PROPOSED WILD COAST SPECIAL ECONOMIC ZONE UMTHATHA, EASTERN CAPE

Desktop Aquatic and Terrestrial Ecological Scoping Report

Version: 1.0

Date: 18th January 2018

Eco-Pulse Environmental Consulting Services

Report No: EP341-01

Prepared for: WSP: Environment & Energy, Africa

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SPECIALIST ASSESSMENT REPORT DETAILS AND DECLARATION OF INDEPENDENCE

This is to certify that the following specialist vegetation assessment report has been prepared has been prepared independently of any influence or prejudice as may be specified by the Department of Environmental Affairs (DEA) and Department of Water & Sanitation (DWS).

Document Title:	***Desktop Aquatic and Terrestrial Ecological Scoping Report*** for the proposed Wild Coast Special Economic Zone (SEZ)
Prepared by:	**Adam Teixeira-Leite** *Pr. Sci. Nat.*
Field of Practice/Expertise	Wetland and Terrestrial Ecology and Management
Date:	18th January 2018
Version Number:	1.0
Report No.	EP341-01
Client:	WSP (on behalf of Coega Development Corporation (CDC))

Details of Project Team (Eco-Pulse)

The relevant experience of specialist team members from Eco-Pulse Consulting involved in the assessment and compilation of this report are briefly summarized below. *Curriculum Vitae's* of the specialist team are available on request.

Specialist	Role	Details
Adam Teixeira-Leite *Pr.Sci.Nat.* Senior Scientist	Author	Adam is a Senior Environmental Scientist at Eco-Pulse with a BSc. Honours degree in *Environmental Science: Earth Sciences*. He is a registered Professional Natural Scientist (Pr. Sci. Nat.) in the 'Ecological Sciences' field of practice with SACNASP, with over 10 years' experience, having worked extensively on numerous specialist ecological assessment projects, both for wetland/aquatic and terrestrial (grasslands and forests) habitats and ecosystems in KZN, the Free State, Gauteng, Eastern Cape, Western Cape and Lesotho. He is also experienced in undertaking alien plant surveys and developing ecological rehabilitation and management plans and programmes.

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1.1   Project Background, Description and Locality

The Coega Development Corporation (CDC) intends to develop the Wild Coast Special Economic Zone (WCSEZ), located immediately adjacent to the existing Umthatha Airport north-west of Umthatha town in the Eastern Cape Province of South Africa (Figure 1, below). Given the economic development potential and agricultural focused advantages the region offers, and using input received during the stakeholder's consultation, developmental priorities were identified for phase 1 of the development.
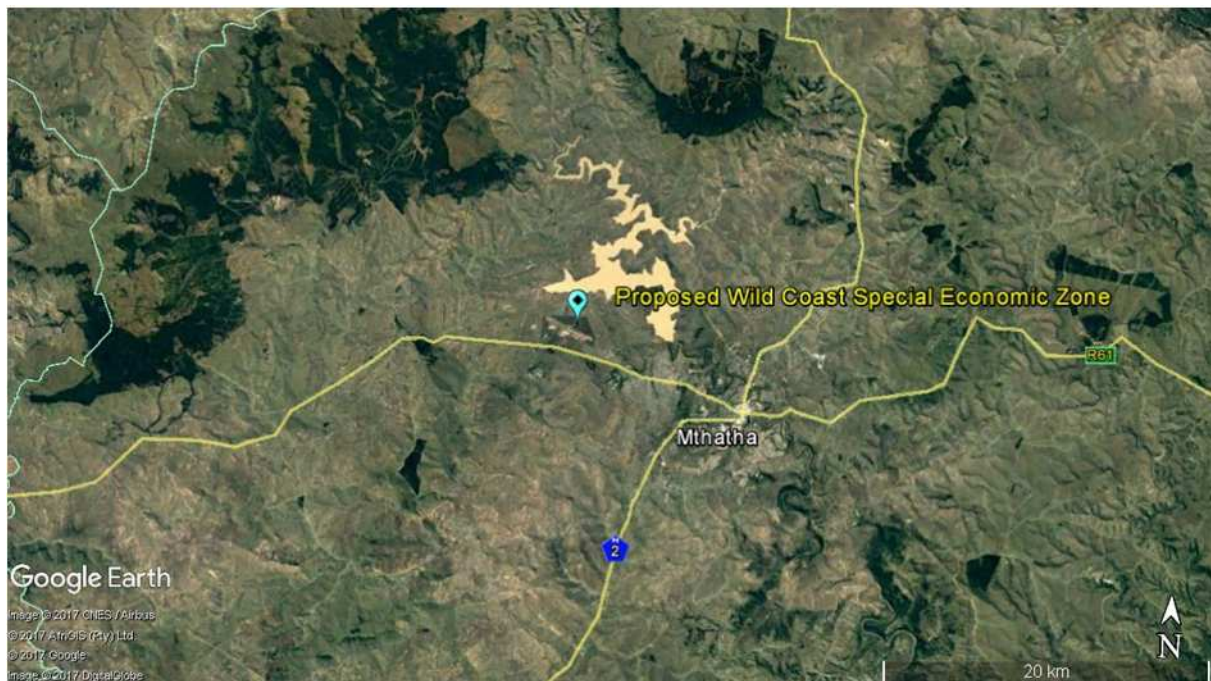
Figure 1 Google Earth™ map showing the location of proposed WCSEZ near Mthatha, King Sabata Dalindyebo Local Municipality, Eastern Cape.

Based on available information received, CDC is seeking Environmental Authorisation (EA) for Phase 1 of a broader concept, namely the industrial-commercial type development (extent: 226 ha in total) near the Mthatha Airport, shown shaded in 'yellow' in Figure 2, below.
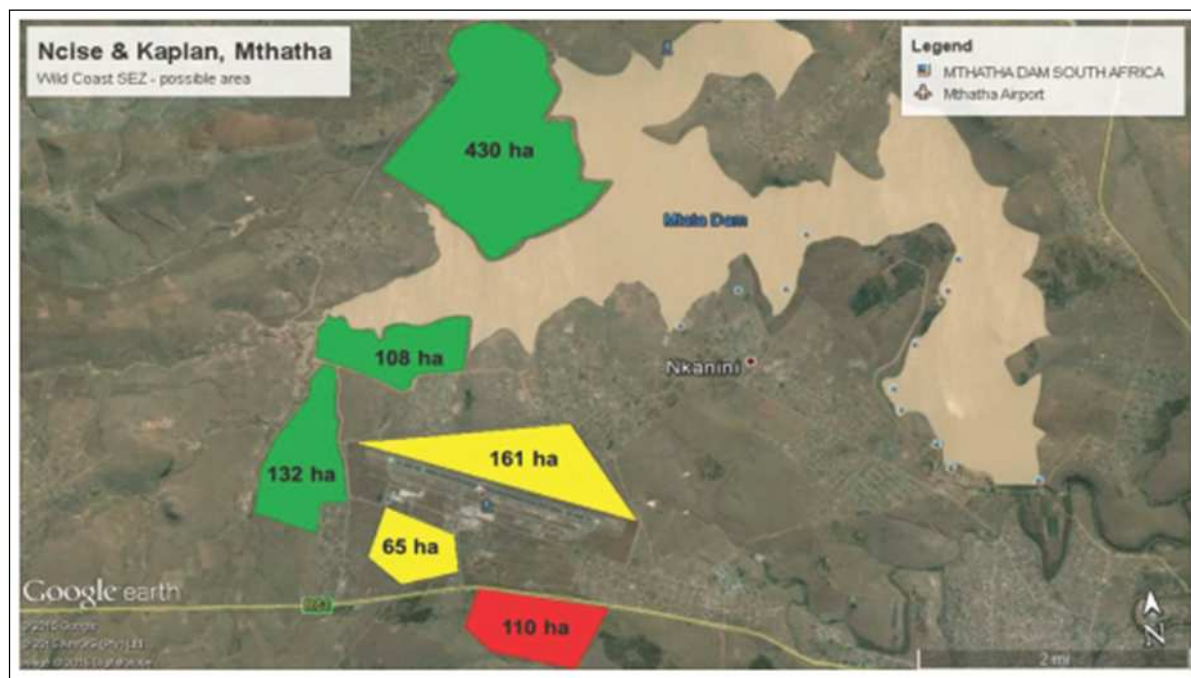
Figure 2 Locality map showing the extent of the study proposed industrial-commercial type development ('yellow' land parcels) which are 226 ha in extent near the Mthatha airport, Eastern Cape, South Africa.

1.2   Purpose of the Ecological Scoping Assessment

The proposed WCSEZ development triggers a Listed Activity in Listing Notice 2 of the NEMA EIA Regulations (2014, as amended) and therefore is subject to a Scoping and Full EIA process. Furthermore, due to the proximity of the development to watercourses at least two water uses (Section 21 c and i) will potentially be triggered by the development and a Water Use Licence Application (WULA) is likely to be an additional requirement. Eco-Pulse Environmental Consulting Services (referred to hereafter as "Eco-Pulse") was appointed by WSP to undertake the required Specialist Aquatic/Wetlands and Terrestrial Ecological Assessments to inform the EIA and WULA processes for the project. The Aquatic and Terrestrial Ecological Impact Assessment has been subdivided into two distinct phases as follows:

➢ **Phase1: Scoping**. The scoping phase of the assessment entails initial desktop investigations and the compilation of a scoping report. The intention of the scoping process is to identify the key ecological issues that are likely to be of most importance during the EIA and eliminates those that are of little concern. Typically, this process serves to focus the detailed EIA phase and generally concludes with the establishment of Terms of Reference (plan of study) for the EIA. The ecological scoping report will essentially highlight the presence and extent of key sensitive freshwater ecosystems (wetlands/rivers), terrestrial ecosystems and sensitive vegetation/habitat/species and significant impacts anticipated to key ecosystems which will form the focus of the detailed EIA-phase investigation. This will also be used to inform further planning for the development based on sensitivities and "no-go" areas.

> **Phase 2: Detailed EIA phase**. This will entail undertaking a detailed Aquatic and Terrestrial Ecological Impact Assessment with detailed impact mitigation and management, which complies with the minimum requirements of Appendix 6 of the NEMA: EIA Regulations (2014).

1.3   Scope of Work

The scoping phase ecological assessment was undertaken in accordance with the following scope of works:

- Desktop mapping and classification watercourses (wetland and rivers) within a 500m radius of the development site.
- Preliminary desktop aquatic screening for all watercourses (wetlands and river/streams).
- Desktop assessment of terrestrial and aquatic conservation context based on available conservation planning information including:
  - National Vegetation Types (Mucina & Rutherford, 2006);
  - National Freshwater Ecosystem Priority Areas (NFEPA) (CSIR, 2011); and
  - Eastern Cape Biodiversity Conservation Plan (Hayes *et al.*, 2007).
- Desktop identification of species of conservation concern (flora & fauna) potentially occurring on the property based on available species records for the region (i.e. SANBI's online threatened species database: PRECIS) and considering the habitat preferences of these species in light of the habitat represented at the site. This identified the potential for such conservation significant species to occur which dictated the level to which associated terrestrial vegetation communities and habitats will be assessed in the EIA phase.
- Preliminary identification and brief description of anticipated aquatic and terrestrial ecological sensitivities and initial identification of anticipated ecological impacts.
- Initial recommendations, including potential sensitive "No-Go" areas and potential fatal flaws and provision of guidance as to whether and potentially how these can be addressed/mitigated early on in the process (for example through alternative development layouts, technology alternatives, etc.).
- Compilation of a brief scoping report and plan of study for the detailed EIA-phase specialist wetland and terrestrial ecological assessments.

1.4   The Importance of Biodiversity and Conservation

The term 'biodiversity' is used to describe the wide variety of plant and animal species occurring in their natural environment or 'habitat'.   Biodiversity encompasses not only all living things, but also the series of interactions that sustain them, which are termed 'ecological processes'. South Africa ranks as the third most biologically diverse country in the world, based on an index of species diversity and endemism, and is one of twelve (12) "mega-diverse" countries which collectively contain more than two-thirds of global biodiversity (Endangered Wildlife Trust and DEA *et al.,* 2013). South Africa's biodiversity is considered important for the following reasons:

- It provides an important basis for economic growth and development;

- Keeping our biodiversity intact is vital for ensuring the on-going provision of ecosystem services that are if benefit to society, including the provision of clean air, water, food, medicine and fibre;
- The role of biodiversity in combating climate change is also well recognised and further emphasises the key role that biodiversity management plays on a global scale (Driver *et al.*, 2012);
- It plays an important role in addressing South Africa's priorities of sustainable rural communities, service delivery and job creation; and
- Biodiversity forms the foundation of ecological infrastructure (ecosystems or habitats which deliver the ecosystem services that underpin economic and social development and are increasingly recognised as having market value).

