

SCOPE OF WORK

Environmental Restoration of Various Properties Along the O6 Pipeline and Stabilization of the Ridge Footnote at Meyersdal Eco Estate.

1.1. DESCRIPTION

Rand Water's Strategic Asset Management (SAM) section is currently undertaking the installation of the O6 Pipeline, which traverses multiple properties and diverse land uses, including wetlands, a school, a golf course, and residential estates. Prior to project initiation, the necessary permissions for pipeline installation across these areas were secured. Rand Water's Environmental Management Services (EMS) team was subsequently requested to assist in appointing a suitable service provider to rehabilitate the affected environment, either restoring them to their original condition or to the best achievable state. The purpose of this rehabilitation initiative is to ensure full compliance with the applicable environmental legislation and associated conditions, as stipulated in the Environmental Authorisation (Reference: 14/12/16/3/3/1/626), the Environmental Management Plan (EMP), and, where applicable, Water Use Licence No: 08/C22B/C1/3508).

1.1.2. OBJECTIVES OF THE REQUIRED WORK

Rand Water received approval from the Department of Water and Sanitation and the Department of Environment to implement the O6 Pipeline project, extending from Alberton to Germiston. As part of the legal conditions associated with this approval, Rand Water is obligated to rehabilitate all areas impacted by the construction activities.

Environmental rehabilitation plays a crucial role in minimizing the long-term effects of construction-related disturbances. Proper rehabilitation of affected areas will mitigate potential environmental risks such as soil erosion, and the proliferation of alien invasive plant species and weeds.

Objectives of the Rehabilitation Effort:

- To ensure that all affected areas are rehabilitated through appropriate grass seeding methods.
- To implement preventative measures aimed at restricting soil erosion.
- To ensure full compliance with all applicable legal and environmental requirements related to the project.

The key milestones of the project are:

- Area preparation and cultivate the compressed soil to promote the germination of grass and growth.
- Re-vegetate the specified area with seeding.
- Application of fertilizer.

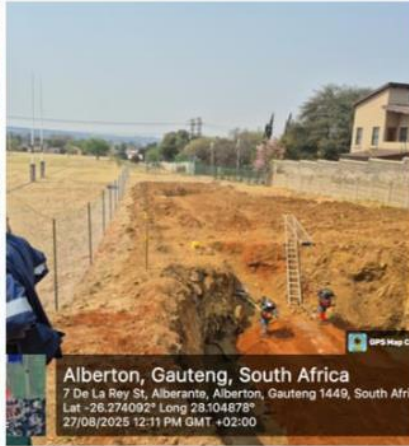
Maintenance of the area.

- Weeding the site until handover.
- Watering/irrigation.
- Collection and Installation of the Liffosteine Block to stabilise the ridge embankment footnote.
- Supply and application of Geojute (Soil saver)

1.1.3. GRASS SEEDING OF THE AFFECTED AREA

The contractor shall remove all the rocks within the 20m working strip or pipeline servitude prior to scarification and the rocks that might be exposed during scarifying. As part of the area preparation the contractor shall level the area and close all trenches to match the surrounding environment. The pipeline route has portions that have significantly revegetated however the contractor shall seed the bare patches along the route to ensure that sufficient grass cover is achieved post rehabilitation activities. The entire scarred area to be seeded must be scarified either mechanically or manually to provide suitable conditions for grass germination and minimise water/wind disturbances. Soil is to be scarified to a minimum depth of not less than 60 mm and with a scarification spacing of not more than 200mm apart. All rubble, stones and other foreign objects must be removed and disposed of at approved dumping site. Proof of disposal needs to be obtained and submitted to Rand Water. The total area identified for environmental rehabilitation through grass seeding is estimated at approximately **28,300 m²**. These areas have been impacted by the construction of the O6 Pipeline and require restoration in line with environmental compliance requirements. The specific sections requiring rehabilitation are detailed in the table below:

No.	Location / Section	Estimated Area (m ²)	Remarks
1	Marais Viljoen School	9 000m ²	<i>School property adjacent to R59</i>
2	N17 (Island and River crossing)	3 600m ²	<i>Sensitive ecological zone (Water use Licence area)</i>
3	Reading Golf Course Section	2 600m ²	<i>Rehabilitation post-construction</i>
4	Kerria Road Park Area	4 700m ²	<i>Bordering private property (City of Ekurhuleni City Parks) Instant Lawn Installation.</i>
5	Cemetery Road	7 400m ²	<i>Bordering private property (City of Ekurhuleni City Parks)</i>
6	Meyersdal Eco Estate Ridge area	1 000m ²	<i>Temporary construction zones</i>
Total		28,300 m²	<i>Rehabilitation post-construction</i>



Marias Viljoen School.



