



APPLICATION NO: 250915006420

**Environmental Management Plan for the Proposed G6 Gravel Road Material Mining at
Commonage Farm No. 2 Windhoek Townlands, Khomas Region**



CONSULTANT:

Mr. Ipeinge Mundjulu (BSc, MSc)
Red-Dune Consulting CC
P O Box 27623 Windhoek
Cell 0811477889

PROPONENT

MEDIVH CONSTRUCTION CC
P O Box 81024
Windhoek
Namibia

DOCUMENT INFORMATION	
DOCUMENT STATUS	FINAL
APPLICATION NO.	250915006420
PROJECT TITLE	Environmental Management Plan for the Proposed g6 Road Material Mining at Commonage Farm No. 2 Windhoek Townlands, Khomas Region
CLIENT	MEDIVH CONSTRUCTION CC
LOCATION	Commonage Farm No. 2, Windhoek Townland, Khomas Region
AUTHORS	Mr. Ipeinge Mundjulu 
DATE	15 October 2025
Copyright notice <i>This report and its content is copyright of Red-Dune Consulting CC. Any redistribution or reproduction of part or all the content in any form other than the intended purpose is prohibited.</i>	

Table of Contents

CHAPTER 1. BACKGROUND AND INTRODUCTION.....	1
1.1. BACKGROUND.....	1
1.2. PROPONENT	1
1.3. STATUTORY REQUIREMENTS	1
CHAPTER 2. POLICY, LEGAL AND ADMINISTRATIVE FRAMEWORK	2
CHAPTER 3. ENVIRONMENTAL MANAGEMENT PLAN	5
3.1. PURPOSE OF THE EMP	5
3.2. ROLES AND RESPONSIBILITIES.....	5
3.3. THE EMP TABLE	8
CHAPTER 4. CLOSURE AND REHABILITATION PLAN/GUIDELINES	18
4.1. REHABILITATION APPROACHES.....	18
4.1.1. <i>Progressive Rehabilitation</i>	18
4.2. REHABILITATION GUIDELINES.....	19
4.2.1. <i>The Slope</i>	19
CHAPTER 5. CONCLUSION AND RECOMMENDATIONS.....	20
5.1. CONCLUSIONS.....	20
5.2. RECOMMENDATION	20
CHAPTER 6. REFERENCE	22

LIST OF FIGURES

Figure 1. Progressive Rehabilitation (Earth Resources 2015).....	18
Figure 2. Illustration of the final slope (1:3 fall)	19

LIST OF TABLES

Table 1. Policy and legal framework governing the project.....	2
Table 2. Roles and Responsibility	5

ABBREVIATIONS

DEA	Department of Environmental Affairs
EA	Environmental Assessment
EAP	Environmental Assessment Practitioner
ECC	Environmental Clearance Certificate
ECO	Environmental Compliance Officer
EIA	Environmental Impact Assessment
EMA	Environmental Management Act (No. 7 of 2007)
EMP	Environmental Management Plan
MEFT	Ministry of Environment Forestry and Tourism
RD	Red-Dune Consulting CC
SM	Site Manager

I. EXECUTIVE SUMMARY

This Environmental Management Plan (EMP) has been developed in accordance with the findings of the Environmental Impact Assessment (EIA) conducted for the proposed extraction of G6-grade gravel. The project site is located at Commonage Farm No. 2 in the Khomas Region, adjacent to the Dr. Hage Geingob Windhoek–Hosea Kutako Highway (GPS coordinates: 22.600019°S, 17.123860°E). The proposed gravel extraction project will be managed and overseen by MEDIVH Construction CC, which will ensure adherence to environmental best practices and regulations throughout the project's implementation.

