

KRUGER NATIONAL PARK



South African
NATIONAL PARKS

REVISED ZONATION PLAN

August 2011

Version 2.0

TABLE OF CONTENTS

1. INTRODUCTION	5
2. REVISION PROCESS FOR THE ZONATION PLAN AND MAP (2011)	5
2.1. Zone Amendments	6
2.2. Road Reserves	7
2.3. Camp Buffers	8
2.4. Peripheral Development Zone	9
3. TRADITIONAL USE OVERLAY	10
4. PARK INTERFACE ZONES	10
5. TOURISM DEVELOPMENT	12
6. WAY FORWARD	14
7. REFERENCES	14

LIST OF TABLES

Table 1: Road Reserves 7
Table 2: Camp Buffers 8
Table 3: Limits of development for the Peripheral Development Zone 9

LIST OF FIGURES

Figure 1: Revised Zonation Map (2011) and highlighted changes 5
Figure 2: Park Interface Zones and Traditional Use Overlay 10
Figure 3: Proposed Tourism Development Activities 12

LIST OF APPENDICES

Appendix 1: Figure 4 - Recreational Opportunity Zonation (2011) 14
Appendix 2: Figure 5 - Existing Infrastructure 15
Appendix 3: Figure 6 - Waterpoint closure 16
Appendix 4: Figure 7 - Visual Impact Zones delineated by viewshed analysis 17

ACKNOWLEDGEMENTS

This Kruger National Park Revised Zonation Plan (2011) has been prepared by Tracy-Lee Petersen and Sandra MacFadyen.

The authors acknowledge and thank the following people who have made valuable contributions to this plan:

Danie Pienaar
Blake Schraader
Freek Venter
Stefanie Freitag
Stephen Holness
Lucy Nhlapo
Joep Stevens
Louis Olivier
Albert Machaba
Sithembile Mhlope
Rob Thompson
Johan Oelofse
Sandra Basson
Karien Keet
Joe Nkuna
Dalton Mabasa
Robert Bryden
Moreku van Rooi
Aurel Nyambi
Steven Whitfield
Thomas Mbokota

Phineas Nobela
Andrew Desmet
Derek Visagie
Don English
Andrew Desmet
Willem van Riet Jnr
Audrey Kekana
Derick Mashale
Ewout Verschoor
Rodney Landela
Agnes Madonsela
Tinyiko Chauke
Marius Renke
Rendani Nethengwe
Phindile Makhuvele
Richard Sowry
Evans Mkhanzi
Neels van Wyk
Albert Smith

1. INTRODUCTION

South African National Parks (SANParks) is required to adopt a spatial planning system in all national parks viz. the Conservation Development Framework (CDF), in accordance with the National Environmental Management Protected Areas Act (Eber et al. 2008). Furthermore, the NEM:PAA mandates SANParks to manage areas of national/international biodiversity, scenic beauty and cultural heritage importance. The NEM:PAA stipulates that Kruger's management plan must therefore contain a zonation indicating what activities may take place in different areas and outline the conservation objectives of those areas (Britton 2005). A Kruger Zonation team was established in August 2006 to develop a draft zonation plan for inclusion into the Kruger Management Plan. Zones were derived using expert knowledge and available spatial data in a workshop environment (Eber et al. 2008). The Biodiversity Sensitivity-Value, unique tourism features, tourism potential, land claims, wilderness-qualities, heritage sites, existing infrastructure, surrounding land uses and ecological rehabilitation requirements were systematically overlaid in a GIS (ArcView 3.2) and compared to inform the zonation process. Subsequently, a SANParks team of representatives from KNP: Conservation Management, Scientific Services, Technical Services and Regional Management, began the 5 year revision of this Zonation Plan and Map in a workshop held on the 10th of August 2011. The outcome of these discussions is described below:

2. REVISION PROCESS FOR THE ZONATION PLAN AND MAP (2011)

As part of the revision process amendments were made to the zonation plan which allow for more opportunities for development according to a new tourism development plan (Figure 3). Moreover, wilderness areas close to the boundary were cut back to offer better viewshed and 'noised' protection and to take better advantage of opportunities for regional tourism linkages with the Greater Limpopo Transfrontier Park (GLTP). Additions to the map include a Peripheral Development Zone (PDZ) and various Park Interface zones, a traditional use overlay for improved community benefit-sharing opportunities, road reserve buffers and camp and gate buffers which further forms the framework for development in the park. The following informants were used for revision of the zonation plan and map:

- ⇒ Protected Area Legislation and Buffer Zone Policy
- ⇒ SANParks policy framework
- ⇒ Kruger National Park Management Plan
- ⇒ KNP Tourism Management Plan
- ⇒ Biodiversity sensitivity-value of the park (incl. National (SANBI) priority areas)
- ⇒ SANParks GeoSpatial database
- ⇒ Existing wilderness trails areas
- ⇒ International borders and border control gates
- ⇒ Surrounding land uses including; Association of Private Nature Reserves, Limpopo National Park Zoning, Makuleke Development Plan, Mozambique game reserves
- ⇒ Water Point closure
- ⇒ Tourist Development Plan for proposed development
- ⇒ Approved Road reserves (or road buffers)
- ⇒ Camp occupancies (April 2010 – March 2011)
- ⇒ Viewshed analysis on park borders

2.1. ZONE AMENDMENTS

The following zones were revised and amended in a GIS (ArcMap 10), incorporating the afore-mentioned stakeholders' comments (Figure 1).

