencast pits, thereafter it will be sloped to resemble the surrounding land configuration/landscape and rehabilitated with indigenous vegetation.					X		X	x	
T4	The Merensky Fine Residue Deposit (FRD) will remain a permanent feature, unless re-worked.					X		X	x	
T5	All processing plants, buildings and surface infrastructure will be demolished and removed when mining activities cease, in line with the latest approved Closure and Rehabilitation Plan. This process will be in consultation with the Regional Manager in terms of Section 44 of the MPRDA, 2002.					X			X	X
T6	Access and haul roads will be rehabilitated in line with the latest approved Closure and Rehabilitation Plan.					X			X	X
T7	The roads that will be rehabilitated will be re-shaped according to the area contours, scarified, fertilized and re-vegetated with indigenous vegetation species.					X			X	X
T8	Surface or storm water control structures (berms or trenches) will be constructed around high pollution areas such as service workshops and catchment dams, in line with the prevailing contours.	X			X			X	X	
T9	Some temporary waste rock dumps may be created as mining progresses, and not at the designated waste dump areas. The waste material will be used for backfilling of shallow excavations.	X			X			X	X	
T10	Natural weathered rock and topsoil will be removed from the areas to be mined prior to the commencement of such activities, and stored separately for later use in rehabilitation.	X			X			X	X	
T11	End use of the open cast pits should be discussed and agreed with the surface owner well in advance so that the mining method and progressive rehabilitation conducted is done in line with the agreed closure objectives and targets. The Principal Inspector of Mines and Regional Manager must be consulted in the regard.	X			X			X	X	
T12	Safety and warning signs must be placed around open pits.	X			X			X	X	
T13	All stockpiles of crushed rock will be removed and sold for various construction purposes.				X			X	X	
T14	Waste Rock Dumps (WRD) will be progressively shaped.	X			X	X		X	X	
T15	The final rehabilitated land surface will reflect the pre-mining topography as closely as possible.		X					X	X	
<b>Soils</b>										
S1	The final rehabilitated land surface will reflect the pre-mining topography as closely as possible. To this end the soils and land surface will be contoured to facilitate good drainage during the operation as well as on completion of the operation.		X						X	
S2	The structure of the dry well-drained soils is unlikely to be effected other than by some compaction. However, dewatering of the clay rich soils of the wet and saturated areas will result in the formation of clay clods and excessive compaction may occur. Cultivation to break these clods will be necessary on rehabilitation. The soils stripped and stockpiled for use in the final closure will need to be protected so as to minimise wind and water erosion (drainage), as well as any compaction. Due to the varied nature of the soils in the area it is extremely important that the wet (Westleigh, Kroonstad and Katspruit) soils, as well as the heavy structured soils (Rensburg and Bonheim) are stockpiled separately from the well-drained moderately productive (Hutton, Clovelly, Glenrosa and Mispah) soils. Foundations will have to be prepared for all access roads and stockpile positions, as well as a detailed design for the drainage, so as to prevent loss of materials by storm water erosion.	X						X	X	
S3	After operational activities cease, the impacted footprint area will be rehabilitated as soon as practicable with growing season and water availability being the primary constraints. Where disturbed areas cannot be re-vegetated promptly, appropriate measures will be taken to control erosion. These may include: contours; berms; energy dissipaters (such as gabions); and application of straw mulches or soil binders to exposed soils.	X						X	X	
S4	Topsoil will be used in various rehabilitation and re-vegetation programmes when mining ceases.		X			X		X		
S5	Storm water control structures should be constructed to preserve the soil and prevent erosion. The soil stockpiles should be vegetated to maintain soil ecology and micro-organism life. Stored topsoil must not be compacted.		X			X		X		
S6	Progressive rehabilitation and re-vegetation will be undertaken by MPM.		X			X		X	X	
S7	When operational activities cease, compacted soils associated with the operations will be loosened to a depth of 300mm, scarified and stabilized. The soil will then be shaped according to the prevailing contours, fertilized and re-seeded with indigenous vegetation seeds.		X			X			X	
S8	On completion of an operation and during rehabilitation, if sampling of the topsoil's indicates a need for fertilisation, the required mix (to be determined from sampling at the time) will be applied in small quantities on a frequent basis.		X						X	

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S9	Monitoring of the success of the re-vegetation programme will form part of the concurrent rehabilitation and EMP performance assessment during the operational phase operations.		X			X		X		
S10	Where appropriate, access roads will be equipped with storm water control structures such as culverts, and drainage trenches to minimize erosion.		X			X		X		
S11	Access roads must be wetted periodically with a water truck to suppress dust and minimize wind based soil erosion.		X			X		X		
S12	Storm water control structures, associated with the UG2 open pits and crusher, should be constructed to preserve the soil and prevent erosion. The soil stockpiles should be vegetated to maintain soil ecology and micro-organism life. Stored topsoil must not be compacted.		X					X		
S13	Over areas of deep excavation where the majority or all of the soil profile is to be impacted, strip all usable soil as defined (700 mm) in terms of the soil classification and stockpile as berms or low (< 1,5 m) terraced dumps		X			X	x	X	X	
S14	Alluvial soils should be stockpiled separately from the colluvial (shallower) and in-situ derived materials, which in turn should be stored separately from any calcrete material, while the soft overburden is stored as a separate unit, as a defined dump of less than 15 m in height where possible.		X			X	x	X	X	
S15	At rehabilitation replace the soft overburden followed by the calcrete, compact in situ followed by the soil to appropriate soil depths, and cover areas to achieve an appropriate topographic aspect and attitude to achieve a free draining landscape as close as possible the pre-mining/construction land capability rating.		X			X			X	
S16	Over areas planned for less invasive structures and any material stockpile or storage, strip the top 500 mm of usable soil over all affected areas including terraces, and strip remaining usable soil and calcrete (if present in profile) where founding conditions require further soil removal.		X			X	x	X	X	
S17	Over areas of WRD and all Heavy Vehicle Haulage Roads and Major Access Routes, strip usable soil to a depth of 750 mm where possible and/or in areas of arable soils, and between 300 mm and 500 mm in areas of soils with grazing land capability. Stockpile hydromorphic soils separately from the dry and friable materials.		X			X	x	X	X	
S18	Before rehabilitation remove all gravel and other rocky material and recycle as construction material or place in open voids. Remove foundations to a maximum depth of 1 m. Replace soil to appropriate soil depths and in appropriate topographic position so as to achieve pre-mining land capability. Protect the stored materials from erosion and contamination using vegetation or rock cladding.		X			X			X	
S19	Over areas to be utilised for General Access Roads (light delivery vehicles), Laydown Pads and any Conveyancing Servitudes (Above ground pipelines and power line servitudes) strip the top 150 mm of usable soil over all affected areas and stockpile in longitudinal stockpile or berms upslope of the facilities. Protect from erosion and contamination.		X			X	x	X	X	
S20	Soil stockpiles and berms height will be restricted where possible to <1.5 m so as to avoid compaction and damage to the soil seed pool. Where stockpiles higher than 1.5m cannot be avoided, these will be benched to a maximum height of 15m. Each bench should ideally be 1.5 m high and 2 m wide.									
S21	For storage periods greater than 3 years, vegetative or rock cover will be essential, and should be encouraged using fertilization and induced seeding with water and/or the placement of waste rock. The stockpile side slope should be stabilized at a slope of 1 in 6. This will promote vegetation growth and reduce run-off related erosion.									
S22	Only inert waste rock material will be used for cladding around the soil stockpiles if the vegetative growth is impractical or not viable (due to lack of water for irrigation etc.). This will aid in protecting the stockpiles from wind and water erosion until the natural vegetative cover can take effect.		X			X		X		
S23	Vehicles: Equipment, human and animal movement on the soil stockpiles will be limited to avoid topsoil compaction and subsequent damage to the soils and seedbank.		X			X		X		
S24	Ensure that the soils conservation plan is implemented during the operational phase of the project.		X			X		X	X	
S25	All soils compacted as a result of the operational activities falling outside the infrastructure footprint areas should be ripped and profiled.		X			X		X	X	
S26	Placement of soils: Stockpiled soil will be used to rehabilitate disturbed sites either ongoing as disturbed areas become available for rehabilitation and/or closure. The utilisable soil (500 mm to 750 mm) removed during the construction phase, must be redistributed in a manner that achieves an approximate uniform stable thickness consistent with the approved post development end land use (conservation land capability and/or low intensity grazing), and will attain a free draining surface profile. A minimum layer of 300 mm of soil will be replaced.		X			X			X	
S27	Fertilization: A representative sampling of the stripped and stockpiled soils will be analysed to determine the nutrient status and chemistry of the utilisable materials for rehabilitation purposes. As a minimum the following elements will be tested for: EC, CEC, pH, Ca, Mg, K, Na, P, Zn, Clay % and organic carbon. These elements provide the basis for determining the fertility of soil. Based on the analysis, fertilizers will be applied if necessary.		X			X		X	X	
S28	Erosion control: Erosion control measures will be implemented to ensure that the soil is not washed away and that erosion gulleys do not develop prior to vegetation establishment.		X			X		X	X	
S29	Restrict vehicle movement to areas of need.		X			X		X	X	
S30	MPM will monitor vegetative growth until it is self-sustaining.		X			X			X	X
S31	Ensure that the Soil Conservation Plan is implemented where necessary during the rehabilitation phase of South 2 Shaft.		X			X			X	X

