

TABLE 29: ACTION PLAN – SURFACE WATER POLLUTION

Phase of operation	Activities (see Table 15)	Sig		Technical and management options (Refer to Appendix A for further detail on mitigation measures)	Action plan		
		UM	M		Timeframe	Frequency	Responsible parties
Construction	Exploration Site preparation Earthworks and civil works Process- and stormwater management Non-mineralised waste management Site support services Storage and maintenance services / facilities Site/contract management	H	L	<ul style="list-style-type: none"> Detailed design of polluting and pollution control facilities to be done by an appropriately qualified engineer in line with regulatory requirements and including measures for containing spillages and/or dirty water runoff (both in the short term and for long-term closure). Control third party access to the site to prevent exposure to potentially polluted water Prevent dirty water runoff and spillages from entering the environment (bunds, stormwater control, catchment paddocks) Prevent erosion runoff as per soil management plan Set up and maintain flow meters in the mine water circuit. 	Design	Once off	SHE Manager
					At start and on-going	On-going	SHE Manager
					On-going	On-going	SHE Manager
Operation	Open pit mining Waste rock and tailings management Mineral processing Process- and stormwater management Transport systems Non-mineralised waste management Site support services Storage and maintenance services / facilities Site/contract management	H	L	<ul style="list-style-type: none"> Refine the site wide climatic water balance in line with monitoring programme Monitor process water in line with monitoring programme Monitor quality of rainfall-related discharge in line with monitoring programme (Section 21). Update the groundwater model to verify the potential for water to collect in the pit. Depending on the results of the model, the mitigation measures may need to be revisited. Handle major spillage incidents in line with emergency response procedure (see Section 20) In case of significant breach of stormwater controls, implement emergency response procedure (Section 20). 	On-going	On-going	SHE Manager
					On-going	Annually	SHE Manager
					On-going	Quarterly	SHE Manager
					On-going	As required	SHE Manager
					At start of mining and	Annually	SHE Manager
As required	As required	SHE Manager					
Decommission	Waste rock and tailings management Process- and stormwater management Transport systems Non-mineralised waste management Site support services Storage and maintenance services / facilities Site/contract management Demolition Rehabilitation	H	L	<ul style="list-style-type: none"> Control third party access to the site to prevent exposure to potentially polluted water until such time as infrastructure is removed and/or risk of exposure is reduced Prevent dirty water runoff and spillages from entering the environment (bunds, stormwater control, catchment paddocks) until such time as infrastructure is removed Prevent erosion runoff as per soil management plan Monitor process water in line with monitoring programme Monitor quality of rainfall-related discharge in line with monitoring programme (Section 21). Handle major spillage incidents in line with emergency response procedure (see Section 20) In case of significant breach of stormwater controls, implement emergency response procedure (Section 20). 	On-going	On-going	SHE Manager
					On-going	On-going	SHE Manager
					On-going	On-going	SHE Manager
					On-going	Quarterly	SHE Manager
					On-going	As required	SHE Manager
As required	As required	SHE Manager					
As required	As Required	SHE Manager					



Phase of operation	Activities (see Table 15)	Sig		Technical and management options (Refer to Appendix A for further detail on mitigation measures)	Action plan		
		UM	M		Timeframe	Frequency	Responsible parties
Closure	Maintenance and aftercare Final land forms (open pit, TSF, waste dumps)	H	H-M	<ul style="list-style-type: none"> Maintain stormwater controls (through inspection and repair) until such time as facilities can be removed Monitor any process water in line with monitoring programme Monitor quality of rainfall-related discharge in line with monitoring programme (Section 21) Monitor water quality in the open pit (if applicable) in line with monitoring programme (Section 21) 	6 years	On-going	SHE Manager
					6 years	Quarterly	SHE Manager
					6 years	As required	SHE Manager
					6 years	Quarterly	SHE Manager

TABLE 30: ACTION PLAN – GROUNDWATER DEWATERING

Phase of operation	Activities (see Table 15)	Sig		Technical and management options (Refer to Appendix A for further detail on mitigation measures)	Action plan		
		UM	M		Timeframe	Frequency	Responsible parties
Construction	None	-	-	-	-	-	-
Operation	Open pit mining	H	M	<ul style="list-style-type: none"> Verify all boreholes in potentially affected zone (see groundwater monitoring programme - Section 21). Update groundwater model using monitored water level data (see groundwater monitoring programme - Section 21). Operate in line with water use license. Buy and/or lease the farms within the mining right application boundary for a period until such time as groundwater levels can be confirmed to reach stable levels. Monitor water levels are per groundwater monitoring programme (Section 21). If pre-mining model predictions change to those assessed in this report, appropriate measures will be implemented in consultation with a qualified specialist. If monitoring indicates a mine-related decrease in groundwater supply to third parties, appropriate measures will be taken to prevent the decrease from occurring, to provide the affected third parties with an alternative water supply, and/or to possibly purchase affected farms. 	Pre-construction	Once off	SHE Manager
Decommission	Final open pit	H	M		On-going	Annually	SHE Manager
					As required	Once off	SHE Manager
					Pre-construction	Once off	SHE Manager
					On-going	Monthly	SHE Manager
					As required	As required	SHE Manager
				As required	As required	SHE Manager	
Closure	Final open pit	H	H	<ul style="list-style-type: none"> Update groundwater model using monitored water level data (see groundwater monitoring programme - Section 21). Operate in line with its water use license. Monitor water levels are per groundwater monitoring programme (Section 21). 	6 years	Annually	SHE Manager
					6 years	On-going	SHE Manager
					6 years	Monthly	SHE Manager

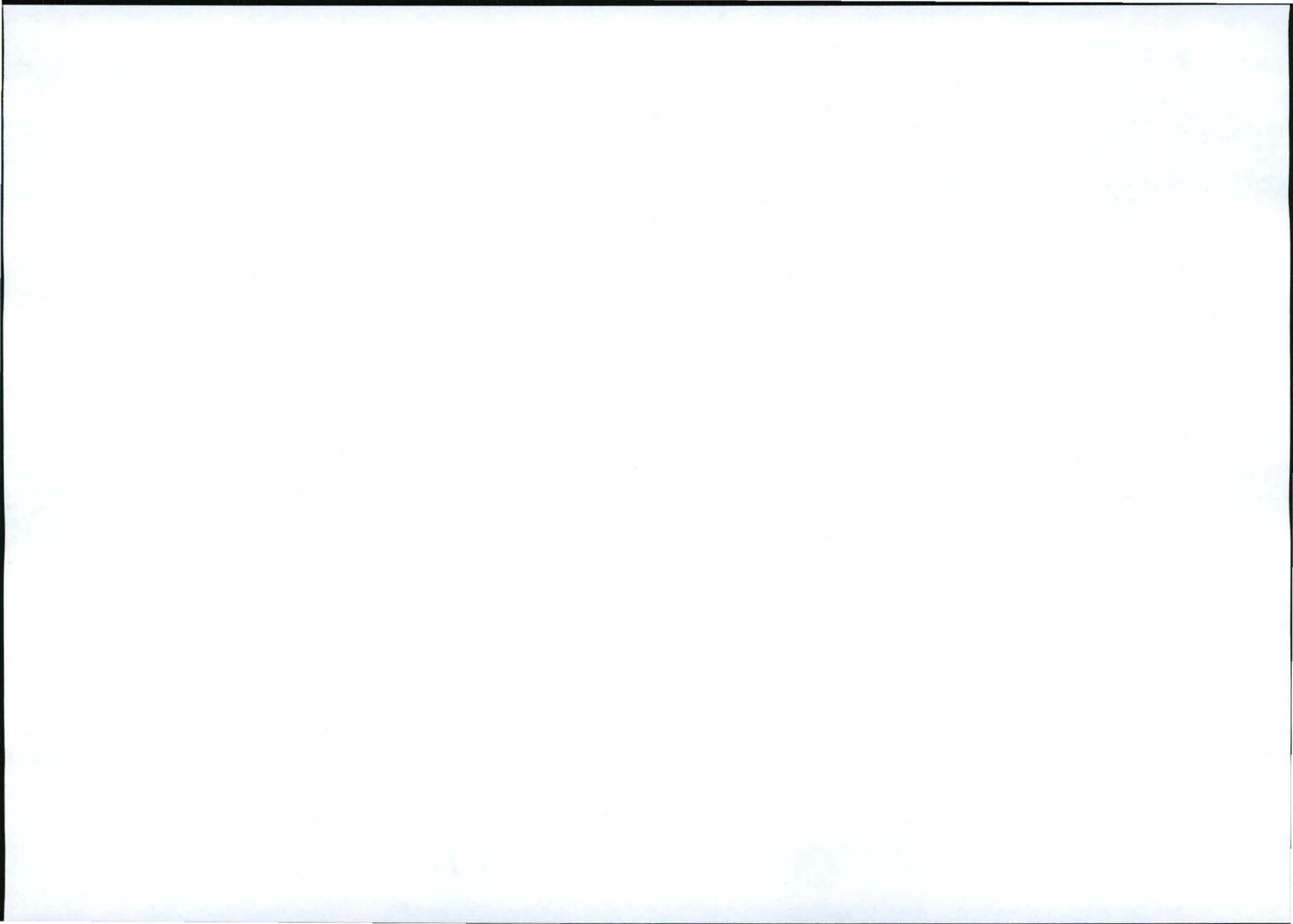


TABLE 31: ACTION PLAN – GROUNDWATER CONTAMINATION

Phase of operation	Activities (see Table 15)	Sig		Technical and management options (Refer to Appendix A for further detail on mitigation measures)	Action plan		
		UM	M		Timeframe	Frequency	Responsible parties
Construction	Process- and stormwater management Non-mineralised waste management Storage and maintenance services / facilities Site contract management	L	L	<ul style="list-style-type: none"> Potentially polluting facilities designed by an appropriately qualified engineer in line with regulatory requirements. Construct and operate TSF with measures to minimize pollution of groundwater as per the tailings management plan Construct and operate waste dumps with measures to minimize pollution of groundwater as per the waste rock management plan Construct and maintain dirty water dams with appropriate lining 	Design On-going On-going	Once off Once off and on-going As required and on-going	SHE Manager SHE Manager SHE Manager
Operation	Tailings and waste rock management Process- and stormwater management Non-mineralised waste management Storage and maintenance services / facilities Site contract management	H	L	<ul style="list-style-type: none"> Verify leachate quality of TSF and waste dumps through testing of project specific tailings and waste rock samples. Set up and undertake groundwater monitoring in line with recommended programme (Section 21). Update groundwater model using monitored water quality data and test results (see monitoring programme - Section 21). 	On-going As soon as samples become available At start and on-going On-going	Once off and on-going Once off Quarterly Annually	SHE Manager SHE Manager SHE Manager SHE Manager
Decommission	Tailings and waste rock management Process- and stormwater management Non-mineralised waste management Storage and maintenance services / facilities Site contract management	H	L	<ul style="list-style-type: none"> If pre-mining model predictions change to those assessed in this report, appropriate measures will be implemented in consultation with a qualified specialist. If monitoring indicates a mine-related decrease in groundwater quality at third party boreholes, appropriate measures will be taken to rectify the contamination situation, to provide the affected third parties with an alternative water supply, and/or to possibly purchase affected farms. Rehabilitate in line with recommended rehabilitation plan In the event of any significant pollution incident follow the emergency response procedure (see Section 20). 	As required As required As required As required	As required As required As required As required	SHE Manager SHE Manager SHE Manager SHE Manager
Closure	Final land forms (open pit, TSF and waste dumps)	H	L	<ul style="list-style-type: none"> Undertake groundwater monitoring in line with recommended programme (Section 21). 	6 years	Quarterly	SHE Manager

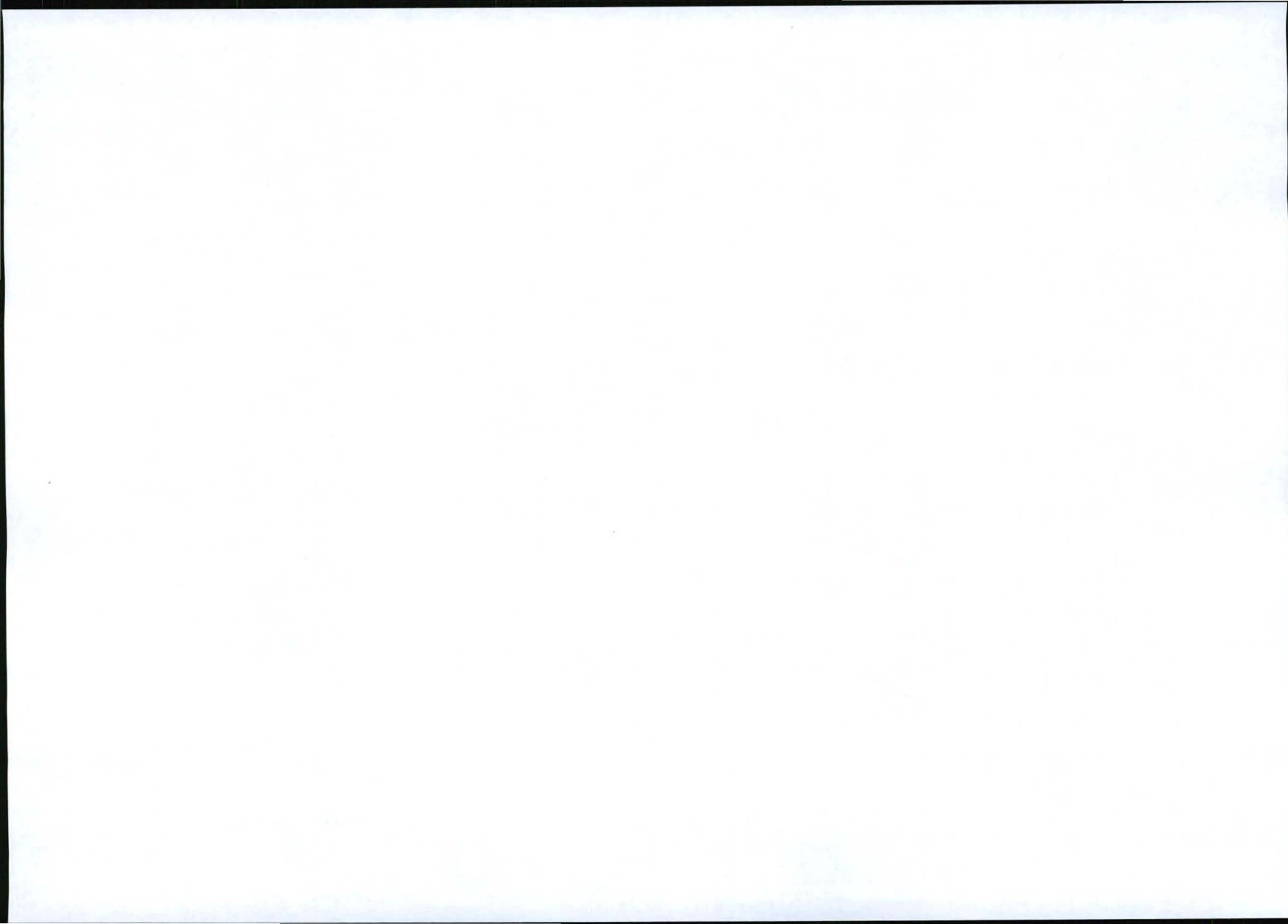


TABLE 32: ACTION PLAN – AIR POLLUTION

Phase of operation	Activities (see Table 15)	Sig		Technical and management options (Refer to Appendix A for further detail on mitigation measures)	Action plan		
		UM	M		Timeframe	Frequency	Responsible parties
Construction	Exploration Site preparation Earthworks and civil works Transport systems Site support services Site/contract management	H-M	M-L	<ul style="list-style-type: none"> All dust generating sources should be located as close as possible to each other and the centroid of activities around the pit. Haul roads will be kept to a minimum. Develop and maintain an air quality management plan in consultation with an appropriately qualified specialist. Limit vehicle speeds. Control dust generation in line with dust management plan Set up and undertake dust monitoring in line with recommended programme in Section 21. Set up and undertake PM10 monitoring in line with recommended programme in Section 21. If monitoring data confirms that either the emissions or the ambient concentrations exceed the relevant standards then Turquoise Moon will, in consultation with the relevant authorities, take steps to further reduce the emissions or ambient concentrations where possible. 	On-going	On-going	SHE Manager
					Pre-construction	On-going	SHE Manager
Operation	Exploration Open pit mining Waste rock and tailings management Mineral processing Transport systems Site support services Site/contract management	H-M	M-L		On-going	On-going	SHE Manager
					On-going	On-going	SHE Manager
Decommission	Waste rock and tailings management Demolition Rehabilitation	H-M	M-L	Pre-construction and on-going	Quarterly	SHE Manager	
				Pre-construction and on-going	Once off and daily	SHE Manager	
Closure	Maintenance and aftercare Final land forms (TSF, waste dumps)	H-M	M-L	As required	As required	SHE Manager	
				6 years	On-going	SHE Manager	

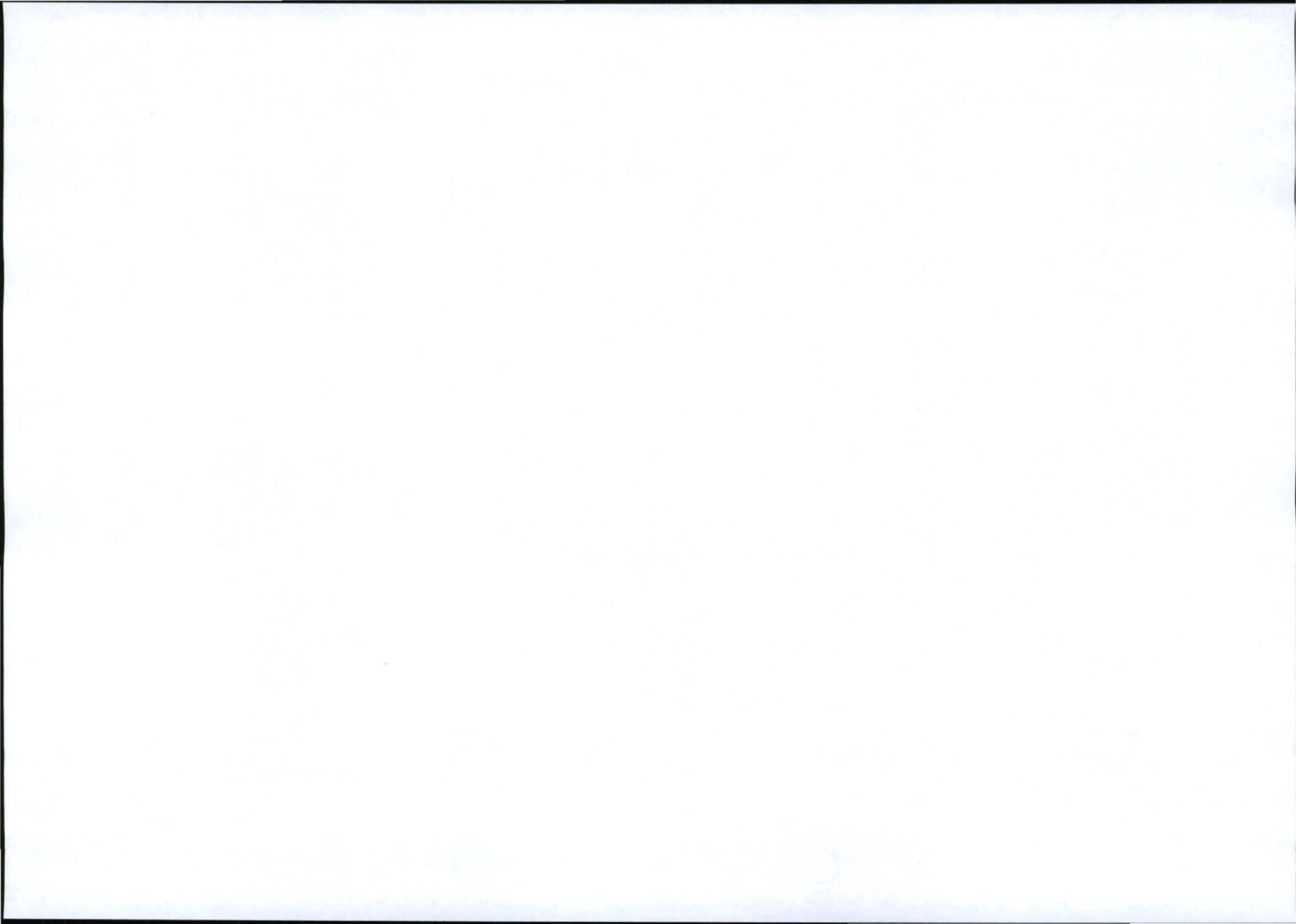


TABLE 33: ACTION PLAN – DISTURBING NOISE

Phase of operation	Activities (see Table 15)	Sig		Technical and management options (Refer to Appendix A for further detail on mitigation measures)	Action plan		
		UM	M		Timeframe	Frequency	Responsible parties
Construction	Exploration Site preparation Earthworks and civil works Process- and stormwater management Transport systems Non-mineralised waste management Storage and maintenance services/facilities Site/contract management	M	L	<ul style="list-style-type: none"> Maintain equipment in good working order. Establish noise berms between noise generating equipment and sensitive receptor sites and maintain facilities Limit activities most likely to cause noise pollution to the hours between 06h00 and 20h00. No blasting will take place in the morning. Blasting will be restricted to the afternoon and will take cognisance of weather conditions Establish and maintain acoustic barriers (screens, enclosed buildings, silencers) Educate workers on the noise impacts of their actions. Investigate the use of alternative reverse alarms. Set up and undertake noise monitoring in line with recommended programme (see Section 21). Where hunting and tourism areas are no longer considered favorable because of disturbing mine noise, compensate affected landowners for reduction in business, which may include purchase of additional land to create a sufficient buffer zone. Handle all registered complaints in line with grievance procedure 	On-going At start and on-going On-going On-going At start and on-going On-going Pre-construction Pre-construction and on-going As required	On-going Once off and on-going On-going On-going Once off and on-going Once off Once off and on-going As required	SHE Manager SHE Manager SHE Manager SHE Manager SHE Manager SHE Manager SHE Manager
Operation	Exploration Open pit mining Waste rock and tailings management Mineral processing Process- and stormwater management Transport systems Non-mineralised waste management Storage and maintenance services/facilities Site/contract management	M-H	L		As required	As required	SHE Manager
Decommission	Demolition Rehabilitation Site/contract management	M	L				
Closure	Maintenance and aftercare	-	-	-	-	-	-

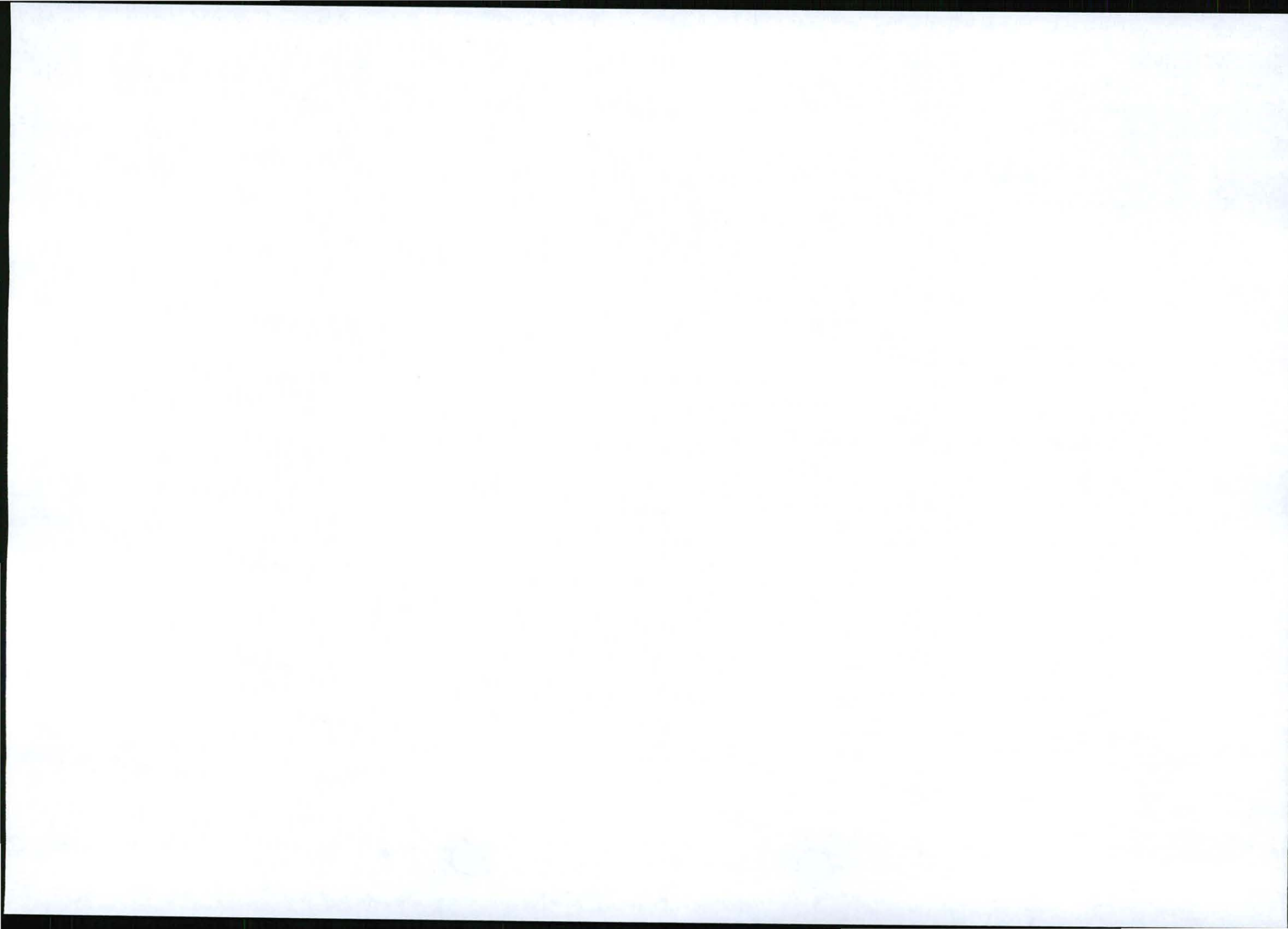


TABLE 34: ACTION PLAN – LANDSCAPE AND VISUAL

Phase of operation	Activities (see Table 15)	Sig		Technical and management options (Refer to Appendix A for further detail on mitigation measures)	Action plan		
		UM	M		Timeframe	Frequency	Responsible parties
Construction	Exploration Site preparation Earthworks and civil works Rehabilitation Site/contract management	H	H-M	<ul style="list-style-type: none"> Land disturbance will be limited to what is absolutely necessary. Retain as much natural vegetation as possible or plant vegetation to act as screens between the mine and sensitive viewers. 	On-going	On-going	SHE Manager
					As required	As required	SHE Manager
Operation	Open pit mining Waste rock and tailings management Mineral processing Power supply Transport systems Non-mineralised waste management Site support services Rehabilitation	H	H-M	<ul style="list-style-type: none"> Paint buildings and large equipment with colours that reflect natural landscape (where possible). Control dust in line with dust management plan Place and use night lights to prevent unnecessary light pollution (direct downwards, movement activated, avoid high pole flood lights) Prevent litter in line with waste management Construct and operate waste dumps as low as possible in height in order to reduce the visibility and intrusiveness. Undertake concurrent rehabilitation of the TSF side slopes in line with tailings management plan 	As required	As required	SHE Manager
					As required	As required	SHE Manager
					On-going	On-going	SHE Manager
					On-going	As required	SHE Manager
Decommission	Waste rock and tailings management Power supply Transport systems Non-mineralised waste management Site support services Demolition Rehabilitation	H	H-M	<ul style="list-style-type: none"> Undertake concurrent rehabilitation of the TSF side slopes in line with tailings management plan Include a professional landscape architect in closure design of any final land forms. Rehabilitate the site and disturbed areas in line with recommended rehabilitation plan (use indigenous vegetation, avoid harsh slopes, remove all infrastructure unless alternative end use is identified, Where hunting and tourism areas are no longer considered favorable because of the disturbing visual impacts of the mine, Turquoise Moon will compensate the affected landowners for reduction in business, which may include purchase of additional land to create a sufficient buffer zone. 	As required	As required	SHE Manager
					Pre-closure	Once off	SHE Manager
					As soon as possible	As required	SHE Manager
					As required	As required	SHE Manager
Closure	Final land forms (TSF and waste dumps)	H	H-M	<ul style="list-style-type: none"> Monitor and maintain vegetation cover. 	6 years	As required	SHE Manager

