BGIS Land Use Decision Support (LUDS) Report

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Disclaimer:

The Land-Use Decision Support (LUDS) Tool has been developed to facilitate and support biodiversity planning and land-use decision-making at a national and provincial level. Its primary objective is to serve as a guide for biodiversity planning and should not replace specialist ecological assessments.

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Please note: that the spatial information incorporated into the LUDS Tool was mapped at various scales, with much of the spatial information mapped at a scale of 1:250 000 (i.e. 1 cm on the map = 2,5 km on the ground) or greater. To ensure maximum accuracy, always check the map against actual conditions on the ground when undertaking planning and decision-making, or contact the relevant conservation authority for additional assistance.

Please forward any queries or concerns to BGIShelp@SANBI.org.za.

1. Information extracted from national datasets

The information below is extracted for the analysed area from national datasets available on BGIS. There is a short description of the dataset under each heading and the URLs to the webpage on BGIS with further information.

1.1. National terrestrial information

1.1.1. National list of threatened terrestrial ecosystems

BGIS source: National list of threatened terrestrial ecosystems for South Africa (2011) – original extents

A list of all threatened ecosystem patches which original extent intersects the analysed area. Note: the data represents the **original extents** of the threatened ecosystems; in other words, natural areas which have been converted to agriculture, mining and urban areas have been **included**. Please view the area using the BGIS online map viewer Bing maps or Google maps tool in order to see whether any natural vegetation may still exist.

BGIS project overview and report: http://bgis.sanbi.org/ecosystems/project.asp
BGIS download metadata and layer: http://bgis.sanbi.org/ecosystems/map.asp

Ecosystem Name	Code	Status
# threatened ecosystems: 0		

1.1.2. National vegetation types

BGIS source: Vegetation Map of South Africa, Lesotho and Swaziland (Mucina & Rutherford 2006)

A list of all the national vegetation types the corresponding number of patches of each which original extents covered the analysed area. Note that this list is based on the estimated original extents of the vegetation types prior to any transformation. Please view the area using the BGIS online map viewer Bing maps or Google maps tool in order to see whether any natural vegetation may still exist.

BGIS project overview and report: http://bgis.sanbi.org/vegmap/project.asp
BGIS download metadata and layer: http://bgis.sanbi.org/vegmap/map.asp

Instructions on how to find Mucina & Rutherford (2006) vegetation type descriptions using BGIS online maps: http://bgis.sanbi.org/vegmap/Veg_Map_Instructions.pdf

The **map code** below refers to the short code used on the wall map and BGIS interactive maps which helps to accurately identify a vegetation type given the complexity of the map's legend colours.

Vegetation type name	Map code	Biome
Namaqualand Granite Renosterveld	FRg 1	Fynbos Biome

1.1.3. Indigenous forest patches (DWAF)

BGIS source: DWAF Indigenous Forest Patches (2005)

A list of all the indigenous forest patches found within the analysed area

BGIS project overview and report: http://bgis.sanbi.org/indigenousforest/project.asp
BGIS download metadata and layer: http://bgis.sanbi.org/indigenousforest/map.asp

Forest name	Forest group	Patch Size
# forest patches: 0		

1.1.4. National soil classes

BGIS source: General soils and soil classes

A list of all the dominant soil classes the extents of which cover the analysed area. Please note that these soil classes were developed for agricultural use.

BGIS project overview and report: http://bgis.sanbi.org/Soils/project.asp
BGIS download metadata: http://bgis.sanbi.org/Soils/project.asp (Please contact the data owner, the Agricultural Research Council, to obtain the GIS data)

Soil Class	Soil Class ID

Non soil land classes	S16

1.2. National aquatic information

1.2.1. Wetlands (NFEPA Wetlands/National Wetlands Map 4)

BGIS source: National Freshwater Ecosystem Priority Areas (NFEPA) Wetland Map/National Wetlands Map 4 and NFEPA wetland clusters

A list of all Wetland units found within the analysed area, should these belong to a wetlands cluster its information is also included. Wetlands and wetland clusters which were selected as freshwater ecosystem priority areas (FEPAs) are indicated. A key to the information codes used is given below.