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S32	Minimise the footprint area of impact by conducting site clearing activities associated with the construction of the required infrastructure on a footprint as small as practically possible.	X					X			
S33	Rehabilitate the project disturbed areas as soon as possible once construction is completed.	X					X			
S34	Rip and profile soils that have been compacted as a result of the construction activities.	X					X			
S35	Ensure that exposed soils and steep slopes are stable and not eroding.		X			X		X	X	
<b>Land Capability</b>										
LC1	Rehabilitation of the project area during the operational phase and on closure will be managed by the environmental officer and will result in the gradual improvement of the local land capability.	X	X			X		X	X	X
LC2	Where possible items of infrastructure such as roads, power lines and buildings will be left as they will benefit the local communities and any future development. Thereafter, the remainder of the infrastructure will be dismantled and removed from the site or demolished on closure.	X	X			X			X	X
LC3	Any voids on the site will be backfilled, in a controlled manner, with building rubble and inert waste rock, compacted and top dressed with sufficient material and the appropriate vegetation.	X	X			X			X	X
LC4	All plant access roadways will be ripped to correct any compaction created by the heavy traffic utilized during the mining operation.	X	X			X			X	X
LC5	Any pollution control berms/ embankments constructed to screen the shaft sites from the local communities should be removed and the topsoil/ soil contained therein used in the rehabilitation process.	X	X			X			X	X
LC6	All infrastructures associated with the operation of the tailings dam (pipelines, penstock, pumps, access roads etc.) will be removed on closure. The surface of the tailings will be flattened and paddocked to prevent erosion of the tailings by storm water runoff. The final surface will be covered with a layer of waste rock and then revegetated using the stockpiled topsoil and reseeded. The embankments may be re-profiled (flattened) to blend in with the surrounding topography. The return water system will be closed and rehabilitated once the system has been thoroughly de-watered.	X	X			X			X	X
LC7	On the completion of decommissioning works, the sites will be rehabilitated to return them to their original condition or better using the stockpiled topsoil and a reseeded programme as follows:	X	X			X			X	X
LC8	The areas that have been dressed with topsoil will then be rolled and seeded, preferably in February/ March, or as soon as the soil moisture is sufficient (monitor with tensiometers) to guarantee that the seed has a chance of germinating. A suitable seed mix (to be determined from the vegetation survey) should be used to stabilize the replaced soils.	X	X			X			X	X
LC9	The planting will be undertaken with water, either by hydroseeding the seed the mix onto the ground, or having pre-wet the soils prior to planting, with a weekly watering programme (15 to 20mm/ha/week) for one month after planting; or until the germination has occurred. The areas to be planted will be levelled and engineered to a slope not greater than 1:5 where possible. The soils will then be ripped to a depth of 20mm to loosen the soil, and all weeds will be removed. A fertilizer mix is required (of 2:3:2 (22) Zn at a rate of 300 to 350kg/ha) will be applied at time of planting. In addition, and if available chicken litter should be applied to at bulk to the heavy clay rich soils.	X	X			X			X	X
LC10	For areas that are considered too steep, and where a gradient of 1:5 cannot be achieved, the use of Vetiver grass (Vetiveria zizanioides) is recommended, and in places will be essential to prevent erosion, and to stabilize the soils. The Vetiver will be planted according to the slope gradient, length of slope, and degree of erosion potential. A spacing of approximately one row every five (5m) meters of vertical drop is recommended. This might alter as the slope becomes very steep, or very shallow. It is recommended that the specialists (specialised soil stabilization) are used for the specific areas of concern.	X	X			X			X	X
LC11	The grass stands will be examined by a horticulturist one year after planting to ensure that the grass has established itself satisfactorily. A soil sample will be taken in the June following planting, and analysed to determine the required fertilizer applications.	X	X			X			X	X
LC12	The establishment of grass will prevent erosion and dust. Vegetation and soil rehabilitation will continue until the land is self-sustainable, well grassed and until closure. The soils have high erosion potential and therefore specific attention must be paid to the implementation or rigorous erosion control measures.	X	X			X			X	X
LC13	The final rehabilitated land surface should reflect the pre-mining topography as closely as possible. To this end the soils and land surface should be contoured to facilitate good drainage during the operation as well as on completion of the operation.		X					X	X	
LC14	The rehabilitation of the land disturbed by the construction of the adits at the Onverwacht Hill and associated infrastructure will be such that the land can be returned to its existing capability and land-use. Future eco-tourism will not be limited by the project. This work will require ongoing management to ensure that it is carried out in accordance with the site rehabilitation plan.		X						X	X
LC15	All land will be returned to its pre-disturbance potential at the Maandagshoek Winze Shaft site. The mine will conserve soil to ensure effective rehabilitation of the land.	X						X	X	
LC16	All land associated with the Maandagshoek Winze Shaft will be returned to a state resembling the area in the immediate vicinity of the dump.	X								X
LC17	Concurrent rehabilitation should be implemented throughout the life of the UG2 open pits and crusher plant to minimize and return the environment to - as much as possible - the original status.		X					X	X	

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<b>Land Use</b>										
LU1	If, the rehabilitation program as stated is carried out to plan, the land use for the Onverwacht tailings dump and Hill site can be expected to be the same, or in places better than prior to the mining operation. The land should not be used for anything other than well controlled (low intensity) grazing, but preferably the land should be left as wilderness or conservation land if possible.		X					X	X	
LU2	MPM will revert back the land use to as close as possible to what existing prior to mining operations associated with MPM operations (wilderness and grazing land state or in line with a approve closure and rehabilitation plan once developed.		X			X		X	X	X
LU3	MPM will maintain or divert existing roads and tracks used by local communities for grazing etc.	X	X			X		X		
LU4	The establishment of the new Merensky FRD complex and Merensky open pit will take up some area formerly forming part of the wilderness and grazing land. These sites must be re-vegetated with indigenous plant species. They will unlikely revert back to original land use due to safety pre-cautions after mining operations cease.		X			X		X	X	X
LU5	Revert back the land use to as close as possible to what existing prior to mining operations associated with the UG2 open pits and crusher plant.		X					X	X	
<b>Flora</b>										
FL1	During induction of all personnel and contractors, awareness training in terms of flora species is recommended to increase awareness, respect and responsibility towards the environment.		X			X		X		
FL2	Minimise the areas that are to be stripped of vegetation.	X					X			
FL3	All development footprint areas and areas affected by mining and related activities should remain as small as possible and should not encroach unnecessarily into the surrounding sensitive areas and the associated buffer zones.		X			X			X	
FL4	Informal fires in the vicinity of mining activities should be prohibited throughout the life of mine.		X			X			X	
FL5	Prevent damages to sensitive habitat from general mining and stockpiling activities associated with operational areas.		X			X		X	X	
FL6	Human and vehicular activity will be restricted to the access & haul routes and infrastructure sites.	X						X	X	
FL7	Staff will be prohibited from collecting plants and cutting firewood.	X						X	X	
FL8	An alien invasive eradication plan associated with MPM operations should be developed and updated to comply with relevant legislation (amendments to the regulations under the Conservation of Agricultural Resources Act, 1983 and Section 28 of the NEMA, 1998).		X			X		X		
FL9	MPM will implement the alien invasive and weed eradication strategy mine wide.	X						X	X	
FL10	No vehicles should be allowed to drive through riparian areas during the eradication of alien and weed species.		X			X		X		
FL11	Care should be taken with the choice of herbicide to ensure that no additional impact or loss of indigenous plant species occur due to the use of the herbicide;		X			X		X		
FL12	MPM will rehabilitate disturbed areas to a stable physical state and prevent proliferation of invasive species.	X						X	X	
FL13	Re-vegetation should be with indigenous plant species that are able to sustain the regional climate conditions and soil conditions.		X			X		X	X	X
FL14	Where vegetation is to be planted, a mixture of commercially available seeds that germinate reliably (high seed viability) will be used. The species to be used will be indigenous (no exotic plant species will be used) and will be selected on the basis of their ability to bind and cover soil (afford erosion protection) and their tolerance of prevailing environmental conditions. Exotic species and species that can become invasive will be avoided. The seed mix will contain a rapidly germinating annual (such as Eragrostis teff) that will act as a nurse crop – this will stabilise the soil rapidly and will then die out allowing for colonisation of the re-vegetated area by indigenous species. An appropriate seed mix and application rate will be formulated in consultation with a rehabilitation expert.	X						X	X	
FL15	Runners of grass with stoloniferous and rhizomatous growth forms will be obtained from the surrounding veld and planted at the reclamation site.	X						X	X	
FL16	Progressively re-establish the removed vegetation associated with MPM operations.		X			X		X		
FL17	Conserve vegetation removed during construction operations.		X			X		X		
FL18	Natural vegetation is expected to re-establish along the sides of the access road. If this fails re-vegetation will be implemented. The access road is likely to still be used by the community even after completion of the mining activities. Consultation should be done closer to mine de-commissioning.		X					X	X	
FL19	Vegetation establishment will be monitored and remedial measures will be implemented where necessary.	X						X	X	
FL20	If any threatened species, or nationally or provincially protected floral will be disturbed, ensure effective relocation of individuals to suitable similar habitat.	X					X			
FL21	All rescue and relocation plans should be overseen by a suitably qualified specialist.	X					X			
FL22	Should any Red data or protected plant species (i.e. Sclerocarya birrea subsp. Caffra and Lydenburgia cassinoides) be encountered within the proposed development footprint areas, it is recommended that two new trees are to be planted in suitable habitat for each tree destroyed, should relocation be unsuccessful. If these trees fall within the development footprint, special authorisation is to be obtained from relevant authorities for such trees to be cut, disturbed, damaged or destroyed.	X					X			