Reading Golf Course

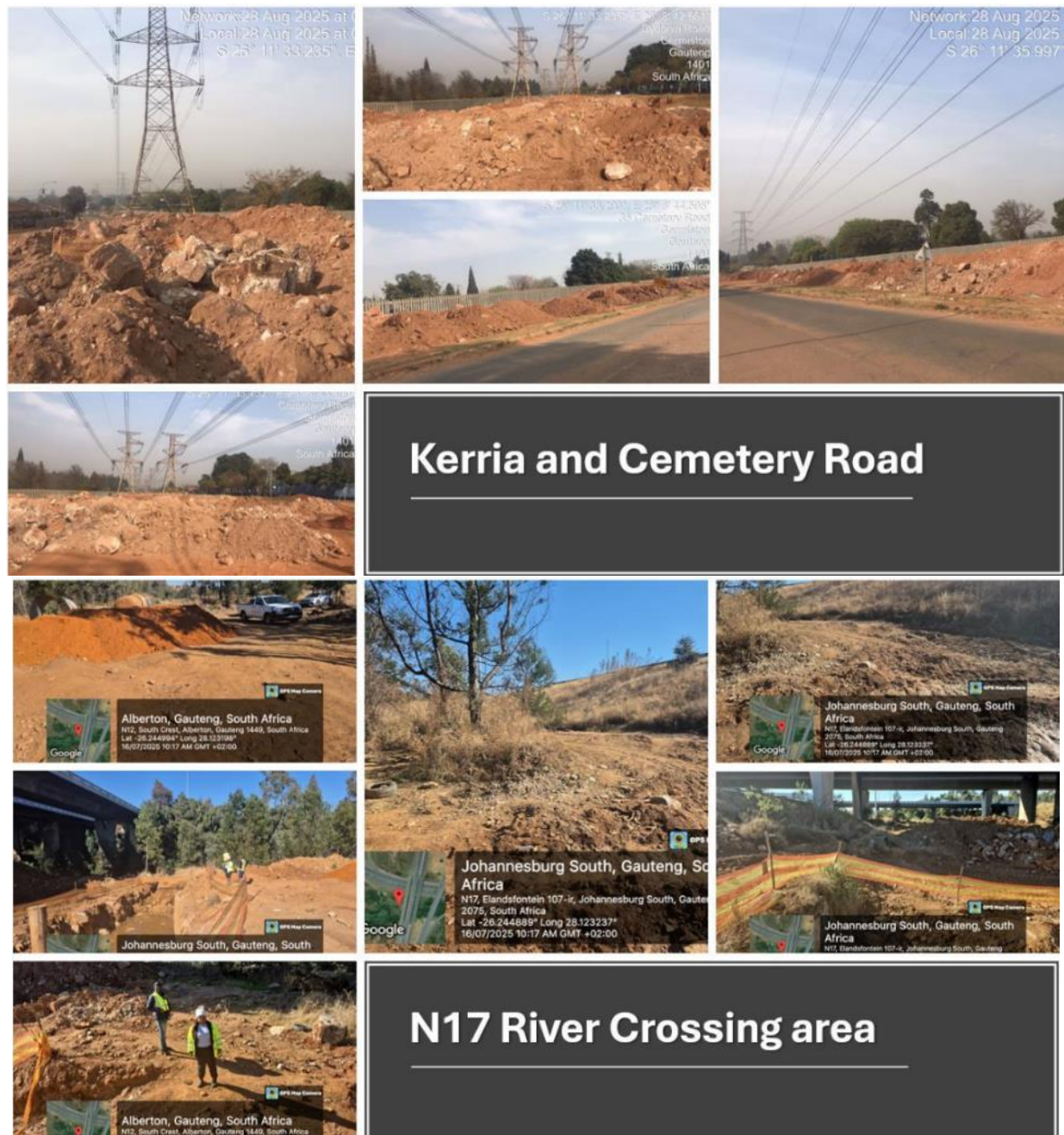


Figure above depicts the aerial map of the O6 Pipeline, areas that are impacted by pipeline construction activities that require rehabilitation interventions.

