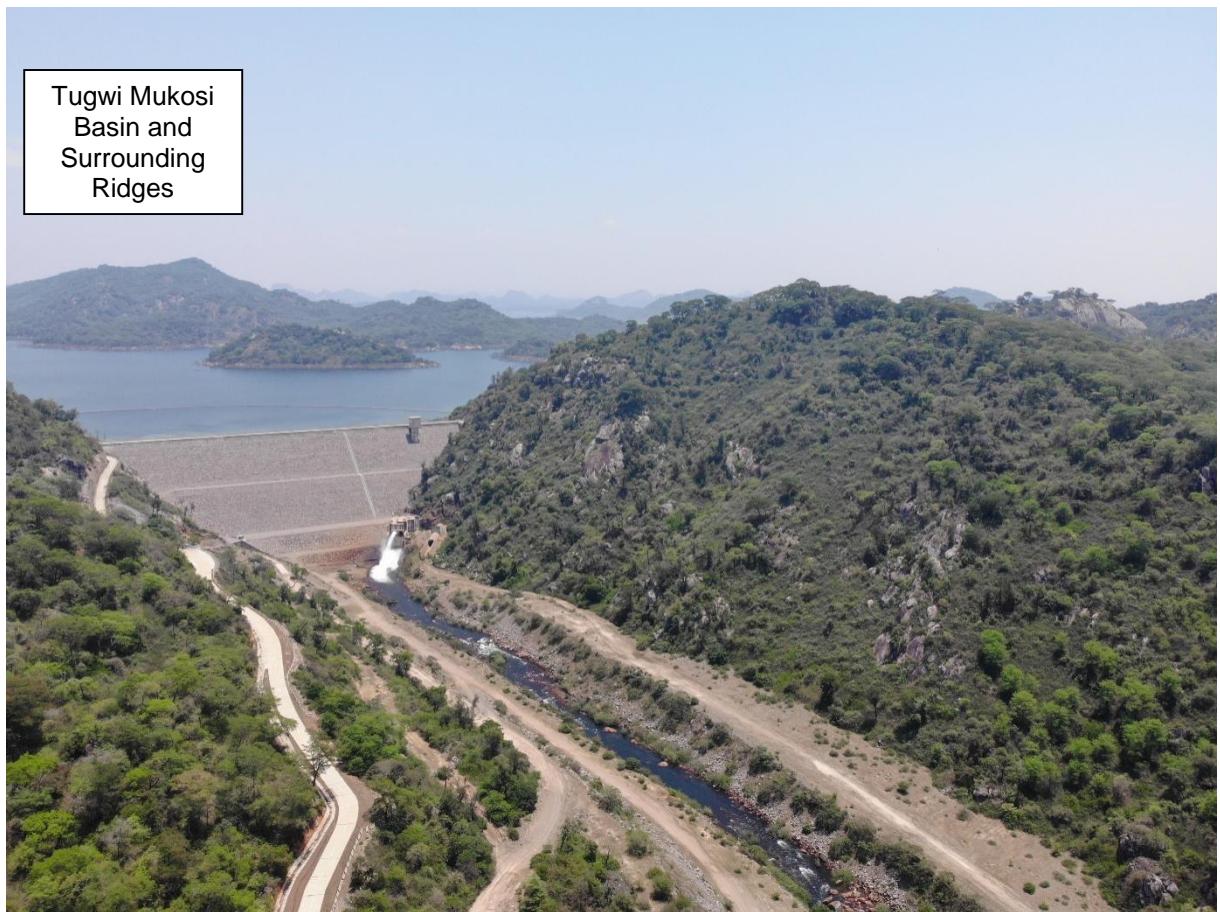




TUGWI MUKOSI RECREATIONAL PARK



MANAGEMENT PLAN 2021 – 2031



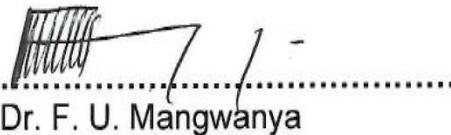
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Funding	All funding for the development of the General Management Plan was provided by the Zimbabwe Parks and Wildlife Management Authority

APPROVAL PAGE

This Management Plan has been approved by the Director General of Zimbabwe Parks and Wildlife Management Authority, Board Chairman of the Zimbabwe Parks and Wildlife Management Authority Board, the Secretary and the Minister of the Ministry of Environment, Climate, Tourism and Hospitality Industry

1st December, 2021



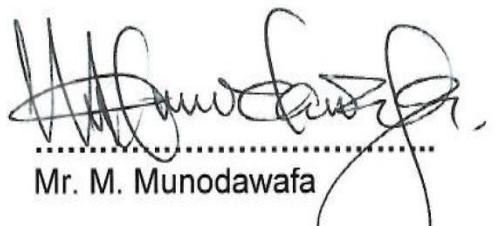
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Director General of Zimbabwe Parks and Wildlife Management Authority



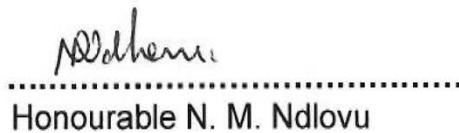
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Minister of Environment, Climate, Tourism and Hospitality Industry

FOREWORD

Tugwi Mukosi Recreational Park is a new Protected Area anticipating gazetttement in terms of a Statutory Instrument yet to be availed as with the laws of Zimbabwe (Refer to Annex B, draft gazette for Tugwi Mukosi RP). Within the Park is Tugwi Mukosi dam which was officially commissioned by the then President of Republic of Zimbabwe, Comrade R. G Mugabe in May 2017. The Park presents immense commercial and conservation opportunities hence this plan aims to encourage commercial activities in and around the Park at the same time maintaining or even improving ecosystem integrity.



This General Management Plan (GMP) for the Tugwi Mukosi Recreational Park (TMRP) is product of comprehensive consultations done in 2020. Tugwi Mukosi RP is part of the South East Lowveld Region which is one of the eight Zimbabwe Parks and Wildlife Management Authority's (ZPWMA) administrative Regions. Tugwi Mukosi RP is 491.73km² in spatial extent straddling the boundaries of Chivi and Masvingo rural districts of Masvingo Province of Zimbabwe, Map 2.

The plan has its foundations in the ZPWMA five - year Strategic Plan (2019 – 2023) which prioritises the development and updating of existing Protected Area management plans (PAMP) for all Protected Areas by December 2023 in accordance with objective 12 of the Conservation of Biodiversity Key Result Area (KRA). Apparently, the development of this Park plan is part of implementing the ZPWMA Research Strategy (2018 - 2022) which emphasises the development of the same especially for Rhino and Elephant monitoring and research. It is during these initial stages that a recommendation was made for the objective description of the plan that clearly describes the special use zones for the recreational Park which will guide sustainable development and activity in a way that enhances protection and preservation of ecosystem processes, scenery, habitats and wildlife.

The plan's objectives are met through four, interlinked programmes namely, - Ecological Management, Tourism Development and Management, Outreach and Collaborative Management and Park Administration. Taken together they represent a holistic suite of strategies and activities designed to secure the future of the Park. The plan has a working life span of ten years (2021 - 2031) and is supported by rolling three-year action plans.

This plan was prepared using a consultative participatory approach which takes into account stakeholder and community concerns, and also their visions for the future of the Park.

Through its objectives, strategies and activities the management plan pays particular attention to the proper management of the exceptional resource values which include the fascinating unpolluted water (basin), heterogeneity and natural diversity, the cultural heritage and aspects enshrined in the Park, the wildlife contained therein and the values of islands of the Park. We envisage that the implementation of this management plan will pave way for the development of the new Recreational Park, enhance the conservation and management of Tugwi Mukosi RP so as to sustain the desired state of the wilderness qualities and exceptional resources for the benefit of current and future generation.

A handwritten signature in blue ink, appearing to read "Fulton Upenyu Mangwanya".

Dr. Fulton Upenyu Mangwanya

Director General, Zimbabwe Parks and Wildlife Management Authority

EXECUTIVE SUMMARY

Introduction

The Zimbabwe Parks and Wildlife Management Authority (ZPWMA) under the purview of the Ministry of Environment, Climate, Tourism and Hospitality Industry (MECTHI) is on the drive to seek the gazettlement of Tugwi Mukosi as a Recreational Park. There are parallel planning processes taking place in the same area, (1) for the General Management Plan for Tugwi Mukosi RP and (2) the preparation of a “Development Master Plan” for Tugwi-Mukosi dam and its environs, including the recreational Park. The planning process of the RP is coming concurrently to close the gap in time between gazettlement and unrolling of the development and /or implementation of planned activities for the forthcoming RP.

Tugwi Mukosi RP has a purpose to preserve and protect the natural features therein for the enjoyment, benefit and recreation of the general public as provided for in section 40 of the Parks and Wildlife Act, chapter 20:14 – to include photographic tourism and fishing.

Management Programme Layout

The plan is actioned through four interlinked management programmes:

1. Ecological Management,
2. Tourism Development and Management,
3. Outreach and Collaborative Management
4. Park Administration.

Each programme is divided into the following sections

- **Programme Description and Purpose** - Programme overview followed by a purpose definition for the programme.
- **Management Philosophy and Guiding Principles** - Sets the stage for the programme. Guiding principles are central to the way the programme is developed
- **Objectives, Strategies and Activities** - The core of the management programme. This also translates into the extracted summary three-year action plan (can be availed as a separate document).

Each strategy has a text description in which the various activities are defined. At the end of each action is a summary of the activities relevant to that action to help focus ground managers.

The three-year activity plan lists the activities and the requirements for their implementation.

Within the document each programme is colour coded for ease of reference.

Ecological Management
Tourism Development and Management
Outreach and Collaborative Management
Park Administration

Plan Foundations

Exceptional Resources and Conservation Targets

The exceptional resources for the Park are classified into four categories - Environmental, Scenic, Social and Cultural. These focus on the quantity and quality of water in the basin, geologic and scenic values of the Park which are strongly associated with its wilderness qualities. The Park has numerous islands, wetlands and rivers and forms an important sub set of the entire Runde catchment area, owing to its low-lying position in the landscape.

The conservation targets for the Park, their key ecological attributes, and the threats facing them were defined at ecosystem, community and species level and these were instrumental for defining the Park purpose and the subsequent objectives in the four programmes.

Park Purpose

The purpose statement summarises the importance of Tugwi Mukosi Recreational Park, clarifies the reasons for its existence, and provides the overall goal that Protected Area managers are working towards. The purpose for Tugwi Mukosi Recreational Park is shown below and it takes its cues from the Parks and Wildlife Act, chapter 20:14 Act.

Tugwi Mukosi RP will protect and preserve the natural and cultural features therein for the enjoyment, benefit and recreation of the public experienced from the extraordinary biogeography of the area, including the biodiversity, the ongoing ecological processes and the wild and scenic landscapes for current and future generations

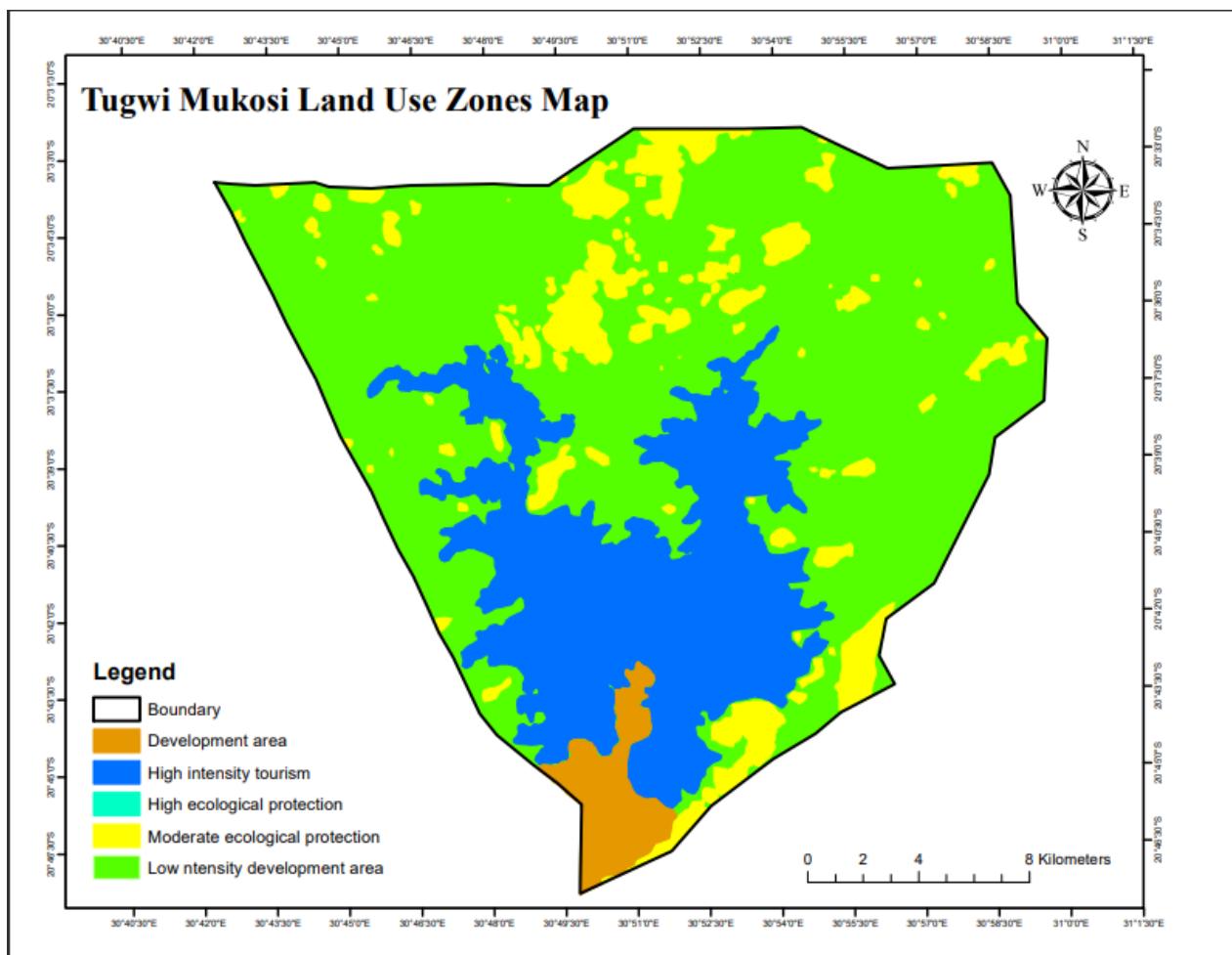
Subsidiary purposes for the Tugwi Mukosi Recreational Park include

- protection for the Runde catchment area for the many rivers/ tributaries draining into Tugwi and Mukosi rivers
- access of communities and visitors to cultural and heritage sites
- provision of facilities and opportunities to the public for fishing, boating, cage culturing, camping, hiking, guided walks, game drives, canoeing, photography, game viewing, bird-watching or such other pursuits that may be permitted therein

Zoning Scheme

As shown in Map 1 the special use zone plan for Tugwi Mukosi was developed to provide a framework in which to balance the aims of conservation of the Park's exceptional resource values and developing the Park as a tourism destination. The conservation of biodiversity, ecosystem processes and the Park's wilderness character are some of the primary management objectives throughout the Park. Table 2 highlights the spatial extent of the respective Tugwi Mukosi land use zones mapped in Map 1.

The zone system departs from the traditional ZPWMA system of categorising zones into "wilderness" or "wild" and then setting limits of use based on these zone types. Rather it defines the zones and then sets limits for use based on the zone characteristics rather than on a zone type. This is to avoid confusion that results from the use of standardised terminology.



Map 1: Tugwi Mukosi Recreational Park Land Use Zones

Ecological Management Programme

The main function of the ecological management programme is to provide the information base on which other management programmes carry out interventions. With four objectives, the programme aims to enhance and expand monitoring and guide research, develop the mechanisms to protect and conserve key habitats, improve the conservation status of diverse aquatic and terrestrial species, to address land use issues outside the Protected Areas and seeks to mobilise resources for the same. The Programme works strongly in conjunction with the Park Administration Programme, especially on “cross-cutting” issues such as fire, vegetation and water management.

Four objectives are defined dealing with research and monitoring, improving the status of selected species and habitats, conservation issues outside the Park and with resource mobilisation to enhance the programme.

Tourism Development and Management Programme

Tugwi Mukosi RP is one the most accessible Parks in Zimbabwe. The main access route Masvingo – Beitbridge Highway is under massive rehabilitation. The Ngundu – Tanganda highway is in an acceptable state. This easy accessibility encourages high potential levels of visitation to the Park which is a great opportunity for tourism development. While pressure on other Protected Areas in Zimbabwe for tourism development is high, the low levels of tourism (limited to fishing and sometimes camping of the very fishermen) in Tugwi Mukosi RP now allow the plan to recommend a phased approach to tourism

development and one that seeks to capitalise on the vast water basin (largest inland dam in the country), scenic islands, majestic topography, various cultural sites and wilderness qualities of the Park.

The Park has been zoned into five areas with differing levels of permissible use as shown in Map 1. The development of tourism is viewed as an evolving strategy for the new Park based on a lot of outdoor, water and land-based activities. Four objectives are defined seeking to develop and manage tourism, as well as to educate visitors and communities alike.

Outreach and Collaborative Management Programme

This programme deals with communities and wildlife and conservation related issues outside the Park. It also deals with collaborative management; the way in which the ZPWMA in general and Tugwi Mukosi Park management in particular deals with conservation partners and community - based law enforcement or resources management. Five objectives are defined, three dealing with communities, stakeholders and the ever-present human wildlife interface. The fourth objective defines ways of dealing with conservation partners and collaborative management paradigms for the Park. The fifth objective deals with resource mobilisation to drive and strengthen this programme.

Park Administration Programme

The Park Administration programme underpins all other programmes and their activities in the Park. The programme aims to provide a conducive and supportive environment for Park staff to carry out their duties. Staff need to be well trained, motivated and in sufficient numbers to carry out their duties effectively. They also need sufficient infrastructure and equipment to be able to carry out their duties. This includes building decent staff housing, roads, airstrips, boats, vehicles and ancillary patrol related equipment. Any staff increases need to be done in tandem with improved housing facilities.

Five objectives are defined, three of them dealing with ensuring that staff numbers and morale are improved and that there is sufficient equipment and infrastructure for the management of the Park. The fourth deals with security and law enforcement. The fifth deals with mobilisation of resources to fund the programme.

Summary

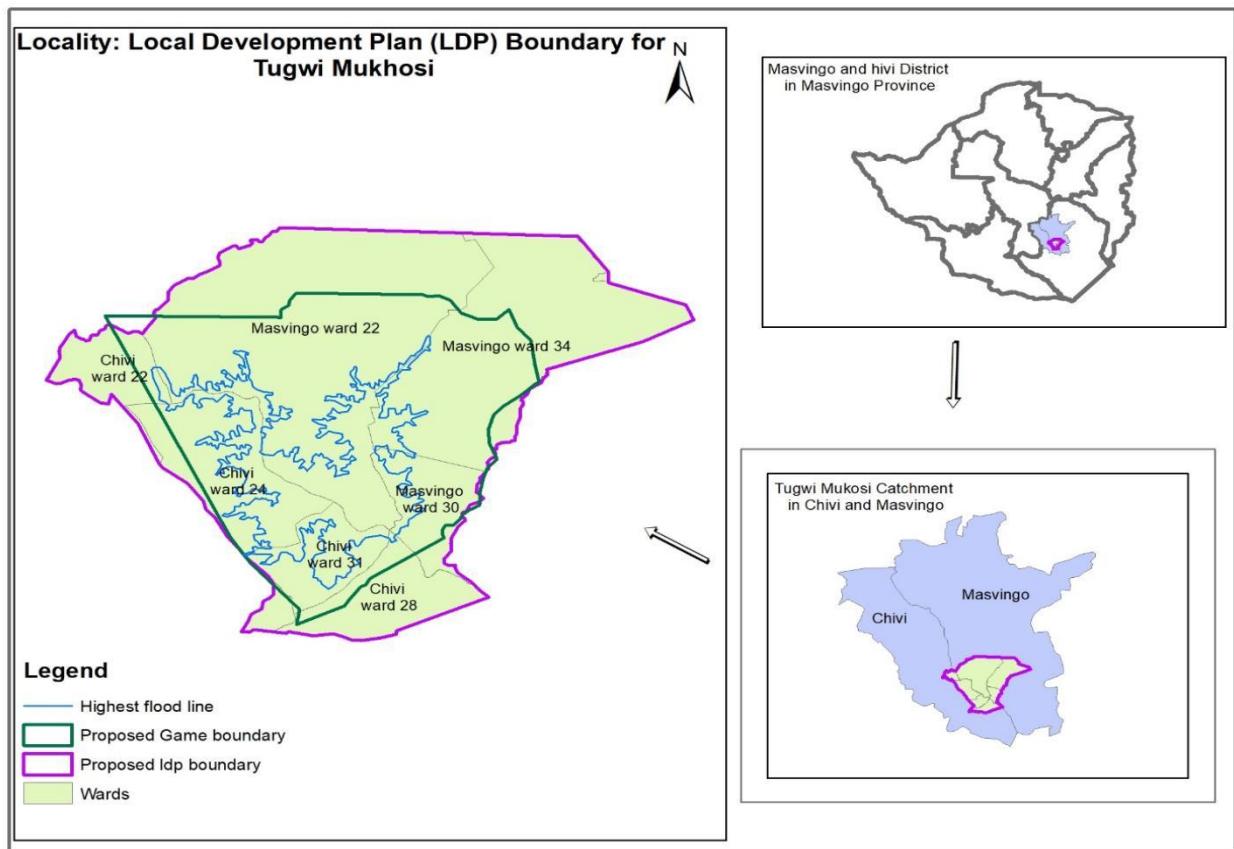
The purpose, guiding principles and objectives for all programmes are defined in Table 1 on the next page.

Table 1: Programme Summary

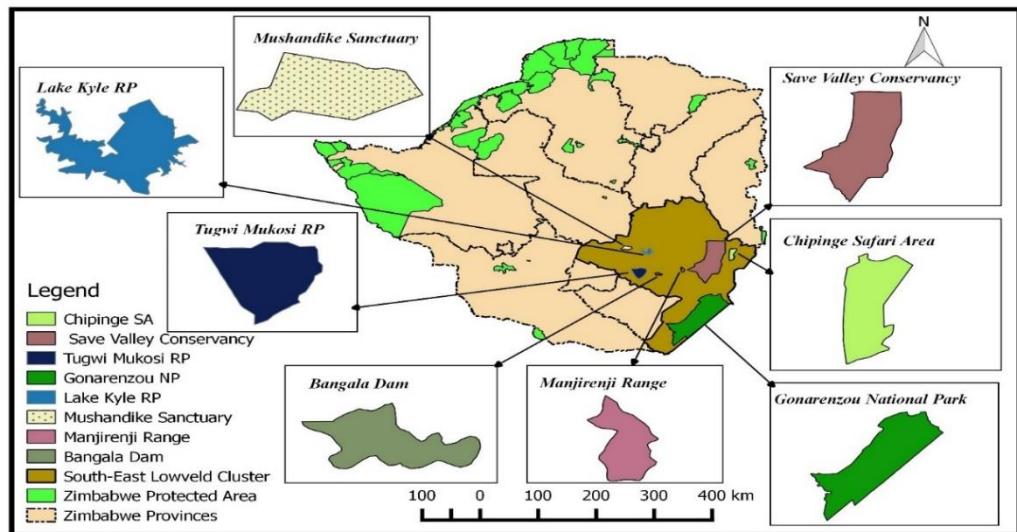
Programme	Purpose	Guiding Principles	Objectives
Ecological Management	To conserve the diverse aquatic and terrestrial flora and fauna, natural landscapes and hydrological resources of Tugwi Mukosi RP through research, monitoring and targeted management interventions	<ol style="list-style-type: none"> 1. Management decisions based on scientific evidence 2. Consumptive use to conform to the aims of the establishment of the Park 3. Ecological interventions to be kept to a minimum 4. Conservation agendas will also be pursued outside the Park 5. Connectivity with the wider landscape and management entities 6. Management decisions should ensure that commercial opportunities do not threaten biodiversity 	<ol style="list-style-type: none"> 1. To conduct research and monitoring that effectively address management needs 2. To ensure that biodiversity, habitats and wildlife populations are introduced/ restored and protected 3. To address land use issues in surrounding areas 4. To mobilise resources for research and monitoring activities
Tourism Development and Management	To promote conservation and protection of Tugwi Mukosi RP unique fresh water reservoir, landscapes and biodiversity values which provide outstanding and satisfactory ecotourism activities such as fishing, boating, camping and/ or accommodation as well as memorable scenic islands, wilderness, wildlife and cultural experiences to domestic and international tourists in order to fund management, research and outreach activities and provide employment for local people	<ol style="list-style-type: none"> 1. The scenery and expanse unpolluted water resources, islands, mountain ridges, indigenous vegetation and wilderness character of the Park will be the driving force behind tourism 2. Fishing, boating, conferencing, accommodation, walking safaris and self-drive camping are an integral part of the Tugwi Mukosi experience 3. Tourism development should be phased 4. Exclusive use areas should not be permitted 5. Permanent tourism facilities should be encouraged in adjacent areas 6. Partners are integral to the future of tourism 	<ol style="list-style-type: none"> 1. To develop and/ upgrade tourism product 2. To improve management and administration of tourism 3. To improve education and interpretation 4. To mobilise resources to spearhead tourism development and management

Programme	Purpose	Guiding Principles	Objectives
Outreach & Collaborative Management	To engage and empower local communities and stakeholders through promoting custodianship for the protection and conservation biodiversity	<ol style="list-style-type: none"> 1. Open and transparent relationships with stakeholders 2. Community involvement and participation 3. Community access 4. Cultural sites will be recognised and protected 5. Education and awareness 6. Promotion of conservation agendas outside the Park 	<ol style="list-style-type: none"> 1. To improve human wildlife conflict resolution 2. To raise stakeholder awareness of Tugwi Mukosi RP 3. To generate and/ or increase community benefits from the Recreational Park 4. To improve collaborative management of Tugwi Mukosi RP 5. To mobilise resources to drive and strengthen community outreach and engagement activities
Park Administration	To ensure the achievement of effective management of Tugwi Mukosi Recreational Park through transparent, accountable and efficient management of human, financial and physical resources	<ol style="list-style-type: none"> 1. Trained and motivated staff 2. Good access and communications are vital for effective management 3. Management and financial resources are finite 4. Collaborative management - the sum is greater than the parts 	<ol style="list-style-type: none"> 1. To recruit sufficient trained staff with high morale 2. To construct adequate infrastructure for effective management 3. To put in place and maintain adequate equipment required for management 4. To improve resource protection 5. To mobilise resources to drive Park administration

MAPS

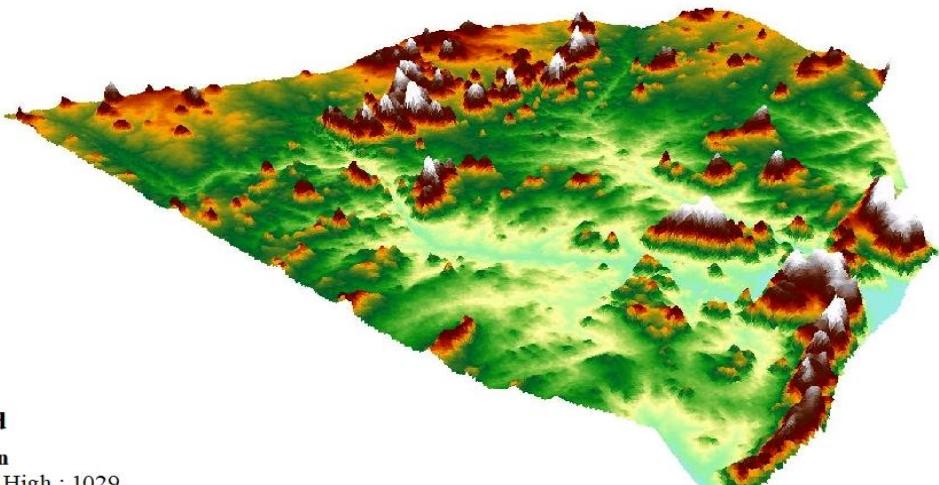


Map 2: Location of Tugwi Mukosi Local Development Plan and RP in Masvingo Province of Zimbabwe



Map 3: Location of Tugwi Mukosi RP in relation to neighbouring Protected Areas and Private Ranches

Tugwi Mukosi Recreational Park: 3D Digital Elevation Model

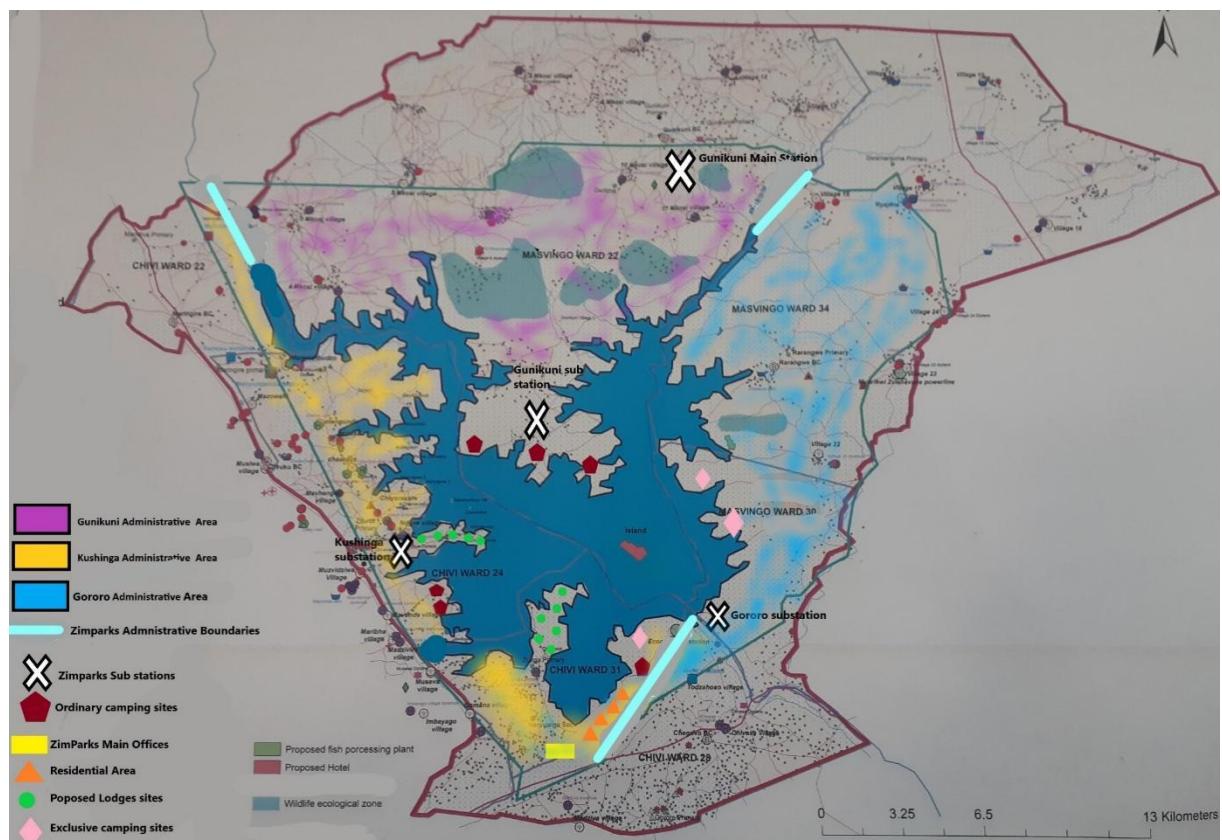


Legend

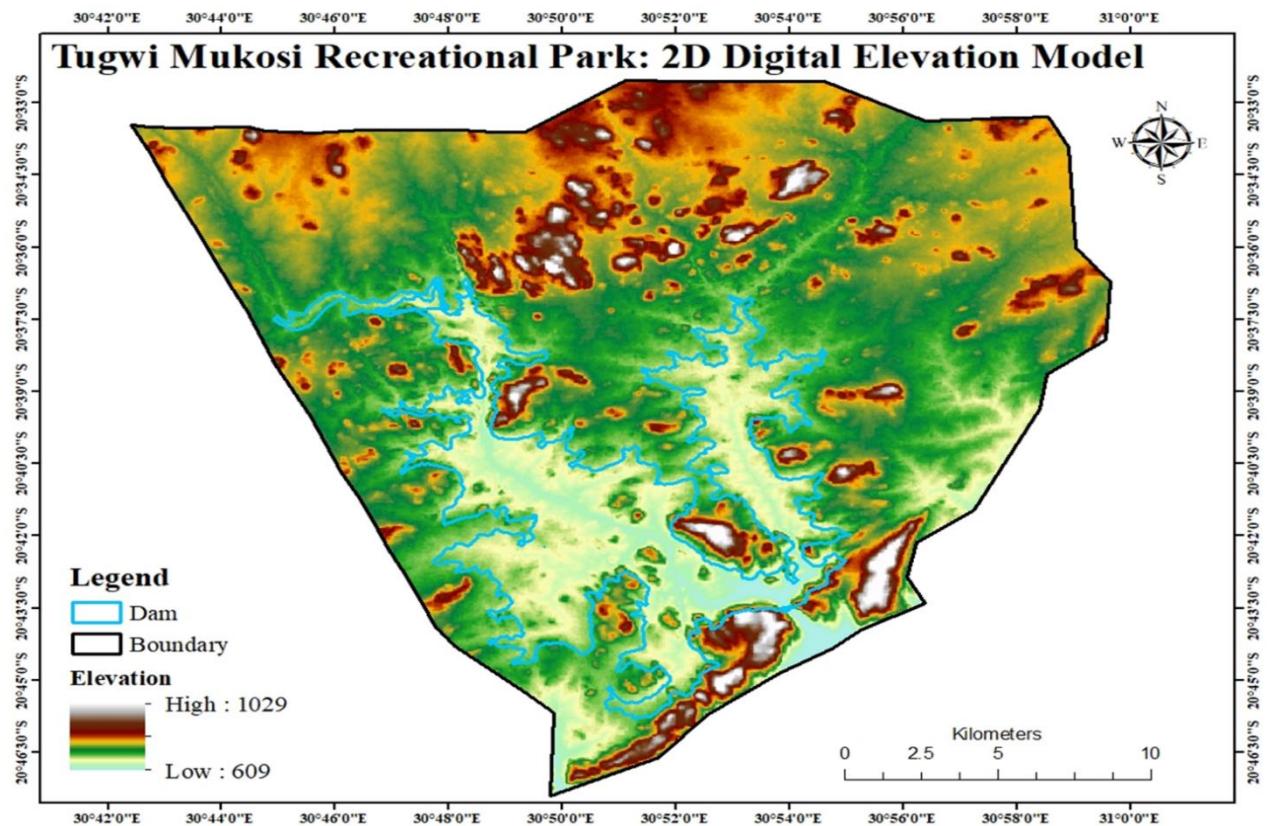
Elevation

- High : 1029
- Low : 609

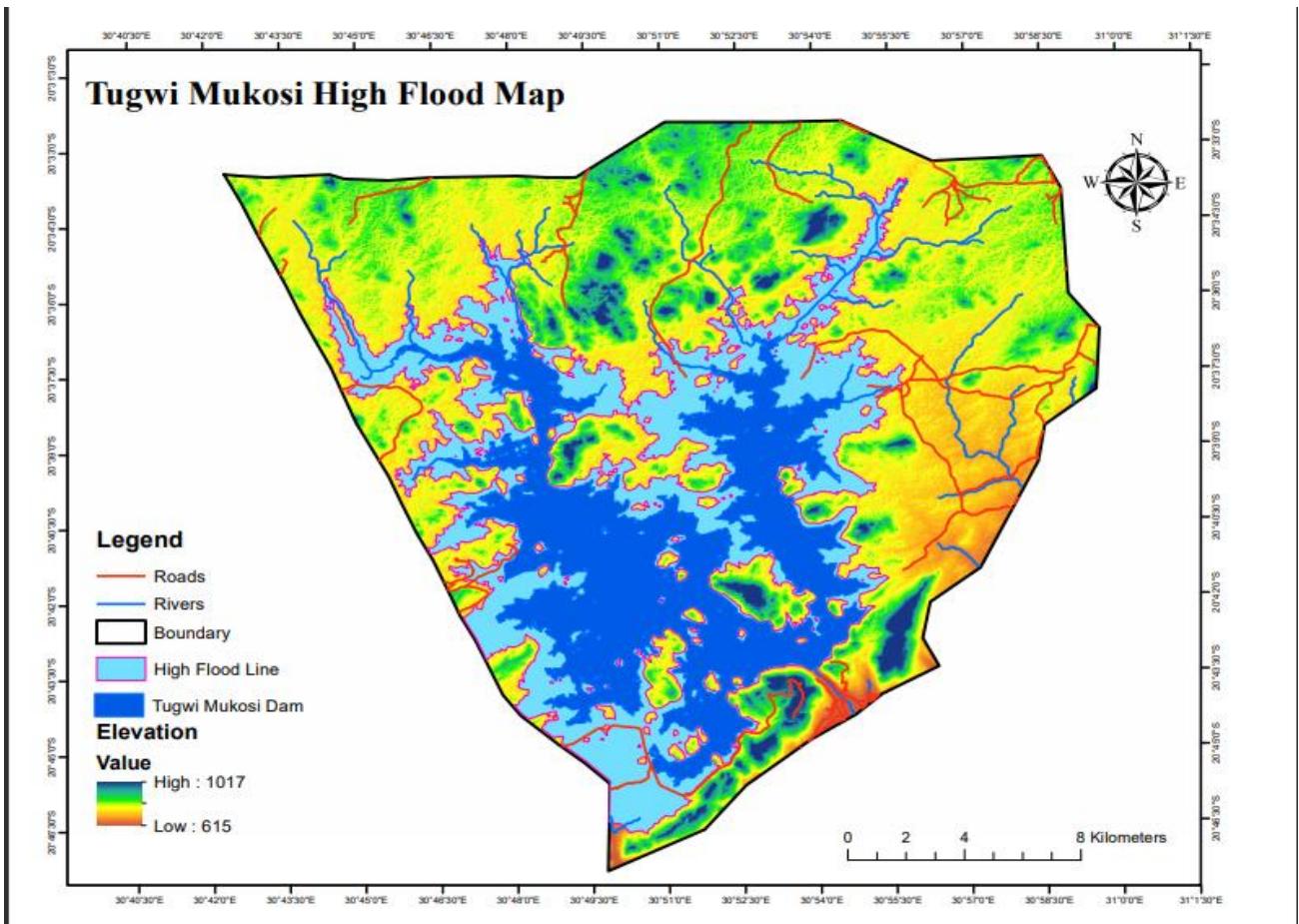
Map 4: Tugwi Mukosi RP 3-Dimensional map