We need to be mindful of the fact that without the integrity of our natural systems, there will be no sustained long-term economic growth or life (DEA *et al.*, 2013). Pressures and threats to biodiversity are increasing globally and the continuous decline in biodiversity loss may have damaging consequences in terms of local opportunity cost such as the production of clean water, carbon storage to counteract global warming, etc. The loss of biodiversity puts aspects of the economy, wellbeing and quality of life at risk, and reduces long-term socio-economic options for future generations. The need to sustain biodiversity is directly or indirectly referred to in a number of Acts, with the most important being the National Environmental Management: Biodiversity Act No. 10 of 2004 (NEM: BA). In terms of NEM: BA, sustainable development requires the consideration of all relevant factors including disturbance of ecosystems and loss of biodiversity, both of which should be avoided or, if that is not possible, should be minimized and remedied. Given the limited resources available for biodiversity management and conservation in South Africa, as well as the need for development, efforts to manage and conserve biodiversity need to be strategic, focused and support the notion of sustainable development.

1.5   The Importance of Freshwater Ecosystems and their Conservation

Water affects every activity and aspiration of human society and sustains all ecosystems. "Freshwater ecosystems" refer to all inland water bodies whether fresh or saline, including rivers, lakes, wetlands, sub-surface waters and estuaries (Driver *et al.*, 2011). South Africa's freshwater ecosystems are diverse, ranging from sub-tropical in the north-eastern part of the country, to semi-arid and arid in the interior, to the cool and temperate rivers of the fynbos. Wetlands and rivers form a fascinating and essential part of our natural heritage, and are often referred to as the "kidneys" and "arteries" of our living landscapes and this is particularly true in semi-arid countries such as South Africa (Nel *et al.*, 2013). Rivers and their associated riparian zones are vital for supplying freshwater (South Africa's most scare natural resource) and are important in providing additional biophysical, social, cultural, economic and aesthetic services (Nel *et al.*, 2013). The health of our rivers and wetlands is measured by the diversity and health of the species we share these resources with. Healthy river ecosystems can increase resilience to the impacts of climate change, by allowing ecosystems and species to adapt as naturally as possible to the changes and by buffering human settlements and activities from the impacts of extreme weather events (Nel *et al.*, 2013). Freshwater ecosystems are likely to be particularly hard hit

by rising temperatures and shifting rainfall patterns, and yet healthy, intact freshwater ecosystems are vital for maintaining resilience to climate change and mitigating its impact on human wellbeing by helping to maintain a consistent supply of water and for reducing flood risk and mitigating the impact of flash floods. We therefore need to be mindful of the fact that without the integrity of our natural river systems, there will be no sustained long-term economic growth or life (DEA *et al.,* 2013).

Freshwater ecosystems, including rivers and wetlands, are also particularly vulnerable to anthropogenic or human activities, which can often lead to irreversible damage or longer term, gradual/cumulative changes to freshwater resources and associated aquatic ecosystems. Since channelled systems such as rivers, streams and drainage lines are generally located at the lowest point in the landscape; they are often the "receivers" of wastes, sediment and pollutants transported via surface water runoff as well as subsurface water movement (Driver *et al.,* 2011). This combined with the strong connectivity of freshwater ecosystems, means that they are highly susceptible to upstream, downstream and upland impacts, including changes to water quality and quantity as well as changes to aquatic habitat & biota (Driver *et al.,* 2011). South Africa's freshwater ecosystems have been mapped and classified into National Freshwater Ecosystem Priority Areas (NFEPAs). This work shows that 60% of our river ecosystems are threatened and 23% are critically endangered. The situation for wetlands is even worse: 65% of our wetland types are threatened, and 48% are critically endangered (Driver *et al.,* 2011*)*. Recent studies reveal that less than one third of South Africa's main rivers are considered to be in an ecologically 'natural' state, with the principal threat to freshwater systems being human activities, including river regulation, followed by catchment transformation (Rivers-Moore & Goodman, 2009). South Africa's freshwater fauna also display high levels of threat: at least one third of freshwater fish indigenous to South Africa are reported as threatened, and a recent southern African study on the conservation status of major freshwater-dependent taxonomic groups (fishes, molluscs, dragonflies, crabs and vascular plants) reported far higher levels of threat in South Africa than in the rest of the region (Darwall *et al.,* 2009). Clearly, urgent attention is required to ensure that representative natural examples of the different ecosystems that make up the natural heritage of this country for current and future generations to come. The degradation of South African rivers and wetlands s is a concern now recognized by Government as requiring urgent action and the protection of freshwater resources, including rivers and wetlands, is considered fundamental to the sustainable management of South Africa's water resources in the context of the reconstruction and development of the country.

1.6 Relevant Environmental Legislation

The link between the ecological integrity of freshwater resources and their continued provision of valuable ecosystem goods and services to growing populations is well-recognised, both globally and nationally (Rivers-Moore *et al.,* 2007) and in response to the importance of freshwater aquatic resources, protection of wetlands has been campaigned at national and international levels. A strong legislative framework which backs up South Africa's obligations to numerous international conservation agreements creates the necessary enabling legal framework for the protection and management of freshwater resources in the country. Given the value of wetlands and other aquatic ecosystems (such as rivers, streams and estuaries) and the fact that humans depend on aquatic resources, it is against

the law to deliberately damage wetlands. The law therefore places, directly and indirectly, the responsibility on landowners and other responsible parties, to manage and restore wetlands where relevant. Relevant environmental legislation pertaining to the protection, management and use of aquatic ecosystems (i.e. wetlands/rivers) in South Africa has been summarised below.

At an International level, wetland protection is emphasized through the following conventions and agreements:

The RAMSAR Convention	Emphasis is placed on protecting wetlands and implementing initiatives to maintain or improve the state of wetland resources.
Convention on Biological Diversity	Countries are to rehabilitate or restore degraded ecosystem through the formulation of appropriate strategies and plans;
United Nations Convention to Combat Desertification	South Africa has responded to the UN Convention to Combat Desertification by developing a National Action Plan (NAP). The aim of the NAP is to implement at current and future policies that affect natural resource management and rural development, and establish partnerships between government departments, overseas development agencies, the private sector and NGOs
New Partnership for Africa's Development (NEPAD)	Wetland conservation and sustainable use is one of the eight themes under the environment initiative.
The World Summit on Sustainable Development (WSSD)	The Implementation Plan highlights actions that reduce the risk of flooding in drought-vulnerable countries by promoting the restoration and protection of wetlands and watersheds.

At a National level, there are a plethora of policies and legislation dealing either directly or indirectly with wetland protection and management. These include:

South African Constitution 108 of 1996	This includes the right to have the environment protected through legislative or other means.
National Environmental Management Act 107 of 1998	This is a fundamentally important piece of legislation and effectively promotes sustainable development and entrenches principles such as the 'precautionary approach', 'polluter pays', and requires responsibility for impacts to be taken throughout the life cycle of a project. According to the Act: • The loss or disturbance of ecosystem and loss of biological diversity must be avoided. • The pollution and degradation of the environment must be avoided. • The disturbance of landscapes and sites that constitute the Nations' cultural heritage must be avoided. • The use and exploitation of non-renewable and renewable natural resources must be avoided. • The development and exploitation of renewable resources and ecosystem of which they are part, must not exceed the level beyond which the integrity is jeopardised. • Sensitive, vulnerable, highly dynamic or stressed ecosystems such as wetlands require specific attention. A duty of care rests in all persons to avoid environmental degradation and pollution.
Environmental Impact Assessment (EIA) Regulations	New regulations have been promulgated in terms of Chapter 5 of NEMA and were published on 4 December 2014 in Government Notice No. R. 32828. In addition, listing notices (GN 983-985) lists activities which are subject to an environmental assessment.
The National Water Act 36 of 1998	This Act imposes 'duty of care' on all landowners, to ensure that water resources are not polluted. The following Clause in terms of the National Water Act is applicable in this case: **19 (1**) "*An owner of land, a person in control of land or a person who occupies or uses the land on which (a) any activity or process is or was performed or undertaken; which causes, has caused or likely to cause pollution of a water resource, must take all reasonable measures to prevent any such pollution from occurring, continuing or recurring*" A person who is responsible for an incident; or who owns a substance involved in

	an incident or who was in control of a substance involved in an incident, must take all reasonable measures to contain and minimise the effects of an incident and any other such measures that a Catchment Management Agency (CMA) may require.

Chapter 4 of the National Water Act is of particular relevance to wetlands and addresses the use of water and stipulates the various types of licensed and unlicensed entitlements to the use water. Water use is defined very broadly in the Act and effectively requires that any activities with a potential impact on wetlands (within a distance of 500m upstream or downstream of a wetland) be authorized. |
General Authorisations (Gas)	These have been promulgated under the National Water Act and were published under GNR 398 of 26 March 2004. Any uses of water which do not meet the requirements of Schedule 1 or the Gas, require a license which should be obtained from the Department of Water and Sanitation (DWS).
National Environmental Management: Biodiversity Act No. 10 of 2004	The intention of this Act is to protect species and ecosystems and promote the sustainable use of indigenous biological resources. It addresses aspects such as protection of threatened ecosystems and imposes a duty of care relating to listed invasive alien plants.
Conservation of Agricultural Resources Act 43 of 1967	The intention of this Act is to control the over-utilization of South Africa's natural agricultural resources, and to promote the conservation of soil and water resources and natural vegetation. This includes wetland systems and requires authorizations to be obtained for a range of impacts associated with cultivation of wetland areas. This Act does not generally apply to land in urban areas, except with respect to the provisions relating to alien invader plants.

Other pieces of legislation that are also of some relevance to wetlands/rivers include:

- The National Forest Act 84 of 1998;
- The National Environmental Management: Protected Areas Act 57 of 2003; and
- The Mountain Catchments Areas Act 62 of 1970.

Terrestrial ecosystems, their relevant species, vegetation, habitats and biodiversity in general are governed in South Africa by the following legislation:

- Section 24 of The Constitution of the Republic of South Africa;
- Agenda 21 – Action plan for sustainable development of the Department of Environmental Affairs and Tourism (DEAT) 1998;
- National Environmental Management Act No. 107 of 1998 (NEMA) inclusive of all amendments;
- National Environmental Management: Biodiversity Act No. 10 of 2004 (NEM: BA);
- Conservation of Agricultural Resources (Act No. 43 of 1983 (CARA); and
- National Forests Act No. 84 of 1998 (NFA).

1.7   Assumptions, Limitations and Gaps in the Information Presented

The following limitations and assumptions apply to this assessment:

- This report deals exclusively with a defined area and the extent of aquatic and terrestrial habitat/ecosystems in that area.
- Information used to inform the assessment was limited to desktop data and GIS coverage's available for the province and district municipality at the time of the assessment as well as existing specialist wetland studies undertaken for portions of the site north of Umtata Airport by Eco-Pulse Consulting in 2012.

2 DESKTOP ECOLOGICAL ANALYSIS

2.1 Data Sources

The following data sources and GIS spatial information listed in Table 1 was consulted to inform the specialist desktop ecological scoping assessment. The data type, relevance to the project and source of the information has been provided.

Table 1. Data sources and GIS information consulted to inform the scoping phase ecological assessment.

	DATA/COVERAGE TYPE	RELEVANCE	SOURCE
Biophysical Context	**Colour aerial photography**	Desktop mapping of drainage network	National Geo-Spatial Information (NGI)
	Latest Google Earth ™ imagery	To supplement available aerial photography where needed	Google Earth™ On-line
	1: 50 000 Relief Line (5m Elevation Contours GIS Coverage)	Desktop mapping of drainage network	Surveyor general (2006)
	1:50 000 River Line (GIS Coverage)	Highlight potential onsite and local rivers and wetlands and map local drainage network	Surveyor General (2006)
	DWA Eco-regions (GIS Coverage)	Understand the regional biophysical context in which water resources within the study area occur	DWA (2005)
	Geomorphological Provinces of South Africa	Understand regional geomorphology controlling the physical environment	Partridge *et al.* (2010)
	South African Vegetation Map (GIS Coverage)	Classify vegetation types and determination of reference primary vegetation	Mucina & Rutherford (2006)
	NFEPA: river and wetland inventories (GIS Coverage)	Highlight potential onsite and local rivers and wetlands	CSIR (2011)
Conservation Context	**NFEPA: River, wetland and estuarine FEPAs** (GIS Coverage)	Shows location of national aquatic ecosystems conservation priorities	CSIR (2011)
	NFEPA: Wetland Vegetation Groups (GIS Coverage)	Wetland vegetation type and threat status	CSIR (2011)
	National Biodiversity Assessment - Threatened Ecosystems (GIS Coverage)	Determination of national threat status of local vegetation types	SANBI (2011)
	Eastern Cape Biodiversity Conservation Plan (GIS Coverage)	Determination of provincial terrestrial freshwater conservation priorities and biodiversity buffers	Hayes *et al.* (2007) Berliner & Desmet (2007)
	SANBI's PRECIS (National Herbarium Pretoria Computerized Information System) (electronic database)	Determination of conservation important plant species	http://posa.sanbi.org
	Red Data Books (Data Lists of Plants, Mammals, Reptiles and Amphibians)	Determination of conservation important plants, mammals, reptiles and amphibians	Various sources
	Animal Demography unit	Determination of conservation important birds	ADU, 2017

2.2 Regional & Local Biophysical Setting

A summary of key biophysical setting details of the study area and surrounds are presented in Table 2 below.