1.1.3.1. SEEDING MIXTURE

Rand Water EMS Nursery has to date successfully used a seeding mixture of *Eragrostis teff*, *Digitaria smutsii*, *Chloris gayana*, *Melinis repens* and *Cynodon dactylon*. The mixture ensures adequate variety and blends in well with surrounding grass species. This mixture is recommended yet remains open to further species being added. Should the Contractor wish to recommend additional/replacement indigenous grass species, these must be specified in the tender/quotation together with the Contractors' recommended application rate. Preference will be given to improved seeding mixtures recommended by the Contractor. The mix must mirror the existing grass varieties; the final varieties mix should be approved by EMS.

1.1.3.2. SEEDING RATE ANTICIPATED PERCENTAGE COVER

It is envisaged that with the above-mentioned seeding mixture and at the given application rate, more than 95% (ninety-five percent) cover can be - obtained by the end of the second growing season. The Contractor shall ensure then that no single area 0.5 m² or larger be left uncovered with a total uncovered area not more than 5% (five percent) over the entire scarred area. Should these conditions not be acceptable to a Contractor, it must be stipulated in writing together with the quote for grass seeding and the Contractors' guaranteed percentage cover. The minimum height of the grass should be 20cm; the contractor must remain accountable until this standard is recognised.

1.1.3.3 APPLICATION OF FERTILIZERS

It is a standard requirement of Rand Water that any contractor responsible for the application of fertilizers must submit proof of registration and certification as a Pest Control Operator (PCO) in terms of the *Fertilizers, Farm Feeds, Agricultural Remedies and Stock Remedies Act, No. 36 of 1947 (as amended)*. Proof of registration must accompany the quotation. Failure to comply will render the quotation invalid, as Rand Water would otherwise be considered to be contravening the law.

The Contractor shall supply a selection of fertilizers, deliver them to site, and apply them under the supervision of the Environmentalist: Rehabilitation.

A Type of Fertilizer

- Superphosphates must be applied during seeding or planting.
- 2:3:2 fertilizer must be applied as follow-up to establish vegetation cover.
- If the site is already established, alternative fertilizers such as 3:2:1, 3:1:5, or 4:1:1 may be applied.
- Soil samples and fertilizer recommendations may be requested by the Environmentalist: Rehabilitation. Costs for such analysis will be borne by Rand Water.

B Application Rate

- Superphosphate and 2:3:2 must be applied at a rate of 5 kg per 100 m² across the scarred area, at specified intervals.
- Where alternative fertilizers are supplied, application rates and intervals will be determined by the EMS representative.
- Chicken manure may also be applied where appropriate.

C Fertilizer Intervals

- Superphosphate must be applied at the time of seeding.
- Follow-up fertilization shall be conducted at intervals specified by the EMS representative to ensure proper vegetation establishment.

1.1.3.4. MULCHING OF SEEDED AREA

On completion of sowing the seed, the site may also be covered with a very light layer of veld grass or chipped materials as mulch. This mulch layer shall be no thicker than 2-3mm deep.

1.1.3.5. WATERING OF GRASS

The installation of a temporary irrigation is not feasible along the road; the contractor will be responsible for providing irrigation as required until the first growing season to ensure the 95% cover as required. Watering of the site should be done four times a month for a period of 3 months.

1.1.3.6. MAINTENANCE OF THE SITE

- The site will be maintained until the first growing season ending February 2026 and/or grass is 20cm in height.
- Keeping adequate barricading up, to prevent pedestrian traffic from damaging the newly germinated grass.
- The contractor should continuously monitor the site and correct when minimal damage occurs on the germinating grass.
- Adequate watering of the area to ensure optimum growth.
- Keeping adequate barricading up, to prevent pedestrian traffic from damaging the newly germinated grass.
- Payment will be linked with rate of application and growth percentage of seeding, germination and 20cm height.
- Seeding payment will be done in parts i.e., during germination and when growth is 20cm.
- Remaining payment will be made with 95% cover and grass with average height of 20cm.
- Maintenance of the seeded area shall be undertaken on weekly basis for three months.