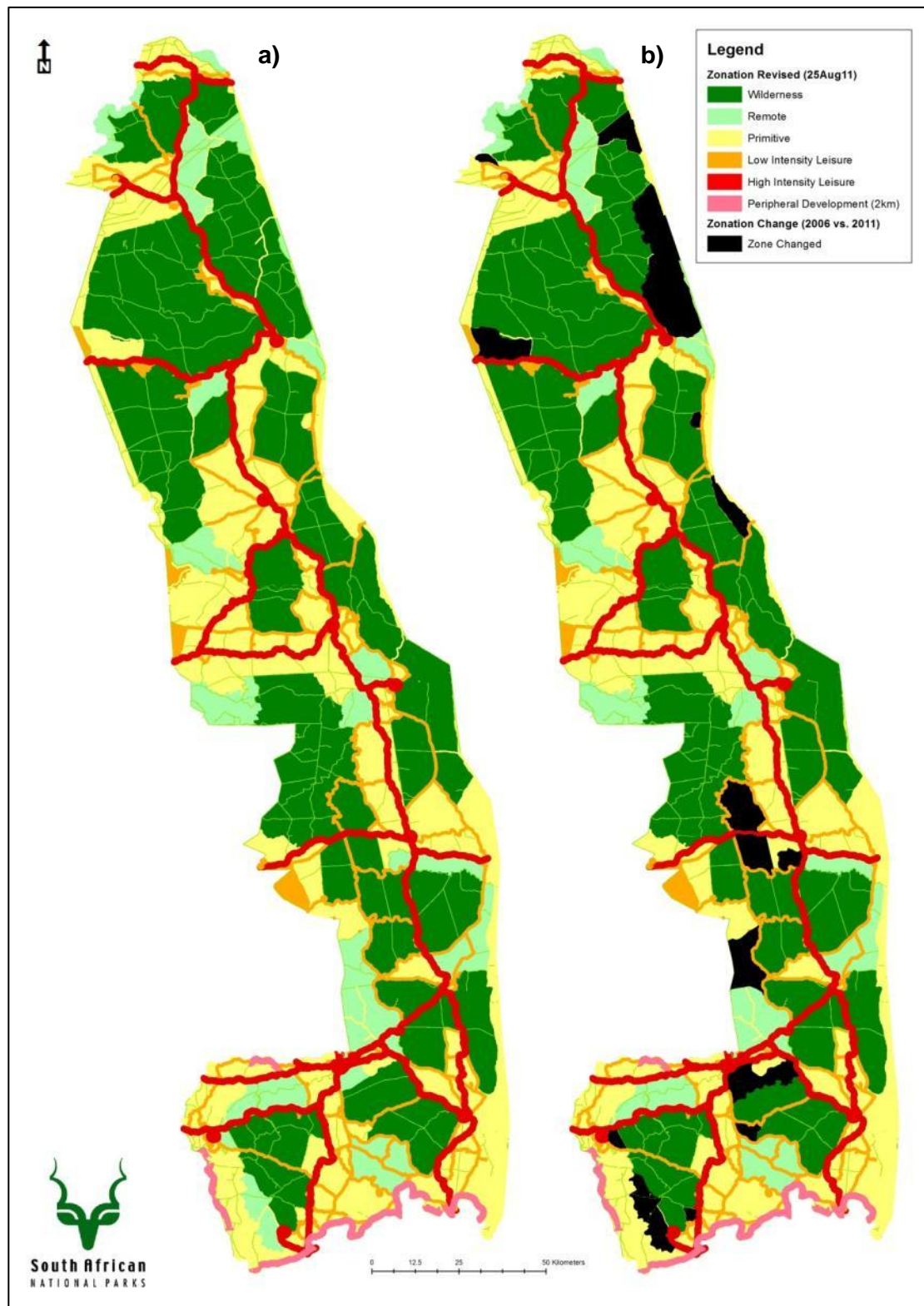


Figure 1: a) Revised Zonation Map of the Kruger National Park (2011) with b) changes to the Zonation Map of 2006 highlighted.

2.2. ROAD RESERVES

Buffers were added to existing road reserves in order to limit development as determined by the road category and surrounding zonation and to mitigate the impacts of roads on the environment (Table 1; Figure 1).

