COEGA DEVELOPMENT CORPORATION

WILDCOAST SPECIAL ECONOMIC ZONE, MTHATHA

FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT (REF: 14/12/16/3/3/2/1064)

24 OCTOBER 2018

PUBLIC

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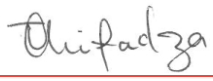
Signature				
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SIGNATURES

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This Final Environmental Impact Assessment report (Report) has been prepared by WSP Environmental Proprietary Limited (WSP) on behalf and at the request of the Coega Development Corporation. (Client), to provide the Client with an understanding of the impacts of the proposed Wild Coast Strategic Economic Zone.

Unless otherwise agreed by us in writing, we do not accept responsibility or legal liability to any person other than the Client for the contents of, or any omissions from, this Report.

To prepare this Report, we have reviewed only the documents and information provided to us by the Client or any third parties directed to provide information and documents to us by the Client. We have not reviewed any other documents in relation to this Report, except where otherwise indicated in the Report.

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GLOSSARY

ABBREVIATION	MEANING
APPA	Atmosphere Pollution Prevention Act
AQA	Air Quality Act
BA	Basic Assessment
BLMCs	Biodiversity Land Management Classes
BPO	Business Process Outsourcing
CBA	Critical Biodiversity Area
CDC	Coega Development Corporation
CRR	Comment and Response Report
DEA	Department of Environmental Affairs
DEDEAT	Department of Economic Development, Environmental Affairs and Tourism
DEO	Designated Environmental Officer
DoT	Department of Transport
DSR	Draft Scoping Report
DPW	Department of Public Works
DTI	Department of Trade and Industry
DWS	Department of Water and Sanitation
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
ECBCP	Eastern Cape Biodiversity Conservation Plan
EC	Eastern Cape
EIA	Environmental Impact Assessment
EIAR	Environmental Impact Assessment Report

ABBREVIATION	MEANING
EMP	Environmental Management Programme
FSR	Final Scoping Report
GIS	Geographical Information System
GPS	Global Positioning System
ha	Hectares
HV	High Voltage
ICT	Information and Communications Technology
IDP	Integrated Development Plan
IDZ	Industrial Development Zone
IPAP	Industrial Policy Action Plan
KSDLM	King Sabata Dalindyebo Local Municipality
NDP	National Development Plan
NEMA	National Environmental Management Act
NPAES	National Protected Areas Expansion Strategy
ORTDM	O.R. Tambo District Municipality
PES	Present Ecological State
PIDS	Provincial Industrial Development Strategies
PMO	Project Management Office
POC	Potential Occurrence
QDGS	Quarter Degree Grid Square
S&EIR	Scoping and Environmental Impact Reporting
SABAP	South African Bird Atlas Project
SAHRIS	South African Heritage Resources Information System

ABBREVIATION	MEANING
SANRAL	South African National Roads Agency Limited
SAWS	South African Weather Services
SDF	Spatial Development Framework
SEZ	Special Economic Zone
SMME	Small and Medium Sized Enterprises
SoE	State-Owned Enterprise
t	Tonnes
TIA	Traffic Impact Assessment
WCSEZ	Wild Coast Special Economic Zone
WMA	Water Management Area
WMCO	Waste Management Control Officer
WMP	Waste Management Plan
WSP	WSP Environmental (Pty) Ltd

1 INTRODUCTION

1.1 PURPOSE OF THIS REPORT

This final environmental impact assessment report (EIAR) documents the process and findings of the impact phase of the Scoping and Environmental Impact Reporting (S&EIR) process for the proposed establishment of a Strategic Economic Zone (SEZ) in the Wild Coast Area, to the immediate north and immediate south of the Mthatha Airport.

The EIAR provides stakeholders and authorities with information that is necessary for a proper understanding of the scoping process; for informing all preferred alternatives, including location alternatives, the scope of the assessment, and the consultation process undertaken through the environmental impact assessment process.

1.2 BACKGROUND INFORMATION

The Department of Trade and Industry (DTI) developed the SEZ policy to support and accelerate industrial development in targeted regions where socio-economic growth has been problematic. This would be achieved by the provision of special measures needed to develop targeted industrial and agricultural capabilities and attract targeted foreign and domestic direct investment. The SEZ policy has four (4) specific objectives:

- Support the development of targeted industrial capabilities and attract foreign and domestic direct investments in support of the Industrial Policy Action Plan (IPAP) and Provincial Industrial Development Strategies (PIDS's), under the over-arching National Development Plan (NDP);
- Develop world-class industrial infrastructure in line with the requirements of the targeted industries and investments;
- Promote beneficiation and further value addition of the country's mineral and agricultural resources; and
- Contribute to the creation of sustainable jobs and increase exports of beneficiated commodities in the targeted regions.

The Wild Coast Special Economic Zone (WCSEZ) is intended to address the under-development of industry and agriculture in the Wild Coast region, the elevated unemployment levels, particularly among the youth, and unacceptable high levels of poverty.

The viability of the proposed WCSEZ will depend on the suggested approach, which will be phased.

1) Phase 1 – mainly Sector development cluster (Agro-processing Sector) housing facilities to unlock the primary sector with the hub near Mthatha Airport.

2) Phase 2 – Services Sector that will focus on the support industries for Agro-processing. This could include Logistics and Distribution, Business Process Outsourcing (BPO), Call Centres and others. Further investigations need to be done to enhance the value proposition and viability of this Sector. This second Phase will also contain value added support infrastructure such as accommodation, skills and training centre, a commercial node and innovation and industrial services nodes.

It is envisioned that increased commercial activity in the area will assist in the development of the tourism sector.

The Coega Development Corporation (CDC) is a state-owned enterprise (SoE) based in the Nelson Mandela Bay Municipality with operations throughout South Africa. The CDC is mandated to develop and operate the 11 500 ha Coega Industrial Development Zone (IDZ), which was established in 1999. To this end, the CDC is tasked with the responsibility to create employment, provide training and development, and Small and Medium Sized Enterprises (SMME) support and development opportunities, in order to reduce unemployment, inequalities, and to eradicate poverty in the Eastern Cape (EC), with a focus on Nelson Mandela Bay Metro, in particular. Therefore, the CDC's vision is to be the leading catalyst for the championing of socio-economic growth. Its mission is to provide a competitive investment location supported by value added business services that effectively enables socio-economic development in the EC and the rest of South Africa. In the 17 years since its establishment, the CDC has become South Africa's most successful IDZ and has matured to become one of the biggest drivers of job creation and development of the EC economy. It is purpose-designed following

the cluster model, which strategically positions related and synergistic industries and their supply chains in close proximity to one another in order to maximise efficiency and minimize turnaround times. The Coega IDZ is demarcated into 14 zones, with the focus being placed on the following sectors:

- Metals/Metallurgical;
- Automotive;
- BPO;
- Chemicals;
- Agro-processing;
- Logistics;
- Trade Solutions;
- Energy; and
- Maritime.

The CDC strives to improve the delivery of infrastructure in the EC by addressing skill shortages, unemployment, constrained planning and project management capacity, under-expenditure, sub-standard infrastructure, and inefficiencies that characterise delivery of infrastructure by government in South Africa generally and the EC in particular. In the process, the CDC advances socio-economic development and transformation within the EC and South Africa as a whole.

The proposed project site for the WCSEZ is directly adjacent to the Mthatha Airport, with boundaries at both the north and the south of the airport as shown in **Figure 1-1** below. The site is north of the R61 and to the south of the Mthatha Dam.

Figure 1-1: Locality Map

1.3 ENVIRONMENTAL ASSESSMENT PRACTITIONER

WSP Environmental (Pty) Ltd (WSP) has been appointed in the role of Independent Environmental Assessment Practitioner (EAP) to undertake the S&EIR processes for the development of the biotechnology plant. The CV of the EAP is available in **Appendix A-1**. The EAP declaration of interest and undertaking is included in **Appendix B**. **Table 1-1** details the relevant contact details of the EAP. In order to adequately identify and assess potential environmental impacts, the EAP will be supported by a number of specialists.

