



Knysna

Municipality Munisipaliteit uMasipala

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MYOLI BEACH ACCESS; MAINTENANCE MANAGEMENT PLAN

Myoli Beach, Sedgefield

Details

Prepared for: Knysna Municipality

Prepared by: Knysna Municipality Environmental Management Department

Reviewed by: Eco Route Environmental Consultancy and South African National Parks

Authorized by: Department of Environmental Affairs

For implementation by: Knysna Municipality

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Acronyms

ECO	Environmental Control Officer
ICMA	National Environmental Management: Integrated Coastal Management Act 24 of 2008
KM	Knysna Municipality
MMP	Maintenance Management Plan
NEMA	National Environmental Management Act 107 of 1998
NEMPA	National Environmental Management: Protected Areas Act 57 of 2003
SANParks	South African National Parks

1. Introduction

The Knysna Municipality (KM) has compiled a Maintenance Management Plan (MMP), reviewed by Eco Route Environmental Consultancy and South African National Parks (SANParks) to ensure equitable access to coastal public property at Myoli Beach, Sedgefield. Historical management of the public access point has been undertaken to ensure vehicular access to the beach for people with disabilities, emergency vehicles and SANParks. The prevalent south-westerly winds experienced in the region, periodically result in the inundation of sand over municipal infrastructure and historically this has resulted in the need to periodically remove sand blown by these winds. Given the frequent interventions and maintenance activities that are required to maintain beach access, getting a MMP approved for each intervention on an ad hoc basis is not pragmatic. A more comprehensive MMP has been prepared in order to enable KM to conduct its beach access maintenance more efficiently whilst remaining compliant with the requirements of the National Environmental Management Act 107 of 1998 (NEMA).

2. Locality

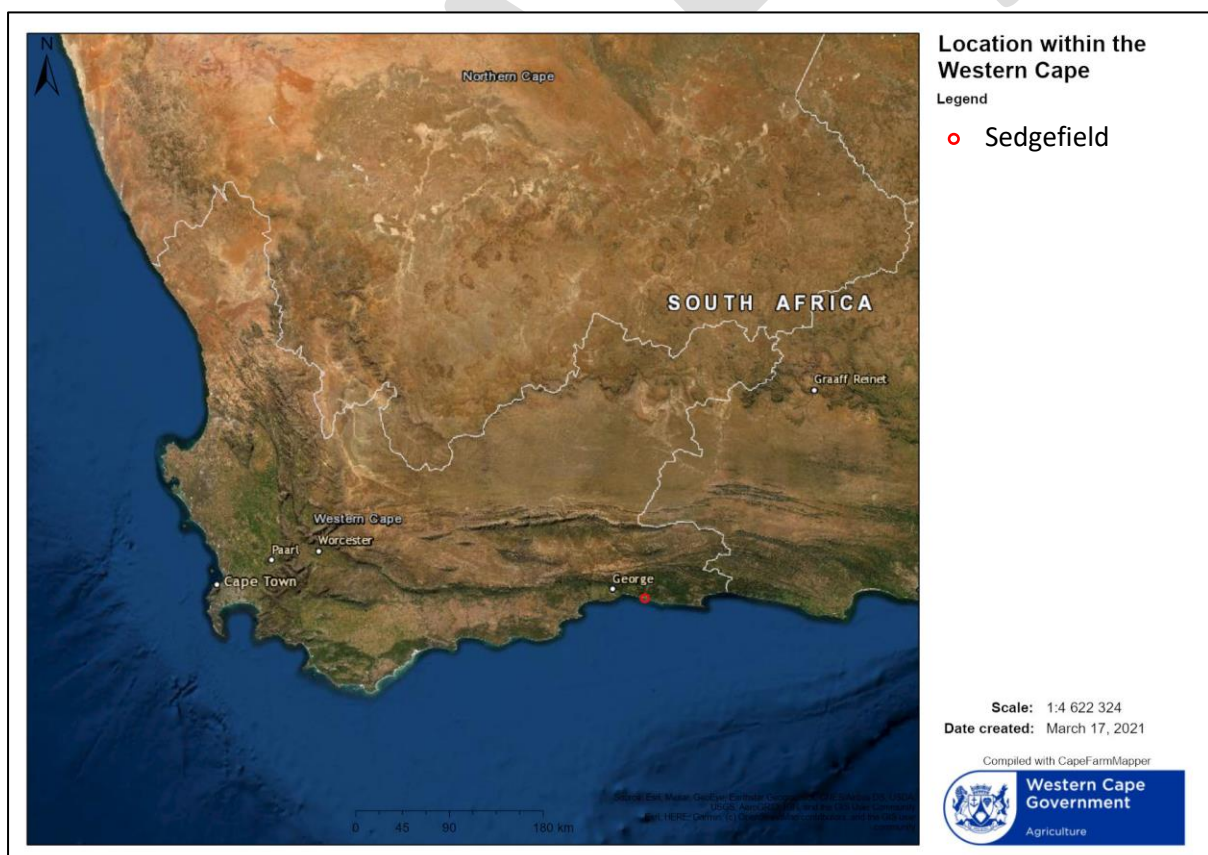


Figure 1 Location Map of the town of Sedgefield within the Western Cape Province

3. Site Description

Myoli Beach is located within the Knysna Municipal Area, in the town of Sedgefield (Figures 1 and 2). The site is situated within erven 1692 and 3517, both of which are vested in the KM. The site consists of a parking area and a portion of coastal public property. The coastal public property consists of a large fore dune on the south-south-western boundary of the parking area, between the fore dune and the high water mark embryo and hummock dunes are present.