Table 1: Road Reserves

Road	Category	Buffer	Limits of development
Tourist – Tar	A	1 km on both sides of the road measured from the central line	Servitudes Gravel Pits Bird Hides and viewing decks Rustic Picnic Sites Small scale Tourist Loop Roads Sand extraction for road re-surfacing Other Technical Services activities including culverts, concrete slabs and bridge structures, table and mitre drain structures and speed control signage *All other developments within the road buffers are limited to the adjacent zonation.
Tourist – Gravel	B	500 m on both sides of the road measured from the central line	Servitudes Gravel Pits Bird Hides and viewing decks Rustic Picnic Sites Small scale Tourist Loops Other Technical Services activities including culverts, concrete slabs and bridge structures, table and mitre drain structures and speed control signage *All other developments within the road buffers are limited to the adjacent zonation.
<u>All Weather Tracks</u> Concession Gravel Road, Guided Eco-trail routes, Self Drive Eco-trail routes, Access Roads to Trails and Camps	C	250 m on both sides of the road measured from the central line	Gravel Pits Other Technical Services activities including culverts, concrete slabs and bridge structures, table and mitre drain structures and speed control signage *All other developments within the road buffers are limited to the adjacent zonation.
<u>Non All Weather Tracks</u> Management Tracks, Concession Tracks, Guided Eco-trail routes and Self Drive Eco-trail routes	D	100 m on both sides of the road measured from the central line	Technical Services activities including culverts, concrete slabs and bridge structures and table and mitre drain structures.

2.3. CAMP BUFFERS

Camp buffers are assigned as a gradient of development emanating from camps with variable levels of impacts associated with camp activities (Figure 1). As a result High Intensity Leisure areas surrounding large camps (> 200 beds) are extended by a radius of 2 km, Low Intensity Leisure areas surrounding smaller camps (< 200 beds) are extended by a radius of 1 km and Primitive Camps are not buffered thereby excluding development in surrounding areas (Table 2). Any proposed development within these surrounding areas cannot extend the existing development buffer.

Table 2: Camp Buffers

Camp Category	Camp Name	No. of beds	Buffer	Limits of development
High Intensity Leisure Camp	Skukuza Pretoriuskop Berg-en-Dal Lower Sabie Satara Mopani Letaba Olifants Shingwedzi Crocodile Bridge Orpen Punda Maria Malelane	>200 beds	3 km Measured from current perimeter	Day Visitor Sites Bird Hides Viewing Decks Environmental Centers Cellular masts Rustic Tented Fly camps Staff accommodation and other facilities such as admin and support infrastructure *All other developments within the camp buffers are determined by the associated camp category and the adjacent zone
Low Intensity Leisure Camp	Biyamiti Talamati Roodewal Tamboti Balule Shimuwini Sirheni Bateleur Boulders Maroela	<200 beds	2 km Measured from current perimeter	Bird Hides Viewing Decks Rustic Tented Fly camps Staff accommodation and other facilities such as admin and support infrastructure *All other developments within the camp buffers determined by the associated camp category and the adjacent zone
Primitive Camp	Metsi Metsi Sweni Bushman Napi Wolhuter Olifants Nyalaland Tsendze Sleep over hides Rustic Tented Camps Rustic Camp sites	<10 beds	None	Ranger posts and appropriate staff accommodation and administration and support infrastructure *All other developments within the camp buffers are determined by the associated camp category and the adjacent zone

2.4. PERIPHERAL DEVELOPMENT ZONE

In order to afford viewshed protection (especially for wilderness areas) a viewshed visibility analysis was run and a Peripheral Development Zone (PDZ) was derived (Figure 1). The idea being, if neighbouring land use practices are in conflict with SANParks conservation land use, PDZ forms a 2 km viewshed visibility buffer. The PDZ offers opportunities for development that does not impact the adjacent zones these include Park Access Gates with a development limit of 250 m into the core and activities and accommodation facilities not exceeding 250 beds (Table 3).

Table 3: Limits of Development for the Peripheral Development Zone

Primary Zone	Infrastructure	Accommodation facilities	Staff beds	Tourist Road	Communication structures/lightening arresters	Primary movement within zone
Peripheral Development Zone (PDZ)	Interpretative centre, picnic sites, view sites, rustic camp site, rustic picnic site ablation facilities, parking areas.	Not greater than 250 tourist beds	<50 beds	B1, B2	May have cell phone coverage	Motorized sedan
	Access Gate and reception, ablation facilities, parking areas	Not applicable	0	B1, B2	Radio mast, hub, satellite dish, aerials	Motorized sedan
	Roads	Not applicable	0	B1, B2, C1, D1	None	Motorized sedan

Coupled to this, a further important consideration is the external activities and 'non-natural' noises that interfere with the soundscape associated with wilderness areas and the experiential qualities such as solitude, quiet and serenity. Since a 'noiseshed' has not yet been determined for the KNP, the PDZ acts to limit 'non-natural' noises coming from the communities adjacent to the KNP and interrupting the trail experience. As a result, in addition to the PDZ, the wilderness zone in the south-west section of the park has been amended to create a suitable buffer and to preserve the wilderness experience.

3. TRADITIONAL USE OVERLAY

A Traditional Use overlay has been identified in the park using current traditional resource use areas as informants. Harvesting may take place in these zones which extend for 5 kms into the park as part of SANParks approved community economic upliftment and benefit-sharing programmes (Figure 2). These include the harvesting of Mopane Worms, thatch grass, road verge clearing and reed clearing. As well as community-driven tourism products in agreement with SANParks, which may include traversing rights.