Table 2. Key biophysical setting details of the study area.

Biophysical Aspects	Desktop Biophysical Details	Source
Quaternary Catchment(s)	T20B & T20C	DWS
Elevation a.m.s.l.	>700m (amsl)	Google Earth™
Mean annual precipitation (MAP)	679.1mm/annum	(Shulze, 1997)
Rainfall seasonality	Late-summer	(DWAF, 2007)
Mean annual temperature	16-20°C in July to 24-28°C in February	(DWAF, 2007)
Potential Evaporation (mm) Mean Annual A-pan Equivalent	1674.7 mm/annum	(Shulze, 1997)
Geology	Sedimentary units of the Tarkastad Subgroup (Beaufort Group): comprising red and greenish-grey mudstone and fine to medium grained sandstone	National Geology dataset
DWA Ecoregion	North-Eastern Uplands (14.06)	(DWAF, 2007)

The study area occurs primarily within quaternary catchment **T20B** and partially within quaternary catchment **T20C**, both of which are drained by the Mthatha River which forms part of the Mzimvubu to Keiskamma Water Management Area (WMA). The proposed WCSEZ development activities will primarily take place upslope of the Mthatha Dam which is situated within a reach of the Mthatha River, whilst the eastern extent of the northern development is upslope of the Cicira River which terminates at the base of the Mthatha dam wall and into the Mthatha River. The Mthatha River eventually drains into the Mthatha River Estuary which is situated approximately 80km south east of the planned development which then terminates at the South Indian Ocean, approximately 85km south east of the study area (Figure 3, below). Based on available climatic records maintained by the Department of Water & Sanitation (DWS), the region experienced its wettest year in 1999/00, with a total rainfall of 1470.5 mm experienced over the 12-month period. (source: DWS online climatic data for weather station at Mthatha Dam: T2E003 and DWA, 2007).
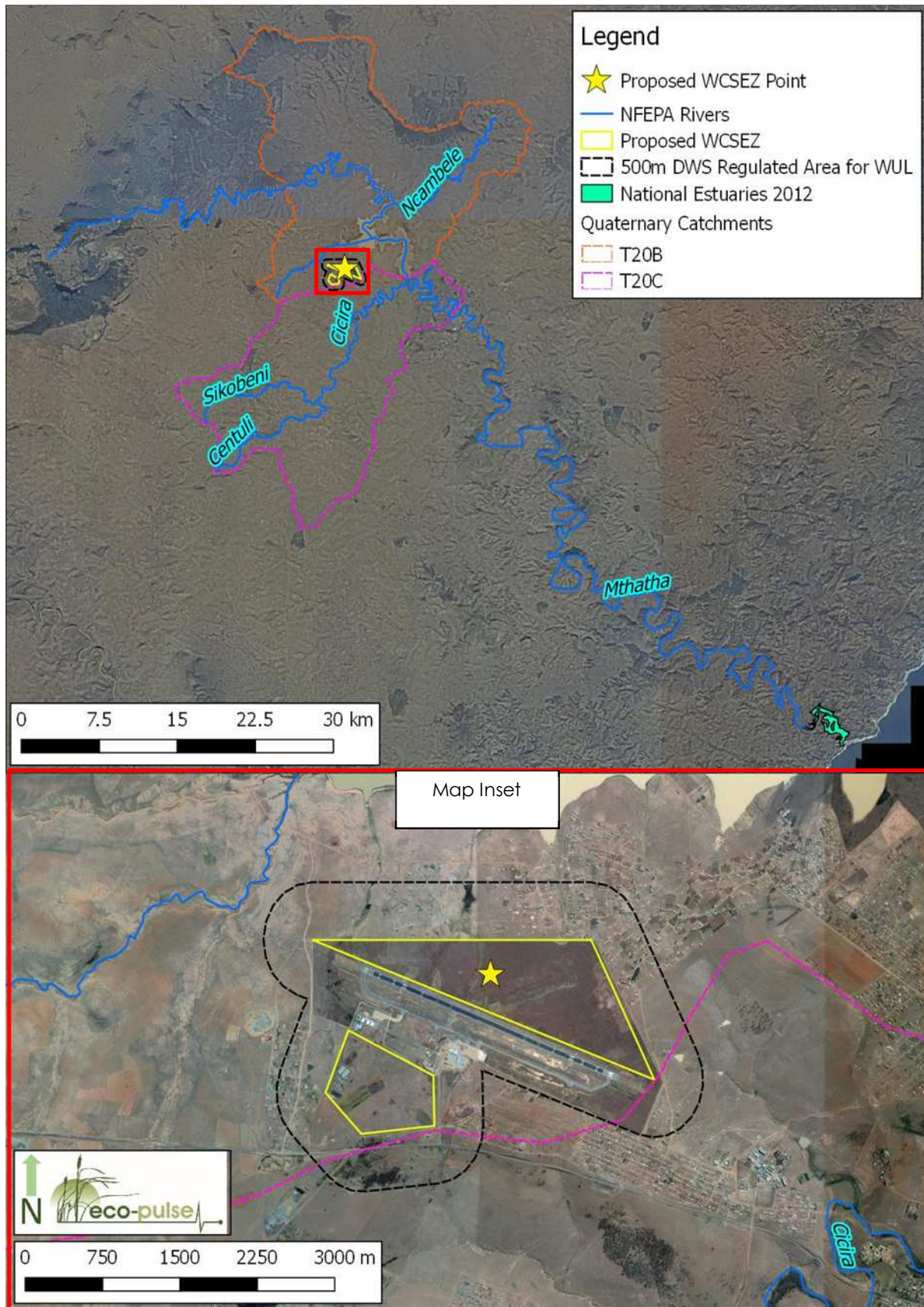
Figure 3 Regional and local (site) drainage setting associated with the Proposed WCSEZ near Mthatha.

2.3   General Conservation Context

Understanding the conservation context and importance of the study area and surrounds is important to inform decision making regarding the management of aquatic and terrestrial ecosystems, habitats and associated biodiversity in the area. In this regard, national, provincial and regional conservation planning information available was used to obtain an overview of the study site. Key conservation context details of the project site and surrounds have been summarised in Table 3, below.

Table 3. Key conservation context summary details for the study area.

NATIONAL LEVEL CONSERVATION PLANNING CONTEXT			
Conservation Planning Dataset	**Relevant Conservation Feature**	**Location in Relation to Project Site**	**Conservation Planning Status**
National Vegetation Types (Mucina & Rutherford, 2006)	Eastern Valley Bushveld (SVs6)	Untransformed vegetation within the portion north of Umthatha Airport	Least threatened, Nominally protected
Ecosystem Threat Status NBA 2011	Mthatha Moist Grassland (Gs 14)	Untransformed vegetation within the portion north and south of Umthatha Airport	**Endangered**
The National Freshwater Ecosystem Priority Area (NFEPA) Assessment (CSIR, 2011)	Mthatha River	North of the site	Non-FEPA River
	Wetlands	Within site boundary and to the north and east	Non-FEPA Wetlands
	Wetland Vegetation: 1. Sub-Escarpment Savanna 2. Sub-Escarpment Grassland Group 7	Intact wetland areas	1. **Endangered** 2. **Critically Endangered**
PROVINCIAL AND REGIONAL LEVEL CONSERVATION PLANNING CONTEXT			
Conservation Planning Dataset	**Relevant Conservation Feature**	**Location in Relation to Project Site**	**Conservation Planning Status**
EC Aquatic Conservation Plan (Berliner and Desmet, 2007)	Wetlands and catchment area	Entire site and catchment	**Critical Biodiversity Area 1 (CBA 1) and CBA 2**
EC Terrestrial Conservation Plan (Berliner and Desmet, 2007)	Untransformed/Intact terrestrial grassland	Site and surrounds	**Critical Biodiversity Area 1 (CBA 1) and CBA 2**

2.4 Desktop Terrestrial Ecological Scoping Assessment

2.4.1 National Threatened Ecosystems

A national process has been undertaken to identify and list threatened ecosystems that are currently under threat of being transformed by other land uses. The first national list of threatened terrestrial ecosystems for South Africa was gazetted on 9 December 2011 (National Environmental Management: Biodiversity Act or NEMBA: National list of ecosystems that are threatened and in need of protection, December 2011). The purpose of listing threatened ecosystems is primarily to reduce the rate of ecosystem and species extinction by preventing further degradation and loss of structure, function and composition of threatened ecosystems (SANBI, 2011). The NEMBA provides for listing of threatened or protected ecosystems, in one of four categories: critically endangered (CR), endangered (EN), vulnerable (VU) or protected. There are four main types of implications of listing ecosystems:

- Planning related implications which are linked to the requirement in the Biodiversity Act (Act 10 of 2004) for listed ecosystems to be taken into account in municipal IDPs and SDFs;
- Environmental authorisation implications in terms of NEMA and the EIA regulations;
- Proactive management implications in terms of the National Biodiversity Act; and
- Monitoring and reporting implications in terms of the Biodiversity Act.

According to the Threatened Ecosystem coverage for the country which was interrogared, the project area and planned development site is located within the **Eastern Valley Bushveld (Least Threatened)** and **Mthatha Moist Grassland (Endangered)** (see Figure 4, below).

Based on a desktop assessment of the type and condition of the vegetation using current and historical aerial photography, much of the vegetation within southern portion of the site (south of Mthatha Airport) appears to be degraded and secondary, subject to years of historic cultivation and with signs of active cultivation on portions of the site. Within this section of the project area, the vegetation is unlikely to resemble the natural reference vegetation type (Mthatha Moist Grassland, Endangered threat status). Within the northern section of the project area (i.e. north of the airfield/runway) however, the grassland areas appear to be more intact which was also confirmed during a site visit and walk-over conducted in 2012 by Eco-Pulse Consulting. Portions appear degraded but there are likely to still be significantly large areas of intact vegetation, however, ***the extent to which this resembles primary grassland and the natural reference vegetation type remains to be confirmed during the detailed EIA phase and vegetation field surveys still to be undertaken during the first quarter of 2018.***

Therefore, at this stage it is not known for certain whether primary grassland/vegetation exists on the northern portion of the project site, but if there are areas of intact Mthatha Moist Grassland (Endangered threat status), the protection/conservation of (at least a portion) these areas may be necessary and the transformation of these areas due to the proposed development could warrant the need for biodiversity offsets to compensate for the loss of this type and the potential contribution towards not meeting conservation targets for this vegetation type (depending on the nature of

transformation and the extent transformed). ***This will need to be confirmed during the detailed vegetation assessment and field surveys planned for the first quarter of 2018.***
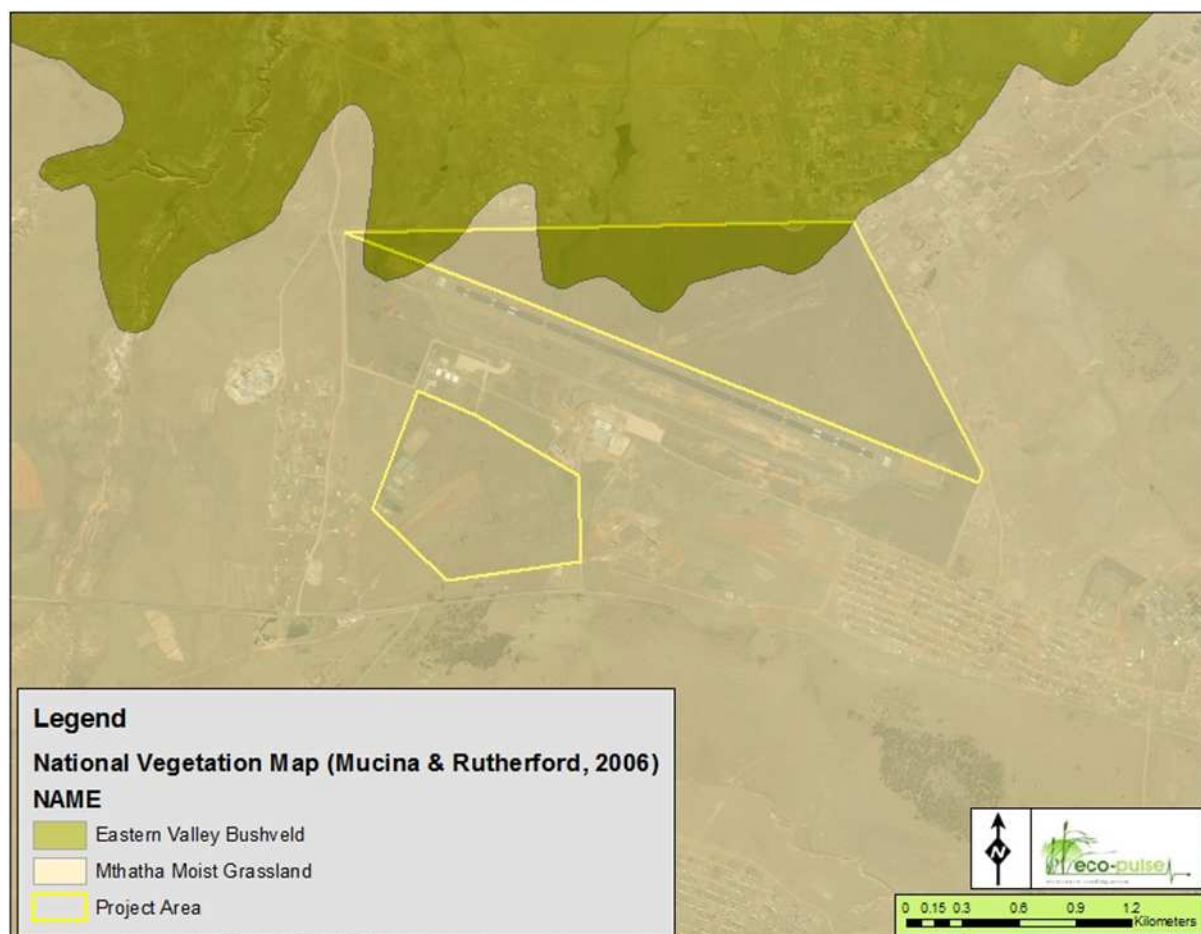
Figure 4 National vegetation map (Mucina & Rutherford, 2006) showing the project area and two (2) national vegetation types identified: Eastern Valley Bushveld (LT) and Mthatha Moist Grassland (EN).

