

Steenbok Nature Reserve Management Plan

1. Introduction

Steenbok Nature Park and Kingfisher Creek lie on the northern shores of Leisure Isle in the beautiful town of Knysna. These small but precious areas of water-edged nature have a wealth of flora and fauna, and an abundance of tranquility.



This photograph taken in 2005 provides an interesting reference point to how the area looked prior to development of the Reserve commenced in 2006

In a joint initiative by the Leisure Island Residents Association and the Knysna Municipality, these two areas have been combined to form one stretch of natural parkland, called Steenbok Nature Reserve (SNR),

Whilst SNR is correctly described as a nature reserve (i.e. land managed so as to preserve its flora, fauna, physical features, etc) it is not solely representative of local historical indigenous flora. Although it contains most beautiful areas of original salt marsh, coastal dune and coastal thicket vegetation and probably one of the finest areas of the former, it also contains an indigenous garden featuring flora representative of the Garden Route and the coastal regions of the Eastern Cape, tree copses featuring Knysna forest trees, small “cultivated” gardens mainly along Links Drive and *Imperata cylindrica* (Cotton grass) and *Pennisetum clandestinum*, (*Kikuyu*) prolific alien grasses not indigenous to the area. It is

also a paradise for dog walkers and fisher people, is a cricket and soccer pitch for children and a large alien tree (*Myoporum tenuifolium*) in the centre of the Park has been retained as a jungle gym for the younger kiddies.

2. History

Steenbok Island captured the attention of George Cearn in 1929 and to the great astonishment of many he set about turning the uninhabited little island into a place where people could live and build their homes, raise their families and retire in idyllic surroundings. He re-named it Leisure Isle, and set about turning his dream into reality. The Island was declared a township in November 1935 and he planted the avenue of gum trees along the Links Drive southern boundary of SNR.

During the 1930s Cearn built a nine-hole golf course on the site now known as Steenbok Park. Sand dunes were flattened and planted with grass, and fairways, bunkers and greens were laid out. In 1939 Knysna Golf Course made it their home. In time this became the clubhouse and eventually the well-loved Leisure Isle Hotel which survived for many years.



ABOVE:—The fifth green of the nine hole Golf Links with Hotel in background.

In the mid 1990's, a fire destroyed the hotel and a few years later a group of concerned residents initiated a management arrangement with Knysna Municipality to take the first steps to change the disused golf course into a nature park. Significant progress was made with mowing pathways and creating open spaces around islands of indigenous grasses, enclosing the area with an attractive wood-pole fence, start of an indigenous garden and putting in place some signage. However within 10 years the condition of the Park deteriorated due to lack of disciplined maintenance.

During the same period Kingfisher Creek at the west end retained its original character and charm with the salt mash vegetation in excellent condition. The only development was a gravel track from Links Drive to the water which provided "boaters" with access to launch their boats.

In between the Park and Kingfisher Creek bowling greens and tennis courts were established and a small boat harbour constructed in the early 1990's.

In June 2005 an Action Group comprising representatives of Leisure Isle Residents

Association (LIRA) and environmental and sporting groups mounted an initiative to ensure that:

- the environmental heritage of Steenbok Nature Park and Kingfisher Creek is nurtured and protected in perpetuity
- appropriate environmental management and action plans are implemented on a continuous basis to achieve the forgoing
- the area can be enjoyed and appreciated by all the residents and visitors of Knysna.

The initiative bore fruit. Positive and active support was given by Cape Nature, SANParks, Knysna Environmental Forum and Knysna Municipality, in whose name the properties are registered. In February 2006 the Knysna Town Council entered into a partnership agreement with LIRA covering the management of these parklands.

The objective of the management agreement with Knysna Municipality is to improve the conservation status to the highest level - warranting protection within 5 years by the most appropriate environmental legislation available.

In mid 2007 a campaign to raise funds was launched, producing over R600,000 from generous supporters. A trust was formed as the custodian of all the funds raised and to be raised. The trust is managed by six trustees representing the major stakeholders.

In July 2011 the KM/LIRA management agreement was extended for a further period of 10 years. In doing so certain procedural clauses were tidied up and improved whilst the original objectives were retained.