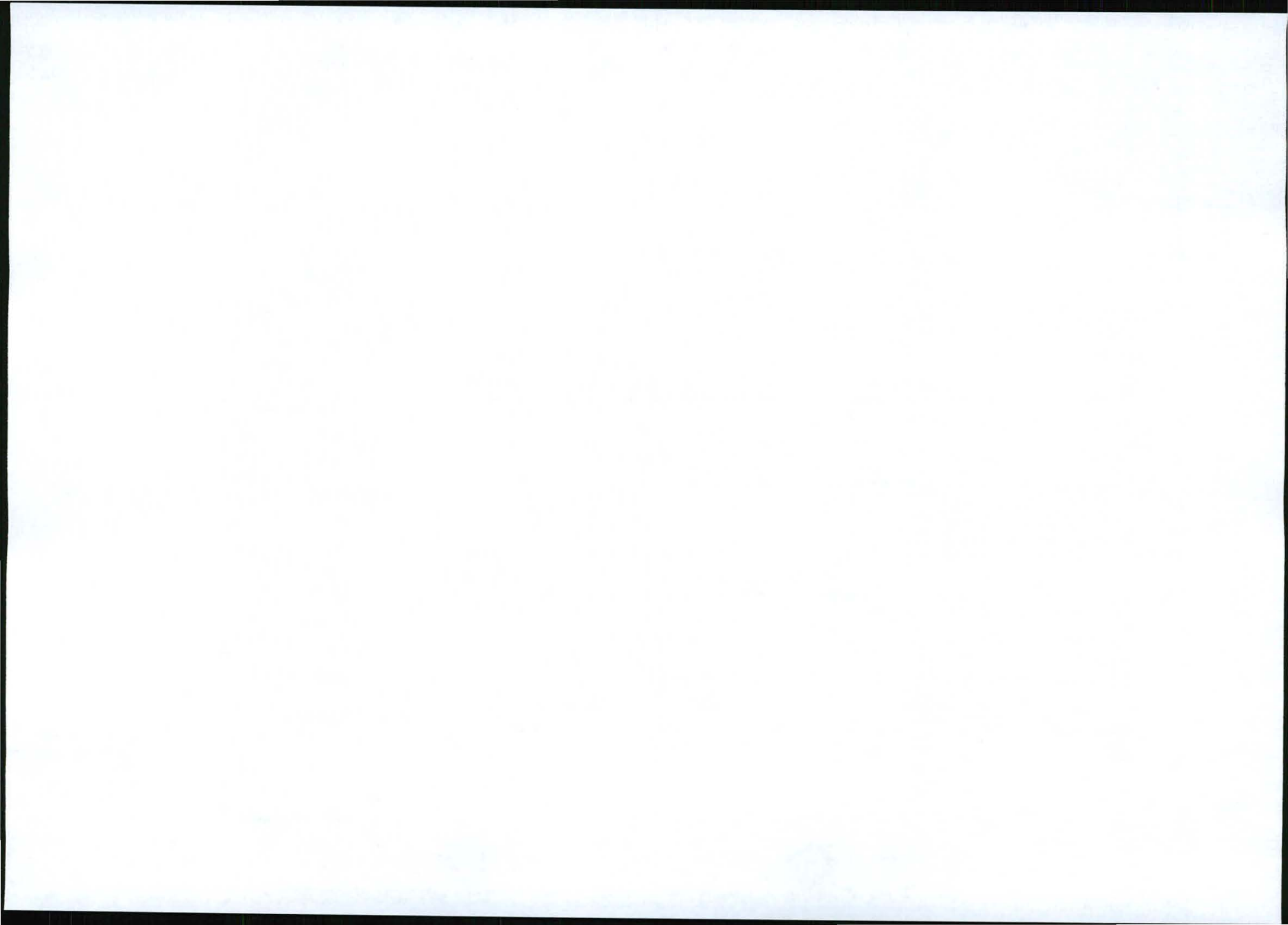


TABLE 35: ACTION PLAN – LAND USES

Phase of operation	Activities (see Table 15)	Sig		Technical and management options (Refer to Appendix A for further detail on mitigation measures)	Action plan		
		UM	M		Timeframe	Frequency	Responsible parties
Construction	Development of the mine	H	M-L	<ul style="list-style-type: none"> Purchase/lease farms within application boundary Effective implementation of all mitigation measures as outlined in this EMP report to reduce its overall impact on the environment and surrounding land-uses. Should the impact on the pre-mining land use and/or pre-mining economic activity still prove unacceptable, Turquoise Moon will compensate the relevant landowners accordingly. Monitor and maintain rehabilitated areas 	Pre-construction	Once off	SHE Manager
Operation	Presence and operation of the mine	H	M-L		On-going	On-going	
Decommission	Presence and rehabilitation of the mine	H	M-L		As required	As required	SHE Manager
Closure	Final land forms (open pit, TSF and waste dumps)	H	M-L		6 years	As required	SHE Manager

TABLE 36: ACTION PLAN – BLAST HAZARDS

Phase of operation	Activities (see Table 15)	Sig		Technical and management options (Refer to Appendix A for further detail on mitigation measures)	Action plan		
		UM	M		Timeframe	Frequency	Responsible parties
Construction	No significant impacts	-	-	<ul style="list-style-type: none"> Design and implement blast to meet threshold criteria Precise control of the charging up operation, auditing prior to detonation and monitoring of blasts and related impacts. Make use of electronic detonators to control the blast. Conduct a pre-blast baseline within a 1,5km radius of the open pit and at the historical house on site (if kept) Restrict blast times. Set a standard blast time. Communicate blast schedule with stakeholders (at meetings, newsletter, sign boards) Monitor blasts (see Section 21). If monitoring data confirms that blast-related damage and/or nuisance has occurred Turquoise Moon will, in consultation with the relevant third party, take steps to investigate and rectify any damage and to limit any further potential for damage and/or nuisance. Where the use of surrounding property (residential, farming, hunting and tourism) are no longer considered favorable because of the disturbing blast hazards, Turquoise Moon will compensate the affected landowners for reduction in business, which may include purchase of additional land to create a sufficient buffer zone. 	Pre-blast	As required	Mine Manager
Operation	Open pit mining	H	L		Pre-blast	As required	Mine manager
					On-going	Every blast	Mine manager
					Pre-blast	Once off	Environment manager
					Every time	Every blast	Mine manager
					Pre-blast	As required	Mine manager
On-going	As required	SHE Manager					
Every time	Daily	SHE Manager					
As required	As required	SHE Manager					
As required	As required	SHE Manager					
Decommission	No significant impacts	-	-		-	-	-
Closure	Not applicable	-	-		-	-	-

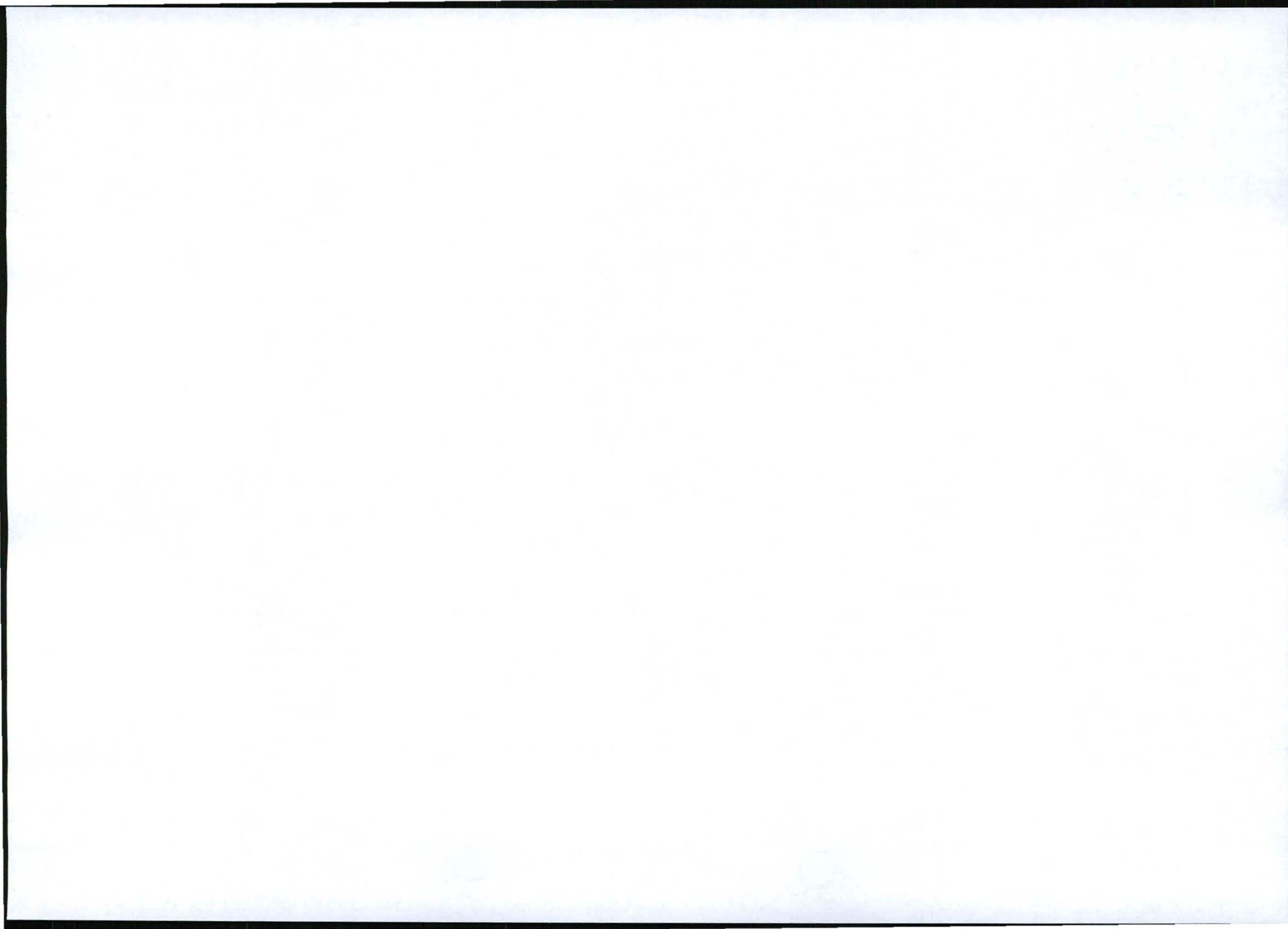


TABLE 37: ACTION PLAN – TRAFFIC

Phase of operation	Activities (see Table 15)	Sig		Technical and management options (Refer to Appendix A for further detail on mitigation measures)	Action plan		
		UM	M		Timeframe	Frequency	Responsible parties
Construction	Transport systems Site/contract management	H	M	<ul style="list-style-type: none"> Design of road improvements and road diversion to be done by an appropriately qualified person. Obtain approval and where necessary way leaves, from roads authority for required road improvements and diversion Establish joint road maintenance plan in consultation with relevant roads department and other significant users of public roads. Ensure plan includes initial investigations on quality and lifespan of roads trucks will travel. Provide and maintain traffic and information signs, road markings and lighting, in consultation with roads department, where relevant. Upgrade intersections in line with specialist recommendations and traffic management plan Monitor and evaluate relevant road intersections in line with monitoring programme (see Section 21.1). Provide dedicated taxi/bus loading and off-loading stops. Co-ordinate transport of heavy loads with the roads department Transport hazardous substances in line with hazchem requirements Where hunting and tourism areas are no longer considered favorable because of project-related transport on local roads, Turquoise Moon will compensate the affected landowners for reduction in business, which may include purchase of additional land to create a sufficient buffer zone. Handle any road accident involving or caused by project related traffic in accordance with the emergency response procedure (see Section 20.2). 	Design	Once off	SHE Manager
Operation	Transport systems Site/contract management	H	M		Pre-construction	Once off	SHE Manager
Decommission	Transport systems Site/contract management	H	M		Pre-construction and on-going	Once off and on-going	SHE Manager
					At construction	Once off	SHE Manager
					Pre-construction	Once off	SHE Manager
					On-going	Annually	SHE Manager
					At start of phase As required	Once off As required	SHE Manager SHE Manager
As required	As required	SHE Manager					
As required	As required	SHE Manager					
As required	As required	SHE Manager					
Closure	Not applicable	-	-	-	-	-	

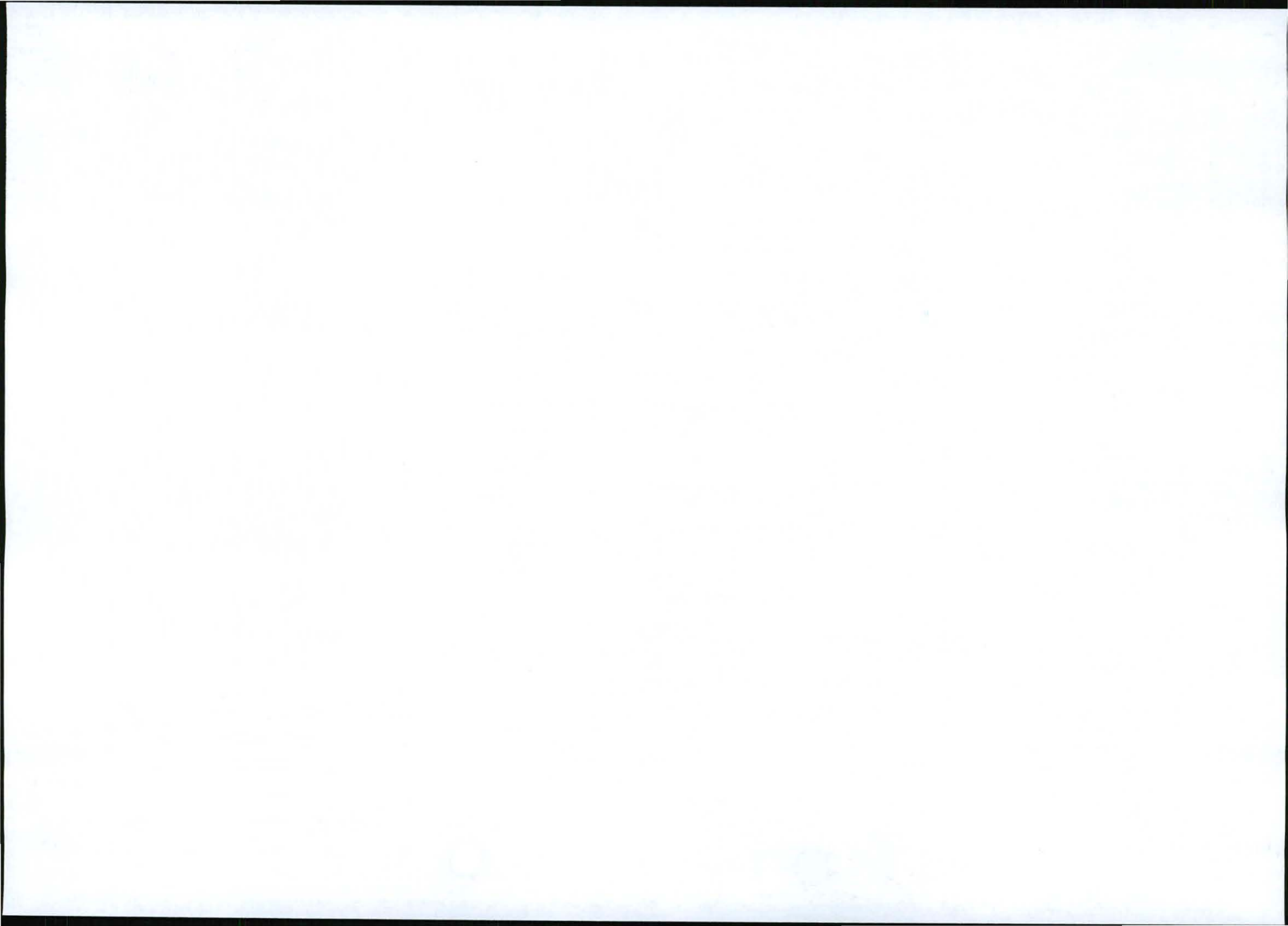


TABLE 38: ACTION PLAN – HERITAGE (AND CULTURAL)

Phase of operation	Activities (see Table 15)	Sig		Technical and management options (Refer to Appendix A for further detail on mitigation measures)	Action plan		
		UM	M		Timeframe	Frequency	Responsible parties
Construction	Site preparation Earthworks Site / contract management	H	L	<ul style="list-style-type: none"> Apply for necessary permits to disturb or destroy heritage sites (includes Phase 2 surveys and use an accredited specialist) Obtain permission for the exhumation and relocation of graves Limit project footprint to that identified in EIA and EMP report. 	Pre-construction	Timeously	SHE Manager
					Pre-construction All phases Pre-construction	Timeously On-going Once off	SHE Manager SHE Manager SHE Manager
Operation	Tailings and waste rock management Open pit mining Stormwater management Site/contract management	H	L	<ul style="list-style-type: none"> All heritage sites not impacted on by the initial development of the site will be marked on the site layout plan. Inspect sites for encroachment and/or damage. Educate all workers (temporary and permanent) about the heritage sites that may be encountered. 	On-going All phases	Monthly Induction and annually	SHE Manager SHE Manager
					As required	As required	SHE Manager
Decommission	Demolition Rehabilitation Site/contract management	M	L	<ul style="list-style-type: none"> Any chance finds of heritage sites will follow its emergency procedure detailed in Section 20.2. 			
Closure	Not applicable	-	-	-	-	-	-

TABLE 39: ACTION PLAN – PALAEOLOGICAL

Phase of operation	Activities (see Table 15)	Sig		Technical and management options (Refer to Appendix A for further detail on mitigation measures)	Action plan		
		UM	M		Timeframe	Frequency	Responsible parties
Construction	Earthworks	L	L	<ul style="list-style-type: none"> Limit project footprint to that identified in EIA and EMP report. Educate all workers (temporary and permanent) about the heritage sites that may be encountered. Any chance finds of palaeontological resources, will follow emergency response procedure (Section 20.2). 	On-going	On-going	SHE Manager
Operation	Open pit mining	L	L		On-going	Induction and annually	SHE Manager
				As required	As required	SHE Manager	
Decommission	Not applicable	-	-	-	-	-	
Closure	Not applicable	-	-	-	-	-	

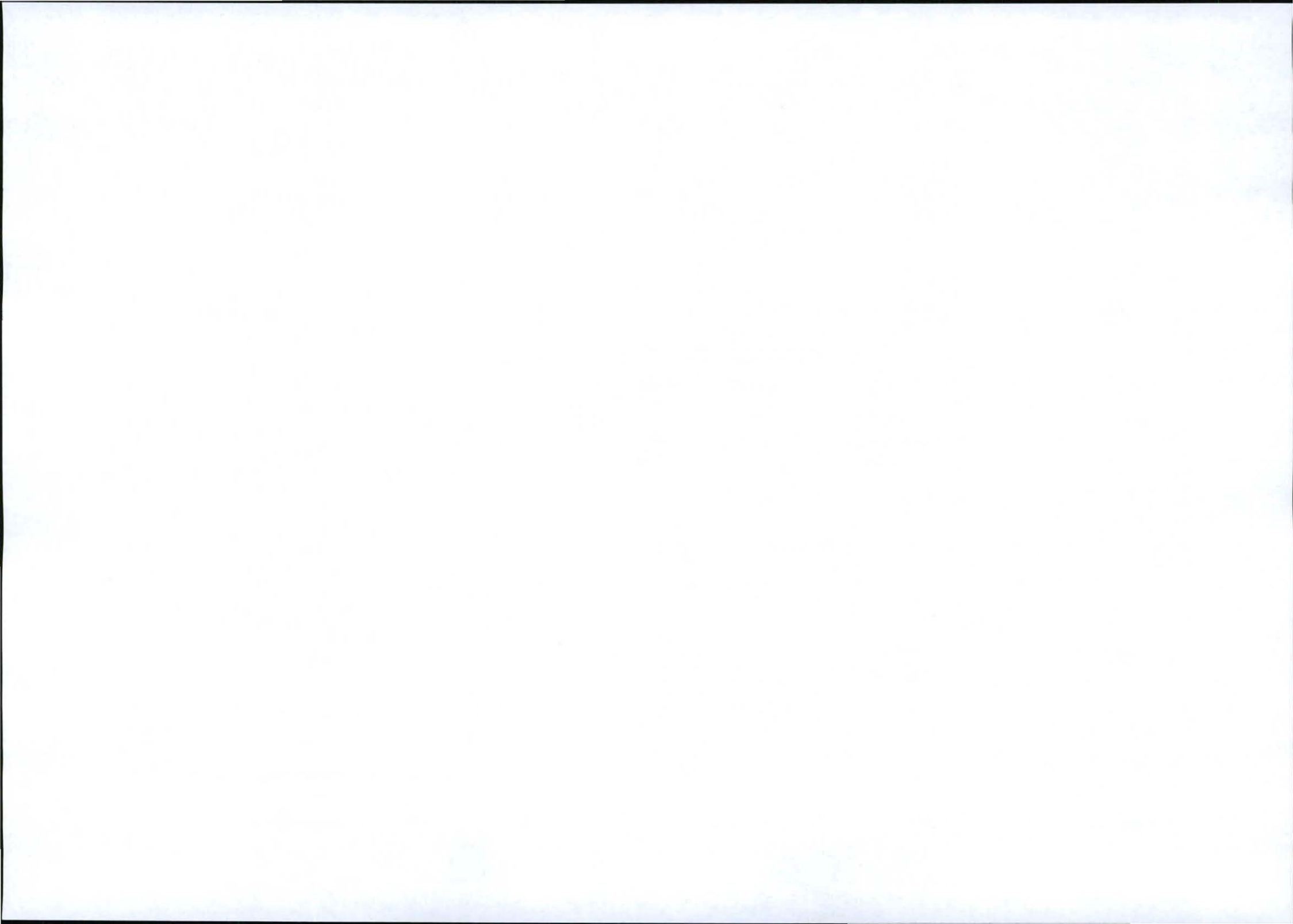


TABLE 40: ACTION PLAN – MINERAL STERILISATION

Phase of operation	Activities (see Table 15)	Sig		Technical and management options (Refer to Appendix A for further detail on mitigation measures)	Action plan		
		UM	M		Timeframe	Frequency	Responsible parties
Construction	Development of the mine	-	-	<ul style="list-style-type: none"> Detailed design of site will take into consideration the presence of mineral reserves on site, and will avoid placing any permanent infrastructure in areas that could potentially sterilize the minerals. 	Pre-construction	Once-off	COO
Operation	-	-	-	-	-	-	-
Decommission	-	-	-	-	-	-	-
Closure	-	-	-	-	-	-	-

TABLE 41: ACTION PLAN – ECONOMIC (POSITIVE AND NEGATIVE)