Table 1-1: Details of the Environmental Assessment Practitioner

ENVIRONMENTAL ASSESSMENT PRACTITIONER (EAP)	WSP ENVIRONMENTAL (PTY) LTD
Company Registration:	1995/08790/07
Contact Person:	Tutayi Chifadza
Postal Address:	PO Box 98867 Sloane Park 2151 Johannesburg
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1.4 ENVIRONMENTAL IMPACT ASSESSMENT PROCESS

The 2014 Environmental Impact Assessment (EIA) Regulations (GNR 326), as amended, identifies the proposed CDC development as an activity being subject to an S&EIR process due to the applicability of the EIA Listing Notices Government Regulation Notice GNR. 325, published on 7 April 2017. In order for the project to proceed it will require an Environmental Authorisation (EA) from the Department of Environmental Affairs (DEA).

WSP has been appointed as the independent EAP to carry out the S&EIR process in accordance with the EIA Regulations, 2014, as amended in 2017.

The Scoping Process has been completed and involved consultation with interested and affected parties and the drafting of the Plan of Study (PoS) for EIA, which culminated in the submission of a Final Scoping Report (FSR) to the DEA. The DEA acceptance of the FSR and authorisation to proceed with the EIA dated **17 July 2018** was received on **18 July 2018** (**Appendix D**).

The draft EIAR was made available for public comment from **10 August 2018** to **10 September 2018**.

As defined in Appendix 3 of GNR 326, the objective of the EIA process is to, through a consultative process:

- Determine the policy and legislative context within which the activity is located and document how the proposed activity complies with and responds to the policy and legislative context;
- Describe the need and desirability of the proposed activity, including the need and desirability of the activity in the context of the development footprint on the approved site as contemplated in the accepted scoping report;
- Identify the location of the development footprint within the approved site as contemplated in the accepted scoping report based on an impact and risk assessment process inclusive of cumulative impacts and a

ranking process of all the identified development footprint alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects of the environment;

- Determine the –
  - nature, significance, consequence, extent, duration and probability of the impacts occurring to inform identified preferred alternatives; and
  - degree to which these impacts –
    - can be reversed;
    - may cause irreplaceable loss of resources; and
    - can be avoided, managed or mitigate;
- Identify the most ideal location for the activity within the development footprint of the approved site as contemplated in the accepted scoping report based on the lowest level of environmental sensitivity identified during the assessment;
- Identify, assess, and rank the impacts the activity will impose on the development footprint on the approved site as contemplated in the accepted scoping report through the life of the activity;
- Identify suitable measures to avoid, manage or mitigate identified impacts; and
- Identify residual risks that need to be managed and monitored.

Public participation is a requirement of the EIA; it consists of a series of inclusive and culturally appropriate interactions aimed at providing stakeholders with opportunities to express their views, so that these can be considered and incorporated into the S&EIR decision-making process. Effective public participation requires the prior disclosure of relevant and adequate project information to enable stakeholders to understand the risks, impacts, and opportunities of the Proposed Project. The objectives of the public participation process can be summarised as follows:

- Identify relevant individuals, organisations and communities who may be interested in or affected by the Proposed Project;
- Clearly outline the scope of the Proposed Project, including the scale and nature of the existing and proposed activities;
- Identify viable Proposed Project alternatives that will assist the relevant authorities in making an informed decision;
- Identify shortcomings and gaps in existing information;
- Identify key concerns, raised by Stakeholders that should be addressed in the subsequent specialist studies;
- Highlight the potential for environmental impacts, whether positive or negative; and
- To inform and provide the public with information and an understanding of the Proposed Project, issues and solutions.

1.5 IMPACT ASSESSMENT REPORT STRUCTURE

Table 1-2 cross-references the sections within the EIAR with the legislated requirements as per Appendix 3 of GNR 326, published in 2017.

Table 1-2: Legislation Requirements as detailed in GNR 326

APPENDIX 3	LEGISLATED REQUIREMENTS AS PER THE NEMA GNR 326	RELEVANT REPORT SECTION
(a)	Details of the EAP who compiled the report; and	Section 1.2 and **Appendix A-1**
	the expertise of the EAP, including a Curriculum Vitae	**Appendix A-1**
(b)	The location of the development footprint of the activity on the approved site as contemplated in the accepted scoping report, including:	
	i) The 21 digit Surveyor code for each cadastral land parcel;	**Appendix B**
	ii) Where available, the physical address and farm name;	**Appendix B**
	iii) Where the required information in terms of (i) and (ii) is not available, the coordinates of the boundary of the property or properties.	Table 6-1 Table 6-2
(c)	A plan which locates the proposed activity or activities applied for as well as the associated structures and infrastructure at an appropriate scale, or, if it is-	
	i) A linear activity, a description of the corridor in which the proposed activity or activities is to be undertaken; or	**Appendix F-3** **Appendix F-4**
	ii) On land where the property has not been defined, the coordinates within which the activity is to be undertaken.	Table 6-1 Table 6-2
(d)	A description of the proposed activity, including-	
	i) All listed and specified activities triggered and being applied for; and	Section 2 Table 2-1
	ii) A description of the activities to be undertaken, including associated structures and infrastructure related of the development;	Section 6
(e)	A description of the policy and legislative context within which the development is located and an explanation of how the proposed development complies with and responds to the legislation and policy context;	Section 2
(f)	A motivation for the need and desirability for the proposed development, including the need and desirability of the activity in the context of the preferred development footprint within the approved site as contemplated in the accepted scoping report;	Section 5
(g)	A motivation for the preferred development footprint within the approved site as contemplated in the accepted scoping report;	Section 5 Section 7.2
(h)	A full description of the process followed to reach the proposed development footprint within the approved site as contemplated in the accepted scoping report, including:	
	i) Details of the development footprint alternatives considered;	Section 6.1 Section 7.2

APPENDIX 3	LEGISLATED REQUIREMENTS AS PER THE NEMA GNR 326	RELEVANT REPORT SECTION
	ii) Details of the public participation process undertaken in terms of regulation 41 of the Regulations, including copies of the supporting documents and inputs;	Section 4.3
	iii) A summary of the issues raised by interested and affected parties, and an indication of the manner in which the issues were incorporated, or the reasons for not including them;	**Appendix C-8**
	iv) The environmental attributes associated with the development footprint alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;	Section 8
	v) The impacts and risks identified for each alternative, including the nature, significance, consequence, extent, duration and probability of the impacts, including the degree to which these impacts- (aa) can be reversed; (bb) may cause irreplaceable loss of resources; and (cc) can be avoided, managed or mitigated;	Section 9
	vi) The methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks;	Section 4.2.1
	vii) Positive and negative impacts that the proposed activity and alternatives will have on the environment and on the community that may be affected focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;	Section 9
	viii) The possible mitigation measures that could be applied and level of residual risk;	Section 9
	ix) If no alternative development footprints for the activity were investigated, the motivation for not considering such; and	N/A
	x) A concluding statement indicating the location of the preferred alternative development footprint within the approved site as contemplated in the accepted scoping report;	Section 7.2
(i)	A full description of the process undertaken to identify, assess and rank the impacts the activity and associated structures and infrastructure will impose on the preferred development footprint on the approved site as contemplated in the accepted scoping report through the life of the activity, including-	
	i) A description of all environmental issues and risks that were identified during the environmental impact assessment process; and	Section 9
	ii) An assessment of the significance of each issue and risk and an indication of the extent to which the issue and risk could be avoided or addressed by the adoption of mitigation measures.	Section 9
(j)	An assessment of each identified potentially significant impact and risk, including-	
	i) Cumulative impacts;	Section 9

APPENDIX 3	LEGISLATED REQUIREMENTS AS PER THE NEMA GNR 326	RELEVANT REPORT SECTION
	ii) The nature, significance and consequences of the impact and risk;	Section 9
	iii) The extent and duration of the impact and risk;	Section 9
	iv) The probability of the impact and risk occurring;	Section 9
	v) The degree to which the impact and risk can be reversed;	Section 9
	vi) The degree to which the impact and risk may cause irreplaceable loss of resources; and	Section 9
	vii) The degree to which the impact and risk can be mitigated	Section 9
(k)	Where applicable, a summary of the findings and recommendations of any specialist report complying with Appendix 6 to these Regulations and an indication as to how these findings and recommendations have been included in the final assessment report;	Section 10
(l)	An environmental impact statement which contains-	
	i) A summary of the key findings of the environmental impact assessment:	Section 10
	ii) A map at an appropriate scale which superimposes the proposed activity and its associated structures and infrastructure on the environmental sensitivities of the preferred development footprint on the approved site as contemplated in the accepted scoping report indicating any areas that should be avoided, including buffers; and	Section 10 (**Figure 10.1**) **Appendix F-5**
	iii) A summary of the positive and negative impacts and risks of the proposed activity and identified alternatives;	Section 10 (**Table 10.1**)
(m)	Based on the assessment, and where applicable, recommendations from specialist reports, the recording of proposed impact management outcomes for the development for inclusion in the EMPr as well as for inclusion as conditions of authorisation;	Section 9
(n)	The final proposed alternatives which respond to the impact management measures, avoidance, and mitigation measures identified through the assessment;	Section 7 Section 10
(o)	Any aspects which were conditional to the findings of the assessment either by the EAP or specialist which are to be included as conditions of authorisation;	N/A
(p)	A description of any assumptions, uncertainties and gaps in knowledge which relate to the assessment and mitigation measures proposed;	Section 1.6
(q)	A reasoned opinion as to whether the proposed activity should or should not be authorised, and if the opinion is that it should be authorised, any conditions that should be made in respect of that authorisation;	Section 10 Section 11
(r)	Where the proposed activity does not include operational aspects, the period for which the environmental authorisation is required and the date on which the activity will be concluded and the post construction monitoring requirements finalised;	N/A
(s)	An undertaking under oath or affirmation by the EAP in relation to-	