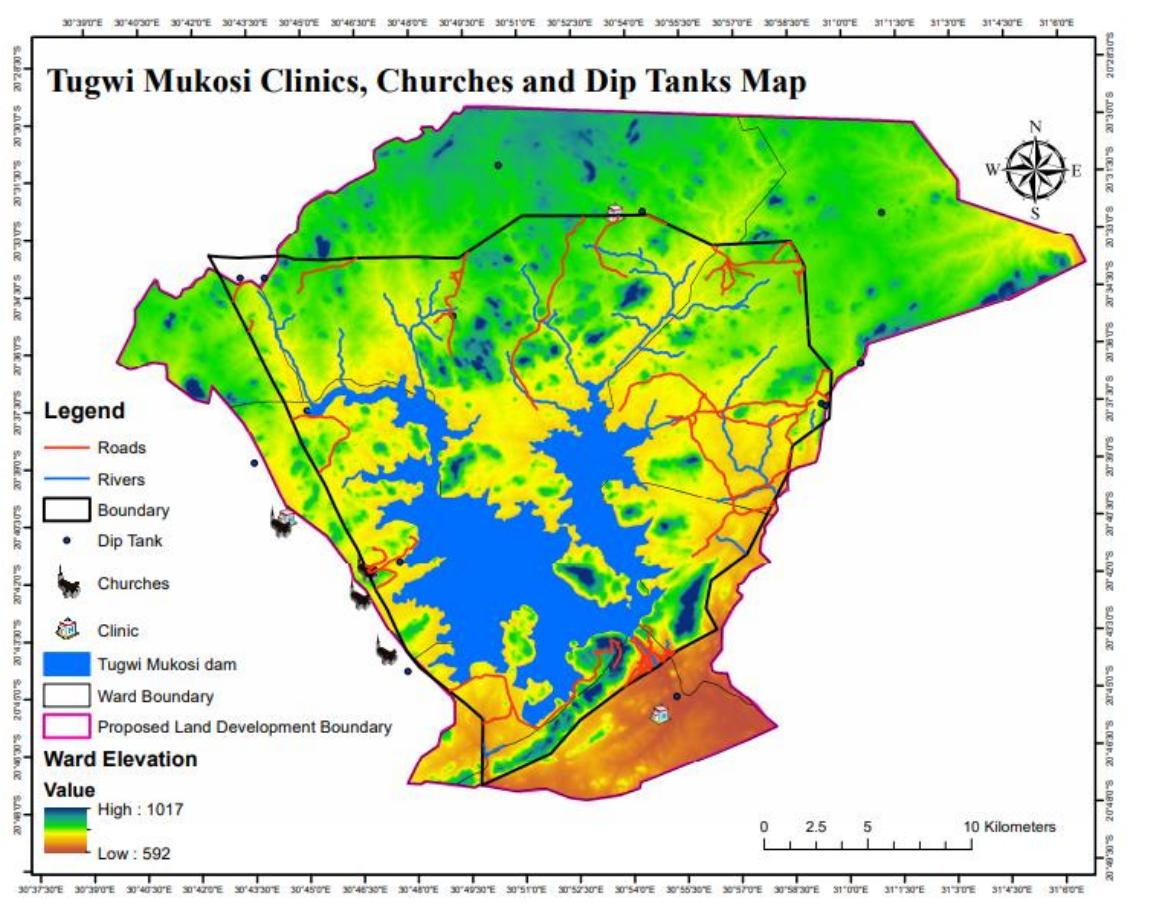
Map 5: Tugwi Mukosi RP Proposed Law Enforcement Stations



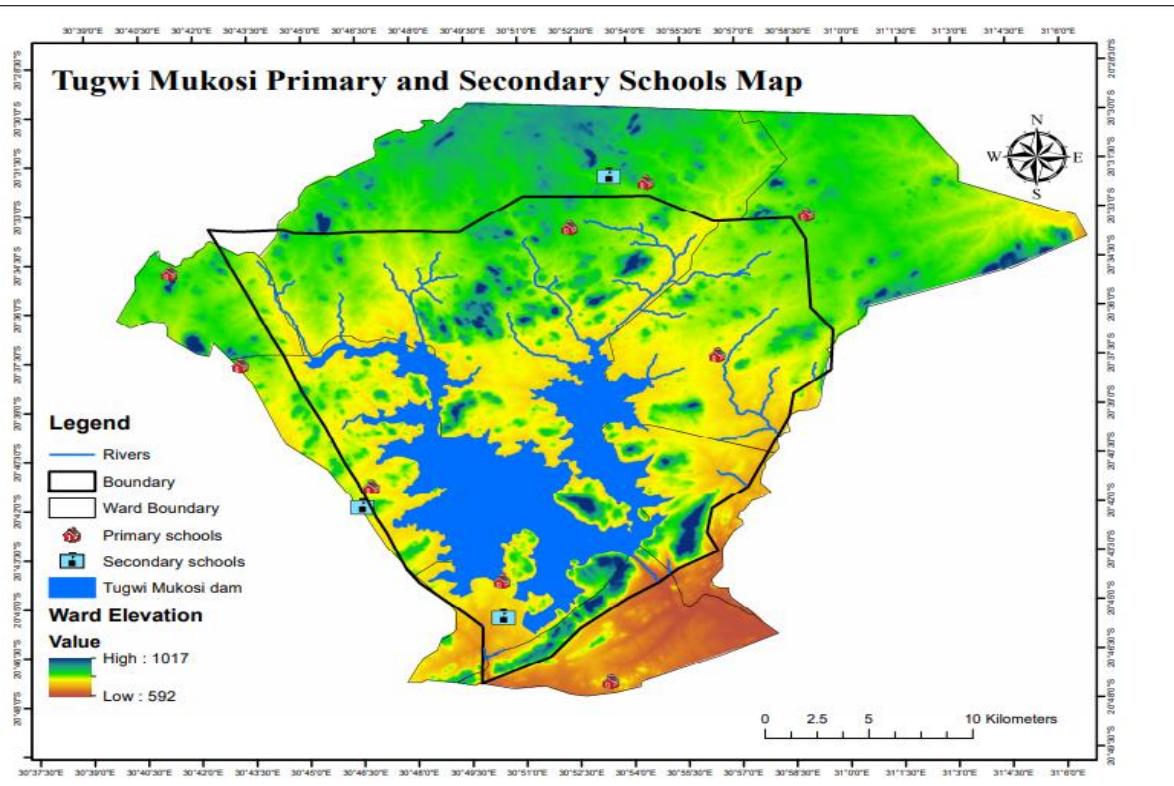
Map 6: Tugwi Mukosi RP 2D Digital Elevation Model



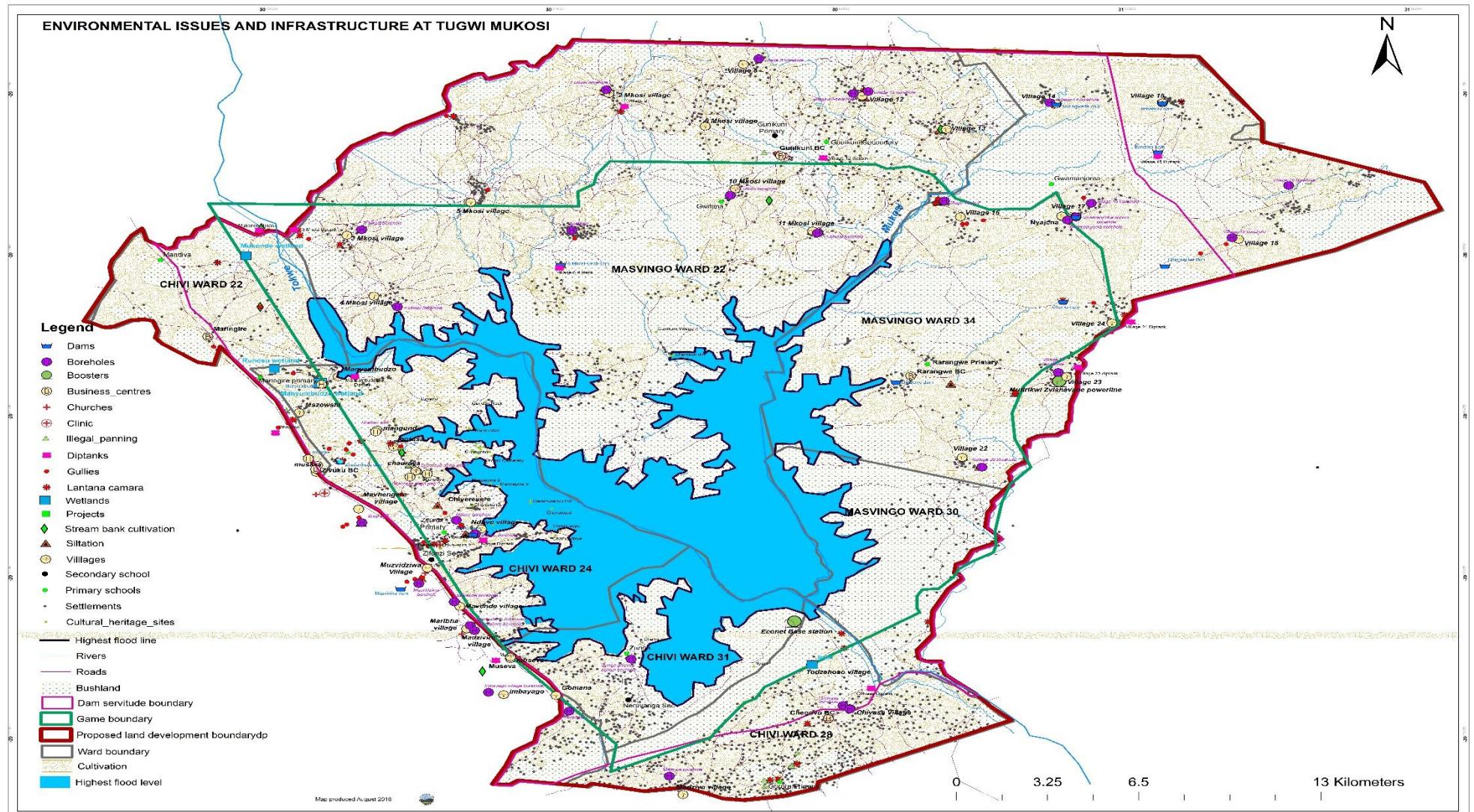
Map 7: Tugwi Mukosi RP High Flood Map



Map 8: Tugwi Mukosi RP Clinics, Churches and Dip Tanks, October 2020



Map 9: Tugwi Mukosi RP Primary and Secondary Schools, October 2020



Map 10: Environmental and Socio-economic Issues Mapped within the Local Development Area, Masvingo PDC Report, 2018

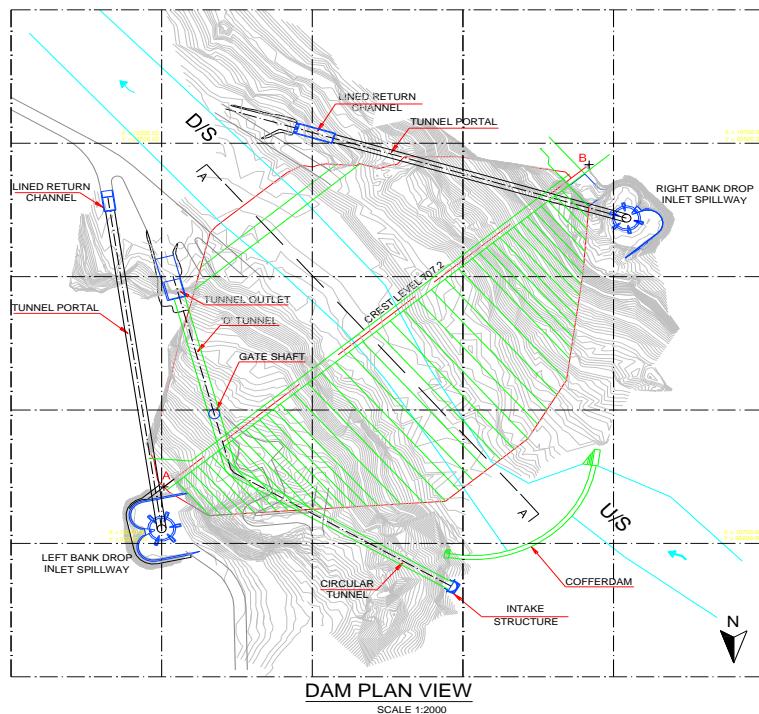


Figure 1: Dam plan view of Tugwi Mukosi dam, *Masvingo PDC Report, 2018*

LEGEND

- (2A) CRUSHED RUN (C-80mm)
COMPACTED IN 40 CM THICK LAYERS NO WATERING
WITH 8 PASSES OF ROLLER WATERING AT COMPACTION
- (2B) QUARRY RUN (C-200mm)
COMPACTED IN 40 CM THICK LAYERS WITH 8 PASSES OF ROLLER
WATERING AT COMPACTION
- (3A) ROCKFILL FROM QUARRY (0-500mm)
COMPACTED IN 50 CM THICK LAYERS WITH 8 PASSES WATERING
AT COMPACTION
- (3B) ROCKFILL FROM QUARRY (0-600mm)
COMPACTED IN 60 CM THICK LAYERS
WITH 8 PASSES OF ROLLER WATERING AT 200L/M3
- (3C) ROCKFILL FROM QUARRY (0-800mm)
COMPACTED IN 80 CM THICK LAYERS WITH 8 PASSES OF ROLLER
WATERING AT 200L/M3
- (1A) COHESIONLESS FINE-GRAINED SOIL
COMPACTED IN 30 CM THICK LAYER
- (1B) RANDOM FILL
COMPACTED IN 20 CM THICK LAYER

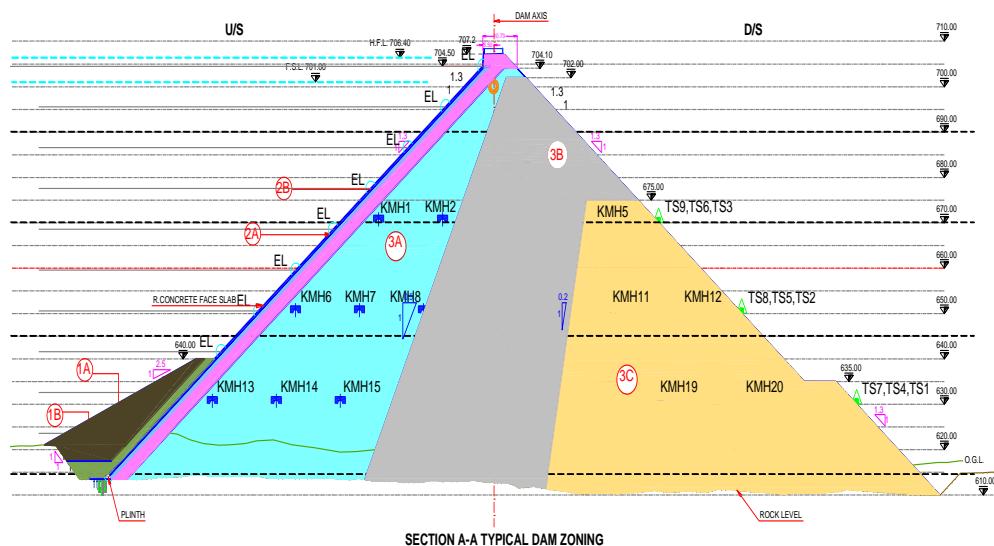


Figure 2: Cross-sectional view of Tugwi Mukosi dam, *Masvingo PDC Report, 2018*

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ACKNOWLEDGEMENTS

The development of this management plan would not have been possible without the unwavering support of the ZPWMA Director General Mr. F. U Mangwanya and entire Directorate (Mr. G Matipano, Mr. G Manyumwa, Mr. A Musakwa, Mr. P Mhaka Mr. E Gandiwa and Mrs P. Gandiwa), Trans frontier Conservation Areas (TFCAs) Unit, Business Development Unit, Tourism and Quality Assurance Unit, Legal Unit and Community Extension Services Unit at ZPWMA HQ. Roseline Mandisodza-Chikerema, the Chief Ecologist of the Terrestrial Ecology Unit and Wendy Kagurabadza deserve special mention for believing in, and keeping the planning process moving forward. At Regional level, special mention also goes to the South East Lowveld Region Manager Mr L. Njiva and Zimbabwe Institute of Wildlife Conservation Principal Mr D. Chitupa who gave freely of their time and knowledge during stakeholder consultations, validation/ review exercise and support to the planning team during field trips and meetings in South East Lowveld Region.

To all our valued stakeholders, Chivi and Masvingo Rural District Councils, District Administrators, ZINWA, Forestry Commission, Environmental Management Agency, rural communities and respective traditional and local leadership we value the time and knowledge you shared freely during the planning process consultations and field trips. The senior staff from Tugwi Mukosi RP, Area Manager Mr M. Svosvai, Ecologist Mr T. Magqina, Ranger Mr J. Tom are thanked for their participation in the process. At times we were accompanied by Tugwi Mukosi staff in the field and their knowledge of the area and proficiency in local languages assisted us to travel safely and freely through the Park and adjacent communities conducting consultations.

Participation at planning meetings was lively and constructive and our thanks go out to all who made the effort to attend.

Funding for the process was provided by the ZPWMA as part of its mandate to conserve and protect diverse flora and fauna.

ACRONYMS

AGRITEX	Agricultural, Rural and Extension Services
CPT	Core planning team
EMA	Environmental Management Agency
ERV	Exceptional resource value
GIS	Geographic information system
GZU	Great Zimbabwe University
HWC	Human-wildlife conflict
KEA	Key ecological attribute (of conservation target)
LDAB	Local development area boundary
IUCN	International Union for Conservation of Nature
METHI	Ministry of Environment, Climate, Tourism and Hospitality Industry
MSU	Midlands State University
NUST	National University of Science and Technology
PA	Protected Area
PAC	Problem animal control
PDC	Provincial Development Coordinator/ Committee
PTC	Permanent Tented Camp
RP	Recreational Park
RS	Remote sensing
SC	Special campsite
SMART	Spatial monitoring and reporting tool
TFCAs	Trans frontier Conservation Areas
UZ	University of Zimbabwe
ZPWMA	Zimbabwe Parks and Wildlife Management Authority

PLAN FOUNDATIONS



PREAMBLE

The Plan and Planning Process

The planning process followed the format used by ZPWMA for the last 15 years. The process is collaborative and involves stakeholder and / or community input through a series of meetings and dialogue. However, it is recognised that ZPWMA is the owner and implementing agency of the plan.

Following the completion of the Tugwi-Mukosi dam and its commissioning by the then President of the Republic of Zimbabwe in 2017, the Government has initiated a process of developing a “Development Master Plan” to guide all development and investment within and around the dam. Furthermore the Government of Zimbabwe is keen to include Tugwi-Mukosi dam as one of the four Special Economic Zones (SEZs) as guided by the Special Economic Zones Act Chap. 14:34. Under this Act, Special Economic Zones are established to restore the economy’s capacity to produce goods and services competitively; create economies of scale good enough for the locator of the proposed SEZs to be internationally competitive; ensure inclusive growth emanating from the spread of growth nodes and diversified provincial offerings; maximize the economic benefits of a given geographical location and its stakeholders; and attract more investment from the international world.

From an organizational level ZPWMA in the 2018 Tugwi Mukosi Local Development Area Baseline Report was recommended to develop a dam catchment plan. It is against this background that the ZPWMA is now working towards fulfilling that requirement to ensure smooth tapping into the identified investments and opportunities.

The Planning Area

The Tugwi Mukosi Ecosystem

The Tugwi Mukosi Recreational Park falls within the South East Lowveld Region one of the 8 ZPWMA administrative units. The Park falls in larger ecological system that includes the Lake Kyle RP, Bangala Dam RP, Gonarezhou National Park, Nuanetsi, Mushandike Sanctuary, Manjirenji Ranch, Save Valley Conservancy and Chipinge Safari Area (Refer to Map 3). All of these fall into a larger conservation area known as the South East Lowveld Region. This is important in that many policy decisions regarding wildlife and conservation are taken at Regional level.

Tugwi Mukosi Recreational Park

The Park provides protection for the Tugwi Mukosi water basin (largest inland dam in Zimbabwe), islands, wetlands, mountain ridges and gorges flanking the Tugwi and Mukosi landscape, flora and fauna as well as for extensive wilderness forests and bushland of native vegetation species in the west and south towards the boundary and dam wall. In addition, the importance of stakeholders and communities is recognised and taken into account and dealt with in the Outreach and Collaborative Management Programme. The Park is also established to provide various commercial and tourism-based opportunities to both the local communities and to the wider tourism industry.

Past Planning for Tugwi Mukosi Recreational Park

Tugwi Mukosi Local Development Area baseline report developed by the Masvingo Provincial Development Committee and published in August 2018 is the only document currently available for the Park, more than two years before official gazetting. This document outlined the rationale for the Park and the key elements are shown below

- Tugwi Mukosi Dam development
- Socio-economic Environment for the Proposed Local Development Area
- Land Resources for the Proposed Local Development Area
- Water Resources for the Proposed Local Development Area
- Biodiversity for the Proposed Local Development Area

No other planning documentation was found

Current Document Structure

The management plan for Tugwi Mukosi RP will have three main components. Firstly, there is the plan itself which has a descriptive section followed by a condensed three-year action plan. This action plan can be considered the core of the documentation.

Supplementary documentation consists of a background to the ecosystem and a "plan on a page". The plan on a page is a summary of the plan on an A0 sheet which can be displayed at appropriate locations. More details are shown in Table 2.

Table 2: Management Planning Documents for the Tugwi Mukosi Recreational Park

Document	Description
Park Plan	The recreational area will have its own general management plan. The primary purposes of the RP as enshrined in the Parks and Wildlife Act (Chap 20:14) shall be to preserve and protect the natural features therein for the enjoyment, benefit and recreation of the public.
Background Document	The background investigation of the Tugwi Mukosi was carried out. A big part of the ecosystem analysis was the collection and cleaning of GIS data and this is represented in maps (Map 1 to 14) found throughout the management plan and the background document. A short summary of the background material is found in the introduction to each plan but it is presented as a separate document of that the plan is not cluttered and buried with background information.
Posters and Maps	A large wall map was prepared for the Protected Area and forms part of the deliverables from the planning process. In addition, it has proved useful to prepare a summary of the management plan on an A0 poster for display on station. This allows all staff members and stakeholders to visualise the plan at a glance.

PLAN FOUNDATIONS

Summary Description

Introduction

As mentioned above planning was carried out for the Tugwi Mukosi Recreational Park and the background documentation was compiled. The material is presented in part 2 of the plan and a summary is shown here. This section provides a snapshot overview of the Park and its management.

Biophysical Environment

Relief - Tugwi Mukosi RP is unique in Zimbabwe combining spectacular and vast water basin, majestic mountain ranges, islands. It is the relief that defines the character of the Park. The highest point is around 1,029 meters above sea level on the mountain ranges sandwiching the dam wall while the lowest is on the Tugwi River at 609 meters above sea level (Refer to Map 4 and 6).

Drainage and Wetlands - Tugwi Mukosi dam is a micro catchment in Tugwi sub catchment of the main Runde Catchment. The main rivers that drain into Tugwi Mukosi dam are Tugwi and Mukosi. Ngezi and Shashe are the two main rivers that significantly contribute to the flow into Tugwi River and later debouches into Tugwi Mukosi dam. Tugwi Mukosi dam has a full supply capacity of 1,802.6 Mm³. It has a maximum flooding level of 706.5m above sea level.

The local development area of Tugwi Mukosi Dam has a total of 6 wetlands which are moderate to severely degraded and are mostly found in areas that have the loam soil type. The total area covered by these wetlands is 3.8ha. Most of these wetlands are found in communal areas and because of their location, their threat comes from agricultural activities and livestock trampling as is the case with Mujena village wetland and Mucharavati village wetland in ward 30 of Masvingo district under Chief Nyajena, and Manyumbudzo village wetland, ward 24 and Mukonde village wetland ward 22 of Chivi district as shown in Map 10.

Geology – The soils are mainly luvisols with isolated patches of calcareous fluvisols. The geology is composed of Paragneiss and other high base grade sediments with structural trends.

Climate - The area predominantly falls under Natural Regions 4 and 5 which receive between 450-650mm of annual rainfall annually. With increased instances of mid-season droughts and late onset of rains owing to climate variability, the area has been characterized by droughts, thus rendering yield/hectare below normal. Average annual temperature is about 20 degrees Celsius.

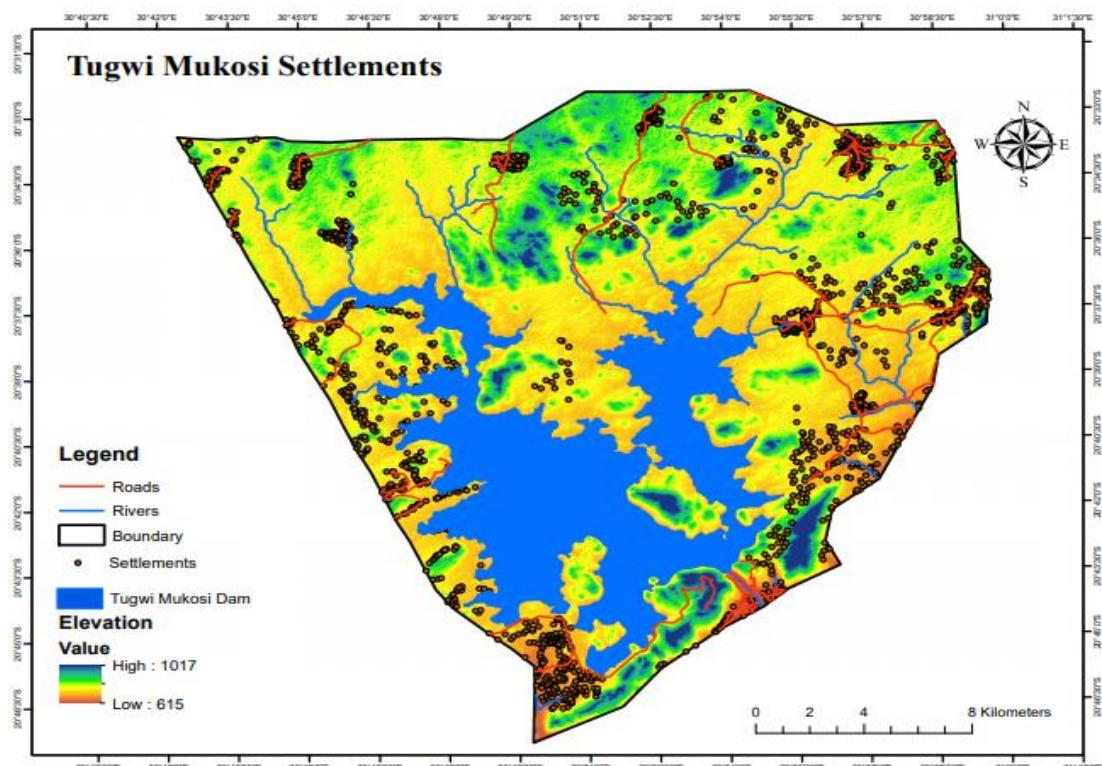
Vegetation - Tugwi Mukosi is mostly dominated by miombo woodland on the Masvingo district side. However mixed vegetation is found in Chivi district side which includes some acacias and other indigenous like mopane (*Colophospermum mopane*) and misusu (*Terminalia sericia*). *Lantana camara* is invading the local development area in the two districts with support of Mupangara tree (*Dichrostachys glomerata*), *Julbernadia globiflora*, *Brachystegia spiciformis* and *Combretum molle*). The ecosystem is composed of other tree species that includes; *Parinari curatellifolia*, *Sclerocarya birrea*, *Mountain acacia*, *Dicrostachys cinerea*, *Pseudolanchnostylis maprouneifolia*, *Brachystegia glaucescens*, *Lannea discolor*, *Diospyros mepiliformis*, *Albizia amara*, *Diospyros lycioides*.

The following indigenous fruit trees were identified, mitamba (*Strychnos spinosa*), mitobwe (*Azanza garkeana*), mipfura (*Sclerocarya caffra*), mionde (*Ficus capensis*), misekesa (*Bauhinia thonningii*) and misuma (*Diospyros mespiliformis*) in the local development area.

There is a high grass species diversity and observed grass species included; *Heteropogon contortus*, *Panicum maximum*, *Polygonatheria squarrosa*, *Hyparrhenia nyassae*, *Digitaria spp*, *Eragrostis spp*, *Hyperthelia species*, *Aristida spp* and *Themeda triandra*.

Fires – Since its inception in 2017, the Park has not witnessed any veld fire. The Park is working on producing an active fire management plan, reviewed on a yearly basis before the fire season. The plan will have means and strategies to actively control and prevent fires - through proactive and reactive management.

Settlement - There are seven wards in both Masvingo and Chivi districts that fall within the RP and the local development area, and these are Wards 22, 24, 28 and 31 in Chivi district and Wards 22, 30, and 34 in Masvingo district (Refer to Map 2 and 10). There are a total of 3 652 households within the seven wards, translating to a total population of 21 265 people as estimated in Map 11. The figures on households and population is based on information obtained from Village heads and local Councillors. This figure may however still need to be verified meticulously as this could not be done during the baseline survey exercise due to time and resource constraints.



Map 11: Tugwi Mukosi RP Settlements, October 2020

Wildlife - The animals that are present in the area includes; kudu, common duiker, bush pig, porcupine, baboons, vervet monkey, civet cat and spotted hyena. There will be need to introduce more plains game to meet the ecological carrying capacity of the area.

The birds that are present in the area includes Brown snake eagle, heron, giant king fisher, pied king fisher, African fish eagle, African jacana, Africana darter, southern ground hornbill, night jar, cuckoos, paradise fly catcher, hammer kop, plover.

Tugwi Mukosi dam is still young limnologically and still supports species from the incoming rivers. It still needs time for the lake species (esp. fish) to establish and breed. The water quality results also support this. Following the launch of the Masvingo Provincial Command Fisheries Program on the 27th of May 2017, at Tugwi Mukosi dam, more than 413 000 fingerlings of Tilapia were introduced into the dam. A cage culture project was also launched where Zimbabwe Parks and Wildlife Management Authority received 34 750 one month old fingerlings of Tilapia bream, from Lake Harvest Kariba. The fingerlings which weighed an average of 6.3 grams each were introduced into three cages, each cage with a volume of 168,84m³ for commercial cage culture purposes.

A dam yield assessment was later conducted in 2018 and species of fish caught are *Comptodon rendalli*, *Oreochromis niloticus*, *Oreochromis mossambicus*, *Clarias gariepinus*, *Micropterus salmoides*, *Marcusenius macrolepidotus*, *Labeo cylindricus*, *Barbus paludinosus*, *Barbus afrohamiltoni*. The fish species indicate a fishery which is evolving from that which is dominated by riverine species to that which is lacustrine in nature. The evolution is still going on and it will be a while before the lake matures into a fully-fledged lake environment. The many fish that were introduced into the lake in 2017 are too few and still small for commercial harvesting. The fish introduced in 2017 have not reproduced yet. The fish in the lake that were caught during the assessment including those caught by local fishermen are self-introduced from the catchment basin as well as from the various dams that were flooded by the new lake.

Research - Research and monitoring in the area is set to flourish with external researchers and the Resident Ecologist having produced a few publications. A Resident Aquatic Ecologist is in place currently stationed at Kyle Recreational Park some 200km away. The Zimbabwe Institute of Wildlife Conservation formerly Mushandike College is nearby to support research and monitoring work in the area. Currently, monitoring activities are being set for the long-term activities.

Management and Development Background

History – According to the Masvingo PDC baseline report (2018), the decision to construct Tugwi Mukosi Dam was first made as far back as 1964 when the extent of the dam servitude/reservation was gazetted by the Rhodesian Government in terms of the Water Act that was operative at the time. The relevant notice is the Southern Rhodesia Notice No. 1056 of 1964 and it had the effect of reserving the area “against subdivision, the construction of permanent improvements and quarrying until further notice”.

The initial design studies and technical report were done by Consulting Engineers Coyne and Bellier in 1967 which they later updated in 1985. The Design Division of the then Ministry of Energy and Water Resources then carried out new design studies in 1989 and the relevant report was completed in 1990. In 1993 Coyne and Bellier were once again commissioned to prepare a comprehensive feasibility report on the project. This report included the design of an arch dam, irrigation works, a report on the power generation, water conveyance systems and the proposed cropping regime. Overally, the report identified a lot of underutilised irrigable land that would easily benefit from the Tugwi Mukosi Dam.

Tugwi Mukosi Dam - Tugwi Mukosi Dam is located at the confluence of Tugwi and Mukosi rivers, and the dam straddles the boundary of Chivi and Masvingo South districts in Masvingo Province. It was designed as a rockfill dam with an upstream impermeable concrete slab. Standing tall at a height of 89.2m, the dam has two 50m deep bell drop-inlet spillways located on both banks of the river with a combined length of about 390m of 6m diameter tunnels (Refer to Figure 1 and 2). The full capacity of the dam is 1 802 600 ml, with 10% yield of $403.947 \times 10^6 \text{m}^3$, and the area to be flooded by the dam at full supply level is 9 600 hectares. There are five saddle dams on the right bank; the fifth saddle dam has been designed as an auxiliary spillway. The dams are zoned earth fill structures with total embankment volume of 1 000 000m³.