Phase of operation	Activities (see Table 15)	Sig		Technical and management options (Refer to Appendix A for further detail on mitigation measures)	Action plan		
		UM	M		Timeframe	Frequency	Responsible parties
Construction	Development of the mine	H+	H+	<ul style="list-style-type: none"> Start closure planning as soon as practically possible. Incorporate economic considerations into closure planning 	At least 5 years prior to decommissioning	On-going	SHE Manager
Operation	Presence and operation of the mine	H+	H+		<ul style="list-style-type: none"> Empower, support and use local people for employment and local business for procurement as far as possible. Enhance local economic development. Provide, where possible, wealth creation and life skills training to assist employees post closure. Implement the commitments in the social and labour plan in accordance with the employment, procurement and social investment principles of the Mining Charter. Implement the land use (Table 35) and land value (Table 44) management measures 	On-going	On-going
Decommission	Presence and rehabilitation/closure of the mine	H+	H+	On-going		On-going	HR Manager HR Manager
				On-going		On-going	HR Manager
				On-going		On-going	SHE Manager
Closure	Maintenance and aftercare	M+	H+	<ul style="list-style-type: none"> Monitor site in line with closure objectives and goals 	6 years	On-going	SHE Manager

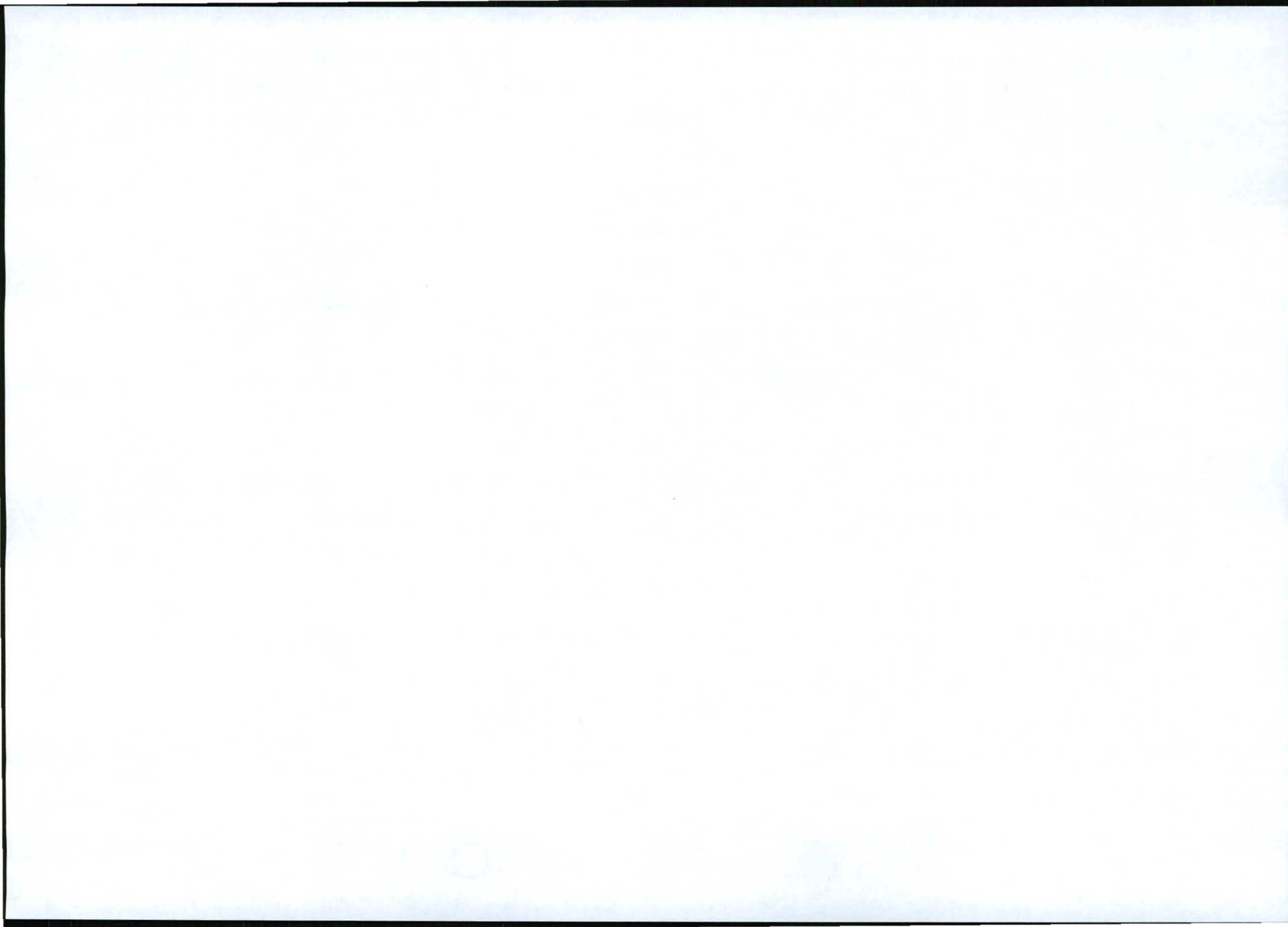
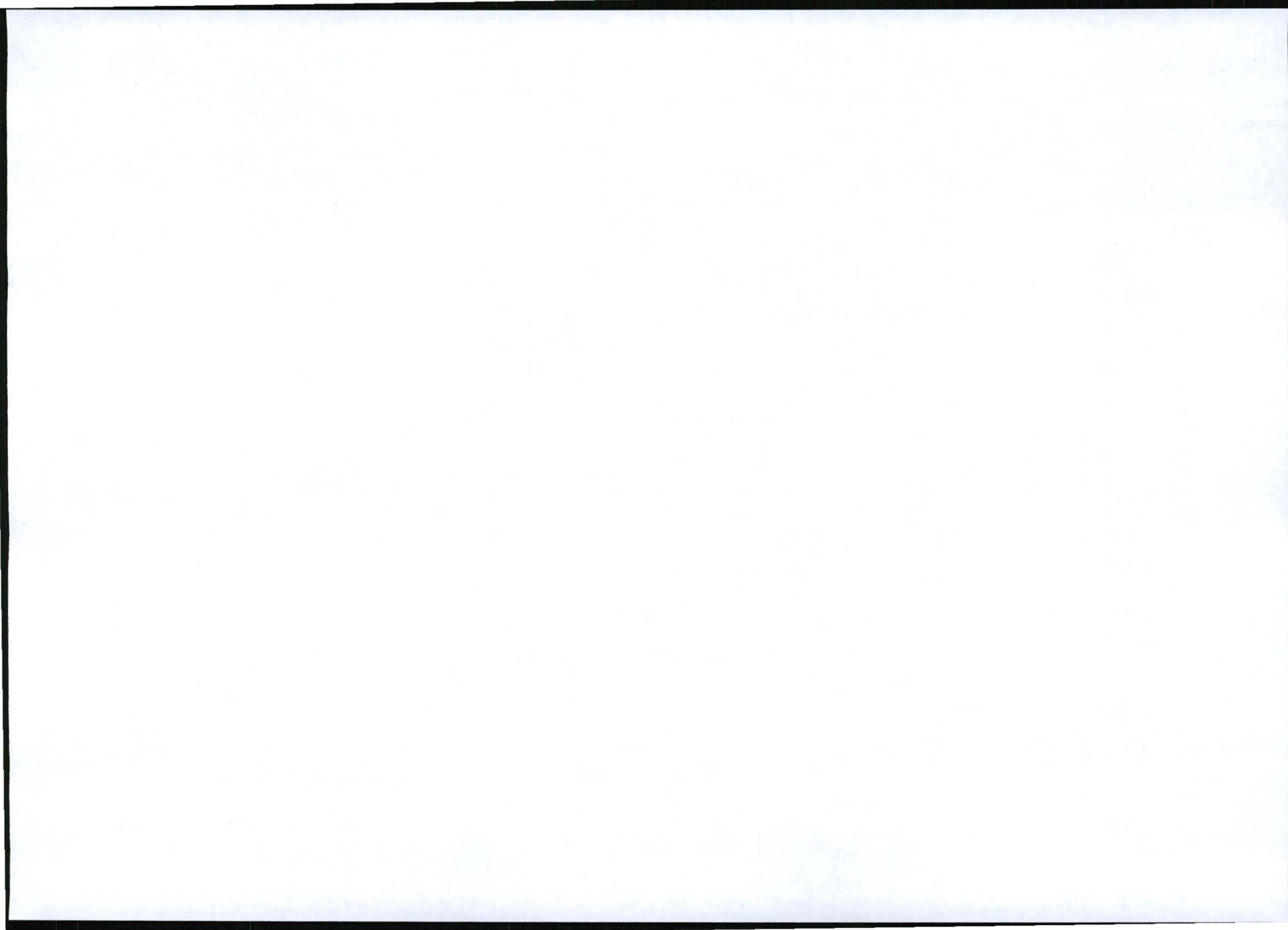


TABLE 42: ACTION PLAN – INFORMAL SETTLEMENTS, SAFETY, SECURITY, SERVICES

Phase of operation	Activities (see Table 15)	Sig		Technical and management options (Refer to Appendix A for further detail on mitigation measures)	Action plan		
		UM	M		Timeframe	Frequency	Responsible parties
Construction	Development of mine	H	M-L	<ul style="list-style-type: none"> • Compile recruitment, training and housing policies and procedures that meet industry standards • Recruit workers in line with recommended recruitment principles (skills register, open communication with respect to requirements and processes be followed, advertisements, recruitment days – off site, notice boards, worker register, employee profile register) • Train potential workers in line with recommended training principles (facilitate recognition of prior learning of those job applicants who do not possess formally documented qualifications, encourage the Department of Labour and Local Economic Development Forums to educate potential workers about the recruitment process and providing assistance with the organization of the necessary documentation, as well as keeping an up to date database of unemployed people who are looking for work, set up structures for training potential employees as required, disclose any social investment plans for the area that may lead to jobs) • House workers in line with recommended housing principles (recruit locally as far as possible, facilitate the provision of appropriate off site formal housing or the provision of a housing allowance that will be provided as part of wages) • Provide formal transport (buses, mini vans) for the majority of the workforce. • Procure services from local area and encourage suppliers to develop local businesses. • Co-operate with law enforcement officials to minimise the potential for informal settlements. • Facilitate and participate in a crime-fighting forum • Implement a stakeholder communication and engagement strategy • The establishment of informal settlements near to the project site will follow the emergency response procedure detailed in Section 20.2. 	Pre-construction	Once-off	HR Manager
Operation	Presence of mine	H	M-L		Pre-construction and pre-operation	As required	HR Manager
					Pre-construction and on-going	As required	HR Manager
					On-going	On-going	HR Manager
					On-going	Daily	HR Manager
					On-going	On-going	HR Manager
					On-going	Quarterly	HR Manager
					Pre-construction Pre-construction	Once off Quarterly	HR Manager SHE Manager
					As required	As required	HR Manager



Phase of operation	Activities (see Table 15)	Sig		Technical and management options <i>(Refer to Appendix A for further detail on mitigation measures)</i>	Action plan		
		UM	M		Timeframe	Frequency	Responsible parties
Decommission	Demolition of mine	H	M-L	<ul style="list-style-type: none"> House workers in line with housing principles (recruit locally as far as possible, facilitate the provision of appropriate off site formal housing or the provision of a housing allowance that will be provided as part of wages) Provide formal transport (buses, mini vans) for the majority of the workforce. Procure services from local area and encourage suppliers to develop local businesses. Co-operate with law enforcement officials to minimise the potential for informal settlements. Participate in crime-fighting forum. Maintain a stakeholder communication and engagement strategy The establishment of informal settlements near to the project site will follow the emergency response procedure detailed in Section 20.2. 	On-going	On-going	HR Manager
					On-going	Daily	HR Manager
					On-going	On-going	HR Manager
					On-going	Quarterly	SHE Manager
					On-going On-going	Quarterly Quarterly	HR Manager SHE Manager
					As required	As required	SHE Manager
Closure	Maintenance and aftercare	H	M-L	<ul style="list-style-type: none"> Participate in crime-fighting forum until mine closes. Maintain a stakeholder communication and engagement strategy until mine closes. The establishment of informal settlements near to the project site will follow the emergency response procedure detailed in Section 20.2. 	On-going	Quarterly	SHE Manager
					On-going	Quarterly	SHE Manager
					As required	As required	SHE Manager

TABLE 43: ACTION PLAN – RELOCATION

Phase of operation	Activities (see Table 15)	Sig		Technical and management options <i>(Refer to Appendix A for further detail on mitigation measures)</i>	Action plan		
		UM	M		Timeframe	Frequency	Responsible parties
Construction	Development of the mine	H	M-L	<ul style="list-style-type: none"> If farms workers and their families relocate with landowners, stipulate as a condition in the purchase agreement contract with relevant landowners. If farm workers and their families do not relocate with their current employees, appoint appropriately qualified specialist to design and implement resettlement plan (in line with World Bank Operational Directive on Involuntary Resettlement) Consider if farm workers currently employed and that would be relocated can be trained and employed at the mine 	Pre-construction	Once off	HR Manager
					Pre-construction	Once off	HR Manager
					Pre-construction	Once off	HR Manager
Operation	Not applicable	-	-	-	-	-	
Decommission	Not applicable	-	-	-	-	-	
Closure	Not applicable	-	-	-	-	-	

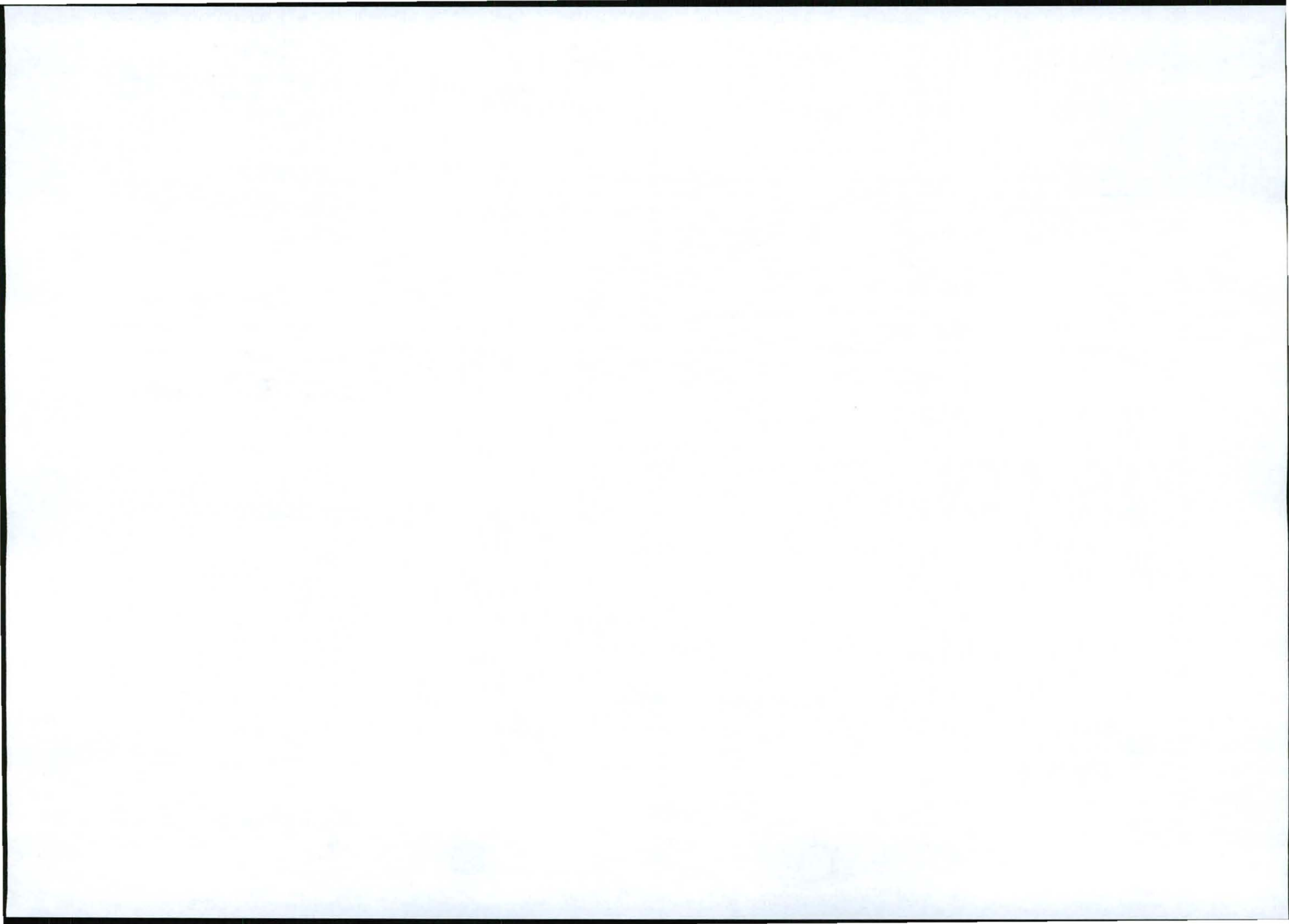
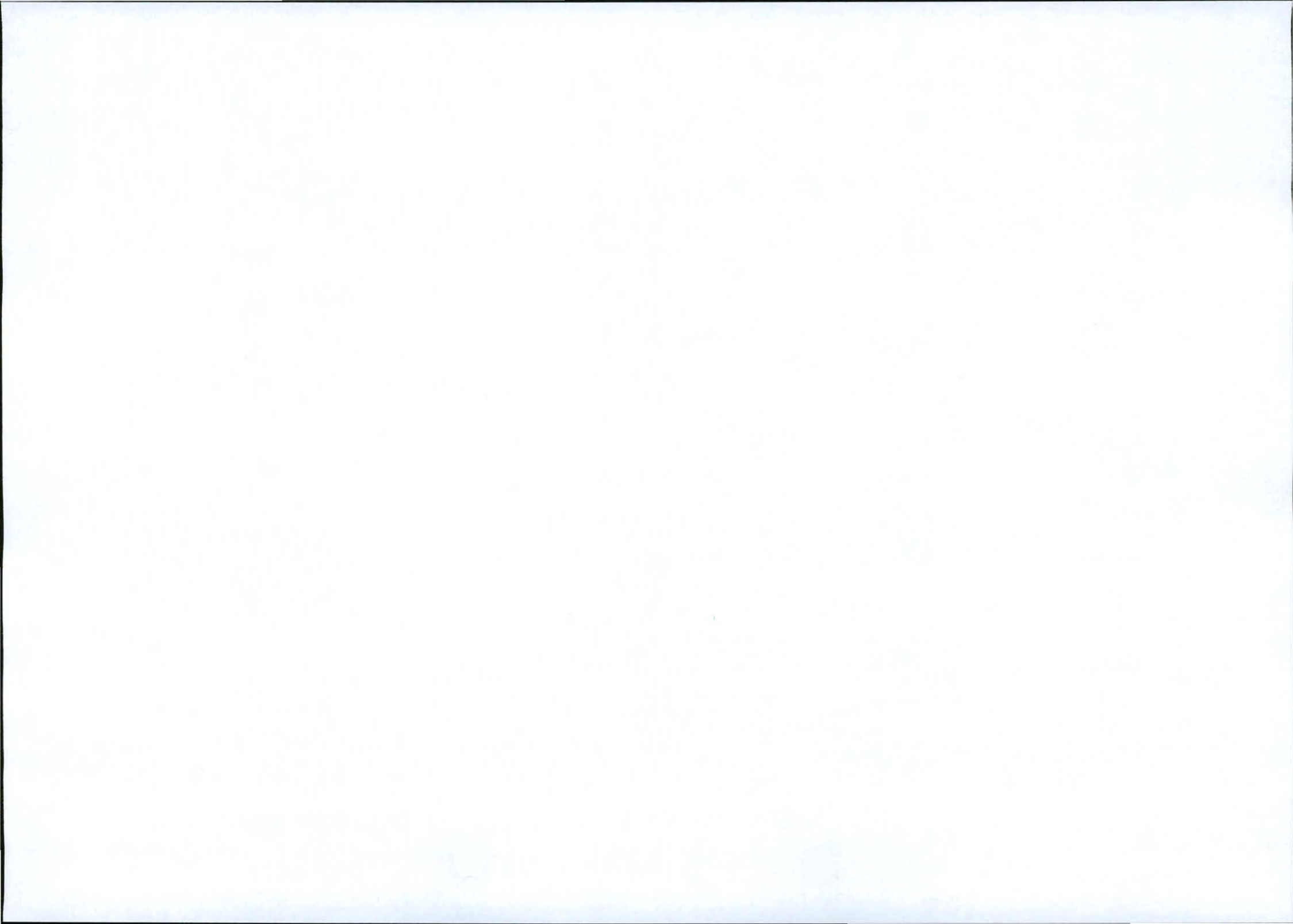


TABLE 44: ACTION PLAN – LAND VALUES

Phase of operation	Activities (see Table 15)	Sig		Technical and management options <i>(Refer to Appendix A for further detail on mitigation measures)</i>	Action plan		
		UM	M		Timeframe	Frequency	Responsible parties
Construction	Development of the mine	H	M-L	<ul style="list-style-type: none"> Conduct a base case valuation of land and property (by an independent valuator that is acceptable to all parties and paid for by the mine) Effective implementation of all mitigation measures as outlined in this EMP report to ensure that the identified impacts are contained on the project site and/or do not compromise the productivity of surrounding land. 	Pre-construction	Once off	SHE Manager
					On-going	On-going	SHE Manager
Operation	Presence and operation of the mine	H	M-L	<ul style="list-style-type: none"> Effective implementation of all mitigation measures as outlined in this EMP report to ensure that the identified impacts are contained on the project site and/or do not compromise the productivity of surrounding land. 	On-going	On-going	SHE Manager
Decommission	Presence and rehabilitation of the mine	H	M-L				
Closure	Final land forms (open pit, TSF and waste dumps)	H	M-L	<ul style="list-style-type: none"> Monitor site in line with closure objectives and goals 	6 years	On going	SHE Manager



20 PROCEDURES FOR ENVIRONMENTAL EMERGENCIES AND REMEDIATION

20.1 ONGOING MONITORING AND MANAGEMENT MEASURES

The on-going monitoring as described in Section 21 will be undertaken to provide early warning systems necessary to avoid environmental emergencies.

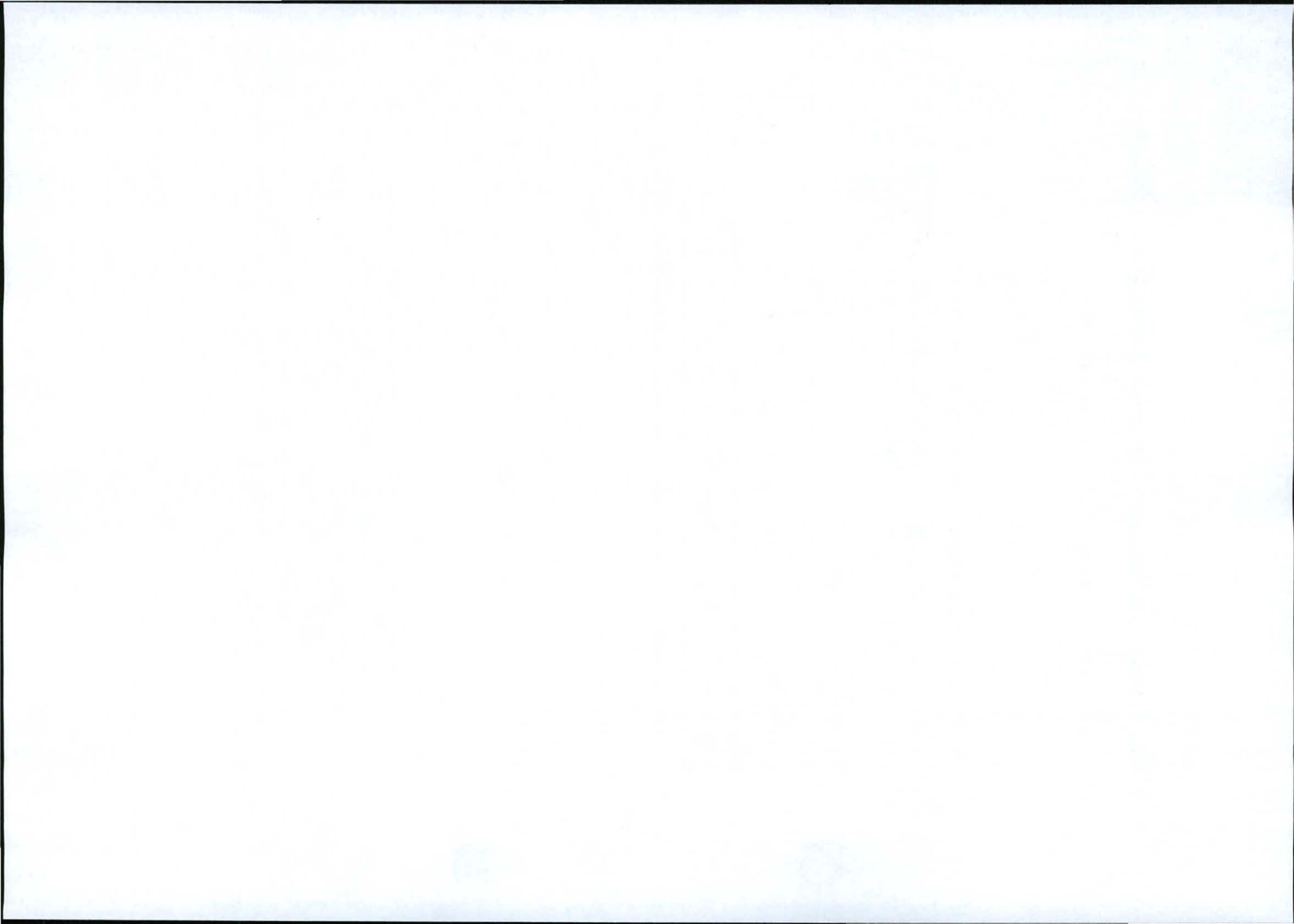
20.2 PROCEDURES IN CASE OF ENVIRONMENTAL EMERGENCIES

Emergency procedures apply to incidents that are unexpected and that may be sudden, and which lead to serious danger to the public and/or potentially serious pollution of, or detriment to the environment (immediate and delayed). Procedures to be followed in case of environmental emergencies are described in the table below (Table 45).

20.2.1 GENERAL EMERGENCY PROCEDURE

The general procedure that should be followed in the event of all emergency situations is as follows.