APPENDIX 3	LEGISLATED REQUIREMENTS AS PER THE NEMA GNR 326	RELEVANT REPORT SECTION
	i) The correctness of the information provided in the report;	**Appendix A-2**
	ii) The inclusion of comments and inputs from stakeholders and I&APs;	**Appendix A-2**
	iii) The inclusion of inputs and recommendations from the specialist reports where relevant; and	**Appendix A-2**
	iv) Any information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested or affected parties;	**Appendix A-2**
(t)	Where applicable, details of any financial provision for the rehabilitation, closure, and ongoing post decommissioning management of negative environmental impacts;	N/A
(u)	An indication of any deviation from the approved scoping report, including the plan of study, including-	
	i) Any deviation from the methodology used in determining the significance of potential environmental impacts and risks; and	N/A
	ii) A motivation for the deviation	N/A
(v)	Any specific information required by the competent authority; and	N/A
(w)	Any other matter required in terms of section 24(4)(a) and (b) of the Act.	N/A

1.6 ASSUMPTIONS AND LIMITATIONS

1.6.1 GENERAL ASSUMPTIONS

General assumptions and limitations relating to the impact assessment study and the EIAR are listed below:

- The EAP hereby confirms that they have undertaken to obtain project information from the client that is deemed to be accurate and representative of the project;
- Site visits have been undertaken to better understand the project and ensure that the information provided by the client is correct, based on site conditions observed;
- The EAP hereby confirms their independence and understands the responsibility they hold in ensuring all comments received are accurately replicated and responded to within the EIA documentation;
- The comments received in response to the public participation process, are representative of comments from the broader community; and
- The competent authority would not require additional specialist input, as per the proposals made in this report, in order to make a decision regarding the application.

Notwithstanding these assumptions, it is the view of WSP that this EIAR provides a good description of the issues associated with the project and the resultant impacts.

1.6.2 SPECIALIST STUDIES

TERRESTRIAL ECOLOGICAL ASSESSMENT

The following limitations and assumptions apply to this assessment:

- This report deals exclusively with a defined area and the extent of terrestrial habitat/ecosystems in that area.
- The terrestrial ecological study focused on 'terrestrial' or dryland vegetation occurring within the study area. Wetland/aquatic vegetation and habitats have not been included in this assessment and are dealt with separately in the Specialist Wetland Assessment Report (Eco-Pulse, 2018, Report No. EP341-02).
- 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.
- Sampling by its nature means that generally not all aspects of ecosystems can be assessed and identified.
- With ecology being dynamic and complex, there is the likelihood that some aspects (some of which may be important) may have been overlooked.
- A rapid site walkover assessment was used instead of formal vegetation plots and detailed vegetation/habitat sampling and analyses methods. Therefore comments on species abundance and dominance are based on the assessor's opinion based on field observations.
- Field assessment was undertaken in the summer/growing season (March 2018) and therefore winter flowering cryptic forbs may have been over-looked. The assessment therefore does not cover the full seasonal variation in conditions in the area of study.
- The location of individual specimens of protected plant species were recorded hand held GPS with an accuracy of 3 – 5m.
- Information on the threat status of plants species was informed largely by the SANBI Threatened Species Online database, which was assumed to be up to date and accurate at the time of compiling this report. Any changes made after the compilation of the report are therefore not covered.
- No detailed survey of fauna was conducted during this assessment. Any fauna documented in this report are based on site observations during a limited time spent in the field and do not reflect the overall faunal composition of the site. It is assumed that based on the nature of the project, that faunal impacts are likely to be limited.
- The assessment of impacts and recommendation of mitigation measures was informed by the site-specific ecological concerns arising from the vegetation field surveys and based on the assessor's working knowledge and experience with similar development projects.

WETLAND HABITAT IMPACT ASSESSMENT

The following general 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 Geographical Information Systems (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.
- All field assessments were limited to day-time assessments.

Furthermore, the following sampling limitations and assumptions were made:

- With ecology being dynamic and complex, there is the likelihood that some aspects (some of which may be important) may have been overlooked.
- While disturbance and transformation of habitats can lead to shifts in the type and extent of freshwater ecosystems, it is important to note that the current extent and classification is reported on here.
- Infield soil sampling and vegetation observations were only undertaken a strategic sampling points within the habitats likely to be negatively affected. Watercourse delineation beyond the 50m study corridor was estimated at a desktop level with limited ground-truth (low accuracy).

- The wetland boundary was identified and classified along a transitional gradient from saturated through to terrestrial soils which makes it difficult to identify the exact boundary of the wetland. The boundaries mapped in this specialist report therefore represent the approximate boundary of wetlands as evaluated by an assessor familiar and well-practiced in the delineation technique.
- The accuracy of the delineation is based solely on the recording of the onsite wetland indicators using a Global Positioning System (GPS). GPS accuracy will therefore influence the accuracy of the mapped sampling points and therefore water resource boundaries and an error of 3 – 5m can be expected. All soil/vegetation/terrain sampling points were recorded using a Garmin Monterra™ GPS and captured using GIS for further processing.
- In environments with multiple artificial water sources (e.g. leaking pipeline infrastructure, agricultural and road runoff, and water discharge from various infrastructure), interpretation of natural versus artificial hydric soils or wetland soil indicators can be difficult. In such cases, we have made an effort to substantiate all claims where applicable and necessary while acknowledging limitations.
- Infield soil sampling and vegetation observations were only undertaken at strategic sampling points within the habitats likely to be negatively affected. Sampling by its nature, means that generally not all aspects of ecosystems can be assessed and identified.
- All vegetation information recorded was based on the onsite observations of the author and no formal vegetation sampling was undertaken. Furthermore, the vegetation information provided only gives an indication of the dominant and/or indicator riparian species and only provides a general indication of the composition of the vegetation communities. Thus, the vegetation information provided has limitations for true botanical applications i.e. accurate and detailed species lists and rare / Red Data species identification.
- Not all wetlands within the 500m DWS regulated area were assessed/delineated in the field. Focal areas at risk of being impacted or triggering Section 21 water use were flagged during the desktop risk/screening exercise to be assessed in detail in the field. Thus, finer habitat type details of the systems not formally assessed were not acquired.
- Inferences made about the ecological integrity/health of the wetlands assessed was based on selected variables sampled on selected occasions at selected geographic locations. This limits the degree to which this information can be extrapolated spatially and temporally (i.e. over seasons). Wetlands by nature can be highly variable ecosystems and can display fine and large scales changes in the structure, composition and quality of the habitat over periods of time.
- No formal aquatic faunal survey was undertaken.

There were seasonal limitations encountered in the study. The wetland delineation and baseline assessment was undertaken during the growing/wet season (summer) but does not cover the seasonal variation in conditions at the site. However, seasonality is not such an issue for the target study area surveyed which does not warrant the need for further seasonal surveys for the following reasons:

- Soil wetness indicators (i.e. soil mottles, grey soil matrix), which in practice are primary indicators of hydromorphic soils, are not seasonally dependent (wetness indicators are retained in the soil for many years) and therefore seasonality has no influence on the delineation of wetland areas.
- Seasonality can also influence the species of flora encountered at the site, with the flowering time of many species often posing a challenge in species identification. Since the wetland vegetation in the study area was found to be largely secondary/degraded with low native plant diversity, seasonality would not be as significant a limitation when compared with a vegetation community that is largely natural or high in native plant diversity. Also, since the wetland vegetation in the study area was surveyed during rainy/summer (growing season), seasonality would not be as significant a limitation.
- The location of the study area within the coastal hinterland zone (largely subtropical climate) means that climate has less of an effect on aquatic ecosystems and vegetation characteristics than typical Highveld inland systems which are exposed to more extreme variations in temperatures between seasons. Thus, vegetation response is limited and species structure and composition tend to remain the same or very similar between seasons.