(a) Project overview

The proposed project involves the patchy, shallow subsurface extraction of G6-grade gravel from a designated area of approximately 12 hectares. The extraction will be carried out to depths of less than 1 meter, utilizing equipment and methods suitable for minimal disturbance to the surrounding environment. The activity is planned to span a period of approximately 12 months, ensuring timely completion while maintaining environmental standards.

i) Purpose:

The primary objective of this project is to supply locally sourced G6-grade gravel to meet the increasing demands of road construction and maintenance, thereby contributing to infrastructural growth and regional economic development.

ii) Key Operational Features:

The operation will include the use of front-loader machinery for loading operations and on-site haulage via tipper trucks traveling along Sam Nujoma Road. Importantly, no new access roads or electrical infrastructure will be established on-site. The project will also provide mobile ablution facilities, water tanks for both drinking and dust suppression, and utilize municipal waste disposal services for solid waste management.

iii) Site Context and Rationale:

- **Location:** Farm Commonage No. 2 is situated within Windhoek Townland of the semi-arid Khomas Highlands. The area is characterized by vegetation consisting of hardy shrubs of encroacher bush, *Acacia Mellifera* and bigger *Acacia Erioloba* trees, primarily found along seasonal drainage lines. The site currently supports grazing activities and recreational use.

- **Environmental Considerations:** A 550-meter buffer zone will be maintained between the site and nearby residential suburbs as mitigation for noise and dust, and extraction activities will be excluded from existing drainage lines to prevent potential adverse impacts on local hydrology and ecology.
- **Need and Desirability:** The natural occurring and nearby availability of G6 gravel significantly reduces transportation costs and associated emissions for infrastructure development in Windhoek and surrounding areas. It also shortens supply timelines for essential road upgrades, aligning with national infrastructure development targets.

(b) Key impacts and mitigation

- **Major potential impacts:** soil disturbance and erosion, loss of vegetation and biodiversity, dust and noise emissions, traffic and road-safety risks, hydrocarbon spills, waste generation, occupational health and safety risks, increased water demand, and possible heritage/archaeological finds.
- **Mitigation measures:** Progressive rehabilitation and topsoil management; dust suppression (water spraying, covered loads, speed limits); traffic management and escorting of abnormal loads; vehicle maintenance and fuel-handling controls; waste segregation and disposal at approved facilities; provision of PPE, health and safety training, breathalyser screening and first-aid resources; chance-find procedure for heritage items; use of indigenous species for revegetation; and ongoing stakeholder engagement.

(c) Closure and rehabilitation

- **Approach:** Progressive rehabilitation during operations and a final closure programme to replace topsoil, support re-vegetation, remove any infrastructure and waste and implement post-closure monitoring and adaptive management to monitor success rehabilitation success.

(d) Conclusions and recommendations

- **Conclusion.** Overall, with adequate implementation of the EMP, the proposed G6 gravel material extraction can supply critical road-construction materials with manageable environmental and social impacts and a clear pathway for site rehabilitation and sustainable post-closure outcomes.

- **Recommendations:** Recommendations: It is recommended to the approving authority to grant the project an Environmental Clearance subject to strict EMP compliance; implement progressive rehabilitation and biannual environmental performance audits with bi-annual reporting to the regulatory authority.

CHAPTER 1. BACKGROUND AND INTRODUCTION

1.1. Background

This Environmental Management Plan is prepared following the Environmental Impact Assessment conducted for the proposed mining of G6 gravel material at Farm Commonage Farm No. 2, in Windhoek Townlands, Khomas Region.

1.2. Proponent

The Proponent is MEDIVH Construction CC, a Namibian construction company currently engaged in works on the Dr. Hage Geingob Windhoek–Hosea Kutako Highway. To support these activities, the company intends to undertake limited, patchy subsurface extraction (to depths of less than 1 m) of G6 road material from Commonage Farm No. 2.

1.3. Statutory Requirements

Environmental protection in Namibia is provided for under Article 95 of the Constitution and the Environmental Management Act, 2007 (Act No. 7 of 2007) (EMA). In terms of the Environmental Impact Assessment Regulations (Government Gazette, 6 February 2012, No. 4878) under the EMA, natural resource extraction is a listed activity that may not be undertaken without an Environmental Clearance Certificate (ECC).

The listed activities applicable to the proposed project include:

- 3.2: Other forms of mining or extraction of any natural resources whether regulated by law or not Extraction of natural resources.
- 3.3: Resource extraction, manipulation, conservation and related activities — Extraction of natural resources.