- Applicable operational managers must be notified of an incident upon discovery;
- Area to be cordoned off to prevent unauthorised access and tampering of evidence;
- If residue facilities/dams, stormwater diversions, etc., are partially or totally failing and this cannot be prevented, the emergency siren is to be sounded (nearest one available). After hours the Plant Manager on shift must be notified;
- Take photographs and samples as necessary to assist in investigation;
- Report the incident to the responsible person of the Safety, Health Environment and Quality (Environment) department (or equivalent);
- The Environment department must comply with Section 30 of the National Environmental Management Act (107 of 1998) such that:
 - The Environment department must immediately notify the Director-General (DWEA, DMR and Inspectorate of Mines as appropriate), the South African Police Services, the relevant fire prevention service, the provincial head of LEDET, the head of the local municipality, the head of the regional DWA office and any persons whose health may be affected of:
 - The nature of the incident;
 - Any risks posed to public health, safety and property;
 - The toxicity of the substances or by-products released by the incident; and
 - Any steps taken to avoid or minimise the effects of the incident on public health and the environment.
 - The Environment department must as soon as is practical after the incident:



- Take all reasonable measures to contain and minimise the effects of the incident including its effects on the environment and any risks posed by the incident to the health, safety and property of persons;
- Undertake clean up procedures;
- Remedy the effects of the incident; and
- Assess the immediate and long term effects of the incident (environment and public health);
- o Within 14 days the Environment department must report to the Director-General DWEA, the provincial head of LEDET, the head of the local municipality, the head of the regional DWA office such information as is available to enable an initial evaluation of the incident, including:
 - The nature of the incident;
 - The substances involved and an estimation of the quantity released;
 - The possible acute effects of the substances on the persons and the environment (including the data needed to assess these effects);
 - Initial measures taken to minimise the impacts;
 - Causes of the incident, whether direct or indirect, including equipment, technology, system or management failure; and
 - Measures taken to avoid a recurrence of the incident.

20.2.2 IDENTIFICATION OF EMERGENCY SITUATIONS

The site wide emergency situations that have been identified together with specific emergency response procedures are outlined in Table 45.

20.3 TECHNICAL, MANAGEMENT AND FINANCIAL OPTIONS

Technical, management and financial options that will be put into place to deal with the remediation of impacts in cases of environmental emergencies are described below.

- The applicant will appoint a competent management team with the appropriate skills to develop and manage a mine of this scale and nature.
- To prevent the occurrence of emergency situations, the mine will implement as a minimum the mine plan and mitigation measures as included in this EIA and EMP report.
- On an annual basis, the mine will undertake a risk assessment as part of its auditing procedures to identify and check potential risks associated with its operations. The findings of the risk assessment will be reported to mine management to be actioned.
- As part of its annual budget, the mine will allow a contingency for handling of any risks identified and/or emergency situations.
- Where required, the mine will seek input from appropriately qualified people.

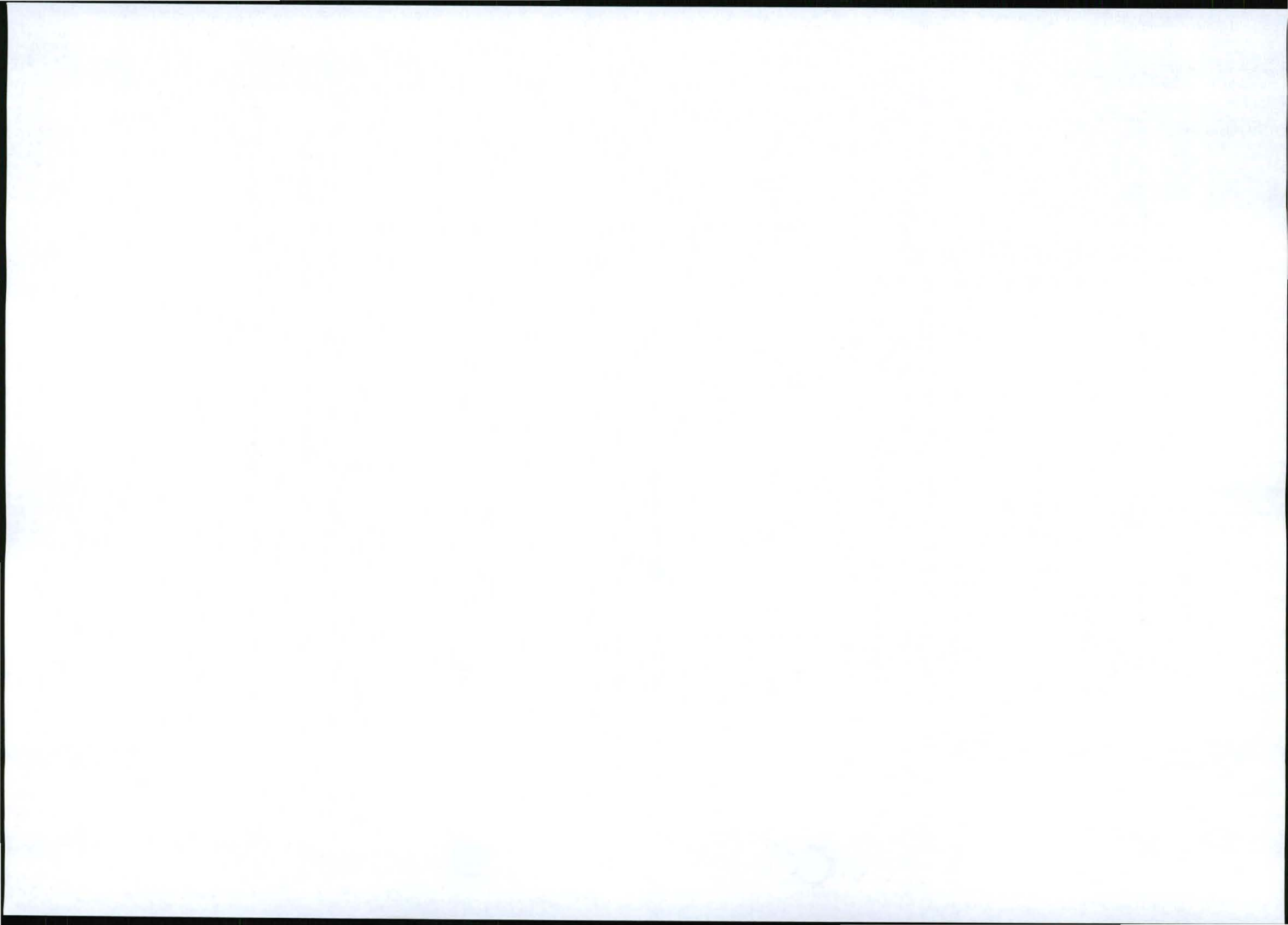
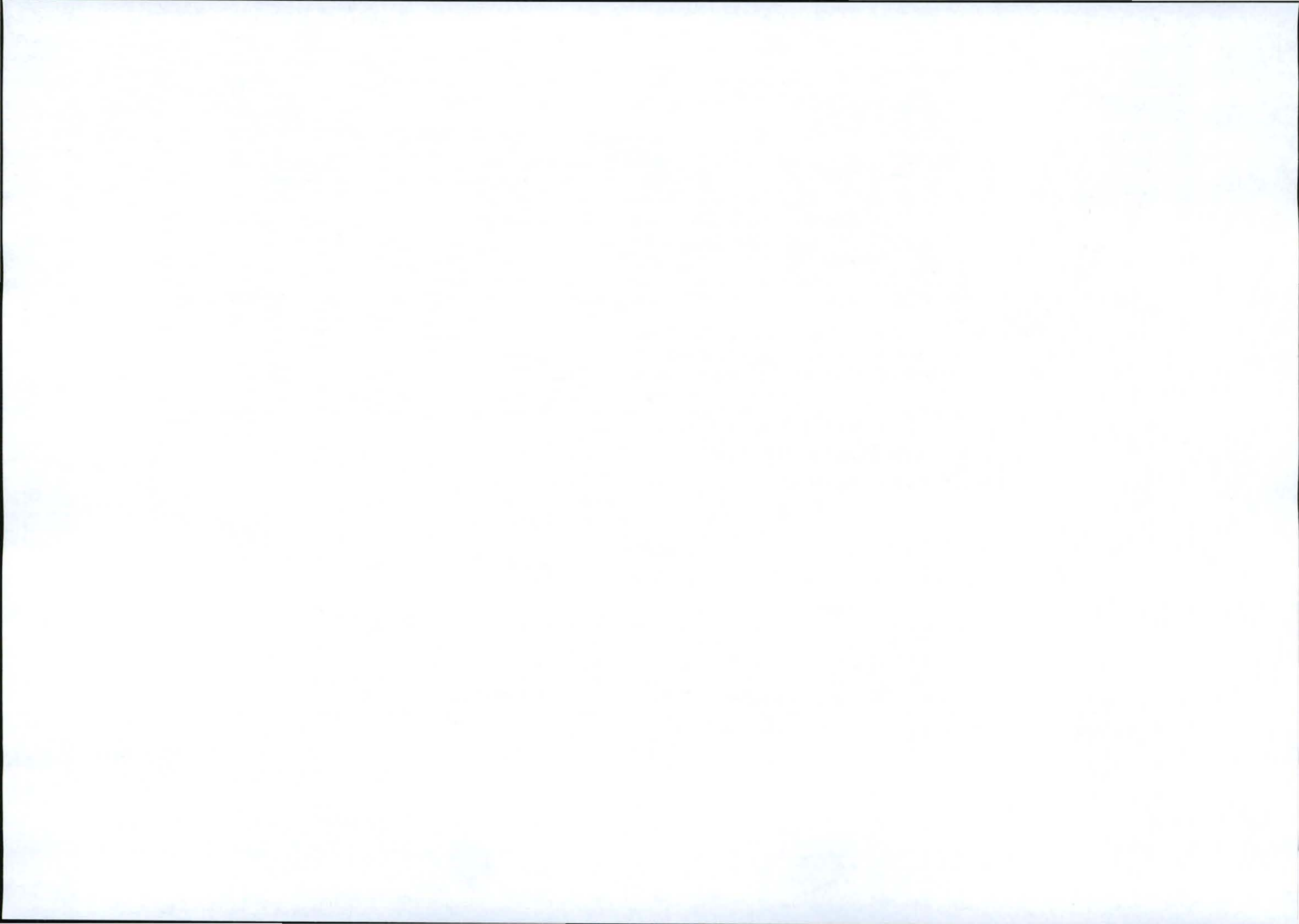
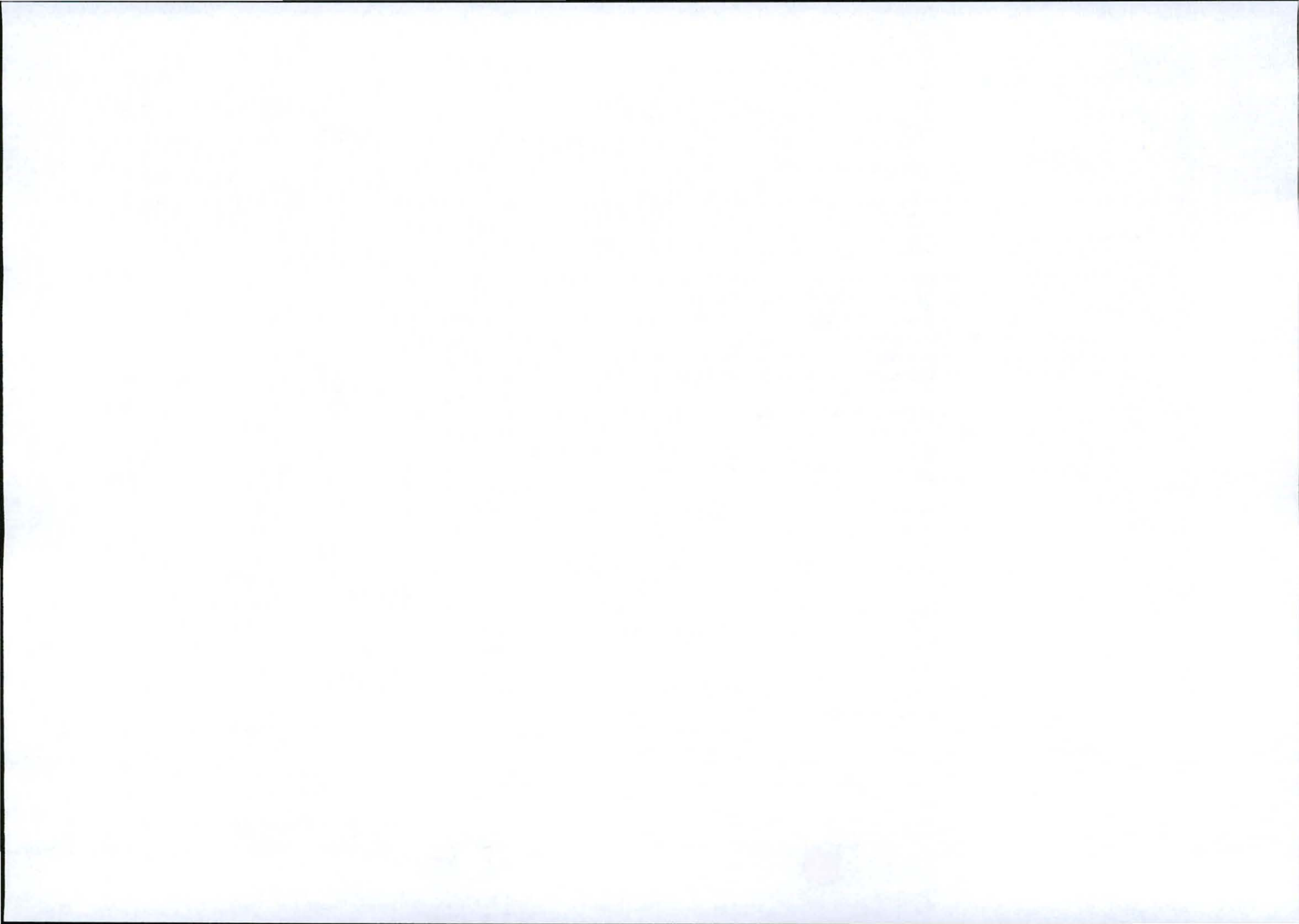


TABLE 45: EMERGENCY RESPONSE PROCEDURES

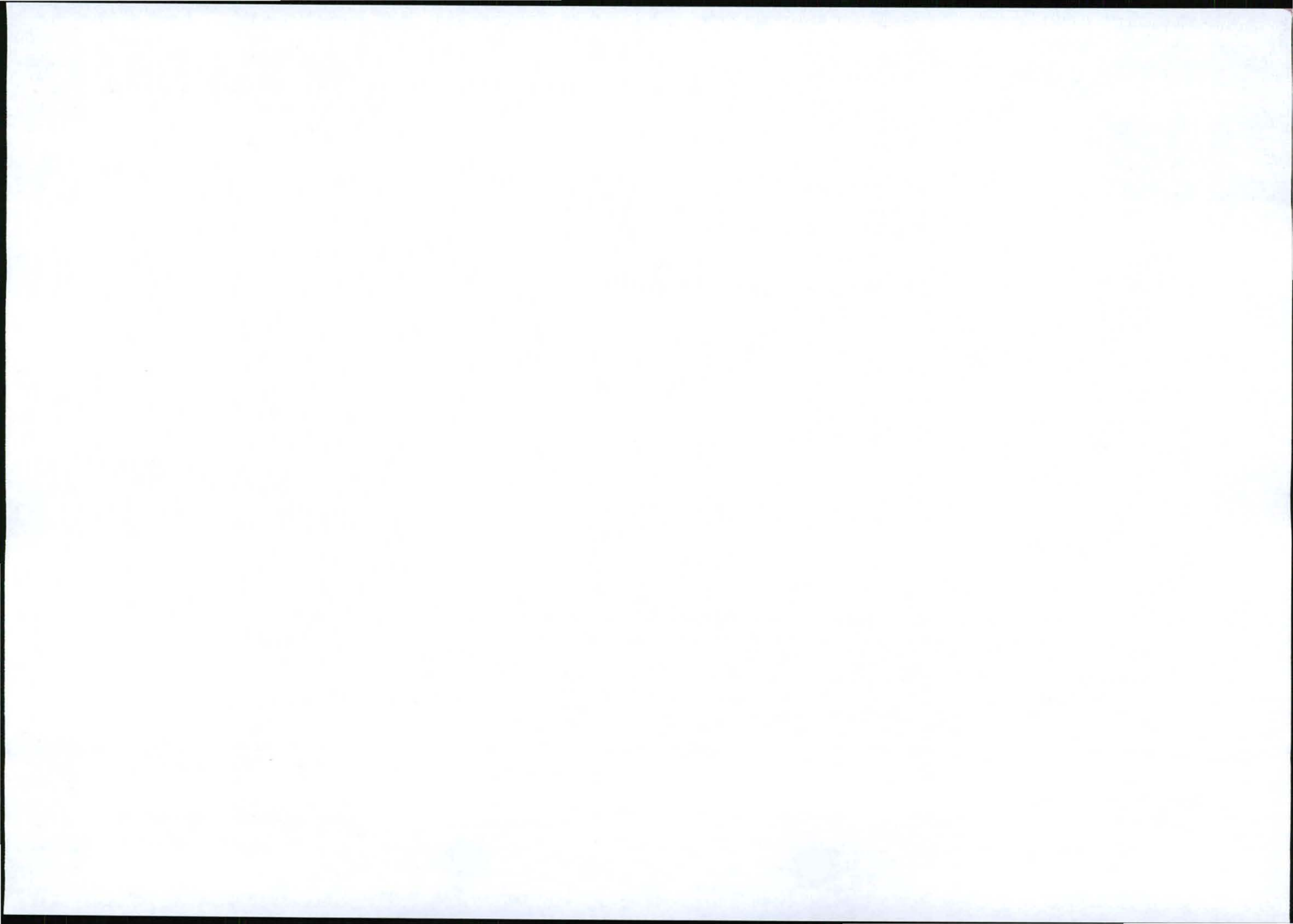
Item	Emergency Situation	Response in addition to general procedures
1	Spillage of chemicals, engineering substances and waste	<p>Where there is a risk that contamination will contaminate the land (leading to a loss of resource), surface water and/or groundwater, Turquoise Moon will:</p> <ul style="list-style-type: none"> • Notify residents/users downstream of the pollution incident. • Identify and provide alternative resources should contamination impact adversely on the existing environment. • Cut off the source if the spill is originating from a pump, pipeline or valve (e.g. TSF delivery pipeline, refuelling tanker) and the infrastructure 'made safe'. • Contain the spill (e.g. construct temporary earth bund around source such as road tanker). • Pump excess hazardous liquids on the surface to temporary containers (e.g. 210 litre drums, mobile tanker, etc.) for appropriate disposal. • Remove hazardous substances from damaged infrastructure to an appropriate storage area before it is removed/repared.
2	Discharge of dirty water to the environment	<p>Apply the principals listed for Item 1 above.</p> <p>To stop spillage from the dirty water system the mine will:</p> <ul style="list-style-type: none"> • Redirect excess water to other dirty water facilities where possible; • Pump dirty water to available containment in the clean water system, where there is no capacity in the dirty water system; and • Carry out an emergency discharge of clean water and redirect the spillage to the emptied facility. • Apply for emergency discharge as a last resort.
3	Pollution of surface water	<p>Personnel discovering the incident must inform the Environment department of the location and contaminant source.</p> <p>Apply the principals listed for Item 1 above.</p> <p>Absorbent booms will be used to absorb surface plumes of hydrocarbon contaminants.</p> <p>Contamination entering the surface water drainage system should be redirected into the dirty water system.</p> <p>The Environment department will collect in-stream water samples downstream of the incident to assess the immediate risk posed by contamination.</p>
4	Groundwater contamination	<p>Use the groundwater monitoring boreholes as scavenger wells to pump out the polluted groundwater for re-use in the process water circuit (hence containing the contamination and preventing further migration).</p> <p>Investigate the source of contamination and implement control/mitigation measures.</p>
5	Burst water pipes (loss of resource and erosion)	<p>Notify authority responsible for the pipeline (if not mine responsibility).</p> <p>Shut off the water flowing through the damaged area and repair the damage.</p> <p>Apply the principals listed for Item 1 above if spill is from the dirty/process water circuit.</p>
6	Flooding from failure of surface water control infrastructure	<p>Evacuate the area downstream of the failure.</p> <p>Using the emergency response team, rescue/recover and medically treat any injured personnel.</p> <p>Temporarily reinstate/repair stormwater diversions during the storm event (e.g. emergency supply of sandbags).</p>



Item	Emergency Situation	Response in addition to general procedures
		Close the roads affected by localised flooding or where a stormwater surge has destroyed crossings/bridges.
7	Risk of drowning from falling into water dams	Attempt rescue of individuals from land by throwing lifeline/lifesaving ring. Get assistance of emergency response team whilst attempting rescue or to carry out rescue of animals. Ensure medical assistance is available to recovered individual.
8	Veld fire	Evacuate mine employees from areas at risk. Notify downwind residents and industries of the danger. Assist those in imminent danger/less able individuals to evacuate until danger has passed. Provide emergency fire fighting assistance with available trained mine personnel and equipment.
9	Overtopping or failure of the tailings dam	Sound the alarm to evacuate danger area. Pump water from top of dam and follow redirection of water as indicated in Item 2 above. Stop pumping tailings to the TSF. Recover casualties resulting from dam failure using the emergency response team. Make the remaining structure safe. Apply the principles of Item 1 above.
10	Falling into hazardous excavations	Personnel discovering the fallen individual or animal must mobilise the emergency response team to the location of the incident and provide a general appraisal of the situation (e.g. human or animal, conscious or unconscious, etc.). The injured party should be recovered by trained professionals such as the mine emergency response team. A doctor (or appropriate medical practitioner)/ambulance should be present at the scene to provide first aid and transport individual to hospital.
11	Road traffic accidents (on site)	The individual discovering the accident (be it bystander or able casualty) must raise the alarm giving the location of the incident. Able personnel at the scene should shut down vehicles where it is safe to do so. Access to the area should be restricted and access roads cleared for the emergency response team. Vehicles must be made safe first by trained professionals (e.g. crushed or overturned vehicles). Casualties will be moved to safety by trained professionals and provided with medical assistance. Medical centres in the vicinity with appropriate medical capabilities will be notified if multiple seriously injured casualties are expected.
12	Development of informal settlements	The mine will inform the local authorities (municipality and police) that people are illegally occupying the land and ensure that action is taken within 24hrs.
13	Injury from fly rock	The person discovering the incident will contact the mine emergency response personnel to recover the injured party and provide medical assistance. Whilst awaiting arrival of the emergency response personnel, first aid should be administered to the injured party by a qualified first aider if it is safe to do so.



Item	Emergency Situation	Response in addition to general procedures
14	Uncovering of graves and sites	<p>Personnel discovering the grave or site must inform the Environment department immediately.</p> <p>Prior to damaging or destroying any of the identified graves, permission for the exhumation and relocation of graves must be obtained from the relevant descendants (if known), the National Department of Health, the Provincial Department of Health, the Premier of the Province and the local Police.</p> <p>The exhumation process must comply with the requirements of the relevant Ordinance on Exhumations, and the Human Tissues Act, 65 of 1983.</p>
15	Uncovering of fossils	<p>Personnel discovering the fossil or potential site must inform the Environment department immediately.</p> <p>Should any fossils be uncovered during the development of the site, a palaeontologist or palaeoanthropologist will be consulted to identify the possibility for research.</p>



21 PLANNED MONITORING AND EMP PERFORMANCE ASSESSMENT

21.1 PLANNED MONITORING OF ENVIRONMENTAL ASPECTS

Environmental aspects requiring monitoring are listed below.

- Water resources – see Section 21.1.1 for details
- Air – see Section 21.1.2 for details
- Noise – see Section 21.1.3 for details
- Biodiversity – see Section 21.1.4 for details
- Blasting – see Section 21.1.5 for details
- Transport – see Section 21.1.6 for details
- Tailings dam, waste dumps and other water dams – see Section 21.1.7 for details

21.1.1 WATER RESOURCES

Groundwater

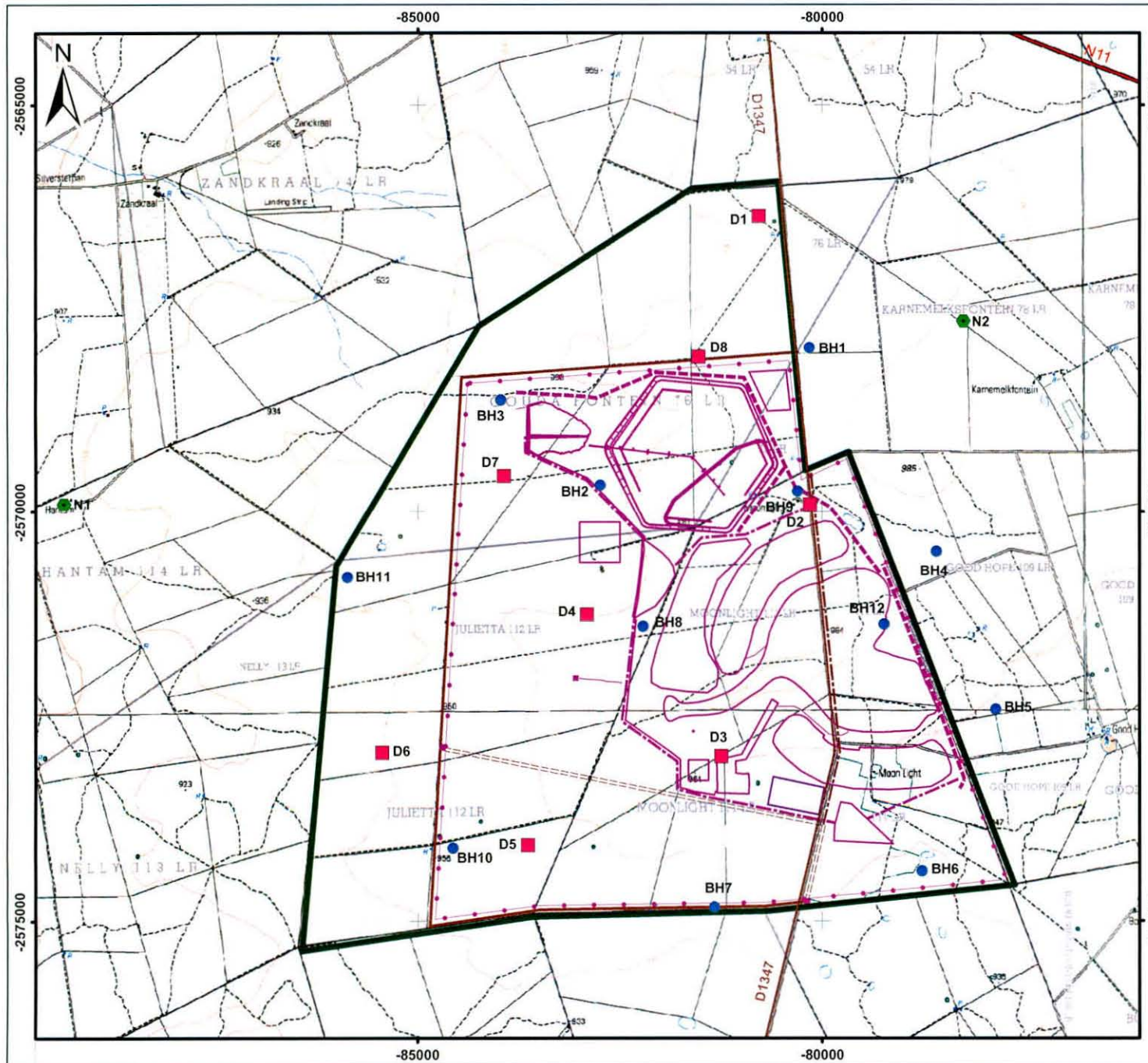
Prior to the commencement of the project, Turquoise Moon will conduct a verification hydrocensus of all boreholes that are in use in the potentially affected zone of dewatering and contamination to verify whether there are additional boreholes to those that have already been identified as part of the project's hydrocensus surveys. This hydrocensus will confirm the borehole location, water depth, water quality and water use for each identified borehole.