3. Management

A feature of the management agreement is the appointment of a Management Committee (MANCOM) made up of representatives of Knysna Municipality, LIRA, SANParks and The Friends of Steenbok Nature Reserve Trust (Friends of Steenbok). Eminent environmentalists are co-opted by MANCOM at times. MANCOM advises LIRA and the Municipality on management of these parklands and conducts an annual audit to ensure that agreed plans are put in place.

Initially these activities were pursued with limited funding from LIRA, Gardening at Leisure (the Island garden club), a municipal grant and ad hoc donations. The indigenous and entrance gardens were completely revamped and regularly maintained. Timber pole fencing was restored, an alien eradication programme established and a successful dog litter programme implemented with plastic bags dispensers and bins. New indigenous flower beds were introduced, many of the untidy wild areas cleared and careful pruning of indigenous trees and shrubs undertaken to discourage 'over-nighting'. Great quantities of loose bricks, glass, plastic and other debris were removed from the salt marsh area inside the Steenbok sea wall and the inlet pipe manhole cleaned up. As a result there is improved tidal flow through the inlet pipes and the salt marsh area inside the wall continues to spread. Great strides have been made with the identification of flora and fauna.

With the advent of Friends of Steenbok and the enhanced funding that this produced, these goals could be pursued more aggressively. Planning and consultation with a broad spectrum of professional advisors, individuals and organizations was undertaken. These initiatives included a geographical survey of the area and detailed examination by a hydrologist and professional engineer of the pros and cons of creating an opening in the Steenbok sea wall to permit an increase in the daily tidal flow into the Park. As a result of valid concerns raised this aspect of the development plan was deferred indefinitely.

In September 2008 a formal Landscape Management Plan for Steenbok Park (the area east of the Harbour Road) was prepared by Di Grant of environmental planners Grant Johnston Associates. At about the same time Nigel Wessels (previously with Cape Nature) was appointed Vegetation Management consultant for Kingfisher Creek (the area west of the Harbour Road. These plans and recommendations were adopted and were in the main put in place over the following two years. Subsequently advice was obtained from Andrew Johnson of GCS Consultants who also undertook the EIA, for the brick pathway and boardwalks, and obtained the approvals, and who at a later date advised on vegetation and new pathways at Kingfisher Creek. Subsequently annual Action Plans have been formulated and approved by MANCOM in September each year. During this period close relationships with SANParks, Cape Nature, Knysna Environmental Forum, and environmentalists of the Knysna Municipality have been maintained and support and advice sought on an ad hoc basis.

The primary objectives of these plans was to retain the existing very attractive open character; maintain a high species diversity in the natural areas; and at the same time increase its recreational potential. The varied character of the Reserve was enhanced by increasing the diversity of local plant species as well as by the gradual replacement of exotic trees with locally indigenous trees. Enhanced biodiversity was achieved by the replacement of exotic with indigenous species, and by increasing the species diversity. Recreation potential was increased by improving access for wheelchair users with the brick path while the new boardwalks now enable comfortable access over salt marsh and wetland in the Park. Interpretive signage relating to the restoration of the dune fynbos and salt marsh, the estuary, and Leisure Isle hydrology was introduced and the display boxes at the three main entrances established to feature information and news.

4. Objectives

The objectives set out in KM/LIRA agreement are still considered appropriate:

- Manage the eco system of the property on the northern shores of Leisure Isle for the benefit of all the Knysna residents, and its visitors, to ensure the natural heritage of this area is nurtured and protected for the benefit of the current and future generations.
- Nurture and protect this area of natural beauty and interest on the northern shore of Leisure Isle
- Create and maintain a place of enjoyment for all whilst recognising the protocols that are applicable in nature conservation areas
- Maintain and establish representative plant communities as found in similar eco-locations along the garden Route
- Protect plant life indigenous to Leisure Isle and the salt marsh community.

In order to achieve the above it is considered of vital importance that formal recognition of Nature Reserve status be obtained. To this end representations to have Steenbok Nature Reserve declared a "Protected Environment" and/or municipal zoning changed from "open space" to "nature reserve" are being vigorously pursued.

5. Usage Protocols

The following protocols governing the staging of events in the Reserve have been adopted by MANCOM and approved by the Municipality

- Small (approx. 50) meetings/gatherings of an educational/environmental nature.
- Marathon, cross country and walking events limited to 300 participants
- School sporting events limited to 150 participants.