Assumptions made with regards to the baseline ecological assessment include:

- It should be noted that while WET-Health (Macfarlane *et al.,* 2008) is the most appropriate technique currently available to undertake assessments of wetland condition/integrity, it is nonetheless a rapid assessment tool that relies on qualitative information and expert judgment. While the tool has been subjected to an initial peer review process, the methodology is still being tested and will be refined in subsequent versions. For the purposes of this assessment, the assessment was undertaken at a rapid level

with limited field verification. It therefore provides an indication of the PES of the system rather than providing a definitive measure.

- The PES and EIS assessments undertaken are largely qualitative assessment tools and thus the results are open to professional opinion and interpretation. We have made an effort to substantiate all claims where applicable and necessary.
- The WET-Health tool's Hydrological assessment module is not particularly well suited for the assessment of wetlands with high groundwater inputs.
- The Ecological Importance and Sensitivity assessment did not specifically address the finer-scale biological aspects of the rivers such as fauna (amphibians and invertebrates) occurring.

Assumptions made with respect to the assessment of impacts include:

- The assessment of impacts and recommendation of mitigation measures was informed by the site-specific ecological concerns arising from the field survey and based on the assessor's working knowledge and experience with similar projects.
- Evaluation of the significance of impacts with mitigation takes into account mitigation measures and best management practice, as provided in this report.

Assumptions were also made with respect to the assessment of risk. Risks were assessed based on the DWS Risk Assessment Matrix. The following assumptions apply to the application of the DWS risk matrix tool in the context of project in question:

- All risk ratings generated by the DWS risk matrix are conditional on the effective implementation of the specialist mitigation measures provided in this report.
- For the severity ratings, impacts to wetlands were assessed on their merits rather than automatically scoring impacts to wetlands as 'disastrous' as guided in the DWS risk matrix.
- The severity assessment for changes in flow regime and physico-chemical impacts were interpreted in terms of the changes to the local freshwater ecosystem represented by the potentially affected reaches.
- For the scoring of impact duration, the predicted change in PES was also considered which could override the actual duration of the impact where applicable e.g. if the impact duration was long term (typically a score of 4 out of 5) but the predicted change in PES is negligible, the impact duration was down-rated to a score of 2 in line with the duration criteria descriptions in the risk matrix tool.

There were also assumptions and limitations used in compiling the wetland rehabilitation plan which is an appendix to the Wetland Habitat Impact Assessment Report by Eco-Pulse (July 2018) and these include:

- The information provided in this report is based on site visits that have been undertaken by the project team (Wetland Ecologist from Eco-Pulse Consulting) and their subsequent input into the Reporting, which includes baseline wetland assessments. It is understood that this information is sufficient for the relevant environmental authorisation processes.
- This Conceptual Wetland Rehabilitation Plan should be read in conjunction with the specialist baseline wetland assessment report:
  - *Eco-Pulse Consulting. 2018. Proposed Wild Coast SEZ, Eastern Cape. Wetland Habitat Impact Assessment Report. Unpublished report prepared by Eco-Pulse Environmental Consulting Services for WSP. Report No. EP341-02.*
- Information contained in this Report/Plan will be used to inform, where necessary, the rehabilitation of wetlands on the target property and to guide the development of a detailed wetland rehabilitation plan, together with relevant mitigation actions and remediation activities where needed.
- The implementation of this Plan must take into account all relevant recommendations of the Environmental Authorisation (EA) and Water Use License (WUL) processes for the development project.
- The information in this Report is based on existing available information and input from the wetland ecologists from Eco-Pulse Consulting. Until this Conceptual Wetland Rehabilitation Plan has been finalised and signed off by the Client/Developer, the content of the document should be considered as preliminary (draft form).
- Rehabilitation and management activities and interventions have been developed for site conditions as at the time of the planning site visits. Should site conditions change before the rehabilitation plan is implemented, changes to the plan may be necessary. In this case, project implementers may require the assistance of a wetland ecologist and/or professional engineer to revise the relevant section(s) of the plan.

HERITAGE IMPACT ASSESSMENT

There were no assumptions and limitations associated with the study.

PALAEONTOLOGICAL ASSESSMENT

The accuracy and reliability of palaeontological specialist studies as components of heritage impact assessments are generally limited by the following constraints:

- Inadequate database for fossil heritage for much of the RSA, given the large size of the country and the small number of professional palaeontologists carrying out fieldwork here. Most development study areas have never been surveyed by a palaeontologist.
- Variable accuracy of geological maps which underpin these desktop studies. For large areas of terrain these maps are largely based on aerial photographs alone, without ground-truthing. The maps generally depict only significant ("mappable") bedrock units as well as major areas of superficial "drift" deposits (alluvium, colluvium) but for most regions give little or no idea of the level of bedrock outcrop, depth of superficial cover (soil *etc*), degree of bedrock weathering or levels of small-scale tectonic deformation, such as cleavage. All of these factors may have a major influence on the impact significance of a given development on fossil heritage and can only be reliably assessed in the field.
- Inadequate sheet explanations for geological maps, with little or no attention paid to palaeontological issues in many cases, including poor locality information.
- The extensive relevant palaeontological "grey literature" - in the form of unpublished university theses, impact studies and other reports (*e.g*. of commercial mining companies) - that is not readily available for desktop studies.
- Absence of a comprehensive computerized database of fossil collections in major RSA institutions which can be consulted for impact studies. A Karoo fossil vertebrate database is now accessible for impact study work.

In the case of palaeontological desktop studies without supporting Phase 1 field assessments these limitations may variously lead to either:

- *underestimation* of the palaeontological significance of a given study area due to ignorance of significant recorded or unrecorded fossils preserved there, or
- *overestimation* of the palaeontological sensitivity of a study area, for example when originally rich fossil assemblages inferred from geological maps have in fact been destroyed by tectonism or weathering, or are buried beneath a thick mantle of unfossiliferous "drift" (soil, alluvium *etc*).

Since most areas of the RSA have not been studied palaeontologically, a palaeontological desktop study usually entails *inferring* the presence of buried fossil heritage within the study area from relevant fossil data collected from similar or the same rock units elsewhere, sometimes at localities far away. To the author's knowledge, there have been no specialist palaeontological field-based studies in this particular part of the Eastern Cape. Since substantial exposures of bedrocks or potentially fossiliferous superficial sediments are not present within the study area, confidence levels for this assessment are rated as *medium*.

2 GOVERNANCE FRAMEWORK

The South African regulatory framework establishes well-defined requirements and standards for environmental and social management of industrial and civil infrastructure developments. Environmental protection functions are carried out by different authorities at both national and regional levels. The applicable legislation and policies are shown in **Table 2-1** below.