Table 46 and Table 47 below set out the planned monitoring points, programme and parameters for groundwater on and off the site (where relevant) (see Figure 19 for the position of boreholes). Where required, third-party boreholes will be included in the mine's monitoring programme. The water quality parameters may be modified on the basis of input from an appropriate specialist and DWA. It is also possible that the programme will be modified as part of the integrated water license process. The frequency of monitoring may be amended depending on the results of the monitoring programme and with approval from DWA.

Water quality analyses results should be classified in terms of the DWAF Guidelines Domestic Water Supply (1999) or SANS 241:2006 standards for Drinking water specifications.

In addition to the above, Turquoise Moon will set up and maintain a transient groundwater flow model showing changes in water levels and water qualities as a result of its operations using water quality and water level data sourced from its monitoring programme. The model will be set up as soon as a hydrological year of data becomes available. This model will be maintained on an annual basis. If the model predictions change to those assessed and discussed in this report, additional mitigation measures will be implemented in consultation the authorities and an appropriately qualified specialist.





- Legend**
- Proposed Monitoring Boreholes
 - Noise
 - Dust Fallout Network
 - Site Boundary
 - Proposed Infrastructure Layout

(See Figure 15 for detail on site layout facilities)



Scale: 1:70 000 @ A4
 Projection: Transverse Mercator
 Datum: Hartebeeshoek, LO29
 Information supplied by Ground Water Specialist

**TURQUOISE MOON TRADING
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**Figure 19
 Proposed Monitoring Network**



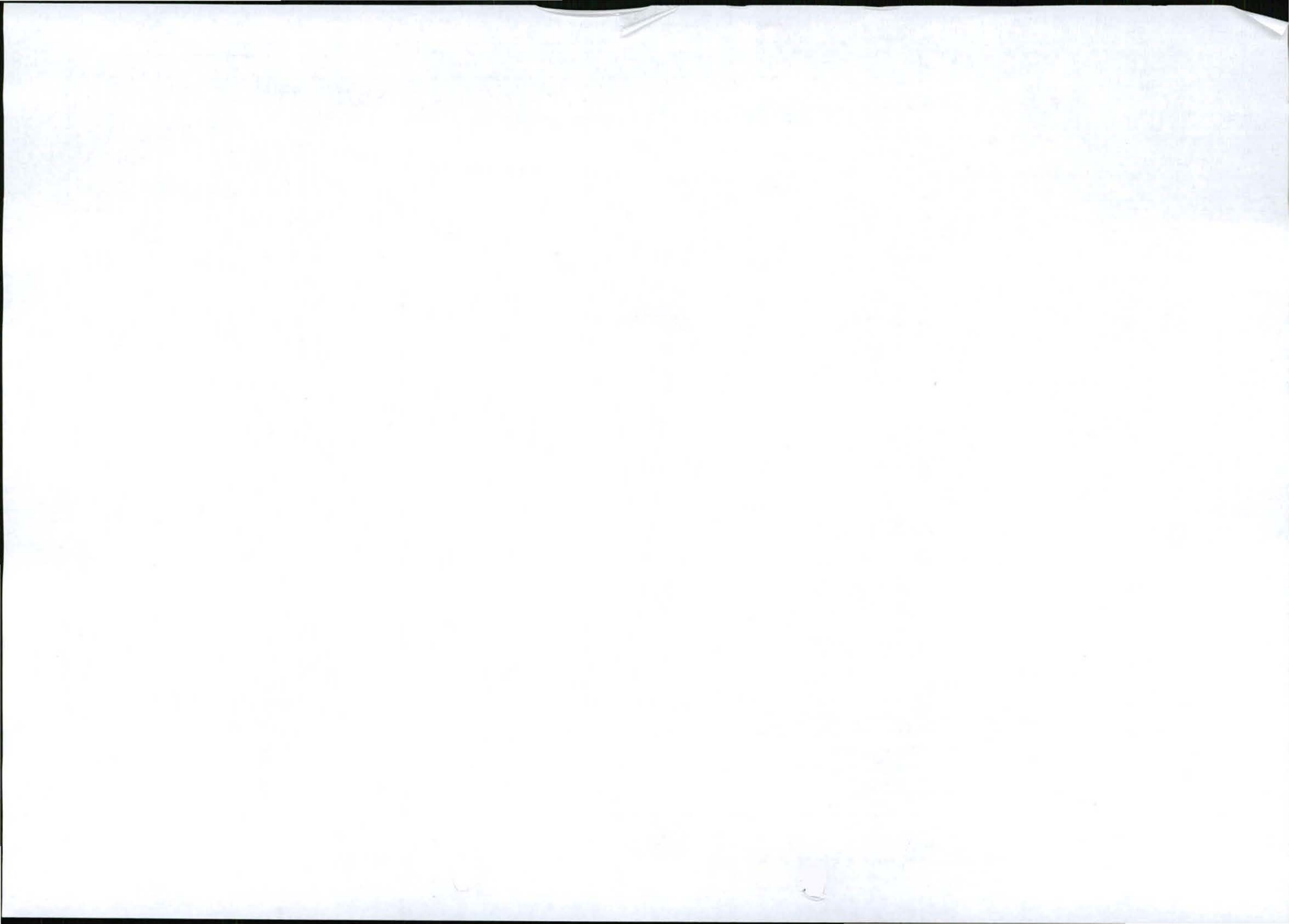


TABLE 46: GROUNDWATER MONITORING PROGRAMME

Reference	New / old	Location	Water quality	Water level
BH1	New	Upstream of TSF	Quarterly	Monthly
BH2	New	Downstream of TSF	Quarterly	Monthly
BH3	New	Downstream of return water dam	Quarterly	Monthly
BH4	New	East of pit	Quarterly	Monthly
BH5	New	East of pit	Quarterly	Monthly
BH6	Use or clean existing	South of pit and southern waste dump	Quarterly	Monthly
BH7	Use or clean existing	South of site	Quarterly	Monthly
BH8	New	Downstream of TSF, upstream of northern waste dump	Quarterly	Monthly
BH9	Use or clean existing	Upstream of northern waste dump and TSF	Quarterly	Monthly
BH10	New	Downstream of site	Quarterly	Monthly
BH11	New	Downstream of site	Quarterly	Monthly
BH12	Use or clean existing	East of open pit	Quarterly	Monthly

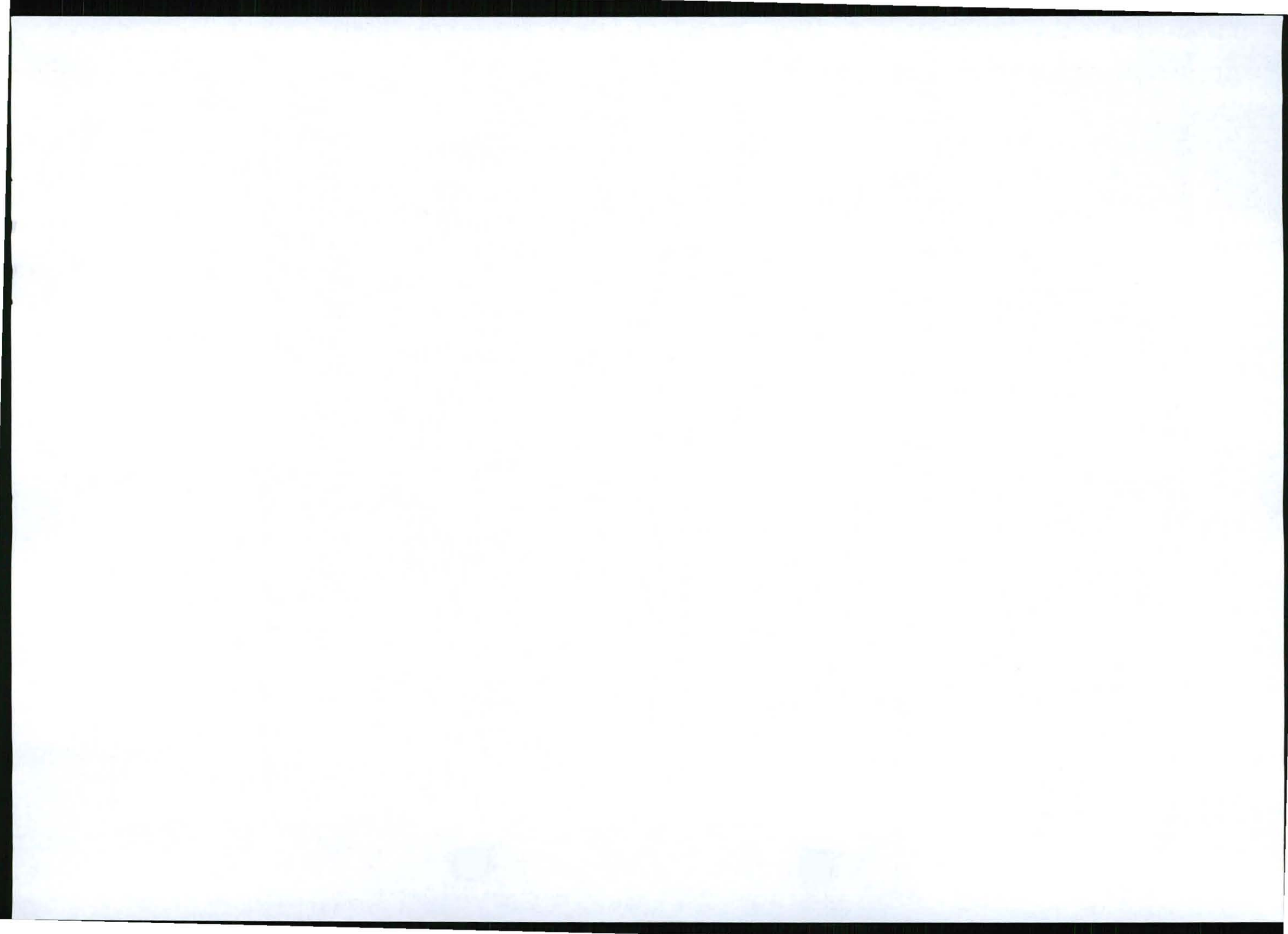
Note:

1. Groundwater levels to be measured where possible i.e. where boreholes are not equipped.
2. 'New' refers to new groundwater monitoring boreholes that need to be installed in order to monitor water levels and water quality. These need to be installed using geophysics in order to position them in the appropriate locations.

TABLE 47: MONITORING PARAMETERS FOR ANALYSIS AND REPORTING

In field measurements		
pH	Electrical conductivity	Redox potential
Total dissolved salts	-	-
Laboratory analysis		
pH	Chloride	Total Chrome
Electrical conductivity	Fluoride	Copper
Temperature	Magnesium	Iron
Dissolved Oxygen	Nitrate as N	Lead
Total dissolved salts (TDS)	Potassium	Manganese
Alkalinity as CaCO ₃	Sodium	Cobalt
Bicarbonate	Sulphur	Silicon
Ammonium	Aluminium	Strontium
Calcium	Arsenic	Titanium
Boron	Barium	Molybdenum
Beryllium	Bismuth	Lithium
Cadmium	Nickel	Zinc
Silver	Selenium	Tin
Antimony	Zirconium	Tungsten
Strontium	Total Coliform bacteria	<i>E.coli</i> -

If monitoring indicates a mine-related decrease in groundwater supply to third parties or groundwater quality at third party boreholes, appropriate measures will be taken to prevent the decrease from occurring or rectify the contamination situation, to provide the affected third parties with an alternative water supply, and/or to possibly purchase affected farms.



Process water

Process water quality from dirty water dams (see Figure 19 for the location of dams) will be monitored on a quarterly basis. The parameters to be monitored are outlined in Table 47. The parameters may be modified on the basis of input from an appropriate specialist and DWA. It is also possible that the programme will be modified as part of the integrated water license process. The frequency of monitoring may be amended depending on the results of the monitoring programme and with approval from DWA.

Rainfall related discharges will be monitored as required according to the parameters in Table 47. If the quality of the monitored discharge is above acceptable levels, additional measures will be identified and implemented to prevent the future potential for surface water related pollution.

If water collects in the open pit at decommissioning, the quality of water will be monitored on a quarterly basis. The parameters to be monitored are outlined in Table 47. The results of the monitoring programme will be used to inform the final end use of the open pit.

Water balance

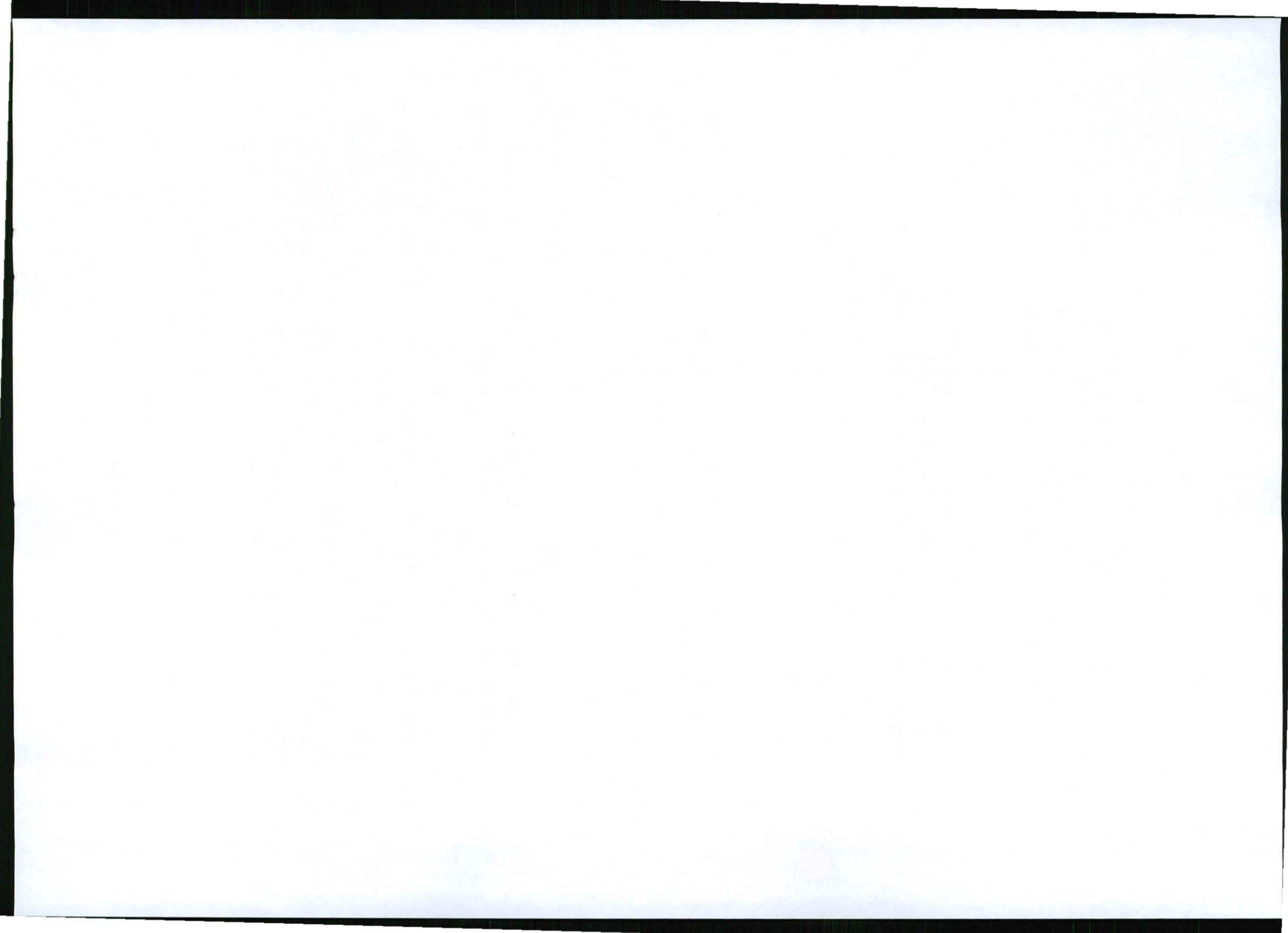
The climatic water balance for the site will be updated on an annual basis during the life of the project. This will be done by an appropriately qualified person. Flow meters will be installed in the mine water circuit to provide actual data on water flows to confirm or amend predictions made in the water balance model. The water balance will be used to check on an on-going basis that the capacity of the dirty water holding facilities is adequate, taking the operational distribution and use of water into account.

21.1.2 AIR QUALITY

As part of the air management plan, a monitoring programme will be developed for the site in consultation with an appropriately qualified air specialist. Monitoring of both source and receptor sites will be conducted. Indicators should be as follows:

- Source based performance indicators for the unpaved roads would be no visible dust when trucks/vehicles drive on the roads. It is recommended that dust fallout in the immediate vicinity of the road perimeter be less than 1 200mg/m²/day and less than 600mg/m²/day at the mine boundary.
- Blasting would always result in significant dust generation but the impacts need to be controlled by blasting (where possible) when there is no inversion layer and wind conditions are optimal. In addition the dust fallout in the immediate vicinity of the open pit should be less than 1 200mg/m²/day.
- From all activities associated with the proposed project, dust fallout levels should not exceed 600mg/m²/day outside the mine boundary and at the sensitive receptor areas.

No dust fallout network exists and it is recommended that a dust fallout network comprising of at least eight single dust fallout buckets be installed before construction commences. The buckets should follow the American Society for Testing and Materials standard method for collection and analysis of dust fall



(ASTM D1739-98) as per the SANS requirements. This will provide management with an indication of what the reduction in fugitive dust levels are once mitigation measures are implemented.

The proposed dust fallout network should include (Figure 19):

- D1 – adjacent to the access road
- D2 – upwind from the main mining operations
- D3 – at the primary crusher and screen
- D4 – adjacent to one of the haul roads
- D5 – downwind from the main mining operations and southern waste dump
- D6 – downwind from the main mining operations and northern waste dump
- D7 – downwind from the TSF
- D8 – upwind from the TSF

Additional buckets can be placed at the request of surrounding IAPs. The buckets will be monitored on a quarterly basis. A report will be produced to document the measurement points, the methodology used, the measured results and recommendations, if required, to further minimise the mine's impact.

It is recommended that a PM₁₀ sampler be installed at the nearest sensitive receptor to the mine. The PM₁₀ sampler can be either continuous or a manual operated device recording PM₁₀ concentrations on a daily basis. Manual sampling can be done on a basis of 1 day out of every 6 days to ensure representative sampling of ambient PM₁₀ concentrations in the region. In addition to the ambient PM₁₀ concentrations, these samples (filter based) can be analyzed for metals and other compounds. A monitoring protocol will need to be established.

The mine will establish a meteorological station on site to record climatic data.

21.1.3 NOISE

A noise survey will be carried out immediately after commissioning followed by annual surveys at the same locations. The purpose of these surveys is to verify the conceptual modeling undertaken for the EIA and to determine if implemented noise management measures are effective. The measurement points are shown on Figure 19. The A-weighted equivalent continuous noise level in a sequence of 10-minute intervals covering a period of preferably 24 hours will be undertaken or at least the night-time period from 22:00 to 06:00. Monitoring will be done by an appropriately qualified environmental noise specialist. The noise measurement points may be modified on the basis of input from an appropriate specialist. A report will be produced to document the measurement points, the methodology used, the measured results and recommendations, if required, to further minimise the mine's impact. Equipment, calibration and measurement procedures must comply with the requirements laid down in SANS 10103.



21.1.4 BIODIVERSITY

Selecting suitable indicator groups

Prior to construction, detailed baseline studies of selected fauna and flora indicator groups within vegetation communities that will be directly impacted will be undertaken by an appropriately qualified specialist. For each vegetation type an area within the direct impact zone and a control area outside of this zone (preferably outside of the 500m buffer zone) should be selected and surveyed. The recommendations of the specialist study should be taken into consideration when selecting suitable indicator groups (Appendix H).

Monitoring program

It is recommended that the monitoring program should include:

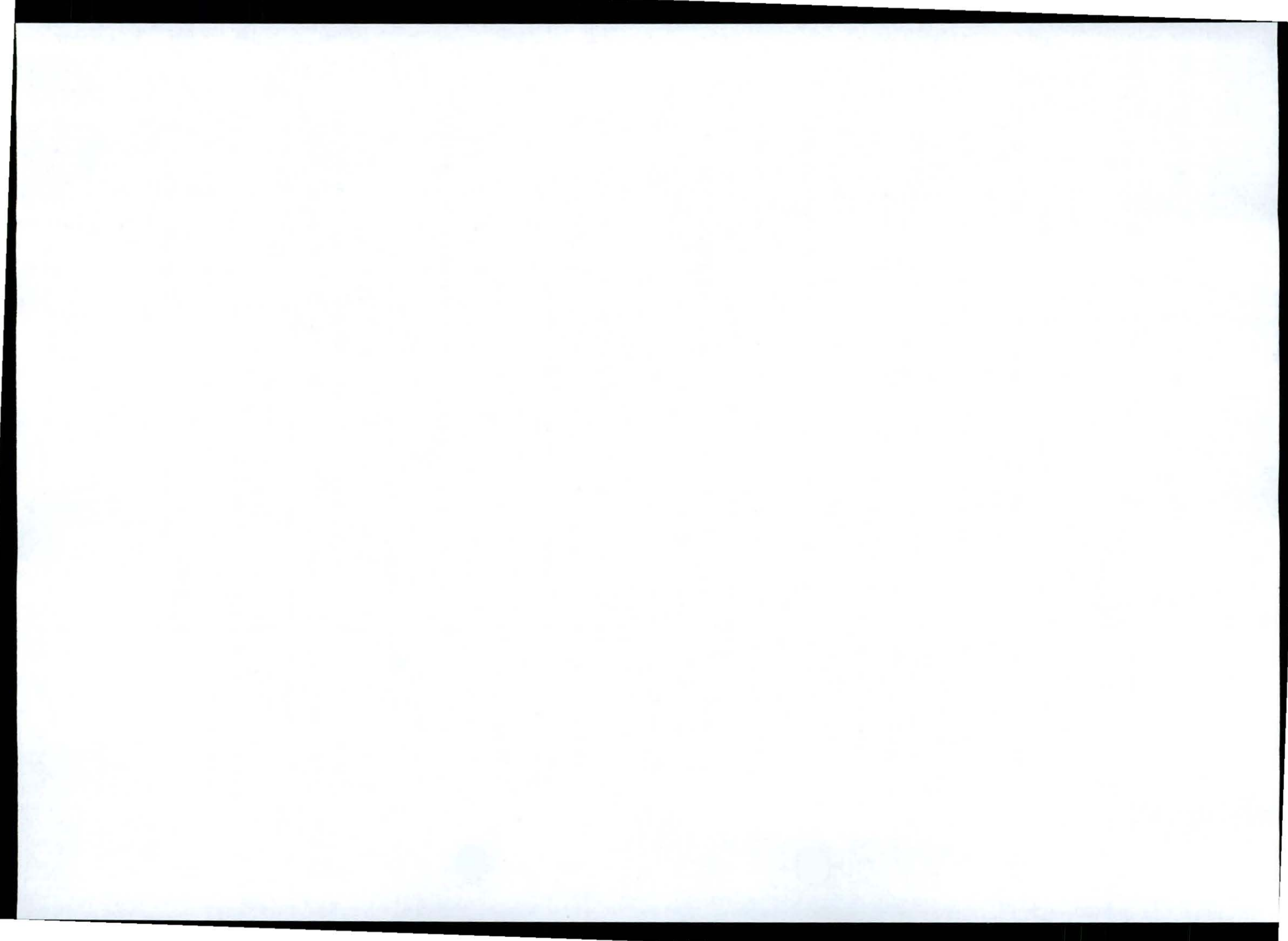
- Regular monitoring (preferably annually), by repeat surveys of the control sites at the same time each year for life of the mine, to provide a measure of naturally occurring inter-annual variation so that this can be distinguished from mining-related impacts and rehabilitation progress. Frequency of monitoring is dependent on the expected duration of mining operations; for an operational life shorter than 5 years, annual monitoring would be recommended, while for longer operational periods (5-10 or 10-20 years) less frequent (every second or third year) might be adequate to provide an adequate baseline and indication of natural inter-annual variation. The frequency of monitoring will be chosen in consultation with a biodiversity specialist.
- Continued monitoring of both the control sites and the rehabilitated areas after mining operations have ceased until mine closure; repeat surveys should be carried out annually for at least the first three years post-rehabilitation, after which the frequency may be reduced, initially to every second year and then every 3-5 years until rehabilitation targets have been reached.