6. Existing Assets and Achievements

SNR is now well established and popular with the public. Assets and achievements are;

- Open vistas, wide skies, feeling of space; and varied views within and beyond the park
- Diversity of vegetation and wildlife habitats:
 - Natural dune thicket
 - Salt marsh and wetlands
 - 2 Klm coastline with Knysna Estuary
 - Indigenous Garden containing botanical species from the Garden Route and Eastern Cape
 - Tree copses featuring Knysna forest trees
 - Dune fynbos with many indigenous plants including *Satyrium princeps* and *Brunsvigia orientalis*
 - Prolific bird and butterflies species.
- Signage identifying the more common plants and trees
- Well positioned directional signage and limited, but interesting information signage and notice boards
- Recreational areas catering for diverse activities
- Accessibility to, and within the reserve on walkways and boardwalks
- Working water hand pump explaining the fresh water aquifer present under Leisure Isle
- Excellent relationships:
 - Friends of Steenbok with membership open to all
 - Major stakeholders viz Knysna Municipality and Leisure Isle Resident's Association
 - SANParks and Cape Nature
 - Knysna Basin Project
- Website www.steenboknaturereserve.org.za providing comprehensive coverage of all aspects of the Reserve
- Educational boma and support from local schools
- Known and respected brand

- Management
- Close working arrangements between Trustees, MANCOM and the Manager..

7. Problems

Some problem areas include:

- Invasive grass species, which if unchecked will lead to loss of flora and fauna diversity
- Illegal bait collecting off the shores of the Reserve
- The wetland (west of the sea wall access boardwalk) which is not natural; neither salt marsh or fresh water wetland
- Significant numbers of dog walkers do not utilize the plastic poo bags and litter boxes provided.
- Non-recognition under legislation and/or regulations as a Nature Reserve.

8. Landscape Proposals

These proposals are arranged under the major vegetation zones occurring in the Reserve and we are most grateful to Jocyln Fearon of Knysna Municipality, SANParks and Esther Townsend for preparing the map specifically for this purpose – refer fold-out Annexure. Each of the landscape zones is covered separately with a summary of the current status and a brief description of the proposed management.

• **Salt marsh** **East end of the Park**

Current Status:

The salt marsh east of the access board walk to the seawall has stabilised and spread following the removal of debris, cleaning out of the pipes, and the intense management conducted over the past 10 years. There is also increased diversity in the salt marsh vegetation as a result of the improved salt water exchange,



Plan:

Ensure maximum efficiency in tidal flow by continual removal of stone and debris and opening of drainage streams and clean out pipes every two years.

Eradicate alien grasses at the east end.

Control non-coastal thicket species in the narrow strip of low growing coastal thicket between the salt marsh and the seawall. *Searsia* species need to be carefully controlled with regular pruning.



King Fisher Creek

Current Status:

The Kingfisher Creek salt marsh is some of the finest found in South Africa. 25 species of salt marsh plants occur and have, at their seaward perimeter, sea grass beds that are essential for the efficient functioning of the Knysna Estuary. Bait collecting is prohibited on the northern shores of the Reserve.

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Keep the area free from debris and litter and make representations to the authorities to ensure that there is no bait collecting. The *Searsia* species need to be carefully controlled with regular pruning.

• Coastal dune

Current Status:

This area occurs naturally at the north-west end of Kingfisher Creek, adjacent to the beach.

Plan:

Ensure that grasses do not become over-dominant.

Encourage diversity of natural indigenous species.



• Coastal thicket Kingfisher Creek

Current Status:

The dune thicket of north-west Kingfisher Creek is pristine – it remains as it was before man found Knysna hundreds of years ago. Moving east there is a tendency for certain species to be spreading and becoming overly dominant. Aliens continue to pop up and littering and defecating by fisher people and others is a problem.

Prior to opening of the Small Boat Harbour in 1992 boats were moored west of Kingfisher Creek and there was a gravel road from Links Drive to the water that boat owners used to



access an area to launch boats.

Following the opening of the Harbour it was largely abandoned as an access road and in 2011 it was finally closed

and its path rehabilitated with new planting leaving an attractive foot path leading to the north/west corner of Kingfisher Creek.