BGIS project overview and report (National Wetlands 4/Wetland clusters):
http://bgis.sanbi.org/nfepa/project.asp
BGIS download metadata and layer (National Wetlands 4/Wetland clusters):
http://bgis.sanbi.org/nfepa/NFEPAmap.asp

Wetlands

Wetland type	Description	Condition	NFEPA rank	FEPA status
# wetland units: 0				

Wetland clusters

Wetland cluster ID	Vegetation type	Wetland units	FEPA status
45501	Namaqualand Cape Shrublands Granite Renosterveld	48	FEPA
# wetland clusters: 1			

Key for NFEPA wetlands condition information codes

NFEPA condition	Description	% of total wetland area
AB	Percentage natural land cover ≥ 75%	47
D	Percentage natural land cover 25-75%	18
DEF	Riverine wetland associated with a D, E, F or Z ecological category river	2
Z1	Wetland overlaps with a 1:50 000 'artificial' inland water body from the Department of Land Affairs: Chief Directorate of Surveys and Mapping (2005-2007)	7
Z2	Majority of the wetland unit is classified as 'artificial' in the wetland locality GIS layer	4
Z3	Percentage natural land cover < 25%	20

* This percentage excludes unmapped wetlands, which includes those that have been irreversibly lost due to draining, ploughing and concreting

Key for NFEPA wetlands rank codes 1-6

Rank	Criterion
1	Wetlands that intersect with a Ramsar site
2	Wetlands within 500 m of a IUCN threatened frog point locality
2	Wetlands within 500 m of a threatened waterbird point locality
2	Wetlands (excluding dams) with the majority of its area within a sub-quaternary catchment that has sightings or breeding areas for threatened Wattled Cranes, Grey Crowned Cranes and Blue Cranes
2	Wetlands (excluding dams) within a sub-quaternary catchment identified by experts at the regional review workshops as containing wetlands of exceptional biodiversity importance, with valid reasons documented
2	Wetlands (excluding dams) within a sub-quaternary catchment identified by experts at the regional review workshops as containing wetlands that are good, intact examples from which to choose
3	Wetlands (excluding dams) within a sub-quaternary catchment identified by experts at the regional review workshops as containing wetlands of biodiversity importance, but with no valid reasons documented
4	Wetlands (excluding dams) in A or B condition AND associated with more than three other wetlands (both riverine or non-riverine wetlands were assessed for this criterion)
4	Wetlands in C condition AND associated with more than three other wetlands (both riverine or

4	Wetlands in C condition AND associated with more than three other wetlands (both riverine or non-riverine wetlands were assessed for this criterion)
5	Wetlands (excluding dams) within a sub-quaternary catchment identified by experts at the regional review workshops as containing impacted Working for Wetland sites
6	Any other wetland (excluding dams)

1.2.2. Sub-quarternary catchments and rivers (NFEPA)

BGIS source: National rivers and sub-quaternary catchment FEPA status (NFEPA)

A list of all NFEPA sub-quaternary catchments and their FEPA status followed by the river units they contain with various parameters and indicators. A sub-quaternary catchment and its river indicated as FEPA are fresh water ecosystem priority areas, A blank FEPA status indicates that NFEPA did not give the sub-quaternary catchment or river priority status. A key to the other information codes used is given below.