4. PARK INTERFACE ZONES

According to the Draft Policy on Buffer Zones for National Parks (Notice 170 of 2010), a buffer zone is critical to help mitigate the negative impacts of outside activities and developments on the ecological integrity of the core area which is the national park (Holness 2008).

An external peripheral buffer of 3 km was overlaid with catchment protection, viewshed protection and protected areas onto the Zonation Map (Figure 2). These were derived from the three primary areas as identified by the Draft Policy on Buffer Zones:

- ⇒ Viewshed Analysis: A viewed analysis (van Riet 2011) identified areas outside of the park that were visible, most importantly, from the wilderness areas and which required viewshed protection.
- ⇒ Catchment Protection: The areas included in the buffer zone include Surface Water Catchment Areas which feed rivers flowing into or through the park
- ⇒ Protected Areas: These areas have been identified for further park expansion and areas important for ensuring the long term persistence of biodiversity and processes within and around the park. They include adjacent natural areas which function as an ecologically integrated unit with the park, maintain ecological links with the broader landscape and areas that form corridors for the movement of wildlife.
- ⇒ 3 km buffer: A cooperative working agreement between the Department of Environmental Affairs and Tourism (now the Department of Environmental Affairs) and SANParks which seeks to align the implementation and enforcement of the National Environmental Management: Protected Areas Act (NEM:PA; Act No. 57 of 2003) by SANParks and the administration of the National Environmental Management: Environmental Impact Assessment Regulations (NEMA; Act No. 107 of 1998, EIA Regulations 2010). The agreement dictates that any peripheral development requiring environmental authorization within three kilometers of the core area requires SANParks' written approval and DEA Record of Decision to proceed (DEAT 2006).

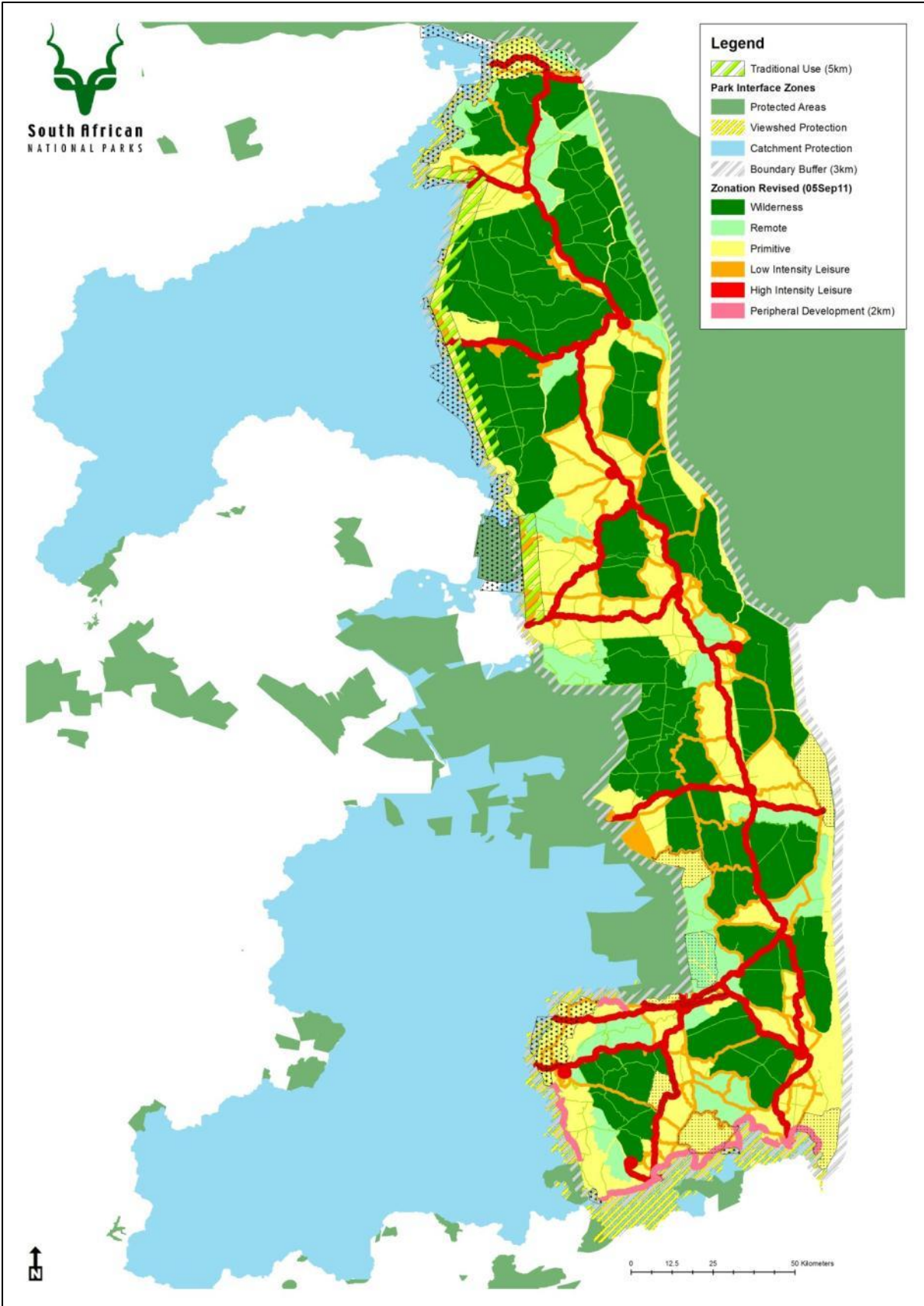


Figure 2: Kruger National Park zonation, park interface zones (protected areas, catchment and viewshed protection and boundary buffer) and resource use overlay.