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FL23	Protected plant species must be identified, and plant nursery established through the mine Environmental Section, under the auspices of a qualified Botanist, to conserve the said protected species and maintain bio-diversity within the operational sites.		X			X		X		
FL24	The protected trees as identified at South 2 Shaft will be removed once a license for the removal has been issued by DAFF.		X			X		X		
FL25	Ensure that dust associated with mining activities has minimal impact upon the regional ecology.		X			X		X	X	
FL26	Mine to expand, manage and maintain the on-site nursery during the Life of Mine to assist with the mitigation and progressive rehabilitation phases.		X			X			X	
FL27	Species utilised in the greening of facility areas can be cultivated in the nursery operated by the Modikwa Mine. This is also a viable long-term option as the nursery can be used to produce floral species, which will be utilised in the closure and rehabilitation of the mining areas.		X			X		X	X	
FL28	Utilise species propagated in the nursery for rehabilitation at South 2 Shaft.		X			X			X	X
FL29	The conditions of the license will be adhered to and the specific nursery implementation and management plan will be implemented.		X			X		X		
FL30	It must be ensured that mining related waste or spillage and effluent do not affect the sensitive habitat boundaries and associated buffer zones after closure of South 2 Shaft.		X			X			X	X
FL31	During construction, and if necessary, drift fences constructed from hessian sheets could be installed at erodible areas to minimise erosion.	X					X			
FL32	Greening of facility grounds with indigenous species to improve aesthetic qualities of the facility, maintain and increase species diversity of the area and create a green consciousness among staff.		X			X		X	X	
FL33	Open cast pits and other shallow excavations will be backfilled with waste rock and overburden material, and sloped to resemble the surrounding land configuration/landscape and rehabilitated with indigenous vegetation where it is expected that no mining will take place after the rehabilitation. Plant species should be cultured in and around the un-disturbed mining area.		X			X		X		
FL34	Post-closure edge effects of activities at South 2 Shaft undertaken during the rehabilitation phase, including erosion and alien/weed controls, need to be strictly managed in the disturbed areas.		X			X			X	X
FL35	Integration into existing group policy and management systems, including the existing Closure Plans and Environmental Management Programmes;		X			X		X	X	X
FL36	All soils compacted as a result of closure activities at South 2 Shaft should be ripped and profiled. Special attention should be paid to alien and invasive control within these areas. Alien and invasive vegetation control should take place throughout all development including decommissioning phases to prevent loss of faunal habitat.		X			X			X	X
FL37	All project related disturbed habitat areas at South 2 Shaft must be rehabilitated and planted with indigenous floral species as soon as possible to ensure that faunal habitat is re-instated.		X			X			X	X
FL38	All access road surfaces must be scarified, supplemented with fertilizer, re-shaped and re-vegetated with indigenous vegetation at operational areas.		X			X			X	X
FL39	Ensure harvesting of plants from this area and preserve in the nursery for rehabilitation purposes, where practical. Any revegetation of affected area to be rehabilitated after construction should be done in consultation with the Botanical Specialist.		X			X		X		
FL40	The on-site nursery must be expanded and maintained by the mine if possible during the Life of Mine to assist with the mitigation and progressive rehabilitation phases.		X			X		X		
<b>Fauna</b>										
FA1	During induction of all personnel and contractors, awareness training in terms of faunal species is recommended to increase awareness, respect and responsibility towards the environment.		X			X		X		
FA2	Mining sites and infrastructure areas should be properly fenced to prevent trespassing and uncontrolled entry into the dangerous mining site by both wild and domestic animals.		X			X		X	X	
FA3	No hunting, snaring or trapping of any kind and of any animal or bird should be allowed on the mining area. All animals – both wild and domestic that become trapped as a result of mining activities must be assisted and released into the surrounding area again. Should the animal or bird be of a species that cannot be caught by hand the matter must be immediately report to the local Department of Nature Conservation for assistance and involvement.		X			X		X	X	
FA4	A sensitivity map has been developed for the South 2 Shaft area, indicating areas which are considered to be of increased ecological importance. It is recommended that this sensitivity map be considered during all development phases to aid in the conservation of floral diversity within the study area.		X			X		X		
FA5	The boundaries of the development footprint areas are to be clearly defined and it should be ensured that all activities remain within defined areas.		X			X		X		
FA6	It is recommended that a speed limit of 40 km/h is implemented mine wide in order to minimise risk to fauna species from vehicles. Speed humps may be constructed to help slow vehicles and help mitigate collision with faunal species.		X			X		X		
FA7	Informal fires in the vicinity of mining activities should be prohibited throughout the life of mine.		X			X			X	

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<b>Riparian Areas</b>										
RA1	Ensure that waste and runoff do not affect the riparian features and associated buffer zones.		X			X		X		
RA2	All development footprint areas and areas affected by the proposed development should remain as small as possible and should not encroach onto surrounding sensitive areas and the associated buffer zones.		X			X		X		
RA3	The boundaries of the development footprint areas are to be clearly defined and it should be ensured that all activities remain within defined footprint areas.		X			X		X		
RA4	All sensitive areas outside the operational area at South 2 Shaft must be kept off-limits to vehicles and personnel.		X			X		X		
RA5	All affected riparian features at South 2 Shaft should be visually inspected and monitored for erosion and incision on a monthly basis, and immediately after heavy rainfall events. A riparian feature inspection programme and reporting system should be developed and implemented during the life of mine.		X			X		X		
RA6	It is recommended that the section of the conveyor belt associated with South 2 Shaft on surface be enclosed to limit the potential of dust generation once ore is transported on the conveyor system, and to prevent transport material from falling off into the riparian features.		X			X		X		
RA7	All road crossings over riparian features that may require upgrading should be undertaken in such a manner as to ensure that hydrological connectivity upstream and downstream of the crossings are maintained.		X			X		X		
RA8	Future mine planning should ensure that mining activities do not lead to a reduction of stream flow or dewatering of any riparian features and connectivity of the riparian features in the vicinity of the mining activities should be maintained.		X			X		X		
RA9	Care will be taken to ensure that the existing water management infrastructure at the existing sewage treatment plant is monitored and maintained.		X			X		X		
RA10	All disturbed riparian features should be rehabilitated upon decommissioning to ensure that the functions of the riparian features are re-instated and all disturbed riparian features up and downstream of the mining development should be rehabilitated with indigenous flora species.		X			X			X	X
<b>Aquatic Environment</b>										
AE1	Very clear and well managed clean and dirty water separation must take place in line with the requirements of regulation GN704 of the National Water Act.		X			X		X		
AE2	All pollution control facilities associated with the South 2 Shaft must be managed in such a way as to ensure that storage and surge capacity is available if a rainfall event occurs.		X			X		X		
AE3	MPM will implement the surface water monitoring programme.		X			X		X		
AE4	Ongoing biomonitoring of aquatic resources in the vicinity of South 2 Shaft must take place at points located upstream and downstream of the mining activities near the Tubatsane River and tributaries as long as there is sufficient habitat to do so.		X			X		X		
AE5	Biannual (twice a year) biomonitoring should be undertaken and include the following methods: SASS5, IHHAS and MIRAI indices. Should any deviation of the normal trend be identified, measures to minimise or prevent any significant negative impacts should be implemented.		X			X		X		
AE6	Toxicity testing should be undertaken at points MD1, MD2, MD3 and MD4 concurrently with the biomonitoring programme in order to monitor the toxicological risk of the process water systems. Toxicity testing will be undertaken in accordance to the Direct Estimation of Ecological Effect Potential (DEEEP Protocol), should it become evident that process water discharge or decant of underground water will occur.		X			X		X		
AE7	Care will be taken to ensure that the existing water management infrastructure at the existing sewage treatment plant is monitored and maintained.		X			X		X		
<b>Surface Water</b>										
SW1	The <b>ore storage</b> area will be designed and located in the plant site area which will be bunded so that any spillages or runoff may be collected to prevent the ingress of waste and/or contaminated water into the external environment.	X	X			X		X		
SW2	The <b>flotation building</b> will be designed so that it is located within a bunded area. This area will be equipped with sumps and suitable pumps to allow any spillages to be returned to the process stream.	X	X			X		X		
SW3	In addition, the flotation building will be located in the plant site area which in turn will be bunded so that any spillages or runoff may be collected to prevent the ingress of waste and/or contaminated water into the external environment.	X	X			X		X		
SW4	The <b>concentrate storage</b> area will be located within the plant site bund which will be designed so that any spillages or runoff may be collected to prevent the ingress of waste and/or contaminated water into the external environment.	X	X			X		X		
SW5	Ensure the salvage yard is managed so that all non-hazardous/ hazardous waste materials will be stored in a controlled manner and removed off site for disposal or recycling on a regular basis.	X	X			X		X		
SW6	The storage areas (i.e. the salvage yard and collection points) will be designed to incorporate bunds and sumps so that any spillages or runoff may be collected to prevent the ingress of waste and/ or contaminated water into the external environment.	X	X			X		X		
SW7	In addition the entire plant area will be bunded to prevent contamination of the external environment.	X	X			X		X		