The site is the only vehicular access point to the section of coastline east of the Swartvlei Estuary and west of the Goukamma Estuary, a coastal stretch of 15km. The site is situated at the end of Galjoen street and is bordered by a restaurant, NSRI boathouse, ablution facilities, desalination plant and cleared recreational area (Figure 3). The main areas that require regular maintenance are indicated in Figure 4. There are a total of 5 access points to pedestrians in Sedgefield (Figure 7), with the only vehicular access point at Myoli Beach.

Historical research shows that the south-westerly winds are dominant throughout the year (Whitfield, 1983) and these heavy south-westerly conditions are primarily responsible for longshore sand transport along the coastline at the site (Kok, 1986). Historical aerial photographs show the south-westerly transport of sand over the site prior to any development (Figures 5 and 6). The prevalence of the south-westerly winds has remained unchanged, but it is expected that the dune became vegetated with the introduction of the invasive environmental weed, *Acacia cyclops* (Rooikrans) to stabilise the dune for development and prevent the shifting of the dune. The deliberate introduction of *A.cyclops* coupled with its invasiveness and ability to thrive in sandy, coastal habitats would have resulted in the vegetation of the original dune.

Subsequent urban, residential development within the area has resulted in the need to periodically remove sand blown by these south-westerly winds to prevent the inundation of KM infrastructure.