The contract for the construction of the dam commenced in April 1998 and lasted for a period of 19 years. It was commissioned in May 2017 by the then President of Republic of Zimbabwe, Cde Robert Gabriel Mugabe. The Zimbabwe National Water Authority, a parastatal under the then Ministry of Water Resources Development and Management designed the dam and supervised its construction. The main contractor for the dam was **Salini-Impregilo Joint Venture** consortium of two Italian companies. The Zimbabwean Government wholly funded the construction contract from its own resources which amounted to \$255 million dollars.

Boundaries – Tugwi Mukosi has a perimeter boundary of 96km straddling two districts, Masvingo and Chivi of Masvingo Province. The Park is 49 010 ha in spatial extent. Seven wards in both Masvingo and Chivi districts that fall within the Tugwi Mukosi RP as well as the local development area, and these are Wards 22, 24, 28 and 31 in Chivi district and Wards 22, 30, and 34 in Masvingo district.

Staffing – Currently, Tugwi Mukosi has 14 members of staff with a ranger patrol compliment of 11. With time-off, sick, maternity and study leaves and other reasons for absence this translates to a low level of enforcement capability. The Park has an Area Manager and an ecologist assigned to it.

Equipment - The current vehicle compliment for Tugwi Mukosi is very low with one limited runner land cruiser pickup. However, this vehicle is often most times not on the road due to breakdowns. One limited runner 4-seater 75hp boat is on station.

Services - Water for the HQ is from a single borehole at present but this needs to be expanded. ZESA line reaches the HQ and is currently the source of power. There is need for all the houses and office to be equipped with solar power. Patrol rations are scarce. There is a training and management ration quota allocated for the staff on annual basis, Annex D. Schooling and medical services are off-site with the closest population centres being Gororo business centre, about 5km away where a school, clinic and shops are accessed. Ngundu halt business along the Harare – Beitbridge highway is better off in terms of service provision but about 30 plus km away from the current main station.

Infrastructure – The ZPWMA station does not own any housing, workshop, office and recreational / entertainment infrastructure in Tugwi Mukosi. Currently, there are 17 houses including 1 office availed to ZPWMA by ZINWA since 2017 for temporary usage. There are at least 200 km of roads and fireguards throughout the Park that needs to be opened up maintained.

There are plans to construct 73 housing units, E21 = 5 units and F15 = 68 units on 4 different sites as indicated in Annex C. The sites are strategically located around the Park at the main camp (Gororo) near the dam wall, Zunga, Gunikuni and Rarangwe as shown in Map 5.

Communications – The radio system available at Tugwi Mukosi is obsolete, barely sufficient and non-functional. There is only 1 HYT base set and 1 handset. There is no repeater link. Currently, rangers on patrol use their mobile phones to get hold of the station or the other way round. Net One and Econet network is available in most areas of the Park except for some northern parts in Gunikuni where both signals are sporadic.

Anti-poaching - Anti-poaching operations in form of extended, local and strategic patrols are run from the Tugwi Mukosi Gororo HQ and is supported by one recently re-established outpost at Zunga. The Park has been divided into 4 patrol sections that are accessed on a rotational basis, with at least half of them conducting lake patrols. Spatial Monitoring and Reporting Tool (SMART) is currently not being implemented to compliment and monitor ground patrol efforts. Trainings have been held to equip rangers with knowledge to collect data in the field from their previous stations prior to deployment at Tugwi Mukosi. There will be need to have a full-time ranger, SMART analyst who collates, analyse data and produce monthly, periodic, situational, quarterly and annual reports to show quantitative ranger vehicle, boat and foot patrol effort and coverage. Consumables and equipment needed for anti-poaching (tents, boots etc) are limited, so too are vehicles and boats for patrol deployment. Currently, there are no conservation partners to assist ZPWMA with anti-poaching activities, both inside and outside the Park.

Community Outreach - The proposed community outreach programme for Tugwi Mukosi RP will assume a multi-faceted approach with inputs into problem animal control (PAC), livestock security, community awareness components and access to the Park for selected resources. At Regional level there is a Community Liaison and Extension Officer who work with the station. Currently, ZPWMA has to handle this activity 100% on its own. The future outreach programme will see anticipated benefitted from assistance of potential conservation partners reaching the adjacent communities.

Tourism - The Park has established a niche for tourism that is based around boating, fishing, self-drive camping, game viewing and walking safaris. Levels of tourism have always been low, partially due to the infancy of the Park and partly due to marketing and the general situation in Zimbabwe. Campsites, chalets, lodges and a hotel will be established. Figure 3 shows that data on visitor numbers is available but the records indicate that visitation is on the increase. Currently, tourism in the Park is markedly seasonal with most visitors coming in the dry season for fishing only. Fishing is the only tourism activity attracting people.

Collaborative management – Tugwi Mukosi at the time of writing, did not have any conservation partner. The Park is open to take on board partners to assist in Park management with a wide range of activities including infrastructure refurbishment, research, community aspects, anti-poaching, communications etc. The NGOs will have 5 or 10 year commitments through signed MoUs with ZPWMA and so the coordination of their collaborative efforts is of paramount importance.

Exceptional Resources

These exceptional resource values describe the Tugwi Mukosi RP's key natural and man-made resources and other features that provide outstanding benefits to local, national and international stakeholders. These are also especially important for maintaining the area's unique qualities, characteristics and ecology and are summarised and described in Table 3.

Table 3: Summary of Exceptional Resource Values for Tugwi Mukosi Recreational Park

Category	Exceptional Resource Values
Environmental	Dam
	Wetlands
	Islands
	Wilderness
	Mountains (ranges)
	Native vegetation pockets
Scenic	Geological features - Gorges, Mountains (ranges)
	Dam/ wall
	Wetlands
	Islands
Social	Catchment protection
	Research
	Community routes (Zunga to Gunikuni, Rarangwe to Zunga, Gororo to Gunikuni)
Cultural	Shona culture
	Cultural and Heritage sites

Table 4 describes the exceptional resource values in more detail.

Table 4: Exceptional Resource Values for the Tugwi Mukosi Recreational Park

	Value	Description
Environmental	Dam	The dam, water and aquatic species contained therein are of great ecological, cultural, agricultural, tourism significance. The magnificent dam wall, massive basin and diverse fish species are at the primary centre of attraction. The dam was designed as a rockfill dam with an upstream impermeable concrete slab as shown in Figure 1 and 2. Standing tall at a height of 89.2m. The full capacity of the dam is 1 802 600 ml, with 10% yield of $403.947 \times 10^6 \text{ m}^3$, and the area to be flooded by the dam at full supply level is 9 600 hectares.
	Wetlands	The local development area of Tugwi Mukosi Dam has a total of 6 wetlands which are moderate to severely degraded and are mostly found in areas that have the loam soil type. The total area covered by these wetlands is 3.8ha. Most of these wetlands are found in communal areas and because of their location, their threat comes from agricultural activities and livestock trampling as is the case with Mujena village wetland and Mucharavati village wetland in ward 30 of Masvingo district under Chief Nyajena, and Manyumbudzo village wetland, ward 24 and Mukonde village wetland ward 22 of Chivi district (Refer to Map 10).
	Islands	There are about 12 islands in varying magnitude in the dam (Refer to Map 12 and 13). All the islands fall within the high ecological protection zone. With the exception of one island where a semi-permanent tourist facility will be allowed, the islands should be protected from human disturbance. Most aquatic fauna is expected to forage, roost, breed or nest on the islands.
	Wilderness	Long touted by many other Parks in Africa, wilderness is actually a quality that is becoming rarer. The fastest shrinking tourism product. However, wilderness is certainly a key feature of the Park in most areas in the North, Gunikuni and south Gororo where native vegetation pockets are still thriving.
	Mountain (ranges)	There are spectacular mountain ranges in the southern boundary of Tugwi Mukosi Recreational Park which make up the physiographic boundary of the Park and a key feature for the formation of the dam wall. Viewable from significant distances the mountains to the west have cultural significance to the local people.
	Native vegetation pockets	The RP is predominantly characterised by miombo species to the south. These important vegetation types need to be protected for various ecological, cultural and conservation reasons. In areas where people resided there is need to go beyond protection but regeneration as a lot of trees are likely to have been felled for firewood while the grasses suffered from trampling by livestock and soil erosion.
Scenic	Geological features	Geological features include Gorges, Mountains (ranges). As under mountain ranges above.
	Dam/ wall	As under dam above.
	Wetlands	As under wetlands above.
	Islands	As under islands above
	Flora	As under native vegetation pockets above
Social	Catchment protection	The headwaters of the Runde Catchment are found in the southern parts of the Park, Tugwi Sub Catchment. These include the Tugwi, Mukosi and other tributaries Shashe and Ngezi. These rivers are important for the downstream communities. The Park provides protection to both banks of the specific rivers of the river for more than 40 km of its course retarding high rates of erosion and siltation.
	Research	The Park represents a great opportunity for research, especially as the development of a research and training facility inside the Park.
	Community routes	People were originally settled in the Park. Community routes were used for example from Zunga to Gunikuni, Rarangwe to Zunga, Gororo to Gunikuni. The gazettlement of the Park will witness cut off of legal access to these routes.
Cultural	Shona culture	The original inhabitants of the area were Shona under various Chiefs (Gororo, Nemauzhe, Shindi, and Shumba). In the late 1950s to the 70s the area was previously a cattle ranch owned by one white farmer. Prior to the completion of dam construction locals were relocated in 2014 and some will be relocated.
	Cultural and heritage sites	The western and southern parts of the Park are characterised by various cultural and heritage sites. Most of them are under Chief Gororo and Nemauzhe and have been mapped. Chiefs have negotiated for access to such sites and the ZPWMA has agreed to the request.

Ecosystems Components

The planning methodology requires that the ecological components of the Recreational Park, and the threats to them, be identified and prioritised. The groupings are termed “Conservation Targets”. Once the conservation targets, their associated key ecological attributes, and threats have been identified, the main thrust of the ecological management programme is to focus its monitoring and management intervention activities on these.

The methodology works on the assumption that, when taken together, these targets are representative of the biodiversity both aquatic and terrestrial of the Tugwi Mukosi Recreational Park and concentrating on them will also capture systems, communities and species that are not listed. It also allows managers to focus their limited manpower and financial resources.

Conservation Targets

Tables 5 and 6 present the Tugwi Mukosi Recreational Park conservation targets and the threats to these conservation targets.

Table 5: Tugwi Mukosi Recreational Park Conservation Targets

Systems	Unique geological features – mountain ranges, mountains and gorges Wetlands and alluvial systems Water basin and riverine systems Native wilderness values
Communities (wildlife and vegetation)	Carnivores - leopards, jackals, civet cat and spotted hyena Birds - Important Bird Area (IBA) trigger species Aquatic - Fish Species
Species	Hyenas Leopards Kudu

Table 6: Conservation Targets for the Tugwi Mukosi Recreational Park

	Conservation Target	Rationale	Subsidiary Targets	Key Ecological Attributes
ECOSYSTEM	Unique geological features	The best-known features of the Park are the spectacular mountain ranges, mountains and gorges especially on the southern and eastern boundaries (Refer to Map 4 and 6).	Escarpment and hillslope vegetation. Gorge and valley vegetation	<ul style="list-style-type: none"> • Species diversity • Unusual species
	Wetlands and alluvial systems	Wetlands are a distinctive feature of the Tugwi Mukosi landscape with many of them being perennial	Aquatic wildlife	<ul style="list-style-type: none"> • Water flow • Water quality
	Water basin and riverine systems	This is a key feature of Tugwi Mukosi and was included in the Park as it is a stronghold for the diverse fish and vegetation species. The riverine systems also offer different habitats to the rest of the Park.	Aquatic life forms (diverse) Riverine vegetation	<ul style="list-style-type: none"> • River regime (flow and level) • Riparian habitat • Water quality
	Native wilderness values	A vital component of the Park's tourism future, the wilderness values are unsurpassed in the region	Vegetation	<ul style="list-style-type: none"> • Intact woodlands • Minimal disturbance of designated wilderness areas

	Conservation Target	Rationale	Subsidiary Targets	Key Ecological Attributes
COMMUNITY	Large and small carnivores	Leopards, jackals, civet cat and spotted hyena	Other species in ecosystem	<ul style="list-style-type: none"> • Population size and structure • Prey species availability
	Birds - Important Bird Area (IBA) trigger species	Important Bird Area (IBA) trigger species, especially birds of prey	Other birds	<ul style="list-style-type: none"> • Population size and structure • Habitats
	Aquatic - Fish Species	<i>Comptodon rendalli, Oreochromis niloticus, Oreochromis mossambicus, Clarias gariepinus, Micropterus salmoides, Marcusenius macrolepidotus, Labeo cylindricus, Barbus paludinosus, Barbus afrohamiltoni</i>	Other wildlife such as Hippo and Crocodile species	<ul style="list-style-type: none"> • Population size and structure • Habitat availability
SPECIES	Leopards	Numbers not known. An indicator of a healthy population. There is need to establish the estimates through camera trap, spoor, dung surveys/ analysis	Other herbivores and livestock - HWC	<ul style="list-style-type: none"> • Population size and structure • Migration and dispersal areas • Predation (especially on livestock)
	Hyenas	Numbers not known. However, from community assessments they are a menace in the communities.	Other species in the ecosystem especially herbivores and livestock	<ul style="list-style-type: none"> • Population size and structure • Prey species availability
	Kudu	Numbers not known. Indicator of favourable habitat	Other species in the ecosystem and habitat	<ul style="list-style-type: none"> • Population size and structure • Migration and dispersal areas • Predator/ prey relationships • Poaching

Threats

A threat is defined as any factor which has the potential to impair, degrade or destroy a conservation target. These are mainly related to human activity and a summary of the major ones facing the Park are shown in Table 7. More details are found in the background documentation

Table 7: Threats facing the Tugwi Mukosi Recreational Park

Issue	Description
Poaching (wildlife/wood)	Poaching is a serious threat to the integrity of the ecosystem. Poaching can take many forms which include removal of the wildlife especially kudu, bushbuck, fish and vegetation resources. Can be either commercial or subsistence poaching.
Invasive species	<i>Lantana camara</i> is the dominant alien invasive species and is found in wards 22, 24, 28 & 31 of Chivi district and 22, 30 and 34 of Masvingo district covering a total area of 170.9 hectares. The total area of <i>Lantana camara</i> cleared so far is 13.88hectares. <i>Lantana camara</i> was reported to have been introduced in most parts of the districts through seed dispersal by birds, animals and by runoff. The most affected area is ward 30 of Masvingo district where a total of 147hectares is covered by <i>Lantana camara</i> .
Low prey numbers	The prey base for carnivores is low at present. This has fuelled the increase of occurrence of Human Wildlife Conflict cases in the neighbouring communities.
Human Settlement Presence	A lot of communities, over 3 500 families are still living in the Park. They engage in crop raising, livestock farming, firewood cutting, timber harvesting, gold mining, gravel and sand extraction for construction, land clearing among other day to day activities.
Livestock availability	Livestock is available in the Park with their owners. Livestock presence trigger erosion and siltation of the rivers and dam.
Un-prescribed fire	Fires in the Park normally emanate from honey and wildlife poachers, clearing of land for various purposes, retaliatory burning among other natural causes.
Tourism infrastructure/activities	Currently not a major issue but unplanned tourism developments have the potential to greatly degrade the wilderness value and the commercial attractiveness of the Park in a negative way.
Human wildlife-conflict	Given the high densities of humans residing around and inside the Park the potential for human-wildlife conflict is high. Key species PAs include the leopards, jackals, hyenas, civet cat among other carnivores.
Soil erosion	Cattle tracks, poor community access roads construction, absence and non-maintenance of conservation works and soil type are the major drivers of soil erosion which is manifested in the form of rill erosion and gully formation.
Siltation	Siltation of rivers is an ongoing challenge. It is being exacerbated by soil type, poor farming practices, and poor rangeland management practices in the local development area of Tugwi Mukosi Dam.
Drought/ Climate Change	Drought has been part of life in the entire Masvingo Province for a long time. However, when this is compounded by climate change its effects can be far reaching.
Illegal mining	Illegal gold, sand, gravel, clay mining in the southern and western parts of the Park. In Chivi district, gold mining is rampant in Ward 28 Gororo area under Chief Shindi. The chemicals used are cyanide and mercury.
Stream bank cultivation	The availability of water in major rivers like Mukosi, Tugwi, Muchegwa and Gwehondo among others and the need to provide food through subsistence farming has resulted in stream bank cultivation by most communities living in proximity to water bodies. The total stretch of stream bank cultivated gardens is 4 050m.

This table relates to the identified threats and grades their potential impacts on the conservation targets.

Target	Unique geological features	Wetlands and alluvial systems	Water basin and riverine systems	Native Wilderness values	Carnivores	Unique Birds	Aquatic Life – Fish species	Rare and endangered ungulates
Threat								
Poaching (wildlife/ wood)		High	Very High	Very High	High	High	Very High	Very High
Human/ settlement presence		Very High	Very High	High	High	High	High	Very High
Invasive species		High		Very High			Very High	Low
Low prey numbers					Very High			
Livestock incursions		High	High	Low				
Un-prescribed fire				High	Medium	Medium		Very High
Tourism infrastructure/ activities (when poorly managed/ unplanned)	High	Very High	Very High	Very High	High	High	Very High	High
Human wildlife-conflict					Low			Very High
Soil erosion		Medium	Very High	High				
Siltation		Medium	Very High				Very High	
Drought/ Climate Change		Very High	High	High	High	High	High	High
Illegal mining		Very High	Very High	Very High			Medium	Medium
Park invasions		Very High	Very High	Very High	Low	High	High	Very High
Stream bank cultivation		Very High	Very High				Very High	

Purpose

The purpose statement summaries the importance of Tugwi Mukosi Recreational Park, clarifies the reasons for its existence, and provides the overall goal that the Protected Area managers are working towards. The purpose for Tugwi Mukosi Recreational Park is shown below and it takes its cues from the 1975 Act.

Tugwi Mukosi RP will protect and conserve the extraordinary biogeography of the area, including the gorges, wetlands, the biodiversity, the ongoing ecological processes and the wild and scenic landscapes for current and future generations

Subsidiary purposes for the Tugwi Mukosi Recreational Park include

- protection of the catchment area for the many rivers draining into Tugwi and Mukosi rivers, including the spectacular array of wetlands found throughout the area
- protection of the wildlife, mountain ranges, escarpments, islands, valley and gorges that define the essence of Tugwi Mukosi
- provision of facilities and opportunities to the public for camping, fishing, boating, cage culture, photography, game viewing, bird-watching or such other pursuits that may be permitted therein

ZONING

Overview

Zoning refers to what can and cannot occur in different areas of the Park. It is a way of breaking down the Park into smaller units for management or tourism. Management and tourism zones may not align, but it is helpful if they.

- provide protection for critical or representative habitats, ecosystems and ecological processes;
- separate conflicting human activities;
- protect the natural and/or cultural qualities while allowing a spectrum of reasonable human uses; and
- enable damaged areas to be set aside to recover or be restored

When viewing the possible zonal scenarios, it was decided that zoning made more sense from an ecosystem perspective than by individual Parks. Accordingly, although zoning was discussed first at a Protected Area level, the final zone plan took both areas into account. They are therefore presented together. In addition, the management and tourism zones are same, although there may be zonal subdivisions for management and anti-poaching purposes.

Zimbabwe has a standardised zoning system that has been used in its Protected Areas for the last 50 years. The zonal categories are

- | | | |
|--|---|--|
| <ul style="list-style-type: none">• Wilderness• Wild• Special Protection | <ul style="list-style-type: none">• General Use• Development | <ul style="list-style-type: none">• Restoration• Buffer/Influence |
|--|---|--|

However, as ZPWMA evolved from being a government department funded from the fiscus into a self-funding parastatal. The need for commercialisation became apparent to enhance revenue generation for conservation activities. However, the Authority still has a mandate to ensure that the ecological values of the Protected Area estates remain intact

This divergence of responsibilities has seen a proliferation of camps and exclusive leases in some National Parks. Part of the problem may stem from the zone classification. For example, Hwange NP has two extensive "wild" zones in which most of the camps and concessions have been established. This precedent means that "wild" zones are now considered to be open for development, hence the need for a new zonation and limits of use framework.

Another issue is the classification for a "wilderness" zone. Most Parks do have a wilderness zone but its status can be perilous. For example, the wilderness zone in Mana Pools was invaded by developers and now no longer exists. In Hwange, in recent years, camps and concessions have been allocated in the wilderness zones.

In short, the meaning of a wild or wilderness zone can be distorted in pursuance of commercial interests. This can lead to inappropriate siting of camps and concessions. Accordingly, for the Tugwi Mukosi management plans it was decided to use ecological and tourism development-based zone naming only as the basis for the prescribed limits of use.

Zoning for Tugwi Mukosi

The following zone plan was developed for Tugwi Mukosi Recreational Park. Initial stages of the proposal have included marking of the proposed boundary on the ground and description of the boundary for purposes of gazetting. It is during these initial stages that a recommendation was made for the objective description of special use zones for the proposed Park. In principle, the zones guide development and activity in a way that enhances protection. Discussed below and shown in Map 12 and 13 are six zones considered appropriate for the Tugwi Mukosi Protected Area. Table 8 shows the spatial extent of the respective zones from the total size of Tugwi Mukosi RP, 490,73km².

Maximum flooding zone

The area that will be covered by water during maximum flooding was established based on a maximum flood level of 706.5 m above mean sea level as shown in Map 7 and as obtained from engineers interviewed at the site.

High ecological protection zone

This zone comprises entirely of relatively large and permanent islands on the dam. With the exception of one island where a semi-permanent tourist facility will be allowed, the islands should be protected from human disturbance. Most aquatic fauna is expected to forage, roost, breed or nest on the islands.

Moderate ecological protection zone

The general area has several scenic hills and granitic domes that remain largely undisturbed. Most of these support pristine miombo vegetation communities that also need special protection. Highest points on these hills offer beautiful views of the dam and other scenic landscapes and for this reason; these places will also be open for limited use by tourists during hiking trails.

Low intensity tourism zone

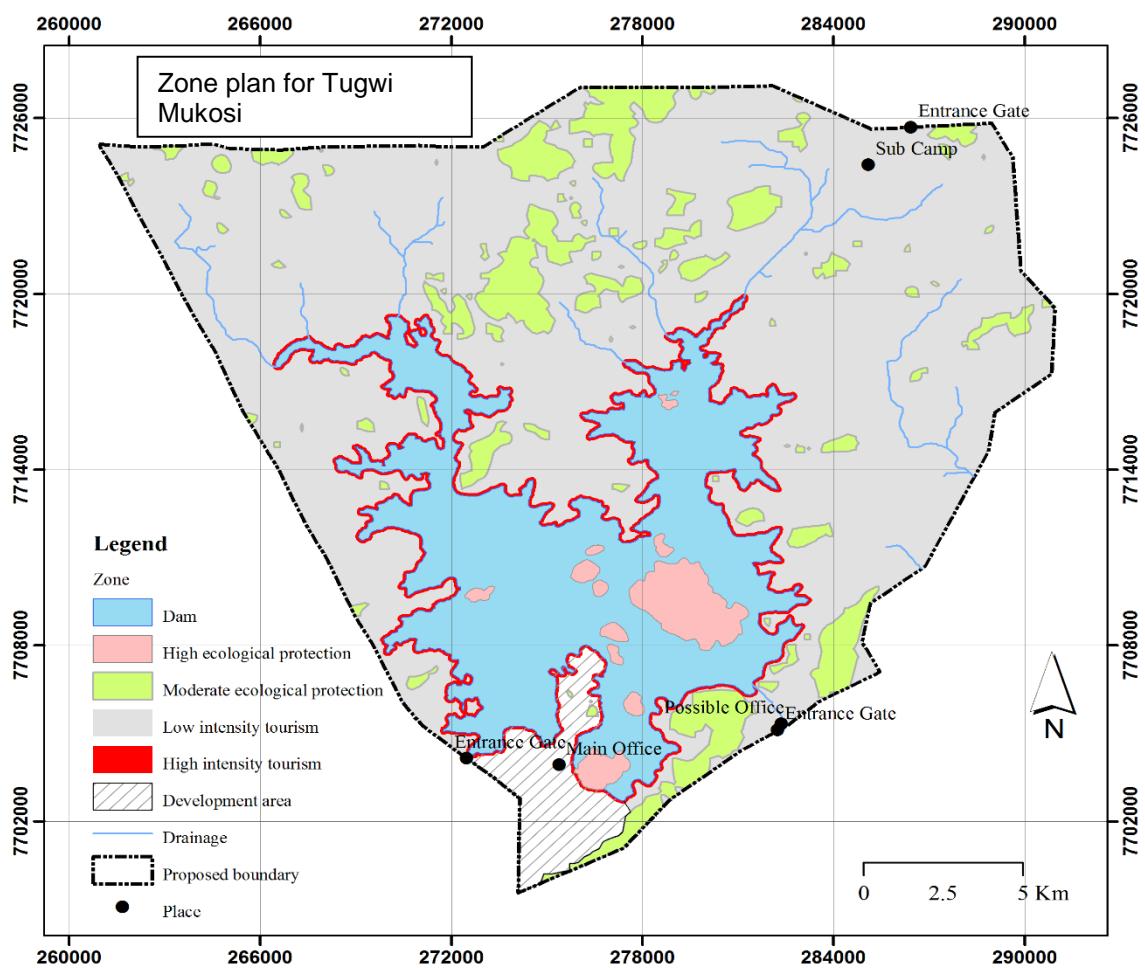
This zone comprises all landscapes that fail to meet the criteria for the other four zones. Most animal introductions can be considered in this zone and this should be supported by location of a camp from which law enforcement details will operate. After successful reintroductions of game, some roads can be opened for game viewing in this zone. The bulk of this land consists largely of areas currently under cultivation and other bushy areas that serve as grazing land for livestock.

High intensity tourism zone

This zone is found on all areas within 100 meters of the maximum flooding level. These are the areas that will be open for basic tourism amenities and use. Facilities to be found in this zone include ablution facilities and boat launching sites while activities will include fishing and boating. Exact location of fishing facilities in the zone will depend on identification of fish breeding sites while boating facilities will be located close to suitable waters. Owing to large volumes of visitor numbers, this zone has been identified as being of high intensity tourism.

Development zone

This zone consists of areas that were found to be most ideal for the location of administration offices and workshops. In identifying this area availability of drinking water and electricity was considered. Easy accessibility of the areas was also considered to be essential for the zone. The highway from Masvingo to Beitbridge and the other one from Ngundu to Tanganda were considered as easy access lines. Areas located close to both highways and with a ready supply of electricity and treated water were considered most ideal for this zone.



Map 12: Proposed Zonation for the Tugwi Mukosi Recreational Park

Table 8: Tugwi Mukosi RP Ecological Zone Spatial Extent

Ecological Zone	Area Km ²
High ecological protection zone (Islands)	10.93
Moderate ecological protection zone	43.13
Low intensity tourism zone	305.85
High intensity tourism zone	16.81
Development area	17.34
Dam (excluding Islands)	96.67
Boundary	490.73

Management Programmes

This plan has been laid out into four management programmes which are in common use both in other Zimbabwean Parks, as well as in Protected Areas throughout the region.

1. Ecosystems Management
2. Tourism Management
3. Outreach Management
4. Park Administration

Programme Function Summary

Table 9 outlines the expected functions for each programme. It is important to set the stage for the programme functions as these affect the development of the objectives, actions and activities.

Table 9: Programme Function Summary

Programme	Brief Description
Ecological Management	<p>The main function of the ecological management programme is to provide the information base on which other management programmes carry out intervention activities. All activities within the Park will affect the ecology and the programme is designed to monitor these. Important activities include the collection and collation of data, and the direction and management of research.</p> <p>Poaching and other illegal use issues, although directly affecting the ecology of the area, are passed over to the Operations Programme. The execution of other ecological issues is passed to Park management (e.g. fire control, maintenance of water, removal of exotics), but the planning for these remains the responsibility of this programme.</p>
Tourism Management	<p>The Tourism Management Programme is primarily for tourism infrastructural development, management of tourist facilities and the tourists themselves. The most important function being ecological sustainability in the development and operations of tourism in the Park. One of its most important functions is the collection of revenues and the tourism statistics that goes with this. Another function is the enforcement of rules and regulations in conjunction with the Operations Programme. The safety and security of visitors is passed over to the Operations programme.</p>
Outreach and Collaborative Management	<p>Although these functions include conservation and management of wildlife resources outside the Protected Areas, much of its focus is on management of human-wildlife conflict, devolution of benefits to communities, cultural resources management among other community related issues. Therefore, the main thrust of this programme is to alleviate conflicts between people and wildlife. Education and/ or awareness and interpretation is seen as being a very important tool for this programme. Management of any cultural resources in the Park also falls into this programme.</p> <p>In addition, this programme deals with conservation partners and seeks to pave the way for NGO assistance into Park management and collaboration of NGOs and ZPWMA in carrying out community work. Tugwi Mukosi is promising in attracting the attention of a number of investors and activities who will have inputs into all of the Park programmes. However, their coordinated management is a priority and is dealt with in this programme.</p>
Park Administration	<p>The Park Administration Programme deals with day-to-day Park administration, including security issues. These include issues such as staff morale, housing, vehicles, plant and equipment. Control and management of wild fires also falls under this programme.</p>

Management Programme Layout

Each programme is divided into the following sections

- **Programme Description and Purpose** - Programme overview followed by a purpose definition.
- **Management Philosophy and Guiding Principles** - Sets the stage for the programme. Guiding principles are central to the way the programme is developed
- **Objectives, Strategies and Activities** - The core of the management programme.

Each strategy has a text description in which the various activities are defined. At the end of each action is a summary of the activities relevant to that action to help focus ground managers.

The three-year activity plan lists the activities and the requirements for their implementation.

Within the document each programme is colour coded for ease of reference.



ECOLOGICAL MANAGEMENT PROGRAMME



PROGRAMME DESCRIPTION AND PURPOSE

The main function of the ecological management programme is to provide the information base on which other management programmes carry out intervention activities. All activities within the Park will affect the ecology and the programme is designed to monitor these. Important activities include the collection and organisation of data, and the direction and management of research. The programme also will provide guidelines for management of biodiversity in the other three management programmes.

Poaching and other illegal use issues, although directly affecting the ecology of the area, are passed over to the Operations Programme. The execution of other ecological issues is passed to Park management (e.g. fire control, maintenance of water, removal of exotics), but the planning for these remains the responsibility of this programme.

The purpose of the Ecological Management Programme was defined as:

To conserve the diverse aquatic and terrestrial flora and fauna, natural landscapes and hydrological resources of Tugwi Mukosi RP through research, monitoring and targeted management interventions

MANAGEMENT PHILOSOPHY AND GUIDING PRINCIPLES

Introduction

Tugwi Mukosi dam and the wider RP sits on the Tugwi sub catchment of Runde catchment area. The RP is characterised by long and steep mountain ranges along its southern and eastern borders, and high individual mountains to the north. The Park dips downwards to the south where Tugwi and Mukosi river confluence used to be but now the dam wall.

The Park is well endowed with perennial wetlands (almost 6) which are moderate to severely degraded and are mostly found in areas that have the loam soil type. The uplands give rise to some important rivers draining into the lower Tugwi sub catchment (Tugwi, Mukosi, Shashe, Ngezi, Muchegwa and Gwehondo) and some of these have been severely degraded by poor farming methods practised in the area. The 2 major rivers in draining into the lack are Tugwi and Mukosi though they are seasonal.

Tugwi Mukosi local development area is mostly dominated by miombo woodland on the Masvingo district side. However mixed vegetation is found in Chivi district side which includes some acacias and other indigenous like mopane (*Colophospermum mopane*) and misusu (*Terminalia sericea*). *Lantana camara* is invading the local development area in the two districts with support of Mupangara tree (*Dichrostachys glomerata*), *Julbenadia globiflora*, *Brachystegia spiciformis* and *Combretum molle*). The ecosystem is composed of other tree species that includes; *Parinari curatellifolia*, *Sclerocarya birrea*, *Mountain acacia*, *Dicrostachys cinerea*, *Pseudolanchnostylis maprouneifolia*, *Brachystegia glaucescens*, *Lannea disolor*, *Diospyros mepiliformis*, *Albiazia amara*, *Diospyros lycioides*. The following indigenous fruit trees were identified, mitamba (*Strychnos spinosa*), mitobwe (*Azanza garkeana*), mipfura (*Sclerocarya caffra*), mionde (*Ficus capensis*), misekesa (*Bauhinia thonningii*) and misuma (*Diospyros mespiliformis*) in the local development area. There is a high grass species diversity and observed grass species included; *Heteropogon contortus*, *Panicum maximum*, *Polygonarthria squarrosa*, *Hyparrhenia nyassae*, *Digitaria spp*, *Eragrostis spp*, *Hyperthelia species*, *Aristida spp* and *Themeda triandra*.

Tugwi Mukosi provides a habitat to various bird species that includes Brown snake eagle, heron, giant king fisher, pied king fisher, African fish eagle, African jacana, Africana darter, southern ground hornbill, night jar, cuckoos, paradise fly catcher, hammer kop, plover.

The Park is being introduced in an area that is currently settled by communities. This translates to a lot of habitat disturbance through poaching of wildlife, prevalence of unprescribed fires, deforestation, illegal mining, land fragmentation among other drivers. This has led to decimated numbers of wildlife in the area. From community consultations the animals that are present in the area includes; kudu, common duiker, bush pig, porcupine, baboons, velvet monkey, jackal, civet cat and spotted hyena. There are plans to restock some areas of the Park. Following the vegetation assessment, species such as buffalos, zebra, wildebeest, eland, sable, roan, kudu, waterbuck, impala, common duiker, steenbok and warthog can be introduced in the area. If issues of security threats are looked at white rhino species can be introduced in the Park. The fencing of the area prior to wildlife reintroductions to minimise human-wildlife conflicts is recommended. Apart from that, Lantana camara which was noted in some areas needs to be monitored and managed to reduce encroachment.

Carnivore diversity and numbers within the Park area and communities is relatively high. Jackal, civet cat and spotted hyena are known to be numerous and causing much livestock damage. The hyena population is very high and is listed as one of the main problems in the surrounding communities. Bush pigs are also a menace in terms of crop destruction.

Guiding Principles

The guiding principles are summarised below and briefly discussed thereafter.

1. Management decisions based on scientific evidence
2. Consumptive use to conform to the aims of the establishment of the Park
3. Ecological interventions to be kept to a minimum
4. Conservation agendas will also be pursued outside the Park
5. Connectivity with the wider landscape and management entities
6. Management decisions should ensure that commercial opportunities do not threaten biodiversity

1 Management decisions must be based on scientific evidence

ZPWMA started operations in Tugwi Mukosi in 2017 and a Resident Aquatic Ecologist was recruited a year later. Since then, to date a significant amount of scientific research and monitoring is being carried out which is essential for management decisions to be made based on the best scientific information available. This plan outlines the way forward regarding building research and monitoring component to ensure that all decisions (ecological, tourism, collaborative and Park administration) are based on scientific information in tandem with the ZPWMA 5-year Strategic Plan (2019 - 2023) and the Research Strategy (2018 - 2022).

2 Consumptive use to conform to the aims of the establishment of the Park

Recreational Parks together with other categories of Protected Areas are accorded the highest level of protection in Zimbabwe and unregulated consumptive use of their resources goes against the central reason for their creation. Since 2017 the coming in of ZPWMA, legal consumptive use in Tugwi Mukosi was/ is limited to rationed fishing for ZPWMA staff, sport fishing for individuals using rod and line gear and fishing cooperatives. There is ration and training quota allocated to Tugwi Mukosi (Refer to Annex 3). There are limited known numbers of operational fishing cooperatives in Tugwi Mukosi (Refer to Table 12).

3 Ecological interventions to be kept to a minimum

A non-intervention policy will be pursued in general. However, interference with natural processes may occur to maintain wildlife and plant species diversity, to preserve sensitive

species or to restore native ecosystem functioning that has been disrupted by past or ongoing human activities.

4 Conservation agendas will also be pursued outside the Park

Tugwi Mukosi Recreational Park management will influence the surrounding communities, local and district governments, and other agencies to help ensure that activities occurring outside the Park do not impair Park resources and values. Conservation agendas will be pursued when and where possible, especially through local district planning forums.