Rehabilitation targets

Rehabilitation targets are set as follows:

- return biodiversity levels of indicator species (total species number estimates) to at least 90% of baseline average
- achieve diversity/evenness indices of at least 90% of average baseline values
- achieve at least 70% similarity of community species composition to baseline measure
- rank abundance plot slopes, which are expected to become significantly steeper in the early stages of rehabilitation, should have regained a similar pattern to that obtained from the baseline studies if rehabilitation is to be considered complete.

Modification of these targets may be necessary if high inter-annual variation in control site data is encountered; this should be done in consultation with Limpopo Tourism and Parks Agency and the specialist responsible for implementing the monitoring program.



21.1.5 BLASTING

Prior to the construction phase, Turquoise Moon will undertake a pre-blast baseline survey as detailed in the action plan (Section 19).

Monitoring of each blast will take place for the duration of blasting activities. Points for off-site vibration and airblast monitoring will be identified in consultation with surrounding landowners and a blast monitoring specialist. The monitoring results will be documented and maintained for record-keeping and auditing purposes.

21.1.6 TRANSPORT

Turquoise Moon will monitor and evaluate its use of the relevant road intersections and road sections as part of its risk and safety management practices. This will be done annually during construction and decommissioning and every 5 years during operation. The scope and undertaking of the assessment will be done in consultation with an appropriately qualified traffic specialist. The monitoring results will be documented and maintained for record-keeping and auditing purposes.

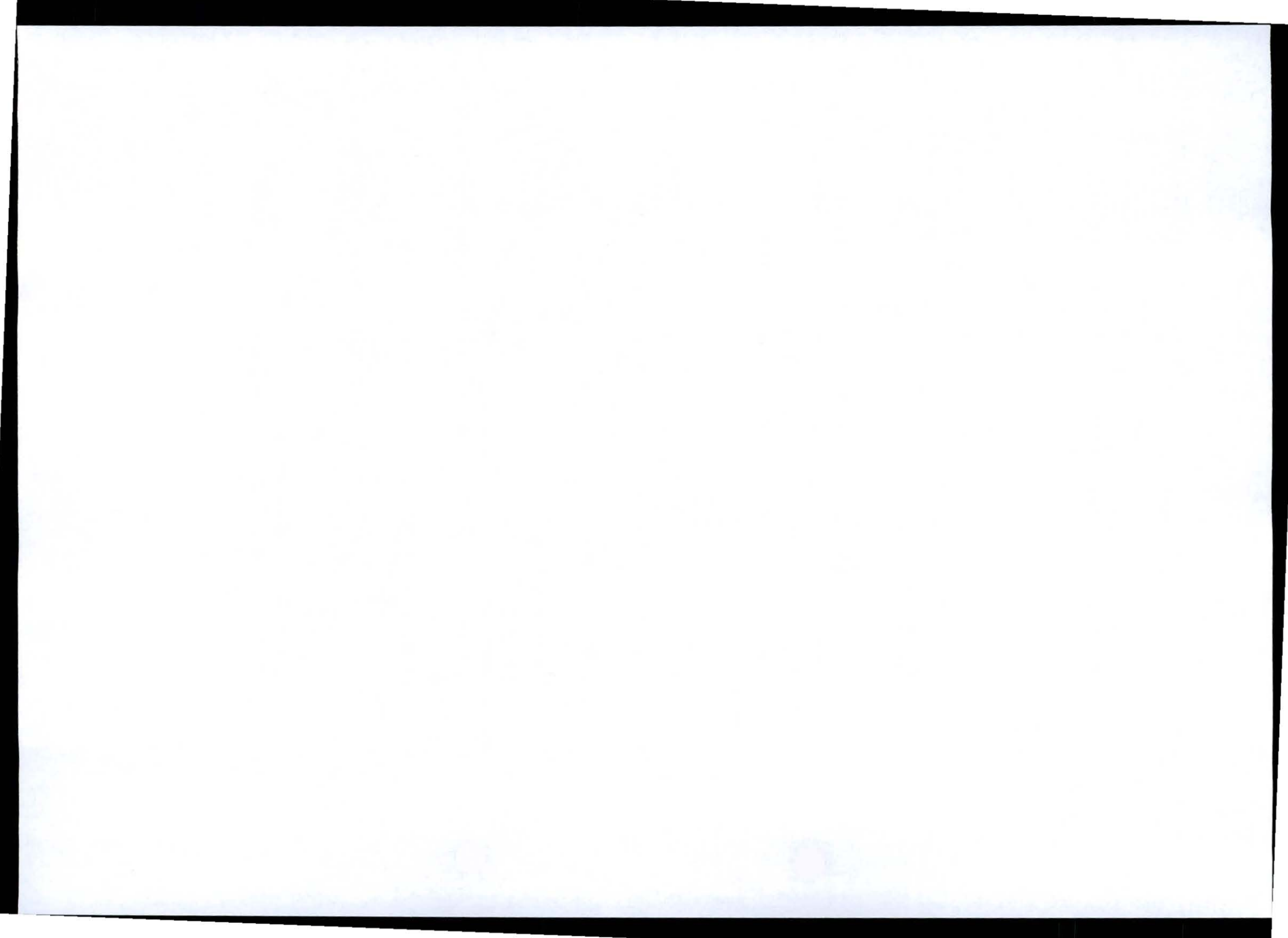
21.1.7 TAILINGS DAM, WASTE DUMPS AND OTHER WATER DAMS

In addition to the abovementioned environmental monitoring programmes, the following issues will, as a minimum and where applicable, be monitored by the dam operators on a monthly basis and a professional engineer on a quarterly basis:

- the location and size of the supernatant pool, elevation and position of the phreatic surface, slope stability, adequacy of freeboard, presence of seepage, and functioning of drains, condition of pipelines and valves, incidence of layering
- pumping flow rates between, from and into the various dams and TSF
- vegetation cover and success rate of vegetation establishment in rehabilitated areas such as side slopes
- groundwater pollution aspects as detailed above
- dust generation
- erosion damage and general condition of facilities including catchment paddocks, drainage systems, sumps, silt traps.

In addition to the above, monitoring of all water dams will include:

- daily monitoring of water levels and operation of pumps and pump motor control systems.
- monthly monitoring to include:
 - Dipping of leak detectors to check integrity of liners (where relevant)
 - Physical inspection for damage to liner



- Presence of seepage, erosion damage, wall movement, vegetation on outer slope, condition of riprap, condition of spillways
- Condition of fences, access gates, signage, safety ropes, life rings
- Capacity of silt trap, cleaning and removal of silt (when required).

The findings will be documented and maintained for record-keeping and auditing purposes.

21.2 AUDITING AND PERFORMANCE ASSESSMENTS

The environmental manager will conduct internal management audits against the commitments in the EMP and project plan in the EIA. During the construction and decommissioning phases, these audits will be conducted every two weeks. In the operational and closure phases, these audits will be conducted on a quarterly basis. The audit findings will be documented for both record keeping purposes and for informing continual improvement. In addition, and in accordance with mining regulation R527, an independent professional will conduct an EMP performance assessment every 2 years. The site's compliance with the provisions of the EMP and the adequacy of the EIA and EMP report relative to the on-site activities will be assessed in the performance assessment.

21.3 FREQUENCY FOR REPORTING

As a minimum, the following documents will be submitted to the relevant authorities from the start of construction until mine closure:

- EMP performance assessment, submitted every two years to DMR
- updated closure cost estimate, submitted annually to the DMR
- water monitoring reports, submitted annually to DWA -- these reports will not only present monitoring data but will also provide interpretations of trends in the data and reporting on compliance with water quality guidelines
- air monitoring reports, submitted annually to the DMR and LEDET
- traffic, submitted every two years to relevant roads authorities
- detailed plan for decommissioning/closure, submitted to DMR at least five years prior to decommissioning.



22 FINANCIAL PROVISION

The information in this section was sourced from the closure cost calculation study completed by Metago (Appendix V).

22.1 PLAN SHOWING LOCATION AND AERIAL EXTENT OF PROPOSED OPERATION

A plan showing the location and aerial extent of the proposed operation is provided as Figure 15 (Section 2.4). A plan showing the annual progression of the mining operation relative to the overall plan is included as Figure 14 (Section 2.4).

22.2 ANNUAL FORECASTED FINANCIAL PROVISION

The annual forecasted financial provision for the first 10 years of operation together with the progress total in Year 10 is provided in the table below (Table 48).

TABLE 48: FINANCIAL PROVISION – UP TO YEAR 10

Phase	Year	Financial provision (R, including VAT)
Construction	1 (Dec 2013)	R7,516,457
	2	+ R34,461,116
Operation	3	+ R20,874,819
	4	+ R19,781,909
	5	+ R14,920,738
	6	+ R9,638,185
	7	+ R5,889,224
	8	+ R46,166,799
	9	+ R6,014,666
	10	+ R14,711,608
	11	+ R2,392,111
	12	+ R7,180,150
	13	+ R3,346,732
	Progressive total for Year 10 of operation	R192,894,514
Life of mine	33	R225,875,808

22.3 CONFIRMATION OF AMOUNT TO BE PROVIDED

The amount of financial provision that will be provided should the right be granted is R42 million (covering the first two years of construction).

22.4 METHOD OF PROVIDING FINANCIAL PROVISION

The financial provision will be provided in the form of a financial guarantee.



23 ENVIRONMENTAL AWARENESS PLAN

This section includes an environmental awareness plan for the mine. The plan describes how employees will be informed of environmental risks which may result from their work, the manner in which the risk must be dealt with in order to avoid pollution or degradation of the environment and the training required for general environmental awareness and the dealing of emergency situations and remediation measures for such emergencies.

All contractors that conduct work on behalf of Turquoise Moon are bound by the content of the EMP and a contractual condition to this effect will be included in all such contracts entered into by the mine. If contractors are used, the responsibility for ensuring compliance with the EMP will remain with Turquoise Moon.

The purpose of the environmental awareness plan is to ensure that all personnel and management understand the general environmental requirements of the site. In addition, greater environmental awareness must be communicated to personnel involved in specific activities which can have a significant impact on the environment and ensure that they are competent to carry out their tasks on the basis of appropriate education, training and/or experience. The environmental awareness plan should enable Turquoise Moon to achieve the objectives of the environmental policy.

23.1 ENVIRONMENTAL POLICY

Turquoise Moon will display the environmental policy prominently at the mine entrance and key notice boards at the mine's business units. Turquoise Moon's environmental policy is described below:

- To minimise the impact of Turquoise Moon's mining operations on the environment wherever possible;
- To comply with all applicable environmental legislation and the commitments contained in Turquoise Moon's Environmental Management Programme (EMP) report;
- To ensure that all Turquoise Moon's employees, contractors and sub-contractors:
 - Are aware of the impact of their activities on the environment;
 - Are informed about the measures required to prevent, mitigate and manage environmental impacts; and
 - Apply these principles whilst carrying out their work.
- To establish and maintain a good relationship with surrounding communities, industries and other interested and affected parties, with regard to Turquoise Moon's activities;
- To develop a localised environmental strategy with the local authority and nearby industries; and
- To provide relevant and constructive consultation/public participation on the management of the potential environmental impacts posed by the mine in the future.



23.2 STEPS TO ACHIEVE THE ENVIRONMENTAL POLICY OBJECTIVES

Turquoise Moon's environmental policy will be realised by setting specific and measurable objectives. It is proposed that new objectives are set throughout the life of mine, but initial objectives are as follows:

- Management of environmental responsibilities:
 - Turquoise Moon will establish and appoint an Environmental Manager at senior mine management level, who will be provided with all necessary resources to carry out the management of all environmental aspects of the site as a primary function, for example:
 - Compliance with environmental legislation and EMP commitments;
 - Implementing and maintaining an environmental management system;
 - Developing environmental emergency response procedures and coordinating personnel during incidents;
 - Manage routine environmental monitoring and data interpretation;
 - Environmental trouble shooting and implementation of remediation strategies; and
 - Closure planning.
- Communication of environmental issues and information:
 - Meetings, consultations and progress reviews will be carried out, and specifically Turquoise Moon will:
 - Set the discussion of environmental issues and feedback on environmental projects as an agenda item at all company board meetings;
 - Provide progress reports on the achievement of policy objectives and level of compliance with the approved EMP to the Department of Minerals Resources;
 - Ensure environmental issues are raised at monthly mine management executive committee meetings and all relevant mine wide meetings at all levels; and
 - Ensure environmental issues are discussed at all general liaison meetings with local communities and other interested and affected parties.
- Environmental awareness training:
 - Turquoise Moon will provide environmental awareness training to individuals at a level of detail specific to the requirements of their job, but will generally comprise:
 - Basic awareness training for all prior to granting access to site (e.g. short video presentation requiring registration once completed). Employees and contractors who have not attended the training will not be allowed on site.
 - General environmental awareness training will be given to all employees and contractors as part of the Safety, Health and Environment induction programme. All non-Turquoise Moon personnel who will be on site for more than five days must undergo the SHE induction training.
 - Specific environmental awareness training will be provided to personnel whose work activities can have a significant impact on the environment (e.g. workshops, waste handling and disposal, sanitation, etc.).



- Review and update the environmental topics already identified in the EMP which currently includes the following issues:
 - Topography (hazardous excavations);
 - Soil and land capability management (loss of soil resource);
 - Management of biodiversity;
 - Surface water management (alteration of surface drainage and pollution of surface water);
 - Groundwater management (reduction in groundwater levels/availability and groundwater contamination);
 - Management of air quality (dust generation);
 - Noise (specifically management of disturbing noise);
 - Visual aspects (reduction of negative visual impacts);
 - Surrounding land use (traffic management, blast management, land use loss);
 - Heritage resources (management of sites);
 - Socio-economic impacts (management of positive and negative impacts);
- All mine projects will be designed to minimise impact on the environment and to accomplish closure/rehabilitation objectives.
- Turquoise Moon will maintain records of all environmental training, monitoring, incidents, corrective actions and reports.
- Contractors and employees will be contractually bound to participate in the achievement of environmental policy objectives and compliance with the EMPR.

23.3 TRAINING OBJECTIVES OF THE ENVIRONMENTAL AWARENESS PLAN

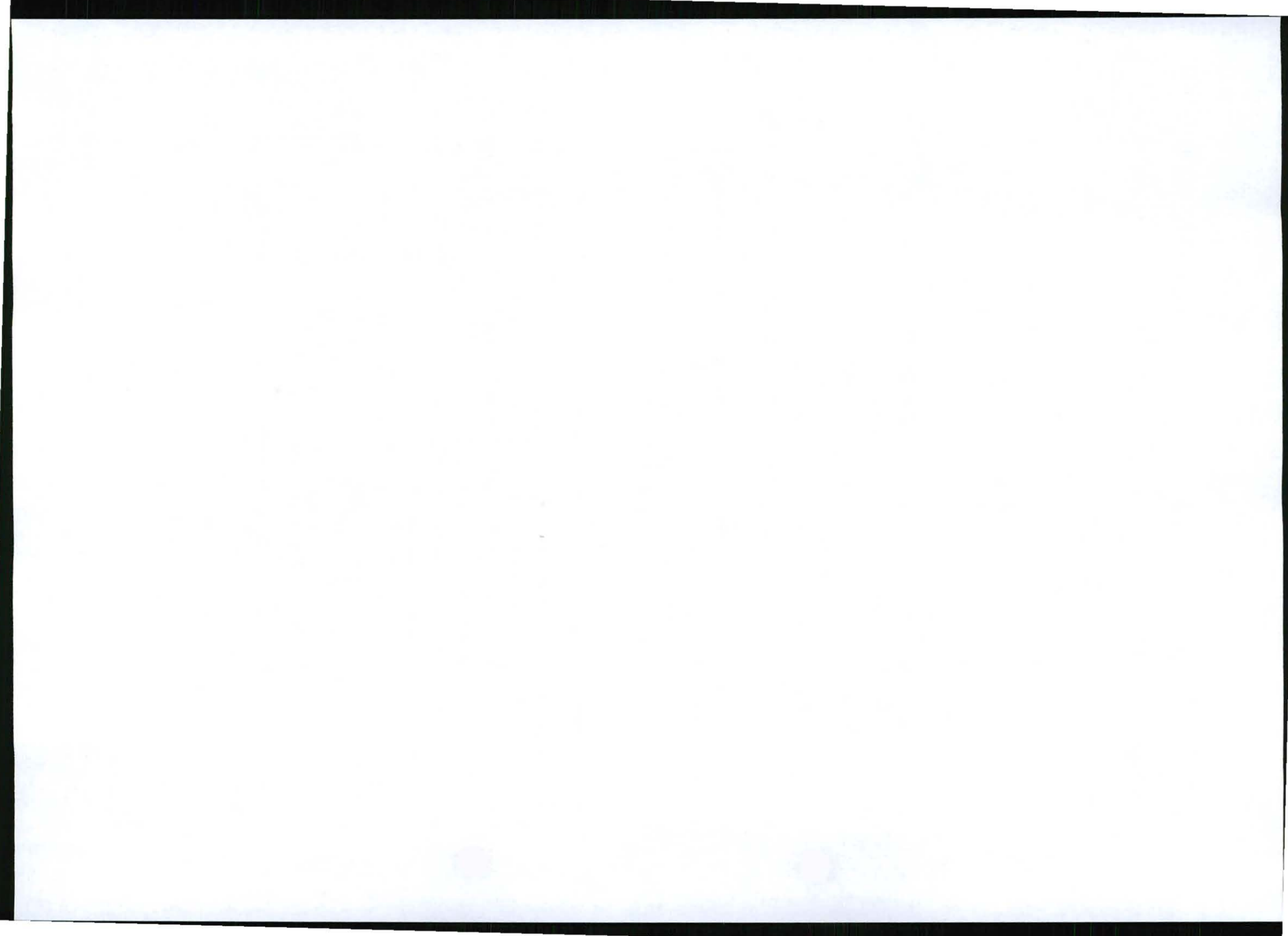
The environmental awareness plan ensures that training needs are identified and that appropriate training is provided. The environmental awareness plan should communicate:

- The importance of conformance with the environmental policy, procedures and other requirements of good environmental management
- The significant environmental impacts and risks of individuals work activities and explain the environmental benefits of improved performance
- Individuals roles and responsibilities in achieving the aims and objectives of the environmental policy
- The potential consequences of not complying with environmental procedures.

23.3.1 GENERAL CONTENTS OF THE ENVIRONMENTAL AWARENESS PLAN

To achieve the objectives of the environmental awareness plan the general contents of the training plans are as follows:

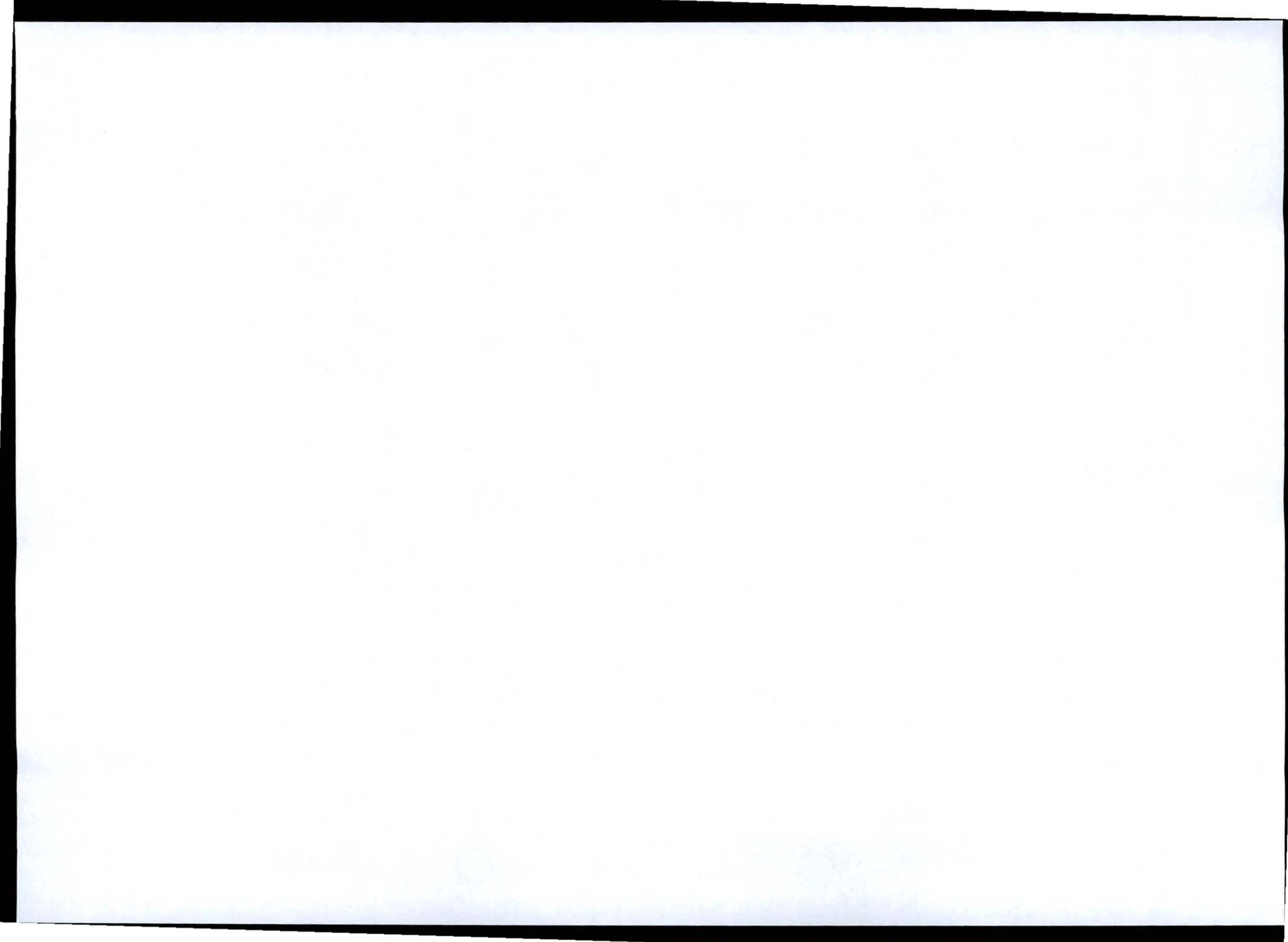
- Module 1 – Basic training plan applicable to all personnel entering the site:
 - Short (15min) presentation to indicate the site layout and activities at specific business units together with their environmental aspects and potential impacts.



- Individuals to sign off with site security on completion in order to gain access to the site.
- Module 2 – General training plan applicable to all personnel at the site for longer than 5 days:
 - General understanding of the environmental setting of the mine (e.g. local communities and industries and proximity to natural resources such as rivers);
 - Understanding the environmental impact of individuals activities on site (e.g. excessive production of waste, poor housekeeping, energy consumption, water use, noise, etc.);
 - Indicate potential site specific environmental aspects and their impacts;
 - Turquoise Moon's environmental management strategy;
 - Identifying poor environmental management and stopping work which presents significant risks;
 - Reporting incidents;
 - Examples of poor environmental management and environmental incidents; and
 - Procedures for emergency response and cleaning up minor leaks and spills.
- Module 3 – Specific training plan:
 - Environmental setting of the workplace (e.g. proximity of watercourses, vulnerability of groundwater, proximity of local communities and industries, etc.);
 - Specific environmental aspects such as:
 - Spillage of hydrocarbons at workshops;
 - Spillage of explosive liquids in the open pits;
 - Poor waste management such as mixing hazardous and general wastes, inappropriate storage and stockpiling large amounts of waste;
 - Poor housekeeping practices;
 - Poor working practices (e.g. not carrying out oil changes in designated bunded areas);
 - Excessive noise generation and unnecessary use of hooters; and
 - Protection of heritage resources (including palaeontological resources).
 - Impact of environmental aspects, for example:
 - Hydrocarbon contamination resulting in loss of resource (soil, water) to downstream users;
 - Groundwater contamination also resulting in loss of resource due to potential adverse aesthetic, taste and health effects; and
 - Dust impacts on local communities (nuisance and health implications).
 - Turquoise Moon's duty of care (specifically with respect to waste management); and
 - Purpose and function of Turquoise Moon's environmental management system.

Individuals required to complete Module 3 (Specific training module) will need to complete Modules 1 and 2 first. On completion of the Module 3, individuals will be subject to a short test (written or verbal) to ensure the level of competence has been achieved. Individuals who fail the test will be allowed to re-sit the test after further training by the training department.

The actual contents of the training modules will be developed based on a training needs analysis.



Key personnel will be required to undergo formal, external environmental management training (e.g. how to operate the environmental management system, waste management and legal compliance).

In addition to the above Turquoise Moon will:

- Conduct refresher training/presentations on environmental issues for mine employees (permanent and contractors) at regular intervals.
- Promote environmental awareness using relevant environmental topic posters displayed at strategic locations on the mine. These topics will be changed monthly, and will be reviewed annually by the Environmental Manager to ensure relevance.
- Participate and organise events which promote environmental awareness, some of which will be tied to national initiatives e.g. National Labour Week, World Environment Day and National Water Week.



24 TECHNICAL SUPPORTING INFORMATION

Technical and supporting information included as appendices to this report, not already attached in terms of the EIA, are listed below.