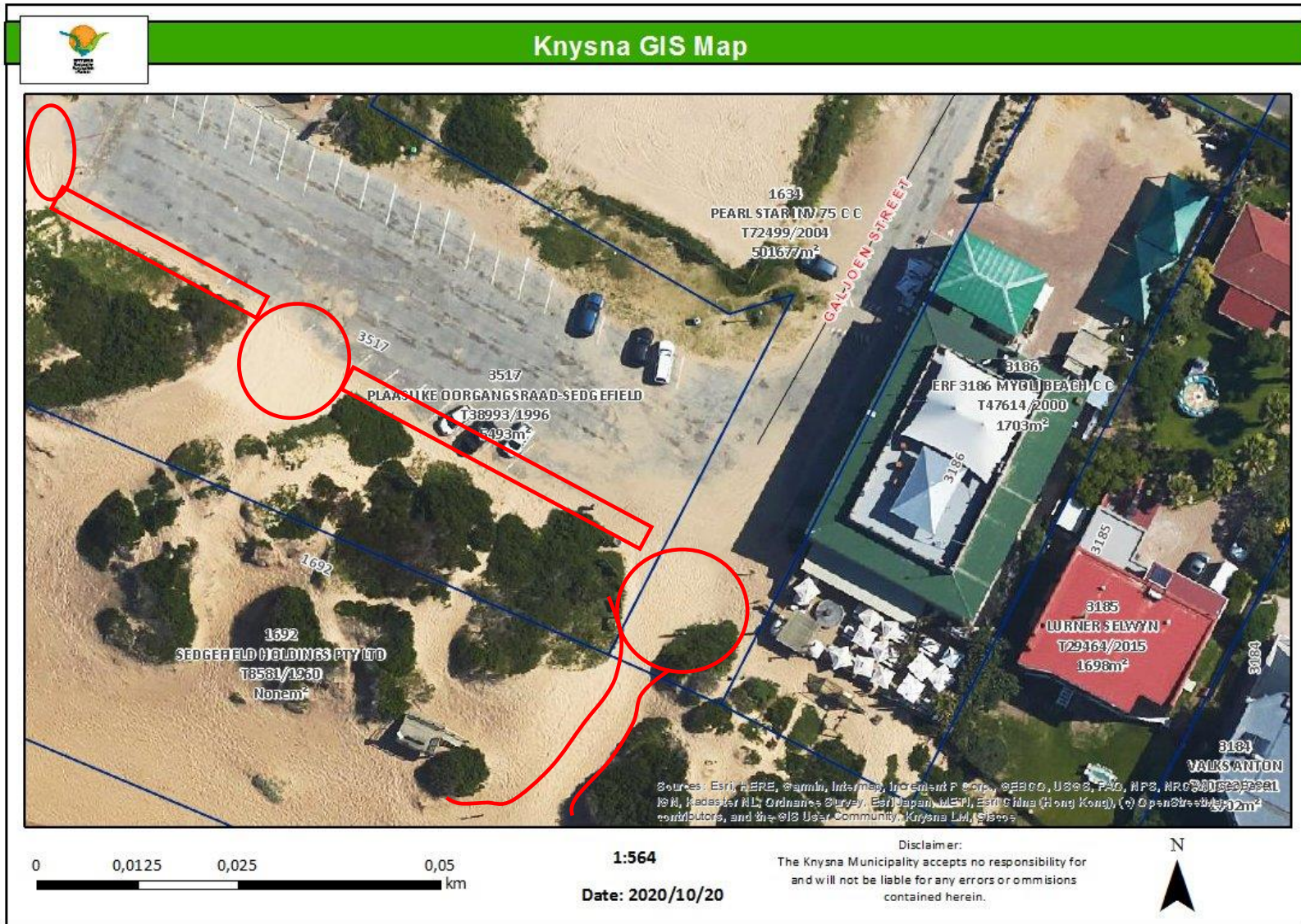


Figure 4 Overview of areas that require maintenance. Any vegetated area outside these demarcations will be no-go areas for maintenance work.



Figure 5 Aerial photo circa 1930's indicating prevalence of dunes and windblown sand at the site. Source: South African National Parks, Wilderness Lakes Section of the Garden Route National Park.



Figure 6 Aerial photograph from 1958, with prevalence of windblown sand as a result of the south-westerly evident. Source Figure 6c of Whitfield, 1983

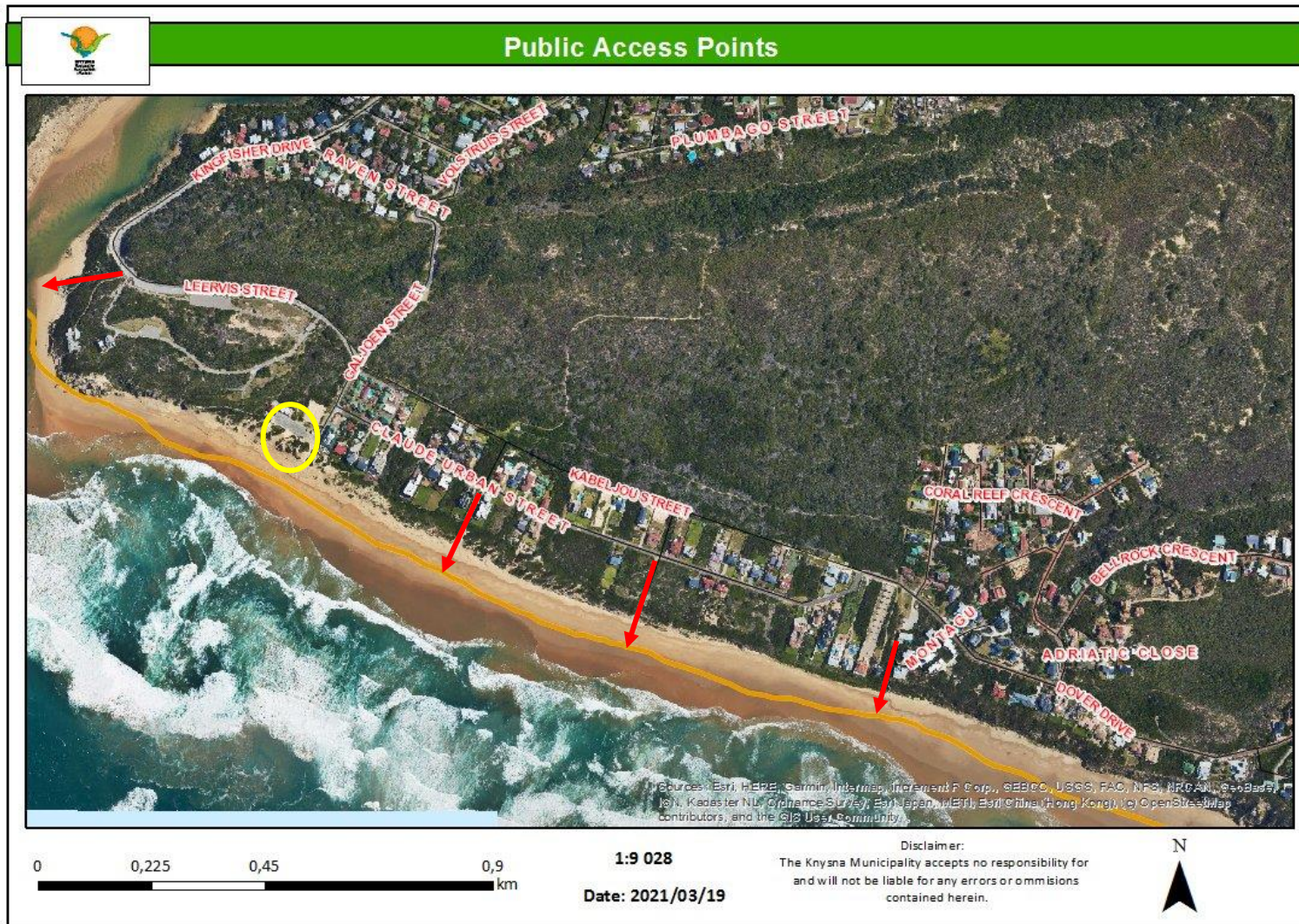


Figure 7 Existing public access points to the beach in Sedgefield. The RED arrows indicate existing pedestrian access points provided by the Knysna Municipality. The yellow circle is the Myoli Beach Access Point.