Plan:

A monthly walk through is necessary to identify and remove alien plants and to identify out of control littering. KM is responsible for clearing litter bins but it is often necessary for SNR labour to be used for special clean-ups. New pathways are discouraged and an effort made to reduce the number of paths.

Searsia sp are spreading aggressively west of the tennis courts and need to be continually pruned back heavily especially in areas where *Satyriun princeps* is found.

Trees in this area that are not indigenous to the coastal thicket area are being removed.

Roger's Way

Current Status:

The area between the Boat Yard and Tennis/Bowling Greens was reclaimed in 2008 with the objective of creating a natural, safe and attractive wandelpad (walkway) from Steenbok Park to Kingfisher Creek and hiding the boat yard on its southern and western sides. Leisure Isle Country Club hold a long term lease over this area and have granted SNR right of use. The Club continues to utilise certain areas for storage of top soil and compost heaps that are maintained and used by the Reserve.

In 2008 the area was planted to mimic coastal thicket as found at Kingfisher Creek.

Plan:

This is a high maintenance area requiring weeding, pruning, replanting and grass cutting.

The western end has suffered severe flooding (both sea water and rainfall) on four separate occasions requiring complete replacement planting after each occurrence. The flooding has largely been overcome with drainage, bems and choice of plant material and now seems to have stabilised.



West end of Park

Current Status:

In the Park a variety of dune thicket species are establishing along the top of the steep sandy bank at the western end, near the small boat harbour and below the concrete path, extending into the surrounding open grassy areas.

Plan:

This area has excellent potential for bird habitat and is being cleared of alien grasses and planted up with additional thorny and other coastal thicket species to provide dense and impenetrable nesting sites. On the periphery of coastal thicket areas attractive associated flowering species are being encouraged for the added interest they give. Selective removal of *Passerina* and *Bietou* and heavy pruning of *Searsia sp* is necessary at six monthly intervals.



- **Coastal fynbos and grasses**

Current Status:

Dominant grasses are Kikuyu (*Pennisetum clandestinum*), Buffalo grass (*Stenotaphrum secundatum*) and Cottonwool grass (*Imperata cylindrica*). The latter especially is an extremely invasive and competitive grass which has become dense and moribund, to the detriment of a variety of other plants commonly found on coastal sands. It was probably first introduced to stabilize sand dunes but now threatens to become the dominant species. Worldwide it is regarded as a very serious weed and has been identified in the USA as one of the ten worst weeds. It spreads by deep rooted rhizomes, and wind-dispersed seeds, and is gradually invading large sections of the Reserve.

Following consultations with the major stakeholders, and experts, experiments were conducted to discover the most effective and least ecologically damaging method of removing this grass. Various alternatives were tested and it was finally concluded that the only practical and effective solution was to apply Roundup herbicide. It is used and recommended by SANParks and the Knysna Municipality and is not applied in any areas in close proximity to water. With the experiments conducted it was found that within 18 months of the first application the area treated blossomed with a large variety of coastal fynbos, none of which were visible at the time of spraying with Roundup.



Plan: Where ever it seems that Cottonwool grass will eventually out-compete other species, and lead to low species diversity, and a less interesting landscape, Roundup herbicide is applied judiciously with a second application 3 weeks later. In the areas treated it will be necessary for many years thereafter to continue to weed out manually.

These areas are also the natural home to a large variety of coastal fynbos that grow in harmony with grass species other than the invasive species mentioned above. As in other places in the Reserve *Searsia sp* and *Passerina rigida* need to be controlled so that they do not become over-dominant and there are certain indigenous trees that are not appropriate to the grasslands.

Aliens need to be continually removed as they grow from seed.

• **Cut grass paths and play areas**

Current Status:

These areas in the Park and the Links Drive verge, as indicated on the Map Annexure, are maintained by KM using tractor mowers and weed eaters.

Plan:

The KM current practice should continue at intervals not greater than 4 weeks, where necessary supplemented by the SNP gardeners. The grass verges of the brick path should continue to be cut and maintained at least monthly by KM. The Manatok “play tree” in the middle of the Park should be pruned once a year to remove dead wood.



