GEOGRAPHICAL INFORMATION SYSTEM

GIS METADATA : DETAILED REPORT

**SSD File:** SSD14/3/8/5/4 **BSP_ONA_WC-District-LocMun_2017.shp**

## IDENTIFICATION INFORMATION

**Title:** Western Cape BSP 2017 **Date of layer completion:** 06/03/2017

**Brief Description:** Western Cape Biodiversity Spatial Plan 2017

**Abstract Description:**

The Western Cape Biodiversity Spatial Plan (WCBSP) is the product of a systematic biodiversity planning assessment that delineates, on a map (via a Geographic Information System (GIS)), Critical Biodiversity Areas (CBAs) and Ecological Support Areas (ESAs) which require safeguarding to ensure the continued existence and functioning of species and ecosystems, including the delivery of ecosystem services, across terrestrial and freshwater realms. These spatial priorities are used to inform sustainable development in the Western Cape Province. This product replaces all previous systematic biodiversity planning products and sector plans with updated layers and features.

**Description of Purpose:**

The Western Cape Biodiversity Spatial Plan (WCBSP) is a tool that comprises the Biodiversity Spatial Plan Map of biodiversity priority areas (this product), accompanied by contextual information and land use guidelines (the WCBSP Handbook) that make the most recent and best quality biodiversity information available for informing all aspects of sustainable development in the Western Cape; from land use and development planning, to environmental assessment and regulation, and natural resource protection and management more broadly.

The key informant in the spatial product is the Category field which speaks to broad categories defined in the Biodiversity Act and in the Guidelines regarding Bioregional Plans. These categories provide a link to the Handbook's comprehensive set of recommendations about how to use the maps and land- and resource-use guidelines in a range planning processes. The broad categories are: Protected Areas (PAs), Critical Biodiversity Areas (CBAs), Ecological Support Areas (ESAs), and Other Natural Areas (ONAs). Fields containing the definition and Desired Management Objective for each broad category are also included.

In the spatial datasets a further distinction is made between CBAs that are likely to be in a natural condition (CBA 1) and those that are potentially degraded or represent secondary vegetation (CBA 2). This distinction is based on best available land cover data, and therefore may not be an entirely accurate or current reflection of condition. Site visits are recommended to verify habitat condition. Similarly, a distinction is made between ESAs that are likely to be functional (i.e., in a natural, near-natural or moderately degraded condition; ESA 1), and Ecological Support Areas that are likely severely degraded or have no natural cover remaining and therefore require restoration where feasible (ESA 2).

Importantly, both CBAs and ESAs are further divided into sub-categories which recognise important inherent attributes of the site, allowing for greater specificity in applying land-use guidelines. The sub-categories should be used in conjunction with the WCBSP Handbook and its proposed land use guidelines (see Chapter 4). Category 1 indicates whether the CBA or ESA sites require (where feasible) restoration from plantation or high density invasive alien plant cover, versus restoration from some other form of land use or land cover.

Finally, a "reasons" layer is also provided, based on planning units used in the spatial analysis. This layer provides both a summary and a detailed list of biodiversity and ecological infrastructure features found in each unit selected as CBA or ESA, and to which the unit makes a quantifiable contribution to the target.

These BSP maps should serve as the primary source of information on biodiversity and ecological infrastructure for all land- and resource-use decision-making and forward planning processes, such as Strategic Environmental Assessments (SEAs), Environmental Management Frameworks (EMFs), Spatial Development Frameworks (SDFs), and Integrated Development Plans (IDPs).

**Methodology / Lineage Description:**

The Western Cape Biodiversity Spatial Plan Map was developed using a systematic biodiversity planning methodology, based on the approach outlined by Margules and Pressey (2000) and Ardron et al. (2010). The data were analysed using Marxan software (Game & Grantham 2008), which employs optimisation routines to achieve specified goals (targets) with reasonable optimality. Marxan was accessed via an open-source GIS platform, QGIS, in conjunction with the plugin (interface software) CLUZ (Smith 2016).

The production of the WCBSP Map entailed four main steps: mapping (sourcing or generating all spatial input data), setting biodiversity targets, analysing the data, and translating the results into final products for distribution.

The mapping phase started with the development of a planning unit layer which divided the entire study area (Western Cape Province) into appropriate units of analysis. GIS layers were then compiled to allow for the following to be determined for each planning unit: protection status (Protected Area layer); habitat condition (Land Cover and Ecosystem Remnant layers); contribution to biodiversity targets (see Feature layers below); and a selection 'cost' to influence spatial design, including efficiency and conflict avoidance (WCBF 2014 CBA layer, Ecosystem-Based Adaptation layer, Neighbouring Priorities, and Urban Edges). A major component of the mapping phase was the sourcing or creation of maps of biodiversity pattern features and ecological persistence features. Features included: ecosystems (terrestrial vegetation types, coastal habitats, indigenous forest types, river types, wetland types and estuaries); species (threatened plants, amphibians, fish, birds, butterflies, reptiles, odonates and mammals, as well as species for which a BMP-S exists or is in progress: Cape Mountain Zebra, Bontebok, Geometric Tortoise, Clanwilliam Sandfish, Barrydale Redfin, and African Penguin); and spatial surrogates for a variety of ecological processes, ecological infrastructure, and climate resilience attributes.

The setting biodiversity targets phase entailed aligning provincial targets to national biodiversity thresholds for pattern and process, based on best available science, and adjusting targets where necessary to address deficits in biodiversity 'stocks' or features.