4. Aims and Objectives of this MMP

This MMP was compiled with the aim of identifying the management recommendations for the successful rehabilitation of the existing dune system at Myoli Beach, and the maintenance of the existing access point. The MMP aims to undertake these management and maintenance activities effectively, sensitively and in accordance with the relevant legislation.

The MMP has the following objectives:

- To maintain such existing access that recognises the environmental sensitivities on site and structure such maintenance work to avoid unnecessary disturbance and impact.
- To minimise management commitments by using soft maintenance options.
- To prevent the inland encroachment of the fore dune by stabilising the existing blow-out, to reduce the impacts of wind-blown sand into the Myoli Beach parking area.
- To facilitate safe public and vehicular access.
- To protect the existing fore dune.

5. Rationale for this MMP

Historical urban development in the Myoli Beach area has heavily altered the normal functionality of the dune system by effectively creating a barrier to the natural movement. Given the impracticality of the retreat of infrastructure within this area, the system now requires an integrated management approach that stabilises dunes and continues to provide equitable access to the beach.

Knysna Municipality has historically managed the entrance to Myoli beach in an effort to enable vehicular access for emergency vehicles, SANParks and for equitable access to the beach for pedestrians with and without disabilities. In doing so the municipality triggered activities 18 and 19 of Listing notice one described in the National Environmental Management Act 107 of 1998. However, maintenance of the site commenced when the parking area was constructed prior to the promulgation of the NEMA.

The town of Sedgefield is a popular tourist destination and the site and its surrounds are densely developed. The site is the only vehicular access point along a 15km stretch of coastline in addition to being the only access point between two river mouths. Access to the beach has to be maintained as a service to the public and to ensure access for emergency vehicles, maintenance vehicle used by SANParks and KM.

Dune systems occupy the transitional space between land and sea masses and vegetation cover plays a crucial role in dune development, mainly by trapping and depositing sand particles by reducing wind energy (The City of Cape Town's Transport and Urban Development Authority, 2017). The reduction in vegetation on the fore dune as a result of excessive trampling through the dune area results in the fore dune no longer being effective at trapping sand and the dune advances landward into the parking area where it is undesired.

By instituting maintenance actions that promote the trapping and depositing on sand on the fore dune it is expected that KM can slow the inundation of sand into the parking area.

6. Description of Environmental Settings and Sensitivities

The site is found within an urban area, based on historical records within the Knysna Municipality it has been used as an access point and parking area prior to 1998. The southern boundary of the site borders the Wilderness Section of the Garden Route National Park. The northern and western boundaries consist of a Critical Biodiversity Area found within a private residential estate and nature reserve. The eastern boundary is a continuation of the residential area.



Figure 8 Proximity of the site to Protected Areas and Critical Biodiversity Areas

The site does not fall within a protected area or critical biodiversity area. No species of concern or with any threat status or level of protection are found within the site. A species list of plants found on site is provided below:

Arctotheca populifolia

Tetragonia decumbens

Acacia Cyclops

7. Legislative Requirements

7.1 National Environmental Management Act 107 of 1998

Maintenance is defined in Listing notice one of NEMA as:

“...actions performed to keep a structure or system functioning or in service on the same location, capacity and footprint”.

In this instance the ‘service’ is equitable access to the beach, the ‘footprint’ is the site described above which includes the parking lot and coastal public property (see Figure 3). The site is required to perform numerous essential management and emergency services; (1) access for large machinery for the breaching of Swartvlei estuary by SANParks (2) access for emergency vehicles of the National Sea Rescue Institute and (3) access for municipal vehicles for maintenance of the desalination well points on the beach.

All probable Identified Activities as listed in the National Environmental Management Act Listing Notices, GN R983, R984 and R985. The table below indicates all identified activities with the proposed maintenance on site. The table provides a description of the activity and the reason why /why not the activity is not applicable to the proposed maintenance work.