• **Wetland**

Current Status:

The wetland west of the sea wall access boardwalk is not natural; neither salt marsh nor fresh water wetland. Salt water leaks through the seawall and, at times of exceptionally high tides, flows from the salt marsh area. Rainfall provides the fresh water inflow. As a result salinity within the wetland fluctuates depending on the inflows of fresh and seawater. Notwithstanding this frogs survive in this area. It is important not to open the tidal flow under the boardwalk (to link the existing salt marsh area and the wetland) as this will upset the balance of water flows that have been successfully achieved in the salt marsh area.

After careful consideration a plan to restore the salt marsh by arranging tidal flow through pipes was abandoned.

This area will now be left to establish its own unique vegetation zone.



Indigenous garden

Current Status:

The Indigenous Garden is one of the most popular areas of the Reserve. It features plant species indigenous to the Garden Route and also contains other species that grow well in this coastal area, although not indigenous to it. A list of all plant species found in the

Reserve is featured on www.steenboknaturereserve.org.za and differentiates between species indigenous to the Garden Route, and those that are not. The area is watered automatically from the main spike watering system.

Plan:

This is a high maintenance area requiring attention at least monthly with weeding, pruning, replanting and mowing of the grass surrounds. Fast growing and invasive tree species particularly *Searsia sp* and *Passerina rigida* need to be pruned, cut back regularly and severely so that they do not create too much shade and become over-dominant. It is also important to retain low growth in places allowing panoramic views of the Estuary and the mountains. Smaller invasive species also need to be pruned regularly so that paths are kept open and other species not smothered. Flowering shrubs such as *Leonotis leonurus* (Wild dagga) and *Hypoeste aristata* (Ribbon Bushes) need to be pruned severely after flowering. Bio Ganic fertilizer should be applied judiciously once a year.



Recently the brick pathway has been extended to create a north/east entrance and an attractive new garden planted to compliment this new entrance. The irrigation system has been extended into this area.

Consideration could also be given to expanding the *Restios* section on the western side across the grass pathway. There is the space to create a *Restios* Avenue with a large number of different species along the western side of the grass pathway.

• **Tree copses**

Current Status:

Four tree copses have been established in recent years in the Park and another self sown tree copse is developing west of the tennis courts in close proximity to the owl box. These copses, containing a representative sample of indigenous Knysna forest trees, were planted from 2009 to mimic the conditions found in natural forests.

Unlike many forest trees planted previously in the Park, these groups of trees are growing amazingly well. They are forming their own mini forest climate which, as it becomes more established, will result in much greater growth in the future. There are three reasons for this:

- the close proximity of the trees (50mm in places) which simulates conditions in the natural Knysna forests
- generous composting, and
- a regular supply of water through a drip irrigation system fed from the main spike.

Plan:



At this young age the copses are relatively high maintenance. Three of the copses are watered by drip system from the main spike watering system and until sufficient shade is provided by the trees, weeds need to be kept under control. In order to help create dense forest conditions aggressive shrubs like *Searsia sp* were planted originally and now, if left to spread, could smother the young forest trees. Every 6 months growth needs to be checked and appropriate pruning undertaken.

These tree copses, with signage giving their botanical and common names, are of utmost interest to the public and it is thus important to check the signage regularly and to replace name signs some of which inevitably go missing or are damaged by dogs.

Tree Memorial Policy

Members of Friends of Steenbok may arrange to have a “memorial” tree planted in the Reserve subject to the following conditions:

- The tree is positioned in one of the tree copses to be agreed with SNR
- The species of tree must be indigenous to the Garden Route, approved by SNR and at time of planting not taller than 2 metres
- The tree to be delivered to planting position for planting by a SNR staff member at fee of R100. Alternatively SNR will source a tree and quote prices.
- Placing of memory plaque is optional.
- No guarantee can be given as to longevity of tree planted.

• **Gardened areas**

Current Status:

The following cultivated gardens have been established and are maintained on a regular basis:

- main entrance
- east and west entrances to the Park
- north east entrance
- grass garden adjacent to Horne Drive
- aquifer garden with historic water hand pump
- *Aloe thraskii* beds along Links Drive



These areas are primarily, but not exclusively, indigenous.