2.4.2   Eastern Cape Biodiversity Conservation Plan (ECBCP)

The Eastern Cape Biodiversity Conservation Plan (ECBCP (Hayes *et al.*, 2007; Berliner & Desmet, 2007) addresses the urgent need for integrative systematic conservation planning and capacity building for land-use decision making in the Eastern Cape.   The ECBCP is a systematic conservation plan that identifies and spatially maps Critical Biodiversity Areas (CBAs) required for biodiversity persistence and to inform protected area planning and rural land-use planning in the Province.   For successful implementation of the ECBCP, the CBAs need to be incorporated at all levels of spatial development planning.

> ➤ **Terrestrial conservation priorities highlighted in the ECBCP:**

The ECBCP maps the site as a ***Terrestrial Critical Biodiversity Area (CBA) level 1 2 (T2)*** (Figure 5, below), which captures sections of near-natural landscape and the (potential) presence of representative

'Endangered' vegetation types (i.e. Mthatha Moist Grassland) identified through the systematic conservation assessment. The central portion of the northern project area has been mapped as a **CBA at level 1** and has further been identified as a potentially important **ecological corridor** for the movement of biota.

Associated land-use guidelines for CBA areas are in the form of Biodiversity Land Management Classes (BLMCs) which set out the desired ecological state that an area should be kept in to ensure biodiversity persistence. For terrestrial CBA areas, the desired state should be to '**maintain biodiversity in near-natural state with minimal loss of ecosystem integrity and no transformation of natural habitat should be permitted'.**
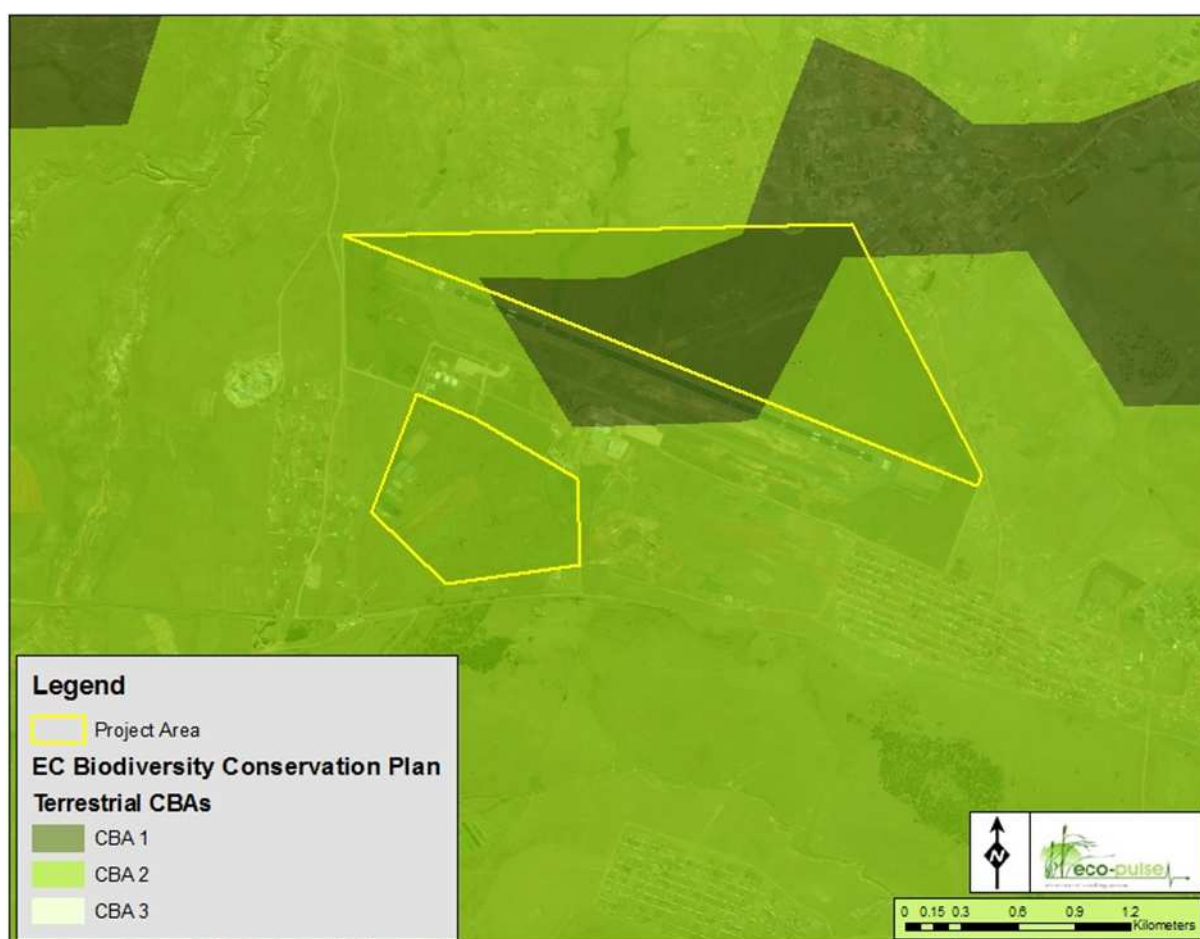
Figure 5 Map showing the location and extent of Terrestrial CBAs in relation to the proposed WCSEZ development identified according to the Eastern Cape Biodiversity Conservation Plan (Berliner & Desmet, 2007).

The ECBCP also identifies the portion of land to the north of the project area (surrounding Umthatha Dam) as a Provincial Protected Area: **Nduli Luchaba Nature Reserve** (see extent and location shown in Figure 6, below). This is a ~460ha provincial nature reserve which hosts a variety of wildlife, with a series of wetlands and grasslands that support rare and threatened cycads and a wide selection of birds including the rare 'Stanley's Bustard' (Vulnerable threat status) and many wetland birds (online source: http://www.mthathadam.co.za). There are no planned expansion areas for national protected areas

mapped in the area around Mthatha in terms of the latest National Protected Areas Expansion Strategy (NPAES) spatial coverage (Figure 6).
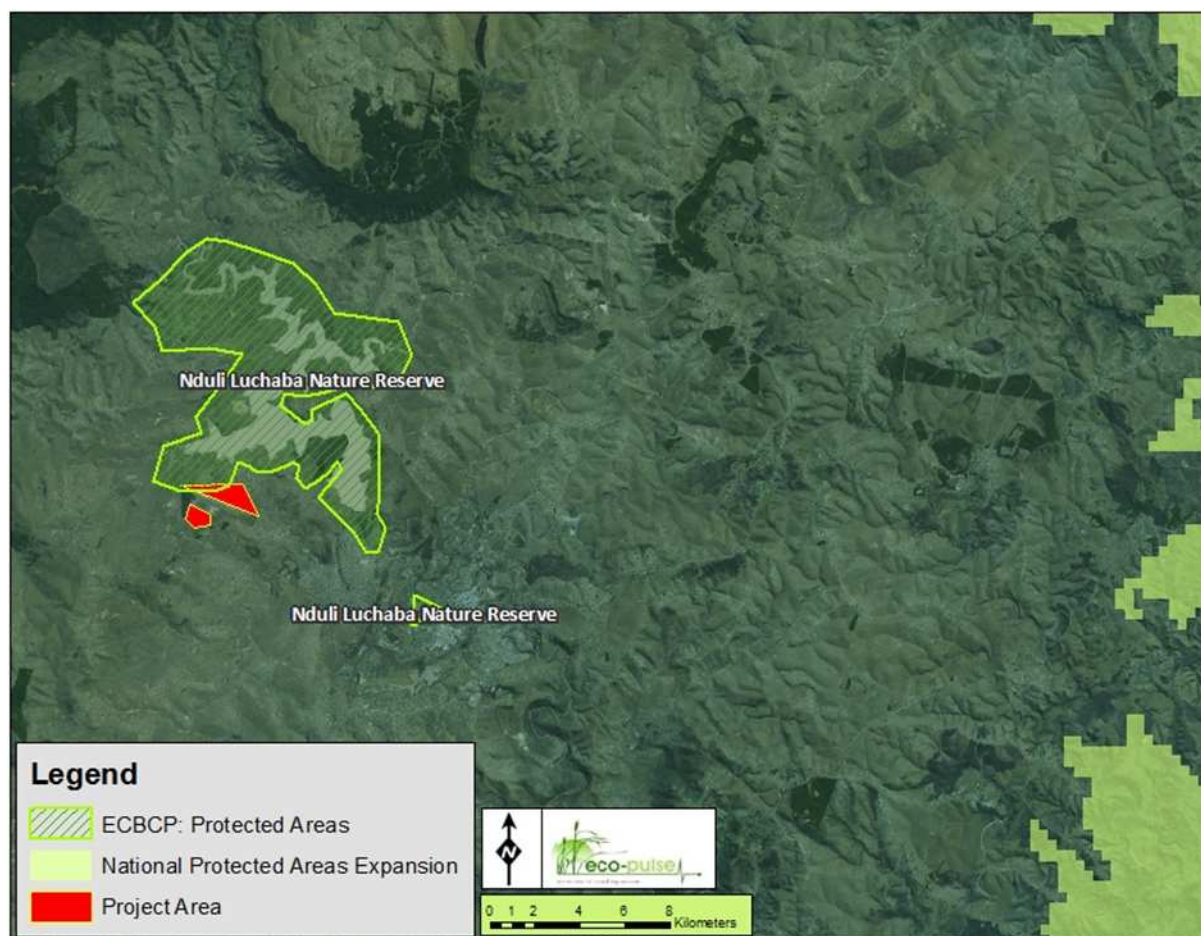
Figure 6 Map showing the location and extent of the 'Nduli Luchaba Nature Reserve' (Provincial Protected Area) in relation to the project area at Umthatha Airport (Source: Eastern Cape Biodiversity Conservation Plan - Berliner & Desmet, 2007).