Table 1 Identified activities applicable to the proposed maintenance on site

Activity No.	Relevant Identified Activity in terms of Listing Notice 1 (GN R983)	Portion of the Proposed Activity to which the applicable Identified Activity relates
18	The planting of vegetation or placing of any material on dunes or exposed sand surfaces of more than 10 square metres, within the littoral active zone, for the purpose of preventing the free movement of sand, erosion or accretion, excluding where (i) the planting of vegetation or placement of material relates to restoration and maintenance of indigenous coastal vegetation undertaken in accordance with a maintenance management plan	This identified activity is not triggered as this document will act as the maintenance management plan for the maintenance of indigenous coastal vegetation.
19A	The infilling or depositing of any material of more than 5 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 5 cubic metres from (i) the seashore (ii) the littoral active zone, an estuary or a distance of 100 metres inland of the high-water mark of the sea or an estuary, which ever distance is greater – but excluding where such infilling, dredging, excavation, removal or moving (g) is for maintenance purposes undertaken in accordance with a maintenance management plan	The proposed maintenance will result in the movement of more than 5 cubic metres of sand from within 100m of the sea. This identified activity will not be triggered as the exclusion to undertake the activity in accordance with a maintenance management plan is applicable.

7.2 Occupational Health and Safety Act 85 of 1993

The Act provides for the health and safety of persons at work and for the health and safety of persons in connection with the use of plant and machinery; the protection of persons other than persons at work against hazards to health and safety arising out of or in connection with the activities of persons at work. It is the Applicants responsibility to ensure that all contractors and employees are aware of the obligations in terms of this Act.

7.3 National Environmental Management: Integrated Coastal Management Act 24 of 2008

The maintenance of the site aligns with the objectives of National Environmental Management: Integrated Coastal Management Act 24 of 2008 (ICMA). Maintenance is necessary to ensure equitable access to coastal public property for members of the public to use and enjoy it, specifically those with physical disabilities. This aligns with the equitable access to coastal public property specified by ICMA, the maintenance of the vehicular access point will ensure that the use of the natural resource, namely the beach, is socially justifiable. Using this MMP to guide the method and scope of maintenance work we can ensure that the use of the natural resource will be ecologically sustainable.

7.4 National Environmental Management: Protected Areas Act 57 of 2003

An objective of the National Environmental Management: Protected Areas Act 57 of 2003 (NEMPA) Act is to provide for co-operative governance in the management of protected areas. The site borders the Wilderness Section of the Garden Route National Park and in the interest of co-operative governance in the management of protected areas it is imperative that an MMP be in place which accurately anticipates any impacts on the adjacent protected areas.

The maintenance of the access route will ensure machinery necessary for the manipulation of the estuary mouth, under the management of SANParks, are able to reach the mouth. The manipulation is needed to assist in ensuring the sustained supply of environmental goods and services within the Swartvlei Estuary.

Maintenance of parking area and access route will ensure augmentation of a nature-based tourist destination, namely the Garden Route National Park. Access will also ensure certain rights and entitlements will be respected due to the provision of essential emergency services as set out in NEMPA Chapter 4 Section 53 (1) (b).

8. Scope of the MMP

This MMP has been prepared to allow for the immediate and on-going management of the entrance to Myoli beach while remaining compliant with the provisions of NEMA. Windblown sand brought over the dune by the prevailing south-westerly wind has been removed on an annual basis and deposited on the access route to the beach. A Beach and Dune Management Plan was already developed as far back as 1993 by the CSIR (CSIR Report EMAS-C93005) to control the windblown sand.

The objective of the MMP is to prevent the inland encroachment of the fore dune by stabilising the existing blow-out but also to prevent any further blow-outs and protect the existing fore dune. Encroachment occurs through blow-outs where sand blows over the fore dunes and accumulates on the landward side, which will pose a threat to any development located downwind of the shoreline (Associates, 2015).

The MMP describes and guides the management and maintenance measures that will be followed in order to prevent unnecessary environmental damage and to ensure the defined operation of maintenance activities during all phases of the project, namely:

- Planning and Design Phase
- Operational Phase

9. Public Participation

TO BE COMPLETED BY CONSULTANT

10. Phases of the Proposed Maintenance

10.1 Environmental Impact: Planning Phase

Update Maintenance Management Plan	
Potential Impact	Deviations from proposed maintenance work could result in: <ul style="list-style-type: none">• Non-compliance with the approved MMP• Triggering an identified activity• A change in the severity of the impacts assessed in this MMP
Impact Management Outcome	Operations are compliant with the MMP
Mitigation Measures	<ul style="list-style-type: none">• MMP must be amended if required• Amendments to the MMP must be approved by the Competent Authority
Performance Indicators	An updated MMP that reflects the changes in maintenance work, approved by the Competent Authority

Pre-Maintenance site inspection	
Potential Impact	<ul style="list-style-type: none"> • Destruction of nesting/breeding sites of sea birds • Destruction of established dune vegetation communities
Impact Management Outcome	All species impacted by maintenance activities are successfully relocated
Mitigation Measures	<ul style="list-style-type: none"> • A search and rescue operation must be undertaken prior to the commencement of activities
Performance Indicators	Successful establishment of rescued dune vegetation