In accordance with these statutory requirements, MEDIVH Construction CC has appointed Red-Dune Consulting CC (RDC) to undertake an environmental scoping study and consequently develop the EMP for the proposed G6 gravel extraction.

CHAPTER 2. POLICY, LEGAL AND ADMINISTRATIVE FRAMEWORK

The proposed G6 gravel material extraction will be subjected to the following KEY national laws (Table 1).

Table 1. Policy and legal framework governing the project

REGULATORY FRAMEWORK	SUMMARY	APPLICABILITY
The Namibian Constitution	The State shall actively promote and maintain the welfare of the people by adopting policies aimed at ... The maintenance of ecosystems, essential ecological processes and biological diversity of Namibia and utilization of living natural resources on a sustainable basis for the benefit of all Namibians, both present and future	Protection of the environment and biodiversity
Environmental Management Act No. 7 of 2007	This act aims to promote the sustainable management of the environment and the use of natural resources and to provides for a process of assessment and control of activities which may have significant effects on the environment; and to provide for incidental matters	The acts provides a list of activities that may not be undertake without an environmental clearance certificate to prevent environmental damages
Draft Pollution Control and Waste Management Bill	This Bill serves to regulate and prevent the discharge of pollutants to air and water as well as providing for general waste management	To protect the Environment from possible hydrocarbons and oil leaks from the machinery and vehicles

REGULATORY FRAMEWORK	SUMMARY	APPLICABILITY
Environmental Policy framework (1995)	This policy subjects all developments and project to environmental assessment and provides guideline for the Environmental Assessment.	Consideration of all possible impacts and incorporate them in the development stages
The Occupational Safety and Health Act No. 11 of 2000	Promotes the Safety and Health of employees at the work place	Employees subjected to noise and dust
Public and Environmental Health Act, 1 of 2015.	Provide a framework for a structured uniform public and environmental health system in Namibia; and to provide for incidental matters.	Application of proper mitigation measure to noise and dust
Labour Act No. 11 of 2007	This Act outlines the labour laws which encompass protection and safety of employees at work.	This project will require labour during its operational stage and decommissioning stage.
Water Act No, 54 of 1956	All water resources belongs to the State. It prevents pollution and promotes the sustainable utilization of the resource	Hydrocarbons from machinery has the potential to pollute water resource
Soil Conservation Act No. 76 of 1969	To promotes the conservation of soil, prevention of soil erosion	Uncontrolled movement of heavy vehicles and truck at areas surrounding the site may cause land degradation
Water Resource Management Act No.11 of 2011	The Act stipulates the prevention of both Surface and Ground water sources.	Oil spillage coming from machines and transporting vehicles need to be prevented to avoid water contamination.

REGULATORY FRAMEWORK	SUMMARY	APPLICABILITY
Public Health Act no. 36 of 1919	The Act gives provision for the protection for the health of all people.	The noise and dust level emanating from the project could affect the surrounding community.
National Heritage Act No.27 of 2004	The Act gives provision of the protection and conservation of places and objects with heritage significance.	There were no heritage features identified on site or within the close vicinity of the site. A chance find shall be implemented
Local Authority Act No. 23 of 1992 Government Notice of No.116 of 1992.	This Act underlines the duties and functions of the	All stakeholders affected by the operations of the project have been informed of the developments including that of undertaking the EIA.

CHAPTER 3. ENVIRONMENTAL MANAGEMENT PLAN

3.1. Purpose of the EMP

The key objective of this EMP is to ensure that all activities associated with the proposed G6 gravel material mining are carried out in an environmentally sustainable and legally compliant manner. It serves as a comprehensive risk management strategy designed to address and mitigate potential environmental impacts associated with the project.

It provides a clear logical framework that outlines what needs to be done, how it will be monitored, and the steps to reduce potential negative effects on the environment. It ensures that environmental protection is integrated into every phase, operation, closure and decommissioning in alignment with relevant legal and regulatory requirements.

Furthermore, the EMP clearly defines the roles and responsibilities of all stakeholders involved in the project, including the Proponent, contractors, and regulatory authorities, to ensure accountability, effective implementation of mitigation measures, and continuous environmental performance improvement.