Table 2-1: Applicable Legislation and Policies

APPLICABLE LEGISLATION AND POLICY	DESCRIPTION OF LEGISLATION
The Constitution of South Africa (No. 108 of 1996)	The Constitution cannot manage environmental resources as a stand-alone piece of legislation hence additional legislation has been promulgated in order to manage the various spheres of both the social and natural environment. Each promulgated Act and associated Regulations are designed to focus on various industries or components of the environment to ensure that the objectives of the Constitution are effectively implemented and upheld in an on-going basis throughout the country. In terms of Section 7, a positive obligation is placed on the State to give effect to the environmental rights.
National Environmental Management Act (No. 107 of 1998)	In terms of Section 24(2) of the NEMA, the Minister may identify activities which may not commence without prior authorisation. The Minister thus published GNR 327 (Listing Notice 1), 325 (Listing Notice 2) and 324 (Listing Notice 3) listing activities that may not commence prior to authorisation (7 April 2017). The regulations outlining the procedures required for authorisation are published in GNR 326 [Environmental Impact Assessment Regulations (EIA)] (7 April 2017). Listing Notice 1 identifies activities that require a Basic Assessment (BA) process to be undertaken, in terms of the EIA Regulations, prior to commencement of that activity. Listing Notice 2 identifies activities that require an S&EIR process to be undertaken, in terms of the EIA Regulations, prior to commencement of that activity. Listing Notice 3 identifies activities within specific areas that require a BA process to be undertaken, in terms of the EIA Regulations, prior to commencement of that activity. WSP undertook a review of the listed activities according to the proposed project description to conclude that **Listed Activity 15 of GNR 325** is considered applicable and therefore an S&EIR process must be followed. An EA is required and will be applied for.
Listing Notice 1: GNR 327	***Activity 9 –*** *The development of infrastructure exceeding 1 000 metres in length for the bulk transportation of water or storm water—* *(i) with an internal diameter of 0,36 metres or more; or* *(ii) with a peak throughput of 120 litres per second or more* **Description:** The provision of internal services to future tenants will require the provision of both potable water and stormwater reticulation. This will entail the establishment of approximately 7 000 metres of potable water and 12 000 metres of stormwater pipelines within the project area. Please note that the design stage of these pipelines has not been reached yet and as such, the worst case design scenario of triggering the 0.36 metre internal diameter and 120 litres per second peak throughput thresholds have been considered for this activity. ***Activity 10 –*** *The development and related operation of infrastructure exceeding 1 000 metres in length for the bulk transportation of sewage, effluent, process water, waste water, return water, industrial discharge or slimes –* *(i) with an internal diameter of 0,36 metres or more; or* *(ii) with a peak throughput of 120 litres per second or more.* **Description:**

APPLICABLE LEGISLATION AND POLICY	DESCRIPTION OF LEGISLATION
	The provision of internal services to future tenants will require the provision of sewer reticulation. This will entail the establishment of approximately 7 000 metres of sewer pipelines within the project area. Please note that the design stage of these pipelines has not been reached yet and as such, the worst case design scenario of triggering the 0.36 metre internal diameter and 120 litres per second peak throughput thresholds have been considered for this activity. ***Activity 12 –*** *The development of:* *(ii) infrastructure or structures with a physical footprint of 100 square metres or more; where such development occurs—* *(a) within a watercourse.* **Description:** The development of internal services will require the construction of numerous infrastructure and structures that will have a physical footprint of 100 square meters or more. Please note that the design stage of these structures has not been reached yet and as such, the worst case design scenario of exceeding the 100 square metre threshold has been considered for the construction of each of the four stormwater attenuation ponds and for each of the proposed three reservoirs. ***Activity 19 –*** *The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from a watercourse.* **Description:** There will be clearing, dredging and removal of soil from the site within 4 wetland systems. This will result in the removal of more than 10 cubic metres of soil from a watercourse. Please note that the design stage and survey stage of the material has not been reached yet and as such, the worst case design scenario of exceeding the removal or depositing of material of more than 10 cubic metres threshold has been considered for this activity. ***Activity 24 –*** *The development of a road—* *(ii) a road with a reserve wider than 13,5 meters, or where no reserve exists where the road is wider than 8 metres.* **Description:** Internal roads will be required to be developed. A 2 200 meter road will be constructed on the south portion of the project site. 800 meters of this road will be a 40 meter reserve road and 1 300 meters will be a 20 meter reserve road. ***Activity 30 –*** *Any process or activity identified in terms of Section 53(1) of the National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004).* **Description:** The proposed project entails the clearance of the naturally occurring vegetation, the Mthatha Moist Grassland (Gs 14), which is a listed ecosystem classified as Vulnerable (VU). This is considered a threatening process according to Section 53(1) of the National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004).
Listing Notice 2: GNR 325	***Activity 15*** *- The clearance of an area of 20 hectares or more of indigenous vegetation, excluding where such clearance of indigenous vegetation is required for-* *(i) the undertaking of a linear activity; or* *(ii) maintenance purposes undertaken in accordance with a maintenance management plan* **Description:** The site clearance will be over an area of 226 ha.
Listing Notice 3: GNR 324	***Activity 4 –*** *The development of a road wider than 4 metres with a reserve less than 13,5 metres.*

APPLICABLE LEGISLATION AND POLICY	DESCRIPTION OF LEGISLATION
	(a) Eastern Cape: *i. Outside urban areas:* *(bb) National Protected Area Expansion Strategy Focus areas* *(ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans.* **Description:** Internal roads of approximately 9 000 meters on the north portion of the project site will be developed and these have a reserve of 6 meters. Please note that the design stage of the roads has not been reached yet and as such, the worst case design scenario of exceeding the 4 meter width threshold has been considered for this activity. It is anticipated that the internal roads will be wider than 4 meters. The site is located within a Critical Biodiversity Area. ***Activity 12 –*** *The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan.* *(a) Eastern Cape:* *i. Within any critically endangered or endangered ecosystem listed in terms of section 52 of the NEMBA or prior to the publication of such a list, within an area that has been identified as critically endangered in the National Spatial Biodiversity Assessment 2004;* *ii. Within critical biodiversity areas identified in bioregional plans.* **Description:** The site will be cleared of indigenous vegetation over an area of 226 ha. The site is located within a Critical Biodiversity Area. ***Activity 14 –*** *The development of (ii) infrastructure or structures with a physical footprint of 10 square metres or more; Where such development occurs – (a) within a watercourse* *(a) Eastern Cape:* *i. Outside urban areas:* *(bb) National Protected Area Expansion Strategy Focus areas* *(ff) Critical biodiversity areas or ecosystem service areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;* **Description:** The proposed SEZ will require supporting infrastructure be it for water, electricity and access roads. This infrastructure will have a physical footprint of more than 10 square metres and may occur within one of the 4 wetland systems present on site. Please note that the design stage of these structures has not been reached yet and as such, the worst case design scenario of exceeding the 10 square metre threshold has been considered for the construction of the stormwater attenuation ponds, each of the proposed three reservoirs and for each of the proposed electrical substations. The site is located within a Critical Biodiversity Area. ***Activity 15 –*** *The transformation of land bigger than 1000 square metres in size, to residential, retail, commercial, industrial or institutional use, where, such land was zoned open space, conservation or had an equivalent zoning, on or after 02 August 2010.* *(a) Eastern Cape* *i. Outside urban areas* **Description:** 14.3 ha of the open space will be transformed to industrial while 3.5 ha will be transformed to commercial.

APPLICABLE LEGISLATION AND POLICY	DESCRIPTION OF LEGISLATION
NEMA National Biodiversity Offset Policy (31 March 2017)	The aim of the National Biodiversity Offset Policy is to ensure that significant residual impacts of developments are remedied as required by NEMA, thereby ensuring sustainable development as required by Section 23 of the Constitution of the Republic of South Africa, 1996. This policy should be taken into consideration with every development application that still has significant residual impact after the Mitigation Sequence has been followed in the Environmental Impact Assessment process, and should be applied taking the principles of NEMA into consideration. The Mitigation Sequence places emphasis on avoid/prevent, minimise, rehabilitate/restore, offset and no go in that order. With regards to this project, a Biodiversity Offset Plan will not be developed. A compromise has been made to conserve part of the site (a third of the site) to protect the wetlands and biodiversity on the site and only make use of the rest. Furthermore, due to site limitations, this is the best available site for productive use of land considering lack of available land close to the airport and for access to main roads (R61 and N2) for logistics linkages.
National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)	The objectives of this Act are within the framework of the National Environmental Management Act, include: – The management and conservation of biological diversity within the Republic of South Africa and the components of such biological diversity – The use of indigenous biological resources in a sustainable manner; and – The fair and equitable sharing among stakeholders of benefits arising from bio prospecting involving indigenous biological resources; and – Giving effect to ratified international agreements relating to biodiversity which are binding on the Republic. The Act, amongst others, provides the framework for biodiversity management and planning, comprising a national biodiversity framework, bioregions and bioregional plans, and biodiversity management plans and agreements. Threatened and protected ecosystems (Section 52) have been listed (December 2011) and activities or processes within those ecosystems may be listed as 'threatening processes', thus triggering the need to comply with the NEMA EIA regulations. List of critically endangered, endangered, vulnerable and protected species have also been promulgated in terms of this Act (2007), covering species affected by 'restricted' activities; effectively those species hunted, bred or traded for economic gain. In addition, regulations addressing alien and invasive species and their management/control were promulgated in 2014.
NEMBA National List of Ecosystems (GNR 1002 of 9 December 2011)	The National List of Ecosystems is in place for the ecosystems that are threatened and in need of protection. The NEMBA provides for listing of threatened or protected ecosystems in one of the following categories: – **Critically endangered (CR) ecosystems**, being ecosystems that have undergone severe degradation of ecological structure, function or composition as a result of human intervention and are subject to an extremely high risk of irreversible transformation; – **Endangered (EN) ecosystems**, being ecosystems that have undergone degradation of ecological structure, function or composition as a result of human intervention, although they are not critically endangered ecosystems; – **Vulnerable (VU) ecosystems**, being ecosystems that have a high risk of undergoing significant degradation of ecological structure, function or composition as a result of human intervention, although they are not critically endangered ecosystems or endangered ecosystems; – **Protected ecosystems**, being ecosystems that are of high conservation value or of high national or provincial importance, although they are not listed as critically endangered, endangered or vulnerable. With regards to the proposed Mthatha SEZ, the proposed project area is occupied by the Mthatha Moist Grassland (Gs 14), which is a listed ecosystem classified as Vulnerable (VU).