Ref Nr	Management measures/ actions	North	Plant	Central	South 1	South 2	Construction	Operational	Closure and Decommissioning	Post Closure
		Area of Mine to which management measures apply					Project Phase			
SW8	Workshop/ storage areas will be designed with adequate bunding and sumps so that any spillages or runoff may be collected to prevent the ingress of waste and/or contaminated water into the external environment. In addition, these areas will be located within the shaft site or plant site areas, which in turn will be designed to allow the capture of any spills and/or runoff.	X	X			X		X		
SW9	Ensure all sewage collection points will be designed as closed units and the adoption of pollution control measures.	X	X			X		X		
SW10	The sewage treatment plant will be designed with adequate bunding and sumps so that any spillages and runoff may be collected to prevent the ingress of waste and/ or contaminated water into the external environment. In addition, these areas will be located within the shaft site area, which in turn will be designed to allow the capture of any spills and/or runoff. The final treated effluent from Montrose Village is discharged while final treated effluent from Area Village is discharged or is utilised for irrigation.	X	X			X		X		
SW11	Uncontrolled disposal of waste bags may create litter in the vicinity of the laboratory. All bags are recycled where possible. Old bags and other waste that cannot be returned to the plant is disposed of in a skip prior to removal to the salvage yard.	X	X			X		X		
SW12	Ensure laboratory is fitted with suitable banded liquid waste storage/ disposal system to prevent contamination of the external environment.	X	X			X		X		
SW13	The waste liquid storage and disposal system will comprise a sealed tank with an automatic pH regulating systems. The contents of this tank will be automatically discharged on a regular basis into the process stream.	X	X			X		X		
SW14	The solid waste/ dust collected by the bag house/ air extraction system will be removed on a regular basis by the air extraction supplier/operator. This company will also be responsible for the correct offsite disposal of this waste.	X	X			X		X		
SW15	The bag house unit(s) will be located within the plant area which will be designed to incorporate bunds and sumps so that any spillage or runoff may be collected to prevent the ingress of waste and/ or contaminated water into the external environment.	X	X			X		X		
SW16	A stormwater management system will be installed at the Onverwacht Hill site.		X					X		
SW17	There will be no discharges of dirty water from the Maandagshoek Winze Shaft site unless there is an extreme storm event, with a recurrence interval exceeding 1:50 years. The mine will avoid contamination of soils and will implement appropriate remedial measures if incidents of spillage occur.	X						X	X	X
SW18	The land surface after rehabilitation will follow the natural contours of the surrounding land after to avoid ponding.	X						X	X	
SW19	All quarries, ponds and small pools associated with the South 2 Shaft and Merensky operations must be de-watered following rains or storms. The said water may be pumped into a designated reservoir, or used as process water for dust control on the mine access roads and concentrator plant.		X			X		X		
SW20	Soil erosion, associated with South 2 Shaft and Merensky operations, must be managed with the construction of gabions, and filling of dongas with waste material/bricks. Care must be however taken not to scatter waste rock and overburden material all over the mining area in an unsystematic manner. All disturbed area must be re-vegetated with indigenous vegetation to encourage form soil structure and composition, and in turn minimize erosion and run-off sediment load.		X			X		X		
SW21	The Chrome plant will be constructed on a concrete slab within banded wall to contain any spillages, and prevent mixing of contaminated and clean water.		X			X		X		

Ref Nr	Management measures/ actions	North	Plant	Central	South 1	South 2	Construction	Operational	Closure and Decommissioning	Post Closure
		Area of Mine to which management measures apply					Project Phase			
SW22	The engineering designs of the Merensky Fine Residue Deposit (FRD) must entail the following: a. Cut-off trenches and walls above the FRD to separate clean water from the FRD. b. Paddocks and solution trenches between the foot of the FRD and the natural water channel to intercept migrating slurry water along the soil profile/bedrock contact zone c. Decanting of stormwater runoff from the catchment area above the FRD, rainfall on the FRD and supernatant water through penstocks and an underdrain into return water dams from where it will be recycled back into the process. d. An emergency spillway to deal with extreme storm events. e. Collection of runoff from the side slopes of the FRD on step-in areas where solids will be trapped and collection of seepage from beneath the FRD in drains down slope of the dam to be returned into the process. f. Location of the proposed fenced boundary of the site beyond the estimated 1:100 year flood line of the valley tributary thereby ensuring the upper catchment runoff is not affected. g. The FRD will be constructed in accordance with Regulation 704 of the Water Act. h. Good housekeeping practices will be maintained, including but not limited to separation of clean and dirty water, limiting exposed dirty surfaces and maximizing opportunities for re-use of water. i. Linear infrastructure such as roads and pipelines will be inspected at least monthly to check that the associated water management infrastructure is effective in controlling erosion. j. All surface water management infrastructure constructed from soil (berms, canals and bunds) will be inspected at least monthly, with more frequent inspections during periods of high rainfall and after major rainfall events. k. Energy dissipaters will be constructed at points where there are concentrated discharges of water that can cause significant erosion, such as in the clean water diversions around the FRD or along roads and pipelines. The effectiveness of these dissipaters will be checked on a monthly basis. l. If any of the inspections detailed above identify eroded areas, these should be repaired where necessary as soon as practicable. m. Tailings pipelines will be inspected regularly and monitored through flow metres for efficiency, and any damage will be repaired immediately. n. Engineering designs such as lining of the return water dams and perimeter drainage trenches will be implemented.		X				X		X	
SW23	Soil erosion, associated with UG2 open pits and crusher plant, must be managed with the construction of gabions, and filling of dongas with waste material/bricks. Care must be however taken not to scatter waste rock and overburden material all over the mining area in an unsystematic manner. All disturbed area must be re-vegetated with indigenous vegetation to encourage form soil structure and composition, and in turn minimize erosion and run-off sediment load.		X					X	X	
SW24	All open pits, quarries, ponds and small pools must be de-watered following rains or storms. The said water may be pumped into a designated reservoir, or used as process water for dust control on the mine access roads and concentrator plant.		X					X		
SW25	Storm water control berm will be constructed along the open pit perimeter to divert water from the pit.		X					X		
SW26	Storm water control structures will also be constructed on the mine site to contain run-off from the site. All ponds and small pools must be de-watered immediately following rains or storms. The said water may be pumped into the existing on-mine water reservoir or used as process water for dust control on the mining access roads and crusher plant.		X					X		
SW27	Stormwater culverts and clean water diversions will be designed and constructed to accommodate the 1:50 year storm event at South 2 Shaft.		X			X		X		
SW28	Stormwater runoff at South 2 Shaft will be handled on surface and directed towards natural watercourses.		X			X		X		
SW29	Ensure that project specific clean water diversions continue to route the water towards the local water course.		X			X		X		
SW30	Routine water quality monitoring proposed up and down stream of operational activities and areas should be undertaken in line with the water monitoring campaign.		X			X		X		
SW31	MPM will implement the surface water monitoring programme mine wide		X			X		X		
SW32	The proposed WRD for the storage of waste rock generated at the South 2 Shaft will require management of dirty runoff and diversion of up gradient clean runoff and one drainage line;		X			X		X		
SW33	All stormwater management infrastructures associated at the South 2 Shaft should be inspected monthly during the raining season to assess any damage and the extent of any erosion or debris build up. Areas where maintenance is identified should be addressed as soon as practicable.		X			X		X		
SW34	The point where the clean water diversions re-enter the natural system must enter the system at the same elevation as the receiving aquatic environment via an energy dissipation structure thereby preventing erosion and incision of the natural watercourse. To further minimise erosion and incision of the natural watercourse the diverted flow should enter the natural system where possible at an acute angle to prevent the creation of turbulent flow.		X			X		X		
SW35	Demolition activities will be undertaken at South 2 Shaft during the dry season, where possible to minimise the potential for stormwater runoff.		X			X			X	
SW36	During closure and rehabilitation activities clean water diversion berms upstream of the area will be constructed		X			X			X	