5 Connectivity with the wider landscape and management entities

Tugwi Mukosi is linked into a wider conservation landscape (albeit sometimes tenuously). These include links to Lake Kyle Recreational Park, Gonarezhou National Park, Save Valley Conservancy, Mushandike Sanctuary, Chipinge Safari Area, Nuanetsi Ranch, Bangala Dam, Manjirenji range among others. However, the Park does not share any boundary with any protected or conservation area. Management should take an ecosystem wide view of conservation. To this end, where possible, research and monitoring programmes should be developed across and with the above-mentioned conservation areas with close cooperation between and among ecologists or researchers from Lake Kyle Recreational Park, Gonarezhou National Park, Mushandike Sanctuary. Tugwi Mukosi RP and other conservation pockets should take advantage of the nearby Zimbabwe Institute of Wildlife Conservation to and tap from the knowledge base.

6 Management decisions should ensure that commercial opportunities do not threaten biodiversity

The change from being a Government Department to an Authority has meant that the focus on income generation has become more pressing and intense. In some cases, the need to generate income has taken precedence over biodiversity conservation. This guiding principle draws attention to this trend believing that the Park is a designated Recreational Park, established for the Enjoyment of the public (according to the Parks and Wildlife Act), recreational opportunities are provided through commercial enterprises. The philosophy of the Parks Authority is sustainable utilisation and as such biodiversity should be promoted but at the same time striking a balance with driving ahead economic development. The Government expects to see fisheries and tourism infrastructural development which are commercial developments in Tugwi Mukosi to recover \$225 million invested in dam construction.

Ecological Management

Joint Management - Lake Kyle Recreational Park, Gonarezhou National Park, Save Valley Conservancy, Mushandike Sanctuary, Chipinge Safari Area, Nuanetsi Ranch, Bangala Dam, Manjirenji Range

This section briefly summarises the main areas for collaborative and joint management and among the Protected Areas. This is especially true for this programme as it deals with the underlying resources of the area, some of which are highly mobile.

- Research and monitoring coordination
- Adoption and implementation of SMART, GIS and RS
- Fire management (Plan)
- Corridors and dispersal areas
- Mining and prospecting
- Cage culturing
- Park Planning

OBJECTIVES, ACTIONS AND ACTIVITIES

The primary functions of the Ecological Management Programme are research and monitoring and sometimes there is a fine line between these two. Research could be defined as the assessment of situations on the ground while monitoring is less intensive and builds on the research data for the longer term. However, in some cases, monitoring activities can in themselves be defined as research.

Whichever way the situation is viewed, there is no doubt that the major task of the ecological programme is the collection, organisation and analysis of data, much of it being routine monitoring. Following on from this, the other major function is to provide advice on management interventions to ensure that the ecological processes necessary for the well-being of the ecosystem are conserved and maintained. In addition, the programme will direct and advise on research in the area.

With these limitations of the programme in mind, the objectives and actions have been defined as:

Objective 1: To conduct research and monitoring that effectively address management needs

- 1.1: Adequate research and monitoring capacity on station
- 1.2: Focussed research priorities
- 1.3: Compile baseline data and make it accessible
- 1.4: Effective monitoring programme running

Objective 2: To ensure that biodiversity, habitats and wildlife populations restored and protected

- 2.1: Elaborate an aquatic and terrestrial species introduction and management strategy
- 2.2: Monitor and manage fires
- 2.3: Expand research on special interest species
- 2.4: Identify and compile a plan for special protection areas
- 2.5: Control invasive species
- 2.6: Identify and control erosion sites
- 2.7: Ecologically sound restocking and reintroduction
- 2.8: Mining activities assessed and controlled

Objective 3: To address land use issues in surrounding areas

- 3.1: Resuscitate/ protect corridors

Objective 4: To mobilise resources for research and monitoring activities

- 4.1 Identify and harness potential areas/ partners for revenue generation to fund research and monitoring

Objective 1: To conduct research and monitoring that effectively address management needs

Monitoring and research in Tugwi Mukosi Recreational Park has started recently around 2018 with the deployment of a resident ecologist in the area. The Park started operating only in 2017. However, research is incapacitated by lack of housing facilities to accommodate the ecologist at Tugwi Mukosi station, lack of research infrastructure and equipment an office, laboratory such as depth finders, boats, GPS receivers, Cyber trackers, ambient water quality testing kits among other laboratory equipment.

A guiding principle of this programme is that research and monitoring need to be adequate enough to guide management decisions and this object sets out the steps that are necessary to achieve this.

1.1: Adequate monitoring and research capacity on station

The first step towards ensuring that monitoring and research effectively addresses management needs is to ensure that the station has sufficient capacity to establish an effective long-term monitoring programme and to guide research. This includes sufficient and appropriately qualified staff, given ample time on the station before being transferred elsewhere and who have the necessary equipment to carry out their duties. To maintain consistency especially in carrying out monitoring activities research teams need to have updated databases and proper hand over and takeover of monitoring databases. Above all this needs to be done in the event of staff movements.

The ecologist (already allocated for the station) needs support staff including the Senior Ranger Scientific Services, student attachés among others. This will be defined by the ecologist and forwarded through appropriate channels for HQ Human Resource action. It is expected that more ranger staff will be assigned to the unit. Another possibility is to establish an intern system for local and foreign universities. These people could assist with specialised tasks requested by the ecologist.

A GIS based and SMART systems should be set up and supported by the Zimbabwe Institute of Wildlife Conservation (ZIWC) formerly Mushandike College. This system needs to be expanded and training needs met to ensure that it continues and endures.

Without adequate infrastructure, equipment and transport, it will be difficult to carry out any meaningful research and monitoring. The ecologist needs to be clear about equipment that is needed for research and monitoring and these requests need to put forward as soon as possible. Above all a standard office and laboratory are primary for research and monitoring work.

Summary of Activities

- Staffing – Ecologist plus Senior Ranger Scientific Services and supporting staff.
- Intern system established and promoted
- GIS, RS and SMART expanded
- Infrastructure and equipment – Office, laboratory, dedicated vehicle, boat and other appropriate equipment secured

1.2: Focussed research priorities

The following listing is provided as a baseline for research and monitoring priorities both aquatic and terrestrial within Tugwi Mukosi. Research protocols need to be defined to ensure that all research is carried out in an appropriate format and within defined parameters.

- Reproductive biology and population dynamics of Bass (*Micropterus salmoides*, Kapenta (*Limnothrissa moidon*) introduction,
- Impacts of artisanal and Recreational fisheries on the biology and population characteristics of the target species,
- Limnology and water chemistry of Tugwi Mukosi,
- Sustainable development and integrated management of fisheries and Tugwi Mukosi Ecosystem,
- Linking the management of fisheries to knowledge of the fish biomass and the cost structure of the fishing industry,
- The carrying capacity of the water body should be determined using scientifically proven techniques,
- Science to inform management decisions so that they have legitimacy in order to avert it being a source of conflicts between resource managers and resource users,
- Management decisions such as the level of resource rent to be extracted from the fisheries and any other fees should be based on sound knowledge of the industry's cost structure,
- Decisions such as the appropriate gear to be used and the number of beneficiaries should be based on sound knowledge of the water body's carrying capacity and the household economics,

- Explore the devolution of some of the management decisions and activities to local communities and the inclusion of local government in the management and development of fisheries with respect to the potential of improving compliance with fisheries management regulations,
- Access of women who give high priority to socioeconomic issues and household food security to fisheries resources,
- Allocation of fisheries access rights in relation to the needs of women, disabled and elderly people,
- Security of access rights to the fishery resources in relation to sustainable utilization,
- Sustainable utilization, the unit of proprietorship, unit production and management,
- Correlation between tenure and the quality of management and the magnitude of benefits derived,
- Tenure rights, conditionalities and sustainable utilization,
- Structured and holistic formal approach is required to promote ecosystem management and development
- Predator dynamics
- Invasive Species, *Lantana camara* monitoring
- Prey base dynamics
- Hydrological systems
- Cultural and archaeological research (See Outreach Programme)
- Impact of tourism activities (See also tourism programme)
- Vegetation changes induced by fire, climate change among other natural and anthropogenic factors.

As it may be difficult to implement an ambitious research programme using only ZPWMA staff and equipment, appropriate conservation and academic partners should be approached and canvassed to implement research priorities. To date several publications have been produced for Tugwi Mukosi dam, RP and the environs.

Furthermore, research should also focus on commercial exploitation such as generation of fish production models. This also entails setting up of a fish business demonstration center run commercially. The Business Development Unit to strengthen capacity building has to come up with achievable fish business models which communities can come and learn from. This can be done in partnership with other Parks.

Summary of Activities

- Research priorities defined and disseminated
- Research protocols defined
- Active canvassing of appropriate partners to implement research priorities
- Research should also focus on commercial exploitation such as generation of fish production models
- To strengthen capacity building has to come up with achievable fish business models which communities can come and learn from

1.3: Compile baseline data and make it accessible

It is vital for all research and monitoring activities to be compiled into an accessible database. This aids in the determination of trends, shortcomings, continuity of work and a benchmark from which to measure or ascertain change over a period of time. To date the only available baseline information/ data for the Park is from a Tugwi Mukosi baseline report dated August 2018 but transcends into the development area beyond the Recreational Park which is Tugwi Mukosi Land Development Area. The baseline report is a product of various government arms and departments which include the Environmental Management Agency (Coordinator), Zimbabwe National Water Authority, Zimbabwe Parks and Wildlife Management Authority, Forestry Commission, Tugwi Sub Catchment Council, Agricultural Mechanization Department,

Masvingo RDC, Chivi RDC, National Museums and Monuments of Zimbabwe, Department of Irrigation and AGRITEX. The report touches on various important issues in Tugwi Mukosi spanning from Dam Development, Socio-economic Environment, Land Resources, Water Resources and Biodiversity for the Proposed Local Development Area.

From the 2018 Baseline Report wildlife both aquatic and terrestrial that was in existence in the ecosystem were detected. This information is relevant in terms of setting a benchmark in research and monitoring.

The GIS for the recreational Park is adequate for management needs but needs to be expanded and made available for use by researchers and conservation partners. However, the GIS database for the Tugwi Mukosi needs to be expanded. A start was made on this in 2018. The GIS should be in a format understood by workers in the field and be easily accessible.

There is also need to create and compile a database for all research papers published for the RP. That will be carried forward to strengthen the preservation of research work.

Summary of Activities

- Establishment of baseline information on aquatic and terrestrial ecosystems needed
- Baseline Report of August 2018 including the development area in place courtesy of various government arms and departments
- GIS to be improved and made accessible

1.4: Effective monitoring programme running

Monitoring is a vital component of understanding a Protected Area and for this new Park plans are in place to speed up the same. However, an ecologist has been appointed to the Park which is a very encouraging sign. An ecological monitoring programme needs to be defined for the Park which takes into account the exceptional resources and conservation targets.

However, the programme also needs to take current capability into account. There is little value in defining a comprehensive monitoring programme when there are not enough staff and equipment to carry out the work. Ideally, and probably over time, the staff compliment and equipment availability will be increased so that the programme can evolve to take advantage of the changing circumstances. A SMART data gathering programme should be adopted for both anti-poaching and research / monitoring activities. However, the capacity to integrate this data into the monitoring programme must be on station.

It is vital that the monitoring programme is developed in conjunction with those of other stations in the Region. There is great anticipation that several NGOs and conservation partners will find interest in Tugwi Mukosi and assist in the implementation of not only SMART *per se* but research and monitoring in the Park.

The Park as a new establishment the only existing animal species are native to the area such as hyenas, baboons, monkeys, jackals, crocodiles, hippos among others. Currently, ZPWMA is working on conducting feasibility ecological assessments prior the stocking of some plains game such as buffalos, zebra, wildebeest, eland, sable, roan, kudu, waterbuck, impala, common duiker, steenbok and warthog into Tugwi Mukosi RP and most from Save Valley Conservancy (SVC) and other not yet identified or stated Protected Areas. There will be need, funds permitting to GPS collar introduced species to determine their dispersal areas and home range areas. This could be assisted by local information.

Currently, in the aquatic field monitoring is centred on the reproductive biology and population dynamics of Bass (*Micropterus salmoides*), kapenta (*Limnothrissa moidon*) introduction and the impacts of artisanal and Recreational fisheries on the biology and population characteristics of the target species. With respect to terrestrial ecology not much defined monitoring activities are taking place.

Summary of Activities

- Define realistic and practical monitoring programme with capacity for expansion for the new Park
- Monitoring to be done in collaboration with NGOs and other stations in the Region
- Feasibility ecological assessments prior the stocking of some plains game taking place
- Monitoring witnessed in the aquatic field

Objective 2: To restore and protect biodiversity, habitats and wildlife populations

Tugwi Mukosi RP and its environs biodiversity, habitats and wildlife populations are facing major threats from settlements thriving in the Park, poaching for wood and wildlife, livestock presence, illegal gold mining, climate change/ global warming, stream bank cultivation, erosion, siltation, invasive species, unprescribed fires among other threats. This scenario has led low prey numbers, alarming rates of HWC cases, habitat destruction and shrinkage, loss of native miombo woodlands, fear of extinction of wildlife species among other negative near and far future fetched scenarios.

This objective aims to protect and manage the key habitats of Tugwi Mukosi by paying particular attention to the key drivers of change, in this instance, increase in human population, climate change, proliferation of alien invasive species, illegal mining and fire. In addition, the possibilities of restoration of some species are considered.

2.1: Elaborate an aquatic and terrestrial species (re) introduction management strategy

It is very imperative for the research section to compile all past (since 2017) and current research, monitoring and management activities in the RP. Lessons have been learnt in Sengwa Research Station where all past and current research and monitoring activities have been compiled and entered into a database. This assists future researchers to have a foundation and benchmarks on which to work from.

There is need to develop an agreed aquatic and terrestrial species (re) introduction and management strategy for Tugwi Mukosi RP which is in line with the ZPWMA Research Strategy (2018 - 2022). The document will offer guidance in terms of the appropriate species to be restocked in the RP, how their security can be strengthened, determination of carrying capacities, community involvement among other issues. The strategy needs to be developed for the Region as a whole and feeding into the Tugwi Mukosi RP Antipoaching Plan.

Under this strategy there is need for Tugwi Mukosi RP to enhance research and monitoring on (1) aquatic species such as cage culture and (2) terrestrial species such as dispersal of plains game, carnivores etc and other research priorities mentioned in 1.2 above.

Summary of Activities

- Compilation of past research and management activities for elephants within the Region
- Development of an agreed management strategy for an agreed aquatic and terrestrial species (re) introduction and management strategy for Tugwi Mukosi RP
- Enhance monitoring and research on aquatic and terrestrial species

2.2: Monitor and manage fires

This plan foresees the drafting of a practical and effective fire management plan for the Park based on active and proactive monitoring (See Park Administration Programme), an awareness and education component (See Outreach programme) and a monitoring and mapping component (this programme). The fire management plan is reviewed and updated every year before the onset of the fire season. The fire management plan relies on an early burning and firebreak system to prevent un-prescribed fire. It is vital that the extent of prescribed fires used for blocks and firebreaks are recorded and mapped to build up the picture over time. This would be from a combination of data sources - MODIS fire mapping from satellite, recent Landsat Thematic Mapper imagery. Ground reconnaissance for fire mapping, drones and SMART recorded patrol-based data.

The effect of fire on vegetation, water sources and animal movements also need to be monitored. Standard practice is for vegetation monitoring (and not just for the effects of fire) is a mosaic of vegetation plots in key habitats and fixed-point photography. Monitoring of mammal movements into and out of burnt areas can be monitored using transects.

Summary of Activities

- Fire and vegetation monitoring system established - Fixed point photography, transects, vegetation plots etc
- Imagery and other satellite-based monitoring tools accessed

2.3: Expand research on special interest species

The Park is home to few animal species in Zimbabwe, both predators and herbivores. Based on evidence from community communications, HWC reports and Park staff there are physical sightings and indirect evidence of the presence of kudu, common duiker, bush pig, porcupine, baboons, vervet monkey, jackal, civet cat, leopards and spotted hyena. Very little species-specific research has been carried out in the aquatic sphere and nothing has been done in the terrestrial sphere of the Park. There is need to define the scope of investigations into special interest species. Additionally, there is need to go a step ahead and factor in the monitoring programmes for the specific species.

Summary of Activities

- Defining the scope of investigations into special interest species
- Factor into monitoring programme all special interest species

2.4: Identify and compile a plan for special protection areas

There are many sites within the Park that require special protection. This includes, wetlands, native vegetation pockets, islands, fish breeding sites, game Park area, lake front, cultural and heritage sites among others in different zones. The first step will be the identification and inventorying of all these areas. People with expert knowledge of the Park should be approached for advice. Once the inventory has been completed an adaptive protection plan should be compiled. At the very least this should consist of controlling inappropriate behaviour at these sites (e.g. camping, littering, etc). Construction of infrastructure and facilities must take these special protection areas into account.

Summary of Activities

- Identification of sites and database compiled
- Adaptive protection plan

2.5: Control invasive species

Lantana camara is the only invasive species found in the Park. No aquatic invasive species have been identified yet. *Lantana camara* is the dominant alien invasive species and is found in wards 22, 24, 28 & 31 of Chivi district and 22, 30 and 34 of Masvingo district covering a total area of 170.9 hectares. The total area of *Lantana camara* cleared so far is 13.88hectares (Refer to Map 10). *Lantana camara* was reported to have been introduced in most parts of the districts through seed dispersal by birds, animals and by runoff. The most affected area is ward 30 of Masvingo district where a total of 147hectares is covered by *Lantana camara*. The first step will be an inventory which will lead into an ongoing monitoring programme. Mapping of all sites with *Lantana camara* has been done in 2018. Where appropriate steps should be taken for control of invasive species (physical removal as the first line of defence).

Summary of Activities

- Invasive species inventory
- Monitoring programme
- Interventions if required

2.6: Identify and control erosion sites

There are a number of erosion sites within the Park which are a cause for concern. Cattle tracks, poor community access roads construction, absence and non-maintenance of conservation works and soil type are the major drivers of soil erosion which has manifested in the form of rill erosion and gully formation. A total number of 44 gullies and 8 rill erosion cases were observed within the Park. The total volume of soil lost to gully erosion measures approximately 31 000m³ from an area measuring approximately 4.12 hectares. Soil erosion is particularly severe in Ward 24 of Chivi district where rill erosion is rife in Manyumbudzo, Mazowani and Gwezuva villages and 20 gullies were observed in Muzvidziwa, Mavhengere, Mazowani, Gotosa and Musiwa villages. In Masvingo district, ward 34 is the most affected with 9 gullies mapped in villages 16, 17 and 18. However, a detailed inventory of erosion sites and their description has been carried out in 2018 (Masvingo PDC Baseline Report, 2018). There is need now to formulate and implement an effective monitoring programme. In addition, possible steps to halt erosion should be put forward and implemented.

Summary of Activities

- Inventory and characterisation of erosion sites
- Monitoring programme devised
- Erosion control measure where appropriate

2.7: Ecologically sound restocking and (re)introduction

Tugwi Mukosi RP as a new Park both terrestrial and aquatic species need restocking and/ or (re)introduction to leverage the species population growth rates. Natural increase without the initial boost from restocking under improved law enforcement efforts would not realise positive results or yields in the near but maybe long future.

Efforts to restock and introduce fish were made in 2017 at Tugwi Mukosi dam following the launch of the Masvingo Provincial Command Fisheries Program on the 27th of May. More than 413 000 fingerlings of Tilapia were introduced into the dam. A cage culture project was also launched where ZPWMA received 34 750 one month old fingerlings of Tilapia bream, from Lake Harvest Kariba. The fingerlings which weighed an average of 6.3 grams each were introduced into three cages, each cage with a volume of 168,84m³ for commercial cage culture purposes. The many fish that were introduced into the lake in

2017 are too few and still small for commercial harvesting. They had not reproduced a year later in 2018. Thus, there is need to conduct research to ascertain the attainment of such poor results before conducting more restocking exercises.

There is a plan to restock and introduce plains game in Tugwi Mukosi RP. This will be the first restocking or introduction exercise of terrestrial species since the inception of the Park in 2017. Restocking and introduction is earmarked for selected sites (game Park areas) specific areas around the Dam based availability of good habitat, security, social considerations among other niches for selected species. Upon gazetting the Tugwi Mukosi Area, small plain game will have to be introduced in Gunikuni Area, Rarangwe Area and Chivi pockets area i.e. Zivuko after the area has been secured.

The small game to be introduced or restocked and approximate figures are:

1. Impala *45
2. Kudu * 20
3. Zebra*30
4. Bushbuck *20
5. Waterbuck* 15
6. Wildebeest *25
7. Warthogs *30

However, restocking depleted wildlife areas is regarded as a legitimate conservation tool in the right circumstances. But it is important that the Park should not be regarded as a convenient "dumping ground" for species that are overstocked in other areas. Prior to any restocking or introduction exercise being carried out a full ecological assessment needs to be carried out. A full restocking ecological assessment report with recommendations addressing the IUCN guidelines should be produced and shared with relevant stakeholders. This should take into account the aspects listed below (at the very least). The IUCN has published guidelines for reintroductions and conservation translocations and these need to be considered as well.

- Protection fundamentals need to be in place - There is little point in restocking or introducing species in an area where the wildlife cannot be protected.
- Social responsibility - Moving wildlife that could pose a threat to surrounding communities needs to be assessed. Example include predators that could move out of the Park.
- Animal welfare and zoonotic burden/ disease considerations - Stress from the translocation and release and the risk of animals settling into their new environment needs to be assessed. The aspect of disease also needs to be investigated.
- Habitat risks with mega herbivores - The woodlands and wilderness in Tugwi Mukosi will not suffer from foraging activity of mega herbivores like elephants because none will be included in the earmarked species list. However, a strategy for any species management needs to be in place prior to increasing numbers through restocking exercises (Refer to 1.1).

Linked to re-stocking is the concept of introduction. In the case of Tugwi Mukosi this refers to the white rhino. As with the restocking exercises a full assessment of the ecological, law enforcement and social aspects needs to be undertaken. As all of these are long-term prospects, time should be taken to ensure that the paperwork and policy is clear.

Ideally Tugwi Mukosi should develop a policy towards restocking and reintroductions based on best practice and taking into account experiences in other areas (Refer to 1.1).

Some plains game numbers will increase significantly in the Park. So much so that the ecological effects of this increase should be monitored (Refer to research and monitoring). In fact, some attempts should be made to determine "optimal levels" for key species (Refer to 1.1).

Summary of Activities

- Full ecological and social assessment of any proposed restocking exercises in the short-term
- Development of a restocking and introduction policy for the Park in the longer term
- Determination of "optimal levels" for key species

2.8: Mining activities assessed and controlled

The availability of natural resources like gold, river and pit sand are the major drivers of mining/panning in the areas within and surrounding Tugwi Mukosi RP. The availability, coupled with the need to sustain livelihoods through engaging in illegal gold mining, river and pit sand abstraction has resulted in environmental problems related to the same. Identification and mapping of gold mining, river and pit sand abstraction sites was conducted in 2018. Mining activities are mostly prominent on the Chivi side of the dam where a total of 16 sites were observed compared to 4 in Masvingo district. The mining activities in Masvingo district were only for gravel, clay and river sand. In Chivi district, mineral mining is rampant in Ward 28 Gororo area under Chief Shindi. The chemicals used are cyanide and mercury (Masvingo PDC Baseline Report, 2018).

A total of 101 mineral mining pits covering an estimated total area of 55.23 hectares were noted, with an average pit length of 29.61m and depth of 7.73m. At Shongamiti 22 Gold Mine in Chegovo village, ward 28 of Chivi district, the deepest pits measuring 60m were identified. Mining activities are threatening infrastructure like roads and power lines and ecosystems such as arable and grazing land as in the case of Charamba gold mine, in Charamba village, ward 28 of Chivi district. Clay mining was observed to be affecting Tugwi River on the downstream side of the dam in airstrip village, ward 30 under chief Nyajena and Mukosi River in ward 22 under Chief Shumba.

This plan wholly **advocates for zero tolerance to mining** (whether illegal or regularised) within the Park and its buffer zone. River and pit sand, favourably river desiltation benefitting communities maybe allowed after thorough consultations with EMA. Thus, there is need to monitor the illegal mining, river and pit sand abstraction activities. The identification, mapping and monitoring of the mining of gold, river and pit sand abstraction activities and sites forms the basis to institute measures to curb the very activities. There is need to assess the nature of mining, spatial extent, magnitude of the problem, causes, areas suffering, impacts etc before one crafts measures to reduce or stop the activity.

Summary of Activities

- Identification and mapping of gold mining, river and pit sand abstraction sites in the RP
- Monitoring illegal gold mining, river and pit sand abstraction activities and sites
- Institute measures to curb gold mining, river and pit sand abstraction in the RP

Objective 3: To address land use issues in the surrounding areas

Land use planning for buffer areas surrounding Protected Areas is of paramount importance to alleviate human-wildlife conflicts and to ensure connectivity through the wider landscape. Accordingly, this objective seeks ways to ensure that ZPWMA participates meaningfully in District level planning and in any conservation planning initiatives. Tugwi Mukosi is officially part of the greater SELC landscape although the Park has no known established traditional wildlife corridors with nearby Protected Areas and wildlife conservancies.

3.1: Resuscitate/ protect corridors

Existing wildlife populations and their movements are decimated by the presence of communities in the Tugwi Mukosi RP and surroundings. However, there is still some hope of identifying and mapping traditional corridors for the existing wildlife or its connectivity with other nearby communities – at a micro scale. So far it has not yet been established where there is connectivity in wildlife movement between Tugwi Mukosi RP and the nearby Protected Areas – at a macro scale. The Protected Areas are too far. With the plan to fence off the RP the identification and mapping exercise of corridors would be futile.

In association with conservation partners (though at the present moment there is none) it is vital that corridors and dispersal areas are properly identified and mapped by ZPWMA. Some of this work is already underway but it needs to be expanded. Once there is clarity on corridors efforts to informally protect and raise awareness should be carried out in tandem with more formal efforts at designation.

Summary of Activities

- Identify and map corridors
- Formal and informal corridor protection

Objective 4: To mobilise resources for research and monitoring activities

Research and monitoring is one area that needs back up in terms of human, financial, infrastructural and material resources. Limited availability of these impede outcomes and outputs in the very sphere and cripple management decision making foundation not only in Research per se but also in tourism development and management, collaborative management and Park administration areas. Most sought for resources fall within the capital and operations budget expenditures and these are not limited to adequate offices and furniture, laboratories, boats, depth finders, vehicles, GPS units, SMART devices, laboratory equipment, depth finders, computers, fuel, GIS and Remote Sensing softwares among other needs.

1.4 Identify and harness potential areas/ partners to generate revenue for research and monitoring

For Tugwi Mukosi to drive research and monitoring to (near) anticipated levels revenue has to be raised to develop/ construct and secure material needed to support the same. Tugwi Mukosi RP research personnel has to engage in consultancy services to the wider community offering technical expertise and guidance to potential and fish farmers for a fee. There is also need to engage external researchers who bring other resources and funding. Arrangements maybe made for the external researchers to leave behind all equipment used to ensure continuity of the monitoring activities. Another avenue would be also to embrace any chance that brings on board resources from Conservation Partners. Tugwi Mukosi may also engage in the production of fish Seed and fish farming on commercial basis to boost their revenue generation capacity. Collaboration with other research institutions such as Great Zimbabwe University, UZ, NUST, MSU and researchers from other Protected Areas such as Kyle RP, ZIWC is another way of capacity building in research.

Summary of Activities

- Engage in consultancy services to the fish farming community
- Take on board external researchers who leave resources behind as the exit strategy
- Accommodate Conservation Partners
- Produce fish Seed and fish on commercial basis
- Collaboration with other research institutions

THREE YEAR ACTIVITY PLAN

Table 10: Summary and three-year Activity plan: Ecological Management Programme

Table 10: Summary and three-year Activity plan: Ecological Management Programme					
OBJECTIVE 1: TO CONDUCT RESEARCH AND MONITORING THAT EFFECTIVELY ADDRESS MANAGEMENT NEEDS					
Strategy	Activity	Notes	Implementation Schedule	Resp.	Verification
1.1: Adequate monitoring and research capacity on station	Recruit Ecologist and Ranger Scientific (already on station) and more support staff for research (scientific rangers)	Ecologist to define support staff according to research and monitoring programme	Extra staff on site by June 2021	Ecol, CEA, CET, DSS, HQ HR	Report, Staff on station
	Student Attaché, Intern and External researcher's recruitment system established for local and foreign universities	Can assist with specialised technical tasks such as GIS and remote sensing	Starting early 2021 and ongoing	Ecol, CEA, CET, DSS, HQ HR	Recruitment Register, Attendance Register, Staff on Station, Research Permits
	GIS, RS and SMART system expanded	GIS basic system already in place. SMART to be introduced and adopted from nearby Zimbabwe Institute of Wildlife Conservation. Training to ensure system endures. Remote sensing skills will be advantageous	Ongoing	Ecol, PZIWC	SMART reports & digital maps
	Source dedicated vehicle, boat and equipment for research ie Depth finder, water testing kits, radio system, GPS for lake navigation	Equipment to be defined as part of monitoring and research programme	Wish lists by end March 2021, equipment by Jan 2022	Ecol	Vehicle, boat, equipment Assets Register Reports

OBJECTIVE 1: TO CONDUCT RESEARCH AND MONITORING THAT EFFECTIVELY ADDRESS MANAGEMENT NEEDS					
Strategy	Activity	Notes	Implementation Schedule	Resp.	Verification
1.2: Focussed research priorities	Research priorities are defined and disseminated	Reproductive biology and population dynamics of Bass (<i>Micropterus salmoides</i> , Kapenta (<i>Limnothrissa moidon</i>) introduction, Impacts of artisanal and Recreational fisheries on the biology and population characteristics of the target species, Limnology and water chemistry of Tugwi Mukosi, Sustainable development and integrated management of fisheries and Tugwi Mukosi Ecosystem, Linking the management of fisheries to knowledge of the fish biomass and the cost structure of the fishing industry, The carrying capacity of the water body should be determined using scientifically proven techniques, Science to inform management decisions so that they have legitimacy in order to avert it being a source of conflicts between resource managers and resource users, Management decisions such as the level of resource rent to be extracted from the fisheries and any other fees should be based on sound knowledge of the industry's cost structure, Decisions such as the appropriate gear to be used and the number of beneficiaries should be based on sound knowledge of the water body's carrying capacity and the household economics, Explore the devolution of some of the management decisions and activities to local communities and the inclusion of local government in the management and development of fisheries with respect to the potential of improving compliance with fisheries management regulations, Access of women who give high priority to socioeconomic issues and household food security to fisheries resources, Allocation of fisheries access rights in relation to the needs of women, disabled and elderly people, Security of access rights to the fishery resources in relation to sustainable utilization, Sustainable utilization, the unit of proprietorship, unit production and management, Correlation between tenure and the quality of management and the magnitude of benefits derived, Tenure rights, conditionalities and sustainable utilization, Structured and holistic formal approach is required to promote ecosystem management and development	Functional programme by end March 2021 and ongoing	Ecol, CEA, DSS	Priorities report

Table 10: Summary and three-year Activity plan: Ecological Management Programme

OBJECTIVE 1: TO CONDUCT RESEARCH AND MONITORING THAT EFFECTIVELY ADDRESS MANAGEMENT NEEDS					
Strategy	Activity	Notes	Implementation Schedule	Resp.	Verification
	Research protocols are defined	Based on existing ZPWMA protocols & research policy	With priorities, by end March 2021	Ecol, CEA, DSS	Reports
	Active canvassing of appropriate partners to implement research priorities	Networking through conservation partners (Local universities involved in the Multi-Disciplinary Research Centre at Tugwi Mukosi)	Start once programme in place, then ongoing	Ecol, CEA, DSS	Reports, MoUs Publications (Journals and reports)
	Research should also focus on commercial exploitation such as generation of fish production models.	This also entails setting up of a fish business demonstration center run commercially. Capacity building has to come up with achievable fish business models which communities can come and learn from. This can be done in partnership with other Parks.	Start January 2022	BDM, DSS, CEA, Ecol	Reports
1.3: Compile baseline data and make it accessible	Compilation of existing research documentation on the Recreational Park and on an ecosystem-wide basis	In conjunction with staff in the surrounding Protected Areas in the South East Lowveld Region and conservation partners there is need to make follow up on ecosystem research and make this accessible	By end 2021 to tie in with 1.2	Ecol, Regional Ecologists	Interim and final reports Publications (Journals and reports)
	Baseline intensive survey of plains game (incorporated into monitoring as well)	Establish road counts, water hole counts, indirect (spoor and dung) with higher levels of precision for Tugwi Mukosi	Operational by end March 2021	Ecol, Kyle Ecol	Reports Publications (Journals and reports)
	Establish baseline information on aquatic ecosystems	Inventory of aquatic habitats, followed by species inventory (fish, reptiles, macro-invertebrates etc). Determine harvest quantities and size of fish ie experimental gill netting, use of rod and line, use of depth finder Ascertain demographics of other aquatic species ie hippo, crocodiles etc	Completed by end 2021	Ecol	Species Inventories Reports and short communications
	Compile updated digital (basin and vegetation) map, dam geo fencing model and associated monitoring system	Imagery acquisition, ground truthing point database for both vegetation and dam geofencing model. Vegetation monitoring plots in all habitats. Fixed point photography database. Vegetation dynamic studies	End June 2021	Ecol, CEA, DSS	Digital map, monitoring reports
	Ecosystem-wide GIS updated and improved and made accessible	Expansion of GIS, backup and availability. Must be a original clean version available	End 2021	Ecol,	Maps, GIS database
1.4: Effective monitoring programme running	Define practical monitoring programme with capacity for expansion. Start with current equipment/capacity. Joint monitoring programme with Protected Areas in the Region vital	Reproductive biology and population dynamics of Bass (<i>Micropterus salmoides</i> , Kapenta (<i>Limnothrissa moidon</i>) introduction, Limnology and water chemistry of Tugwi Mukosi, Fire and burn scars, Fixed point vegetation photography, Climate data and its expansion, Erosion sites, Special protection sites, Species monitoring, Wetlands and islands	In place end March 2021	Ecol, CEA, CET, DSS	Baseline monitoring programme report, Ongoing annual reports

Table 10: Summary and three-year Activity plan: Ecological Management Programme					
OBJECTIVE 1: TO CONDUCT RESEARCH AND MONITORING THAT EFFECTIVELY ADDRESS MANAGEMENT NEEDS					
Strategy	Activity	Notes	Implementation Schedule	Resp.	Verification
	Wildlife movements monitored into adjacent areas using local information and collars (funding permitting)	Repeated interviews in surrounding areas with communities and at a later stage community resource monitors Collars for plains game etc In terms of fish species there is need to monitor/ determine new species introductions in the Dam/ Lake based on the initial baseline inventory	Starting 2021 and ongoing	Ecol, RDCs	Document and reports
	Staff increased (Refer to Park Administration) and 1.1				
	Equipment available (Refer to Park Administration)				