The 3 km area directly adjacent to the park is intended to be a multiple use zone that excludes light and heavy industry, new residential areas, golfing estates or new intensive agricultural developments (Figure 2). As a result, the following human activities compatible with conservation may be considered in consultation with SANParks and the DEA:

- ⇒ Low intensity subsistence use
- ⇒ Nature-based Responsible Eco-tourism and related infrastructure

5. TOURISM DEVELOPMENT

As part of the compilation of the KNP Low-Level Tourism Management Plan (2007-2011) (SANParks 2006) a stakeholder engagement process and analysis was conducted in which stakeholders expressed the following needs in-line with tourism objectives:

- ⇒ More roads and tourist infrastructure (picnic sites, hides, stop-over points with toilets etc.) built in a 'close to nature' rustic style
- ⇒ Enjoyment of self-drive activities through reduced crowding at view sites and congestion on the roads
- ⇒ Appreciation of peace and tranquility or 'sense of place'
- ⇒ More camping and caravan sites

The landscape informants of species richness, topographic richness and rivers, were used to identify good potential areas for nature-based non-motorised and motorized tourism activities in the workshop held on the 10th August 2011, such as wilderness camping, overnight trails, bird hides, rustic tented camps, rustic picnic spots, guided 4x4 Overland Eco-trails and Self-Drive Eco- Routes. Additional gravel loops and look-out points were placed along the main tourist roads to enhance the self-drive experience and reduce congestion.

At a Tourism Product Development Workshop held on the 15th August 2011, the proposed new tourism development overlay for the Zonation Plan was introduced and further endorsed by the KNP: Tourism sector. Further inputs and recommendations from SANParks stakeholders were incorporated into the Zonation Plan and Zoning Map (Figure 1).

The following tourism activities and infrastructure (Figure 4) were proposed in the workshop held on the 10th August 2011.