APPLICABLE LEGISLATION AND POLICY	DESCRIPTION OF LEGISLATION
National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008)	The National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) (NEM:WA) is subsidiary and supporting legislation to the NEMA. The Act is a framework legislation that provides the basis for the regulation of waste management. The Act also contains policy elements and gives a mandate for further regulations to be promulgated. On 29 November 2013 GNR 921 was promulgated (repealing GN R718) which contains a list of waste management activities that if triggered require a Waste Management License (WML) and in turn a Basic Assessment (Category A activities) or Scoping and EIA (Category B activities) process to be undertaken in terms of the NEMA EIA Regulations. Category C activities are required to comply with the Norms and Standards for Storage of Waste 2013 (GN. 926) and do not require authorisation. It is anticipated that activities on the site will not trigger the NEM:WA. However, waste handling, storage and disposal during the construction and operational phase of the project must be undertaken in accordance with the requirements of this Act and the Best Practicable Environmental Option which will be incorporated into the site specific Environmental Management Programme (EMPr).
National Environment Management: Air Quality Act, 2004 (Act No. 39 of 2004)	The National Environment Management: Air Quality Act, 2004 (Act No. 39 of 2004) (NEM:AQA), which repeals the Atmospheric Pollution Prevention Act of 1965 (APPA), came into effect on 11 September 2005, with the promulgation of regulations in terms of certain sections resulting in the APPA being repealed entirely on 1 April 2010. Persons undertaking such activities are required to possess an Atmospheric Emissions License (AEL), essentially the equivalent of a Registration Certificate under the APPA. In terms of Section 32 of the NEM:AQA The National Dust Control Regulations (GNR 827) were promulgated, which aim at prescribing general measures for the control of dust in both residential and non-residential areas.
National Water Act, 1998 (Act No. 36 of 1998)	The National Water Act, 1998 (Act No. 36 of 1998) (NWA) provides the framework to protect water resources against over exploitation and to ensure that there is water for social and economic development, human needs and to meet the needs of the aquatic environment. The Act defines water source to include watercourses, surface water, estuary or aquifer. A watercourse is defined in the Act as a river or spring, a natural channel in which water flows regularly or intermittently, a wetland, lake or dam into which or from which water flows, and any collection of water which the Minister may declare a watercourse. Section 21 of the Act outlines a number of categories which require a water user to apply for a Water Use License (WUL) and Section 22 requires water users to apply for a General Authorisation (GA) with the Department of Water and Sanitation (DWS) if they are under certain thresholds or meet certain criteria. The list of water uses that require a WUL under section 21 are presented below: a) Taking water from a water resource; b) Storage of water; c) Impeding or diverting the flow of water in a watercourse; d) Engaging in a stream flow reduction activity; e) Engaging in a controlled activity; f) Discharging waste or water containing waste into a water resource through a pipe, canal, sewer, sea outfall or other conduit; g) Disposing of waste in a manner which may detrimentally impact on a water resource; h) Disposing in any manner of water which contains waste from, or which has been heated in. any industrial or power generation process; i) Altering the bed, banks, course or characteristics of a watercourse;

APPLICABLE LEGISLATION AND POLICY	DESCRIPTION OF LEGISLATION
	j) Removing, discharging or disposing of water found underground if it is necessary for the efficient continuation of an activity or for the safety of people; and k) Using water for recreational purposes. It is anticipated that a WUL will be required for the impeding or diverting of the flow of water in a watercourse and the altering of bed, banks, course or characteristics of a watercourse under Section 21(c) and (i) respectively as a result of the four wetland systems present on the site.
National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)	The National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004) (NEMBA) was promulgated in June 2004 within the framework of NEMA to provide for the management and conservation of national biodiversity. The NEMBA's primary aims are for the protection of species and ecosystems that warrant national protection, the sustainable use of indigenous biological resources, the fair and equitable sharing of benefits arising from bioprospecting involving indigenous biological resources. In addition, the NEMBA provides for the establishment and functions of a South African National Biodiversity Institute (SANBI). SANBI was established by the NEMBA with the primary purpose to report on the status of the country's biodiversity and conservation status of all listed threatened or protected species and ecosystems. The biodiversity assessment identifies Critical Biodiversity Areas (CBAs) which represent biodiversity priority areas which should be maintained in a natural to near natural state. The CBA maps indicate the most efficient selection and classification of land portions requiring safeguarding in order to meet national biodiversity objectives. As such, an Ecological Assessment will be undertaken as part of the EIA process. The Conservation of Agricultural Resources Act (No. 43 of 1983) (CARA) Regulations with regards to alien and invasive species have been superseded by the National Environmental Management: Biodiversity Act, 2004 (Act no. 10 of 2004) – Alien and Invasive Species (AIS) Regulations which became law on 1 October 2014. Specific management measures for the control of alien and invasive plants has been included in the Environmental Management Programme (EMPr).
Conservation of Agricultural Resources Act (No. 43 of 1983)	The Conservation of Agricultural Resources Act (No. 43 of 1983) (CARA) includes the use and protection of land, soil, wetlands and vegetation and the control of weeds and invader plants. This is the only legislation that is directly aimed at conservation of wetlands in agriculture. In terms of the amendments to the regulations under the CARA, landowners are legally responsible for the control of alien species on their properties. Various Acts administered by the DEA and DWS, as well as other laws (including local by-laws), spell out the fines, terms of imprisonment and other penalties for contravening the law. Although no fines have yet been placed against landowners who do not remove invasive species, the authorities may clear their land of invasive alien plants and other alien species entirely at the landowners cost and risk. Specific management measures for the conservation of agricultural resources will be included in the EMPr.
National Heritage Resource Act (Act No. 25 of 1999)	The National Heritage Resource Act (Act No. 25 of 1999) (NHRA) serves to protect national and provincial heritage resources across South Africa. The NHRA provides for the protection of all archaeological and palaeontological sites, the conservation and care of cemeteries and graves by SAHRA, and lists activities which require any person who intends to undertake to notify the responsible heritage resources agency and furnish details regarding the location, nature, and extent of the proposed development. In terms of the Section 38 of NHRA, any person who intends to undertake a linear development exceeding 300m in length or a development that exceeds 5000m^2 must notify the heritage resources authority and undertake the necessary assessment requested by that authority. In the case of the proposed SEZ, a Heritage Impact Assessment (HIA) will be undertaken looking at Archaeology, Heritage and Palaeontology. The proposed project will be brought to the