2.4.3   Important Bird Areas (IBAs)

The Important Bird Areas (IBA) Programme is one of Bird Life International's most important conservation initiatives. The South African IBA Programme is coordinated by BirdLife South Africa, with the purpose being the identification and protection of a network of conservation sites, at a bio geographical scale, critical for the long-term viability of naturally-occurring bird populations. Important Bird Areas (Cape Vulture Colonies) have been identified within 50km of the project area (Figure 7) and are unlikely to be of much significance to this project.
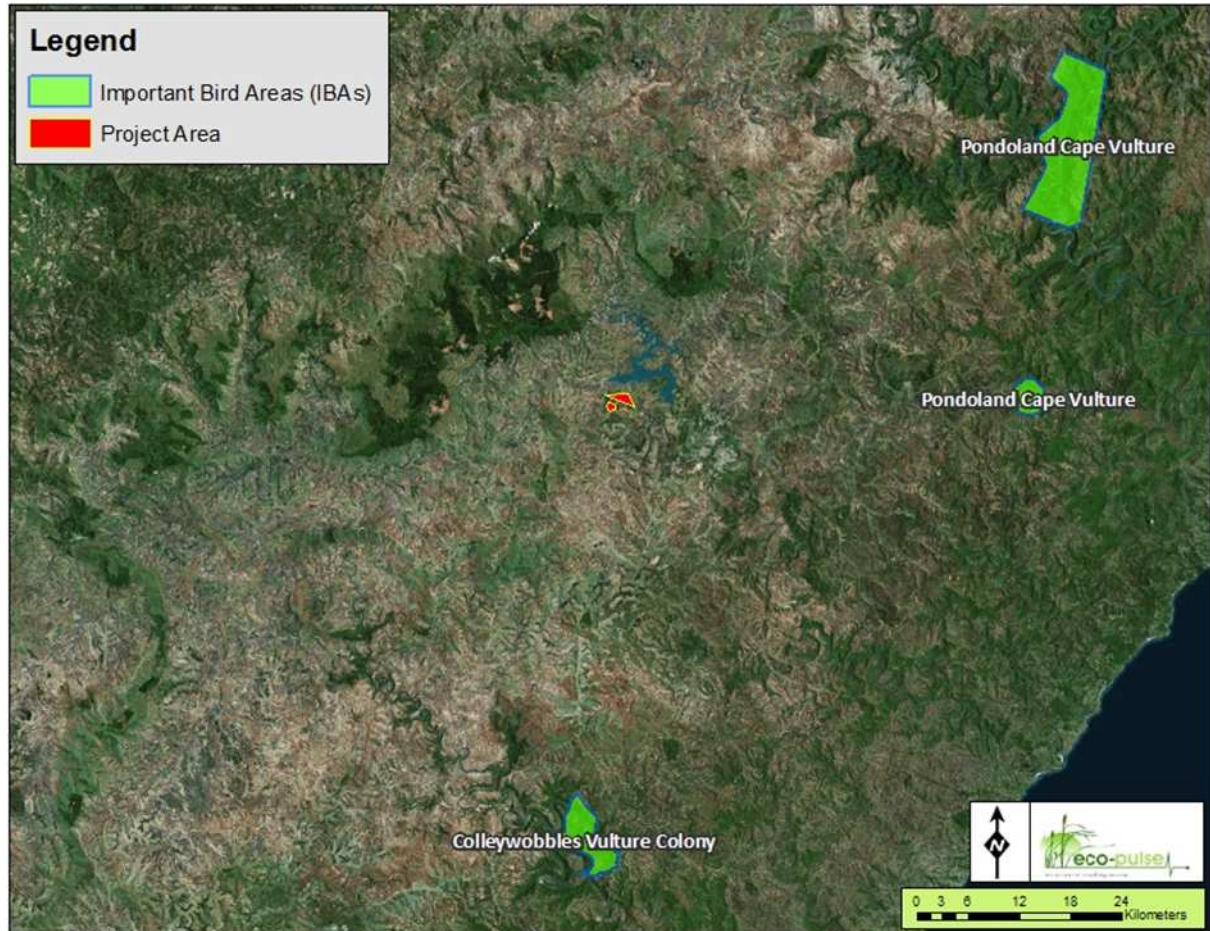
Figure 7 Map showing the location of Important Bird Areas (IBAs) in relation to the project area at Umthatha Airport (source: BirdLife South Africa).

2.4.4 Species of Conservation Concern: Potential Occurrence (POC)

Species of conservation concern refer to species of flora (plants) and fauna (animals) that have a high level of conservation importance in terms of preserving South Africa's high biological diversity and include threatened species that have been classified as 'at high risk of extinction in the wild'. If a subpopulation of a species of conservation concern is found to occur on a proposed development site, it would be one indicator that development activities could result in significant loss of biodiversity, bearing in mind that loss of subpopulations of these species will either increase their extinction risk or may in fact contribute to their extinction (see Figure 8).

A description of the different SANBI categories of species of conservation concern is provided in Table 4, below.

Table 4. South African Red List Categories for species of conservation significance (after SANBI, on-line at http://redlist.sanbi.org/eiaguidelines.php).

Status	Category	Description
SPECIES OF CONSERVATION CONCERN (INCREASING RISK OF EXTINCTION)	**Critically Endangered, Possibly Extinct (CR PE)**	Possibly Extinct is a special tag associated with the category Critically Endangered, indicating species that are highly likely to be extinct, but the exhaustive surveys required for classifying the species as Extinct has not yet been completed. A small chance remains that such species may still be rediscovered
	Critically Endangered (CR)	A species is Critically Endangered when the best available evidence indicates that it meets at least one of the five IUCN criteria for Critically Endangered, indicating that the species is facing an extremely high risk of extinction.
	Endangered (EN)	A species is Endangered when the best available evidence indicates that it meets at least one of the five IUCN criteria for Endangered, indicating that the species is facing a very high risk of extinction.
	Vulnerable (VU)	A species is Vulnerable when the best available evidence indicates that it meets at least one of the five IUCN criteria for Vulnerable, indicating that the species is facing a high risk of extinction.
	Near Threatened (NT)	A species is Near Threatened when available evidence indicates that it nearly meets any of the IUCN criteria for Vulnerable, and is therefore likely to become at risk of extinction in the near future.
	Critically Rare	A species is Critically Rare when it is known to occur at a single site, but is not exposed to any direct or plausible potential threat and does not otherwise qualify for a category of threat according to one of the five IUCN criteria.
	Rare	A species is Rare when it meets at least one of four South African criteria for rarity, but is not exposed to any direct or plausible potential threat and does not qualify for a category of threat according to one of the five IUCN criteria.
	Declining	A species is Declining when it does not meet or nearly meet any of the five IUCN criteria and does not qualify for Critically Endangered, Endangered, Vulnerable or Near Threatened, but there are threatening processes causing a continuing decline of the species.
	Data Deficient - Insufficient Information (DDD)	A species is DDD when there is inadequate information to make an assessment of its risk of extinction, but the species is well defined. Listing of species in this category indicates that more information is required and that future research could show that a threatened classification is appropriate.
OTHER	**Data Deficient - Taxonomically Problematic (DDT)**	A species is DDT when taxonomic problems hinder the distribution range and habitat from being well defined, so that an assessment of risk of extinction is not possible.
	Least Concern (LC)	A species is Least Concern when it has been evaluated against the IUCN criteria and does not qualify for any of the above categories. Species classified as Least Concern are considered at low risk of extinction. Widespread and abundant species are typically classified in this category.
	Not Evaluated (NE)	A species is Not Evaluated when it has not been evaluated against the criteria. The national Red List of South African plants is a comprehensive assessment of all South African indigenous plants, and therefore all species are assessed and given a national Red List status. However, some species included in Plants of southern Africa: an online checklist are species that do not qualify for national listing because they are naturalized exotics, hybrids (natural or cultivated), or synonyms. These species are given the status Not Evaluated and the reasons why they have not been assessed are included in the assessment justification.
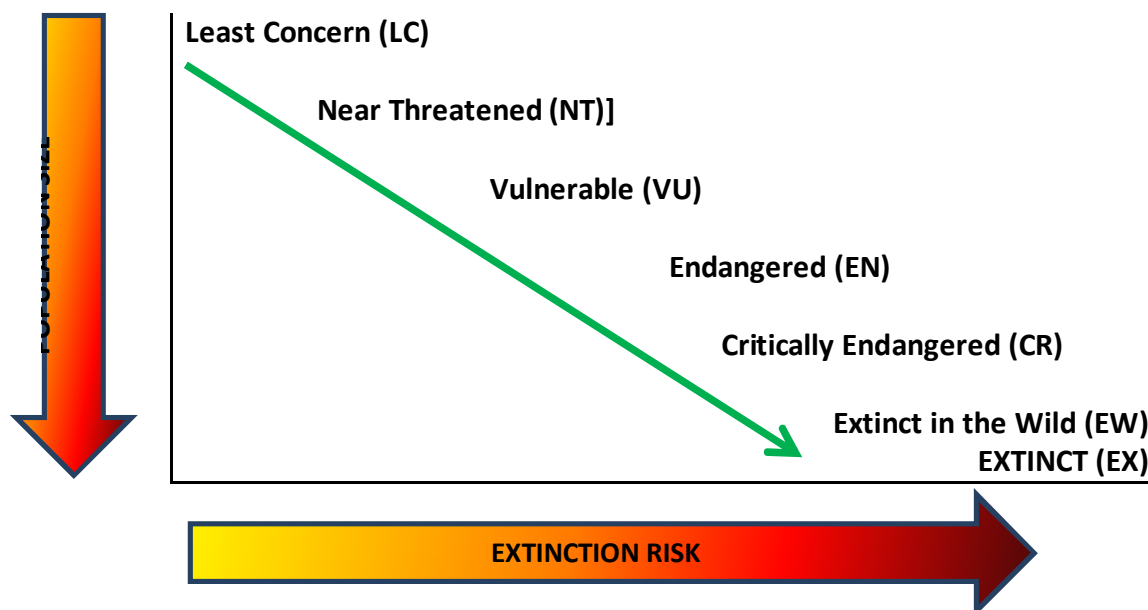
Figure 8 Graph showing the relationship between population size and extinction risk, distinguishing between the various species threat statuses (after SANBI, 2010).

A number of existing species databases, publications and field guides were used to assess the **Potential Occurrence (POC)** of Red Data (Threatened/Protected) flora and fauna species for the study area and development site, with following parameters were then used to assess the probability of occurrence:

1. **Species range**: Species often have specific geographical/altitudinal ranges in which they occur or are restricted to and the location of the project area in relation to these distributional ranges was evaluated based on available information.

2. **Habitat requirements**: Most Red Data animals have very specific habitat requirements/preferences and the presence/absence of these habitat characteristics in the study area was evaluated.

3. **Habitat status:** Often a high level of habitat degradation in a specific habitat will negate the presence of Red Species which are typically sensitive to disturbance; hence the status or ecological condition/suitability of available habitat in the area was assessed.

4. **Habitat connectivity**: Movement between areas for breeding and feeding forms an essential part of the life-cycle and persistence of many species. Isolated/patchy habitats are generally not well-suited for harboring threatened species; however, this is not always the case. Connectivity of the study area to surrounding habitat and the adequacy of these linkages were evaluated.

The habitat requirements/preferences for each plant/animal t species of conservation concern was thus reviewed (based on available literature) and was compared with the habitat occurring at the site (initially based on imagery which was then verified through site visits) in order to estimate the likelihood of these species occurring on the target property (as per the assessment matrix in Table 5, below).

Table 5. Generic matrix used for the estimation and rating of flora/fauna species potential occurrence based on known habitat requirements/preferences and ranges.

<table>
<tr><td rowspan="2" colspan="2"></td><td colspan="4">SPECIES HABITAT REQUIREMENTS/PREFERENCES</td></tr>
<tr><td>Fully met</td><td>Largely met</td><td>Partially met</td><td>Not met</td></tr>
<tr><td rowspan="4">SPECIES DISTRIBUTION/RANGE</td><td></td><td>Natural condition</td><td>Fair condition</td><td>Poor-Fair condition</td><td>Poor condition/ Transformed</td></tr>
<tr><td>Habitat occurs within known species geographic/altitudinal range</td><td>Highly probable</td><td>Possible</td><td>Unlikely</td><td>Highly unlikely or Improbable</td></tr>
<tr><td>Habitat occurs on the edge of known species geographic/altitudinal range</td><td>Possible</td><td>Possible</td><td>Unlikely</td><td>Highly unlikely or Improbable</td></tr>
<tr><td>Habitat occurs outside of known species geographic/altitudinal range</td><td>Unlikely</td><td>Unlikely</td><td>Highly unlikely or Improbable</td><td>Highly unlikely or Improbable</td></tr>
</table>

2.4.4.1 Flora POC

Interrogation of SANBI's online threatened species database for the quarter degree grid square 3128DA highlighted four (4) species for consideration (refer to Table 6, below). Of the 4 species highlighted, only two were identified as being 'possible' to potentially occur within remaining untransformed/intact grassland habitat in the project study area. T*he two plant species (Brachystelma caffrum and Crinum macowanii) will therefore be the focus during detailed vegetation surveys of the site to be undertaken.*

Table 6. Flora of conservation significance potentially occurring in the project area according to SANBI's POSA online database for the quarter degree 3128DA.

Species Name	Threat Status	Description	Major Ecosystem	Habitat Preferences	Potential Occurrence (POC)
Brachystelma caffrum[1]	VU	Perennial. Geophyte, succulent	Terrestrial	Moist grassland with a preference for dolerite outcrops. Altitudinal range: 300-1600m.	Possible
Impatiens flanaganiae[2]	VU	Perennial. Herb	Terrestrial	Scarp forest near waterfalls and seepage areas. Altitudinal range: 10-150m.	Highly Unlikely
Dioscorea brownii[3]	EN	Perennial. Geophyte, herb, succulent	Terrestrial	Tall mistbelt and moist montane grassland, on high ground along forest margins, in rich, red, dolerite soils. Altitudinal range: 650-1450m.	Unlikely
Crinum macowanii[4]	DECL	Perennial. Geophyte	Terrestrial	Mountain grassland and stony slopes in hard dry shale, gravely soil or sandy flats. Altitudinal range: 200-1650m.	Possible

Key to Species Threat Status: **EN** – Endangered   **VU** – Vulnerable   **DECL** - Declining

[1] Dold, A.P. & Victor, J.E. 2007. Brachystelma caffrum (Schltr.) N.E.Br. National Assessment: Red List of South African Plants version 2017.1. Accessed on 2018/01/18.