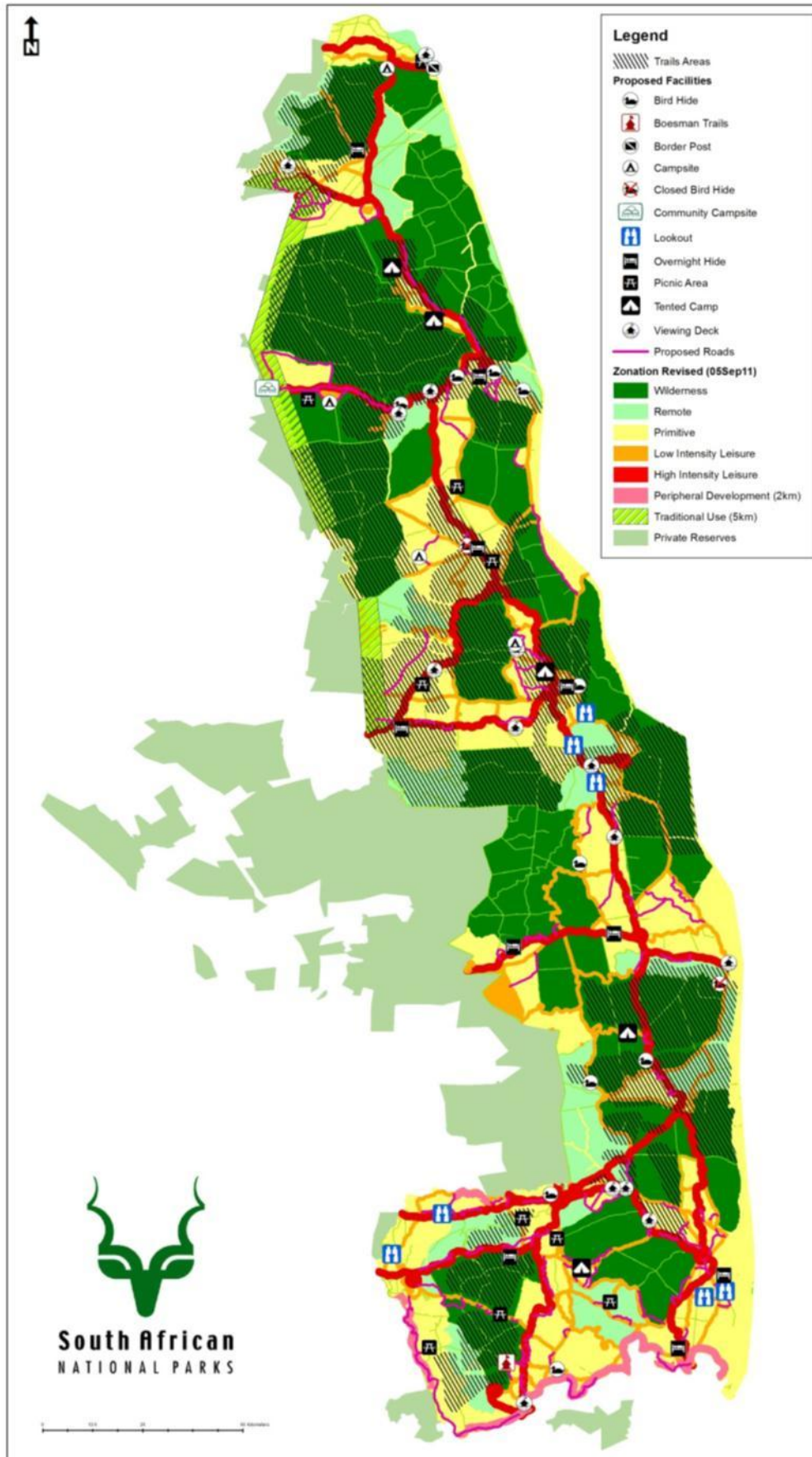


Figure 3: Proposed Tourism Development Activities.

6. WAY FORWARD

An integrated CDF process is required that would include the following:

1. Revision of the Limits of Development
2. Refinement of the zone definitions (including quality indicators and standards)
3. Development of potential Cultural Heritage tourism activities including the proposed Guided Rock Art Route (update associated layer).
4. Revision of the Low Level Tourism Management Plan (2007-2011) including strategic Market Analysis and Visitor Surveys in order to inform the desired state of tourism and tourism development
5. Implement findings and recommendations of the Strategic Environmental Assessment (SEA) for the Marula Region
6. Implement findings and recommendations of the Traffic modeling and visitor traffic density satisfaction survey conducted for the Marula Region.
7. Integration of the buffer zone with Municipal Integrated Development Plans (IDPs) and Spatial Land Use Plans
8. Acquire funding for the implementation of proposed tourism activities
9. Stakeholder participation and presentation of the KNP: Management Plan as part of the mandatory public participation process for the finalization of the CDF.

7. REFERENCES

ArcView 3.2 (2002) Environmental Systems Research Institute (ESRI). Redlands, USA.

ArcMap 10 (2006) Environmental Systems Research Institute (ESRI). Redlands, USA.

Britton. P and Cronwright. R (2005) *Conservation Development Framework (CDF) Manual: A Guide to Preparing a CDF for a National Park First Edition*. SANParks South Africa.

DEAT (2006) Department of Environmental Affairs and Tourism (DEAT) and South African National Parks (SANParks) *Cooperative Working Agreement between the Department of Environmental Affairs and Tourism (DEAT) and South African National Parks*

Eber S, MacFadyen S and Venter F (2008) *Kruger National Park Zoning Plan*. Unpublished Report. SANParks, South Africa.

Holness S (2008) The Park Interface Zone. Unpublished report. SANParks, South Africa.

Notice 170 of 2010. Government Gazette Notice: Draft policy on Buffer Zones for National Parks.

South African National Parks (2006) Kruger National Park: Tourism Management Plan (2007-2011) SANParks. South Africa

van Riet W (2011) Viewshed Analysis: Kruger National Park. Unpublished dataset. SANParks. South Africa.