3.2. Roles and Responsibilities

To promote accountability, effective implementation of mitigation measures, and continuous environmental performance improvement, it is essential to assign clear delegation of roles and responsibilities across all levels of the project. The following outlines the key roles and their associated responsibilities to ensure the successful implementation of the EMP.

Table 2. Roles and Responsibility

Role	Responsibility
Proponent: MEDIVH CONSTRUCTIONCC	1) Overall responsibility for ensuring that the project complies with all environmental legislation and regulations. 2) Allocate resources and budget for the implementation of the EMP.

	3) Appoint an Environmental Control Officer (ECO) to oversee day-to-day environmental management on site. 4) Ensure that the EMP is regularly reviewed and updated to reflect any changes in project scope, legislation, or environmental conditions. 5) Liaise with regulatory authorities and stakeholders to report on environmental performance and address any concerns.
Environmental Compliance Officer (ECO)	1) Monitor and ensure compliance with the EMP, environmental regulations, and site-specific requirements. 2) Conduct regular site inspections to verify the implementation of mitigation measures. 3) Coordinate with project personnel to ensure proper waste management, pollution control, and safety protocols are followed. 4) Prepare regular environmental performance reports, including monitoring results and corrective actions, and submit these reports to the project proponent and relevant authorities. 5) Lead training sessions for project staff on environmental best practices and legal obligations. 6) Act as the primary point of contact for environmental matters and regulatory agencies. 7) Modifying or improving mitigation measures for purposes of corrective action
Site Manager	1) Ensure the project's overall operations are conducted in accordance with the EMP and approved environmental permits. 2) Supervise all exploration activities to ensure they align with environmental guidelines. 3) Work closely with the ECO to implement corrective actions when environmental non-compliance is identified.

	4) Ensure that all personnel are appropriately trained in environmental procedures and that they adhere to the safety protocols established in the EMP.
Contractors and Subcontractors	1) Ensure that all contracted activities comply with the EMP and all applicable environmental regulations. 2) Provide their workers with adequate environmental and safety training. 3) Monitor and report on the environmental performance of their activities. 4) Implement mitigation measures specific to their scope of work as outlined in the EMP and ensure that they are properly maintained.
Ministry of Environment, Forestry and Tourism (MEFT)	1) Review and approve the EMP. 2) Conduct inspections and audits to ensure compliance with environmental laws and regulations. 3) Provide oversight and guidance on environmental compliance.

3.3. The EMP Table

Aspects	Objectives	Mitigation Measures	Indicators	Responsibility
A. EMP AWARENESS				
Knowledge and understanding of the EMP	Ensure all are knowledgeable of the EMP	1. Undertake induction meeting with contractors and all stakeholders involved in the sand mining activities	Minutes of the awareness meeting	Site Manager
B. BIO-PHYSCIAL ENVIRONMENT				
Biodiversity	Protection of flora and fauna	1. Big trees within the site should be preserved where possible 2. Tree and bushes that are nesting places for the birds must not be cut down. (This would not be necessary as the area is does not have nesting places) 3. Do not plant alien trees 4. Only remove shrubs that are within the demarcated mining site 5. Do not kill animals 6. Workers must not leave food unattended as it will attract monkeys / baboons in the surrounding	Visual inspection	Site Manager
Land Degradation	To prevent land degradation	1. Movement of heavy vehicles must be coordinated and restricted to be within the site and access roads 2. Loosen soil must be sprayed with water and compacted	Visual inspection	Site Manager

Aspects	Objectives	Mitigation Measures	Indicators	Responsibility
		3. All excavated areas must be well rehabilitated to avoid formation of gullies 4. Only drive on designated haul roads 5. Ensure no gullies are formed during rainfall 6. Continuous rehabilitation of the burrow pit must be conducted by proper profiling and smoothing of the slopes to allow smooth runoff of storm water hence preventing soil erosion.		
Top Soil	To conserve of top soil that will be used for revegetation during rehabilitation	1. Preserve the top soil 2. Use vegetation cover to preserve top soil	Visible Stockpile	Site Manager
C. HEALTH AND SAFETY				
Safety at work place	This section aims to protect the safety of the employees at work place. Adhere to	1. A compulsory safety induction course must be given to all employees. 2. Adequate safety signs must be put on site.	Company Safety Plan Safety induction minutes	Site Manager