1.1.3.7. WEEDING

All grassed areas must be kept free of weeds, always until the site is handed over. Either by means of physical or chemical weeding. Where chemical weeding is used, the product to be used must first be discussed with the Environmental Control Officer (ECO). Staff applying chemicals must be fully trained, competent, and certified. The MSDS sheets of chemicals must be kept on site at all the times. The appointed contractor will be requested to have the PCO License. Weeding must include invasive alien plant species.

1.1.3.8. RESEEDING

The Contractor shall consistently monitor the germination and the growth of the seedlings. Should there be or the identify bare or die back areas, the Contractor shall take immediate measures to have those areas reseeded or plant plugs at his cost within 14 days from the date of notification by the Environmentalist Rehabilitation.

1.1.3.9. SUPPLY AND INSTALLATION OF GEOJUTE (SOIL SAVER)

The contractor shall be responsible for the supply and installation of Geojute erosion control blankets to protect embankments from soil erosion and prevent seed wash-away during the rehabilitation activities.

Scope of Work

- **Site Preparation:**
 - The soil surface shall be prepared by raking to remove clods, large stones, and debris.
 - The soil must be loosely prepared without compaction to promote seed germination.
 - Fertilizer shall be applied evenly prior to seeding, following agronomic recommendations.
- **Seeding and Mulching:**
 - Seeds and mulch shall be evenly distributed over the prepared soil surface.
- **Geojute Installation:**
 - The contractor shall supply and install biodegradable Geojute blankets over

- seeded areas on the embankment, specifically at the ridge section.
- The Geojute acts as a surface stabilizer to minimize soil erosion and prevent seed displacement by wind or water.
- The area requiring Geojute installation is approximately 100 m x 10 m (10,000 m²).
- The Geojute product is manufactured from woven natural jute fibers forming a mesh with an aperture of approximately 10 mm x 10 mm.
- Geojute blankets shall be secured by staking at 1 m intervals across the entire surface.
- **Product Characteristics:**
 - Geojute is biodegradable and will naturally decompose into organic mulch over approximately two years.
 - By this time, the planted vegetation should be fully established, securing the soil with its root system.



Composition		100% Jute fibre	
Mass	Nominal	g/m ²	292
Water Retention	Nominal	g/m ²	1 300
Yarn Diameter	Nominal	mm	2-4
Open Area	Nominal	%	65-70
Aperture Size	Nominal	mm	10x10
Roll Width	Nominal	M	1.22
Roll Length	Nominal	m	100

1.1.4. INSTALLATION OF LIFFOSTEIN BLOCKS

This method statement covers the procedures and quality controls required for the safe and effective installation of Löffelstein retaining wall blocks for the purpose of slope retention, erosion control, and landscaping.

Materials & Equipment

Materials

- Löffelstein blocks (type L300, L500, etc.)
- Geogrid (as specified by engineer)

- Concrete for foundation
- G5/G6 fill material
- Plant-supportive soil for block pockets
- Drainage aggregate (19mm ballast)
- Geo-fabric

Equipment

- Excavator
- Plate compactor (non-vibratory near wall)
- String lines and spirit levels
- Wheelbarrows and shovels
- Laser level or dumpy level
- Hand tools

Methodology

Site Preparation

- Establish wall alignment, levels, and height based on engineer's drawings.
- Excavate to required depth:
 - Minimum: $\frac{1}{2}$ height of first block + base layer.
- Remove unsuitable material and replace with G5 or G6 fill, compacted in 150mm layers to 93% MOD AASHTO.
- Prepare and pour a concrete foundation where required by design.

First Course Installation

- Lay the first course of blocks directly on the foundation.
- Ensure minimum of two rows partially buried below ground level for anchorage.
- Check and adjust level using a spirit level and string line for straightness.