Location of vehicular and equipment storage facility	
Potential Impact	<ul style="list-style-type: none"> • Equipment could block access to the beach • Potential for the groundwater / soil pollution if leaks occur
Impact Management Outcome	All vehicles and equipment stored in a designated area with suitable spill protection available
Mitigation Measures	<ul style="list-style-type: none"> • Pre-determined safe and secure storage area • Place drip trays below vehicles • Determine possible spill/leak risks from all equipment and take necessary preventative measure • Have necessary safety equipment on site
Performance Indicators	No spills or leaks within the working or storage area over the duration of maintenance work

10.2 Environmental Impact: Operational Phase

Site demarcation	
Potential Impact	Failure to demarcate the working areas may result in an increased disturbance footprint
Impact Management Outcome	Maintenance activities will be restricted to within the designated areas (Fig. 4) and as a result no environmentally sensitive areas will be disturbed
Mitigation Measures	<ul style="list-style-type: none"> • All vegetated areas outside the working areas are to be considered no go areas (Fig. 4)
Performance Indicators	Working areas have been clearly demarcated by the ECO, and staff clearly instructed prior to maintenance activity commencing on site

Noise impact management	
Potential Impact	Noise will be generated during the undertaking of maintenance activities, which may be a nuisance to surrounding landowners
Impact Management Outcome	The surrounding landowners are not significantly impacted by the noise arising from construction activities
Mitigation Measures	<ul style="list-style-type: none"> • Activities on site should be restricted to normal working hours • Machinery used on site is to be kept in good working order • Loud music is not allowed on site
Performance Indicators	No noise complaints are received

Work on the fore dune	
Potential Impact	Disturbance of fore dune due to pedestrian activity by workforce
Impact Management Outcome	Minimal disturbance area on fore dune
Mitigation Measures	<ul style="list-style-type: none"> • Access onto the fore dune can only be granted for specific works • Fore dune is a general no-go area
Performance Indicators	<ul style="list-style-type: none"> • No pedestrian tracks visible from works on the fore dune • No vegetation on fore dune, hummock dunes or embryo dunes disturbed

Alien clearing	
Potential Impact	Removal of alien vegetation can result in the de-stabilisation of the fore dune
Impact Management Outcome	Alien vegetation removed from the fore dune
Mitigation Measures	<ul style="list-style-type: none"> • Only ring barking of Rooikrans species undertaken
Performance Indicators	<ul style="list-style-type: none"> • No actively growing Rooikrans

Removal of old infrastructure	
Potential Impact	<ul style="list-style-type: none"> • Localised destabilisation of dune • Injury to the public if old infrastructure is exposed
Impact Management Outcome	All old, disused and exposed infrastructure removed and disposed at an authorised dumpsite
Mitigation Measures	<ul style="list-style-type: none"> • Only exposed sections of infrastructure to be removed • No structures to be dug out
Performance Indicators	Successful establishment of dune vegetation over areas previously containing infrastructure

Removal of foreign material	
Potential Impact	Foreign material such as concrete, tar and rock being deposited onto the beach
Impact Management Outcome	All rubble material transported to an authorised dumpsite
Mitigation Measures	Sand that is moved back on to the beach is first searched for rubble
Performance Indicators	No rubble evident on the sand moved back over on to the beach

11. Method Statement

The overall plan can be separated in two activities: (1) The maintenance of the access route to the beach and (2) the maintenance of the parking area.

11.1 Maintenance of Access Route:

The maintenance of the access route to the beach starts at the edge of the hardened surface of the parking lot and ends where the viewing deck is located (Figure 9). The entrance point will be maintained at a height of 1,86m and a width of 8.5m at its base and 6.5m at its crest, as indicated in Figures 10 and 11. The sand that needs to be moved with the aid of earth moving equipment, to be deposited on the south eastern slope of the dune and graded in a manner that facilitates access as far as possible. To ensure wheelchair access is possible the angle of the slope will need to be maintained at 1:5.