Ref Nr	Management measures/ actions	North	Plant	Central	South 1	South 2	Construction	Operational	Closure and Decommissioning	Post Closure
		Area of Mine to which management measures apply						Project Phase		
SW37	Routine surface water quality monitoring up and down stream of closure and rehabilitation activities at South 2 Shaft will be undertaken as per the surface water monitoring programme.		X			X			X	
SW38	Stormwater runoff will be handled on surface and directed towards natural watercourses.	X					X			
SW39	The North 1 Ventilation Shaft will be placed outside the two rivers to the North and South of the proposed shaft. The soils are erodible and it is likely to that the Ventilation Shaft will be situated within the erosion gullies which means that the stormwater control needs to ensure that the ventilation shaft is not in the conduit of stormwater and hence the following control measures are required:	X					X			
SW40	Where possible the Ventilation Shaft should be placed outside of the gullies.	X					X			
SW41	During construction the raise bore machine should be protected with a deflection bund.	X					X			
SW42	A waste rock pad/terrace or other competent material should be constructed around the ventilation Shaft to ensure the erosion is not at the base of the ventilation shaft.	X					X			
SW43	The concrete portion of the ventilation shaft should be at least 2 m above the lowest point of the ventilation shaft.	X					X			
SW44	Any runoff upstream of the ventilation shaft should be deflected away via berms and canals.	X					X			
SW45	Any discharge from the North 1 ventilation shaft must be controlled by energy dissipaters.	X					X			
SW46	Develop and implement controls to pick up oil/diesel leaks and spillages of any designated hazardous waste.	X					X			
SW47	Ensure areas used construction and vehicle maintenance areas are clearly indicate and adequate bunded areas are provided for the storage of chemicals and hazardous materials.	X					X			
SW48	Ensure that routine maintenance on all vehicles is undertaken as per maintained schedule and records are kept.	X					X			
SW49	Routine surface water quality monitoring up and down stream of clearing activities and position of infrastructure and activities associated with the proposed project will be undertaken on a monthly basis in accordance with the Water Monitoring Plan of MPM.	X					X			
SW50	Stormwater runoff will be handled on surface and directed towards natural watercourses.	X						X	X	
SW51	During operation the Ventilation Shaft should be checked for any ongoing erosion and repaired where necessary.	X						X		
SW52	During operation the Ventilation Shaft should be checked for any ongoing erosion and repaired where necessary.	X						X		
SW53	Ensure that routine maintenance on all vehicles are undertaken as per maintained schedule and records are kept.	X						X	X	
SW54	Routine surface water quality monitoring up and down stream of clearing activities and position of infrastructure and activities associated with the proposed project will be undertaken on a monthly basis in accordance with the Water Monitoring Plan of MPM.	X						X	X	
SW55	Ensure that surface water resources of all major watercourses are monitored for changes during all phases of the mine.		X			X		X	X	
SW56	Ensure adequate pollution control measures are adopted for the site during all the phases.	X	X					X		
<b>Groundwater</b>										
GW1	A quarterly groundwater quality and level monitoring will be established using the existing abstraction and monitoring boreholes at the site as follows: o Groundwater monitoring boreholes will be monitored on a quarterly basis, around areas of possible contamination. o This will be compared to simulated water levels and the predictions made will be updated accordingly. The mine owns the surface rights of the expected impacted area and it is therefore the responsibility of the mine to provide an alternative source of water or to relocate the affected inhabitants. o The surface area of the storage dam, plant and low grade ore dumps will be compacted in order to reduce infiltration. Clay-rich material (for example	X	X			X		X	X	
GW2	Water from the operational phase of the mine will be sourced from the Olifants River/ Arabie Dam. (The mine will also assist DWS in the installation of water supply infrastructure for the local communities as part of this scheme.)	X	X			X		X		
GW3	The mine will endeavour to minimise the use of fresh water as far as possible by making use of oil separation dams and treatment systems to allow the recycling of groundwater from the underground operations, dirty drilling water, runoff water collected in the plant/shaft areas and tailings return water.	X	X			X		X		
GW4	Monitoring of groundwater levels and qualities associated with the operations will continue and annual audit reports will be submitted to DMR and DWS. Water quality of underground water, being abstracted will also be monitored quarterly. The water quality standard will be taken as qualities indicated in the Water Use License – surrounding communities use water for domestic purposes. Reviewing of this standard is, however, suggested due to the fact that ambient water quality does not comply with the guideline target values.		X						X	
GW5	Explosives with a low nitrate level will be considered, in order to minimise nitrate contamination in water abstracted from workings at the Onverwacht Hill site.		X						X	
GW6	Mine inflow volumes, associated with Onverwacht Hill site will be estimated (using groundwater model) and provision will be made to hold this water (either in a new holding dam or existing infrastructure), which may contain elevated nitrates. Discharge of water, only when the water is of suitable quality, will be investigated in order to replenish the aquifer.		X						X	
GW7	The construct of the on-mine reservoirs to store and recycle water for mining processes will greatly reduce the need to pump water from underground for mining purposes. Ground water will be required for domestic and industrial use on the mine site.	X	X			X		X		

Ref Nr	Management measures/ actions	North	Plant	Central	South 1	South 2	Construction	Operational	Closure and Decommissioning	Post Closure
		Area of Mine to which management measures apply						Project Phase		
GW8	The water levels in the borehole where extraction will take place must be monitored regularly, so as not to over extract.	X	X			X		X		
GW9	Conserve and re-use water resources in the South 2 Shaft and Merensky operations.	X	X			X		X		
GW10	Ground water will be routinely monitored at various boreholes around the mine site to test and determine the water quality.		X			X		X		
GW11	Collection of runoff from the side slopes of the Merensky FRD on step-in areas where solids will be trapped and collection of seepage from beneath the Merensky FRD in drains down slope of the dam to be returned into the process.		X			X		X	X	X
GW12	Engineering designs such as lining of the return water dams and perimeter drainage trenches will be implemented.		X			X		X	X	X
GW13	Engineering designs, considered pre-mitigation, include cut-off trenches and walls above the Merensky FRD to divert clean water from the Merensky FRD, decanting of runoff and supernatant water through penstocks and an under-drain into return water dams from where it will be recycled back into the process, an emergency spillway to deal with extreme storm events and collection of seepage from beneath the FRD in drains down slope of the dam to be returned into the process. Paddocks and solution trenches will furthermore be constructed between the foot of the FRD and the valley water channel to intercept migrating slurry water along the soil profile/bedrock contact zone.		X			X		X	X	X
GW14	In the long term, the final fine residue disposed of at the Merensky FRD will be free of chrome which will reduce the possibility of heavy mineral and chrome contamination to underground water resources.		X			X		X	X	X
GW15	Ground water will be required for domestic and industrial use on the mine site. All water pumped from the UG2 open pit working areas will be pumped into the on-mine reservoirs.		X					X		
GW16	Compaction of the WRD area associated with the UG2 open pits before storage activities begins to reduce seepage into underlying aquifers.		X					X		
GW17	Other mitigation measures will include up gradient surface water diversion to ensure the containment of runoff and subsequent seepage into underlying aquifers and the installation of down gradient paddocks.		X					X		
GW18	The requirements for appropriate practical management measures for the protection of the groundwater resource will be discusses with DWS.		X					X		
GW19	Implement the groundwater monitoring programme during the life of mine.		X					X		
GW20	Proper management of stormwater drainage infrastructure at South 2 Shaft should be ensured.		X			X		X		
GW21	Up-gradient surface water diversion to ensure the containment of runoff and subsequent seepage into underlying aquifers at South 2 Shaft.		X			X		X		
GW22	The installation of down-gradient paddocks at South 2 Shaft.					X				
GW23	Groundwater inflow volumes must be recorded in order to update predictions. Numerical groundwater model must be updated and recalibrated every year to properly quantify and characterise the impacts.		X			X		X		
GW24	Implement the groundwater monitoring programme during the closure and rehabilitation phase of South 2 Shaft.		X			X			X	
GW25	If groundwater ingress is encountered associated with fractures, the fracture flow can be sealed off by grouting.	X					X			
GW26	All spillages will need to be cleaned up as soon as practically possible.	X					X			
GW27	Proper management of stormwater drainage infrastructure should be ensured.	X					X			
GW28	Ensure that groundwater resources feeding surrounding watercourses are not contaminated by seepage or discharge associated with operational areas.		X			X		X	X	
GW29	Ensure that potential post-closure seepage from mining infrastructure such as the WRD associated with South 2 Shaft is prevented as far as possible.		X			X			X	X
GW30	Post-closure groundwater management will need to be very carefully managed to ensure that no impacts on the identified riparian features located within the South 2 Shaft site area takes place after mine closure has taken place.		X			X			X	X
GW31	Post closure groundwater management will need to be very carefully managed to ensure that no impact on the wetland areas and riparian resources in the area takes place after mine closure has taken place.		X			X			X	X
<b>Air Quality</b>										
AQ1	The underground operations will be equipped with air extraction and supply systems that will be adequate to remove all dust and fumes from the workings. The system will be maintained regularly to ensure correct operation and to minimise dust/gas emissions.	X	X			X		X		
AQ2	Dust emissions will be monitored around the individual vent fans and at the monitoring locations established during the EMPR to determine the impacts of dust, if any, on the local communities and the need for the adoption of dust suppression systems.	X	X			X		X		
AQ3	Where dust levels in the immediate area require the use of PPE, it will be provided and its use will be enforced.	X	X			X		X		
AQ4	Dust prevention measures will be adopted if the results of the monitoring indicate dust levels are unacceptable.	X	X			X		X		
AQ5	Dust emissions at the transfer points will be monitored. In addition the background dust levels will be monitored at the locations established as part of the EMPR to determine the impact of the dust, if any, on the local communities.	X	X			X		X		
AQ6	The laboratory will be equipped with an air extraction and supply system that will be adequate to remove all dust and fumes from the laboratory and specific items of machinery. The system will be maintained regularly to ensure correct operation.	X	X			X		X		