Laying of Subsequent Courses

- Stagger joints between blocks to form a natural interlock.
- Maintain wall batter of 75° using a plumb bob or pre-set jigs.
- Use geogrid reinforcement:
 - For walls >2m or where specified.
 - Install between every second course, extending $\geq 800\text{mm}$ behind the wall.
- Fill block pockets with plant-supportive soil.
- Compact backfill behind each course in layers.
 - Avoid mechanical compaction within 300mm of wall face.

Drainage Installation

- Install a ballast drain wrapped in geo-fabric directly behind the wall.
- Connect to site-wide stormwater system or weep holes as per engineer's design.
- Ensure drain remains unobstructed during construction.

Curved Wall Construction

- For curved alignments, adhere to manufacturer's radius limits:
 - L300 blocks: min radius 2m
 - L500 blocks: min radius 3m
- Use cutting tools if required, under supervision.

Quality Control

- Ensure all blocks are level and properly aligned.
- Verify compaction using nuclear density gauge or other approved methods.
- Monitor geogrid placement and extension.
- Conduct periodic site inspections with the project engineer.

Health & Safety

- All works to comply with the project Health & Safety Plan and local regulations.

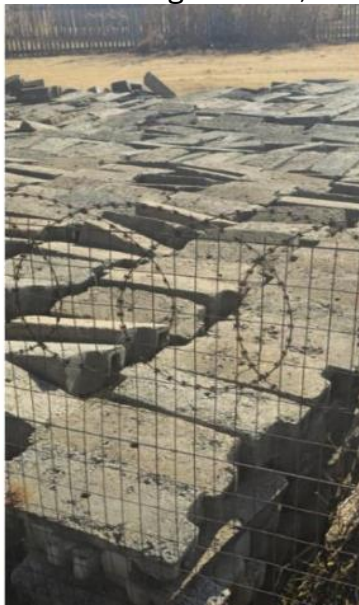
- PPE to be worn at all times (hard hats, gloves, safety boots, etc.).
- Secure working area to prevent unauthorized access.
- Manual handling procedures to be followed when lifting blocks.
- Equipment operators must be certified and trained.

Environmental Considerations

- Use indigenous/low-maintenance plants in block pockets.
- Minimize soil disturbance outside working area.
- Prevent siltation and runoff with temporary barriers where necessary.

Completion & Handover

- Final inspection with client/engineer.
- Remove excess material and restore surrounding areas.
- Provide as-built drawings, maintenance guidelines, and plant schedules where required.



Pictures of the Loffestein Blocks available for collection and example of the already installed.

1.1.5. Supply and Installation of Kikuyu Lawn Sods

The contractor shall be responsible for the supply, delivery, preparation, installation, and maintenance of Grade A Kikuyu lawn sods in accordance with the following requirements:

a. Supply and Delivery

- The contractor shall supply and deliver Grade A Kikuyu lawn sods, harvested no more than one day prior to installation to ensure freshness and viability.

b. Soil Preparation

- A minimum 2 cm layer of compost shall be applied and worked into the topsoil across the prepared area.
- Final grading must ensure that once the lawn is laid, it matches the existing surrounding lawn levels seamlessly.
- All rubble, stones, and foreign objects must be removed and disposed of at an approved dumping site.

- Proof of legal disposal must be submitted to Rand Water.

c. Lawn Installation

- Lawn sods must be laid tightly together, with no gaps between individual pieces.
- Butter the edges of each sod to ensure a tight fit and fill any small gaps with compost or approved lawn dressing.
- The installed lawn must form an even, continuous carpet.
- The surface must be smooth, level, and free of undulations.

d. Rolling and Watering

- After laying, the lawn shall be rolled using a heavy-duty lawn roller to ensure proper contact between sod and soil.
- Watering must be carried out immediately after rolling, thoroughly soaking the lawn without causing surface runoff or mud formation.

e. Weed-Free Condition

- The lawn must be free of any weeds upon completion of installation and throughout the maintenance period.

f. Final Presentation and Maintenance

- The contractor shall ensure the lawn is cut, trimmed, and neatly presented once, prior to final handover.
- The site will only be handed over after a maintenance period of three (3) months, during which:
 - The contractor shall ensure regular watering, cutting, and general lawn care.
 - The grass must be well-rooted and established at the time of handover.