BGIS project overview and report (NFEPA river FEPAs and NFEPA rivers):
http://bgis.sanbi.org/nfepa/project.asp
BGIS download metadata and layer(NFEPA river FEPA and NFEPA rivers):
http://bgis.sanbi.org/nfepa/NFEPAmap.asp

Sub-quaternary catchments (river FEPAs)

NFEPA ID	FEPA status
5084	FEPA
# sub-quarternary catchments:	1

NFEPA river units

River name	FEPA status	River type	Condition	Mainstem	Flagship

 # river units: 0

Key for NFEPA sub-quaternary catchment and river units information codes

FEPA status	**River types**	**River condition**
Summarized FEPA status using a text description, where: **FEPA**= freshwater ecosystem priority area **FISHFSA**= fish support area **FISHCORRID**= corridor critical for movement of threatened Fish between habitats **PHASE2FEPA**= phase 2 freshwater ecosystem priority area **UPSTREAM**= upstream management area In instances where several of these map categories overlapped, the status took the following order of precedence: "FEPA", “PHASE2FEPA", "FISHFSA” or “FISHCORRID”, and then “upstream management area”	Used by NFEPA which comprises: the level 1 ecoregion number hyphen (-) *followed by* the flow **N**= not,permanent/flashy **P**= permanent or seasonal hyphen (-) *followed by* the geomorphological zone **M**= mountain stream **U**= upper foothills **L**= lower foothills **F**= lowland river	Used by NFEPA, A or B is considered intact and able to contribute towards river ecosystem biodiversity targets. **A**= unmodified, natural **B**= largely natural with few modifications **AB**= A or B above **C**= moderately modified **D**= largely modified **E**= seriously modified **F**= critically extremely modified **EF**= E or F above **Z**= Tributary condition modeled as not intact, according to natural land cover

1.3. National protected area information

BGIS source: Protected areas formal and informal (NBA 2011 and NPAES 2010)

A list of all protected areas the extents of which intersect with the analysed area. The formal protected areas were updated by the National Biodiversity Assessment (NBA 2011) whereas the informal protected areas were updated by the National Protected Areas Expansion Strategy (NPAES 2010).

Also included is a list of any NPAES 2010 focus areas that were intersected by the analysed area.

BGIS NBA 2011 project overview and report:
http://bgis.sanbi.org/NBA/project.asp

BGIS formal protected areas (NBA 2011) download metadata and layer:
http://bgis.sanbi.org/NBA/terrestrial_formalprotecedareas.asp
BGIS NPAES 2010 project overview and report:
http://bgis.sanbi.org/protectedareas/NPAESinfo.asp
BGIS informal protected areas (NPAES 2010) download metadata and layer:
http://bgis.sanbi.org/protectedareas/ProtectedAreas.asp
BGIS NPAES 2010 focus areas download metadata and layer:
http://bgis.sanbi.org/protectedareas/NPAES.asp

Protected area name	Category	Management agent

Formal protected areas

 # Formal protected areas: 0

Informal protected areas

 # Informal protected areas: 0

NPAES focus area name
Kamiesberg Bushmanland Augrabies
NPAES focus areas 1

2. Information extrated from the most relevant biodiversity conservation plan for the Namakwa District.

The information below is extracted for the analysed area from the most relevant and up to date biodiversity conservation plan available on BGIS. There is a short description of the dataset under each heading and the URLs of the webpage on BGIS with further information.

2.1. Terrestrial information for the Namakwa District

BGIS source: Namakwa District Biodiversity Sector Plan – terrestrial CBAs

A list of all Critical Biodiversity Area (CBA) units which intersect the analysed area. Each unit's category is determined by the highest ranking biodiversity feature it contains which is included for each unit.

Note that the protected areas of the Namakwa District are not included and the CBA and protected area boundaries are not mutually exclusive.