The entrance gardens were established to create an attractive and colourful welcome to visitors whilst the grass and aquifer gardens, together with the tree copses, provide points of interest as one walks along the wheel chair friendly path towards the indigenous garden, all with the amazing backdrop of the Outeniqua Mountains. The aquifer and pump are covered later in this plan whilst the *Aloe thraskii* beds are dealt with in the section covering the Links Drive Gum trees.

Plan:

All these gardens are high maintenance areas requiring attention at least monthly with weeding, pruning, replanting and mowing of the grass surrounds. Most of the areas are watered automatically by the main spike watering system.

In order to give as natural an appearance to these beds as possible:

- ground cover and other planting is of a limited variety of species – preferably those that occur naturally; and
- grass edges are inconspicuously controlled - trenching around the edge of the bed and earth mounding is avoided.

• **Links Drive Verge**

Current status:

A Surveyor General's aerial plan dated 1937 indicates that approx. 160 *Eucalyptus grandis* were planted before that date along the northern side of Links Drive. Over time, and in recent years, trees have died and been removed and now less than 30 survive.. These are not grouped to any plan – in places there are large spaces between, and in others they are concentrated too closely. Many of the Eucalyptus stumps as well of the living trees are surrounded by clusters of indigenous species. *Eucalyptus grandis* is now classified in South Africa as a category 2 invader and is thus not considered appropriate to replace trees as they die.

Plan:

The clusters of indigenous species that have developed naturally (mini-tree copses) will be retained as replacement trees and encouraged by judicious pruning and feeding. These areas already contain *Sideroxylon inerme*, *Euclea racemosa*, *Searsia (crenata, lucida, and chirindensis)*, *Gymnosparia buxifolia*, *Diospyros dichrophylla*, *Buddleja saligna*, and *Chrysanthemoides monilifera*.

Existing *Aloe thraskii* beds will be transformed by introducing other indigenous shrub species into larger groups of a more balanced height and new *Aloe thraskii* beds will be created to achieve overall balance.

The *Eucalyptus* trees are the responsibility of the Knysna Municipality and, other than occasional pruning up to 2m, Steenbok Nature Reserve is not involved in any way with their maintenance, retention or removal.

- **Special flora species:**

Satyrium princeps

Current status:

These wild orchids grow in sandy or loamy soil along coastal dunes and in fynbos, from Wilderness to Port Elizabeth. *S. princeps* is listed in the “Red List” as Vulnerable and as such are “**facing a high risk of extinction in the wild.**” The Steenbok Nature Reserve colonies are some of the healthiest and largest in the Garden Route. There are 2 sites in the Kingfisher Creek area that have been identified and their GPS locations registered by CREW (Custodians of Rare and Endangered Wild flowers).



Their leaves develop during cold, wet winter months and they flower mainly during October. Plants are dormant in summer and, in spring, are pollinated by sunbirds that are attracted by their bright red flowers. They are robust tuberous geophytes with 2 leaves pressed flat to the ground. 7 – 10 papery sheathing leaves occur along the flowering stem with up to 100 flowers on an inflorescence up to 75cm long, crimson red, petals with crisped margins.

When first identified in recent times (in 2008) only 5 flowering plants were sighted. Following judicious removal of dense undergrowth the number of flowering plants has increased in recent years to 150.

Plan:

It is important that the plants have plenty of light and that they are not smothered particularly by *Searsia sp* and *Buchu.sp*

Brunsvigia orientalis

Current status:

Brunsvigia orientalis is a spectacular bulbous geophyte, which grows in scattered colonies on coastal sand. Visitors to Leisure Island are likely to see this beautiful plant growing in Steenbok Nature Reserve when it blooms from February to April. However they have been known to bloom in late December. Populations have decreased since the first census was held in 2000. The count in 2014 was 394 compared with 880 in 2000 and a low of 74 in 2013.

Plan:

As the leaves first appear in autumn watch out for infestations by large numbers of the “Lily borer worms” who feed on the *Brunsvigia* leaves. They have been identified as the Lily Leaf Miner (*Brithys crini pancratii*) that lay the eggs on the leaves. With large infestations treat with Doom – Blue Death or similar.



• Birds and Butterflies

Current Status:

Aquatic bird life on the Northern Shore is not as prolific as that of the wetland east of George Rex Drive. However there is scope for improved bird feeding and nesting sites by additional planting in the coastal dune thicket areas and for enhancement of butterfly habitats.