Aspects	Objectives	Mitigation Measures	Indicators	Responsibility
	the Health and Safety Regulations, Government Notice 156/1997 (GG 1617)	3. Each employee must be provided with Personal Protective Equipment (PPE) and must be worn all the time during working and when on site. 4. Employees must possess a valid licence to operate heavy machinery 5. Provide a first aid kit to be available onsite at all time 6. No unauthorised fires shall be permitted on site, 7. To avoid field fires, smoking is only permitted at designated sites with low risk to fire; 8. Provide at least one fire extinguisher 9. All employees must be screen with the breathalyser to avoid intoxicated personnel on site 10. All heavy vehicles must have a rotating flushing light installed for visibility 11. Ensure that all vehicles are well serviced and roadworthy 12. No employee must be allowed to be at work station without adequate PPE 13. Provide adequate gender sensitive ablution facility 14. Provide clean drinking water.	Visual inspection PPE available Valid license to operate machinery First Aid available onsite Visual Inspection Designated smoking place Visual Inspection	

Aspects	Objectives	Mitigation Measures	Indicators	Responsibility
		15. Erect warning signs at designated sites to alert public of potential dangers 16. Trucks carrying G6 material must be covered to avoid material flying off 17. Truck must maintain a five-kilometre in-between distance to avoid traffic congestion 18. Transportation of g6 material at night is not allowed 19. Adhere to the Labour act, non-toxic human dust exposure levels may not exceed 5mg/m³ for respiratory dust and 15mg/m³ for total dust. 20. Abide by the Occupational Health and Safety and Labour Act of Namibia and other statutory requirement such as International Labour Practise (ILO) 21. Supervisors must undergo an occupational health and first aid course, 22. Train employees on the possible health hazards to avoid potential risks 23. Cordon off the mining areas / sites		
Dust	To protect public health	1. Haul trucks transporting sand must be covered during transportation	Public complaint	Site Manager

Aspects	Objectives	Mitigation Measures	Indicators	Responsibility
		2. Use dust suppression measures such as water spraying to mitigate dust impacts. 3. Avoid working during extreme windy times 4. Avoid unnecessary movement of vehicles on site 5. Keep records of complaints to monitor community dissatisfaction 6. Operation must be limited to day hours only, from 05H00-18H00 7. Adequate safety signs must be put at designated places. 8. During sand transportation, keep the speed limit below 40km/h on all gravel and village roads	Visual inspection	
Noise	Reduce noise pollution	1. Maintain low speed at project sites (40/km/h) 2. All vehicles and equipment must be well serviced to prevent excessive noise 3. Do not hoot unnecessary 4. Stationary vehicles and machines must be switched off at time 5. It is inevitable that noise level shall exceed the required maximum amounts, hence workers must have sufficient breaks and proper ear muffs for hearing conservation 6. Provide ear muff to employees	Public Complain register	Site Manager

Aspects	Objectives	Mitigation Measures	Indicators	Responsibility
		7. Avoid unnecessary reeving of engines 8. Only operate during day time (05H00AM-06H00PM)		
Employees Health	Reduce health risks and environmental pollution	1. Employees must not be exposed to noise levels above the 85dB (A) limit over a period of 8 hours. 2. Non-toxic human dust exposure levels may not exceed 5mg/m ³ for respiratory dust and 15mg/m ³ for total dust. 3. Provide adequate PPE	Visual Inspection. Deaf record and hearing complains. Respiratory complains	Site Manager
Public Health and Safety	To protect public health and safety	1. The excavated area/mining area must be cordoned off to prevent access by people 2. Construction vehicles must have reflectors and visible head lumps to warn public.	Visual inspection of cordon fence Visual inspection	Site Manager
Traffic congestion and road safety	Reduced Level of service by slow flow of traffic and potential increase of road accidents	1. Abnormal vehicles should be escorted to ensure the road is cleared for their passages. 2. All construction vehicles must be roadworthy and fitted with reflectors and amber lights. 3. Ensure all drivers are in possession of drivers licences and are screened with an alcohol breathalyser for alcohol.	Public complain Visual inspection	Site Manager