BGIS project overview and report: http://bgis.sanbi.org/namakwa/project.asp
BGIS download metadata and layer: http://bgis.sanbi.org/namakwa/cbas.asp

List of CBA or ESA units

Terrestrial CBA 2 - T2 **Unit size (Ha):** 366.151

Biodiversity feature information

EXPERT IMPORTANT TERRESTRIAL

Terrestrial CBA 2 - T2 **Unit size (Ha):** 0.538

Biodiversity feature information

SLOPES

Terrestrial CBA 2 - T2 **Unit size (Ha):** 161.354

Biodiversity feature information

SA VEG Additional information:Namaqualand Granite Renosterveld

 # CBA or ESA units: 3

Description of the biodiversity feature information included for each terrestrial CBA or ESA unit

Biodiversity feature	Description
BOKKEVELD FSP TERRESTRIAL (CBA T1)	Irreplaceable sites identified through a computer analysis as part of the Hantam Fine Scale Plan for the Bokkeveld Plateau. These are areas or sites that are mandatory if conservation targets are to be achieved.
CORRIFDOR (CBA T2)	Whole landscape-level biodiversity corridor network aimed at retaining connectivity between all geographic areas in the district and nationally. Corridor network identified based on existing corridor networks and following alignment guidelines laid out in the NSBA such as upland-lowland, climatic and latitudinal gradients.
CRITICAL SITES (CBA T1)	Buffered point locality of threatened species or other species of conservation concern. Point locality buffered by 500m.Only data for Riverine Rabbit included in this version of the Namakwa Biodiversity Sector Plan.
EXPERT CRITICAL TERRESTRIAL (CBA T1)	Areas in the terrestrial environments identified by experts as being most important for biodiversity. BCI vegetation map quartz patches, Kamiesberg vegetation map quartz patches, LHSKT highest ranked areas, expert mapped areas, estuary buffers (Groen and Spoeg rivers
EXPERT IMPORTANT TERRESTRIAL (CBA T2)	Areas in the terrestrial environment identified by experts as being important for biodiversity.
KLOOFS (CBA T2)	All kloofs larger than 50ha in extent. These represent a keystone resource for biodiversity (e.g. presence of springs) and important climate change refugia for biodiversity.
RICHTERVELD SPRINGS (ESA T)	Keystone ecological support areas for terrestrial biodiversity as these are the only natural perennial source of water in the environment
RIVERINE RABBIT (CBA T2)	Modelled Riverine Rabbit habitat based on observed records and buffered 1:50 000 scale stream lines
SA VEG (CBA T1)	Remaining extent of critically endangered ecosystems (vegetation types). i.e. The amount remaining intact of this vegetation type is less than representation target. NOTE: The ecosystem status classification used is the provincial level classification and does not include degradation in the calculation
SA VEG (CBA T2)	Remaining extent of endangered and vulnerable ecosystems (vegetation types), i.e. The amount remaining intact of these vegetation types is less than 60%.
SA VEG QUARTZ (CBA T2)	SA vegetation types with quartz or other types of gravel patches present. Excluding Richtersveld vegetation types as these do not correspond closely to the occurrence of quartz patches. Richtersveld quartz patches picked up through the expert mapping process.
SLOPES (CBA T2)	All areas with steep south-facing mountain slopes larger that 25ha in extent. These represent an important climate change refugia for biodiversity.

Land management objective for Namakwa BSP CBA or ESA categories

Information on the recommended land use practices in each of these categories can be found in the Namakwa BSP report.

CBA or ESA unit category	**Land management objective**
CBA 1	Natural landscapes: • Ecosystems and species fully intact and undisturbed • These are areas with high irreplaceability or low flexibility in terms of meeting biodiversity pattern targets. If the biodiversity features targeted in these areas are lost then targets will not be met. • These are landscape that are at or past their limits of acceptable change
CBA 2	Near-natural landscapes: • Ecosystems and species largely intact and undisturbed. • Areas with intermediate irreplaceability or some flexibility in terms of area required to meet biodiversity targets. There are options for loss of some components of biodiversity in these landscapes without compromising our ability to achieve targets. • These are landscapes that are approaching but have not passed their limits of acceptable change.
Ecological support Area (ESA)	Functional landscapes: • Ecosystems moderately to significantly disturbed but still able to maintain basic functionality. • Individual species or other biodiversity indicators may be severely disturbed or reduced. • These are areas with low irreplaceability with respect to biodiversity pattern targets only
ONA transformed (not listed)	Production landscapes: manage land to optimize sustainable utilization of natural.