- Calculation of financial closure liability report (Appendix V)



25 CAPACITY TO MANAGE AND REHABILITATE THE ENVIRONMENT

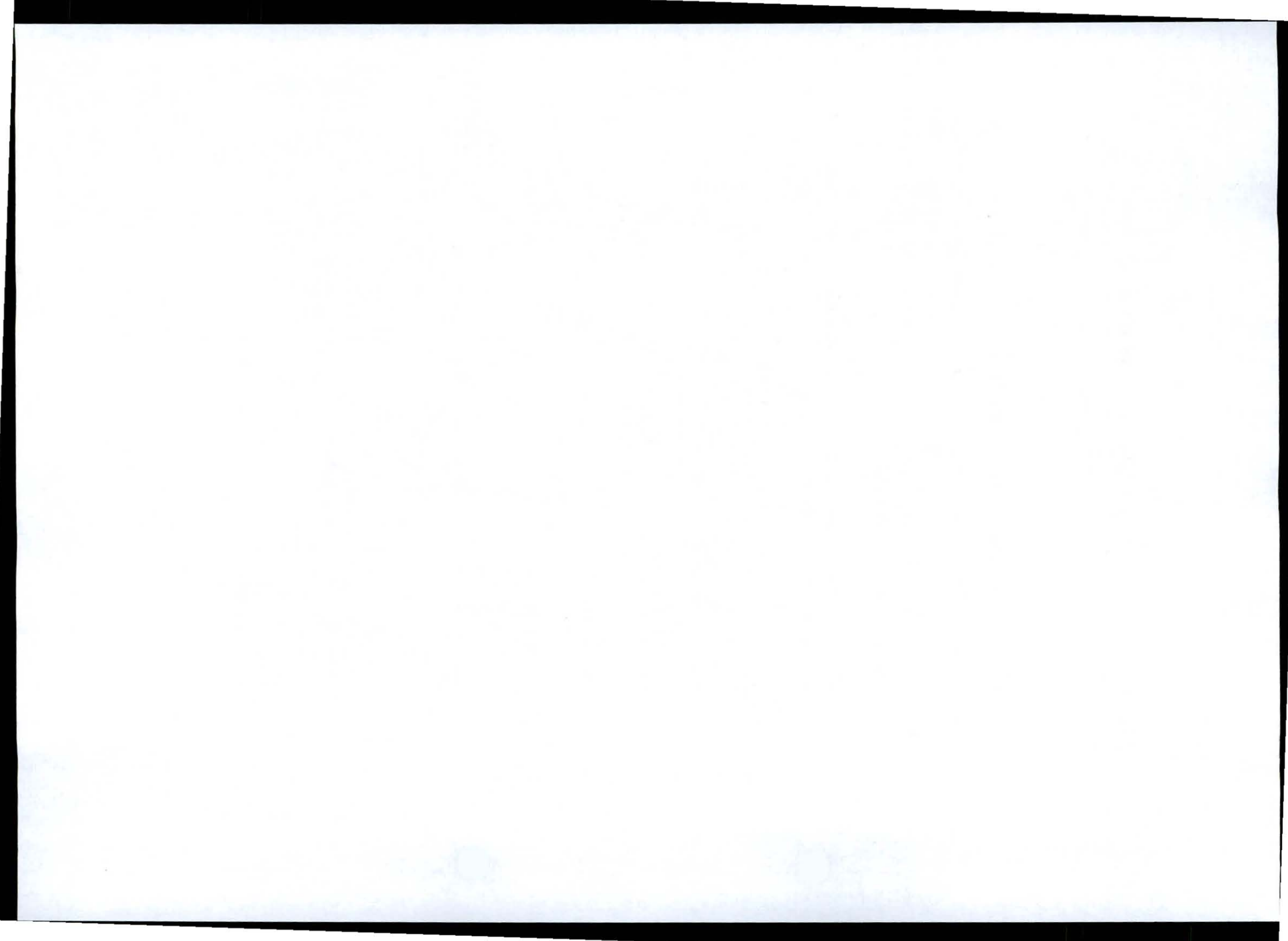
This section outlines the applicant's capacity to rehabilitate and manage negative impacts on the environment.

25.1 AMOUNT REQUIRED TO MANAGE AND REHABILITATE THE ENVIRONMENT

Estimated costs for implementing the technical and management options identified in Section 18 are included in the table below (Table 49). The costs are either once off costs or an annual cost and have been determined at 2011 rates. Please note that the costs included in the table are based on conceptual estimates only (using experience in similar projects).

TABLE 49: ESTIMATED COSTS FOR IMPLEMENTING TECHNICAL AND MANAGEMENT OPTIONS

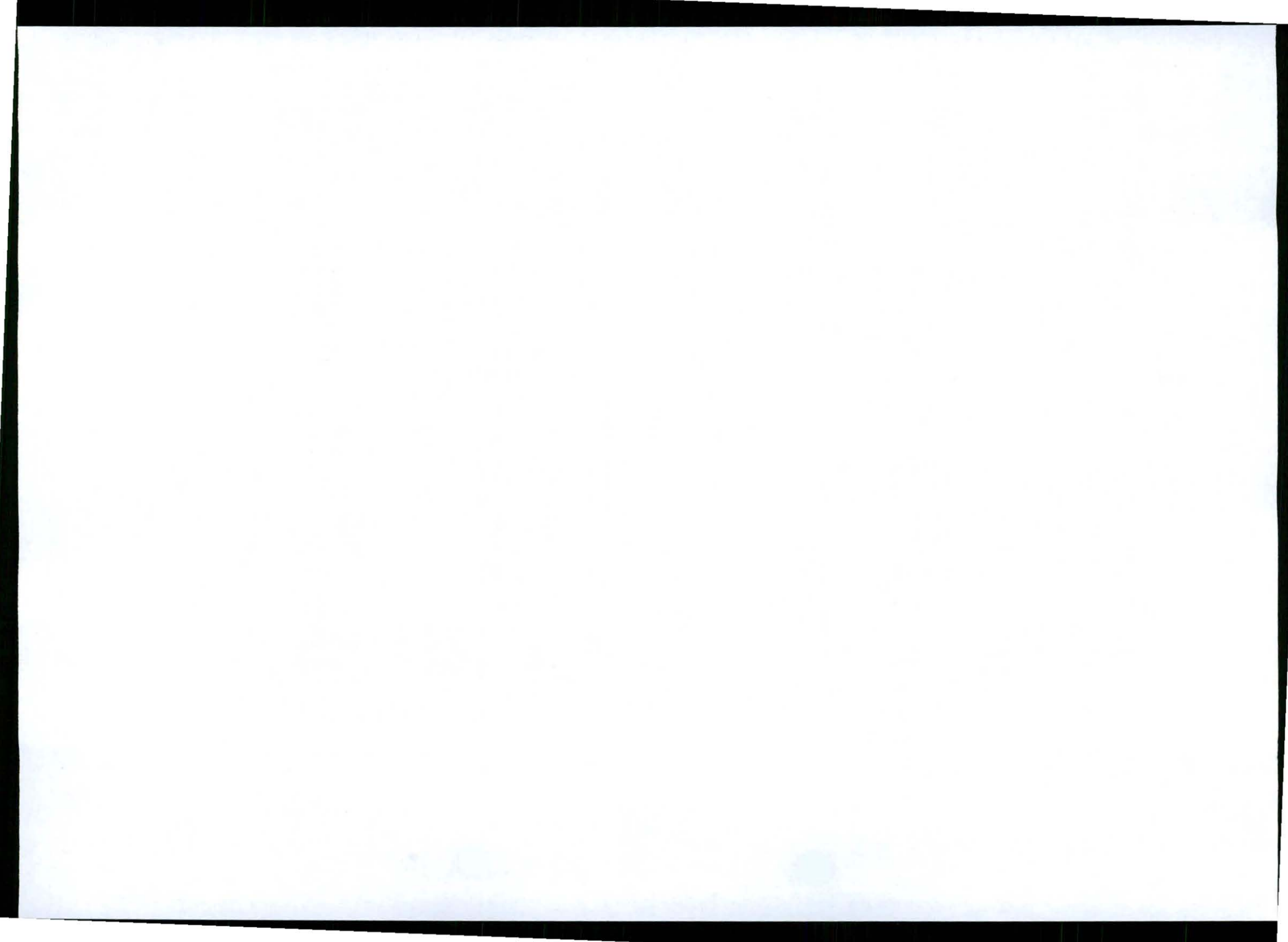
Potential impact	Technical and management options	Estimated costs	
		Once off	Annual
# Detailed design	Includes costs associated with the detailed design of facilities undertaken as part of the definite feasibility study	±R70 million	-
§ Site services	Includes maintenance of facilities and services of general management activities at the mine	-	±R2 million
* Site management	Includes activities that will be conducted by the mine personnel as part of their daily jobs (caters for three management positions)	-	±R3 million
© Construction cost	Includes facilities and activities that will be established and conducted during the development of the site	An initial R2 billion expected	-
Monitoring	Annual EMP performance assessment (external) Professional engineer for TSF Annual review of closure cost estimate	- - -	R60,000 R1 million R100,000
♣ Implement an EMS system	Includes purchasing of system, personnel training and on-going implementation	R300,000	R3,000 + * (incl. above)
Hazardous structures	Establish and maintain site security measures	© (incl. above)	\$ (incl. above)
	Control site and facility access	-	\$ (incl. above)
	Appropriate design of stockpiles with the potential to fail (and by qualified person)	# (incl. above)	-
	Establish and maintain infrastructure security measures	© (incl. above)	\$ (incl. above)
	Undertake third party awareness training	-	* (incl. above)
	Implement emergency response	-	To be determined
Loss of soil resources	Limit project footprint	# * (incl. above)	* (incl. above)
	Implement a site-specific soil management plan	© (incl. above)	\$ (incl. above)
	Establish and maintain containment measures for hazardous substances	© (incl. above)	\$ (incl. above)
	Establish and maintain stormwater controls	© (incl. above)	\$ (incl. above)
	Implement a non-mineralised waste management procedure	© (incl. above)	\$ (incl. above)
	Rehabilitate disturbed areas (as soon as possible) and the site (at decommissioning)	-	Closure cost (incl. below)



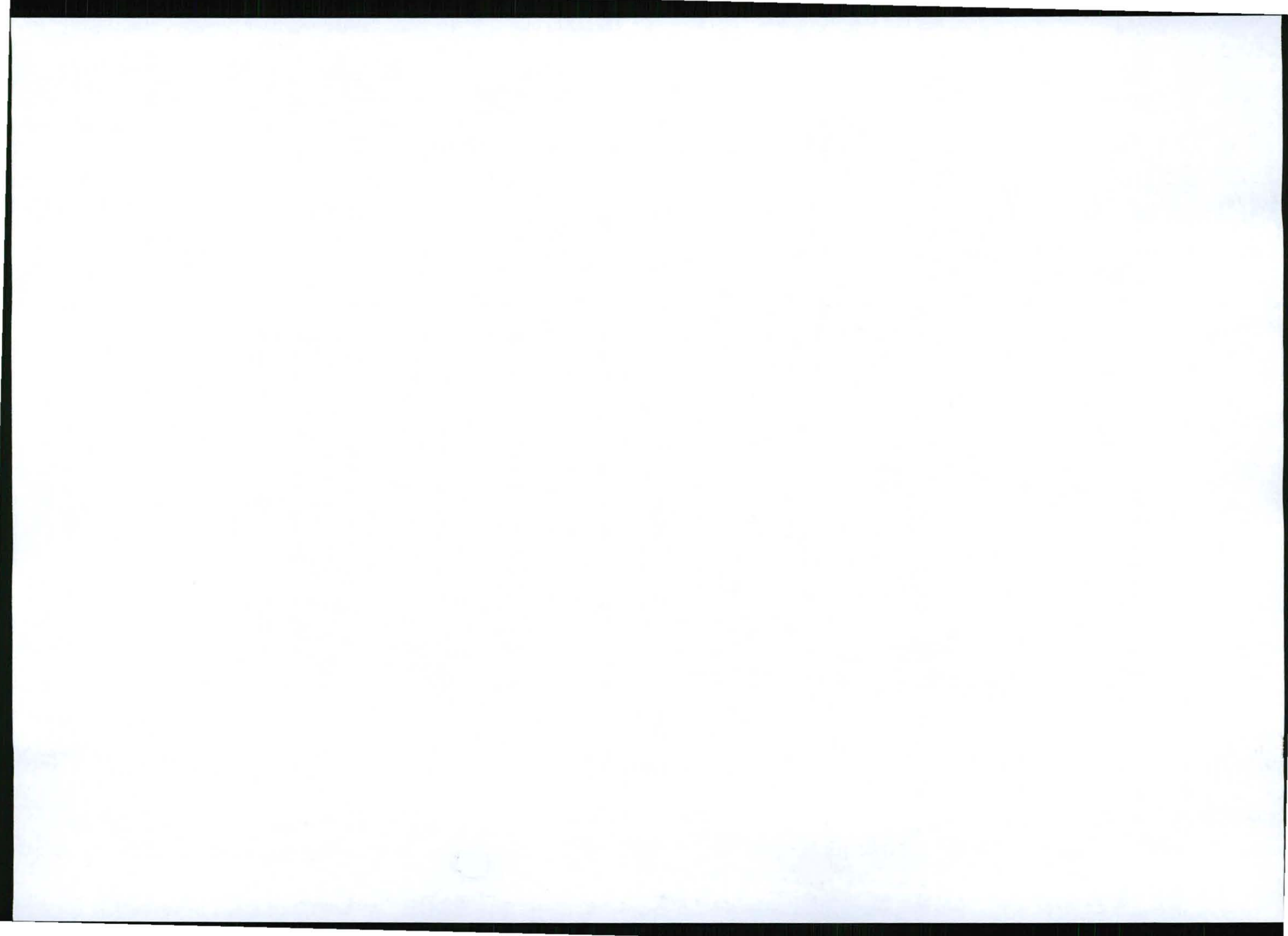
Potential impact	Technical and management options	Estimated costs	
		Once off	Annual
Biodiversity	Limit project footprint	# * (incl. above)	* (incl. above)
	Develop and implement a biodiversity management plan	R200,000	* (incl. above)
	Apply for permit to disturb protected trees	R150,000	-
	Establish and maintain containment measures for hazardous substances	-	\$ (incl. above)
	Establish and maintain stormwater controls	-	\$ (incl. above)
	Control dust generation	© (incl. above)	\$ (incl. above)
	Implement a monitoring programme	-	R200,000
	Rehabilitate disturbed areas (as soon as possible) and the site (at decommissioning)	-	Closure cost (incl. below)
Alternation of drainage patterns	Appropriate design of stormwater controls (and by qualified person)	# (incl. above)	-
	Limit project footprint	# * (incl. above)	* (incl. above)
	Implement and maintain stormwater controls	-	\$ (incl. above)
	Implement emergency response	-	To be determined
Surface water pollution	Appropriate design of polluting facilities and pollution prevention facilities (and by qualified person)	# (incl. above)	-
	Control access to the site and infrastructure	-	\$ (incl. above)
	Implement and maintain stormwater controls	© (incl. above)	\$ (incl. above)
	Implement site-specific soil management plan	© (incl. above)	\$ (incl. above)
	Install flow meters and refine water balance	© (incl. above)	R80,000
	Implement a monitoring programme (water use, process water quality, rainfall-related discharge quality)	-	R50,000
	Maintain groundwater model with monitored results	-	R80,000
	Implement zero discharge policy	-	* \$ (incl. above)
Implement emergency response	-	To be determined	
Groundwater dewatering	Verification hydrocensus of boreholes in zone of influence	R120,000	-
	Purchase/lease farms within application boundary	To be negotiated with landowner	-
	Operate in line with water use license (to be obtained)	-	To be determined
	Implement a monitoring programme (water levels on and off site)	R500,000	R150,000
	Maintain groundwater model with monitored results	-	Incl. above
	Revisit mitigation measures if updated model predictions change	To be determined	To be determined
Compensation for loss	To be determined	To be determined	
Groundwater contamination	Appropriate design of polluting facilities (and by qualified person)	# (incl. above)	-
	Construct and operate professionally engineered TSF and waste dumps	© (incl. above)	Incl. above
	Appropriate lining of dirty water dams	R400,000	\$ (incl. above)
	Verify leachate quality of TSF and overburden once site is operational	R50,000	-
	Implement a monitoring programme (water qualities on and off site)	-	Incl. above
	Maintain groundwater model with monitored results	-	Incl. above
	Revisit mitigation measures if updated model predictions change	To be determined	To be determined
	Compensation for loss	To be determined	To be determined
	Rehabilitate disturbed areas (as soon as possible) and site (at decommissioning)	-	Closure cost (incl. below)
Implement emergency response	-	To be determined	



Potential impact	Technical and management options	Estimated costs	
		Once off	Annual
Air pollution	Concentrate activities as close to each other as practically possible	# * (incl. above)	* (incl. above)
	Develop and implement air quality management plan	R100,000	* (incl. above)
	Establish dust collection measures at equipment	© (incl. above)	\$ (incl. above)
	Control dust plumes	-	\$ (incl. above)
	Implement a dust monitoring programme	R20,000	R80,000
	Implement a PM10 monitoring programme	R350,000	Incl. above
	Establish and maintain a meteorological station on site	R100,000	* (incl. above)
Disturbing noise	Maintenance of equipment and machinery	© (incl. above)	\$ (incl. above)
	Establish and maintain noise berms, where possible	© (incl. above)	\$ (incl. above)
	Reduce operating hours of noise polluting equipment	-	-
	Blast when conditions are more favourable	-	-
	Establish and maintain acoustic barriers	© (incl. above)	\$ (incl. above)
	Educate workers	-	* (incl. above)
	Investigate use of alternative reverse alarms	* (incl. above)	-
	Implement a monitoring programme (off site)	R75,000	R45,000
	Compensation for economic loss	To be determined	To be determined
Implement grievance procedure	* (incl. above)	* (incl. above)	
Landscape and visual	Limit land disturbance	# * (incl. above)	* (incl. above)
	Retain natural vegetation as screens	© (incl. above)	\$ (incl. above)
	Establish screens, if needed	© (incl. above)	-
	Paint buildings and structures in colours that reflect landscape	© (incl. above)	-
	Control dust plumes	© (incl. above)	\$ (incl. above)
	Careful use of night lights	© (incl. above)	\$ (incl. above)
	Prevent litter	© (incl. above)	\$ (incl. above)
	Operate waste dumps as low as possible	-	-
	Concurrent rehabilitation of facilities such as the TSF	-	Incl. above
	Input from a professional landscape architect in closure design	R50,000	-
	Rehabilitate disturbed areas (as soon as possible) and site (at decommissioning)	-	Closure cost (incl. below)
Compensation for economic loss	To be determined	To be determined	
Land uses	Purchase/lease farms within application boundary	Incl. above	-
	Effective implement of mitigation measures	-	♣ (incl. above)
	Compensation for economic loss	To be determined	To be determined
Blast hazards	Design and implement blast to meet threshold criteria	R50,000	-
	Control of blasts and use of electronic detonators	© (incl. above)	-
	Conduct pre-blast survey	R350,000	-
	Restrict blast times	-	-
	Set a standard blast time and communicate blast schedule with stakeholders	-	* (incl. above)
	Monitor blasts	R40,000	R60,000
	Rectify damage to third party structures	To be determined	To be determined
	Compensation for economic loss	To be determined	To be determined



Potential impact	Technical and management options	Estimated costs	
		Once off	Annual
Traffic	Appropriate design of road improvements and road diversion (and by qualified person)	# (incl. above)	-
	Approval of road improvements and road diversion from the relevant roads department	# (incl. above)	-
	Provide alternative access to landowners	R200,000	-
	Establish joint road maintenance plan	* (incl. above)	To be determined
	Upgrade intersections	R1.5 million	-
	Divert district road around mine infrastructure	R600,000	-
	Provide traffic and information signs, road markings and lighting	Incl. above	\$ (incl. above)
	Provide dedicated taxi and bus stops	© (incl. above)	-
	Co-ordinate heavy loads with roads department	© (incl. above)	-
	Comply with hazchem requirements for transport of hazardous substances	-	-
	Monitor and evaluate project use of roads	-	R100,000
	Compensation for economic loss	To be determined	To be determined
	Implement emergency response	To be determined	To be determined
Heritage (and cultural)	Apply for permits to disturb heritage sites (if applicable)	R80,000	-
	Obtain permission and undertake exhumation and relocation of graves	R250,000	-
	Limit project footprint to that identified in this report	# * (incl. above)	* (incl. above)
	Mark remaining heritage sites on plan	-	* (incl. above)
	Inspect sites for encroachment and/or damage	-	* (incl. above)
	Educate workers	-	* (incl. above)
	Implement emergency response	To be determined	To be determined
Mineral sterilisation	Design site taking cognisance of potential ore reserves	# (incl. above)	-
Economic (positive and negative)	Appoint competent management team	-	-
	Establish EMS for site	♣ (incl. above)	♣ (incl. above)
Informal settlements, safety, security and services	Establish and implement clear and effective recruitment, training, procurement, housing and transport policies and procedures	Incl. below	R1 million + * (incl. above)
	Establish and participate in law enforcement forum	-	* (incl. above)
	Implement commitments in SLP	-	±R5 million (for first two years)
	Undertake on-going stakeholder engagement	-	* (incl. above)
Relocation	Start closure planning as soon as practically possible	-	* (incl. above)
	If farm workers and their families relocate with landowners, stipulate such condition in landowner purchase agreements	* (incl. above)	-
	If farm workers and their families remain, design and implement appropriate resettlement plan	R650,000	-
Land values	Consider training and employing farm workers at mine	-	-
	Establish a base case valuation	R400,000	-
	Effectively implement mitigation measures outlined in this report	-	♣ (incl. above)
	Compensation for economic loss	To be determined	To be determined
Total		±R2,077 million ∞	±R10 million ∞
∞ excludes purchase of land, which will be negotiated with the landowners as required			
Closure cost for life of mine	Based on closure cost calculation compiled by Metago	R226 million (at Dec 2045 based on current rates)	-



25.2 AMOUNT PROVIDED FOR

The amount as outlined in Table 49 above will be provided for in the mine budget.



26 UNDERTAKING SIGNED BY APPLICANT

COMMITMENT/UNDERTAKING BY APPLICANT

I, Kevin Scott Huntly

the undersigned and duly authorised thereto by

TURQUOISE MOON TRADING 157 (PTY) LTD

undertake to adhere to the requirements and to the conditions set out in the approved EMP with the exception of the exemption(s) and amendment(s) agreed to be relevant by the Regional Manager:

LIMPOPO (include relevant province).

Signed at: FOURWAYS

On: 27 JUNE 2011

Signature: [Signature]

Designation: STRATEGIC DEVELOPMENT MANAGER.

REGIONAL MANAGER: LIMPOPO REGION

In terms of the Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002) this document of is approved subject to the conditions as set out in the letter of approval.

Signed at:

On:

Signature:

Designation:

REGIONAL MANAGER: _____



27 ENVIRONMENTAL IMPACT STATEMENT & CONCLUSION

This document presents the project plan as defined by Turquoise Moon, presents findings of specialist studies, identifies and assesses potential impacts on the receiving environment in both the unmitigated and mitigated scenarios, including cumulative impacts, and identifies measures together with monitoring programmes to monitor and mitigate potential impacts.

A summary of the potential impacts (as per Section 7 of the EIA and EMP report), associated with the chosen alternatives (as per Section 2 and Appendix B of the EIA and EMP report), in the unmitigated and mitigated scenarios for all project phases is included in Table 50 below. The assessment of the proposed project presents the potential for significant impacts to occur on the bio-physical, cultural and socio-economic environments both on the site and in the surrounding area.

The project is expected to benefit nearby communities both directly and indirectly. Direct economic benefits will be derived from wages, taxes and profits. Indirect economic benefits will be derived from the procurement of goods and services and the increased spending power of employees. Some local negative economic impacts are expected in the immediate vicinity of the mine if the mitigation as presented in Section 19 and Appendix A is not effectively implemented. The challenge facing Turquoise Moon is to contribute to the positive benefits while at the same time preventing and/or mitigating potential negative social and environmental impacts as discussed in detail in Section 7.