Table 10: Summary and three year Activity plan: Ecological Management Programme

OBJECTIVE 2: TO INTRODUCE/ RESTORE AND PROTECT BIODIVERSITY, HABITATS AND WILDLIFE POPULATIONS

Strategy	Activity	Notes	Implementation Schedule	Resp.	Verification
2.1: Elaborate an aquatic and terrestrial species introduction and management strategy	Compilation of past/ current research, monitoring and management activities in the RP	Current/ past research, monitoring, control/ intervention activities	End 2021	Ecol,	Report
	Development of an agreed aquatic and terrestrial species introduction and management strategy for Tugwi Mukosi RP which is in line with the ZPWMA Research Policy and Strategy	Dedicated meeting to discuss and elaborate	Start of June 2021	Ecol, CET, CEA, DSS	Workshop report Tugwi Mukosi Species Introduction and Management Strategic Document
	Enhance research and monitoring on aquatic species ie cage culture	Cage culture research	Ongoing	Ecol, CEA, CET, DSS	Reports, Publications (Journal and reports)
	Enhance research and monitoring on terrestrial species	Plains game, carnivores	Start of June 2021	Ecol, CEA, CET, DSS	Reports, Publications (Journal and reports)
2.2: Monitor and manage fires	Fire and vegetation monitoring system established - Fixed point photography, transects, vegetation plots etc	Should be ecosystem wide Daily downloading of NASA FIRMS	Annual and ongoing	Ecol	Annual fire management plan
	Imagery and other satellite-based monitoring tools accessed	Use of free data sources (MODIS)	Sources established end 2021 then ongoing	Ecol	As above
2.3: Expand research on special interest species	Define scope of investigations into special interest species	See also 1.2	Start of June 2021	Ecol	Report
	Factor into monitoring programme	See also 1.4	Start of June 2021	Ecol	Monitoring programme
2.4: Identify and compile a plan for special protection areas	Identification of sites and database compiled for areas such as islands, Lake front, cultural and heritage sites, wetlands, game Park, indigenous forest	Advice from anticipated conservation partners	End June 2021	Ecol	Database report
	Adaptive protection plan	Site and type specific	End of 2021	Ecol, AM	Report
2.5: Control invasive species	Invasive species mapping and inventorying	Build on existing data and maps	In place end June 2021	Ecol, AM	Inventory report, Maps
	Monitoring programme	Train patrol staff to collect data during patrols	In place end June 2021	Ecol, AM	Reports Publications
	Interventions and control measures if required	Research interventions in other areas first	In place end June 2021	Ecol, AM	Reports Publications
2.6: Identify and control erosion sites	Inventory, characterisation and mapping of erosion sites	Include historical data	Database in place end 2021	Ecol, AM	Inventory report, maps

Table 10: Summary and three year Activity plan: Ecological Management Programme					
OBJECTIVE 2: TO INTRODUCE/ RESTORE AND PROTECT BIODIVERSITY, HABITATS AND WILDLIFE POPULATIONS					
Strategy	Activity	Notes	Implementation Schedule	Resp.	Verification
	Monitoring programme devised	Use of accepted methodology	Ongoing	Ecol, AM	Annual report
	Erosion control measures where appropriate	Seek advice prior to action	Ongoing and adaptive	Ecol, AM	Site reports
2.7: Ecologically sound (re)stocking and (re)introduction	Full ecological and social assessment of any proposed restocking exercises in the short-term	Take into account IUCN guidelines	Ongoing for fish species and End June 2021 for Plains Game	Ecol, AM	Assessment report, Animal Movement Permits
	Development of a restocking policy for the Park in the longer term	In conjunction with HQ	End June 2021	Ecol, AM, CEA, CET, DSS	Policy document
	Determination of "optimal levels" for key species	Adaptive, based on new information	End of 2021	Ecol, CET, CEA, DSS	Report
2.8: Mining activities assessed and controlled	Identification and mapping of illegal gold mining sites, sand extraction sites in the Recreational Park	Use of GIS and RS	Ongoing	Ecol, AM, CEA, CET, DSS	Annual Reports Maps
	Monitoring illegal gold mining and sand extraction sites	Use accepted methodology			
	Institute measures to curb illegal gold mining and sand extraction in the Park	Seek advice prior to action	End of 2021		Arrests Register

Table 10: Summary and three year Activity plan: Ecological Management Programme					
OBJECTIVE 3: TO ADDRESS LAND USE ISSUES IN THE SURROUNDING AREAS					
Strategy	Activity	Notes	Implementation Schedule	Resp.	Verification
3.1: Resuscitate/ protect corridors	Identify and map corridors	In collaboration with conservation partners	Ongoing	Ecol,	Reports, Maps
	Formal and informal corridor protection	In collaboration with conservation partners. Awareness in local communities seen as key.	Ongoing	Ecol,	Reports, Maps

Table 10: Summary and three year Activity plan: Ecological Management Programme

OBJECTIVE 4: TO MOBILISE RESOURCES FOR RESEARCH AND MONITORING ACTIVITIES

Strategy	Activity	Notes	Implementation Schedule	Resp.	Verification
4.1: Engage and harness potential areas/ partners to generate revenue for research and monitoring	Engage in consultancy services to the fish farming community	Ecological assessments and technical services	Ongoing	Ecol	Reports
	Take on board external researchers who leave resources behind as the exit strategy	For a fee	Ongoing	DSS, CEA, HR HQ, Ecol,	Reports, Publications
	Accommodate Conservation Partners	Come in as donors	To start 2021	DSS, CEA, RM, AM, Ecol	Reports
	Produce fish Seed and fish on commercial basis		Ongoing	RM, AM, Ecol	Reports
	Collaboration with other research institutions	UZ, GZU, MSU, NUST, ZIWC, Lake Kyle RP	Ongoing	DSS, CEA, RM, AM, Ecol	Reports, Publications

Core Implementation

HQ HR	HQ Human Resources	CEA	Chief Ecologist Aquatic
DSS	Director Scientific Services	CET	Chief Ecologist Terrestrial
AM	Area Manager	BDM	Business Development Manager
Ecol Kyle	Ecologist Kyle	Tour	Tourism Park
Comm	Community Officer	Bus Dev	HQ Business Development
Ecol	Resident Ecologist	PZIWC	Principal Zimbabwe Institute of Wildlife Conservation

TOURISM DEVELOPMENT AND MANAGEMENT PROGRAMME



Tugwi Mukosi
Dam Night View

PROGRAMME DESCRIPTION AND PURPOSE

The Tourism Development and Management Programme has two major components, as reflected in its name. The first one is the development of tourism and the second is the management of tourism. The development component of the programme sets out the way forward for tourism in the Park, while the management component is primarily for the management of tourist facilities and the tourists themselves. One of the most important functions of the management component is the collection of revenue and the tourism statistics that goes with this. Another equally vital function is the enforcement of rules and regulations in conjunction with the Operations Programme.

The purpose of the Tourism Management Programme was defined as:

To promote conservation and protection of Tugwi Mukosi RP unique fresh water reservoir, landscapes and biodiversity values which provide outstanding and satisfactory ecotourism activities such as fishing, boating, camping and/ or accommodation as well as memorable scenic islands, wilderness, wildlife and cultural experiences to domestic and international tourists in order to fund management, research and outreach activities and provide employment for local people

MANAGEMENT PHILOSOPHY AND GUIDING PRINCIPLES

Introduction

Since Independence in 1980 Zimbabwe has been experiencing fluctuating economic fortunes. These have largely been linked to political events which, in turn, have been linked to sporadic negative publicity about Zimbabwe. Downturns in the economy were experienced in the period between 2006 and 2009 and are again being felt. Negative publicity can have the effect of discouraging foreign visitors to the country. From a low record of arrivals in 1980s tourism entries steadily increased until 1995 when the country entered into a phase of sharply fluctuating tourist arrivals which has continued to date.

Tourism in Tugwi Mukosi has started in 2017 on a low-key and focuses mainly on fishing, camping and boating. There are plans to introduce and expand more tourism activities in the entire Park.

The tourism statistics for Tugwi Mukosi are currently from fishing and camping. Figure 3 shows visitor data from January 2019 to December 2020. Data from December 2017 when the Park started operating to December 2018 was tattered. The tourism statistics database management system currently in place is robust and well managed. There is need to explore the reasons behind positive and negative outliers (peaks and sinks) before February 2020. Thereafter, statistics seem to be stabilising hovering a certain average.

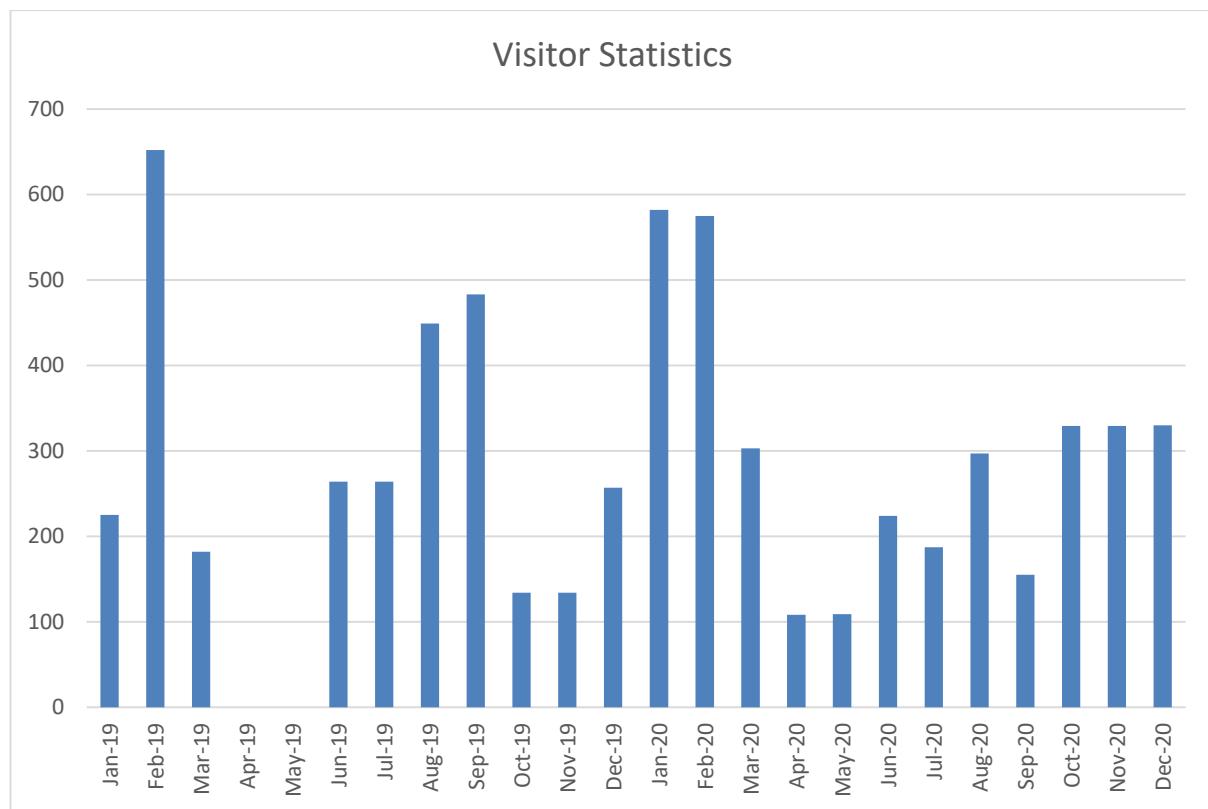


Figure 3: Tugwi Mukosi RP Visitor Statistics (Jan 2019 to Dec 2020)

The Tugwi Mukosi dam and local development area is accessible via the Masvingo-Beitbridge highway which is tarred. Due to age and traffic volume, the road's standard has been compromised and has consequently been considered for upgrading by the Government of Zimbabwe. A new tarred road connecting the RP/ dam off Ngundu-Chiredzi road was constructed in the south, thus improving accessibility. The main gravel roads maintained by the local authorities within the communities to the north and east area can best be described as being fair to good, while community access roads are poor particularly because of lack of maintenance and non-adherence to minimum road construction standards. Community roads are threatened by erosion, mostly gully erosion compromising accessibility to some places. The RP is 345km from Bulawayo, 410km from Harare and 214km from Beitbridge. There is a rudimentary airstrip which was used during construction of the dam. There is need to construct road network in the recreational Park for easy accessibility.

Currently, fishing and camping are the only tourism activities taking place in the RP but needs to be expanded. In addition, there are plans to introduce many other tourism activities as shown in the Table 11.

Table 11: Proposed Tourism Developments in Tugwi Mukosi RP Zones

Zones	Proposed Tourism Developments
Zunga	<ul style="list-style-type: none"> i. Day Visitor Picnic Sites, ii. ZPWMA Safari Lodge – (with restaurant and conference centre and activities) iii. ZPWMA Game drives combined with Boats iv. ZPWMA Tented Self Catering Lodges v. Campsites vi. Tour Operators to Conduct Boat Cruises vii. Specialised Tented Fishing Camps for Regattas viii. Jet Skii ix. Jetty Sites for public boat launching
Gunikuni	<ul style="list-style-type: none"> i. ZPWMA Exclusive Campsites (Game Park Area) ii. Tour Operators to Conduct Game Drives and Safari Walks
Gororo and Islands	<ul style="list-style-type: none"> i. Private Concessions with Hotels, Lodges, Conference Centres ii. Jetty Sites for private boat launching iii. Exclusive Campsite for Gonarezhou Circuit iv. Tour Operators v. Houseboats vi. Jetboats vii. Hot Air Balloons viii. Para Gliding ix. Parasailing

The Dam currently has 16 fishing community cooperatives of which 13 are operational. This is against a recommended maximum carrying capacity of 10 fishing cooperatives given that the Dam is yet to mature. The list of cooperatives is given below:

Table 12: List of Fishing Cooperatives in Tugwi Mukosi RP

	Operational	Non operational
1	Rarangwe	Mtendi
2	Muchandiona	Zivhu Foundation
3	Kuyedza	Youths
4	Tugwane Lakeside	
5	Munhumutapa	
6	Sojoma	
7	Sikanajena	
8	Masaisai	
9	Shindi	
10	Zimbabwe Prison and Correctional Services	
11	Shaiko	
12	Greenfield	
13	Fesma	

Cage culture

The dam's current maximum carrying capacity of cages is 50 cages measuring 10*10 m. At the moment, there are 4 companies with permits for cages in the dam and these are given below.

Table 13: Entities Engaging in Cage Culturing in Tugwi Mukosi RP

Company name	Number of cages
Zimbabwe Parks and Wildlife Management Authority	2
Tugwi Bream	24
Aqua Nurture	10
Mabhiza	2
Great Zimbabwe Union	2

The core objective is for Tugwi Mukosi Recreational Park to address Tourism Development and Food and Nutrition Security **through the development of a vibrant tourism and fishing industry**. Accordingly, the guiding principles and the objectives promotes high and low-key high value water and land-based tourism activities in much of the Park. Lodges and tented camps are encouraged outside the Park and Land Development Area where they will also provide community benefits.

Guiding Principles

The following principles will guide the objectives, actions and activities that will be implemented to ensure that the tourism development and management programme achieves its objective.

1. The unpolluted state of basin water and wilderness character of the Park will be the driving force behind tourism
 2. Sport Fishing, boating, walking safaris and self-drive camping are an integral part of the Tugwi Mukosi experience
 3. Tourism development should be phased
 4. Exclusive use areas should not be permitted
 5. Permanent tourism facilities should be encouraged in adjacent areas
 6. Partners are integral to the future of tourism
- 1 The scenery and expanse unpolluted water resources, islands, mountain ridges, indigenous vegetation and wilderness character of the Park will be the driving force behind tourism**

Tugwi Mukosi is a unique Park in the Region with spectacular views of expanse unpolluted water resources, islands and well-endowed with wetlands, mountain ridges, indigenous vegetation pockets and wilderness character. The conceptual model used for planning tourism on Tugwi Mukosi comprises of the 5A's of Tourism which are summarised in Table 14.

Table 14: Principles of Planning Tourism in Tugwi Mukosi RP

Principle	Description	Tugwi Mukosi Model
Attraction	The motivator for visitors to travel	Scenery, Dam,
Activities	Extra tourism attraction services	Game Drives, Fishing, Boat Cruises, Safar Walks, Conferences
Accommodation	Places for visitors to stay	Lodges, Campsites, Hotels,
Access	Means of Transport to the destination region	Private Air Charters, Roads to be constructed within the Park for safaris and access. Road Transfers Self Driving Boat Transfers from one Bank to the other
Amenities	Extra Services required generally	Hospital/Clinic, Fuel Stations, Vehicle Repair, Restaurants, Grocery Shops, Telephone connectivity.

In terms of attraction all is set, the resources are in place. However, there is need to establish, construct and expand the support activities, accommodation facilities, access and amenities.

Access roads from all directions to Tugwi Mukosi RP are range from fair to terrible state and many are under rehabilitation. The inside roads need to be opened up.

This plan reinforces the view that Tugwi Mukosi needs to remain unique. Many other Parks in Zimbabwe are allowing the income aspect of tourism to override ecological and aesthetic concerns. Interestingly these areas still try to sell the notion of wilderness to tourists while it is crumbling. Tugwi Mukosi needs to capitalise on this aspect and ensure that its wilderness is valued and costed accordingly.

2 Fishing, boating, conferencing, accommodation, walking safaris and self-drive camping are an integral part of the Tugwi Mukosi experience

Only fishing and camping are the tourism activities currently going on in Tugwi Mukosi RP. However, there are plans to establish and introduce boating, accommodation, conferencing, game viewing, walking safaris, hiking among other interesting activities.

3 Tourism development should be phased

In many tourism planning exercises there is a tendency to develop a plan that has an urgency for implementation. Changing circumstances can render the best laid plans irrelevant. This plan promotes a cautious and phased approach. Trial and error and small adjustments of the direction are favoured over ambitious and grandiose schemes that could go wrong and damage the reputation of the Park.

4 Exclusive use areas should not be permitted

Operators favour concessions where exclusive use of an area can be used in marketing materials. However, as seen in some other Parks oversubscription to the exclusive concession leasing model can significantly reduce future options for effective utilisation of the Park and building on its unique assets. Concession leasing in Tugwi Mukosi RP should be minimised as much as possible. Only the Gororo area has been earmarked for concessions to set up lodges, chalets and one hotel on one of the islands. This plan advocates for the development of semi – permanent hotel, lodges and chalets or tourism accommodation structures. Lodges and tented camps should also be encouraged outside the Park in keeping with the principle of allowing surrounding communities to benefit (Refer to Outreach Programme).

5 Permanent tourism facilities should be encouraged in adjacent areas

Encouraging permanent tourism facilities in adjacent areas is regarded as a win-win situation. The communities benefit from having facility on their land and the Park can follow its core mandate of conservation. Facilities inside Parks bring a number of issues with access, pollution and management. However, a point of departure from this principle is noted where a hotel (permanent structure) will be set up on the biggest island inside the Park.

6 Partners are integral to the future of tourism

Although the ZPWMA runs low key campsites in Tugwi Mukosi, the main thrust for the future of tourism in the Park is expected to come from partnerships with the private sector. These should be encouraged where appropriate.

Tourism Programme

Joint Management - Tugwi Mukosi RP and Tugwi Mukosi Land Development Zone

This section briefly summarises the main areas for collaborative and joint management between the two areas.

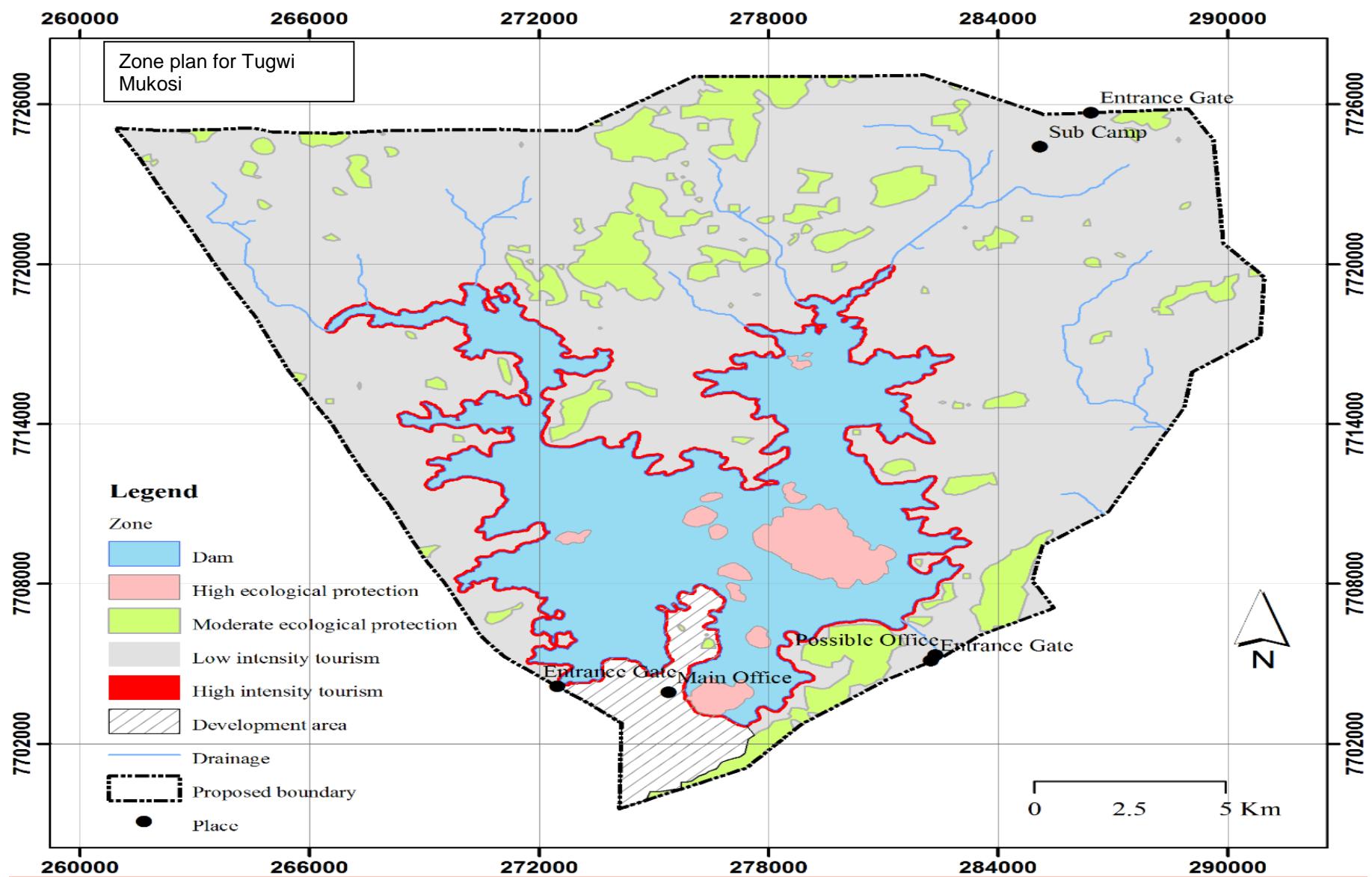
- Provision of amenities such as a hospital/Clinic, Fuel Stations, Vehicle Repair, Restaurants, Grocery Shops, Telephone connectivity.
- Development of means of Transport to the destination region - Private Air Charters, roads to be constructed within the Park for safaris and access, road Transfers, boat Transfers from one Bank to the other
- Maintenance of main attractions from degradation, pollution such as the dam, rivers, islands,

Tourism Zones

The rationale for the zoning of the Park has been discussed in the plan foundations. This section deals with the tourism zones and the levels of use of the different areas. Six main zones are defined in Table 15.

Table 15: Tugwi Mukosi Zone Types

Zone	Comments
Maximum flooding zone	The area that will be covered by water during maximum flooding was established based on a maximum flood level of 706.5 m above mean sea level as obtained from engineers interviewed at the site (Refer to Map 13).
High ecological protection zone	This zone comprises entirely of relatively large and permanent islands on the dam. With the exception of one island where a semi-permanent tourist facility will be allowed, the islands should be protected from human disturbance. Most aquatic fauna is expected to forage, roost, breed or nest on the islands.
Moderate ecological protection zone	The general area has several scenic hills and granitic domes that remain largely undisturbed. Most of these support pristine miombo vegetation communities that also need special protection. Highest points on these hills offer beautiful views of the dam and other scenic landscapes and for this reason; these places will also be open for limited use by tourists during hiking trails.
Low intensity tourism zone	This zone comprises all landscapes that fail to meet the criteria for the other zones. Most animal introductions can be considered in this zone and this should be supported by location of a camp from which law enforcement details will operate. After successful restocking of game, some roads can be opened for game viewing in this zone. The bulk of this land consists largely of areas currently under cultivation and other bushy areas that serve as grazing land for livestock.
High intensity tourism zone	This zone is found on all areas within 100 meters of the maximum flooding level. These are the areas that will be open for basic tourism amenities and use. Facilities to be found in this zone include ablution facilities and boat launching sites while activities will include fishing and boating. Exact location of fishing facilities in the zone will depend on identification of fish breeding sites while boating facilities will be located close to suitable waters. Owing to large volumes of visitor numbers, this zone has been identified as being of high intensity tourism.
Development	This zone consists of areas that were found to be most ideal for the location of administration offices and workshops. In identifying this area availability of drinking water and electricity was considered. Easy accessibility of the areas was also considered to be essential for the zone. The highway from Masvingo to Beitbridge and the other one from Ngundu to Tanganda were considered as easy access lines. Areas located close to both highways and with a ready supply of electricity and treated water were considered most ideal for this zone.



Map 13: Proposed Zonation for the Tugwi Mukosi Recreational Park

Table 16: Detailed Description and Limits of Use

	High Ecological Protection Zone (Islands)	Moderate Ecological Protection Zone	Low intensity tourism zone	High intensity tourism zone	Development area	Dam (excluding islands)
Area	10.93 km ²	43.13 km ²	305.85 km ²	16.81 km ²	17.34 km ²	96.67 km ²
Current Tourism	This zone comprises entirely of, in total 12 relatively large and permanent islands on the dam. No tourism activity is going on now all the islands.	This zone supports pristine miombo vegetation communities that also need special protection No tourism activity is going on now.	This zone is fit for animal introductions No tourism activity is going on now.	Fishing, boating, camping, fish farming (cage culture).	Zone for administration facilities, workshops and staff housing. There are 3 such sites	Fishing, boating, fish farming (cage culture).
Current Tourism Infrastructure	None of the islands to date has witnessed any tourism developments	None has witnessed any tourism developments	None.	Only semi-permanent fishing camps in Zunga	None	Cages for cage culture and fishing (rod and line and gill nets)
Existing Infrastructure (non - tourism)	None. Still pristine.	None. Most still pristine except where dam construction access roads have been opened up.	None at the moment. Proposals for law enforcement sub camps in the North, East, south	Harbours and boat launching sites but still under construction	Tugwi Mukosi RP HQ with ZINWA infrastructure, airstrip, helipad, Staff Housing, water and electricity available	None
Limits of Tourism Use	Walking, hiking, Camping, Picnicking, Overnight fly camping?	Camping, Mountain Hiking	No hotel (s)	No hotel (s) allowed	No tourism in this zone	Adherence to recommended fishing gear and fishing areas
Proposed Tourism Infrastructure	On only one island a semi-permanent tourist facility will be allowed, the islands should be	None	Lodges, chalets, campsites, picnic sites	Lodges, chalets, camping sites including ablution facilities, harbours,	None	None

	protected from human disturbance. Most aquatic fauna is expected to forage, roost, breed or nest on the islands.					
Specifically, not permitted	Construction of lodges, chalets both permanent and semi-permanent on the other 11 islands.	Camps, tented camps, lodges all tourism infrastructure	None	Fishing from fish breeding sites/ none fishing zones	All tourism activities	Fishing from fish breeding sites. Use of wrong fishing gear Luring of fish
Threats	Human disturbance ie waste, deforestation, overpopulation, habitat destruction	Tourism developments, veld fires, deforestation, mining, proliferation of invasive alien species	Livestock, wood extraction, fires, agriculture, mining, wildlife poaching, proliferation of invasive alien species, soil erosion	Water pollution, Land pollution, Noise pollution, Siltation, alien invasive species, eutrophication	Water pollution, Land pollution, Noise pollution, Livestock, wood extraction, fires, agriculture, mining, wildlife poaching	Water pollution, Noise pollution, Siltation, fish poaching, over fishing
Opportunities	Development of the Tugwi Mukosi Brand, research and monitoring, resource protection and biodiversity conservation	Tourism product in keeping with Tugwi Mukosi brand, research and monitoring, resource protection and biodiversity conservation. Maintenance of wilderness qualities	Tourism product in keeping with Tugwi Mukosi brand, research and monitoring, resource protection and biodiversity conservation	Tourism product in keeping with Tugwi Mukosi brand, research and monitoring, resource protection and biodiversity conservation	Law enforcement hubs that can increase coverage	Tourism product in keeping with Tugwi Mukosi brand, research and monitoring, resource protection and biodiversity conservation
Other	An operator maybe be leased out the island concession for hotel construction		Tugwi and Mukosi and their tributaries	Surrounding the entire water basin		Dam fed by Tugwi and Mukosi rivers and their tributaries

OBJECTIVES, ACTIONS AND ACTIVITIES

Three management objectives have been described for the Tourism Programme. The objectives and their targets (summarised below) were defined after analysis of the threats, issues and concerns and the guiding principles. There is a text description of the components prior to presentation of the first three - year activity plan.

Objective 1: To develop and upgrade tourism product

- 1.1: Develop and upgrade Tugwi Mukosi Tourism Products
- 1.2 Define and disseminate Tugwi Mukosi brand
- 1.3: Upgrade of tourist road system
- 1.4: Construct accommodation facilities
- 1.5: Institute Tour Guide tours
- 1.6: Improve visitor information

Objective 2: To improve management and administration of tourism

- 2.1: Improve visitor and guide behaviour
- 2.2: Improve visitor data collection and analysis
- 2.3: Monitor visitor impact
- 2.4: Tourism activities managed

Objective 3: To improve education and interpretation

- 3.1: Establish Wildlife Educational Centre (Museum) facility at Tugwi Mukosi HQ
- 3.2: Promote educational trips
- 3.3 Cultural tours established

Objective 4: To mobilise resources to spearhead tourism development and Management

- 4.1 Harness potential areas/ partners to generate revenue for and from tourism development and management

Objective 1: To develop and upgrade tourism product

Tugwi Mukosi has a low level of tourism numbers. The reasons for this low visitation levels are that the Park is still in its infancy, the dam is still not yet mature, fish diversity and quantities are still expanding, recreational activities and infrastructure are being introduced, marketing has not spread so far, wildlife yet to be introduced and staff numbers being improved. This objective outlines strategies and activities aimed at improving and expanding the tourism product over time.

1.1 Development and upgrading of Tugwi Mukosi Tourism Products

Tugwi Mukosi is already receiving visitors/ tourists mainly locals mainly for fishing and by default camping is done for those spending a night or nights since there is no other accommodation offered in within the Park. However, there is need to upgrade the activity by developing sufficient support infrastructure such as cash/ revenue collection points, ablution facilities, signage, increase law enforcement staff or rangers. A lot of tourism products or activities need to be introduced such as boat cruises, house boating, camping, game drives, game viewing, walking safaris, mountain hiking. To complement these activities necessary support facilities, need to be put in place such as roads, trails, ablution facilities, camping sites, harbours/ boat launching sites, game drive vehicles, signage, wildlife introductions among other structures. All these products will generate revenue for law enforcement, Park management and ranger motivation. However, this will be done in phases over a defined period of time.

Summary of Activities

- Upgrade fishing
- Introduce a wide range of tourism products and associated support infrastructure

1.2 Define and disseminate Tugwi Mukosi brand

The competitive edge of Tugwi Mukosi is its location proximity or just along the Harare – Beitbridge main road and proximity to South Africa, a ready market. However, Tugwi Mukosi is not well known outside Zimbabwe but with the support it has from the Combined Authority concept soon it shall be popular regionally. The Park when fully established will boast from its water and land-based activities. Once the hybrid product has been clearly defined this information needs to be taken into broader marketplace to ensure that tourism helps to fund Park protection and activities. The exact modalities of brand definition and then its packaging and dissemination is not prescribed here in this plan. Rather, this is seen as being evolutionary process and advice and funding for this will be sought from the appropriate sources.

Summary of Activities

- Brand consensus and definition
- Brand packaging
- Brand dissemination

1.3 Upgrade of tourist road system

Currently the only available and superb roads in Tugwi Mukosi is the main access tarred road into the Park and to the dam wall from the Ngundu – Tanganda road as well as the inroads used during dam construction. Most of the roads within Tugwi Mukosi serve a dual purpose as they are used for management as well as for tourism. There is need for opening new circuits and access routes around the Park. However, boating will assist in tourism as well as law enforcement for linking different sites across the dam. The presence of the roads and boats will be a boost for tourism as it allows tourists to reach areas that were previously inaccessible. However, care must be taken to ensure that drainage on the opened up/ improved roads is adequate as the soils of the area, coupled with the terrain, leads to many instances of graded roads being turned into rivers and erosion gullies. Hand labour may be an appropriate method of repairing roads at many sites.

Summary of Activities

- Opening of tourism roads
- Upkeep and maintenance of tourist roads
- Possible new alignments for tourism roads

1.4 Construct accommodation facilities

Availability of accommodation attracts quite a significant number of diverse overnight visitors. These are the very clients who bring more revenue apart from day visitors since they pay for both accommodation and various activities to make their visits memorable. Tugwi Mukosi RP is the newest kid on the block of all Protected Areas in the country. There are no accommodation facilities as yet for all the anticipated tourists. As such there is need for ZPWMA to site ideal areas for the accommodation facilities, design the most appropriate chalets, camping sites and lodges. It is also the role of ZPWMA to construct or to lease out sites for camping sites, lodges/ chalets and viewing platforms to tourism players. The facilities

should cater for both low – key and high – income visitors. Most of these accommodation facilities will be in the high and low intensity tourism zones except for one hotel on one of the islands.

Summary of Activities

- Site and design accommodation facilities
- ZPWMA should establish accommodation facilities for middle to low - income earners
- Lease out other sites to tourism players to take for construction of camping sites, lodges and chalets

1.5 Institute Tour Guide tours

Fishing, boating, hiking, conferencing, game viewing and walking safaris remain some of the main activities on which the reputation of Tugwi Mukosi will be built. These will be carried out by a selected few professional guide who know the area and dam really well but there is an opportunity for ZPWMA staff to be trained and to carry out tour guiding as well. In the initial stages these should be boating/ fishing/ walks or hiking of a few hours or of a single day but as staff are properly trained and become more experienced, they could also do multi-day boating/ fishing/ walks. Staff would need to be selected and given appropriate training. A grading system for aspiring rangers should also be implemented.

Summary of Activities

- Staff selection to engage in tour guiding
- Appropriate training
- Start on trial basis at first and then building up

1.6 Improve visitor information

There is little information about the Park available to visitors and what the Park offers has to be developed. At the outset, and as an interim measure, this should be continued. At the very least a map with some information about the Park (including any relevant codes of conduct; See objective 2). As the brand definition of the Park takes shape (See 1.1 above) then consideration should be given for the production of a map for sale to visitors. Given the visitor volumes involved this should be a low cost map so that the cost of production can be recovered. Besides fliers, leaflets, pamphlets, brochures etc with Park information should be disseminated for free.

Signage in the Park for visitors needs to be developed and later upgraded. A short study on where signs should be placed should be carried out. In addition, signage should be uniform and reflect the scenery and/ or wilderness quality of the Park where possible. New signs should be erected if required and decisions taken if any need to be replaced at a later stage.

Summary of Activities

- Flyers and leaflets to hand out to tourists
- Park map produced for sale at reception
- Signage - locations and design

Objective 2: To improve management and administration of tourism

Tourism needs to be managed effectively to ensure that it does not degrade the very resources that it relies on. Regulating and monitoring the behaviour of visitors is important. In addition, collection of data on visitors to assist with research, marketing and tailoring of the tourist product is vital.

2.1 Improve visitor and guide behaviour

Although the type of tourist making the effort to visit Tugwi Mukosi RP is likely to be mostly water based including fishing, boating among other water-based activities and to some extent somewhat "bush and environmentally savvy" this cannot always be taken for granted. There will always be some visitor ready to break the rules. As a first step towards containing this type of behaviour a code of conduct should be developed for visitors and this code of conduct should be circulated to visitors. A copy should be posted up at reception and copies handed out to visitors when they arrive. In addition, laminated copies should be placed in the campsites.

Although guided boating/ fishing and walks are anticipated in the Park with professional and reputable guides there is always a danger, as the numbers and demand increases, that there will be some guides also ready to bend the rules. Again, a code of conduct for guides should be developed and amended over time to reflect the situation on the ground.

Litter can become a problem and this needs to be addressed. Firstly, by ensuring that all visitors are aware of the litter rules in the Park. The Park will implement a pack it in, pack it out policy towards litter in the Park. This needs to be made known in all Park literature.