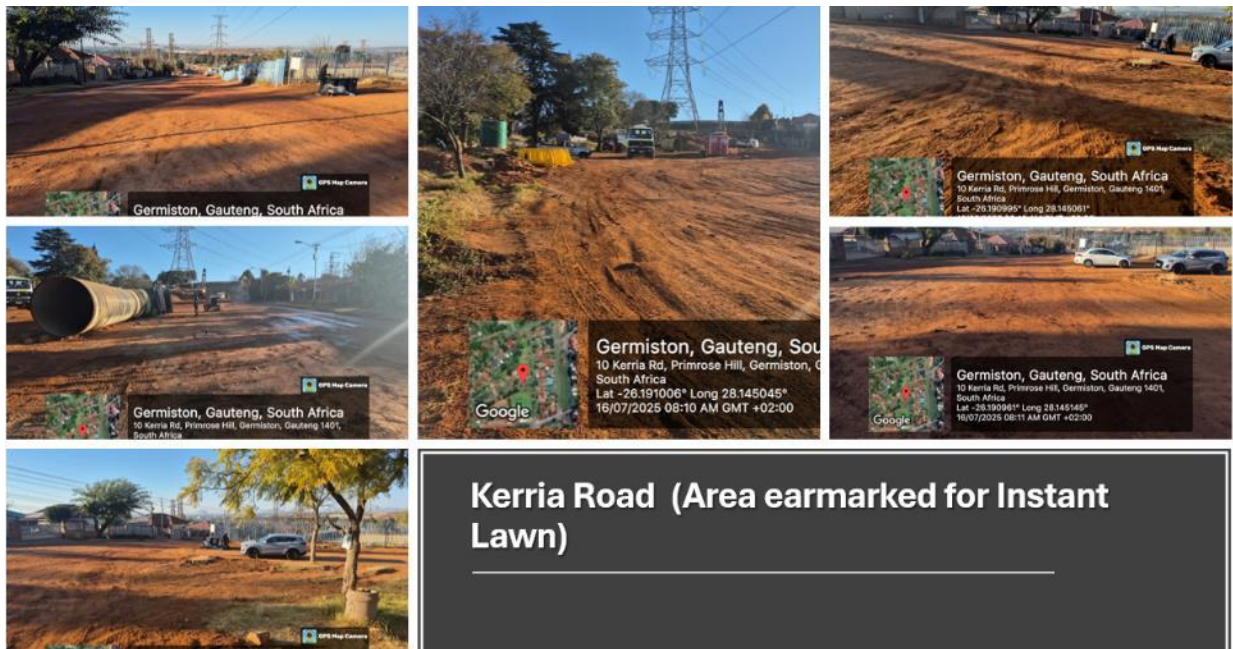


Figure depicts the area that requires to be installed with the instant lawn and the following property respectively.

1.1.5.1. FERTILIZING

⊕ Applications of fertilizer shall be made and must be distributed evenly and irrigated afterwards.

1.1.5.2. FERTILIZING INTERVALS:

⊕ Superphosphate must be applied when seeding.

1.1.5.3. FOUR WEEKS AFTER SEEDING

⊕ A follow up fertilization with 2:3:2 must be applied, 5kg/100m².

1.1.5.4. WATERING OF THE LAWNED AREA

The lawned area should be watered at least twice a week for a period of 3 months, this watering will aid in grass growing in work. The installation of temporary irrigation is not feasible along the road; the contractor will be responsible for providing irrigation as required until the second growing season. The contractor shall ensure that there is adequate watering of the lawned area. Watering should be at least twice a month for three months.

1.1.5.5. MAINTENANCE OF THE SITE

- Keeping adequate barricading up, to prevent pedestrian traffic from damaging the newly planted lawn.
- The contractor should continuously monitor the site and correct when minimal damage occurs on the newly planted lawn.
- Adequate watering of the area to ensure optimum growth.
- Maintenance of the lawn area shall be undertaken twice a week three months.

1.1.6. DIRECTIONS TO SITE

The site is situated in Alberton to Germiston, the directions to the site will be shown during the clarification meeting. Coordinates:

26°18'14.95" S

26°15'41.60" S

26°11'22.71" S

28°08'26.64" E

28°06'29.93" E

28°08'42.90" E



Figure: Depicts the Aerial map of the O6 Pipeline servitude within the Marais Viljoen School and Meyersdal Eco Estate.