APPENDIX 1

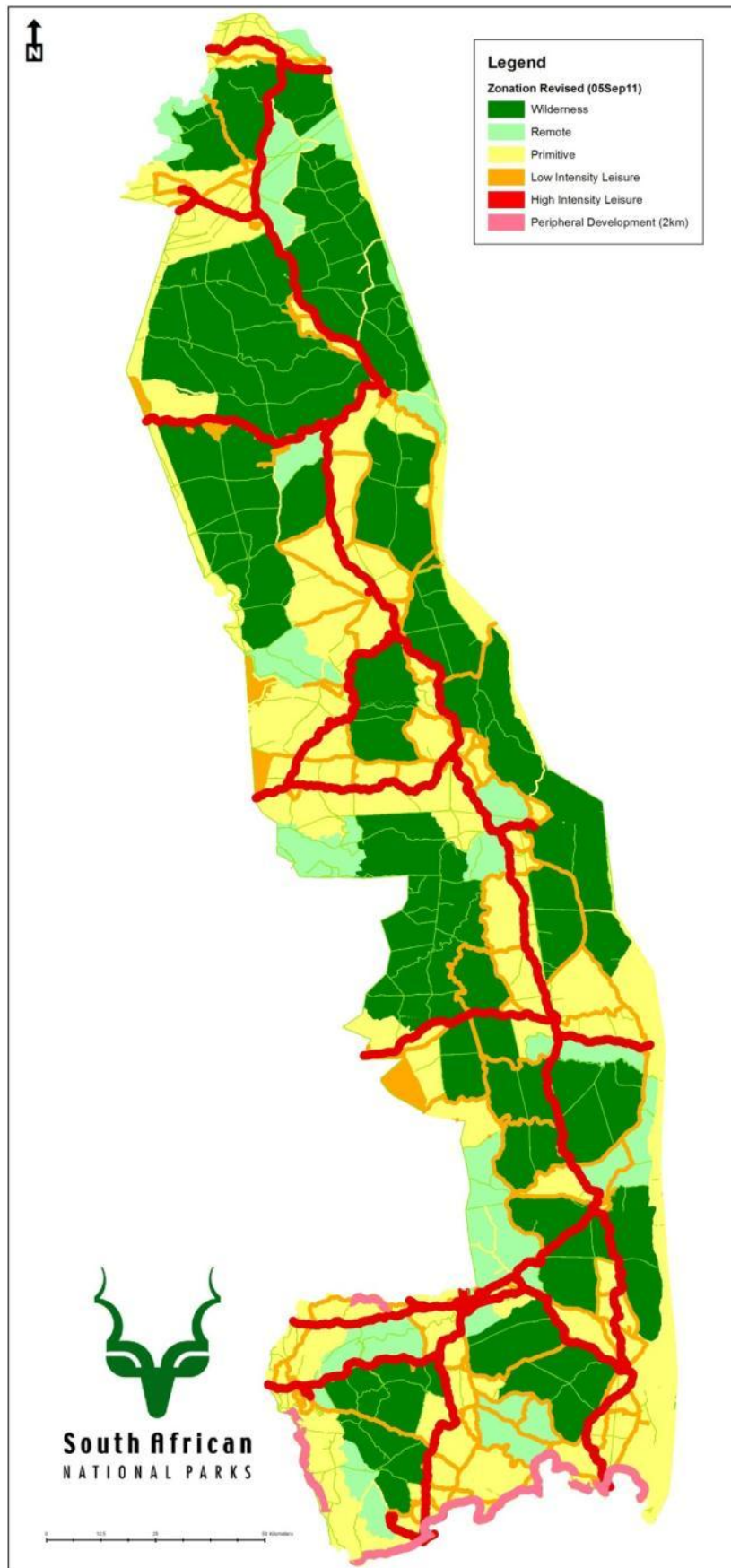


Figure 4: Recreation Opportunity Zoning Plan 2011.