Summary of Activities

- Tourism both aquatic and terrestrial based
- Develop code of conduct for visitors
- Guide behaviour – develop code of conduct for guides
- Litter - pack it in, pack it out policy

2.2 Improve visitor data collection and analysis

The Park started its operations in December 2017. From then visitor/ tourism data collection has been comprehensive and still is manageable. As shown in Figure 3 available data at station is for 2018 to date. There is gap in data collection between December 2017 and December 2018. Over and above all this plan fosters for the comprehensive collection and storage of visitor/ tourism data for trend and impact analysis. The data should be regularly or irregularly analysed and results be made available for management purposes.

Moving forward a system needs to be devised and implemented to record, analyse and present data. This should follow best practice but also take into account systems in other Parks in Zimbabwe to ensure compatibility.

Summary of Activities

- Comprehensive data collection in place since 2017
- Data recording and analysis system complementary with the entire ZPWMA system

2.3 Monitor visitor impact

The visitors themselves can have an impact on the environment, especially as the numbers are expected to increase. A system of monitoring visitor impact at the established campsites and at any overnight fly camps needs to be established so that emerging problems can be identified and addressed. This can be done by analysis of such data by researchers.

Summary of Activities

- Monitoring system for campsites

2.4 Tourism activities managed

Although levels of visitation are low currently in the near future management of multi-day fishing, boating, camping, walking safaris is not an issue if the zones are well defined. There is an anticipated increased demand for the products in the near future and may mean that some kind of management system should be put in place. Based on expert knowledge, the preferred fishing, boating, camping, walking areas should be defined and, when necessary a booking system instituted. If Tugwi Mukosi is to develop and maintain its position as one of the premier fishing and wilderness walking areas, separation of parties to retain the perception of wilderness will be important. This can be spatially and/or temporally.

Summary of Activities

- Definition of fishing, boating, camping, walking compartments/ areas
- Plan for a booking system, if required

Objective 3: To improve education and interpretation

In keeping with the objectives for the Parks and Wildlife Estate, as outlined in the Wildlife Policy, education and interpretation are important functions for Protected Areas. The key areas for this programme are the development of interpretations facilities on the ground, the composing and dissemination of written materials and the education of the public, especially schools.

3.1 Establish Wildlife Educational Centre (Museum/ Interpretive Centre) at Tugwi Mukosi HQ

A museum or interpretive centre should be established at the Gororo HQ. There are plans from the Combined Authority arrangement where the Department of National Museums and Monuments should establish and run a Museum in the Recreational Park. The Museum should be the hub of technical and other information on the dam construction and current status respectively. This would require a building (possibly near the main entrance towards the dam wall). Materials would need to be collected and appropriate designs for displays worked out. An interactive modern and state of the art centre will be ideal in this current world.

Summary of Activities

- Building of a Museum under the Combined Authority arrangement in place.

3.2 Promote educational trips

Ideally the Park should be a source of inspiration for the surrounding communities and one way of generating this positive outlook is to bring school children and university students into the Park. Although, it may be too early for a concerted programme involving school or university visits a start should be made on this. Firstly, the modalities surrounding school trip possibilities should be investigated and a trial using local schools conducted.

Another possibility is the development of camps for secondary and tertiary students. These could be of the "Outward Bound" type of camp. Educational and adventure camps. Again, the modalities of this type of camp needs to be fully investigated. Appropriate instructors would be needed.

Summary of Activities

- Investigate modalities of school visits, especially local schools
- Investigate possibilities of "outward bound" style camps for secondary and tertiary students

3.3 Establishment of cultural tours

Ideally the Park should be a source of inspiration to visitors, both for its natural and man-made (dam) wonders, but also for its place within the ecological and cultural environment in which it sits.

Cultural tours for tourists should also be investigated and visitors taken to villages and cultural sites within the Park with a local guide. Itineraries should be developed in conjunction with the communities.

Summary of Activities

- Cultural tours to local villages; Itinerary established in conjunction with local communities

Objective 4: To mobilise resources to spearhead tourism development and management

Tourism development and management is a business venture which has to be initiated by capital injection from capital expenditure budgetary component of the ZPWMA (Refer to Annex C). For Tugwi Mukosi RP a new Park the capital goods or infrastructure such as lodges, chalets, picnic sites, wildlife educational centre/ Museum, boats, game drive vehicles among others need a lot of financial resources. Thereafter, there is need for the business line to sustain itself and furthermore to generate profits that could otherwise not only sustain tourism developments and management but fund other conservation initiatives and anti - poaching.

4.1 Harness potential areas/ partners to generate revenue for and from tourism development and management

Apart from capital injection from ZPWMA into tourism infrastructure, tourism management and activities are a magnet of financial resources. Revenue will thereafter be realised from visitor and vehicle entry, conservation fees, accommodation fees, fishing fees, leases, rentals, dam/ lake usage, camping, picnic, walks, game viewing fees. There are prospects that ZPWMA will enter into Joint Venture partnerships or any other partnership models that generate revenue for the RP. The models have to be strengthened by water tight MoUs. Of late there is a proposal to introduce Voluntary Tourism (Volunteerism) with the expectations to rake in more revenue from tourists coming as voluntary researchers in the RP.

Summary of Activities

- Capital injection from the ZPWMA budget
- Revenue collection from various tourism ventures and activities
- Engagement with partners into Joint Venture Agreements or any model
- Take on board Voluntary Tourism clients/ visitors

THREE YEAR ACTIVITY PLAN

Table 17: Summary and three year Activity plan: Tourism Development and Management Programme

OBJECTIVE 1: TO DEVELOP AND UPGRADE TOURISM PRODUCT					
Strategy	Activity	Notes	Implementation Schedule	Resp.	Verification
1.1 Development and upgrading of Tugwi Mukosi Tourism Products	Upgrade fishing	Already in place	Ongoing	RM, AM, CEA, Ecol, TM, BEM	Reports, Tourism Arrival Reports
	Introduce boat cruises, house boating	There is need to introduce various activities since there is the supporting resource and conducive environment	End of June 2021	RM, AM, CEA, Ecol, TM, BEM	Reports, Tourism Arrival Reports
	Introduce camping				
	Introduce game drives / game viewing				
	Introduce walking safaris/mountain hiking				
1.2: Define and disseminate Tugwi Mukosi brand	Brand consensus and definition	In collaboration with stakeholders	Ongoing	Bus Dev, Tourism, RM, AM	Meeting reports
	Brand packaging	Promotions mostly during off-season	Ongoing	Bus Dev, Tourism, RM, AM	Tourism reports, materials
	Brand dissemination	Internet, social media, paper, trade shows etc	Ongoing	Bus Dev, Tourism,	Material disseminated
1.3: Upgrade of tourist road system	Opening of tourism roads	Great care to be taken with appropriate drainage	Start end of April 2021	RM, AM, TM, BEM	Station, NPR reports
	Upkeep and maintenance of tourist roads	Grading and hand work as appropriate	Start end of April 2021	RM, AM, TM, BEM	Station annual reports
	Possible new alignments for tourism roads	Based on possible new sites and viewing areas	Start end of April 2021	RM, AM, TM, BEM	Road report
1.4: Construct accommodation facilities	Camping sites	Siting, designing of ablutions, fencing, shade/ gazebo/ viewing platform, braai stands and unit sites	End of March 2021	RM, AM, TM, BEM	Maps, Layout Plans, Assessment Reports, Clients satisfied with service delivery
	Lodges and Chalets	Siting, designing of accommodation units and liquid/ solid waste management systems, water supply, energy (solar/ electricity/ gas)	End of March 2021	RM, AM, TM, BEM	Maps, Layout Plans, floor plans, Assessment Reports, Clients satisfied with service delivery
	Viewing platforms	Siting, designing of platforms including ablutions and liquid/ solid waste management systems, water supply, braai area	End of March 2021	RM, AM, TM, BEM	Maps, Layout Plans, Assessment Reports, Platform functional, Clients satisfied with service delivery

Table 17: Summary and three year Activity plan: Tourism Development and Management Programme

OBJECTIVE 1: TO DEVELOP AND UPGRADE TOURISM PRODUCT					
Strategy	Activity	Notes	Implementation Schedule	Resp.	verification
1.5: Institute Tour Guide tours	Staff selection	Criteria in place for selection	End of March 2021	AM, Tour	Report of criteria and skills required
	Appropriate training	Definition of skills required and training schedule for these. In association with Guiding Association		AM, Tour	
	Walking on trial basis at first and then building up	Possible grading system for rangers to work towards improving qualifications based on guides and learner guides system	Start May 2021	Tour	Report
1.6: Improve visitor information	Flyers and leaflets to hand out to tourists	Basic info on Park, regulations, basic map	End of March 2021	Tour, Bus Dev	Documents, flyers
	Park map produced for sale at reception	Sales accruing to Parks	End of March 2021	Tour	Map
	Signage - locations and design Construct and maintain	Standardised design for signage.	Design by end of Dec 2020, Ongoing sign erection and rehabilitation	Tour	Report, signs in place

Table 17: Summary and three year Activity plan: Tourism Development and Management Programme					
OBJECTIVE 2: TO IMPROVE MANAGEMENT AND ADMINISTRATION OF TOURISM					
Strategy	Activity	Notes	Implementation Schedule	Resp.	Verification
2.1: Improve visitor and guide behaviour	Develop code of conduct for visitors	Based on regulations and general tourism etiquette for areas of interest. Perhaps zone specific. Dissemination as well	End of 2021	Tour, Bus. Dev.	Report and code
	Guide/ reservationists/ front desk office staff/ lodge attendant's behaviour	As above.	End of March 2021		
	Litter - pack it in, pack it out policy	This info should be disseminated so visitors such that they are aware when they visit Park	End of March 2021	Tour	Policy documents for visitors
2.2: Improve visitor data collection and analysis	Comprehensive search for all tourism data, both on station and at HQ	Location of any data, both on station and at HQ	End 2021	Tour	Report on exercise
	Data recording and analysis system implemented	Take into account and country-wide procedures	End 2021	Tour, Bus Dev AM	Station annual reports
2.3: Monitor visitor impact	Monitoring system for campsites, Park	Reporting and self-reporting system?	End 2021	Tour	Station annual reports
2.4: Tourism activities managed	Definition of walking compartments, fishing areas, boating zones etc	In conjunction with users and stakeholders	End of March 2021	Tour, Bus Dev, AM	Report
	Develop plan for a booking system, if required. Online options investigated	Once tourism picks up	Future date	Tour	Book on station, Online system

Table 17: Summary and three year Activity plan: Tourism Development and Management Programme

OBJECTIVE 3: TO IMPROVE EDUCATION AND INTERPRETATION

Strategy	Activity	Notes	Implementation Schedule	Resp.	Verification
3.1: Establish Wildlife Educational Centre (Museums) facility at Tugwi Mukosi HQ/ Main Station	Status and design	At gate or HQ?	Design by end, 2021, Operational by end 2022	RM, AM, Bus Dev	Reports, design documents, museum
	Materials	Station to assist with compiling displays		RM, AM	Displays functional
3.2: Promote educational trips	Day trip modalities and trial run with local schools	Vehicle access? Use tourist vehicles	June 2021	Tour, Community	Reports
	Develop camps for secondary/tertiary students	Wilderness/survival skills type camps. Need to seek suitable partner	2023	RM, AM, Bus Dev	Camp established, Reports
3.3: Cultural tours established	Develop itinerary in conjunction with community	Need community member to accompany tours	2022	Tour, Community	Cultural site established, Reports

Table 17: Summary and three year Activity plan: Tourism Development and Management Programme

OBJECTIVE 4: TO MOBILISE RESOURCES TO SPEARHEAD TOURISM DEVELOPMENT AND MANAGEMENT

Strategy	Activity	Notes	Implementation Schedule	Resp.	Verification
4.1 Harness potential areas/ partners to generate revenue for and from tourism development and management	Capital injection from the ZPWMA budget	From the annual Capital Expenditure Budget	2021	DFA, SA, RM, AM, TM, BEM, Bus Dev	Reports, infrastructure, equipment
	Revenue collection from various tourism ventures and activities	From visitor and vehicle entry, conservation fees, accommodation fees, fishing fees, leases, rentals, dam/ lake usage, camping, picnic, walks, game viewing fees.		RM, AM, SA, BEM	Records, Financial Statements
	Engagement with partners into Joint Venture Agreements or any model	MoUs need to be signed	2021	RM, AM, TM, BEM, Bus Dev	Infrastructure established, Reports, MoUs
	Take on board Voluntary Tourism clients/ visitors		2021	TM, RM, AM, CEA, Ecol	Reports

Core Implementation

HQ HR	HQ Human Resources	CET	Chief Ecologist Terrestrial
AM	Area Manager	Tour	Tourism Park
Ecol	Ecologist Tugwi Mukosi RP	Bus Dev	HQ Business Development
Comm	Community Officer	SA	Senior Accountant, Region
TM	Tourism and Quality Assurance Manager	RM	Regional Manager
BEM	Business Enterprise Manager, Regional	DFA	Director Finance and Administration

OUTREACH AND COLLABORATIVE MANAGEMENT PROGRAMME



PROGRAMME DESCRIPTION AND PURPOSE

This programme deals with conservation and management of wildlife resources outside the Protected Areas, education and awareness. However, much of its focus is on (1) fostering ZPWMA social mandate or responsibility in the management and containment of human-wildlife conflict, which is becoming increasingly common in areas adjacent to the Park. Under this programme again (2) ZPWMA should also suffice its social corporate responsibility in providing or creating avenues for communities to realise any benefits from their immediate resources such as employing the locals, offering meat handouts, providing access to building materials such as sand, thatch grass, poles or timber, firewood, among other benefits associated with resources in their confines. Role (3) is to assist or facilitate community development and empowerment that is for example financing or capacity building in projects that uplift community livelihoods such as construction of schools, supporting other income generation projects such as goat rearing projects, irrigation farming among others. Under this role there is need to consider Community Based Tourism Enterprises, where the community run places where traditional food is served. This programme also deals with collaboration with conservation partners and NGOs in all the four facets such as biodiversity management, tourism development and management, Park Administration and community and collaborative work. More detail is found in the Table 18.

Table 18: Key components of the Outreach Programme

Component	Brief Description
Communities	Communities living adjacent to the Park are a key focus for any outreach programme. Unless these close neighbours view the Park in a positive light, the long-term future for the conservation area will be difficult. The flow of benefits is expected to be in both directions and in return for rights such as access to Park for tourism, traditional rights and other cultural reasons community members are expected to respect the boundaries and limits of use of the Protected Area. Key to a successful relationship will be open and transparent communications. Control of problem animals by the relevant authorities is expected to be another community benefit. Under this component ZPWMA is obliged to fulfil (1) social co-corporate responsibility such as swift reaction to Human Wildlife Conflict reports and cases in communities, (2) community empowerment/ development such as initiating and supporting community livelihood empowerment projects in communities and (3) social services provision as delivering wildlife and environmental education and awareness in communities.
Education and awareness	Education and awareness programme are a long-term strategy for environmental protection. The benefits may not be immediately apparent and hence there is some reluctance on the part of management authorities to pursue this, but they may be the aspect that will ensure the long-term sustainability of the environment and wilderness areas such as Tugwi Mukosi.
Corridors and Connectivity	Tugwi Mukosi has several potential corridor and habitat linkages to surrounding communal areas. Corridors and connectivity with other wildlife areas need to be explored but the wildlife areas are too far and in between there are a lot of barriers, well established rural, semi – urban and urban communities. Assessment and maintenance of these corridor areas, in collaboration with the other three programmes in this management plan is an important component of this Programme.
Partner agencies	Dealing with partner agencies who are assisting with management and development of the Park is another facet of this programme. Currently, none are in the RP.

The purpose of the Outreach Programme was defined as:

To engage and empower local communities and stakeholders through promoting custodianship for the protection and conservation biodiversity

MANAGEMENT PHILOSOPHY AND GUIDING PRINCIPLES

Introduction

The Protected Area falls into agro - ecological region 4/5 which is one of the driest and marginal environments in Zimbabwe but this has not stopped the pace of settlement expansion in the area. At the time of writing the RP was in its inception phase. Agricultural communities were still settled within the proposed RP boundaries and engaging in all forms of subsistence agriculture, gold panning, wood curving and fishing (Refer to Maps 8, 9 and 10).

Tugwi Mukosi was on the dam development agenda since the 1960s. By then cattle ranching was the sole land use activity before communities decided to resettle themselves within the now RP area. In 2014 before the dam construction was complete over 3000 families were marooned and with government assistance most of the were evacuated to Chingwizi resettlement area in Mwenezi some 150 km away. However, by the time of publication of this Management Plan in 2021 the Park was not officially gazetted. Care was taken when defining and mapping the entire boundaries to minimise the effect on and conflict with communities.

A perennial problem facing communities living adjacent to Protected Areas is problem animals, both herbivores and carnivores. Animals such as bush pigs do immense damage to crops in all communities surrounding the Park. Carnivores pose a danger both to people and their livestock and the hyena and civet cat features high on the list of concerns for people living adjacent to Tugwi Mukosi. Leopards are also a cause of concern.

Fishing in the Park is seen as being one way in which communities can benefit from wildlife. There were over 130 applications of fishing cooperatives interested in Tugwi Mukosi dam. According to scientific studies 10 fishing cooperatives are ideal for the dam at present. As such 13 local community fishing cooperatives have been licensed to conduct gill net fishing in the dam (Refer to Table 12). Fair enough 10 of the cooperatives are operational now. In addition, surrounding community rod and line fishermen are allowed at a cost one third less than the fee of other fishermen from elsewhere.

In addition to the obvious benefits from fishing the Park does also provide ecosystem services that are beneficial for communities and human well-being. These include water sources, clean air, a positive effect on climate from being wooded, preservation of cultural and heritage sites, carbon or greenhouse gas sinks, pollinators for plants in the adjacent areas. Although difficult to define and quantify the importance of these ecosystems services is becoming well known and should be considered in any assessment of the value of a Protected Area.

Settlement expansion has also led to corridor options becoming restricted. It is considered to be important for the ecological integrity of the area that the Tugwi Mukosi RP and Land Development area complex is connected to which is basically the adjacent communities. In addition, although largely cut off by settlement there might be corridor possibilities between Tugwi Mukosi and other Protected Areas in the Region. There is need for this to be explored.

Tugwi Mukosi RP is easily accessible. The road infrastructure had been allowed to decline over the past decades. Currently, the Government of Zimbabwe is working on a massive road infrastructure rehabilitation exercise that will see the improvement in the accessibility of the Park from the outside world. Community and Park roads need massive opening and upgrading. Tourism (only fishing and camping) numbers are on the rise since December 2017 when the Park was started. Research and

monitoring is gaining momentum since 2017. Initially, there were no resources to support it but currently there are plans to secure research human, infrastructural resources, vehicles, boats and equipment. An ecologist and rangers to support research are on station. At Tugwi Mukosi there is no housing and management infrastructure owned by ZPWMA. Mobility for management and patrol staff is problematic. In addition, there are no conservation partners assisting in all facets of Park management. There are anticipations that several NGOs might express interest in the Park and MoUs will be signed to cement the engagements. Management and coordination of these conservation partners is an important part of this programme.

Ideally, communities living adjacent to the Park should have a positive view of the Protected Area. However, in practice this is often difficult to achieve.

Guiding Principles

The following guiding principles were used during the development of the Community Partnership Programme.

1. Open and transparent relationships with stakeholders
2. Community involvement and participation
3. Community access
4. Cultural sites will be recognised and protected
5. Education and awareness
6. Promotion of conservation agendas outside the Park

These are briefly described below

1 Open and transparent relationships with stakeholders

As community livelihood activities taking place around the Park increasingly impact on and are impacted by the area's conservation, good relations between Park managers and communities are essential to ensure that both parties can raise issues of mutual concern before they escalate into serious problems. This will allow them to work together when livelihood and conservation goals align.

Experience from other Protected Areas has shown that, while law enforcement is an effective way of combating illegal activities within a PA, the development of good relations with surrounding communities is an essential complement to this approach, and can, if carried out effectively, result in a reduced need for law enforcement activities.

It is vital that Park management proactively engages the neighbouring communities, to ensure that community interactions do not simply focus on damage mitigation and conflict resolution. It is important that the ZPWMA interests are not seen as being restricted to dealing with problems that impact on the management of the Protected Area. Rather they should be seen to be addressing the concerns raised by communities themselves. Or indeed capitalising on potential synergies between community and the Authority.

The ZPWMA will strive towards developing open and constructive relations between managers and neighbouring communities, in order to strengthen community collaborations and increase communities' support and contribution to the conservation of the Park.

In addition, the development of open and constructive relationships with other partners involved in the Park is also important. This includes security, management, tourism and biodiversity partners.

2 Community involvement and participation

Currently community participation in Park affairs is limited. Engagement of stakeholders, and of the adjacent and affected communities in particular, needs to be improved. Where feasible communities, through their local and governmental leadership structure need to be invited to participate.

3 Community access

Currently community access to the Park is restricted. There are areas of the Park where communities were and are evicted and cognisance needs to be taken of this by Tugwi Mukosi management. Sacred and historical sites important to the communities may exist inside the Park where communities need to access sometimes of the year. Arrangements need to be made where rangers escort communities into the Park for purposes of grass collection, river or pit sand abstraction, fire wood collection.

4 Cultural sites will be recognised and protected

As parts of the Park were settled until present day there are a number of sites of spiritual, cultural and historical significance. These will be respected and protected. Efforts have been made to map and document the sites before the collective memory of the people fades (Refer to Map 10). In addition, efforts need to be made to ensure that indigenous and local knowledge of the Park and its associated environmental systems is documented.

5 Education and awareness

Awareness of Tugwi Mukosi RP, its resources and its management need to be promoted. A first step towards this can be achieved by liaising with key stakeholders and the Authority needs to be more proactive in this regard. Previously since 2018 the ZPWMA was involved in active outreach and educational programmes that brought information about the Park and its environment to the people. The Park is also anticipating to bring on board conservation partners who will also be active with education and awareness programmes. ZPWMA has engaged an Education, Awareness and Interpretation Officer for the entire South East Lowveld Region based at the Regional office, Masvingo.

6 Promotion of conservation agendas outside the Park

As mentioned above, human populations in the Tugwi Mukosi RP environs have increased dramatically over the years. As a result of these increases in population the ecology and conservation of the Park is increasingly impacted by activities that take place beyond its borders and these are likely to intensify during the lifespan of this management plan.

Outreach & Collaborative Management Programme Joint Management - Tugwi Mukosi Recreational Park and Tugwi Mukosi Land Development Area

This section briefly summarises the main areas for collaborative and joint management between the two Protected Areas. Details to be found in the text.

- Joint approach to the buffer community that comprises Chief Shindi, Chief Shumba, Chief Nyajena and Chief Nemauzhe area
- Coordinated awareness and education programmes
- Support community projects such as setting up of community irrigation schemes
- Swift reaction to Human Wildlife Conflict reports and PAC

OBJECTIVES, STRATEGIES, TARGETS AND ACTIVITIES

Four management objectives have been described for the Outreach and Collaborative Management Programme. The objectives, their targets, actions and activities (objectives and targets summarised below) were defined after a detailed analysis of the current management systems and an analysis of the threats, issues and concerns facing the programme. The programme Purpose and the guiding principles also played a major role during the process.

There is a text description of the objectives and their subsequent activities prior to the tabular presentation of the three-year action plan, which represents the heart of the programme.

Objective 1: To improve human wildlife conflict resolution

- 1.1: Continued response to problem animal reports
- 1.2: Research into alternative PAC methodologies
- 1.3: Improvement of community outreach from ZPWMA
- 1.4: Develop an area specific HWC Policy

Objective 2: To raise stakeholder awareness of Tugwi Mukosi

- 2.1: Stakeholders properly identified
- 2.2: Improve information about Park and make this available to stakeholders
- 2.3: Improve outreach and education component
- 2.4: Integration of traditional knowledge systems to ZPWMA

Objective 3: To generate and/ or increase community benefits from the Recreational Park

- 3.1: Capacitation of communities in income generating projects
- 3.2: Exploration of innovative ways for tourism to benefit communities
- 3.3: Local community members are employed in the Park
- 3.4: Dissemination of information to communities (Education and awareness activities)

Objective 4: To improve collaborative Management of Tugwi Mukosi RP

- 4.1: Improve collaborative law enforcement
- 4.2: Improve coordination with conservation partners

Objective 5: To mobilise resources to drive and strengthen community outreach and engagement activities

- 5.1 Source resources for PAC, community outreach and engagement activities

Objective 1: To improve human wildlife conflict resolution

Human wildlife conflict occurs along all the Park boundaries and currently in communities settling within the future Park boundary. In the near future after the gazettlement of the Park the increasing population and expanding settlement will erode much of the buffer wildlife areas that surrounds the Park. This will lead to increased conflict between wildlife and people. On one end communities have poached and most cases, exhausted the ungulates and large mammals which used to be preyed on by hyenas, jackals and leopards etc. Due to lack of food and increased competition for less and less prey the mentioned predators have resorted to easy prey in the communities in form of the available livestock such as cattle, goats, sheep, chickens among other domestic animals for survival.

1.1 Continual response to problem animal reports

Effective and prompt responses to problem animal reports can go a long way to improving the relationship between the Authority and the surrounding communities. Crop destruction by medium and small herbivores ranks very high on the list of complaints as does livestock destruction by hyenas, serval cats, jackals and other predators. In fact, hyenas are listed as one of the most common causes of conflict

in the Tugwi Mukosi communities. The threats to humans by predators also need to be taken seriously by ZPWMA and respective RDCs.

Routine PAC work needs to continue and be scaled up if required. People need to believe that their issues are taken seriously by the Authorities. The ZPWMA can be assisted by Chivi and Masvingo RDCs.

There need to be improved linkages between the different authorities responsible for PAC. In the first instance this includes ZPWMA and the RDCs (Chivi and Masvingo).

Data on incidents, PAC reports and the actions undertaken in response need to centrally coordinated so that an evolving picture of human wildlife conflict can be built up. This action relates to Action 1.6.1 in the Biodiversity Programme.

Summary of Activities

- Routine PAC
- Improved linkages between ZPWMA and RDCs on PAC response
- Cohesive dataset on incidents

1.2: Research into alternative PAC methodologies

Human-wildlife conflict can be about perception. Generally, speaking the large and dangerous animals are perceived to be more of a threat than the smaller animals that also raid the crops and food stores.

Participatory research is needed into non-lethal methods of controlling problem animals. These include deterrents, chasing etc. The most promising appears to be olfactory deterrents such as chilli peppers or auditory deterrents such as bees. It should be noted that these are aimed mainly at elephants but can work for other species.

It has been demonstrated that most livestock are taken at night when they are out of kraals and even in not properly secured kraals. If cattle and goats are secured inside predator-proof kraals at night the incidence of attacks is greatly reduced. Depending on the severity of livestock losses the use of bomas might be explored as another way to reduce livestock loss to predators. However, there is need for community buy in and support from other players.

Summary of Activities

- Participatory research into non-lethal methods
- Boma research continued and promoted

1.3: Improvement of community outreach from ZPWMA

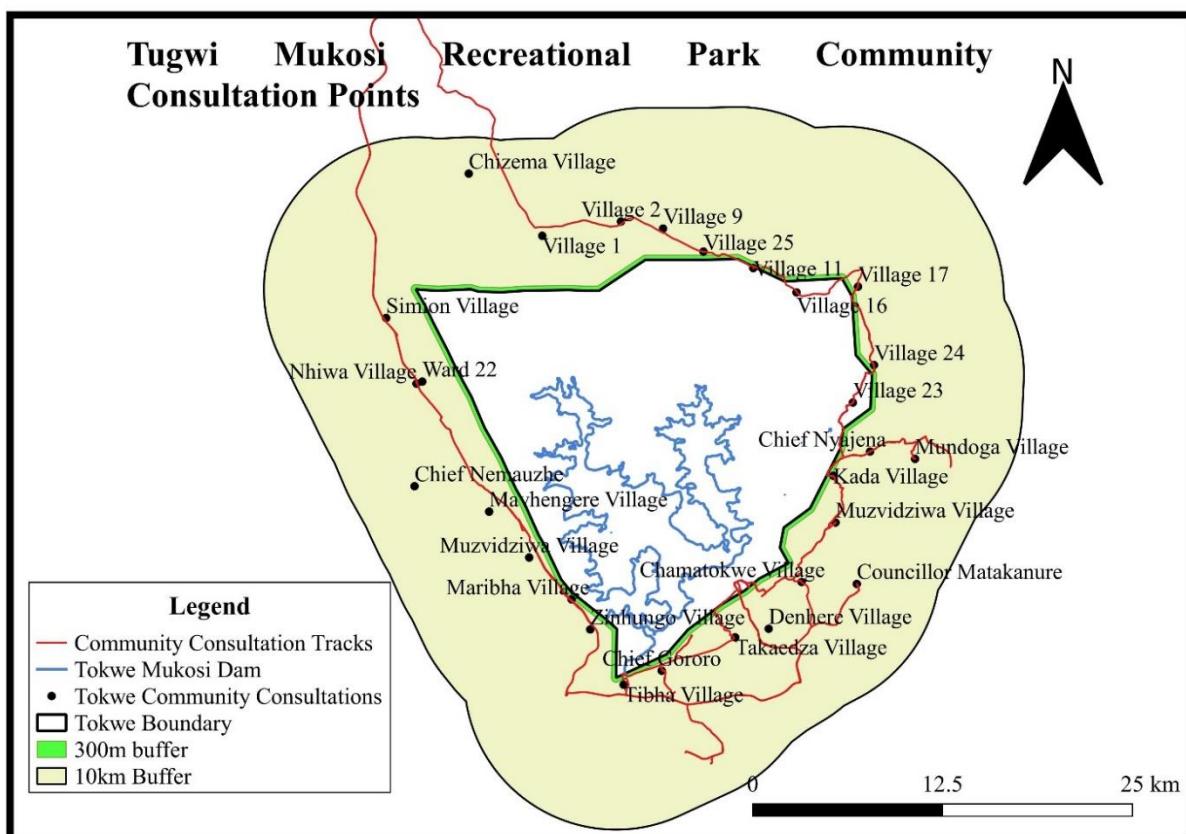
Community outreach is an important part of community liaison. This aspect of the linkages between ZPWMA and the communities around the Park needs to be strengthened.

It appears that ZPWMA has limited contact with the communities. Most of the contact is in response to PAC and therefore takes place when communities are aggrieved. A proactive approach should follow so that communities see ZPWMA personnel, not only when something negative has happened to them, their livestock or their crops, but also at times when things are good. Again this work can be carried in conjunction with conservation partners at a later stage but it is important that communities do not perceive community outreach to be the purview of the conservation partners - it must be seen to be driven by the ZPWMA.

From mid-October to mid November 2020 the Park planning team of the ZPWMA courtesy of funding from ZPWMA conducted participatory community and administrative consultations to suffice this planning component. Over 28 community consultations were conducted in both Chivi and Masvingo RDC where over 140 individuals adjacent to the Park were met as shown in Map 14. The thrust of the community consultations was to gain an insight on community perceptions and perspectives on (1) community knowledge on ZPWMA, (2) the nature of the currently existing relationship between ZPWMA and communities, (3) ways to improve the relationship between ZPWMA and communities, (4) community expectations from ZPWMA, (5) community position on the proposed gazettlement of Tugwi Mukosi as a Recreational Park, (6) problem animal issues in their communities among other issues.

Of the target population, we were mostly interested in Chiefs, Headmen, Councillors, kraal, village heads and their few neighbours. However, we took the samples, gatherings we had as a true representation based on the fact that the problems, challenges, perceptions and perspectives of those are the same faced by their immediate communities.

The planning team used questionnaires (open and close ended), drone, SMART device, GPS receiver as materials. Methods used include QGIS overlay analysis, SMART analysis, interviews and observations.



Map 14: Tugwi Mukosi RP Community Consultation Points

In terms of findings, it was agreed that the 2013/ 14 marked boundaries be maintained. There were concerns about the delay to gazette the Park. The planning team during this exercise made efforts to identify some of the beacons marked. However, some beacons have been tempered with. There is need for redefining them. There are local communities settled in the proposed Park as shown in the settlement maps 8, 9 and 10 of Tugwi Mukosi in the plans foundation section. The numbers of the people living within the boundaries of the Park were not established at the moment. These people will need to be relocated from the proposed Park before it starts to operate fully. Local communities had a mixed knowledge about the importance of the Park. The majority of the community knew correctly that the Park was for conservation while a small proportion of the community was ignorant about this.

The community were expecting to get several benefits from the Park, including fishing, employment, drinking water for people and livestock. However, a small section of the community felt that the mere fact that the Park is under ZPWMA would restrict them from getting full anticipated benefits. There was also a mixed knowledge about the Park/community boundary that was marked in 2013/2014. Some knew about the boundary while others did not have full knowledge and others were ignorant about the boundary. They also pointed that they were not consulted and were left out of the boundary marking exercise. Not all communities supported the gazetting of the Park. Those who opposed it feared that they will not have access to the Park resources like water, and access to their sacred places. Communities are expected to be compensated for relocation while others are resistant to relocation. They pointed out that before the dam was constructed and gazetting of the Park, the area was important in providing firewood, fishing ground, watering place for people and livestock, irrigation of gardens, settlements, grazing area. The relationship between the proposed Park and communities was not friendly because of arrests for poaching, problem animals, low awareness campaigns. Problem animals such as monkeys, jackals, hyenas, crocodiles, snakes, leopards, bush pigs and others are raiding livestock and crops.

A lot of ways need to be harnessed to improve the relationship between ZPWMA and communities i.e. Community engagement, quick response to Problem Animal Control (PAC), Employment of locals, forming and promoting cooperatives and irrigation schemes for locals, Awareness campaigns, Allow traditional ceremonies in sacred places in the Protected Area, Engage chiefs first, provide fish permits, Borehole provisions outside the Protected Area, road maintenance, provision of game fencing among other issues

In the same period, the planning team visited administrative authorities for Masvingo and Chivi Rural District Councils namely, Masvingo Provincial Development Coordinator (PDC), Chief Executive Officers (CEOs), District Administrators (DAs), Zimbabwe Republic Police (ZRP) and the Office of the President Cabinet (OPC). For convenience important stakeholders, the Environmental Management Agency (EMA), Zimbabwe National Water Authority (ZINWA) and Forestry Commission (FC) were also visited in the cited administrative growth points and were consulted on various Tugwi Mukosi RP and wildlife related issues. All their response in a nutshell were positive in as far as supporting the establishment of the Park is concerned. They echoed the same sentiments that there should be community involvement and realisation of benefits from the RP.

It is recommended that this community participation process be taken further and that community and RDC representatives should be consulted during the preparation of the annual plan for the Park.

Summary of Activities

- Collaborative community outreach meetings
- Communities as stakeholders invited to participate in annual plan formulation

1.4 Develop an area specific HWC Policy

Currently, the ZPWMA has a National HWC Policy to address concerns and gaps in HWC cases/ reports as well as their resolution in the country. UNDP is funding the nationwide ongoing revision of the policy to accommodate changes over time. There is need for Tugwi Mukosi RP to adopt the National HWC Policy and domesticate it for Tugwi Mukosi and surrounding communities. This is imperative as it brings home made solutions which best suit the nature, degree and scope of HWC cases experienced in Tugwi Mukosi.

Summary of Activities

- Tugwi Mukosi RP to adopt the National HWC Policy and domesticate it for Tugwi Mukosi and surrounding communities

Objective 2: To raise stakeholder awareness of Tugwi Mukosi RP

In the absence of clear information, many rumours about the Park and its management will surface. In addition, it is important to ensure that the profile of the Park is raised both locally and further afield. This will require both print and electronic media items and, if necessary, these should be targeted towards important stakeholders.

2.1 Stakeholders properly identified

There are a large number of stakeholders adjacent to the Park. These include local government (Masvingo and Chivi RDCs), EMA, Forestry Commission, communities and traditional leaders (Refer to 1.3 above). Although many of the players are known, a database must be compiled of all villages and traditional leaders (Chiefs and Headmen as well as Ward Councillors) and their spheres of influence understood. Currently, there are no NGOs in the RP.

Summary of Activities

- Stakeholder database

2.2 Improve information about the Park made available to stakeholders

Generally, the level of awareness of what is happening in the Park amongst stakeholders is low. If stakeholders were more aware of what was happening in the Park and the inputs from management will help to engender a more positive attitude towards the Park.