[2] von Staden, L., Victor, J.E. & Cloete, E. 2006. Impatiens flanaganiae Hemsl. National Assessment: Red List of South African Plants version 2017.1. Accessed on 2018/01/18

[3] Abbott, A.T.D., Johnson, I.M., Grieve, G. & von Staden, L. 2016. Dioscorea brownii Schinz. National Assessment: Red List of South African Plants version 2017.1. Accessed on 2018/01/18

[4] Williams, V.L., Raimondo, D., Crouch, N.R., Cunningham, A.B., Scott-Shaw, C.R., Lötter, M., Ngwenya, A.M. & Brueton, V.J. 2016. Crinum macowanii Baker. National Assessment: Red List of South African Plants version 2017.1. Accessed on 2018/01/18

2.4.4.2 Fauna POC

Fauna of conservation significance for the study area were highlighted by investigating at a desktop level:

(i) Biodiversity features and known faunal species for the Eastern Cape region highlighted in the Eastern Cape Conservation Plan (Berliner & Desmet, 2007);

(ii) Species records found in the South African Bird Atlas Project (SABAP) database for the Region;

(iii) Available species records (ADU, 2013); and

(iv) Professional experience regarding rare/threatened amphibian species, reptiles and small mammals and their habitat requirements in eastern South Africa (KZN and EC).

A. Mammals

The potential occurrence of mammal species of conservation significance (i.e. Red data/Endangered species) was assessed based on available distribution records and habitat requirements for these species, with the outputs of the desktop POC survey summarised in Table 7, below. The lack of species-specific habitat for most of the mammals listed in Table 7 greatly reduces the likelihood of their occurrence at the site. The likelihood of occurrence of many of these species is further reduced by their proximity to human activities. Larger mammal species have either been eradicated or have moved away from the area due to high levels of human disturbance associated with human occupation in the area as well as development and cultivation pressures.

Small mammal species are also extremely vulnerable to human impacts, poaching as well as dogs and feral cats. It is therefore quite unlikely that the development site itself constitutes significant habitat for any species of threatened mammal species as well as for mammal species in general. The dominant small mammal species occurring within adjacent intact habitats are also likely to be limited to those with one or more of the following traits:

➢ Have generally small range requirements and broad habitat requirements;

➢ Tolerance for human disturbance;

➢ Characterised by high reproductive and survival rates; and

➢ The ability to move easily between remaining untransformed vegetation patches.

Table 7. Potential occurrence of mammal species within the study area.

Species Name	IUCN Status	Habitat Requirements/ Preferences (after Stuart & Stuart, 2007)	Distribution/ Range	Habitat requirements met at site?	Site within distribution/ range?	POC
Reddish-grey Musk Shrew *Crodidura cyanea*	DD	Moist habitats but also found in very dry terrestrial habitats. Show a preference for dense, matted vegetation.	Widespread in RSA	Possible	√	Possible
Aardwolf *Proteles cristatus*	Rare	Preference for open habitats and avoids heavily wooded areas and forest.	Widespread in RSA	Possible	√	Unlikely due to human presence

Species Name	IUCN Status	Habitat Requirements/ Preferences (after Stuart & Stuart, 2007)	Distribution/ Range	Habitat requirements met at site?	Site within distribution/ range?	POC
African striped weasel *Poecilogale albinucha*	DD	Moist grasslands with flourishing populations of small rodents (their main food source). Soil texture may be important as weasels often excavate their own burrows.	Eastern RSA	Possible	√	Unlikely due to human presence
Brown hyaena *Parahyaena brunnea*	Rare	Potentially wide distributional tolerance (historically).	Northern southern Africa	Possible	√	Unlikely due to human presence
Leopard *Panthera pardus*	Rare	Extremely wide distributional tolerance (historically).	Northern RSA, NE Eastern Cape, Western Cape	X	√	Highly Unlikely
Blue duiker *Cephalophus monticola*	Rare	Confined to forests and dense bush.	Western coastal RSA	X	√	Highly Unlikely
Honey badger *Mellivora capensis*	VU	Most major habitats.	Widespread in RSA	Possible	√	Unlikely due to human presence
African Wild cat *Felis silvestris lybica*	VU	Open, dry habitats.	Widespread in RSA	Possible	√	Unlikely due to human presence
Oribi *Ourebia ourebi*	VU	Open short grassland with taller patches for cover.	Southern KZN, NE Eastern Cape	Possible	X	Highly Unlikely
Cape clawless otter *Aonyx capensis*	NT	Unpolluted, un-silted streams (though species is not adversely affected by turbid waters) and rivers with good supply of food (crabs) and dense riverine vegetation (long grass, reeds, bushes) and other cover (holes, boulders).). Areas with dense reed beds and a rocky substrate on banks are used most intensively, probably on account of a localized high food biomass. Impoundments, both large and small, appear to be secondary (less suitable) habitat.	Eastern RSA	X	√	Highly Unlikely

Species Name	IUCN Status	Habitat Requirements/ Preferences (after Stuart & Stuart, 2007)	Distribution/ Range	Habitat requirem ents met at site?	Site within distribution/ range?	POC
Serval *Leptailurus serval*	**NT**	Servals enjoy with well-watered habitats like grass savannas along river reed beds and swamps, in brush and open woodlands and along the edge of forests.	Eastern RSA	X	√	Unlikely
Swinny's Horseshoe Bat *Rhinolophus swinnyi*	**EN**	Found in moist montane rainforest, and dry and moist savanna. Populations are dependent on caves, mines and similar habitats for roosting. It appears to be sparsely distributed in parts of its range.	Eastern part of South Africa	X	√	Unlikely
Sykes' Monkey *Cercepithecus albogularis*	**Rare**	High forest, forest margins and riverine gallery forest.	Eastern RSA	X	√	Highly unlikely
Tree hyrax/dassie *Dendrohyrax arboreus*	**Not evaluat ed**	Suitable forest and bush areas, including coastal dune forest.	Central KZN, Eastern and coastal EC	X	√	Highly unlikely
Giant golden mole *Chrysospalax villoosus*	**Not evaluat ed**	Very patchy and limited distribution, occurring only in relict areas of indigenous high forest.	Central KZN, Eastern and coastal EC	X	√	Highly unlikely

Key to Species Threat Status:

EN – Endangered, **VU** – Vulnerable, **NT** – Near Threatened, **DD** – Data Deficient

B. Avifauna (birds)

The South African Bird Atlas Project (SABAP) aims to map the distribution and relative abundance of birds in southern Africa and relies heavily on data uploaded by "citizen scientists". Birds of conservation concern were identified through use of the South African Bird Atlas Project (SABAP) database (available online at http://sabap2.adu.org.za/). Information for the Quarter Degree Grid Square (QDGS): 3128DB was used.

Whilst the majority of species recorded by the SABAP are considered locally common birds, there are a number of bird species that are considered to be of conservation concern based on their conservation/threat status (Table 8, below). The distributional ranges and habitat requirements/preferences for each bird species of conservation concern was reviewed (based on available literature) to estimate the likelihood of these species occurring within the study area. Based on their habitat preferences and distributional range, five (5) birds of conservation concern could possibly utilise the grassland and wetland habitat at the site and surrounds, including African marsh-harrier (*Circus ranivorus*), Black-winged Lapwing (*Vanellus melanopterus*), Lesser Kestrel *(Falco naumanni),* Grey Crowned Crane (*Balearica regulorum*) and Denham's (Stanley's) Bustard (Neotis denhami) (Table 8).

A pair of **Grey-Crowned Crane** (VU) was observed by the ecologists from Eco-Pulse in 2012 within the moist grassland adjacent to the wetlands on the site in the northern section of the project area and probably exploit the site as the area is fenced and less vulnerable to predators. **Stanley's Bustard** (VU) is also known to occur within the grasslands within the adjacent Luchaba Nature Reserve to the north. There is therefore a reasonably high probability that these birds may be present on the development site and a priority during detailed field surveys (scheduled for the first quarter of 2018) will need to be assessing habitat and possible occurrence of these species on the site or in adjacent areas. Further input from the Endangered Wildlife Trust - African Crane Conservation Programme is also recommended to discuss issues related to the management of this species.

Table 8. Summary of the potential occurrence of bird species of conservation concern within the study area.

Species Name	Status	Habitat Preferences (after Chittenden, 2009; IUCN, 2016)	POC
African Crowned Eagle (*Stephanoaetus coronatus*)	NT	Favours tall closed canopy forest, riparian forest, dense woodland and gorges. Also inhabits gum and pine forestry plantations. Normally chooses tallest canopy tree to build large stick platform nest.	Highly Unlikely
African marsh-harrier (*Circus ranivorus*)	VU	Inland and coastal wetlands as well as adjacent moist grassland. Breeding demands a stretch of undisturbed long grass with concealed clearings.	Possible
Black-winged Lapwing (*Vanellus melanopterus*)	NT	Breeds in short grassland a higher elevations and open plains and dry savanna at lower altitudes. Frequents wastelands, cultivated or fallow fields, meadows, airfields, coastal flats and golf courses during times of non-breeding.	Possible
Cape Vulture *Gyps coprotheres*	VU	Flies long distances over open country, usually found near mountains, where it breeds and roosts on cliffs.	Highly Unlikely
Denham's (Stanley's) Bustard (*Neotis denhami*)	VU	Inhabits grasslands, grassy *Acacia*-studded dunes, fairly dense shrubland, light woodland, farmland, crops, dried marsh and arid scrub plains	**Possible** (known to be present within the adjacent Luchaba Reserve)
Grey Crowned Crane (*Balearica regulorum*)	VU	Breeds in marshes, pans and dam margins with tall emergent vegetation. Found in pairs during breeding season, roosting on the ground near nest in wetlands. Feed in adjacent short to medium height grassland, wetlands and agricultural fields.	**Possible** (observed by Eco-Pulse in 2012)
Secretarybird (*Sagittatius serpentarius*)	NT	Open grassland with scattered trees/shrubs.	Unlikely
Southern Ground-Hornbill (*Bucorvus leadbeateri*)	VU	Favours open woodland.	Highly Unlikely
Martial Eagle	VU	Mostly open savanna and woodland on plains.	Unlikely
Lesser Kestrel (*Falco naumanni*)	VU	Open savanna, grassland and verges of cultivated land.	Possible

Key to Species Threat Status: **VU** – Vulnerable **NT** – Near Threatened

C. Reptiles

A number of endemic and near-endemic reptile species, including lizards, snakes and skinks, modelled to occur in this region of the Eastern Cape and could potentially reside in the more intact grassland and wetland/riverine habitats in the study area (Table 9, below). No endangered species are likely to occur based on the data/literature consulted. All reptile species are sensitive to major habitat alteration and fragmentation. As a result of human presence in the area coupled with historic and still active agricultural disturbances, alterations to the original reptilian fauna are expected to have already occurred, with remaining areas where anthropogenic impacts are limited possibly hosting some of the species listed.

Table 9. Summary of reptile species of conservation significance potentially occurring in the study area.