2.2. Aquatic Information for the Namakwa District

BGIS source: Namakwa District Biodiversity Sector Plan (BSP)– aquatic CBAs

A list of all aquatic CBA units which intersect the analysed area. Each unit's category is determined by the highest ranking biodiversity feature it contains which is included for each unit.

BGIS project overview and report: http://bgis.sanbi.org/namakwa/project.asp
BGIS download metadata and layer: http://bgis.sanbi.org/namakwa/cbas.asp

List of CBA or ESA units

 # CBA or ESA units: 0

Description of the biodiversity feature information included for each aquatic CBA or ESA unit

Biodiversity features	Description
BOKKEVELD FSP AQUATIC (CBA A1)	Bokkeveld critical wetland and rivers as part of the Hantam Fine Scale Plan for the Bokkeveld Plateau.
BOKKEVELD FSP AQUATIC ESA (ESA A)	Bokkeveld critical wetland and river boffers as part of the Hantam Fine Scale Plan for the Bokkeveld Plateau.
KAMIESBERG WETLANDS (CBA A1, CBA A2)	Irreplaceable wetlands (CBA – A1) and remaining (CBA – A2) wetlands, rivers and pans in the Kamiesberg
KAMIESBERG WETLAND BUFFERS (ESA A)	The buffer zone around wetlands and rivers where land-use activitiescan impact the ecological functioning and integrity these features.
LOR EXPERT (CBA A1, CBA A2)	Pristine (CBA – A1) and near natural (CBA - A2) stretches of the Lower Orange River including the estuary (CBA - A1)

3. Municipal and cadastral information

3.1. Province and municipality

The Municipal Demarcation Board's 2009 boundaries are used for the BGIS LUDS tool as these correspond with the municipal biodiversity summaries. The boundaries in the LUDS tool will be updated along with the next municipal biodiversity summaries update.

Municipal biodiversity summary information can be on BGIS by going to the following link http://196.21.45.151/devBGIS/municipalities/municipality.asp.
and following the steps i.e. choose a province and then a municipality on the map or from the dropdown box. These steps also constitute STEP 1: *Find the appropriate BGIS map (LUDS Map) for your municipality*. Please contact SANBI municipal programme for more information about the Municipal Biodiversity Summaries Project.

Note: the LUDS tool does not allow analyses to cut cross municipal and provincial boundaries i.e. any analysis must fall within a single province and municipality.

Province (code): Northern Cape(NC)

Municipality (Cat B): Kamiesberg (NC064)

3.2. Cadastral information

A list of all cadastral units (parent farm and sub-unit properties only) which intersect the analysis area.

SG 21 code	Parcel number	Size (Ha)
C05500000000072800271	**271/728**	0.746

properties: 1

4. Envisaged development information

Development type: TEST ANALYSIS: Dry land & irrigated agriculture & forestry

Additional information:

The Agricultural Research Council ARC will establish 9 new pastures for camparrison with existing communal pastures in a long term study. The pastures will cover an area of 1 Hectare each. Three pastures down and three across a total of nine hectatres. Top left corner is given.

5. Analysis area information

Below are the size (Ha) and location (centroid and extents) in degrees, minutes and seconds of the analysis area, shown in red on the map.

Unfortunately a map of the analysis area cannot at this stage be included in these LUDS reports. If you wish to have a map of the analysis area please use the print map button provided on the LUDS toolbar.

Analysis area centroid (decimal degrees): 18.1080838002132,-30.2874147662418

Analysis area extents (decimal degrees): 18.107685243971,-30.2953300313421,18.1214354343282, -30.2868985311137

Analysis area size (Ha): Cannot be calculated, please use area tool