The analysis phase included: the creation and formatting of input files (e.g. a matrix of contributions per planning unit, summary of targets used, and targets already met by current protected areas); the calibration of Marxan parameters (Boundary Length Modifier, Feature Penalty Factor, Planning Unit Cost, Number of Runs and Iterations); running Marxan (300 000 000 iterations x 100 runs) to generate Selection Frequency Score and Best Solution results; and screening results with specific attention given to urban edges, special habitats, and corridors.

In the final phase of the spatial assessment, Marxan outputs were translated into maps of Critical Biodiversity Areas, Ecological Support Areas, and Other Natural Areas by: (1) replacing planning units with land cover-based remnant data; (2) applying a rule set to combine Marxan's 'high selection frequency' (>75%) and 'best-design' solutions with other features that must be categorically included (e.g., all CR vegetation remnants); and (3) augmenting the resulting shapefiles with relevant attributes (subcategories and features) that link to specific land use guidelines in the Handbook and to explanatory reasons for selection.

**Product Classification:** Standard
**Temporal Extent of the Dataset:**
**Descriptive Keywords:** Biodiversity, Spatial Plan, Critical Biodiversity Areas, Ecological Support Areas
**Supplemental Information / Report Reference:**

**Category Name:** Natural Environment
**Project Name:** WCBSP 2016 **Scale:**

**Bounding Polygon:** **North =** **East =**
**South =** **West =**

**Theme Type:** Feature **Content Type:** Polygon

**Language:** English

**Minimum Zoom:** **Maximum Zoom:**

## DISTRIBUTION INFORMATION

**Path:** Q:\2_Geographic\Natural_Environment\Biotic\Sensitive_Areas\WCBSP_2016_17\BSP_2017\
**File Name:** BSP_ONA_WC-District-LocMun_2017.shp
**File Type Name:** ArcView Shapefile **Distribution - Internal:** Yes
**External:** Yes

**List of Formats:**

**File Size:** **Online Resource URL:**

**Distribution Contact Information and Ordering Instructions**

**Name of Contact Person:** Therese Forsyth
**Name of Contact Organisation:** CapeNature
**Position of Responsible Person:** GIS Technologist
**Contact Address:** Private Bag X5014, Stellenbosch, 7599
**Contact E-mail:** tforsyth@capenature.co.za
**Contact Telephone:** (021) 866 8026

**Ordering Instruction:**
The data can be downloaded from the SANBI BGIS website (www.bgis.sanbi.org). OR The data can be obtained from either the Department of Environmental Affairs and Development Planning (DEADP): Spatial Information Management, with written approval of request from CapeNature. Email: cpetersen@capenature.co.za for a data application and agreement form.

**Fees and Terms:**

**Turnaround Time:**

## DATA OWNER AND METADATA INFORMATION

**Data Owner**

**Name of Contact Person:** Genevieve Pence
**Name of Contact Organisation:** CapeNature
**Position of Responsible Person:** Conservation Planner
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**Data Origin from Old records:**

**Metadata Creator**

**Metadata Creator Name:** Genevieve Pence
**Contact Telephone:** 021 866 8000 **Contact E-mail:** gpence@capenature.co.za
**Metadata Date Stamp:** 06/03/2017

## CONSTRAINTS AND LIMITATIONS

**Use Constraints:**

All data are supplied with no expressed or implied warranty as to their suitability for purpose, planimetric accuracy or completeness. The WCNCB cannot be held responsible for any errors, which may occur in provided data sets. DEADP will not incur any legal liability pertaining to this data or use thereof.

**Access Constraints:**

**Copyright:** No

**Disclaimer:**

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## PROJECTION PARAMETERS

**Reference System Name:**
**Projection Name:** Geographic - WGS84
**Central Meridian:** 0
**Latitude of Projection Origin:**
**Projection Units:**
**UTM Zone:**

**Reference System Code:**
**Projection Type:**
**Upper Parallel:** 0
**Lower Parallel:** 0
**False Easting:**
**False Northing:**

**Datum Name:** WGS84
**Scale Factor at Equator:**

## MAINTENANCE INFORMATION

**Maintenance and Update Frequency:** Unknown

**Revision and Update History**

## CONTENT INFORMATION

**Has SAGDAD been used?** No
**Has another Feature Catalogue been used?** No
**Catalogue Title:**
**Catalogue Date:**

**Attribute Codes and Descriptions**

| Field | Description | Alias |
|---|---|---|
| Quick_Ref | Quick reference assigned per categories: PA (Protected Area), CBA1 (Critical Biodiversity Area), CBA2 (Critical Biodiversity Area: Degraded), ESA1 (Ecological Support Area), ESA2 (Ecological Support Area: Restore), or ONA (Other Natural Area). | |
| Category | Full category name: Protected Area (PA), Critical Biodiversity Area (CBA1), Critical Biodiversity Area: Degraded (CBA2), Ecological Support Area (ESA1), Ecological Support Area: Restore (ESA2), or Other Natural Area (ONA). | |
| SubCat1 | Sub-category division into terrestrial and aquatic feature types for CBA1, CBA2 and ESA1 categories. Sub-category division into restoration types for ESA2 sites. | |
| SubCat2 (CBA only) | Further sub-category divisions into forest, terrestrial, river, wetland and estuary feature types. | |
| Feature (ESA only) | Type of ecological support function provided by the spatial record (of those mapped). | |
| Definition | Definition of the category to which the spatial record has been assigned. | |
| Mngmt_Obj | Desired Management Objective of the category to which the spatial record has been assigned. | |

**Thumbnail:**