Species Name	Threat Status	Habitat Requirements/ Preferences (after Bates *et al.* 2014)	Distribution/ Range	Habitat requirements met at site?	Site within distribution/ range?	POC
Bibron's Blind Snake *Afrotyphlops bibronii*	**Near-Endemic**	Grassland / savannah: burrows in loose soil, common in old termitaria under rocks and rotting logs.	Eastern RSA	√	√	Possible
Cape Girdled Lizard *Cordylus cordylus*	**Endemic**	Rupicolous species, occurring in diverse habitats from coastal rocks to mountain tops.	Widespread across southern RSA	Partial	√	Possible
Cape Grass Lizard *Chamaesaura anguina anguina*	**Endemic**	Found mostly on mountain slopes in fynbos and grassland habitats.	Widespread across RSA	Partial	√	Possible
Cape Many-Spotted Snake *Amplorhinus multimaculatus*	**Near-Endemic**	Reed beds, vleis and riverside vegetation, grassland and montane forest.	Scattered populations in east and south RSA	√	√	Possible
Common South African Slug Eater *Duberria lutrix lutrix*	**Endemic**	Favours damp localities in grassland, moist savanna, lowland forest and fynbos.	Widespread across RSA	Partial	√	Possible
Delalande's Sandveld Lizard *Nnucras lalandii*	**Endemic**	Generally associated with montane and temperate grassland, takes shelter in underground burrows or under rocks.	Widespread across RSA.	√	√	Possible
Dusky-Bellied Water Snake *Lycodonomorphus laevissimus*	**Endemic**	Inhabits riverine and other aquatic habits, particularly well-wooded streams.	Eastern RSA	X	√	Unlikely
Eastern Ground Agama *Agama aculeate distanti*	**Endemic**	Occurs in grassland and woody habitats, occasionally in rocky areas.	Widespread across central and eastern RSA	√	√	Possible
Eastern Cape Dwarf Chameleon *Bradypodion ventrale*	**Endemic**	Considered a habitat generalist.	Southern and east Eastern cape	Partial	√	Possible
Forest Thread Snake	**DD**	Subterranean, forest areas and montane	Scattered in central coastal	X	√	Unlikely

Species Name	Threat Status	Habitat Requirements/ Preferences (after Bates *et al.* 2014)	Distribution/ Range	Habitat requirements met at site?	Site within distribution/ range?	POC
Leptotyphlops sylvicolus		grassland.	KZN and northern Eastern Cape			
KwaZulu-Natal Black Snake *Macrelaps microlepidotus*	NT	Semi-fossorial species, frequents moist leaf litter and humic soil within forests and coastal bush.	Eastern EC and KZN	X	√	Unlikely
Kentani Dwarf Chameleon *Bradypodion kentanicum*	VU	Trees and bushes of coastal scarp forest.	Eastern Cape	X	√	Unlikely
Olive Ground Snake *Lycodonomorphus inornatus*	Endemic	Grassland, savannah, fynbos, forest.	Eastern parts of RSA	√	√	Possible
Pondo Flat Gecko *Afroedura pondolia*	Endemic	Rupicolous species, occurring on rock outcrops and cliffs in a variety of wooded habitats.	Eastern EC and KZN	X	√	Unlikely
Pondo Dwarf Chameleon *Bradypodion caffer*	EN	Coastal forest.	Few coastal localities in EC.	X	√	Unlikely
Southern Brown Egg-Eater *Dasypeltis inornata*	Endemic	Prefers open coastal woodland and moist savannah, shelters under rocks.	Eastern RSA	X	√	Unlikely
Southern Rock Agama *Agama atra*	Near-Endemic	Rocky habitats.	Widespread in RSA	X	√	Unlikely
Spotted Thick-Toed Gecko *Pachydactylus maculatus*	Near-Endemic	Broad range of habitats but chiefly in mesic areas.	Southern and eastern RSA	Partial	√	Possible
Spotted Rock Snake *Lamprophis guttatus*	Near-Endemic	Rocky areas.	Scattered across RSA	Partial	√	Possible
Spotted Harlequin Snake *Homoroselaps lacteus*	Endemic	Semi-fossorial species found in sandy substrates, old termitaria and under rocks.	Widespread across RSA	Partial	√	Possible
Variable Legless Skink *Acontias poecilus*	EN	Found in moist soil or under leaf litter in forested habitats. Occurs from sea level up to 900 m in the Eastern Cape.	Southern coastal reaches of KZN and adjacent eastern parts of EC.	X	√	Unlikely
Western Natal Green Snake *Philothamnus natalensis occidentalis*	Endemic	Occurs in lowland forest, wooded grassland and forest edges.	Eastern and southern RSA	X	√	Unlikely

Key to Species Threat Status: **EN** – Endangered, **VU** – Vulnerable, **NT** – Near Threatened, **DD** – Data Deficient

D. Amphibians

The study area has not been highlighted as a particularly important area for the conservation of amphibian species such as frogs, with few known endemic or threatened species highlighted for the project site. Amphibian species of conservation concern are unlikely to be present at the site or within the surrounding aquatic habitats due to the lack of sutable habtiat provided for key species such as the Endangereed Kloof Frog, *Natalobatrachus bonebergi* (Table 10).

Table 10. Summary of the potential occurrence of amphibian species within the study area.

Species Name	Threat Status	Habitat Requirements/ Preferences (after IUCN, 2016)	Distribution/ Range	Habitat requirements met at site?	Site within distribution/ range?	POC
Natalobatrachus bonebergi Kloof Frog	EN	Coastal and densely forested kloofs, along slow flowing streams.	Coastal KZN and EC	X	√	Highly unlikely
Afrixalus knysnae Knysna Leaf-Folding Frog	EN	Small pans in grassland.	Coastal NE EC	X	√	Unlikely
Leptopelis natalensis Forest tree frog	Ende mic	Riverine bush and swamp forest, coastal forest.	Coastal KZN and NE coastal EC.	X	√	Highly unlikely y

Key to Species Threat Status: **EN –** Endangered

E. Invertebrates

There is generally very little available long-term information on invertebrate species and populations for most of South Africa, with no known available information on invertebrates for the study area to enable the assessment of potential occurrence.

2.5   Wetlands

2.5.1   Desktop Wetland Assessment

Based on a desktop mapping exercise that builds on the detailed site investigations and wetland delineation undertaken for portions of the site by Eco-Pulse in 2012 (for the Mthatha Airport runway expansion), four (4) individual wetland systems have been identified within the DWS regulated area for water use licensing (i.e. within a 500m buffer of the project development site). The location and extent of wetlands is indicated on the map in Figure 9 below. An appreciable area of wetland habitat is shown to be located on the northern portion of the site, particularly within the north-western section (Figure 9 below), and this is likely to pose a potentially significant constraint to development on this portion. Based on the desktop assessment, the southern portion does not appear to be associated with wetlands (apart from the wetland existing to the west of the site (W01), however it must be noted that this area was not surveyed during the 2012 investigation and will need to be assessed during detailed field surveys planned for the first quarter of 2018.

Figure 9 Desktop wetland map showing wetlands identified and mapped within the DWS regulated area for water use licensing purposes (500m buffer of the project site).

The wetlands are northward draining systems that drain towards Mthatha Dam and located within quaternary catchment T20B and characterised by moderate precipitation and high evapo-transpiration rates. The wetlands are largely seasonal valley bottom wetlands and seepage wetlands fed primarily by a combination of surface/storm water runoff from existing airport infrastructure and sub-surface interflow following rainfall entering the ground surface. The wetlands fall on the boundary between the Sub-Escarpment Grassland Group 7 and Sub Escarpment Savanna vegetation groups. Both of these wetland types have seen considerable levels of transformation.

Based on the site assessment undertaken by Eco-Pulse in 2012 for the Umthatha Airport expansion, it appears that these wetlands were probably smaller unchannelled valley bottom wetlands and seeps historically (prior to human development and alteration), with subsurface water inputs probably being equal or greater than surface water inputs. With the alteration of the land surface and construction of hardened infrastructure in the catchment area associated with the airport, wetland hydrology has been largely altered, with increased water inputs as a result of enhanced surface water runoff from the airstrip and concentrated storm water flows through artificial drains that discharge into the wetlands. As a result, the wetlands are likely to have increased in size with the increased level of wetness, with the dominant vegetation types changing from short rushes and hydric grass species (under the natural reference state) to denser sedges and bulrushes that now dominate these systems.

Based on the 2012 assessment, wetlands were found to be in a Moderately Modified to Largely Modified condition or Present Ecological State ('C' and 'D' PES), with the wetland providing a range of ecosystem goods and services, with the importance of these services generally regarded as being low-moderate. **Wetland condition and functioning may have changed over the past 5 years and will therefore need to be confirmed/re-assessed during detailed field surveys planned for the first quarter of 2018.**

2.5.2   National Freshwater Ecosystem Priority Areas (NFEPA)

The National Freshwater Ecosystem Priority Area (NFEPA) project (Nel *et al.*, 2011), is the first formally adopted national freshwater conservation plan that provides strategic spatial priorities for conserving the country's freshwater ecosystems and supporting the sustainable use of water resources that includes rivers, wetlands and estuaries. The importance of water resources in meeting national freshwater conservation targets is provided in the National Freshwater Ecosystems Priority Areas (NFEPA) outputs and coverage's (CSIR, 2011).

The NFEPA coverage for the project area (Figure 10, below) shows a number of wetlands mapped on the property to the north of the Umthatha Airport however these have not been identified as wetland FEPAs. The Mthatha River and its sub-quaternary catchments associated with the study area are not classified as Freshwater Ecosystem Priority Areas (FEPAs).
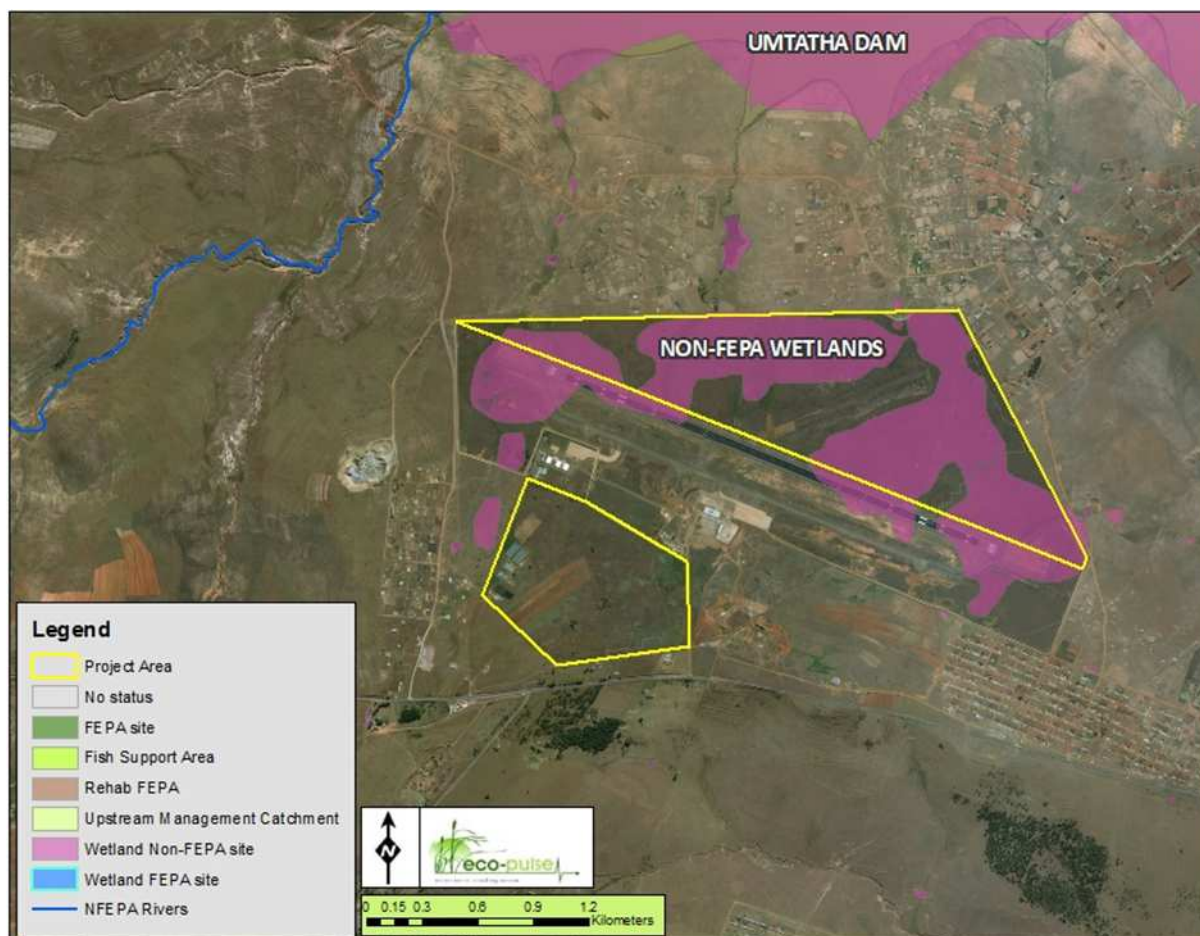
Figure 10 Map showing river and wetland Freshwater Priority Areas (FEPAs) identified for the project area.

Two wetland vegetation groups[5] are associated with the project area: **Sub-escarpment Savanna** and **Sub-Escarpment Grassland Group 7** as defined by NFEPA (SANBI & DWS, 2014). At the wetland vegetation group (WVG) level, the Sub-escarpment Savanna wetland vegetation group has an ecosystem threat status of **Endangered** and the Sub-Escarpment Grassland Group 7 wetland vegetation type is **Critically Endangered**. In terms of protection status at the WVG level, both groups are **Not Protected**. At a 'Wetland Type' (WT), all wetlands falling within these two groups have no protection status, with wetlands relevant to the study area having the following ecosystem threat status in terms of 'wetland type' (WT):

Sub-escarpment Savanna
- Channelled Valley Bottom wetlands: '***Endangered,*** *Not protected'*

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[5] According to the *'Wetland Offset Best-Practice Guideline for South Africa'* (SANBI & DWS, 2014), ecosystem Threat Statuses and Protection Levels for Wetland Groups are taken from an assessment undertaken for the 2014 WRC project No K5/2281: *'Supporting better decision-making around coal mining in the Mpumalanga Highveld through the development of mapping tools and refinement of spatial data on wetlands'*. The methods used were identical to those applied in the National Biodiversity Assessment (SANBI, 2012).