1.1.7. THE CONTRACTOR MUST

- Be fully conversant with the scope
- Be fully conversant with all environmental legislation and ensure compliance.
- Ensure that all the environmental and safety specifications contained within scope of work are adhered to on site.
- Regularly liaise with the Environmentalist Rehabilitation and Manager Environmental Rehabilitation on matters relating to the environment.
- Confine activities to the demarcated rehabilitation site.
- Ensure that safety comes first in all activities.
- That all requirements of the tender are adhered to and addressed.

1.1.8. STANDARDS THAT APPLY

- Returnable documents
- Agreements and contract data
- Pricing data
- Schedules
- Water Use license number:08/C22BC1/3508,
- Environmental Authorisation: 14/12/16/3/3/1/626 and:
- Environmental Management Plan

1.1.9. DELIVERABLES

- Site to be 95% covered in veld grass as per specification and at a height of 20cm.
- Handover will be done once the standard is met.
- Grass seeded.
- Site should be weed free.

- Watering of the grassed.
- Well germinating grass.
- Installed Liffostein Blocks.
- Installed of Instant Lawn.
- Installed Geojute.

1.1.10. TO BE SUPPLIED BY THE CONTRACTOR

- Staff who are fully trained and experienced and comply with all standards set in document.
- Workers who comply with all standards set in document.
- All tools and materials.
- Documents as requested in schedules.
- Photographic progress should be taken and kept throughout project.
- Photographs are to be done on digital format accompanied with one print out.
- Development of Biweekly and Monthly progress report through the project life cycle.
- Fertilizers (organic and inorganic)
- Seeds
- Geojute (Soil saver)
- Instant Lawn
- Water/ Irrigation
- Transport for collection of Loffestein

1.1.11. LABOUR AND EQUIPMENT

The Contractor shall be liable for the provision of labour, including all related costs, the provision of all tools and equipment required, the maintenance and repair of all tools, equipment and vehicles. Competency certificates should be available for all contract staff working on site.

1.1.12. Labour

The Contractor is to supply a suitable human resource capacity responsible for project management, staff's physical safety, disciplinary and other requirements. Staff will have to undergo induction training via Rand Water SHEQ Officer. Medical certificates of fitness from an Occupational doctor should be available for all employees working on this site.

1.1.13. Compliance to legislative requirements includes the following.

- Safety, health and environmental compliance
- Compliance to Authorisation and Environmental management plan.
- Compile and submission of SHE
- Rand Water training induction
- Medical certificates of fitness
- Project Management and other contractual obligations.

1.1.14. Human resource capacity required as minimum:

- 1 Project Manager
- 1 Site supervisor
- 1 Safety representative
- 1 First Aider
- Minimum of 10 Staff

1.1.15. Equipment

The plant and equipment etc used shall satisfy the requirements of the OHS Act or any amendments thereof, also regulation as may be framed there under at any time up to and including the date of completion of the Work under this contract. All maintenance of tools and equipment will take place off site or undertaken on site in an environmentally acceptable manner in order to prevent oil/lubricant and diesel/petrol spillages on site. All equipment as specified in the tender document must always be available and good working condition.

The following are minimum essential requirements for the work.

- Relevant tools (Rakes, shovels, spades, Ripper machine to mentioned few)
- 1 Water bowser truck – Watering/Irrigation
- 1x Gazebo
- 1 Table and 10 chairs
- Ablution facilities (Toilet)
- All other relevant tools and equipment that will enable the work execution.

1.1.16. Work Program

The tenderer shall submit the proposed start and completion dates. The work is expected to be completed within the period of 3 months excluding the maintenance of the site that should be approximately 3 months.

1.1.17. TO BE SUPPLIED BY RAND WATER

- ⊖ Tender document and order for work
- ⊖ Inspection of work and acceptance of receipt
- ⊖ Payment
- ⊖ Water Use license number:08/C22BC1/3508,
- ⊖ Environmental Authorisation: 14/12/16/3/3/1/626 and:
- ⊖ Environmental Management Plan.