APPLICABLE LEGISLATION AND POLICY	DESCRIPTION OF LEGISLATION
	attention of SAHRA, as well as the provincial Heritage Resource Agencies, who will provide comment, and provide the required approval. Construction activities should be conducted carefully and all activities ceased if any archaeological, cultural and heritage resources are discovered. The South African Heritage Resource Agency (SAHRA) should be notified and investigation conducted before any activities can commence.
Transkei Environmental Conservation Decree No. 9 of 1992	The Transkei Environmental Conservation Decree No. 9 of 1992 serves to consolidate and amend the laws relating to the conservation, management, protection and commercial utilisation of indigenous fauna and flora and their habitats on land, in fresh water and in the sea excluding national parks; to provide for the establishment of the Council for the Environment; to provide for the establishment and management of national wildlife reserves, protected natural environments, limited development areas, camping areas, hiking trails, water catchment areas and a coastal conservation area; to provide for the establishment of an environmental conservation fund; to provide for matters relating to the sea and the seashore; and to provide for incidental matters.
Eastern Cape Provincial Development Plan (2030)	The Eastern Cape Provincial Development Plan (2030) ("PDP") is derived from the NDP (2030) and it aims to provide creative responses to the Eastern Cape province's developmental challenges. According to the PDP, a sustainable future for the Eastern Cape rests on people-centred development to achieve five related goals: – An inclusive, equitable and growing economy for the province; – An educated, innovative and empowered citizenry; – A healthy population; – Vibrant, equitably enabled communities; and – Capable agents across government and other institutional partners committed to the development of the province. These goals will be pursued with a focus on rural development to address serious inherited structural deficiencies – the legacy of apartheid has left the rural regions of the Eastern Cape underdeveloped, with an urban economy that is unduly stressed and experiencing slow growth. To realise the plan's development goals, the province has identified four catalytic flagships that will establish a sound foundation for other developments to flourish. These catalytic initiatives cut across sectors and integrate the efforts of many role-players. – **Ilima Labantu** – the first catalytic flagship initiative is an agricultural development initiative that aims to revive the rural economy and encourage other areas of development in the province. – **Ematholeni!** (children first) - the second catalytic flagship initiative aims to give all children a quality start to development and learning, providing a solid foundation for a future of equal opportunity. This foundation begins from the level of early childhood development. – **Infrastructure** - the third catalytic flagship initiative focuses on the provision and maintenance of infrastructure for spatially equitable social and economic development. This includes social infrastructure (human settlements, public institutions) and economic infrastructure (irrigation systems, factories, production technology, equipment and systems, as well as information and communication technology). – **Building human and institutional capabilities for local development action** -the fourth catalytic flagship initiative aims to build human and institutional capabilities for inclusive and meaningful local development action.
O.R. Tambo District Municipality Spatial	In June 2012, the O.R. Tambo DM Council adopted a reviewed Spatial Development Framework (SDF). This document was directed and overseen by Consulting Group Pty (Ltd). The SDF seeks to (1) guide the spatial distribution of current and future desirable land uses/activities within the municipality and (2) give physical effect to the vision, goals and objectives of the municipal IDP.

APPLICABLE LEGISLATION AND POLICY	DESCRIPTION OF LEGISLATION
Development Framework (SDF)	In effect, the SDF represents a "picture" of where the municipality wishes to direct its efforts in facilitating development. As such, the primary purpose of the SDF is to guide all decisions of the municipality relating to the use, development and planning of land and, at the District level, should guide and inform: – The identification of major movement routes; – The identification of Special Development Areas for specific interventions either to facilitate and/or improve local economic development opportunities, or to address special instances of need; and – The conservation of both natural and built environments. In so doing, it is hoped that the SDF will become a useful tool whereby other role-players in different spheres of government, non-governmental agencies and the private sector would be better informed as to how best to direct their investment and development programme activities in the District to ensure greater coordination and impact in investment and spending. As such, the SDF attempts to ensure that public and private sector investment and activities are located in areas that can best: Promote economic generation potential; – Maximise opportunities for the poor; – Improve accessibility; – Minimise the cost of physical expansion; – Ensure that people are well located to opportunities and amenities; and – Promote a sustainable environment. In addition to the above general purpose, it is also the intention of an SDF to provide the basis to inform the development of a coherent land-use management system. As the SDF provides a broad framework for land use planning, it also includes Land Use Management Guidelines that are to be used to guide the municipality in the management of land and to facilitate the land management process. The SDF thereby further informs development decisions and attempts to strengthen the framework in an attempt to boost investor confidence to facilitate both public and private spending. The SDF identifies a number of Nodes and Corridors in each of the local municipalities.
King Sabata Dalindyebo Local Municipality IDP (2016/17)	The main purpose of the IDP is to foster more appropriate service delivery by providing the framework for economic and social development within the municipality. In doing so it contributes towards eradicating the development legacy of the past, operationalises the notion of developmental local government and foster a culture of co-operative governance amongst the three spheres. **IDP Objectives** Integrated development planning is a process whereby municipalities prepare strategic development plans for a five-year period. IDPs are the main platform through which sustainable provision of service delivery could be achieved. They intend to promote co-ordination between local, provincial and national government. Once adopted by Council, these plans should inform planning, decision making, budgeting, land management, promotion of local economic development, and institutional transformation in a consultative systematic and strategic manner. The main objective of developing an IDP is the promotion of developmental local government, through the following: – Institutionalising performance management in order to ensure meaningful, effective and efficient delivery (monitoring, evaluation and review), speed up service delivery through making more effective use of scarce resources; – Enabling the alignment and direction of financial and institutional resources towards agreed policy objectives and programmes; and – Ensure alignment of local government activities with other spheres of development planning through the promotion of intergovernmental co-ordination.

APPLICABLE LEGISLATION AND POLICY	DESCRIPTION OF LEGISLATION
	The IDP also aims to: – Create a higher level of focus and thereby improve the strategic nature of the – document; – Align this strategic document with the limited financial and human resources; – Align the IDP with the activities of the municipality's departments and other social partners in other spheres of government; and – Align the IDP with the various sector and management plans of the municipality.

3 SCOPING & EIA PHASE SUMMARY

3.1 PROCEDURAL PROCESS

The application form was compiled and submitted to the DEA on 2**5 April 2018**.

The DEA reference number allocated to this application is **41100611**. This reference number will appear on all official correspondence with the authorities and the public regarding the Proposed Project.

The draft scoping report (DSR) was released for public review between **24 April 2018** and **28 May 2018**. Subsequently, the scoping report was finalised and submitted to the DEA on **8 June 2018** for their review and approval. The submission of the final scoping report was within 44 days of receipt of the application by the DEA as required by GNR 326. The DEA case officer site visit is yet to be conducted.

The approval of the FSR and the PoS for the EIA was received on **17 July 2018** and is included in **Appendix D**.

The draft EIAR was made available for public review between **10 August 2018** and **10 September 2018**. Comments from stakeholders were accepted up until **10 September 2018**, however, comments only came from the authorities. The submission of the final EIAR to the DEA must be within 106 days of the receipt of the acceptance of the FSR by the DEA as required by GNR 326. The submission of the final EIAR will be on **29 October 2018**.

3.2 AUTHORITY CONSULTATION

No pre-application meeting was held with the DEA in order to discuss the proposed project. The first interaction was on 25 April 2018 when the application form and DSR were submitted. The DEA sent an acknowledgement letter along with comments that were responded to in the FSR. In addition, WSP notified a number of commenting authorities of the Proposed Project via a notification letter as well as through the DSR, FSR and draft EIAR. These included:

- Department of Environmental Affairs Biodiversity Conservation Unit (BCU);
- Department of Water and Sanitation (DWS);
- Department of Agriculture, Forestry and Fisheries (DAFF);
- The South African Heritage Resource Agency (SAHRA);
- The Department of Transport (DoT);
- The Eastern Cape Parks and Tourism Agency (ECPTA);
- The Department of Economic Development, Environmental Affairs and Tourism (DEDEAT);
- The O.R. Tambo District Municipality; and
- The King Sabata Dalindyebo Local Municipality.

WSP received comments on the Scoping Phase from the DEA on **22 April 2018** for the DSR and on **18 July 2018** for the FSR. DEA comments regarding the draft EIAR were received on **14 September 2018**. The BCU sent their initial comments on **18 July 2018** following the FSR and on **16 August 2018**, requested for a site visit to be set up. A letter of comments following the draft EIAR was also received on **11 September 2018**. Following discussions with the main authorities involved, the site visit date was set for **17 September 2018**. The expected attendees were the representatives from the DEA, BCU, ECPTA, DEDEAT as well as the local and district municipalities. Following the site visit, the ECPTA sent their letter of comments on **15 October 2018**. The comments and responses are included within the comments and responses report (CRR) which is attached in **Appendix C-8**.

3.3 STAKEHOLDER CONSULTATION

Stakeholders were identified and will continue to be identified through several mechanisms. These include:

- Networking with local business owners, non-governmental agencies, community based organisations, and local council representatives;
- Field work in and around the project area;
- Advertising in the press:
  - The Daily Dispatch on 25 April 2018.
- Placement of community notices:
  - Site Boundary Fence;
  - Umtata High School;
  - Mthatha Library; and
  - King Sabata Dalindyebo Local Municipality.

All stakeholders identified to date have been registered on the project stakeholder database. The EAP endeavoured to ensure that individuals/organisations from referrals and networking were notified of the proposed project. Stakeholders were identified at the horizontal (geographical) and vertical extent (organisations level). A list of stakeholders captured in the project database is included in **Appendix C-1**.