Alex Pheiffer (PrSciNat)
(Project Manager)



Brandon Stobart (EAPSA)
(Project Reviewer)

Metago Environmental Engineers (Pty) Ltd

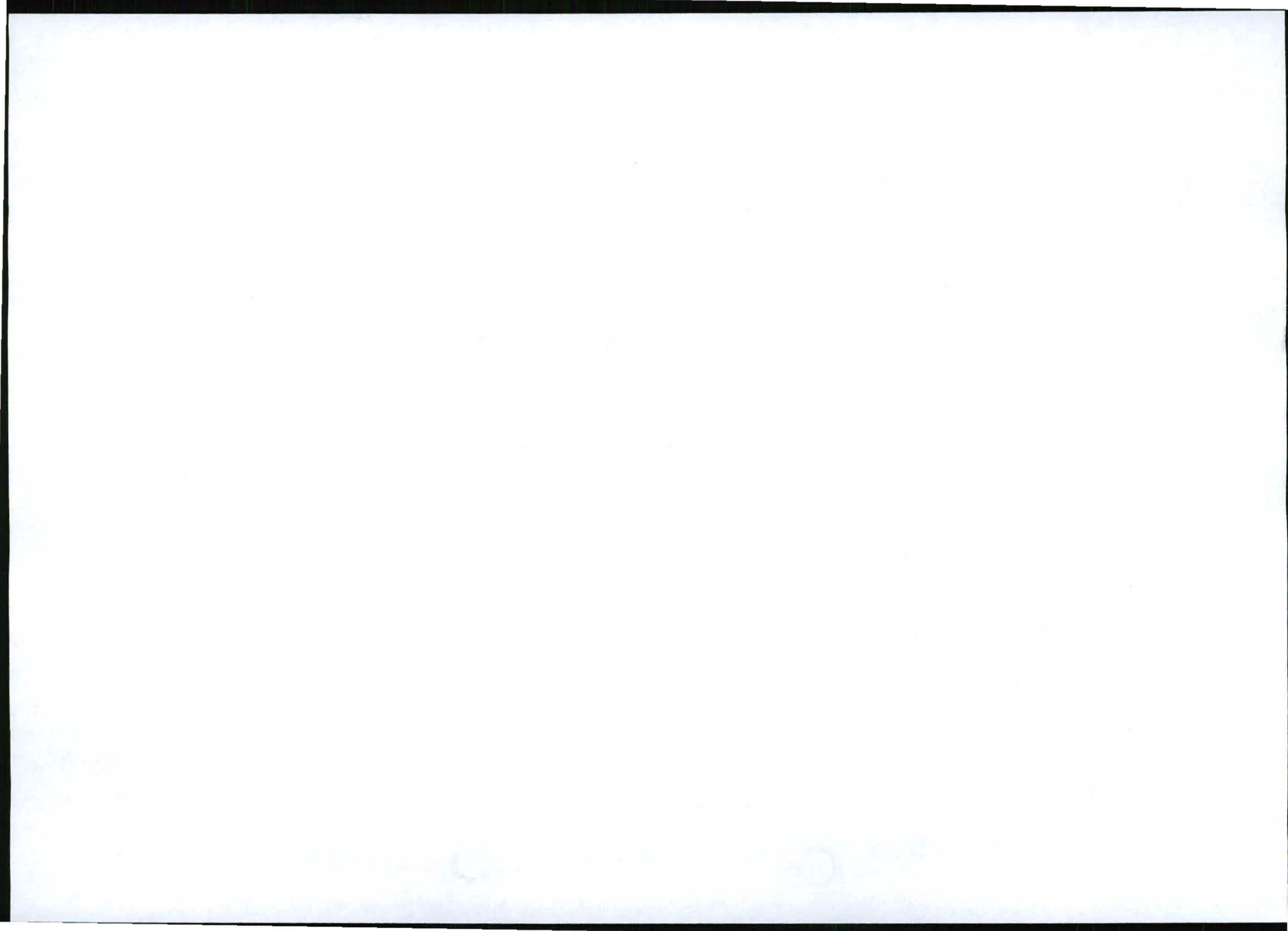
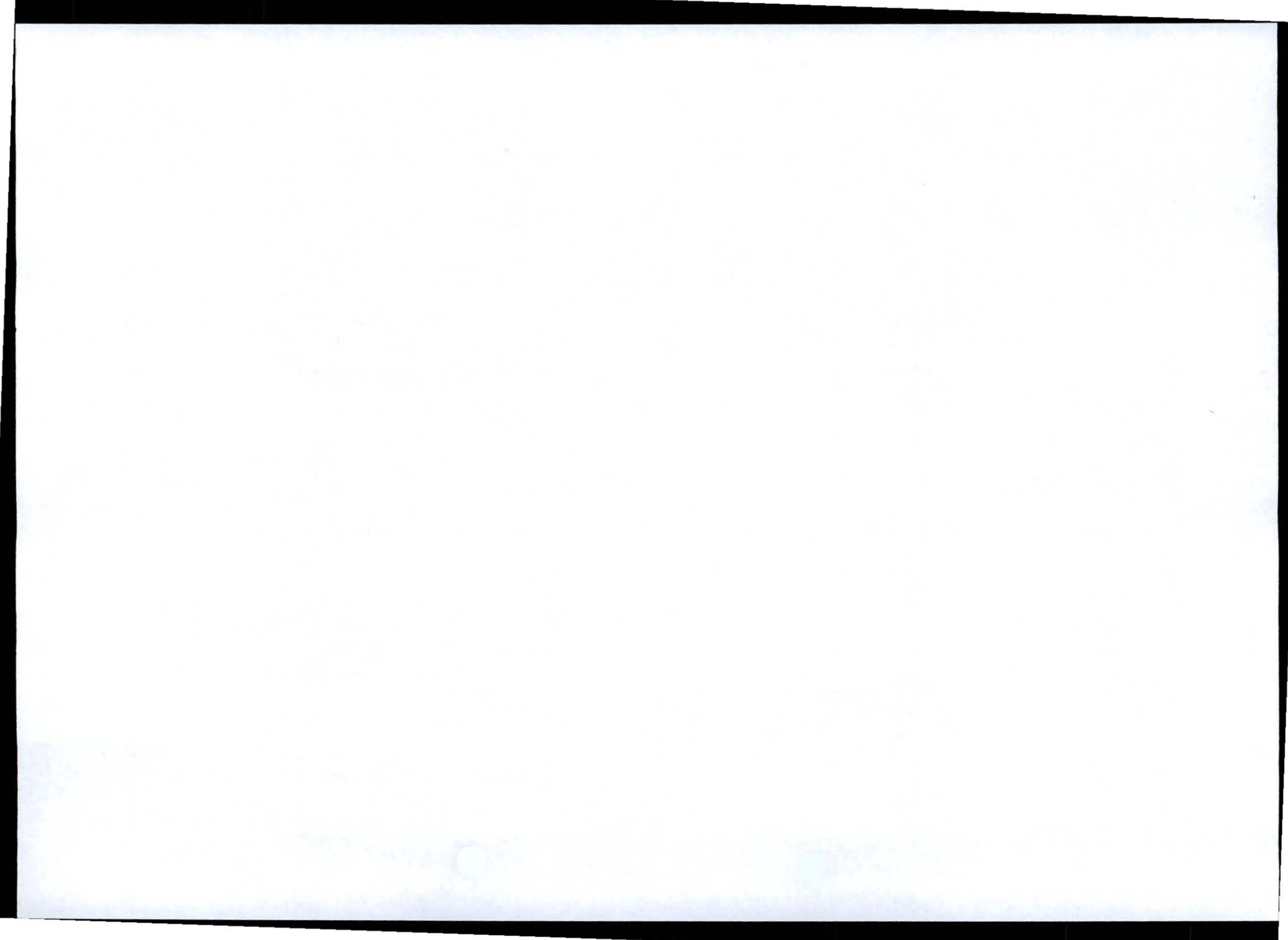
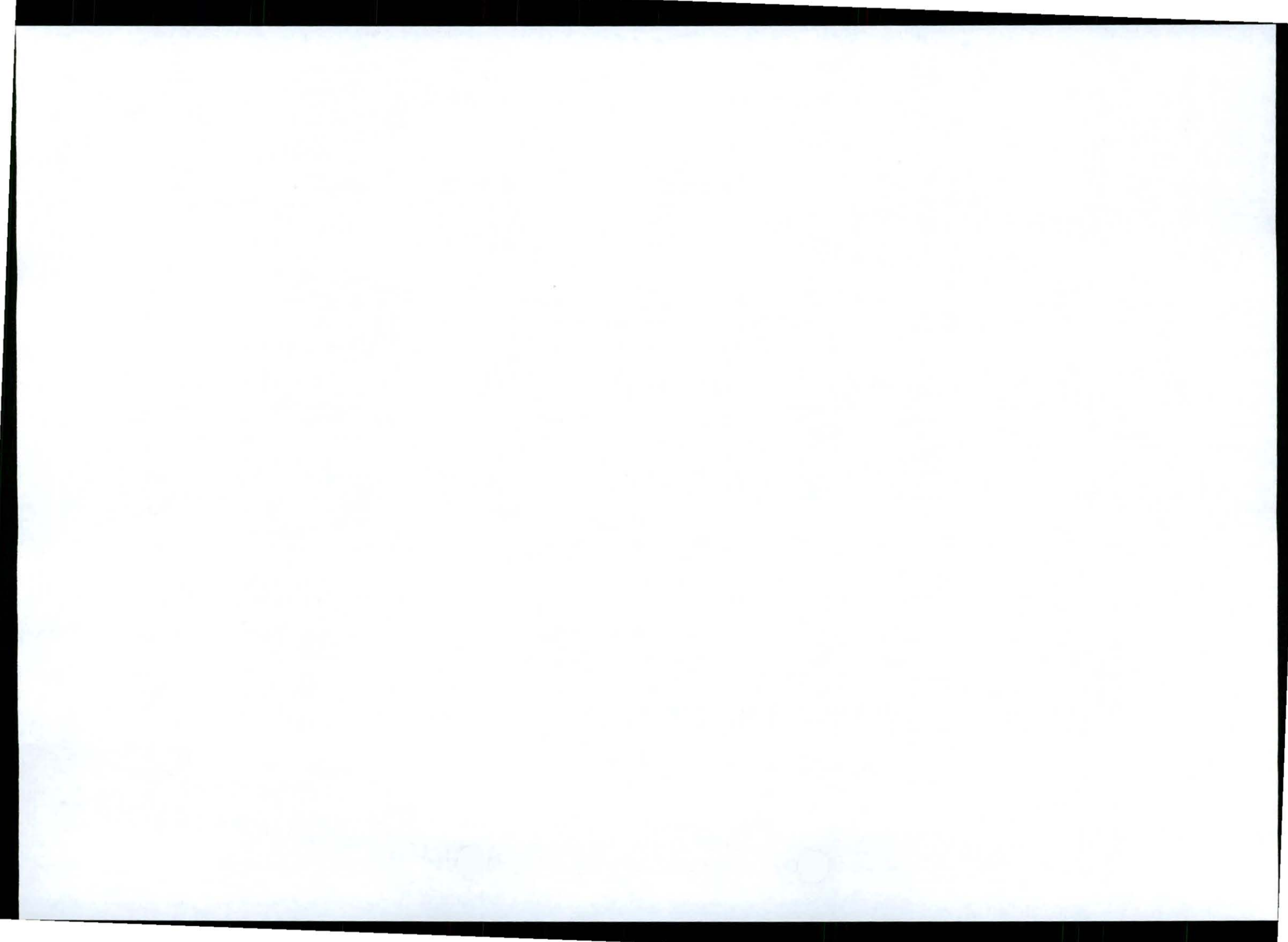


TABLE 50: TABULATED SUMMARY OF POTENTIAL IMPACTS

Section	Potential impact	Significance of the impact (the ratings are negative unless otherwise specified)							
		Construction		Operation		Decommissioning		Closure	
		Unmitigated	Mitigated	Unmitigated	Mitigated	Unmitigated	Mitigated	Unmitigated	Mitigated
Topography	Hazardous structures and excavations posing risk to third parties	High	Low	High	Low	High	Low	High	Medium-Low
Soils and land capabilities	Loss of soil resources (from physical disturbance, erosion, contamination) and associated natural land capabilities	High	Medium-Low	High	Medium-Low	High	Medium-Low	High	Medium-Low
Biodiversity	Physical destruction and general disturbance of biodiversity	High	Medium	High	Medium	High	Medium	High	Medium
Surface water	Alteration of drainage patterns (including ephemeral pan-like structures)	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium
	Pollution of surface water resources	High	Low	High	Low	High	Low	High	High-Medium
Groundwater	Dewatering impacts on third party users	No impact expected.		High	Medium	High	Medium	High	Medium
	Contamination of groundwater	Low	Low	High	Low	High	Low	High	Low
Air quality	Increase in air pollution	High-Medium	Medium-Low	High-Medium	Medium-Low	High-Medium	Medium-Low	High-Medium	Medium-Low
Noise	Increase in disturbing noise levels	Medium	Low	Medium-High	Low	Medium	Low	No impact expected.	
Visual impacts	Negative landscape and visual impact	High	High-Medium	High	High-Medium	High	High-Medium	High	High-Medium



Section	Potential impact	Significance of the impact (the ratings are negative unless otherwise specified)							
		Construction		Operation		Decommissioning		Closure	
		Unmitigated	Mitigated	Unmitigated	Mitigated	Unmitigated	Mitigated	Unmitigated	Mitigated
Land use	Loss of current land uses	High	Medium-Low	High	Medium-Low	High	Medium-Low	High	Medium-Low
	Blasting hazards	Negligible		High	Low	No impact expected.		No impact expected.	
	Project-related road use and traffic	High	Medium	High	Medium	High	Medium	No impact expected.	
Heritage (and cultural)	Destruction and disturbance (indirect) of heritage resources	High	Low	High	Low	Medium	Low	No impact expected.	
	Loss of palaeontological resources	Low	Low	Low	Low	No impact expected.		No impact expected.	
Socio-economic impacts	Loss of mineral resources through sterilisation	No impact expected.							
	Economic impact (positive and negative)	High positive	High positive	High positive	High positive	High positive	High positive	Medium positive	High positive
	Informal settlements, safety, security and services and associated social ills	High	Medium-Low	High	Medium-Low	High	Medium-Low	High	Medium-Low
	Relocation	High	Medium-Low	No impact expected.		No impact expected.		No impact expected.	
	Change in land values	High	Medium-Low	High	Medium-Low	High	Medium-Low	High	Medium-Low



REFERENCES

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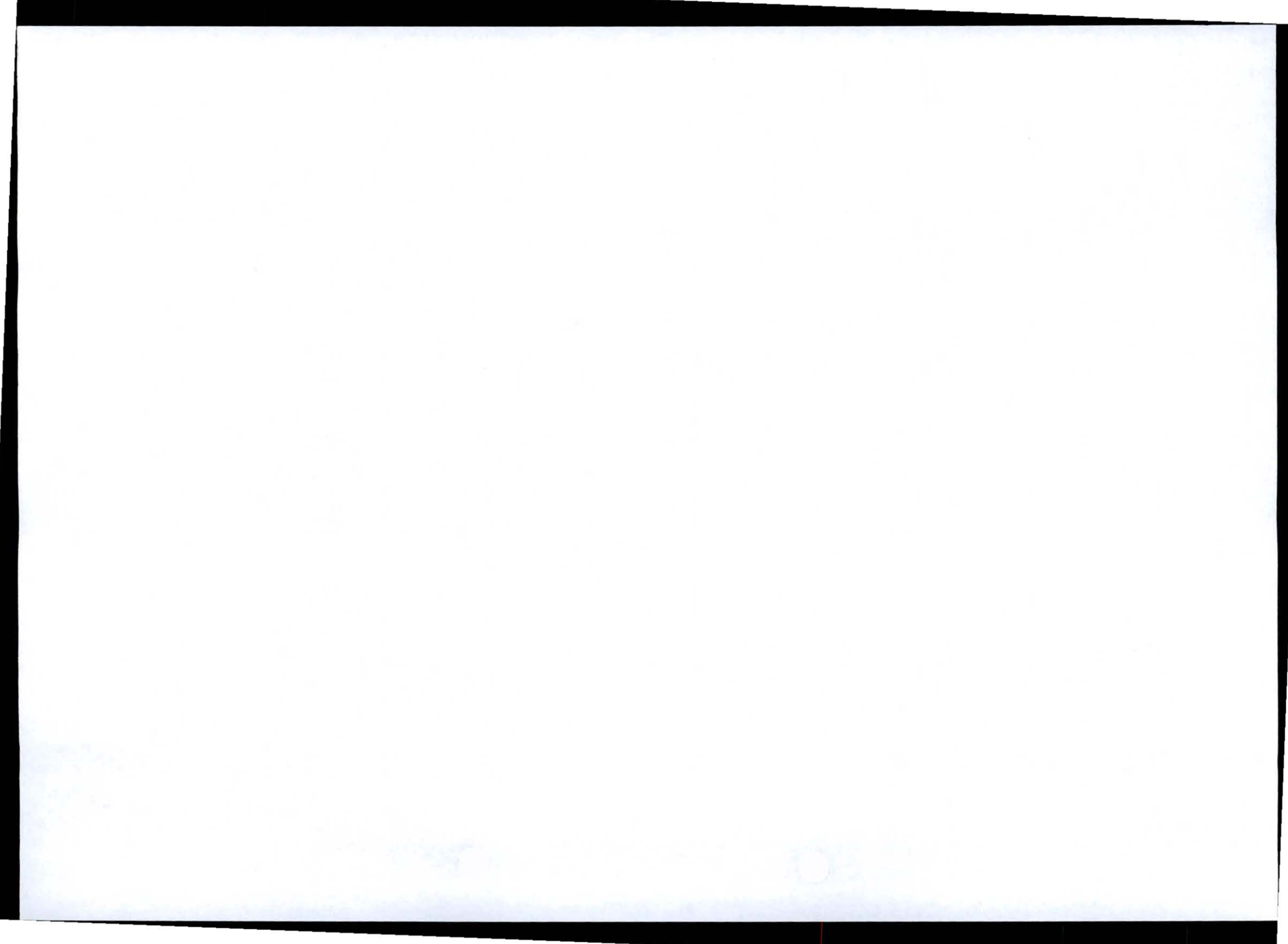
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Johannesburg office: PO Box 1596, Cramerview, 2060
Fourways Manor Office Park, Cnr Roos and Macbeth Str, Fourways
Tel: +27 (11) 467-0945, Fax: +27 (11) 467-0978

Pretoria Office: PO Box 40161, Faerie Glen, 0043
Pentagon House, 669 Plettenburg Rd, Faerie Glen
Tel: +27 (12) 991-8881, Fax: +27 (12) 991-1907

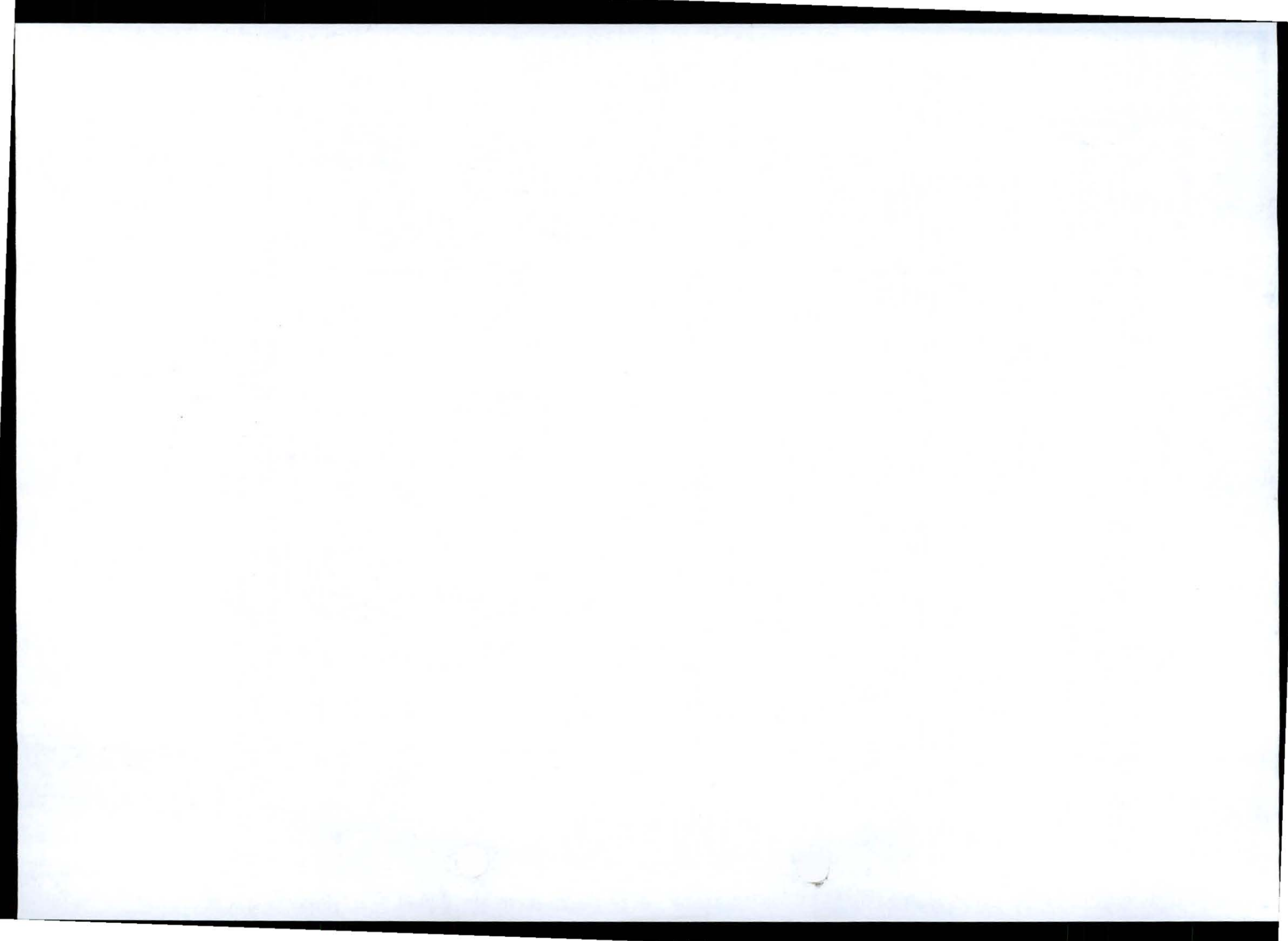
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Applicant: Turquoise Moon Trading 157 (Pty) Ltd

DMR Reference Number: LP30/5/1/2/3/2/1/0201 EM

DEA Reference Number: 12/9/11/L386/5

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CaseID: 2290

**MOONLIGHT IRON ORE PROJECT
ENVIRONMENTAL IMPACT ASSESSMENT AND
ENVIRONMENTAL MANAGEMENT
PROGRAMME**

File 3 of 3

APPENDICES M to W

**SUBMITTED FOR AN APPLICATION FOR A MINING RIGHT
IN TERMS OF SECTION 39 AND OF REGULATIONS 50 AND
51 OF THE MINERAL AND PETROLEUM RESOURCES
DEVELOPMENT ACT, 2002 (ACT NO. 28 OF 2002) (the Act)**

AND

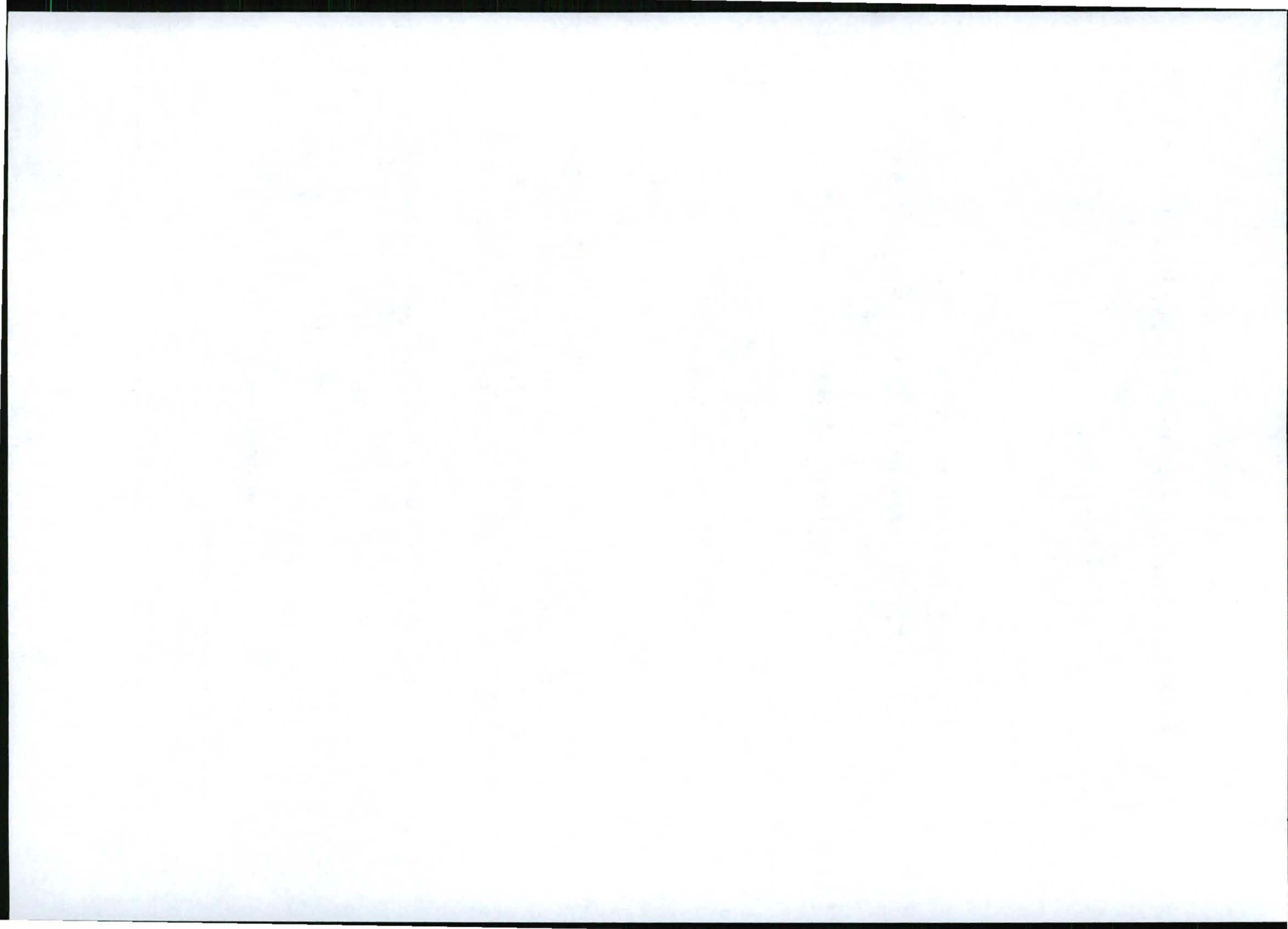
**AS REQUIRED IN TERMS OF REGULATION 385 OF THE
NATIONAL ENVIRONMENTAL MANAGEMENT ACT (ACT
NO. 107 OF 1998)**

Compiled by

 **metago**
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Johannesburg office: PO Box 1596, Cramerview, 2060
Fourways Manor Office Park, Cnr Roos and Macbeth Str, Fourways
Tel: +27 (11) 467-0945, Fax: +27 (11) 467-0978

Pretoria Office: PO Box 40161, Faerie Glen, 0043
Pentagon House, 669 Pieterburg Rd, Faerie Glen
Tel: +27 (12) 991-8881, Fax: +27 (12) 991-1907



APPENDIX M: NOISE STUDY

Specialist report prepared by Acusolv, June 2011