Summary of Activities

- System for regular information to stakeholders devised

2.3 Improve outreach and education component

The ZPWMA has an outreach section but it is currently under-developed and under-funded. Outreach and community education are an important part of defining how a Protected Area fits into its socio-ecological system. Generally, speaking community liaison in the Tugwi Mukosi area is focussed on PAC work and anti-poaching, both being times when the community probably feels antagonistic towards the ZPWMA. It will be important to ensure that the community also feels that they are consulted because they are important neighbours.

An outreach programme cannot be successful without people to drive it. Currently, ZPWMA has engaged an Education, Awareness and Interpretation Officer for the entire South East Lowveld region based at Masvingo Regional office. The area is too big for the ZPWMA community person to cover alone. A vital first step will be the employment of someone based in the Park under ZPWMA equipped with all necessary resources and support staff whose task will be to engage primarily with communities, but also with other stakeholders. This person needs to collaborate with and provide direction to the conservation partners concerned with communities once or as and when they come on board.

Outreach and education are long-term activities and they need to be guided by an evolving strategy. It is important that a strategy for outreach and education is developed at the earliest opportunity. This will provide a framework and roadmap for the activities to guide the community people on station.

The development of conservation and awareness programmes is linked to the outreach plan and these need to be developed by ZPWMA in consultation with the communities. The extent of these activities is likely to be very dependent on funding availability.

Currently, Tugwi Mukosi does not have a fire management plan but there is need and plans are there to have one in place. The fire management plan outlines a community awareness programme and this is reproduced below. The entire Park shares a boundary with communities and there is a high probability that fires inside the Park will have originated from the communal lands. Therefore, communities are a critical component for any fire management plan. Accordingly, a fire awareness campaign is proposed where at least 10 community outreach events per annum concentrating on fire awareness will be held in adjacent villages. Community leaders/ Chiefs will also be made aware of their mandate to police and enforce fire legislation. This would be done in collaboration with other organisations such as RDCs, Forestry Commission, EMA, ZRP among other entities. Awareness events will be held just before the onset of the fire season so that the ideas remain fresh in the villagers' minds throughout the season.

Summary of Activities

- Community person employed for Tugwi Mukosi
- Outreach strategy developed
- Conservation and awareness programmes developed
- Fire awareness outreach events

2.4 Integration of traditional knowledge systems to ZPWMA

ZPWMA through the Ministry of Environment, Climate, Tourism and Hospitality Industry is driving for the gazettlement of Tugwi Mukosi RP. Currently, parts of the Park are settled by local communities. The entire proposed Park area is settled though people have been compensated and moved in the 2015s. Signs of settlement are still visible in many locations and some are still returning back to their previous settlements. Importantly local communities still have a sense of belonging in this area.

Throughout the planning process there was a respect for the Shona culture but a lack of knowledge as to the details surrounding this group in the environs of the dam. It is imperative that Shona systems and knowledge for dealing with life in the Tugwi Mukosi area are recorded and assessed for possible integration into Park management strategies. In addition, the Shona people are the original inhabitants of areas adjacent to Park.

Summary of Activities

- Documentation of Shona culture and their relationship to Tugwi Mukosi

Objective 3: To generate and/ or increase community benefits from the Recreational Park

The contribution of the Park to the surrounding areas should not be underestimated. There are 13 fishing cooperatives adjacent wards and Chiefdoms to the Park. In addition, rod and line fishing is comparatively cheaper to those in the 30km radius (adjacent communities) than to those from further afield.

The challenge for this plan will be to ensure that those benefits are at a minimum maintained and ideally increased, that they are sustainable, and that they are reaching the right people. It should be remembered that there are people in the surrounding areas and inside the proposed Park who were and will be moved to make way for the Park. 3 652 families will be displaced. There is need therefore to allocate adequate land where the families will be resettled. Land that has been identified in the province in Mwenezi district where a total of 31 296.1388ha of land has the potential to accommodate the displaced families subject to the settlement model adopted. The farms identified are Umfula Ranch (16 308.54ha), Minnarshet (6 488.2488ha) and Mbararira (8 499.35ha).

4.2 Capacitation of communities in income generating projects

ZPWMA should be assessing ways in which communities can be capacitated for income generating projects. Increased income in adjacent communities should result in less poaching pressure on the recreational Park. Currently, communities are involved in fishing cooperatives and benefitting. However, there are plans to incorporate communities in cage culturing and irrigation schemes.

Summary of Activities

- Facilitation in fishing cooperatives, irrigation set ups, cage culturing etc

4.3 Exploration of innovative ways for tourism to benefit communities

Communities should be involved and benefit from tourism. In Tugwi Mukosi communities should construct and run camps.

There may be other ways to involve communities in tourism. Walking safaris could start or end a safari in a village promoting culture tourism and gain an appreciation of Shona culture. This and other methods should be investigated.

Summary of Activities

- Construction of external camps
- Exploring other ways to involve communities in tourism

4.4 Employment

ZPWMA should give preference to local communities for employment, especially for casual work on a seasonal basis (road construction, fire management etc). As has been during the construction of the Tugwi Mukosi dam communities were employed on semi-skilled jobs. ZPWMA employment policy advocates for 80% recruitment of permanent employees on any recruitment batch. And this is adhered to.

Summary of Activities

- Seasonal employment opportunities for locals

4.5 Information dissemination

It is the role of ZPWMA to conduct community outreach programmes touching on a number of issues such as dangers associated with and handling of wild animals, veld fires among other conservation issues. Such an interaction is critical in conservation since it is two way. Communities offer indigenous knowledge to ZPWMA.

Summary of Activities

- Dissemination of information on dangers associated with and handling of wild animals, veld fires among other conservation issues.

Objective 4: To improve collaborative management of Tugwi Mukosi RP

Tugwi Mukosi RP does not exist in isolation. It is embedded in an area with existing settlements which is more and more agricultural and predisposed towards rural rather than conservation activities. Park management is increasingly having to collaborate with communities on matters of mutual concern.

In addition, Tugwi Mukosi RP is part of the wider conservation landscape involving (1) at a micro level the Tugwi Mukosi Land Development Area and (2) at a macro level the Gonarezhou National Park, Lake Kyle Recreational Park, Save Valley Conservancy, Mushandike Sanctuary, Bubi Valley Conservancy, Chipinge Safari Area, Bangala Dam, Manjirenji Range and Nuanetsi Ranch among other private game Parks and ranches.

The Park is in its infancy. We anticipate that there will be a lot of conservation partners expressing interest in the development. There are about 9 Ministries involved through the Combined Authority arrangement in this development and all having some form of input towards the success of the Park and the Land Development Area.

Dealing successfully with the full range of stakeholders is a challenge for the Collaborative Management Programme.

4.6 Improve collaborative law enforcement

Community Law Enforcement Collaboration

Ideally one should reach a point where the communities themselves collaborate with the authorities such as NGOs, external researchers and/ or conservation partners over law enforcement. This requires that the communities feel they are benefitting from the Protected Area and it is in their interest to ensure that the wildlife laws are upheld. Thus, communities are the first line of defence to poaching.

The ZPWMA should actively engage and advise communities about community policing activities. These activities can take several forms, including an information network and active removal of snares in communities and along the boundaries of Protected Areas. It is expected that buy-in to this self-policing will be slow at first but then will become accepted as communities are more aware of the benefits from the Park.

Resource monitors will be selected at village or ward level to complement ZPWMA obligations such as assisting in curbing or reducing poaching among other ZPWMA mandates. Environmental committees will be also established through local government structures. Sub-committees are then devolved and these will form an important liaison body for linkages with the ZPWMA and other stakeholders involved in anti-poaching and resource protection. These linkages should be established and maintained.

NGO and Other Law Enforcement Collaboration

Currently, there are no active NGOs in Tugwi Mukosi RP. In future we anticipate that NGOs will collaborate with the ZPWMA on law enforcement and will assist with the defined law enforcement strategies and activities outlined in the Park Administration programme.

Summary of Activities

- Community policing
- Environmental sub-committee liaison
- Coordination with conservation partners in law enforcement

4.7 Participate in Combined Authority projects

Various ministries and departments are currently driving various project initiatives in the Tugwi Mukosi RP and development area. Initiatives include setting up of the Tugwi Mukosi Recreational Park, Tugwi Mukosi Land Development Area, construction of the three harbours, Lake Captain's Navigation Must, Hotel, Lodges, Chalets, Fish Processing Plant, Roads, Museum, Mini hydro power station, Irrigation scheme, Research centre, Low density suburb, Hospital/ Clinic, Fuel Stations, Vehicle Repair, Restaurants, Grocery Shops, Telephone connectivity among other activities and infrastructure. This Master Planning involves the following Ministries and

- Ministry of Environment, Climate, Tourism and Hospitality Industry
- Ministry of Defence, Security and War Veterans (Chair – National Task Force Tugwi Mukosi Land Development Area)
- Ministry of Housing and Local Government
- Ministry of Youths Affairs
- Ministry of Women and Equalities
- Ministry of Lands, Agriculture, Fisheries, Water and Rural resettlement
- Ministry of Transport and Infrastructural Development
- Ministry of Energy and Power Development
- Ministry of Higher Education, Science and Technology
- Ministry of Primary and Secondary Education
- Minister of State for Masvingo Province

Agencies, Departments, Authorities which are:

- Environmental Management Agency (Coordinator)
- Zimbabwe National Water Authority
- Zimbabwe Parks and Wildlife Management Authority
- Forestry Commission
- Tugwi Sub Catchment Council
- Agricultural Mechanization Department
- Masvingo RDC
- Chivi RDC
- National Museums and Monuments of Zimbabwe

- Department of Irrigation
- AGRITEX

There is need to harmonise roles played by each of the departments and the determination of spatial land allocations for the project initiatives between the Tugwi Mukosi RP and development area. ZPWMA is the body entrusted with the management of the Parks and wildlife estate for the country. However, circumstances at Tugwi Mukosi have meant that it is, at times, not liberal, not properly funded, equipped or capacitated to fulfil this mandate. In the case of Tugwi Mukosi management due to the combined authority arrangement may not exercise full rights as there are many line Ministries within the Park and in the Land Development Boundary area who cannot be totally separated from the Park management. The fish processing factory, hotels, urbanization of Ngundu among other issues directly impact on decision making at Tugwi. As such ZPWMA should have to continuously coordinate with the above-mentioned line Ministries and agencies. One good example that calls for such coordination is the crafting of Tugwi Mukosi RP General Management Plan by ZPWMA and the crafting of the Tugwi Mukosi Land Development Boundary Master Plan by the Ministry of Local Government and National Housing in collaboration with 4 local Universities (NUST, MSU, GZU and UZ). The development process of the 2 plans is running concurrently but the earlier is a subset of the later meaning there should be synchronisation of the two. They both feed into each other. Gaps and overlaps should be identified and addressed to avoid conflicting plans of the same area.

Summary of Activities

- Liaison with ongoing Combined Authority projects
- Coordination of Ministries involved.
- One good example that calls for such coordination is the crafting of Tugwi Mukosi RP General Management Plan by ZPWMA and the crafting of the Tugwi Mukosi Land Development Boundary Master Plan by the Ministry of Local Government and National Housing in collaboration with 4 local Universities.
- Gaps and overlaps should be identified and addressed to avoid conflicting plans of the same area

4.8 Identify and improve coordination with Conservation partners

There is need for Tugwi Mukosi to identify prospective conservation partners. For some conservation partners who will be interested to come in as donors MoUs will be crafted. Currently, there are no such conservation partners at Tugwi Mukosi but there is much anticipation that anytime in the near future they may express interest. At the present moment partners identified are the local communities and Chiefs concerned, Ward councillors, fishing cooperatives in the communities, Tugwi breams a local fisheries entity, RDCs, Provincial Development Committee, line ministries and associated agencies/ departments mentioned in 4.2.

With special emphasis to core conservation partners none of which are in play currently there will be need to have close liaison/ coordination to the extent of even having weekly, if need be and annual meetings. Weekly meetings will have to rope in internal partners such as fishing cooperatives representation. Annual meetings will involve community representation and internal players. Such for a will assist in bringing out issues between and among players and ZPWMA.

Summary of Activities

- Identify conservation partners
- Improve coordination with conservation partners
- MoUs crafted for donors
- Weekly and annual meetings to be held

Objective 5: To mobilise resources to drive and strengthen community outreach and engagement activities

Tugwi Mukosi RP in its infancy has to ensure that it starts on a clean note with partners and the local community. An important factor among others will be having a strong financial and resource base to support the same. There is need to collaborate with Masvingo and Chivi RDC in swift response to PAC reports and issues. This can only be practical where there is well trained and motivated staff backed with adequate financial and other resources.

5.1 Source resources for PAC, community outreach and engagement activities

ZPWMA has a mandate to suffice social corporate responsibility, social services provision and community empowerment/ development. ZPWMA is thus obliged to fund PAC, community outreach and engagement through capital and operating expenditure. There is hope that conservation partners or donors will be joining Tugwi Mukosi RP and avail resources towards the same cause.

Summary of Activities

- **ZPWMA to fund** PAC, community outreach and engagement through capital and operating expenditure
- conservation partners or donors will be joining Tugwi Mukosi RP and avail resources towards the same cause

THREE YEAR ACTIVITY PLAN

Table 19: Summary and three year Activity plan: Outreach and Collaborative Management Programme

OBJECTIVE 1: TO IMPROVE HUMAN-WILDLIFE CONFLICT RESOLUTION					
Strategy	Activity	Notes	Implementation Schedule	Resp.	Verification
1.1: Continued response to problem animal reports	Routine PAC	Scaling up of current efforts. Assisted by RDC	Ongoing	Comm, AM	Station monthly, situational and annual reports
	Improved linkages between ZPWMA and RDCs on PAC response	Masvingo and Chivi as priorities. Schedule in place	Ongoing	Comm, AM, RM	
	Cohesive dataset on incidents	To be part of monitoring programme under 1.6.1 in Biodiversity programme	Ongoing and Bulk of dataset in place end 2021	Comm, AM	Monitoring reports
1.2: Research into alternative PAC methodologies	Participatory research into non-lethal methods	Deterrents such as use of chilli, chasing methods, beehives, drum beating, fires etc. Synthesised report on alternatives pros and cons	Report by end March, 2021	AM, Comm, Ecol	Report
	Boma research adopted and promoted	To find acceptable boma systems for local situation. Assisted by anticipated conservation partners	Ongoing	Comm, Ecol	Station annual reports
1.3: Improvement of community outreach from ZPWMA	Collaborative community outreach meetings	Proactive approach towards PAC, not only after the fact. Schedule in place (See also fire 86gmt. plan)	Ongoing	Comm, AM, Ecol	Meeting reports
	Communities as stakeholders invited to participate in annual plan formulation	Involvement of local leadership, evaluation of previous years efforts	Ongoing and annual	Comm, Ecol, Planner	Annual reports
1.4 Develop an area specific HWC Policy	Communities and stakeholders are invited to develop the HWC Policy for Tugwi Mukosi	This will have to be adopted and domesticated from the National HWC	Start January 2022	RM, Legal HQ, AM, Comm	Policy document in place

Table 19: Summary and three year Activity plan: Outreach and Collaborative Management Programme

OBJECTIVE 2: TO RAISE STAKEHOLDER AWARENESS OF TUGWI MUKOSI RP

Strategy	Activity	Notes	Implementation Schedule	Resp.	Verification
2.1: Stakeholders properly identified	Database compiled	Contact numbers, names, positions etc	Ongoing	AM, Comm	Database
2.2: Improve information about Park and make this available to stakeholders	System for regular information to stakeholders devised	Modalities to be discussed. Meetings? emails, newsletter?	System in place end of April 2021 and then ongoing	Comm, AM	Station annual reports, meeting reports etc
2.3: Improve outreach and education component	Community Liaison and Extension Officer employed for Tugwi Mukosi	Appropriately qualified person. We have one at Regional Level	Appointed end 2021	HR HQ	Post filled
	Outreach strategy developed	Adaptive strategy in place driven by community person	Strategy first task of Comm appointee	Comm, AM	Strategy document
	Conservation and awareness programmes developed	In collaboration with anticipated conservation partners	By end 2021	Comm, AM	Reports and station annual reports
	Fire awareness and dam utilisation outreach events	As part of general community engagement	Ongoing	Comm, Ecol	Station annual reports, Fire Management Plan
2.4: Integration of traditional knowledge systems to ZPWMA	Documentation of Shona culture and their relationship with Tugwi Mukosi	Local traditional leadership and cultural/ heritage sites within the Park	Initial report by start June 2021	Comm	Report

Table 19: Summary and three year Activity plan: Outreach and Collaborative Management Programme

OBJECTIVE 3: TO GENERATE AND/ OR INCREASE COMMUNITY BENEFITS FROM THE RECREATIONAL PARK

Strategy	Activity	Notes	Implementation Schedule	Resp.	Verification
3.1: Capacitation of communities in income generating projects	Facilitation in fishing cooperatives, irrigation, cage culturing activities	ZPWMA to engage conservation partners	Ongoing	Comm, AM, RM	
3.2: Exploration of innovative ways for tourism to benefit communities	Construction of camp(s) owned by the community?	Explore this idea	Stakeholder dependant	RM, AM, Comm	Reports (and camp(s) opened)
	Exploring other ways to involve communities in tourism	Walks include community areas Cultural tourism Develop Shona cultural calendar	Starting Nov, 2021 and ongoing	Comm, AM, RM	Monthly reports
3.3: Local community members are employed in the Park	Seasonal employment opportunities. Possibility of permanent employment	Dam construction/ maintenance, road and other construction projects, Fire management contract workers	Seasonally and ongoing	AM, HR Region, Comm	Annual reports
4.4 Dissemination of information to communities (Education and awareness activities)	Dissemination of information on dangers associated with human wildlife interactions	It is a valuable community benefit to acquire knowledge on wildlife management	Ongoing	AM, RM, Comm	Reports

Table 19: Summary and three year Activity plan: Outreach and Collaborative Management Programme

OBJECTIVE 4: TO IMPROVE COLLABORATIVE MANAGEMENT OF TUGWI MUKOSI RP

Strategy	Activity	Notes	Implementation Schedule	Resp.	Verification
4.1: Improve collaborative law enforcement	Community policing	Informer network, self policing	Ongoing	AM, Comm	ZPWMA Database, RDC reporting?
	Environmental sub-committee liaison	Need to set up committees	Committees established end June 2021	AM, Comm	Monthly reports
	Inclusion of NGOs and conservation partners in Park law enforcement operations	Details in Park Administration Programme	Ongoing	AM, Comm	Monthly reports
4.2 Participation in Combined Authority projects	Participation in Combined Authority projects	Work closely with other Ministries and Agencies	Ongoing	Minister, DG, RM	Meeting minutes
4.3: Identify and improve coordination with conservation partners	Anticipating for MoUs between ZPWMA and Conservation Partners	Vital for efficient collaboration. Linked to implementation of management plan		Bus Dev, RM	MoU
	Weekly meetings	Anticipate for such		AM	Station reports
	Annual meeting	For recap and general direction	Annually	AM	Reports

Table 19: Summary and three year Activity plan: Outreach and Collaborative Management Programme

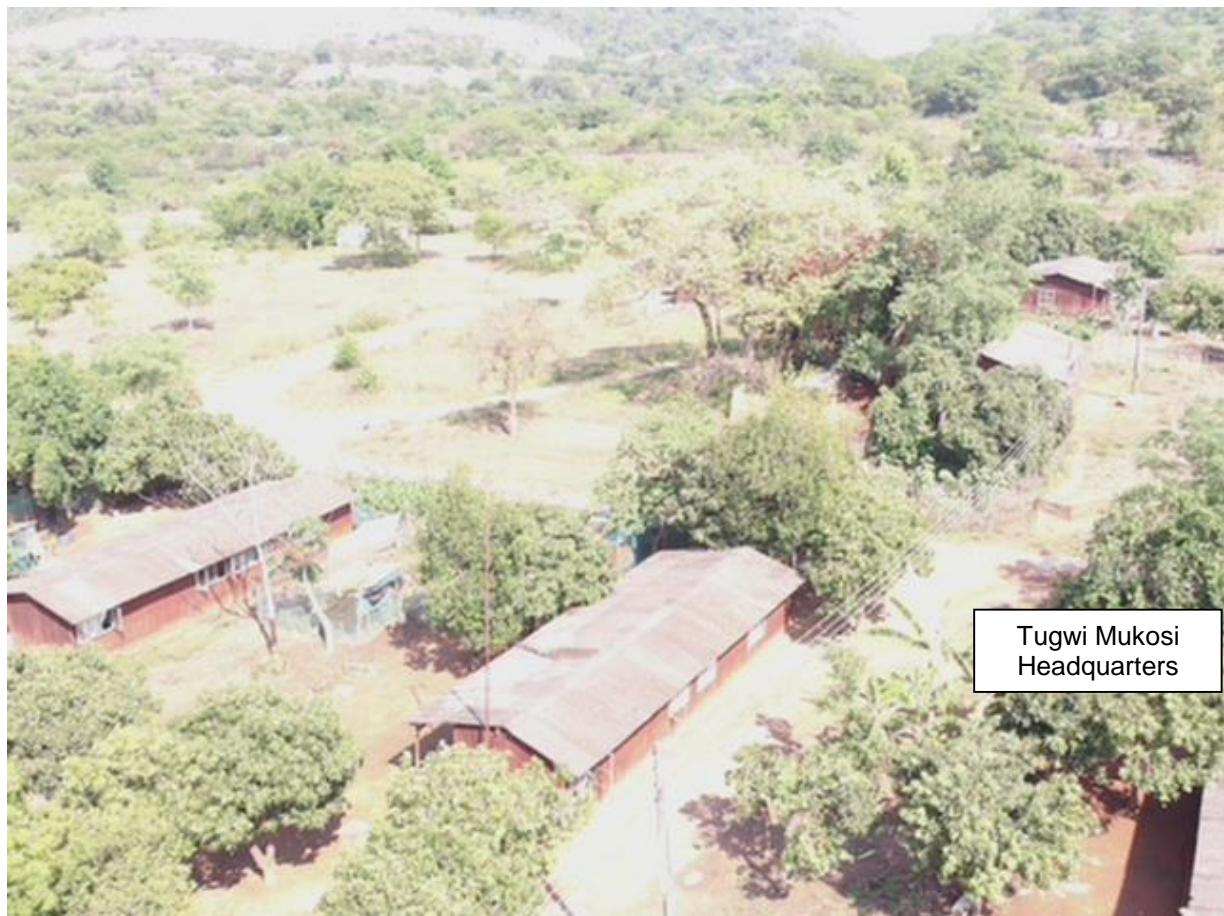
OBJECTIVE 5: TO MOBILISE RESOURCES TO DRIVE AND STRENGTHEN COMMUNITY OUTREACH AND OUTREACH ACTIVITIES

Strategy	Activity	Notes	Implementation Schedule	Resp.	Verification
5.1 Source resources for PAC, community outreach and engagement activities	ZPWMA to fund PAC, community outreach and engagement through capital and operating expenditure	Annual budgetary allocation imminent	Ongoing	RM, AM, SA	ZPWMA Database, RDC reporting?
	Conservation partners or donors will be joining Tugwi Mukosi RP and avail resources towards the same cause	Need to settle and have MoUs in place with Conservation Partners	Awaiting	RM, AM, HQ Legal, CP	Monthly reports

Core Implementation

HQ HR	HQ Human Resources	CET	Chief Ecologist Terrestrial
AM	Area Manager	Tour	Tourism Park
Ecol	Resident Ecologist	Bus Dev	HQ Business Development
Comm	Community Officer	SA	Senior Accountant, Region
		CP	Conservation Partner

PARK ADMINISTRATION PROGRAMME



Tugwi Mukosi
Headquarters

PROGRAMME DESCRIPTION AND PURPOSE

The Park Administration Programme deals with day-to-day Park management, including security issues. These include issues such as staff morale, housing, vehicles, plant and equipment. Administrative functions, including requests to change policy and address political issues etc are also the mandate of this programme. Control and management of wild fires also falls under this programme. A detailed summary of the mandate for this programme is shown in Table 20.

Table 20: Key components of the Park Administration Programme

Component	Brief Description
Staffing	Pertains to staff compliment, leave, training etc.
Morale	Staff morale is a very important part of Park management and these issues need to be addressed effectively to ensure that the Park is properly secured.
Training	Properly trained staff are a valuable asset to the Park, both for contained of illegal activities and legal procedures.
Access	Roads, tracks, bridges, harbours, helipads and airstrips. The Park has approximately 30 km of roads and tracks. About 200 km needs opening.
Buildings	Construction and maintenance of offices, staff housing, vehicle workshops, laboratory, gates and outposts. This component does not include the tourism infrastructure (campsites etc) which fall under the Tourism Programme.
Communications	Telephone, radio and other communication means between the Park and the outside world. Also refers to internal Park communications, usually by radio.
Finances	Effective management of finances, especially as each Park is striving to financially self-sufficient as suggested by the Regional arrangement in place for ZPWMA in the ZPWMA Strategic Plan (2019 - 2023), is an important component of the Operations Programme.
Transport	Reliable transport is vital for effective management of a Park. Equipment needs to be properly cared for and maintained.
Boundaries	Concerns boundary demarcations and the resolution of disagreements about boundaries.
Anti-poaching	Policing and anti-poaching is a big part of the management of a Protected Area. Much of it is the routine patrolling but staff also need to be able to respond to specific incidents. This activity is strongly linked to the Ecological Management Programme.
Fire	Fire management is carried out through this programme but is also closely linked to the Ecological Management Programme.

Given the above, and taking into account the issues facing Tugwi Mukosi Recreational Park the purpose for the Operations Programme is defined below.

To ensure the achievement of effective management of Tugwi Mukosi Recreational Park through transparent, accountable and efficient management of human, financial and physical resources

MANAGEMENT PHILOSOPHY AND GUIDING PRINCIPLES

Introduction

The Operations programme is the “nuts and bolts” part of Park management. This is the foundation on which effective protection of the environment, and utilisation of its resources through tourism depends. If the operations programme is not effective then it is likely that the Park will fail to achieve its objectives outlined in the ecological, tourism, community programmes.

Tugwi Mukosi Recreational Park is a new Park. All of infrastructure need to be constructed such as housing, administration blocks, workshops, tuckshops, roads among other.

The Park is being developed from a current communal settlement area and this brings immense challenges to management especially from illegal activities that include poaching of wildlife, mineral extraction, wood extraction and livestock grazing. In addition, the existing wildlife threatens the livelihood of existing and adjacent villagers (See Outreach Programme).

The Park is currently run from a single Gororo HQ based in the southern part of the area. All deployments are on a patrol basis. There are future and practical plans to construct other sub stations (1) at Zunga in the west (2) in the north at Gunikuni area and (3) in the east around Rarangwe but near Gunikuni to beef up law enforcement activities for the entire Park (Refer to Map 5). It is still deliberated on to have the main station at Gororo and maintain the other 3 as sub stations.

An organisation is only as good as its staff and strongly motivated staff mean that the chances of improving the implementation of this management plan are increased. Accordingly, this programme deals with ways of improving the morale of the staff working within the Park and conservation area as a whole.

As a new Park there are plans to come up with an anti-poaching plan specifically for the Park and surrounding communities. The anti-poaching plan outcomes will be embedded into the updated future versions of the Park general management plan 2032 - 2042.

Guiding Principles

The following guiding principles were used during the development of the Park Administration Programme.

1. Trained and motivated staff
2. Good access and communications are vital for effective management
3. Management and financial resources are finite
4. Collaborative management - the sum is greater than the parts

1 Trained and motivated staff

Staff are more likely to operate efficiently if they are well motivated. This includes fair salaries and allowances which are paid promptly, and decent living and working conditions. In addition, training is an important component for staff morale as it improves their effectiveness and value to the Authority, as well as boosting confidence in themselves. Furthermore, adherence to the disciplinary code also helps to ensure that morale remains high. Well trained staff is a valuable human resource capital investment.

2 Good access and communications are vital for effective management

One of the primary factors which will improve the effective management of Protected Areas is good communications infrastructure. Roads, bridges, reliable and sufficient boats need to be up to certain standard to ensure that staff are able to respond to security situations and that resupply is feasible. Investment in upgrading and maintaining these links is of paramount importance.

In addition, an efficient and reliable communications system is necessary to ensure that Park management is effective. This is true both for communications between the field and the Authority headquarters in Harare, and for communications at the local staff level, both on station and out in the field.

3 Management and financial resources are finite

The Operations programme recognises that management and financial resources are finite, and the use of available resources need to be deployed in the most effective way.

4 Collaborative management - the sum is greater than the parts

Tugwi Mukosi is in a poor state as a new Park having only started operations in December 2017. The road network is in disrepair and it is difficult to travel to most parts of the Park. Staff morale is slowly boosting, administration is patchy and generally the situation in the Park is dire. We anticipate this will change over the few coming years, due in part to promising investments coming into the initiative. A healthy and open relationship between the Authority and other line ministries, and between these line ministries themselves, is important to ensure that the Park and the land development boundary area are managed effectively. Although dealt with in the Outreach and Collaborative Management Programme many of the day-to-day interaction take place at the level of the Park Administration Programme.

Operations Programme

Joint Management – Tugwi Mukosi Recreational Park and Tugwi Mukosi Land Development Boundary Area

This section briefly summarises the main areas for collaborative and joint management between the two Protected Areas.

- Road connectivity
- Joint patrols with ZRP, communities
- Joint intelligence with ZRP, communities

OBJECTIVES, ACTIONS AND ACTIVITIES

Five management objectives have been described for the Park Administration Programme. The objectives, their targets, actions and activities (objectives and targets summarised below) were defined after a detailed analysis of the current management systems and an assessment of the threats, issues and concerns facing the programme. The programme Purpose and the guiding principles also played a major role during the process. Nowhere is the issue of cross cutting activities more apparent than for the Park Administration Programme and some activities - such as anti-poaching and fire management - are defined as part of other programmes, but their implementation is through this programme.

There is a text description of the objectives, strategies and their subsequent activities prior to the tabular presentation of the three-year action plan. This three-year action plan represents the heart of the programme.

Objective 1: To recruit sufficient trained staff with high morale

- 1.1: Optimised staff numbers
- 1.2: Improve staff performance and professionalism
- 1.3: Upgrade recreational facilities
- 1.4: Provision of health facility - clinic

Objective 2: To construct adequate infrastructure for effective management

- 2.1: Improve roads, bridges and airstrips
- 2.2: Construct housing and facilities
- 2.4: Develop, upgrade and maintain communications systems

Objective 3: To put in place and maintain adequate equipment required for management

- 3.1: Secure adequate equipment for Park management
- 3.2: Effective maintenance of equipment

Objective 4: To improve resource protection

- 4.1: Strengthen anti-poaching activities
- 4.2: Consolidate boundaries
- 4.2: Prevention and control of fires

Objective 5: To mobilise resources to drive Park administration

- 5.1 Mobilise resources to drive Park administration

Objective 1: To recruit sufficient trained staff with high morale

In order to effectively manage Tugwi Mukosi Recreational Park, it is essential that the people employed to carry out this task are well motivated, have the requisite levels of training and are present in adequate numbers to implement management objectives. Table 21 and Annex A shows the current staff establishment and conditions in Tugwi Mukosi that are not sufficient to meet management responsibilities.

1.1 Optimised staff numbers

Tugwi Mukosi currently has 15 staff members and only 9 are deployable to carry out antipoaching on a surface of around 500 km². This translates to an impractical ranger patrol area ratio of one ranger per 50km². It can be even more because all the 9 deployable rangers have monthly change overs, some will be on time off, leaves etc. This against the IUCN recommended one ranger per 20km². There is need for adequately trained staff to carry out routine extended, daily and strategic patrol activities effectively. A rapid reaction force will be needed in place to ensure that the communications centres/ forward bases are properly manned. However, more staff calls for more housing and corresponding water, power amenities.

Table 21: Staffing for Tugwi Mukosi RP

Rank	Current	Required	Variation
Area Manager	1	1	0
Ecologist	1	1	0
S/W Officer	0	1	1
Wildlife Officer	0	1	1
Reservationist	0	1	1
Senior Ranger	1	2	1
Technicians	0	2	2
Clerk	1	2	1
Handyman	0	1	1
Ranger 1	5	8	3
Ranger 2	2	20	18
Ranger 3	1	30	29
Lodge Attendant	3	3	0
Totals	15	73	58

Summary of Activities

- Detailed proposal for additional staff, including numbers and housing needs
- Increase in staffing numbers as per proposal

1.2 Improve staff performance and professionalism

Staff morale is an important ingredient to the success of the management of Tugwi Mukosi RP. Fair appraisals of staff, whether for promotion or for disciplinary action, is of cardinal importance to cultivate a positive working environment.

The ZPWMA has developed a detailed code of conduct complete with conditions of service and a disciplinary code. Staff will be made fully aware of content at all times, and managers will implement the code of conduct accordingly, referring to the appropriate clauses in the manual during disciplinary hearing.

In addition to the code of conduct, the ZPWMA has an Operations Manual. Where appropriate this should be updated to take new technology and modes of operation into account. This should be carried out first at the Park level prior to making recommendations for authority-wide additions to the manual.

The provision of sufficient and relevant training and in some cases the existence of an organisational policy that encourages further staff personal development are also vital for improving the capacity of staff. This is not only important for improving their overall ability to carry out their assigned duties, but also for improving staff morale and opportunities for career advancement. In order to address this issue, a training requirements assessment that prioritises needs relevant to Tugwi Mukosi RP will be carried out. An initial listing of required training is presented below.

- Crime scene management
- Survival Skills
- Coxswain
- Evidence gathering
- Weaponry (refresher)
- Ballistics, forensics
- First aid
- Legislation familiarity
- Driving, basic vehicle maintenance

Several training programmes related to law enforcement have been supported by ZPWMA to rangers elsewhere. Rangers at Tugwi Mukosi have randomly benefitted from different courses in their previous stations before deployment to Tugwi Mukosi. These courses include weapons training, bush skills, tracking, patrol techniques, weapon handling and range practice, fitness, SMART trainings or cyber tracker skills, GPS and navigation, reactive patrols, ambushes and radio procedures amongst others.

In addition to standard training, it should be remembered that the range of duties of Park staff are wide, with certain positions requiring extensive contact with the public such as tourism officers, field rangers are often engaged in highly sensitive law enforcement operations and technical staff need to engage in specialised duties. Failure on the part of Park management to constantly appraise and provide ongoing training and refresher courses for staff could have serious public relations, legal, or safety consequences. A range of training options should be explored, inclusive of cost-effective in-house training programmes already offered by stakeholders. It is also important that some ZPMWA are trained to be trainers during stakeholder offered courses so that they can become the future instructors for the Authority.

As a point of interest, it has been noted that there are a significant number of experienced staff who are approaching retirement age. Some method of capturing their experience and passing it onto newer and less experienced staff should be sought.

In order to motivate staff an appraisal and incentive system to reward staff for good performances should be established. The incentive system would need to be transparent to ensure that hard work is rewarded.

Worker's committees form an important link between management and staff and should meet regularly. Grievances should be communicated to management through the appropriate channels, and transparent and timely feedback to staff is of great importance.

Summary of Activities

- Code of conduct implemented
- Capacity building and training programmes implemented
- Appraisal and incentive system developed
- Industrial relations harmonised

1.3 Upgraded recreational facilities

Recreational facilities so far have not been high on the priority list for Tugwi Mukosi RP for financial, temporal, policy and other reasons. There is an existing kiosk but needs to be equipped with a duke box, pool table and dart board. There is an existing soccer pitch that also needs maintenance. However, there is need for development of a volleyball and netball pitch among other recreational facilities for the staff.

Summary of Activities

- Expansion of recreational facilities
- Maintenance and improvement of sports facilities

1.4 Provision of a health facility

There is need for staff to have access to a nearby, well equipped (drugs and equipment), well-staffed (qualified and motivated) clinic. According to Map 8 there are 4 clinics within the local development area and the dam environs. These are Zivuku clinic in Ward 24, Gororo and Chivasa clinics in Ward 28 of Chivi district. All the clinics are in good condition and well maintained with the Gororo clinic being solar-electrified. Village 1 Clinic in Masvingo district under Chief Shumba needs minor repairs and upgrades although it's operational. Staff at Tugwi Mukosi HQ, Gunikuni sub camp and Zunga sub camp have clinics within reasonable proximity to travel to access medical attention approximately 5km. For the sub camp around Rarangwe area staff will have to travel around 15km to the nearby clinic at Gunikuni. With time there will be need to have such well-equipped (drugs and equipment), well-staffed (qualified and motivated) clinics at each of the four stations.