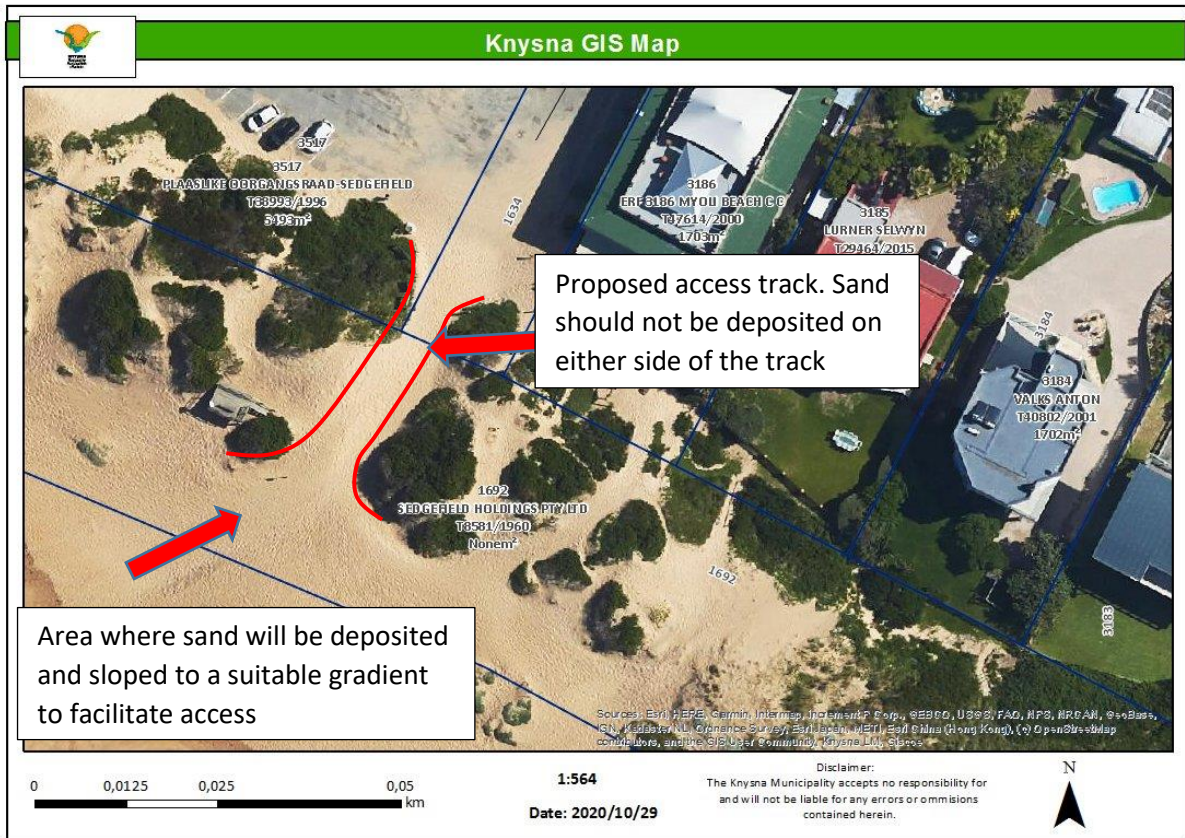


Figure 9 Specifications for the sand movement to maintain vehicular access



Figure 10 The proposed maintenance height, as viewed from the parking area.



Figure 11 Width at the base of the vehicular entrance

11.2 Maintenance of Parking Lot:

The objective of the MMP is to improve the buffering function of the fore dune to decrease the movement of wind-blown sand by (1) trapping the sand in existing blow outs (2) stimulating the development of fore dune hummocks.

The maintenance of the parking area concerns three sites where sand frequently accumulates: the entrance to the NSRI building; the length of the dune adjacent to the parking lot and the main entrance to the beach (Figure 4 and 12). All these sites will require the removal of sand to open up the parking bays and to clear the entrance to the beach. The accumulated sand will be placed in the same position as the sand that will be removed from the vehicular access.



Figure 12 Current sand inundation in the parking area. Photograph taken 6 April 2021.

It is proposed that the maintenance of the parking area include immediate maintenance activities listed below:

- The pushing, moving or relocation of sand back using earth moving equipment to the beach from the parking area to periodically uncover parking bays. The lines marked for parking bays should be visible.
- This only relates to sand that encroaches on the parking area, it does not refer to sand that is part of the functional dune.
- Where disturbance of the dune system will be incurred by transporting the sand to the beach, the sand may be deposited in the cleared recreational area adjacent to the parking lot in Figure 3.

To ensure the long-term maintenance of the parking area that will not require annual or even bi-annual removal of sand will need to be an adaptive approach to reduce the amount of sand that blows over into the parking area. These activities are described below:

- The erection of signage requesting pedestrians to only use the vehicular access point
- The erection of screening to block access from the parking area onto informal pedestrian's routes over the fore dune
- The packing of seed-less branches in horizontal windrows, perpendicular to the slope of the dune to trap wind-blown sand off the beach and encourage natural vegetation growth, as well as a deterrent for pedestrian access
- Branches are only packed in existing blow outs.
- The planting of rescued dune vegetation within the windrows

11.3 General Environmental Management

There are 4 general environmental management objectives that must be adhered to on site in order to provide guidance to ensure the general duty of care in terms of NEMA which rests with the KM. The four main objectives of this MMP are listed below:

- 1) Limitation of maintenance activities within the footprint of the site to avoid unnecessary environmental impacts;
- 2) Transparent communication between the parties involved in the utilisation of the site, namely SANParks, Knysna Municipality, Emergency Services and immediate neighbours;
- 3) Ensure all maintenance activities undertaken by machinery in good working order, that poses a low risk to the environment;
- 4) All individuals working on site be inducted on how to follow the general duty of care principles.