Ref Nr	Management measures/ actions	North	Plant	Central	South 1	South 2	Construction	Operational	Closure and Decommissioning	Post Closure
		Area of Mine to which management measures apply						Project Phase		
AQ7	A dust management programme will be implemented at MPM. Dust monitoring will be conducted during the life of mine and rehabilitation to determine the prominent wind directions and dust levels at various points around the mining site.		X					X		
AQ8	Dust suppression techniques using water carts will be employed throughout the different phases at MPM. This wetting with water must be done daily during dry and windy seasons.		X					X		
AQ9	Where possible the water used shall be obtained from the sewage treatment plant and runoff storage dams to minimise the impact of water usage on the local groundwater.		X					X		
AQ10	Transport routes associated with mining activities will be watered on a daily basis to suppress dust. Wet suppression will be coupled with the use of chemical surfactants on unsurfaced roads, which binds the dust and prevent it from becoming airborne.	X						X	X	
AQ11	Ventilation shafts associated with the Maandagshoek Winze Shaft will be installed a few kilometres from the communities.	X						X	X	
AQ12	In term of the requirements of the Mine Health and Safety Act, 1996, Modikwa Mine must provide protective clothing and equipment for all its employees, and must periodically conduct risk assessments and medical check-ups to analyse and monitor the effects of dust on the staff members and the surrounding environment.		X			X		X	X	
AQ13	All area cleared – of vegetation must be sloped and re-vegetated with indigenous plant species to minimize and prevent wind generated dust pollution and erosion.		X			X		X	X	
AQ14	MPM will keep records of air pollution levels to inform adequate impact management and minimization measures.		X			X		X	X	
AQ15	If dust becomes a problem, dust extractors should be installed on the feeder and primary crusher to minimize dust pollution.		X					X	X	
AQ16	Concurrent rehabilitation and re-vegetation along the sides of the 3 km access road will also reduce surfaces that are exposed to wind generated dust.		X					X	X	
AQ17	Waste rock material and debris associated with South 2 Shaft will be kept wet with just moisture enough to keep the dust down without creating undue runoff.		X			X		X		
AQ18	Where resident moisture content is not adequate to control dust and dispersion of particulates during transportation, dust raising materials will be transported in a closed body vehicles and/or material will be covered with a tarpaulin.		X			X		X		
AQ19	Transportation of dust raising material associated with South 2 Shaft without covering must be restricted to an appropriate speed level (40 km/h) if dispersion of particulates and fugitive dust are observed leaving the transportation vehicles.		X			X		X		
AQ20	Engine idle speeds during operating times should be reduced.		X			X		X		
AQ21	All vehicles and equipment used will be serviced and maintained on a regular basis.		X			X		X		
AQ22	In terms of the conveyor system, it is recommended that the section of the conveyor belt on surface be enclosed to limit the potential of dust generation once ore is transported on the conveyor system, associated with South 2 Shaft.		X			X		X		
AQ23	Silos associated with the conveyor belt system is to be fitted with relevant bag filters or alternative dust minimisation measures.		X			X		X		
AQ24	The outlet of the ventilation shafts at South 2 Shaft should be directed away from sensitive receptors.		X			X		X		
AQ25	Regular removal of dry sludge associated with the sewage treatment plant will be undertaken, and the material will be disposed of in the correct manner.		X			X		X		
AQ26	Speed limits for maintenance vehicles should be limited at 40 km/h on the access road to the ventilation shafts.	X					X			
AQ27	Background dust levels will be monitored at the locations established as part of the EMPR to determine the impact of the dust, if any, on the local communities.	X	X			X	x	X	x	
AQ28	Dust prevention measures will be adopted if the results of the monitoring indicate dust levels are unacceptable.	X	X			X	x	X	x	
AQ29	Where dust is created in areas frequented by employees, the use of PPE will be enforced and dust control measures adopted.	X	X			X	x	X	x	
AQ30	Dust emissions from the vent fans will be monitored.	X	X			X		X		
<b>Noise</b>										
NS1	Noise emission levels from the decline shafts and vent shaft and all surface operations will be monitored around the site and at the monitoring points established during the EMPR to ensure that the noise remains within accepted levels and does not impact on the local communities.	X	X			X		X		
NS2	All contractors will be advised of the required health and safety standards prior to the commencement of decommissioning works. These will include noise level and exhaust emission levels for all vehicles and road safety and awareness.	X	X			X		X		
NS3	Noise prevention measures will be adopted if the results of the monitoring indicate noise levels are unacceptable.	X	X			X		X		
NS4	Where noise levels are unacceptable in areas frequented by employees, the use of PPE will be enforced and noise control measures adopted.	X	X			X		X		
NS5	Employees will be trained in the correct use of PPE and its use will be enforced in areas where noise is in excess of 85dB.	X	X			X		X		
NS6	Noise levels will be monitored at the boundary of the property and at the locations established during the EMPR studies.	X	X			X		X		

Ref Nr	Management measures/ actions	North	Plant	Central	South 1	South 2	Construction	Operational	Closure and Decommissioning	Post Closure
		Area of Mine to which management measures apply						Project Phase		
NS7	All contractors will be advised of the required health and safety standards prior to the commencement of haulage works. These will include noise levels and exhaust emission levels for all vehicles and road safety and awareness.	X	X			X		X		
NS8	MPM (Occupational Health and Hygiene department) currently monitors noise levels on a continuous basis to ensure that the legal requirements are not exceeded.	X						X	X	
NS9	If noise levels exceed the legal requirements, management measures such as enclosing of noise generating equipment will be put in place to reduce noise levels to an acceptable level at MPM.	X						X	X	
NS10	The noise generating activities and equipment, associated with South 2 Shaft and Merensky operations must be confined to the mining area approved by the DME under the mining permit authorization. The mining equipment must be fitted with silencers to minimize noise levels generated.		X			X		X		
NS11	Blasting activities, associated with opencast operations, must be conducted during daytime hours taking cognizance of the schooling hours in the surrounding villages.		X			X		X		
NS12	Operators of the earth moving equipment and within the Chrome Extract Plant must wear ear protection at all times when operating the equipment and machinery. Noise pollution will be monitored monthly, and recorded throughout the life of mine.		X			X		X		
NS13	In term of the requirements of the Mine Health and Safety Act, 1996 Modikwa Mine Ltd must provide protective clothing and equipment for all its employees, and must periodically conduct risk assessments and medical check-ups to analyse and monitor the effects of noise on the staff members and the surrounding environment. Medical check-ups must be conducted by external specialists. All staff must have an exit medical check-up when leaving the employment of Modikwa Mine.		X			X		X		
NS14	MPM will record and maintain the records on the health of in-coming and out-going employees.		X			X		X		
NS15	MPM will record and inform management about mitigations practices to minimize and prevent noise pollution at the South 2 Shaft and Merensky operations.		X			X		X		
NS16	MPM will keep noise pollution as low as possible, and minimize disturbance to the surrounding settlements during mining operations of the UG2 open pits and crusher plant. Minimize disruptions of the daily practices and social fabric.		X					X		
NS17	Drilling and blasting is generally intermittent and should be limited to daylight hours when ambient noise levels are highest. Personnel working within the plant must wear ear protection gear.		X					X		
NS18	Operators of the crusher plant and screens must wear ear protection at all times when operating the equipment and machinery.		X					X		
NS19	There must be continuous monitoring of noise levels in and around the UG2 open pits and crusher plant as part of the EMP performance, and health and safety self-regulation.		X					X		
NS20	Machinery will be fitted with silencers and regular monitoring will be undertaken to ensure compliance to noise levels.		X			X		X		
NS21	Adhere to the speed limit of 40 km/h for all vehicles within the operational areas.		X			X		X		
NS22	The reverse signal of the earthmoving equipment and the trucks to be monitored not to create a noise disturbance and/or noise nuisance.		X			X		X		
NS23	Rollers on the conveyors, associated with South 2 Shaft, to be monitored and replaced when creating a noise disturbance and/or noise nuisance, not associated with normal operational noise.		X			X		X		
NS24	Earthworks activities should be undertaken during daytime periods only.	X					X			
NS25	Diesel generator associated with the operation of the raise bore drilling machine to be encapsulated and placed in such a manner that it is screened from the abutting community.	X					X			
NS26	The noise levels generated by hauling vehicles, machinery, equipment must comply with the manufacturer's specifications and any deviation of these noise levels will have to be immediately addressed and rectified;	X					X			
NS27	Raise bore drilling may only be done during daytime periods and a noise survey to be carried out along the western boundary of the Maphahlane community when such activities are in progress.	X					X			
NS28	A noise evaluation to be carried out before the activities and infrastructure is operational to determine noise mitigatory measures.	X					X			
NS29	An earth berm (height of the crusher plant) of rock and soil to be constructed along the northern and western boundaries of the crusher plant.	X					X			
NS30	The hauling of rock before crushing and shipment off the site will have to take place on gravel roads which is in a good condition and free from any potholes. The speed along these roads may not exceed 40 km/h.	X					X			
NS31	A maintenance plan for all equipment which may be used at the crushing plant must be in place to identify and rectify any noise sources within 5 working days after such noise source was identified.	X					X			
NS32	Conduct site clearing activities during day time periods (sun rise to sun set), as far as practically possible.	X						X		
NS33	Acoustic screening measures be in place and all point sources within the crusher plant which exceed 90.0dBA to be identified and acoustically screened off.	X						X		
NS34	If practical, and required based on the results of the noise level monitoring, a noise barrier could be constructed from rock and soil along the boundaries which face the abutting communities.	X						X		