Summary of Activities

- With time there will be need to have well-equipped (drugs and equipment), well-staffed (qualified and motivated) clinics constructed at each of the four stations.

Objective 2: To construct adequate infrastructure for effective management

Management of any Protected Area requires a significant investment in infrastructure. Most of the roads in the Park were developed after 2010 specifically for the purpose of dam construction and few new alignments put in since then. There is a fabulous 8 to 10km tarred road that connects the Park and dam wall from the main Ngundu – Tanganda highway. Some inroads are dam construction roads within the Park. The other prospective site for the Park HQ, Gororo site is quite extensive and has a significant number of buildings which were constructed by the dam construction contractor, **Salini - Impregilo Joint Venture** being a consortium of two major Italian companies. The structures mainly semi-permanent, were their offices, staff housing, catering and dining, warehouses, workshops. Currently, ZPWMA does not have any

building in place but is occupying those existing structures as offices and staff housing. There is a ZPWMA 2021 budget to construct all sort of needed buildings for the new Park.

2.1 Improve roads, bridges and airstrips

Tugwi Mukosi has a planned extensive road network which soon will be in the process of being rehabilitated. Around 200km length Park road network will be opened and upgraded. The work is expected to continue with preceding years. In addition to the initial opening it will be important that these roads are maintained going forward.

Tugwi Mukosi has a 100km perimeter boundary with adjacent communities. There is need to grade a cut line between the Park and proposed 300m buffer between the Park and communities.

Concurrent with the road grading there are a number of river crossings that need to be improved and upgraded. The most important of these are Tugwi river crossing, Mukosi river crossing and other crossings for various tributaries such as Ngezi and Shashe.

Boats need to be secured to argument road patrols/ game drives. Boats will be used to facilitate lake patrols and cut on distance supposed to be travelled around the water body to the next point for example from South to North bank. Attached to boat usage is the need for standard harbours to facilitate boat launching and docking.

The Park airstrip at Tugwi Mukosi is in an unusable condition but effective maintenance will be an ongoing concern. In addition, there is a helipad in sound state, though not an adequate and equal option to the airstrip.

2.2 Construct housing and facilities

The planned possible Park HQ, Gororo site is quite extensive and has a significant number of buildings which were constructed by the dam construction contractor, **Salini - Impregilo Joint Venture**. The structures mainly semi-permanent, were their offices, staff housing, catering and dining, warehouses, workshops. Currently, ZPWMA does not have any building in place but is occupying those existing structures as offices and staff housing.

Annex C, Tugwi Mukosi 2021 budget shows that there is a budget to construct all sort of needed buildings for the new Park in all 3 sites (1 Tugwi Mukosi HQ either Gororo near the dam wall or Zunga to the west and 2 sub stations either one of the earlier two and Gunikuni as well). Tugwi Mukosi 2021 budget has plans to build 5 senior staff houses and 68 for junior staff at an estimated cost of USD150 000 and USD1 360 000 respectively. To support this a water provision system, solar power and back-up generators will be ideal for all the 3 stations.

With time there should be plans and a budget for refurbishment of the houses. In addition to refurbishment an ongoing maintenance plan must be developed for all building in the Park. If the number of staff are to be increased, then this must come with additional housing to avoid cramped conditions that can lead to loss of morale.

Summary of Activities

- Detailed proposal for construction staff housing and provision of water and electricity needs
- Expansion of solar power
- Need of generator backup system

2.3 Develop, upgrade and maintain communications systems

The communications network in the Tugwi Mukosi is poor. There is no working radio system. The only available base set and handset at the current HQ are non-functional. Rangers on patrol rely on their cell phones for operations communications. However, there are other parts of the Park and surrounding areas where there is erratic and sometimes nil coverage by commercial phone networks, notably Net One, Econet and Telecel. This compromises the smooth flow of anti-poaching operations. As such there is need to secure and install at least 4 repeater links and over 20 radios. With time vehicles and boats should be equipped with radios. There will be need for constant maintenance of the radio system.

Summary of Activities

- Secure and install at least 4 repeater links and over 20 radios.
- With time vehicles and boats should be equipped with radios.
- There will be need for constant maintenance and upgrading of the radio system

Objective 3: To put in place and maintain adequate equipment required for management

Management of a national asset such as Tugwi Mukosi requires a significant investment in equipment. This includes boats, vehicles – both small and large, road maintenance equipment, firefighting and workshop equipment etc. Maintenance of equipment is often overlooked during Park planning but is vital part of Park management and cannot be ignored.

3.1 Secure adequate equipment for Park management

The official vehicles available for Tugwi Mukosi RP and woefully inadequate with one very limited running old land cruiser pickup on station. This vehicle is assigned to all duties from operations, administration maybe research consequently is often off-station on breakdown.

However, and in order to ensure continuity, it is imperative that the Park's vehicle fleet is expanded by at least two additional new land cruiser trucks, 1 by 75HP boat (8-seater) in the short-term. A proposal for the longer-term needs to be developed, especially if staff and patrol staff numbers increase. As shown in the budget for the long-term developments 4 land cruiser pick-up trucks will be ideal 1 being deployed at each station and 3 by 75HP boats each at each (sub) station.

Foot patrols take place in a remote and rugged environment, often under dangerous conditions. In order to maintain staff morale and safety it is important that staff is issued with the most appropriate equipment and rations. A minimum set of required equipment (See 3.1.3) and rations per patrol group have been established for field patrols in the Park. The basic rations and equipment listing per patrol is listed in Table 22.

Table 22: The Basic Rations and Equipment Listing per Patrol Call Sign

Equipment		Rations		
Specialised	Basic		person/day	4 person/10 days
• 1 x VHF radio per group • 1 x GPS per group • 1 x Cyber tracker device per group plus portable charger per group • 1 x basic first aid kit	• 1 Riffle and 60 live rounds of ammunition per head • 1 pair boots • pair socks • pairs field overall • 2 water bottle	Mealie Meal	500g	20kg
		Kapenta	25g	1kg
		Soya Mince	25g	1kg
		Beans	100g	4kg
		Rice	100g	4kg
		Salt	20g	800g

• 1 x light tent (or big tent for group)	• 1 mosquito net	Cooking oil	35ml	1.4 litres
• 1 x Portable hand held axe	• 1 ground sheet	Sugar	100g	4kg
	• 1 sleeping mat	Tea	15g	600g
	• 1 sleeping bag	Curry powder	5g	200g
	• 1 web belt	Tomato paste	25g	1 tin/day
	• 1 bush hat			
	• 1 backpack	Matches		2 boxes
	• 1 bivvie /raincoat			
	• 1 pair of handcuffs			

Summary of Activities

- Two additional light trucks and 3 by 75HP boats on station on the short term planning
- Plans for long term vehicle and boat procurement in place.
- Sufficient patrol equipment and consumables for patrols
- Patrol equipment and supplies sufficient for operations

3.2 Effective maintenance of equipment

This plan recommends the upgrading of the vehicle and boat fleet for the Park. However, experience has shown that a maintenance plan for these vehicles and boats is essential to ensure that they remain on the road and water respectively. The first stage of any maintenance programme will be the establishment of a workshop with the appropriate equipment (tools, compressors, standby power etc). Once this is in place properly trained staff are needed to run it.

Summary of Activities

- Upgrade and equipping of workshop
- Trained staff in place - mechanic and assistants
- Regular maintenance schedules

Objective 4: To improve resource protection

The entire Tugwi Mukosi RP is surrounded by community areas which can be a problem for resource protection. In some cases, communities are "hostile" to the Park and its conservation goals and take the opportunity of limited policing to use the Park resources and enter illegally to poach wildlife and wood and to bring cattle in to graze.

4.1 Strengthen anti-poaching activities

There are many parts of Tugwi Mukosi which are not easily accessible by vehicle, and nowadays by boat since the Park does not own one except for the broken down but which are frequently used by illegal poachers. The backbone of the patrolling system must therefore consist of rangers on foot patrols, lack navigation, supported by vehicles and boats for deployment, upliftment and rapid response. Ongoing monitoring of law enforcement effort and results is essential, with regular feedback to management and field staff. For this system to be effective, data collection in the field must be consistent and accurate.

The establishment of a rapid reaction force is considered to be a priority during the life of this plan. For this force to fulfil its role it would need a dedicated vehicle and boat. The team is expected to be an eight-man

operational team with at least two rotational reserves so that a full force is always available. Obviously housing and equipment needs to be resolved to allow the unit to become operational.

Tracker dog units have proved to be successful deterrents in many other areas and their applicability for Tugwi Mukosi should be investigated. If deemed a worthwhile and practical addition to the suite of anti-poaching methods on hand steps need to be taken to establish and maintain such a unit.

Tugwi Mukosi has plans to established a SMART data recording system and rangers have been trained to collect data using GPS and camera, with assistance from The Zimbabwe Institute of Wildlife Conservation formerly Mushandike College. A dedicated officer should be always on station for data collation as the patrols are debriefed, analysis and report production. This includes mapping of poaching hotspots, water points, habitat mapping for different wildlife species etc. This system should be continued and refined. However, of equal importance to the data collection is the analysis and presentation of the data so that decisions can be taken in almost real time.

In addition, the control room should become the nerve centre for the planning and execution of law enforcement activities. It will devise systems and methodologies for collecting information from a wide variety of sources (e.g. rangers via Cybertracker, rangers' personal observations, tourist observations, informer networks, community, and stakeholders), processing these and making succinct outputs available for practical law and focussed enforcement activities.

As with any information based system it is only as good as the data inputs, its management, and its eventual use for anti-poaching. Care must be taken over the long-term to ensure that the system is used as intended and does not become a repository for a warehouse of unused data. Adaptive management and learning from experiences elsewhere will help to keep the system current, functional and meaningful in real-time.

It is also vital that the SMART data system has regular backups, some of which are stored in a different location. Loss of data is a common problem on stations and needs to be avoided.

The plan recommends a significant increase of staff numbers, especially those who will shoulder the load of the foot patrols (See 1.1 of this programme). Sufficient staff on the ground will be a key component for the success of law enforcement in Tugwi Mukosi. In additional the plan recommends for the crafting of a practical collaborative anti-poaching plan.

Current law enforcement Park setting up plans have a strong drive for the setting up the main station and other 2 sub stations where repeater links will be erected. These are linked to radio repeater installation that need guarding. But these stations could become forward bases for normal scout patrols and the rapid reaction team. In addition, 2 mobile forward base/outpost should be established on any of the islands to facilitate operations in the basin. Mobility and speed is often the key to successful anti-poaching operations.

An adaptive management approach must be taken with law enforcement. What seems reasonable and works today may not work in the future. Management must be aware of changes in technology and methodology, and also of changing tactics from illegal resource users and must be able to change and adapt to deal with new and changing threats.

An intelligence network will be developed and maintained around Tugwi Mukosi to enable managers to be more proactive and specific in their intervention.

Summary of Activities

- Patrol system strengthened
- Rapid reaction force
- Tracker dog unit investigation, then possible establishment
- SMART system based around an effective control room centre
- Informer network

4.2 Consolidate boundaries

The Park boundary description reads as drafted in the draft gazette (Annex B) submitted to the Attorney General in November 2020 for approval. The Masvingo Provincial Development Committee and the National Task Force for Tugwi Mukosi Land Development Boundary and Recreational Park endorsed both boundaries. However, the entire boundary is characterised by various spatial points which are still borne of contentions between ZPWMA and the adjacent communities. As such there is need to resolve the entire boundary issues by engaging the communities. Currently, there are physical and marked beacons which define the boundaries. The mapping and definition exercise was carried out in 2014/ 15.

At the present moment there is need to demarcate the 100km long perimeter boundary with a well-established cutline and these form part of the fire protection strategy for the Park. These need to be cleared on an annual basis. In addition, a bonnox fence 1,8m in height will run around the entire cutline/ 100km perimeter boundary. Indications are there that some conservation partners might be interested in purchasing the fence and approximately USD300 000 is sufficient for the entire perimeter.

24-hour manned entrance gates at most 3 will be left out for each of the 4 main and substations at Tugwi Mukosi for revenue collection, law enforcement, research and any other activities. It will be ideal to leave out locked gates where necessary to enable access of the local communities to cultural and heritage sites for example those to near Maringire shopping centre.

Summary of Activities

- Need for all boundary issues to resolved through community involvement
- Boundaries well marked and maintained – Cutline
- Demarcation of the boundary – bonnox fencing
- Leave out locked gates adjacent cultural and heritage sites for easy community access

4.3 Prevention and control of fires

This plan seeks for the development and annual update of an approved Tugwi Mukosi RP fire management plan. The plan should address four main components -

- Early burning block burning
- Fireguards
- Fire awareness and education
- Monitoring and mapping

Early burning has emerged as one of the most important tools for fire management in miombo woodlands. The strategy is to set early, cool fires across the landscape that will minimise the extent of late dry season hot burns and will create a mosaic of variable fuel loads in the landscape. Firebreaks can assist the situation but are not as effective as properly executed early burns.

The fire awareness component is mainly aimed at communities and this is dealt with in the outreach programme. The fire management plan also has a monitoring and mapping component and this is dealt with in the Ecological Management programme. This section deals with fire management and prevention and has two main components - proactive fire management and reactive fire management.

An annual fire meeting will be held at the end of each wet season, in order to analyse the fire strategy for the coming year, dependant on a review of the successes and failures of the previous fire season and incorporating a spatial and time analysis of the areas that had burnt. Rainfall in the intervening period and subsequent fuel load will be taken into account in the planning exercise. This meeting will determine which roads are to be utilised for strip burns that specific year.

Staff and equipment will be prepared in a timely fashion prior to the start of the dry season.

Summary of Activities

- Fire Management Plan
- Block and strip burning
- Clearing of fire breaks
- Reactive fire management preparedness

Objective 5: To mobilise resources to drive Park administration

Park operations entails day to day activities that call for the greatest portion of resources. Much of the needed operational costs cover resources and costs such as salaries, allowances, vehicles, fuel, motor vehicle service, stationery and consumables, laptops, patrol rations, patrol gear, uniforms, ammunition among other operational needs. Conservation is expensive and needs the concerted efforts of other conservation partners/ donors to ensure that monthly/ annual targets are met. Park administration ensures that antipoaching, fire management, road maintenance, control of invasive species, maintenance of tourist facilities, tourist and tour guide behaviour among others are well managed and monitored.

5.1 Mobilise resources to drive Park administration

At Tugwi Mukosi like in any other Protected Area the ZPWMA has to take full responsibility of meeting the costs of Park administration through the annual operational budget. However, if by any chance there are Conservation Partners/ donors who seek to come on board ZPWMA will be most accommodative having done all necessary procedures and eventually signing MoUs, The Park Administration including the relevant Regional Management has a mandate to spearhead, support and push all new initiatives/ income generating activities, Concession Leasing, carrying out of consultancy work by the Research Unit for a fee, collection of revenue at entry points such as conservation fees, rentals, accommodation fees, fines, assessment fees among other revenue lines.

Summary of Activities

- ZPWMA to fund through capital expenditure budgetary allocation
- Conservation Partners/ donors to assist
- Park Administrators to spearhead, support and push all new initiatives/ income generating activities, Concession Leasing, carrying out of consultancy work by the Research Unit for a fee, collection of revenue at entry points etc

THREE YEAR ACTIVITY PLAN

Table 23: Summary and three year Activity plan: Park Administration Programme

OBJECTIVE 1: TO RECRUIT SUFFICIENT TRAINED STAFF WITH HIGH MORALE					
Strategy	Activity	Notes	Implementation Schedule	Resp.	Verification
1.1: Optimised staff numbers	Detailed proposal for staff numbers. To take into account ZPWMA and partners might add on existing staff establishment	Includes housing assessment and phased implementation	End 2020	AM, RM	Proposal
	Staff compliment increased, especially at ranger level. Partners may be willing to second rangers to Park until ZPWMA rangers become available	30%per annum	Phased starting in 2021	HQ HR, AM	30% ground staff increase by end of 2020
1.2: Improve staff performance and professionalism	Code of conduct implemented	Ensure all staff aware, also Operation Manual	Ongoing	AM, HQ HR	Records of awareness lecture
	Capacity building and training programmes implemented. Liaison with the entire Region to include their rangers	Crime scene management, Weaponry, Ballistics, forensics, First aid, Legislation familiarity, driving, basic vehicle maintenance. Vital that permission for ZPWMA to attend these are received in time.	Ongoing and refresher	AM	Training reports
		Public relations training	Ongoing		
		Trainees becoming trainers protocol	Ongoing		
		Capture senior staff expertise	Ongoing		
	Appraisal and incentive system developed	Introduce an incentive scheme but look for sustainability		RM, AM	Incentive reporting and payments
	Industrial relations harmonised	Workers committee meetings with outputs acted on	Monthly? and ongoing	RM, AM	Monthly and annual reports
1.3: Upgrade recreational facilities	Setting up and expansion of recreational area	Construct volley ball pitch, netball pitch Seating, element protection, toilet facilities, solar etc	End 2021	RM, AM	Building expanded
	Improvement of sports facilities	Upgrade of soccer field Upgrade bar/ kiosk with snookers etc	End 2021	RM, AM, CP	Area upgraded
1.4 Provision of health facility - clinic	Construct and equip clinic with qualified and motivated staff and necessary equipment and drugs	There is need to have a well-equipped clinic at the Main Station and for other sub stations	End of 2022	RM, AM	Report, Clinic in place

Table 23: Summary and three year Activity plan: Park Administration Programme

OBJECTIVE 2: TO CONSTRUCT ADEQUATE INFRASTRUCTURE FOR EFFECTIVE MANAGEMENT

Strategy	Activity	Notes	Implementation Schedule	Resp.	Verification.
2.1: Improve roads, bridges and airstrips	Internal road upgrades	Existing roads to be worked on with ZPWMA. Labour sourced from surrounding communities	To begin end of April 2021	AM,	Station reports
	Link roads from Main Station to other sub stations	Crossings to be dealt with. Use of rock cages to be explored. Then consider securing a boat(s) to link stations and islands	Start 2021 and ongoing	RM, AM	Reports
	Bridge and crossing upgrades Deployment by bot(s) across the dam/ islands to stations to be explored. Other crossings reinforced annually.	The Main station and 3 sub stations are further apart and decimated by the vast dam as such there is need to consider improving both road and water transport	Start 2020 and ongoing	RM, AM	Reposts on works, boat(s) purchased
2.2: Construct housing and facilities	Detailed proposal for housing needs for all staff at all proposed 4 stations	Takes into account 1.1	Jan 2021	AM, RM	Station reports
	Water provision system in support of the housing units	Water pumping and storage facilities.	Jan 2021 (before end of dry season)	AM, RM	Work carried out, Reports
	Setting up of solar power for 3 sub stations	The electricity power lines are a distance from the proposed sub stations thus there is need to use solar power. And for the Main station housing electricity is readily available but solar is the best way to go.	Jan 2021	AM, RM	Power in place, Reports
	Resuscitation of generator backup system	Resuscitation of existing? Smaller backup systems?	April 2021	AM, RM	Generator working
2.3: Develop, upgrade and maintain communications systems	Need for 3 or 4 repeater links and the radios.	Need external assistance to erect and equip the repeater links?	Ongoing	AM, RM	Repeater functioning, Reports
	Maintenance of repeaters and radios	With time	Ongoing	AM, RM	Repeaters functioning, Reports

Table 23: Summary and three year Activity plan: Park Administration Programme					
OBJECTIVE 3: TO PUT IN PLACE ADEQUATE EQUIPMENT REQUIRED FOR MANAGEMENT					
Strategy	Activity	Notes	Implementation Schedule	Resp.	Verification
3.1 Secure adequate equipment for Park management	Secure boat(s), 2 land cruiser trucks under ZPWMA budget	Deployment, research, general duties	April 2021	RM, AM, HQ	Vehicles on station
	Proposal for longer-term transport options	Include 10 tonne trucks, boats etc	End 2021	RM, AM, HQ	Proposal
	Patrol equipment and supplies sufficient for operations	Inspection and replacement schedule	Ongoing	AM, RM	Equipment, Reports
3.2 Effective maintenance of equipment	Construct properly equipped workshop	Equipment assessment and procurement	End June, 2021	AM, RM	Workshop functional, Reports
	Mechanic and assistants on site	Vital for vehicle sustainability	End June, 2021 and positions maintained going forward	RM, AM	Mechanic on station
	Regular maintenance schedules	As above, Schedule needs to be devised and adhered to. Records of servicing and repairs to be kept	Ongoing	AM, RM	Workshop reports

Table 23: Summary and three year Activity plan: Park Administration Programme					
OBJECTIVE 4: TO IMPROVE RESOURCE PROTECTION					
Strategy	Activity	Notes	Implementation Schedule	Resp.	Verification.
4.1: Strengthen anti-poaching activities	Patrol system strengthened. Staff (See 1.1), vehicles (See 2.1)	Deployment plan linked to SMART system Forward bases – Zunga, Gunikuni	Ongoing Forward bases – All 3 in 2021 including the Main Station	AM, RM	Reporting, SMART reports
	Rapid reaction force (8 + reserves)	Dedicated vehicle Force to be properly trained and equipped	Proposal with implementation dates by End 2022	AM, RM	Proposal then units in place
	SMART system based around an effective control room centre	Control room to be nerve centre for anti-poaching	2021 and ongoing	AM, RM	
	Joint operations with Regional stations	Synergy in patrol effort, intelligence and investigations	Formal establishment in 2021 and ongoing	AM, RM	
	Joint operations with other Protected Areas in the Region and with other law enforcement agencies in the region	Synergy in patrol effort, intelligence and investigations	Ongoing	RM, AM	Reporting on operations

Table 23: Summary and three year Activity plan: Park Administration Programme

OBJECTIVE 4: TO IMPROVE RESOURCE PROTECTION					
Strategy	Activity	Notes	Implementation Schedule	Resp.	Verification.
	Informer network developed and maintained	Informer management system needs to be in place	2020 and Ongoing	RM, AM	Reporting on informer linked arrests
4.2: Consolidate boundaries	Entire boundary issues resolved	In collaboration with surveyors	During 2021	RM, AM, RDC	Legal confirmation
	Boundaries well marked and maintained	Boundary clearing Marking of unclear or contested boundaries	Annually, as per rota Ongoing	AM, CP	Boundary inspection, reporting
4.3: Prevention and control of fires	Fire management plan	Based on previous years rainfall and burning activities	Annually by end March	AM, Ecol, CP	Fire management plan
	Block and strip burning	Early burning is most practical tool	Annually based on database		Burning records
	Clearing of firebreaks	In accordance with fire management plan	Prior to burning season		Firebreaks and records
	Reactive fire management preparedness	Standby team of casuals, non-rangers with equipment. Roster during burning season	Annually July to December (approx)		Staff listings, deployment records

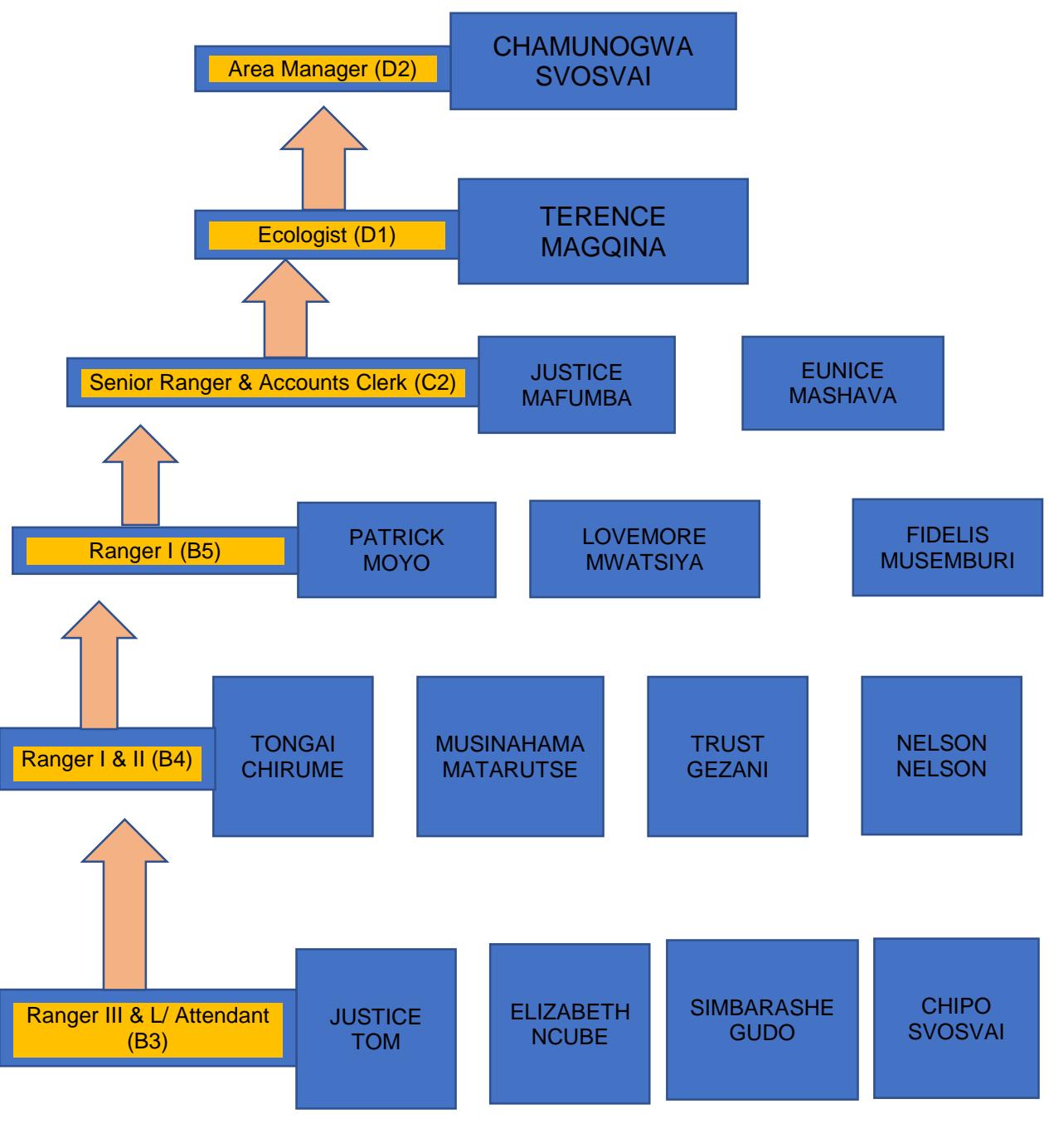
Table 23: Summary and three year Activity plan: Park Administration Programme					
OBJECTIVE 5: TO MOBILISE RESOURCES TO DRIVE PARK ADMINISTRATION					
Strategy	Activity	Notes	Implementation Schedule	Resp.	Verification
5.1 Mobilise resources to drive Park administration	ZPWMA to fund through capital expenditure budgetary allocation	Annual budgetary allocation to cater for this expense	Ongoing	DFA, DSS, CEA, RM, AM, SA, TM, BEM, Bus Dev	Vehicles, Boats, Equipment on station, Reports, Asset Registers
	Conservation Partners/ donors to assist	If they come on board enter into MoUs with partners	Awaiting	CP, DFA, DSS, CEA, RM, AM, SA, TM, BEM, Bus Dev	MoUs, Equipment, Vehicles and Boats on station, Reports, Asset registers
	Park Administrators to spearhead, support and push all new initiatives/ income generating activities, Concession Leasing, carrying out of consultancy work by the Research Unit for a fee, collection of revenue at entry points etc		Ongoing	CP, DFA, DSS, CEA, RM, AM, SA, TM, BEM, Bus Dev	MoUs, Equipment, Vehicles and Boats on station, Reports, Asset Registers

Core Implementation			Conservation Partners			
HQ HR AM Ecol DSS Comm	HQ Human Resources Area Manager Resident Ecologist Director Scientific Services Community Officer	CET Tour Bus Dev	Chief Ecologist Terrestrial Tourism Park HQ Business Development	CP SA TM DFA RM	Unspecified conservation partner Senior Accountant, Region Tourism Manager Director Finance and Administration Regional Director	

Annex A: Tugwi Mukosi RP Staff Organogram 2021



TUGWI MUKOSI RECREATIONAL PARK STAFF ORGANGRAM 2021



Annex B: Statutory Instrument 2020

[CAP. 20:14

Parks and Wild Amendment (Designation of Tugwi-Mukosi Dam as a Recreational Park)

Notice, 2020 (No.....)

IT is hereby notified that His Excellency, the President of the Republic of Zimbabwe has, in terms of section 41 of the Parks and Wild Life Act [Chapter 20:14] made the following notice: -

Title

1. This notice may be cited as the Parks and Wild Life (Amendment) (Designation of Tugwi Mukosi Dam as a Recreational Park) Notice 2020 (No....).
2. This notice shall be effective from2020.
3. The Fifth Schedule to the Parks and Wild Life Act [Chapter 2014] ("hereinafter called the Act"), is amended—

(a) by the insertion of Item 15 under the Masvingo District, which shall read as follows-

Item 15: Tugwi Mukosi Area

The area of land bounded by a line drawn north-westwards from GPS coordinates 0270500E 7706000 S in Ward 24, Chief Nemaushe's area , near Chengwe mountain, about 400m from Masvingo–Beitbridge road. The line proceeds north-westwards passing through coordinates 0270 000E 7707000 S in ward 24, Makombwe mountain, 0269500 E 7708000S, 0269000E 7709000S, 0268500 E 7710 000S Ward 24, Chivavarira mountain, 0268000 E 7711000 S Ward 24, 0267 500 E 7712000 S, 0267000 E 7713000 S , 0266500 E 7714000 S , 0266 000 E 7716 000 S , 026 5500 E 7716000 S, 0265000 E , 7717000 S in ward 24, 0264500 E 7718000 S Ward 22, proceeding to 0264000E 7719000S excluding Chamanhede mountain on the north-west, 0263500E 7720000 S in ward 22 with Chehudo mountain to the south-west , 0263 000 E 7721 000S, then crosses Faraneni river to 0262500E 7720000 S , 026 2000 E 7723000 S , 0261500 E 7724 000 S. The line proceeds north-westwards to coordinate 0261000 E 7725000 S, a point which marks the north-western side of the area.

From this point, the line proceed eastwards to 0261500E 7725000 on Tokwe river in ward 22, proceeding eastwards to 0262500E 7725000 S on a property owned by Hwata, then proceeds eastwards passing through 0263500E 7721000 S at Karonga farm 0264500 E 7725000 S, and 0265000 E 7725000 S at the foot of Gadziguru mountain, 01266539 E 7724940 S Gadziguru mountain,0268000 E, 7725000 S on a small track in ward 22, Chief Mapanzure's area, proceeding eastwards to 0271 000 E 7725000S, 0272000 E 7725000 S, 0273000 E 7725 000S. The line then proceeds northwards along a small track to 0276000E 7727000S in ward 22, Village 10, eastwards to 0278000 E 7727000 S along a mountain range to 0280 000 E 7727000 S excluding Gunikuni Shopping centre to the north, it proceeds to 0282000 E 7727000 S excluding Gunikuni School to the north to 0282217 E 7727008 S which is on the Ngomahuru – Renco mine road.

The line then precedes southwards along the Ngomahuru road, crosses Mukorsi River at 0285270 E 7725 564 S, proceeds eastwards along Ngomahuru road to 0288991 E 7725805 S, proceeds southwards along a small track to 0289618 E 77246735 near a certain primary School so as to exclude it, proceeding further southwards to 029888 E 7720810 S, then follows the road passing through 0290915 E 7719534 S,0290843 E 7717291 S, 0289082 E 7715897 S, proceeds to Madziwa river at 0288880E 7714645 S, then proceeds south-westwards along Madziwa river to point 0286867 E 7710714 S, the line leaves river and proceeds westwards to 0285132 E 7709505 S at the foot of the mountain range, proceeds southwards along the mountain range so as to include it passing through 0284896 E 7708122 S, 0285448 E 7707136S, 0283453 E 7706069 S, proceeds to 0282 596E 7705355 S point on Tokwe river, below the dam wall, crosses the river westwards to 0281093 E 7704414 , proceeds along the mountain range of the indigenous forest reserve so as to include it, passes through 02788 36 E 7702783 S, 0277356 E 7701062 S, proceeds 0274163E 7699553S , line then turns northwards and proceeds cutting across the mountain range (forest reserve) to 0274158E 7702809 S, proceeds in the north-western direction passing through 0273334E 7703489S, 0272422 E 7704202 S, 0271125E 7705253S, proceeds from this point to the starting point, which is 027050 E 7706000S.

Annex C: TUGWI MUKOSI RECREATIONAL PARK 2021 CAPITAL BUDGET

Description	Station Code	User /Location	Purpose	Estimated Cost	Justification
Land & Park Improvements				US\$	
Borehole x3	SE909	Tugwi Mukosi	Domestic	24,000	Each sub-camp needs a borehole which costs US\$8000.00
Entrance gate x4	SE909	Tugwi Mukosi	Law enforcement	120,000	There are 4 entrance points for law enforcement and revenue collection
Road Network (200KM)	SE909	Tugwi Mukosi	Administration	400,000	For a start 200KM have been budgeted for
Fencing (100km) – Boundary Demarcation	SE909	Tugwi Mukosi	Law Enforcement	300,000	The bonnox fence use for fencing the Park costs US\$3000 per km
Buildings - Administrative and Offices					
Admin offices at Main Station (Main Office)	SE909	Tugwi Mukosi	Admin office	100,000	The estimated cost of a standard administration building comprising all major offices is US\$100 000
Operation guard rooms	SE909	Tugwi Mukosi	Law Enforcement	60,000	The station will have 4 guard rooms at a cost of US\$15 000 per guardroom
3 Sub Camps	SE909	Tugwi Mukosi	Law Enforcement	60,000	Each sub camp will have a small administration office at a cost of US\$20000
Research Centre	SE909	Tugwi Mukosi	Scientific	40,000	A research centre for the station is needed at a cost of US\$40000
Research Equipment	SE909	Tugwi Mukosi	Scientific	30,000	The cost for research equipment such as nets and other experimental gadgets will cost US\$30 000
Clinic	SE909	Tugwi Mukosi	Staff	100,000	Staff clinic estimated cost
Buildings - Village & Staff Housing					
F15 Houses x 5	SE909	Tugwi Mukosi	Staff Housing	150.000	Each officer house estimated cost price is US\$30000 and there are 5 of them.

Junior Staff Housing x 68	SE909	Tugwi Mukosi	Staff Housing	1,360,000	The establishment for junior staff is 68 and estimated price per house is US\$20000
Motor Vehicles					
Land Cruiser x 4	SE909	Tugwi Mukosi	Operations	300,000	Each sub-camp will have a land cruiser for operations and the fourth one is for the main office
Boats and Vessels					
Boat x 3 (75HP)	SE909	Tugwi Mukosi	Law Enforcement	120,000	3 boats are needed for law enforcement for each sub camp
Equipment - Communication Devices					
Repeater link and radio communication system x2	SE902/904	Tugwi Mukosi	Law Enforcement	100,000	Two network links for 2 sub-camps are needed for communication
				3,264,000	

Annex D: SEL Region Training and Ration

Species	Masvingo Office	Mushandike	Kyle	Manjirenji	Mwenezi	SVC/ Beitbridge	Tugwi Mukosi
Baboon	10	10	10	0	0	0	0
Buffalo	2	2	2	1	2	2	3
Elephant	1	8	1	0	1	2	0
Fish	0	0	5kg per person per month	0	0	1	5kg per person per month
Hippopotamus	2	2	0	2	0	0	2
Hyena	0	0	0	0	0	0	0
Impala	10	10	6	0	12	24	0
Kudu	0	0	0	0	1	0	0
Warthog	1	0	0	0	0	4	0
Wildebeest	4	5	2	0	3	12	2
Zebra	0	0	0	0	0	0	0