- Unchannelled Valley Bottom wetlands: '***Critically Endangered,*** *Not protected'*
- Seeps: '***Critically Endangered****, Not protected'*

Sub-escarpment Grassland Group 7
- Channelled Valley Bottom wetlands: '***Critically Endangered,*** *Not protected'*
- Unchannelled Valley Bottom wetlands: '***Endangered,*** *Not protected'*
- Seeps: '***Endangered,*** *Not protected'*

2.5.3   Eastern Cape Biodiversity Conservation Plan (ECBCP)

The Eastern Cape Biodiversity Conservation Plan (ECBCP (Hayes *et al.*, 2007; Berliner & Desmet, 2007) addresses the urgent need for integrative systematic conservation planning and capacity building for land-use decision making in the Eastern Cape.   The ECBCP is a systematic conservation plan that identifies and spatially maps Critical Biodiversity Areas (CBAs) required for biodiversity persistence and to inform protected area planning and rural land-use planning in the Province.   For successful implementation of the ECBCP, the CBAs need to be incorporated at all levels of spatial development planning.

> ➤ **Aquatic conservation priorities highlighted in the ECBCP:**

According to the ECBCP, aquatic conservation priorities highlighted for the project area and planned development site include the catchment draining north towards the Mthatha Dam (Figure 11) which has been identified as an ***aquatic 'Critical Biodiversity Area' or CBA at level 1 (A1)***, which represents in this instance critically important river sub-catchments in a natural state that are considered critical for conserving biodiversity and maintaining ecosystem functioning (Hayes *et al.*, 2007). Aquatic CBA 1 areas require high levels of protection and the recommended management objective for these areas should be to: "***Maintain biodiversity in as natural state as possible, Manage for no biodiversity loss***" (Hayes *et al.*, 2007).

The catchment draining south has been identified as an ***aquatic CBA at level 2 (A2b, E3b)***, which are critically important river sub-catchments in a near-natural state that are considered important catchment management areas and zones for conserving biodiversity and maintaining ecosystem functioning in order to support important downstream rivers and estuaries.

Land-use planning needs to take into account the linkages between catchments, important rivers and sensitive estuaries, with a key focus around limiting transformation in CBA catchments.   When landscapes are transformed beyond certain critical thresholds, ecological processes such as fire and the water cycle show dramatic changes, with transformation of catchments also generally resulting in loss in stream flow and a decline in water quality.
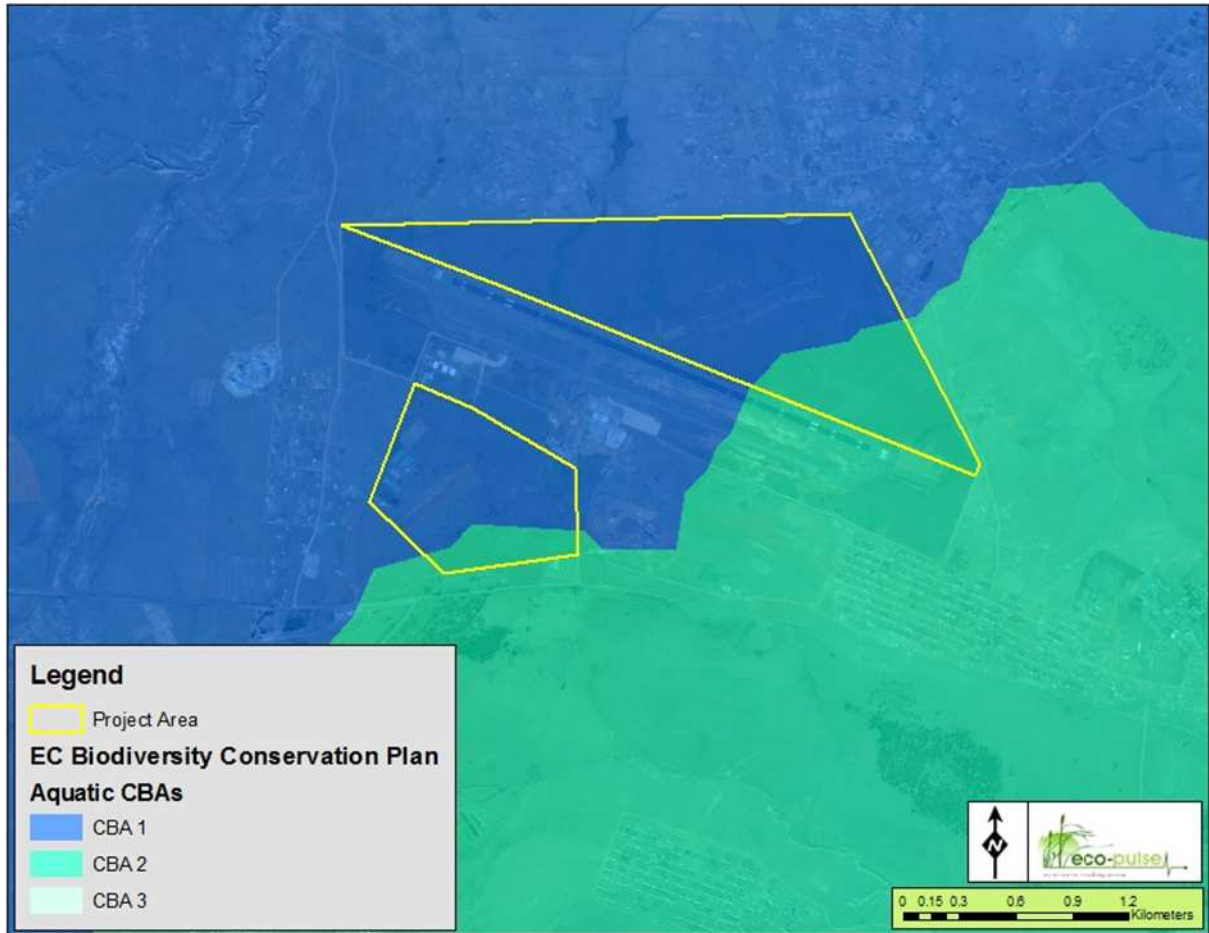
Figure 11 Map showing the location and extent of Aquatic CBAs in relation to the proposed WCSEZ development identified according to the Eastern Cape Biodiversity Conservation Plan (Berliner & Desmet, 2007).

3   SUMMARY OF PRELIMINARY ECOLOGICAL CONSTRAINTS

A summary of preliminary aquatic and terrestrial ecological constraints identified for the development project and study area with implications for the project are contained below in Table 11. These will need to be confirmed or revised based on detailed site investigations and assessments required during the project EIA-phase

Table 11. Summary of preliminary ecological constraints and development implications.

Ecological Constraint	Type	Location	Implications	Further Investigations Needed?
1 Areas of intact **Mthatha Moist Grassland** vegetation (Endangered threat status)	Terrestrial: vegetation	Northern portions of project area	The protection / conservation of (at least a portion) of these areas may be necessary and the transformation of these areas could warrant the need for biodiversity offsets to compensate for the loss of this type and the potential contribution towards not meeting conservation targets for this vegetation type.	**Yes**: detailed vegetation survey needed to confirm vegetation status and condition / importance
2 **Ecological corridor** identified in the EC Biodiversity Conservation Plan	Terrestrial / Aquatic: habitat (corridor)	Central portion of northern project area	The protection / conservation of (at least a portion) of the identified ecological corridor may be necessary.	**Yes**: detailed vegetation survey needed to confirm vegetation status and condition / importance
3 **Conservation important flora (plants)** that may potentially occur: *Brachystelma caffrum (VU)* and *Crinum macowanii (Declining)*	Terrestrial: flora	Northern portions of project area	Where conservation important / protected plants occur, these will either need to be avoided or the relevant permits obtained to remove/translocate these species.	**Yes**: detailed vegetation survey needed to confirm presence of conservation important / protect plants
4 **Conservation important fauna** (animals) that may potentially occur: **Grey-Crowned Crane** (VU) and **Stanley's Bustard** (VU)	Terrestrial / Aquatic: fauna	Northern portions of project area: wetlands and grasslands	Where feeding, breeding, roosting/nesting areas are identified for conservation important species, these will need to be conserved and appropriate biodiversity buffer zones may be warranted.	**Yes**: field survey to investigate possibility of these species utilising the grassland and wetland habitats on the site
5 **Wetlands** located on the property and downstream / adjacent areas	Aquatic: Wetlands	Entire project area	Wetlands have been identified on the properties and adjacent areas and are likely to be a potentially significant constraint to development. Impact management and mitigation will be necessary, with avoidance of wetlands considered the best option, followed by on-site mitigation of impacts and finally offsets to compensate for residual impacts as a last resort measure. Water use license required, possibly a full WULA required.	**Yes**: detailed field survey to ground-truth wetland boundaries and assess wetland condition, functioning and ecological importance / sensitivity. This will inform the necessary recommendations around impact management and mitigation, with avoidance of wetlands considered the best option, followed by on-site mitigation of impacts and finally offsets to compensate for residual impacts as a last resort measure.

4   PLAN OF STUDY FOR EIA

The plan of study for the detailed EIA-phase of the project was informed by this scoping report and the preliminary ecological constraints and development implications highlighted under Section 4 of this ecological scoping report. This will include:

1. **Plan of study for detailed Terrestrial Ecological Assessment:**

  - Detailed baseline field survey to assess baseline terrestrial vegetation status, species composition, condition and importance, with a focus on mapping and assessing untransformed grassland vegetation and habitat. A key distinction will be made between primary and secondary vegetation communities, and the representatives of any remaining intact grassland vegetation communities by comparison with known reference state/composition.

  - Baseline vegetation surveys to include an assessment of protected / conservation important plant species which will need to be documented and GPS coordinates taken for species encountered in the field.

  - The focus of faunal surveys should be on assessing habitat condition and requirements for key bird species (i.e. Grey Crowned Crane and Stanley's Bustard) and documenting the presence and location of any feeding, breeding, nesting/roosting sites in the field.

  - Identification and assessment of the estimated significance of key ecological impacts to vegetation, plant species and fauna.

  - Confirm any fatal flaws from a terrestrial ecological perspective to inform planning and layout of development proposed.

  - Assess the need and desirability for terrestrial biodiversity offsets (where necessary) and provide preliminary recommendations.

  - Recommendations in terms of impact mitigation and management aimed at reducing impacts significant in line with the principles of the 'mitigation hierarchy', including possible biodiversity buffer zones, development realignments, onsite controls (Best Management Practices: BMPs) and initial post-development rehabilitation requirements (i.e. conceptual terrestrial habitat rehabilitation strategy).

2. **Plan of study for detailed Wetland Assessment:**

  - Detailed baseline field survey to confirm / ground-truth wetland boundaries, assess wetland condition, functioning and importance/sensitivity.

  - Identification and assessment of the estimated significance of key ecological impacts to wetlands.

- Confirm any fatal flaws from an aquatic ecological perspective to inform planning and layout of development proposed.

- Assess the need and desirability for wetland offsets (where necessary) and provide preliminary recommendations.

- Recommendations in terms of impact mitigation and management aimed at reducing impacts significant in line with the principles of the 'mitigation hierarchy', including relevant wetland buffer zones, development realignments, onsite controls (Best Management Practices: BMPs) and initial post-development rehabilitation requirements (i.e. conceptual wetland rehabilitation strategy).

5 SUMMARY, CONCLUSION AND WAY FORWARD

The proposed Wild Coast Special Economic Zone (WCSEZ) development (located adjacent to the existing Umthatha Airport in the Eastern Cape Province of South Africa) triggers a Listed Activity in Listing Notice 2 of the NEMA EIA Regulations (2014, as amended) and therefore is subject to a Scoping and Full EIA process. Furthermore, due to the proximity of the development to watercourses (wetlands), at least two water uses (Section 21 c and i) will potentially be triggered by the development and a Water Use Licence Application (WULA) is likely to be an additional requirement.

Eco-Pulse Consulting undertook an initial **Ecological Scoping Phase Assessment** to inform the requirements for the EIA, which entailed undertaking an initial desktop investigation and compilation of a scoping report (i.e. this document) with the intention of the scoping process being to identify the key ecological issues that are likely to be of most importance during the EIA and eliminate those that are of little concern, thus focusing the detailed EIA phase of the ecological/wetland assessments which Eco-Pulse has been appointed to conduct.

The scoping report essentially highlights the presence and extent of four (4) freshwater wetland on the northern portion of the project area, terrestrial ecosystems (Mthatha Moist Grassland, Endangered status) which appears to be largely confined to the northern sections of the project area and potentially occurring conservation important flora (*Brachystelma caffrum* and *Crinum macowanii)* and fauna (Crowned Crane and Stanley's Bustard). Remaining untransformed wetlands and grassland habitat pose the most significant ecological constraints to development and will be the focus of the detailed EIA ecological investigations (to comply with the minimum requirements of Appendix 6 of the NEMA: EIA Regulations of 2014, as amended), which are scheduled to take place during February-March 2018.

Should you have any queries regarding the findings and recommendations in this initial ecological scoping phase report, please contact Eco-Pulse Environmental Consulting Services directly.

Yours faithfully,

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