Aspects	Objectives	Mitigation Measures	Indicators	Responsibility
		4. Ensure heavy vehicles are within the road capacity payload. 5. Keep to minimal speed of 40km/h with heavy vehicle at areas surrounding the site. 6. Ensure construction starts from 6am-5pm only, night operation is prohibited.		
D. POLLUTION AND WASTE MANAGEMENT				
Waste generation	To manage solid waste To prevent littering, pollution, contamination of water and general environmental health hazards	1. Ensure good house keeping 2. Provide dustbins and ensure waste segregation to enable recycling. Waste generated must be disposed of at approved sites 3. Ensure separate ablution facilities for men and women. 4. All waste produced on site should be contained and disposed as required by law 5. No onsite burying, dumping or burning of waste material shall be permitted. 6. Ensure appropriate waste collection and removal from the site and dispose at appropriate waste disposal site. 7. General waste must be separated from hazardous waste; 8. Hazardous waste must be disposed of at an approved site;	Scattered waste, Littering and any other unsightly waste at the site (eyesore)	Site Manager

Aspects	Objectives	Mitigation Measures	Indicators	Responsibility
		9. The Waste Bin for oil cans must be clearly marked Hazardous;		
Water	To avoid possible water contamination	1. Contaminated soils must be removed immediately and stored at a bunded designated area and only be disposed of at the approved dumpsite. 2. No washing of vehicles and machinery on site 3. Vehicle must be well serviced to prevent oil leakages 4. All stationary vehicles and machinery must have drip trays under to collect oils and lubricant leakages 5. If fuelling is to be done on site, it must be done at designated place with a proper structure that would prevent spillage to the ground	Record of oil spill, contaminated soil, bunded structure	Site Manager
Oil Leakages	To prevent soil pollution, water pollution	1. All vehicles must be well serviced 2. Oils and fuels must be stored in appropriate drums and kept on impermeable bunded structure 3. Stationary vehicle must be provided with drip tray to catch any possible leakages 4. No washing of vehicle / equipment is allowed on site 5. Used oil, grease and lubricants cans must be collected in appropriate drums and disposed of at an approved site	Visual inspection	Site Manager

Aspects	Objectives	Mitigation Measures	Indicators	Responsibility
Vehicle emission	Minimize greenhouse gases emission	1. Avoid unnecessarily revving of engine 2. Vehicle must be well serviced	Public complaint	Site Manager
E. CULTURAL HERITAGE				
Archaeological and artefact material buried human remains	To preserve artefacts, archaeological or human remain	1. Implement a chance find strategy where if any archaeological material is found, artefacts or human remain is found; a. STOP the work b. Notify the Supervisor c. Cordon off the area d. Take pictures e. Notify the National Museum (+264 61 276800) or the National Forensic Laboratory (+264 61 240461). f. Only remove material with permission from the Namibian National Heritage Council (NNHC)	Number of findings reported	Site Manager
F. SOCIO-ECONOMICS				
Employment	To ensure local residents of are employed	1. Ensure locals are employed 2. Adhere to the Namibia Labour Act 2007 for fair compensation and providing good working environment	Labour unrest	Site Manager

Aspects	Objectives	Mitigation Measures	Indicators	Responsibility
HIV/AIDS	To STOP the spread of HIV/AIDS pandemic	1. Provide HIV/AIDS awareness to employee 2. The government provide free condoms, ensure a box of condoms is on site or vehicles with employees	HIV/AIDS awareness meeting minutes	Site Manager
Alcohol and Drug Use	To prevent drug and alcohol abuse and foster a healthy lifestyle	1. Use of illegal drugs must be reported to the police 2. Do random alcohol testing and watch out for drunk behaviour 3. Teach workers about the danger of alcohol abuse and drugs	Number of reported case. Alcohol test results. Awareness Minutes	Site Manager

CHAPTER 4. CLOSURE AND REHABILITATION PLAN/GUIDELINES

This chapter outlines the proposed closure plan and rehabilitation guidelines to be implemented after the G6 material resource has been exhausted.