Ref Nr	Management measures/ actions	North	Plant	Central	South 1	South 2	Construction	Operational	Closure and Decommissioning	Post Closure
		Area of Mine to which management measures apply					Project Phase			
NS35	The height of the noise barrier to be higher than the height of the crusher plant.	X						X		
NS36	Hauling of crushed rock and end product to take place during day time periods with vehicles which comply with the manufacturer's noise specifications.	X						X		
NS37	Maintenance at the crusher plant to take place during day time period only.	X						X		
<b>Sites of Archaeological Importance</b>										
HR1	All archaeological, paleontological, and heritage sites and resources must be preserved if they are of cultural, historic or pre-historic significance. This must be done under the auspices of a competent and qualified person,	X	X	X	X	X	X	X	X	X
HR2	MPM will train and sensitize staff on the importance of the historical artifacts or structures and preservation thereof. Workers and staff must be made aware of the different aspects of the mine and how their specific job functions may affect historical artifacts if encountered via the environmental awareness plan and must report any findings immediately to the mine manager.	X	X	X	X	X	X	X	X	X
HR3	Finds, if encountered during any phase of the MPM operations, must be reported to the SAHRA and responsible Mine Manager who will decide, after consultation with authorities, company representatives and local communities whether work may go ahead. Special precautions may be instituted to enable the project or work to proceed.	X	X	X	X	X	X	X	X	X
HR4	All archaeological, paleontological, and heritage sites and resources must be preserved if they are of cultural, historic or pre-historic significance. This must be done under the auspices of a competent and qualified person	X	X	X	X	X	X	X	X	X
HR5	The grave sites are of high importance. The location of the graves should be indicated on a map, and be included in the Environmental Awareness Plan.	X	X	X	X	X	X	X	X	X
HR6	Grave sites must be fenced in and have a management plan drafted for the sustainable preservation thereof.	X	X	X	X	X	X	X	X	X
HR7	New infrastructure should be placed at least 20m any of the graves identified as part of the heritage specialist study. If blasting is to be done regularly this buffer zone should be at least 100m.	X					X			
<b>Visual Aspects</b>										
VI1	Vent fans will be designed to minimise emissions and hence visual impact.	X	X			X	x			
VI2	All ore spillages will be cleaned up using mobile sweepers, which will be returned to the ore storage area. This will be carried out regularly or as and when required basis.	X	X			X		X		
VI3	The constructed slopes along the haul roads and platforms will be top soiled with soil removed during construction and suitable vegetation will be planted (combination of seeds and hand planting).		X					X	x	
VI4	Rehabilitate the land and minimize visual impact during and after mining at the South 2 Shaft and Merensky operations.		X			X		X	X	
VI5	The Merensky open pit and other shallow excavations will be backfilled where possible and sloped to resemble the surrounding land configuration/landscape and rehabilitated with indigenous vegetation where it is expected that no mining will take place after the rehabilitation. Plant species should be cultured in and around Modikwa Mine area.		X			X		X	X	
VI6	Revert back the land to as much as possible the original status before mining at the South 2 Shaft and Merensky operations.		X			X		X	X	X
VI7	Concurrent rehabilitation at South 2 Shaft and Merensky operations should be implemented throughout the life of the mine to minimize and return the environment to - as much as possible - the original status.		X			X		X	X	X
VI8	Screening with vegetation (trees) should be investigated and where practical be implemented to mask the South 2 Shaft and Merensky operations from various settlement viewpoints and soften the visual impacts.		X			X		X	X	X
VI9	Rehabilitate the land and minimize visual impact during and after mining at the UG2 open pits and crusher plant.		X					X	X	
VI10	The UG2 open pit will be backfilled, where practical, and sloped to resemble the surrounding land configuration/landscape and rehabilitated with indigenous vegetation where it is expected that no mining will take place after the rehabilitation. Plant species should be cultured in and around Modikwa Mine area. The pit will, however, not be completely backfilled.		X					X	X	
VI11	Revert back the land to as much as possible the original status before mining at the UG2 open pits and crusher plant.		X					X	X	
VI12	When mining activities are completed, all buildings and structures will be demolished and removed when mining activities cease. This process will be in consultation with the Regional Manager in terms of Section 44 of the MPRDA, 2002. The surface and soil area where these structures were must be scarified, levelled according to the prevailing contours and re-vegetated with indigenous plant species. The access road is likely to still be used by the community even after completion of the mining activities, and will therefore remain visible. Consultation should be done closer to mine decommissioning.		X						X	
VI13	Screening with vegetation (trees) should be investigated and where practical be implemented to mask the UG2 open pits and crusher plant from various settlement viewpoints and soften the visual impacts.		X					X	X	
VI14	If feasible, larger indigenous shrubby vegetation can be planted between the WRD and the Matimatjati Community, as this is the only community that could be visually impacted by the WRD.		X			X		X		
VI15	Ensure that the conveyor's enclosure at South 2 Shaft, is non-reflective and the same colour as existing conveyors,		X			X		X		
VI16	If feasible, silos should be fitted with relevant bag filters or alternative dust minimisation measures.		X			X		X		

Ref Nr	Management measures/ actions	North	Plant	Central	South 1	South 2	Construction	Operational	Closure and Decommissioning	Post Closure
		Area of Mine to which management measures apply					Project Phase			
VI17	Revegetate the scarred area around the ventilation shaft associated with South 2 Shaft as soon as possible after construction and, if feasible, paint the canopy of the ventilation shaft to blend in with the vegetation. If feasible, paint the exposed parts of the structure with a non-reflective colour that will blend in with the surrounding vegetation / background.		X			X	x	X		
VI18	The relevant exposed construction site areas and access gravel roads at South 2 Shaft will be irrigated on a regular basis, with just enough moisture to keep the dust down without creating undue runoff.		X			X		X		
VI19	Litter and dust management measures should be in place at South 2 Shaft.		X			X		X		
VI20	All lights used for illumination (except for lighting associated with security) should be faced inwards and shielded to avoid light escaping above the horizon.		X			X		X		
VI21	Operational activities at South 2 Shaft will be limited to be undertaken between 6am and 6pm, where practically possible.		X			X		X		
VI22	The relevant exposed construction site areas and access gravel roads will be irrigated on a regular basis, with just enough moisture to keep the dust down without creating undue runoff.	X					X			
VI23	Natural vegetation, wherever practical, must be retained on and around the construction sites for North 1 Shaft and Crusher Plant.	X					X			
VI24	Litter and dust management measures should be in place at all times.	X					X			
VI25	Sites where mining related activities are undertaken will be kept neat and tidy at all times.	X					X			
VI26	Construction activities will be limited to be undertaken between 6am and 6pm at the North 1 Shaft and Crusher Plant.	X					X			
VI27	Revegetated the scarred area around the ventilation shaft as soon as possible after construction and, if feasible, paint the canopy of the ventilation shaft to blend in with the vegetation using a non-reflective colour at the North 1 Shaft and Crusher Plant.	X						X		
VI28	The access and hauling roads will be irrigated on a regular basis, with just enough moisture to keep the dust down without creating undue runoff.	X						X		
VI29	Natural vegetation, wherever practical, must be retained on and around the crushed rock storage sites for North 1 Shaft and Crusher Plant.	X						X		
VI30	The open pit, Shaft portals, Chrome and concentrator plants and adits should be screened with indigenous tree vegetation to minimize the negative visual impact viewing the mining site from surrounding viewpoints.		X			X		X	X	X
VI31	Waste rock associated with the MPM operations should be deposited only on the designated areas for waste rock dump.		X			X		X		
<b>Hydrocarbon Management</b>										
HC1	Training and awareness regarding the management of hydrocarbons will be included in the induction programme.		X			X	X	X	X	
HC2	All employees will undergo induction training and health/safety training to provide them with the necessary knowledge and skills to correctly handle hydrocarbon spills.	X	X			X	X	X	X	
HC3	All heavy machinery and other vehicles must be checked regularly and maintained for leakages.		X			X	X	X	X	
HC4	Ensure that routine maintenance on all heavy machinery and vehicles is undertaken as per maintained schedule and records are kept.		X			X	X	X	X	
HC5	Where minor spillages do occur, the spill kits should be utilised and the contaminated soil must be removed and collected into bags/bins removed and stored in designated area – such as bunded wall waste oil storage areas – until properly disposed of to the hazardous waste site by the appointed contractor.		X			X	X	X	X	
HC6	Another measure that can be employed to deal with oil and fuel spillages is application of bio-remediation process to clean the contaminated soil, and re-use the treated soil for rehabilitation purposes.		X			X	X	X	X	
HC7	Major spillage incidents will be reported to the DMR, DWS and LDEDET and the Department of Agriculture (reporting of incidents is required in terms of several Acts).	X					X	X	X	
HC8	In the event of accidental/emergency spillages (e.g. puncture of a diesel tank or breaking of the containment wall), an industrial waste collection consultant/company must be contacted for clean-up operations. Appropriate remedial measures will be implemented in consultation with the regulatory authorities.		X			X	X	X	X	
HC9	Any chemical, fuel and lubricant storage areas will be underlain by impermeable substrates.	X					X	X	X	
HC10	Fuel/lubricant and chemical storage and vehicle maintenance areas will be surfaced and will have appropriate containment measures, such as bunds and canals, with adequate capacity (sufficient to hold the full quantity of material that could be spilled) in place.	X					X	X	X	
HC11	Runoff will be diverted to and contained in the associated pollution control dams.	X					X	X	X	
HC12	Workshop areas, must be equipped with a properly designed and installed concrete sump system to contain all the waste grease, oil and the chemicals during vehicle and machinery servicing.		X			X	X	X	X	
HC13	Workshop areas must have storm water control structure around their entire perimeter to prevent surface runoff from coming into contact with contaminated areas.		X			X	X	X	X	
HC14	All workshops and fuel, oil and chemical storage area must be properly constructed and maintained, and must have emergency procedures in place to deal with accidental spillages to avoid underground water contamination.		X			X	X	X	X	
<b>Hazardous and other waste materials</b>										