APPENDIX 3

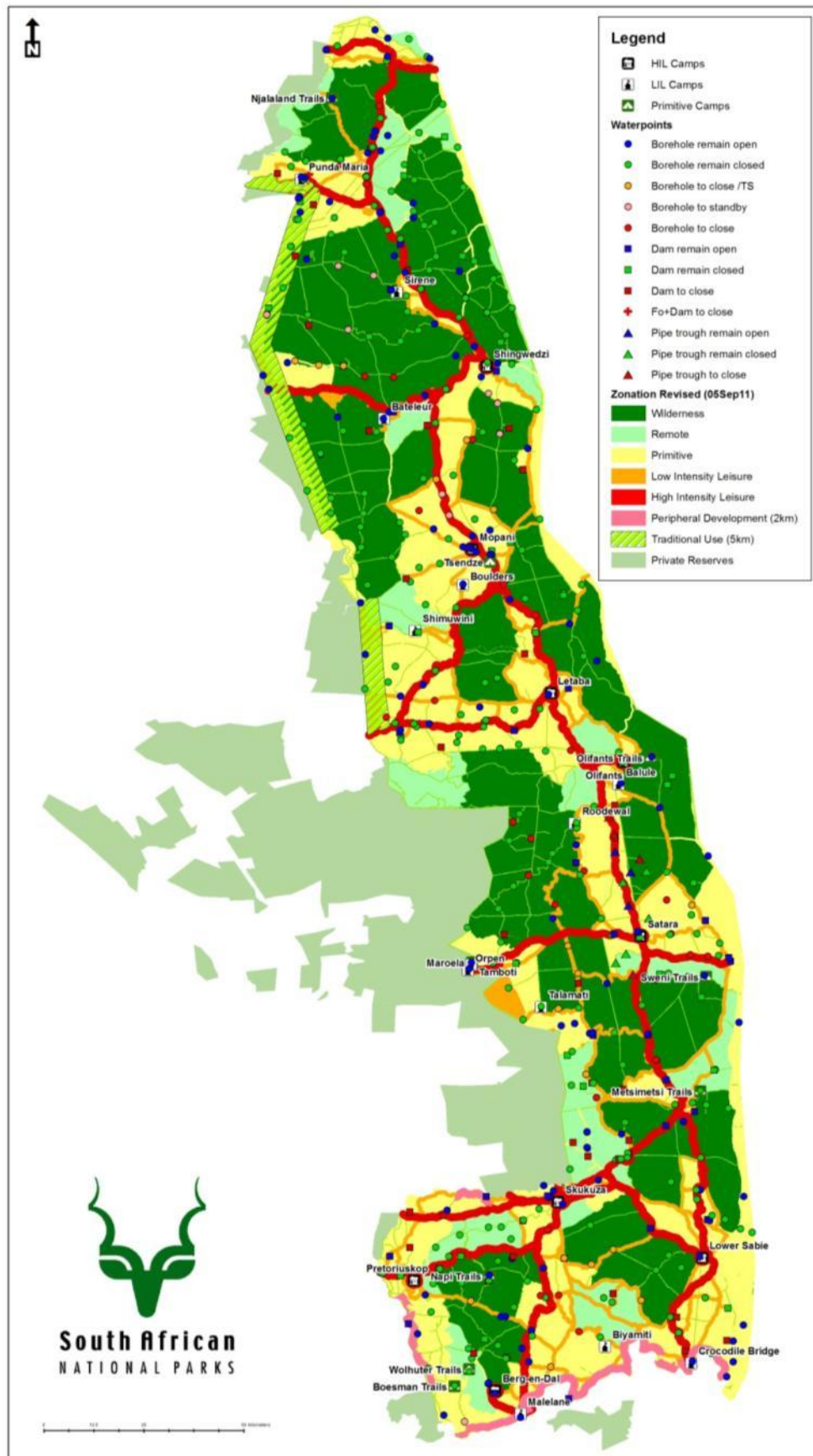


Figure 6: Waterpoint closure.

APPENDIX 4

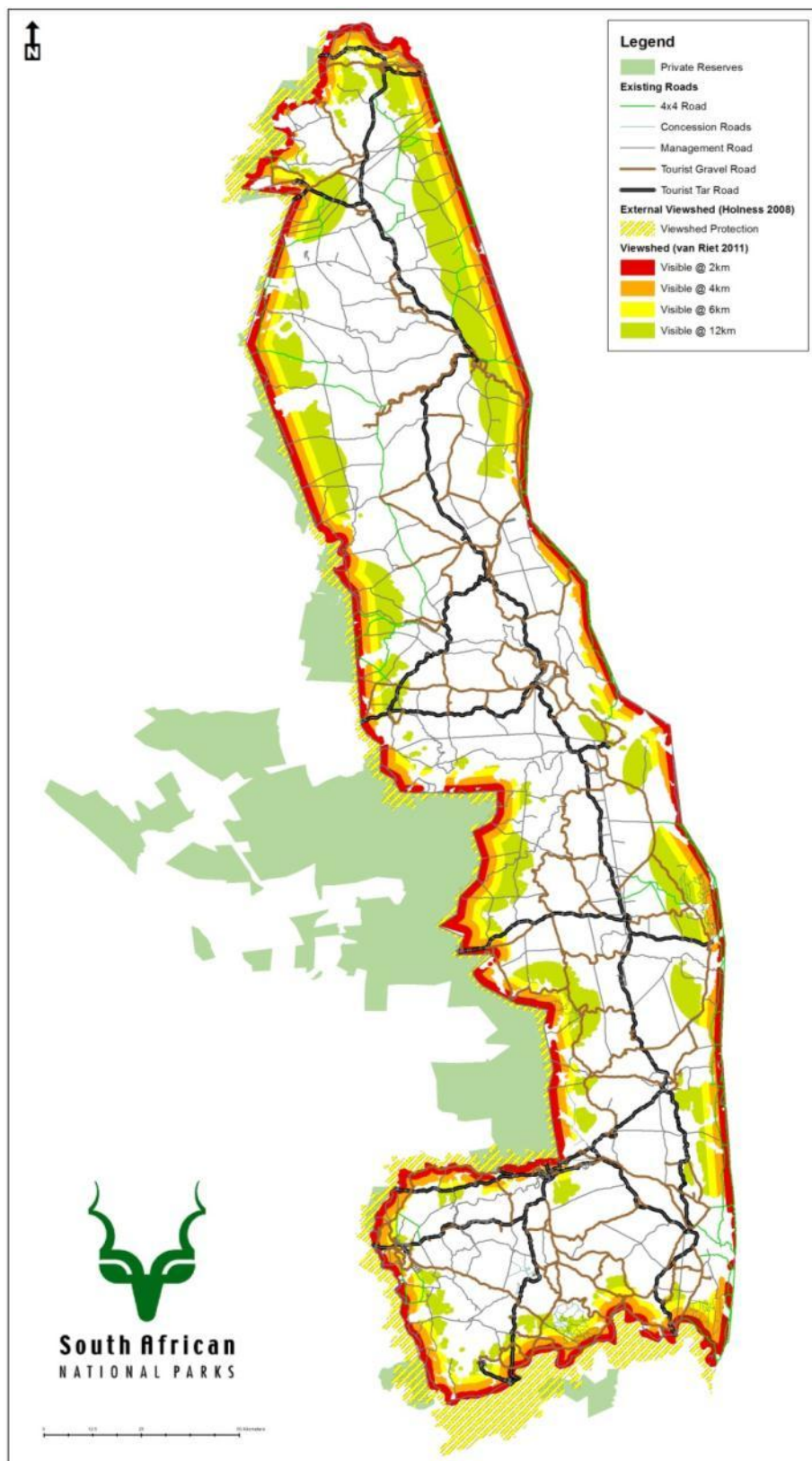


Figure 7: Visual Impact Zones delineated by viewshed analysis. The resulting visual impact zones from the viewshed analysis may act as a guide to identify suitable areas (site-specific) for development along the boundary of Kruger, in accordance with the limits of development for a specific underlying zone.