Following extraction, the site will contain patched shall borrow pit of less than 1 m (<1m) deep. Such excavation will not expose the bedrock; hence the preserved topsoil will be significant to provide base cover and enhance revegetation. Therefore, rehabilitation will follow procedures like those used for construction and rehabilitation of earth dams.

4.1. Rehabilitation approaches

There are two option that may be followed for rehabilitation i) Progressive Rehabilitation, ii) After Closure Rehabilitation. Progressive rehabilitation is mainly used for sites where revegetation is expected. While for sites aimed to be turned into water harvesting reservoirs, after closure rehabilitation is normally used. The former is adopted for this project.

4.1.1. Progressive Rehabilitation

Progressive rehabilitation involves rehabilitating parts of the pit that have been depleted while operations continue in other sections of the site (see Figure 1). During this process, the excavated topsoil must be redistributed and filled back into the areas where excavation has been completed, with slopes carefully smoothed to ensure stability. The primary advantage of this approach is that it reduces the total area disturbed by mining activities. Additionally, it is cost-effective, as it minimizes the need for double handling of filling materials and helps preserve the topsoil, which is vital for successful rehabilitation and future land use.

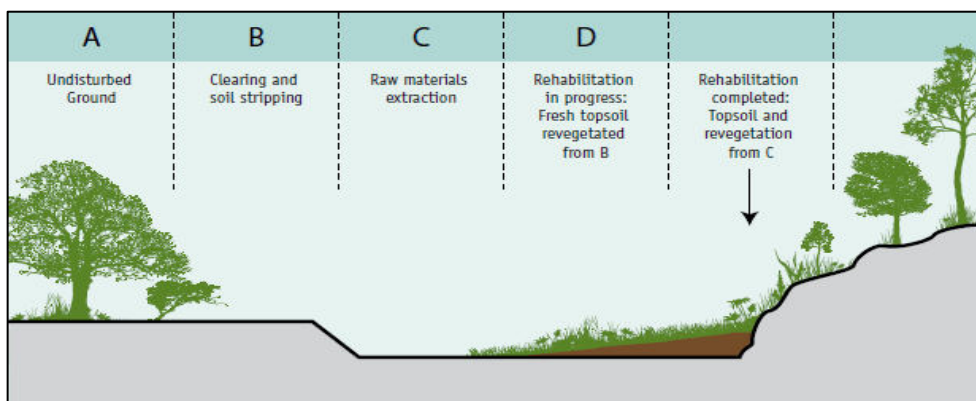


Figure 1. Progressive Rehabilitation (Earth Resources 2015)

4.2. Rehabilitation guidelines

4.2.1. The Slope

During excavation, pit slopes are often steep and pose several risks, including collapsing edge walls, accidents involving people or animals falling into the pits, the formation of gullies, and increased soil erosion and land degradation. Therefore, it is essential that borrow-pit slopes be graded at an appropriate angle to minimize these hazards. However, this requirement does not directly apply to this project, as the slopes will be less than 1 meter in height. Ideally, borrow-pit slopes should be laid back at a ratio of 1:3 (see Figure 2), meaning that the slope falls one meter vertically for every three meters horizontally, ensuring stability and safety.