Plan:

The management of the coastal fynbos along Links Drive should increase the diversity of plant species in this area to the benefit of butterfly populations. New flora species to be planted in the display gardens should, wherever possible, be selected with the objective of encouraging birds, butterflies and larvae.

- **Spotted Eagle owls**

The Spotted Eagle Owl nesting box in the eucalyptus trees near the tennis courts should be maintained as appropriate.

In 2014 we commenced a new focus on creating and protecting the owl habitat in the Reserve. This involves:

- Educating all concerned to refrain from using rat poison
- Increasing the number of owl boxes
- Introducing more high hunting perches in strategic hunting places away from heavy traffic.



9. Physical Features

Brick paths and paved areas

Keep free of weeds using Roundup herbicide
Keep brick pathway and irrigation boxes free of ants
Repair brick and concrete problems as they appear.

Informal pathways

Keep free of invasive weeds and prune away over-hanging branches.

Board walks

The board walks were erected by Louwtjie Burger of Lomat (0833109328 or 0448707898 loburger@telkomsa.net) who determined the timber specifications:

- poles H5 treated pine posts
- structural timber H4 treated S A Pine .
- structural fasteners stainless steel coach screws
- decking 32mm thick H3 treated S A Pine
- timber not to be treated at all.

Ask Louwtjie every 5 years to report on the state of the timber and any remedial work that is necessary.

Five interpretive boards on the one walkway provide information on the estuary as the nursery of many ocean species and the equally fascinating and diverse habitat of the salt marsh .Clean boards regularly and check that holding bolts are firm.

Aquifer pump and ponds

The aquifer exhibit and story board explain the underground fresh water aquifer system enjoyed by the Reserve.

Fresh water lies from 2-3 metres below ground level. This aquifer (water-bearing formation) comprises loose, fine-grained sand which is saturated with fresh water. The storage in the aquifer is 200 litres per cubic metre of sand. Because fresh water is lighter than seawater, it 'floats' on top of the seawater. This fresh water can easily be pumped out via this well point (spike) and the suction pump.



The aquifer is recharged by:

- **Rainfall:** the sand is so permeable and the slope of the land so gentle that rainwater soaks into the ground instead of running into the lagoon. The fresh water floats on the seawater, forming a deep lens-shaped aquifer.
- **Waster water:** Leisure Isle does not have a water-borne sewerage system so all municipal water used on the island stays here and seeps back into the ground through septic tanks.

The water has been tested by Knysna Basin Project Field Laboratory and found suitable for dog consumption. Visitors are invited to work this hand pump to experience the strong and consistent flow of water from the spike sunk only 3 metres into the sand. The hand pump is believed to be at least 100 years old and was found in the back yard of an antique dealer in Beaufort West.

The aquifer hand pump needs servicing every second year and the two ponds need to be cleaned regularly. The rubber suction pad needs to be replaced at fairly regular intervals. Suitable rubber sheeting has been sourced for this purpose

Benches

Bench positions along the main pathways and in shaded areas with lovely views have been carefully selected and no further benches are to be added, Timber slats should be painted annually with Rhysticks exterior clear and memorial signs that are damaged should be replaced.



Notice boards

These are Serviced at least monthly.

Signage

Signs need to be regularly cleaned and maintained and adjacent vegetation pruned so that signs are clearly visible.

Directional Signage

- Good signs, well placed in the landscape, shows that people really care and that they are aesthetically sensitive to the place. It does a great deal to enhance the quality of

the Reserve. Signs currently in place follow this principle with a common design. Whilst remaining functional, signs are attractive and are not obtrusive and do not block views.

- As a general rule no signs or poles should ever be visible into the sky-line view and ideally should have vegetation as a back drop. However exceptions are allowed to create hunting perches for owls.

Botanical Signage

Botanical signs feature the botanical and common names, and family, of the plant that it is placed in front of. These signs bring the Reserve alive and make it meaningful to those with even a small interest in flora and gardening. They have been successfully placed in three of the Tree Copses but we are yet to find the best way of displaying plant names in the gardened areas and in Rogers Way. It is most important in these areas that the signs are not obtrusive, and in the face, whilst at the same time being clearly visible. They should cover the more popular species and be carefully spread so that not more than one or two are visible at any point.