Ref Nr	Management measures/ actions	North	Plant	Central	South 1	South 2	Construction	Operational	Closure and Decommissioning	Post Closure
		Area of Mine to which management measures apply					Project Phase			
WM1	All employees will undergo induction training and health/safety training to provide them with the necessary skills to use all the equipment and handle the variety of hazardous materials as per their work description.	X	X			X	X	X	X	
WM2	Assessments will be carried out on a regular basis and ongoing training will be provided to maintain the required level of skill and awareness.	X	X			X	X	X	X	
WM3	The mine will endeavour to minimise the use of fresh water in the underground operation as far as possible by making use of oil separation dams and treatment systems to allow the recycling of groundwater and dirty drilling water collected in the underground operations.	X	X			X	X	X	X	
WM4	The contamination of water in the underground operation will be minimised as all hazardous and non-hazardous waste materials will be transported from the various collection points around the site to the designated disposal points to containers which may be covered or sealed to prevent any spillage of the wastes.	X	X			X	X	X	X	
WM5	All waste generated by MPM will be dealt with according to the Waste Management Plan.									
WM6	Ensure that hazardous waste materials are stored in bunded areas to prevent contamination of the external environment.	X	X			X	X	X	X	
WM7	All hazardous waste materials will be transported from the various collection points around the site to the designated disposal points to containers which are covered or sealed to prevent any spillage of the wastes.	X	X			X	X	X	X	
WM8	All non-hazardous waste materials will be transported from the various collection points around the site to the designated disposal points to containers to prevent any spillage of the wastes.	X	X			X	X	X	X	
WM9	The storage areas (i.e. the salvage yard and collection points) will be designed to incorporate bunds and sumps so that any spillages or runoff may be collected to prevent the ingress of waste and/or contaminated water into the external environment.	X	X			X	X	X	X	
WM10	· Ensure the salvage yard is managed so that all non-hazardous/ hazardous waste materials will be stored in a controlled manner and removed off site for disposal or recycling on a regular basis.	X	X			X		X		
WM11	Ensure the adoption of pollution control measures.	X	X			X		X		
WM12	Ensure that all waste material is removed from site in a controlled manner.	X	X			X			X	
WM13	All waste scrap will be removed from site for recycling/sale as scrap.		X						X	
WM14	All contaminated materials (waste rock, soils) will be disposed of, where possible, in a controlled manner in suitable containers for disposal at a registered land fill site.		X						X	
WM15	All waste materials – oils, greases, scrap steel, belting etc. will be removed from site to registered land fill sites or for recycling. All waste materials/ rock will be removed from plant site and other contaminated areas and deposited onto the tailings dam.	X	X			X			X	X
WM16	All medical waste will be stored in specialised containers provided by the medical supplier. These containers will be removed from the site on a regular basis by the same supplier, which will be responsible for the offsite disposal of the waste.	X	X			X		X		
WM17	All waste will be collected and stored for treatment (to remove any oils/ greases etc.) and subsequent reuse to minimise the overall use of water by the concentrator plant.	X	X			X		X		
WM18	The salvage yard will be managed so that minimal quantities of waste materials are stored at any one time in the yard. The salvage yard management will also be responsible for ensuring all waste is disposed of off-site in a controlled manner in registered landfill sites.	X	X			X		X		
WM19	All waste scrap will be removed from site for recycling/ sale as scrap.	X	X			X		X		
WM20	All contaminated materials (waste rock, soils) will be disposed of, where possible, in the tailings dam prior to rehabilitation of the tailings dam. All other hazardous material will be removed off site in a controlled manner in suitable containers for disposal at a registered land fill site.	X	X			X		X		
<b>Health and Safety</b>										
HS1	All employees will undergo induction training and health/ safety training to provide them with the necessary skills to use all the equipment and handle the variety of hazardous materials used in the underground operation, concentrator plant, workshops, laboratory etc.	X	X			X	X	X	X	
HS2	Assessments will be carried out on a regular basis and ongoing training will be provided to maintain the required level of skill and awareness.	X	X			X	X	X	X	
HS3	Employees will be trained in the correct use of PPE and its use will be enforced.	X	X			X	X	X	X	
HS4	All contractors will be advised of the required health and safety standards prior to the commencement of haulage works. These will include noise level and exhaust emission levels for all vehicles and road safety and awareness.	X	X			X	X	X	X	
HS5	The following will be incorporated in the design of the reagent storage and handling area to minimise the risk of fire and to assist in pollution control: Firefighting system: this should comprise a water spray system installed around the tanks and in the delivery area. As the reagents are water soluble, should a leak occur, use of the water sprays would assist in decreasing the fire hazard. Gravel layer: This would assist in reducing the risk of a pool fire by limiting the oxygen flow at the burn surface. Sump: This would allow the efficient collection of leaks/ spills reducing the fire hazard and toxicity.	X	X			X	X	X		

Ref Nr	Management measures/ actions	North	Plant	Central	South 1	South 2	Construction	Operational	Closure and Decommissioning	Post Closure
		Area of Mine to which management measures apply					Project Phase			
HS6	Ensure all sewage collection points will be designed as closed units and that sufficient pollution control measures are adopted.	X	X			X	X	X		
HS7	The collection tank(s) will be located within the surface operation area which will be bunded so that any spillage or runoff may be collected to prevent the ingress of waste and/ or contaminated water into the external environment.	X	X			X	X	X		
HS8	All medical waste will be stored in specialised containers provided by the medical supplier. These containers will be removed from the site on a regular basis by the same supplier, which will be responsible for the off-site disposal of waste.	X	X			X	X	X	X	
HS9	All contractors will be advised of the required health and safety standards prior to the commencement of decommissioning works. These will include noise levels and exhaust emission levels for all vehicles and road safety and awareness.	X	X			X			X	
HS10	Before final rehabilitation commences, MPM will educate local communities to increase awareness of the dangers of the sites and associated vehicles/ equipment.	X	X			X			X	
HS11	Trucks transporting ore to the concentrator plant will not be overloaded. Safety of pedestrians, domestic animals and other road users must be taken into account at all times along the transport route.	X					X	X	X	
HS12	MPM will ensure that the surrounding communities know the transport route that will be followed and are aware of general road safety rules. MPM will also ensure that all MPM drivers and contractors involved in the proposed project adhere to general road safety rules and are aware of the people and domestic animals near to and along haulage routes.	X					X	X	X	X
HS13	All contractors will be advised of the required health and safety standards prior to the commencement of decommissioning works. These will include noise level and exhaust emission levels for all vehicles and road safety and awareness.	X	X			X		X		
HS14	The Mine will erect the necessary road signs along the transport routes.	X					X	X	X	X
HS15	Drivers will be briefed on the hazards posed to road users and domestic animals by trucks during induction.	X					X	X	X	X
HS16	The laboratory will be equipped with an air extraction and supply system that will be adequate to remove all dust and fumes from the laboratory and specific items of machinery. The system will be maintained regularly to ensure correct operation.	X	X			X	X	X		
HS17	All laboratory staff will undergo inductions and training to provide them with the necessary skills to use all the equipment in the laboratory, handle the variety of hazardous materials involved in the assay and XRD/XRF process and use PPE issued.	X	X			X	X	X		
HS18	All laboratory staff's blood lead levels will be monitored on a regular basis.	X	X			X	X	X		
<b>Regional Socio-Economic Structure</b>										
SE1	The mine will endeavour to employ as many people from the local communities as possible. It will broadcast this intention to minimise migration of people looking for work.	X	X			X		X		
SE2	Priority will be given to the employment of locals with the necessary skills and the training of locals to provide them with these skills.	X	X			X		X		
SE3	The mine will assist in the establishment of local business forums and new businesses to provide services to the mine during all phases of the project. These opportunities will assist in employing people in the local community over and above the people employed directly by the mine. This will assist in raising the living standards of a significant percentage of the local population.	X	X			X		X		
SE4	A suitable fund will be established, in accordance with the requirements under the MPRDA and NEMA prior to development of the mine.	X	X			X			X	X
SE5	Documentation will be provided with the EMP to show that such a fund has been established.	X	X			X			X	X
SE6	Existing infrastructure that was upgraded or new infrastructure may be left in place after closure - roads, power, water, houses etc. The benefits of leaving all or some of the supporting infrastructure in place on closure of the mine for use by the local communities will be assessed prior to closure.		X						X	X
SE7	Upon closure usable boreholes will be left in place, which could benefit the local communities. The benefits and practicality should be assessed prior to closure.		X						X	X
SE8	MPM will ensure that commitments made to the local community in terms of water supply are fulfilled.	X							X	X
SE9	MPM will make use of the local recruitment office, via Section 21 offices, for recruiting of locals where the necessary skills are available.	X							X	X
SE10	MPM will make use of local service providers if and where possible.	X							X	X
SE11	MPM in conjunction with the community directors will ensure that negative social skills do not proliferate as a result of the MPM operations.	X							X	X
SE12	MPM operations may contribute to improved road infrastructure and other services in and around Burgersfort. The mine will create opportunities for the local suppliers to become part of the procurement process, and thus stimulate the local business and services.	X							X	X
SE13	MPM will develop a Social and Labour Plan (SLP) in terms of Regulations 42-46 of the MPRDA, including a human resources development programme, a Local Economic Development Programme (LEDP), in line with the local and provincial authorities' initiatives and the municipal Integrated Development Plan (IDP), and processes pertaining to management of downscaling and retrenchment.		X			X		X		



Ref Nr	Management measures/ actions	North	Plant	Central	South 1	South 2	Construction	Operational	Closure and Decommissioning	Post Closure
		Area of Mine to which management measures apply					Project Phase			
SE14	MPM to increase the probability of retaining staff by implementing the MPM policy of upskilling employee skills where necessary and possible, and aligning with the Modikwa Social and Labour Plan.		X			X		X		
SE15	MPM and their appointed contractors should adhere to the MPM policies on local procurement in terms of additional labour opportunities.		X			X		X		
SE16	MPM must inform companies it procures goods and services from any procurement gaps during the development of South 2 Shaft, so that affected companies can plan accordingly.		X			X		X		
SE17	Maintain sanitation infrastructure to ensure functional capacity throughout mine's operations phase at South 2 Shaft. Promote hygiene practices and proper use of sanitation.		X			X		X		
SE18	Contractors to provide adequate accommodation for non-local contractors working at MPM.		X			X		X		
SE19	MPM will develop and implement a mechanism to record and respond, appropriately and without delay, to complaints about mine related activities during all phases of the mine.		X			X		X		
SE20	MPM will ensure that the mine's Health and Safety policy are implemented mine wide.		X			X		X		
SE21	MPM to provide necessary and appropriate health and safety training including for HIV/AIDs to all personnel and contractors, and information to surrounding communities. This could be a coordinated response with partners including the provincial departments of health and education and the Greater Tubatse Local Municipality.		X			X		X		
SE22	The mine will record and respond, appropriately and without delay, to any complaints about mine related activities	X					X	X	X	