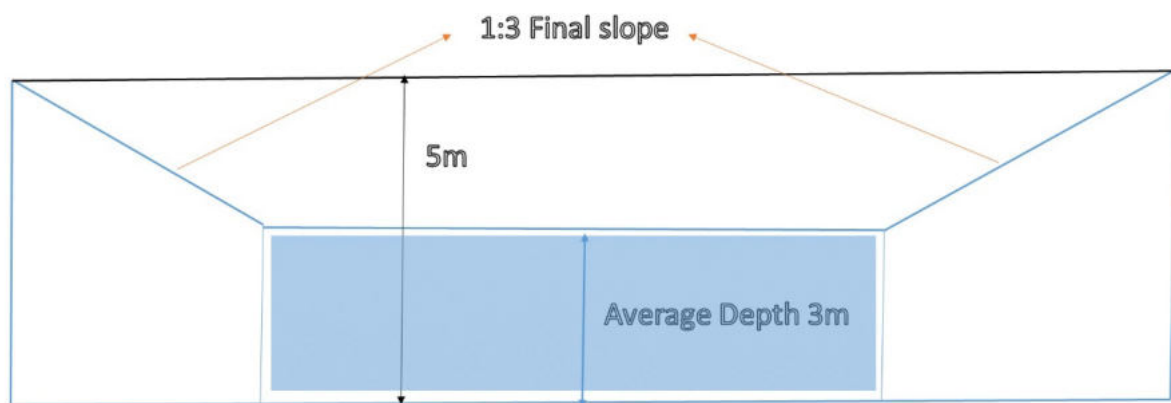


Figure 2. Illustration of the final slope (1:3 fall)

The following guidelines must be followed to ensure effective rehabilitation of the borrow pit:

1. Use the top soil to refill excavated areas
2. Decompact areas exposed to heavy vehicle traffic
 - Ripped or loosen compacted surfaces to improve infiltration and promote re-vegetation. After ripping, replace topsoil where available and seed with appropriate native species.

CHAPTER 5. CONCLUSION AND RECOMMENDATIONS

5.1. Conclusions

This EMP concludes that the proposed G6 gravel extraction project at Commonage Farm No. 2 will significantly contribute to the achievement of national road construction and infrastructure development goals. During the execution of the project, it is anticipated that all shrubs, primarily encroacher bushes and grasses, will be removed entirely. While some of these shrubs may serve as habitat for small animals and birds, it is expected that these animals can easily relocate to surrounding areas. Moreover, the company will enforce a strict zero-tolerance policy on animal killings to ensure the protection of local fauna.

Regarding land degradation, the project is not expected to cause any substantial damage to the environment. This is primarily because the gravel extraction process will be limited to depths of less than 1 meter, thereby avoiding the formation of steep slopes or unstable landforms that could contribute to erosion or land degradation. Furthermore, by strictly adhering to progressive rehabilitation practices and ensuring the proper implementation of the EMP, the project aims to minimize environmental impacts, promote land recovery, and restore disturbed areas efficiently.

Overall, with diligent adherence to this EMP, the project will successfully maintain ecological wellbeing and sustainability. Thus, it is critical that this EMP is carefully implemented.

5.2. Recommendation

1. Stabilisation and progressive rehabilitation
 - Rehabilitate and stabilise exposed areas progressively, replace with topsoil to enhance revegetation.
2. Dust suppression
 - Apply water spraying on haul roads, stockpiles and working faces during active operations; enforce speed limits and cover loads on trucks to minimise fugitive dust.
3. Recordkeeping and reporting

- Maintain complete, up-to-date records: extraction volumes, maintenance records, PPE issuance, training/induction registers, incident and complaint logs, and monitoring results. Produce bi-annual compliance reports for management and the Ministry.
4. Red-Dune Consulting recommends the Ministry to approve this EMP and issue the project with an ECC and for the Proponent to ensure that all necessary measures are implemented.

CHAPTER 6. REFERENCE

1. Namibia Nature Foundation. (n.d). Savannahs of Namibia. Windhoek.
2. Namibian Statistically Agency: Namibia 2011 population and housing census main Report.
3. Mannheimer, C.A, & Curtis, B.A. (eds) 2009. Le Roux and Muller's Field Guide to the Trees and Shrubs of Namibia. Windhoek: Macmillan Education Namibia.
4. Mendelsohn, J., Jarvis, A., Roberts, C. & Robertson, T., 2009. Atlas of Namibia. 3rd ed. Cape Town: Sunbird Publishers.
5. Morkel, M. 2013. Diversity, Structure and Dynamics of an Acacia Erioloba Woodland in the Windhoek Area: Insights for the Management of Urban Habitats. MSc Thesis. University of Namibia. Windhoek.