Story Boards

Story boards have been strategically placed in prominent positions covering a variety of interesting issues and additional boards should be added.

Litter bins and plastic poo bag dispensers

These are placed along the popular walking routes and need to be checked often to ensure that the guards are efficiently loading the dispensers with plastic bags and to identify plastic litter containers that disappear out of the timber litter boxes, and need replacing. In certain positions it is necessary to secure the containers with light chain. Additional bins and dispensers are added as appropriate and they need regular maintenance,

Irrigation lines, spike and pumps

Howard of Bitou Irrigation (082 926 1953) installed the automatic system in the Park and should be employed every 6 months for preventative maintenance.

Compost heaps

These are maintained by Bowls Club labour and distributed through Rogers Way.

Pole fencing and chains at entrances

Missing or damaged poles or chains need replacing regularly on an as need be basis.

Tools and equipment

Tools include petrol hedge trimmer and good quality and large variety of hand tools.

Seawall

Seawall maintenance is the responsibility of KM but it is necessary to continually liaise to ensure that this work is carried out. A comprehensive maintenance upgrade was undertaken in July 2012 and in the future minor maintenance should be carried out annually by Steenbok.

Inlet pipes and tide measurement poles

Clean at least once a year

Parking

Vehicles are parked at the eastern and main entrances, between the Harbour and the west entrance and on the vacant triangle between the Park and the Bowling Greens.

These areas, where necessary, have been leveled and re-grassed or paved. The areas should be left as natural as practical without demarcated parking positions.

Public Toilet

Per agreement with Leisure Isle Boat Club the toilet facilities inside the entrance to the Boat Club have been upgraded at our cost and advertised as being available to visitors of the Reserve.

Suppliers

These are listed in the attached annexure

10. Conclusion

This plan has been prepared to ensure continuity of sound maintenance practices and should be reviewed and updated annually. In the event of a change in the Reserve Manager an "Action summary" with a check list segmented into categories such as annual, monthly and weekly activities and once off projects should be prepared and agreed with the new incumbent.

September 2012

Amended 2014 and approved by MANCOM at meeting held on 26 May 2014

Updated and approved in March 2017

Suppliers

Service	Supplier	Contact person	Phone	Email
Advertising	Action Ads		0443826673	ads@actionads.co.za
Advertising	Knysna Plet Herald	Zirk		zirk@groupeditors.co.za
Attorney	Logan-Martin Inc	Gerald Logan	0443821115	
Auditors	Michaelides Parker	Peter Michaelides	0443827070	office@mcoinc.co.za
Bank	Standard Bank			
Compost	Reliance Compost	Anthony Thompson	0833819615	gardentoute@reliance.co.za
Environmentalist	Cape Nature	Keith Spencer	0880082494	keith@capenature.co.za
Equipment	Top Saw	Roald Sunette/Isak Venter and	0443826414	topsaw@telkomsa.net
Garden Service	Ivy Garden Services	Edgar	0824579122	info@ivygardensrvices.co.za
Garden Service	Rob's Garden	Rob	0825764625	robsgardens@xnets.co.za
I T Services	I T Future	Leon	0443820460	support@itfuture.co.za
Irrigation	Bitou Irrigation Forever	Howard Corvey	0829261953	bitouirrigation@gmail.com
Park benches	Planks/poles	Christo Ryksen	0448740698	fpadmin@mweb.co.za
Photos/Facebook	Elle Phography	Elle	0738020128	info@ellepho.co.za
Plant nursery	New Plant Nursery		0448890055	info@newplant.co.za
Plant nursery	Penhill Nursery	Fred	0443040495	
Printing	Canon	Erylene Levendal Bosman	0443820644	eryleneb@canonec.co.za
Signage	Action Signs	Des/Arnold Pansi	0846901804	sales@actonsigns.net
Signage	Loerie Signs	Neville	0443823138	loerieacct2@mweb.co.za
Timber	Rare Woods	Andrew	0443826575	knysna@rarewoods.co.za
Timber products	Timber Village	Jock & Daniel	0443825649	
Tree ID signs	Trees ID	Wally Doubell	0828917625	info@trees-id.co.za
Website advisor	S2Web Solutions	Sharon	0443827430	info@s2websolutions.co.za