11.3.1 Transparency Between Parties

Various parties make use of the site and require access to Myloi Beach and will be involved during maintenance activities, these include:

- Knysna Municipality as the authority tasked with maintaining access to the beach in terms of ICMA;

- Subcontractor or other party should KM not be undertaking the maintenance activity themselves, supervision of these contractors remains the responsibility of KM;
- SANParks as an advisory role to ensure access is sufficient for their vehicular needs;

11.3.2 Environmental Awareness Plan

All workers working on the maintenance activities must undergo basic environmental training that informs staff of on-site waste management, available toilet facilities, vehicle operation and maintenance, fire control and restricted no-go areas. A detailed description of the various training specifications is given in Appendix B

11.4 Roles and Responsibilities

11.4.1 Responsibilities of Knysna Municipality

Act as Environmental Control Officer (ECO) during maintenance activities, ensure all specifications of this document are adhered to and work is supervised to ensure minimal damage to the environment.

It is the responsibility of KM to engage with SANParks prior to undertaking maintenance work and inform them of any planned maintenance activity.

11.4.2 Responsibilities of the contractor or implementing partner

Where a contractor or outside party conducts the works, the provisions contained within this document are binding on all parties including but not limited to the contractors, subcontractors, and personnel on the site. In the event of any unnecessary environmental damage caused by any action, process or negligence of any party, contractor, subcontractor or personnel under the contractor's employ or commission, it is the responsibility of the person who caused the damage to rectify and rehabilitate the affected environment at own cost, in line with the 'polluter pays' principle. The contractor is required to immediately inform the ECO of any infringements and/or instances of non-compliance with the document and/or instances of pollution or environmental degradation that occur as a result of any maintenance activities, including remediation activities.

11.4.3 Record keeping

The ECO will record all works carried out at the site including but not limited to the date, method of removal of sand, all parties involved and any incidents that occur during the implementation of the MMP. All records will be held with KM. The ECO is required to be on site daily for the duration of maintenance activities to supervise work on site.

11.4.4 Financial considerations

Knysna municipality will provide resources for the implementation of the MMP according to availability. Should SANParks or any other party undertake to implement the MMP on behalf of the municipality they will do so in accordance with the provisions stated herein.

12. Validity of the MMP

This document must be approved by the Department of Environmental Affairs prior to its implementation and the commencement of any maintenance activities. The MMP will be valid for five years from the date of approval.

Any deviations from the MMP over the five-year period should be reviewed by KM against the relevant environmental legislation. If necessary, approvals should be obtained prior to commencement of any activities which deviate from this MMP.

13. References

- Associates, L. B. (2015). *Updated Management Plan for the Pringle Bay beach and adjacent dune area. A revision of the 1988 CSIR Report C/SEA 8842*. Stellenbosch: Laurie Barwell.
- Kok, H. a. (1986). The influence of open and closed mouth phases on the marine fish fauna of the Swartvlei estuary. *South African Journal of Zoology* 21 (4), 309 - 315.
- The City of Cape Town's Transport and Urban Development Authority. (2017). *Maintenance Management Plan: Dunes and Beaches*. Cape Town: City of Cape Town.
- Whitfield, A. A. (1983). *Estuaries of the Cape, Report No. 22*. Stellenbosch: CSIR.

14. Appendices

APPENDIX A – CV of Author

Full name and surname of author	Philippa Kate Southey
Formal Qualifications	BSc Conservation Ecology, University of Stellenbosch (2005) MSC Zoology, Nelson Mandela University (2015)
Additional Qualifications	Short course in Urban Greening and Forestry, Rhodes University (2011) Training course on climate change and climate information systems, Nanjing University of Technology (2011) Introduction to macro and micro economics, Nelson Mandela University (2012)
Previous Document Submissions	Setback Line Application for Erf 295, Plettenberg Bay ECO reports for multiple projects, both infrastructure and residential developments Environmental Impact Report for Farm 560, Plettenberg Bay
Current Role	Senior Environmental Officer at Knysna Municipality since April 2020

APPENDIX B – Environmental Awareness Training Manual

Site Management
Stay within the boundaries of the site
Do not enter adjacent properties
Smoke only in designated areas, away from vehicles and equipment
Inform ECO immediately if any liquid waste has spilt

Waste Management on Site		
Type of Waste	Correct Disposal	Restrictions ❌
Refuse: food waste, food containers, cans, newspapers and packaging material	No dumping other than in the bins provided.	No burning of refuse
Construction Waste: Cement, rock, rubble etc.	To be discarded in skips located on site, alternatively stockpiled and taken by vehicle to an authorised dumpsite	Must not be discarded on site or buried on site. No waste to be used as fill material
Liquid Waste: Diesel, cooking oil, hydraulic fuel, other fuel and sewerage	Use ablution facilities Liquid waste should be recycled	Do not attempt to wash away spill material

Discoveries
Stop work immediately
Notify the ECO
This includes any cultural artefacts, contaminated water, pipes and any buried infrastructure

Fauna and Flora	
DO's	❌ DON'T's ❌
Wait for instruction before removing vegetation	Collect fire wood
Report any birds nests within the working area	Collect, catch or harm any animals or
	Fish during working hours