All concerns, comments, viewpoints and questions (collectively referred to as 'issues') received to date have been documented and responded to in a CRR included in **Appendix C-8.** The following key issues were highlighted during the scoping phase:

- Ecological Resources; and
- Heritage Resources.

Specialist studies for Ecology and Heritage were conducted. The findings and recommendations from both studies have been incorporated in this EIAR.

Table 3-1 below shows details and proof of display of site notices used for stakeholder notification.

Table 3-1: Site Notice Locations

		PHOTOGRAPHS	
LOCATION	**CO-ORDINATE**	**ZOOMED IN**	**LANDSCAPE**
Site Boundary Fence	31°33'18.46"S, 28°40'12.85"E		

		PHOTOGRAPHS	
LOCATION	**CO-ORDINATE**	**ZOOMED IN**	**LANDSCAPE**
Umtata High School	31°35'30.48"S, 28°47'9.62"E		
Mthatha Library	31°35'20.36"S, 28°47'12.86"E		

		PHOTOGRAPHS	
LOCATION	**CO-ORDINATE**	**ZOOMED IN**	**LANDSCAPE**
King Sabata Dalindyebo Local Municipality	31°35'18.82"S, 28°47'16.20"E		

The site notice served to inform the occupiers of the land along with the newspaper advert and existing stakeholder database.

In accordance with GN. R 326 41(2)(c) of Chapter 6 an advert was placed in a newspaper, the Daily Dispatch on 25 April 2018 during the scoping phase. There are many local languages spoken in the area with English being is considered a universal language; therefore, the newspaper advert was published in English only. Proof of the advert publication is included as **Appendix C-3**.

Should the EAP identify an affected stakeholder, and be made aware of his/her existence by the ward councillor, efforts will be made to ensure his/her participation in the stakeholder engagement process [as required by Section 41(2) (e) of Chapter 6].

In addition to the minimum requirements outlined in GNR 326, the EAP undertook the following:

- Distribution of notification letters to the stakeholders via email and bulk sms (where contact data was available).

Any stakeholder who submitted a comment or conveyed interest in the project during the course of the process was automatically registered on the project specific stakeholder database. No comments were received form I&APs during review of the draft EIAR. Only the authorities commented during the draft EIR review period and these have been included in the Final EIR as part of the CRR in **Appendix C-8** and submitted to the competent authority.

4 EIA METHODOLOGY

The EIA process was initiated in accordance with Appendix 3 of GNR 326 pertaining to applications subject to an S&EIR process.

4.1 DETAILED ENVIRONMENTAL ASSESSMENT

4.1.1 SPECIALIST STUDIES

Table 4-1 provides a list of the Specialists studies that have been undertaken. The Specialist Declarations and Qualifications are included in **Appendix E-7**.

Table 4-1: Details of the Specialist Consultants

SPECIALIST STUDY	SPECIALIST COMPANY NAME	APPENDIX
Desktop Aquatic and Terrestrial Ecological Scoping Report	Eco-Pulse Environmental Consulting Services	**Appendix E-1**
Terrestrial Ecological Impact Assessment	Eco-Pulse Environmental Consulting Services	**Appendix E-2**
Wetland Habitat Impact Assessment	Eco-Pulse Environmental Consulting Services	**Appendix E-3**
Desktop Heritage Impact Assessment	Active Heritage	**Appendix E-4**
Phase 2 Heritage Impact Assessment	Active Heritage	**Appendix E-5**
Phase 1 Palaeontological Impact Assessment	Natura Viva	**Appendix E-6**

4.2 IMPACT ASSESSMENT METHODOLOGY

The S&EIR uses a methodological framework developed by WSP to meet the combined requirements of international best practice and NEMA, Environmental Impact Assessment Regulations, 2014, as amended (GN No. 326) (the “EIA Regulations”). As required by the EIA Regulations (2014) as amended, the determination and assessment of impacts will be based on the following criteria:

- Nature of the Impact;
- Significance of the Impact;
- Consequence of the Impact;
- Extent of the impact;
- Duration of the Impact;
- Probability if the impact;
- Degree to which the impact:
  - can be reversed;
  - may cause irreplaceable loss of resources; and
  - can be avoided, managed or mitigated.

Following international best practice, additional criteria have been included to determine the significant effects. These include the consideration of the following:

- Magnitude: to what extent environmental resources are going to be affected;
- Sensitivity of the resource or receptor (rated as high, medium and low) by considering the importance of the receiving environment (international, national, regional, district and local), rarity of the receiving environment, benefits or services provided by the environmental resources and perception of the resource or receptor); and
- Severity of the impact, measured by the importance of the consequences of change (high, medium, low, negligible) by considering inter alia magnitude, duration, intensity, likelihood, frequency and reversibility of the change.

It should be noted that the definitions given are for guidance only, and not all the definitions will apply to all of the environmental receptors and resources being assessed. Impact significance was assessed with and without mitigation measures in place.

4.2.1 METHODOLOGY

Impacts are assessed in terms of the following criteria:

a) The **nature**; a description of what causes the effect, what will be affected and how it will be affected.

Table 4-2: Nature or Type of Impact

NATURE OR TYPE OF IMPACT	DEFINITION
Beneficial / Positive	An impact that is considered to represent an improvement on the baseline or introduces a positive change.
Adverse / Negative	An impact that is considered to represent an adverse change from the baseline, or introduces a new undesirable factor.
Direct	Impacts that arise directly from activities that form an integral part of the Project (e.g. new infrastructure).
Indirect	Impacts that arise indirectly from activities not explicitly forming part of the Project (e.g. noise changes due to changes in road or rail traffic resulting from the operation of Project).
Secondary	Secondary or induced impacts caused by a change in the Project environment (e.g. employment opportunities created by the supply chain requirements).
Cumulative	Impacts are those impacts arising from the combination of multiple impacts from existing projects, the Project and/or future projects.

b) The **physical extent**.

Table 4-3: Physical Extent Rating of Impact

SCORE	DESCRIPTION
1	the impact will be limited to the site;
2	the impact will be limited to the local area;
3	the impact will be limited to the region;
4	the impact will be national; or
5	the impact will be international;

c) The **duration**, wherein it is indicated whether the lifetime of the impact will be:

Table 4-4: Duration Rating of Impact

SCORE	DESCRIPTION
1	of a very short duration (0 to 1 years)
2	of a short duration (2 to 5 years)
3	medium term (5–15 years)
4	long term (> 15 years)
5	permanent

d) **Reversibility:** An impact is either reversible or irreversible. A scale of the level of reversibility indicates how long before impacts on receptors cease to be evident.

SCORE	DESCRIPTION
1	The impact is immediately reversible.
3	The impact is reversible within 2 years after the cause or stress is removed; or
5	The activity will lead to an impact that is in all practical terms permanent.

e) The **magnitude** of impact on ecological processes, quantified on a scale from 0-5, where a score is assigned.

Table 4-5: Magnitude Rating of Impact

SCORE	DESCRIPTION
0	small and will have no effect on the environment.
1	minor and will not result in an impact on processes.
2	low and will cause a slight impact on processes.
3	moderate and will result in processes continuing but in a modified way.
4	high (processes are altered to the extent that they temporarily cease).
5	very high and results in complete destruction of patterns and permanent cessation of processes.

f) The **probability** of occurrence, which describes the likelihood of the impact actually occurring. Probability is estimated on a scale where:

Table 4-6: Probability Rating of Impact

SCORE	DESCRIPTION
1	very improbable (probably will not happen.
2	improbable (some possibility, but low likelihood).
3	probable (distinct possibility).
4	highly probable (most likely).
5	definite (impact will occur regardless of any prevention measures).

g) The **significance**, which is determined through a synthesis of the characteristics described above (refer formula below) and can be assessed as low, medium or high;

h) The **status**, which is described as either positive, negative or neutral;

i) The degree to which the impact can be **reversed**;

j) The degree to which the impact may cause **irreplaceable loss** of resources; and

k) The degree to which the impact can be **mitigated**.

The significance is determined by combining the above criteria in the following formula:

Significance = (Extent + Duration + Reversibility + Magnitude) x Probability

$$[S = (E + D + R + M) \times P]$$

Where the symbols are as follows:

SYMBOL	CRITERIA	DESCRIPTION
S	Significance Weighting	
E	Extent	Refer to **Table 4-3**
D	Duration	Refer to **Table 4-4**
M	Magnitude	Refer to **Table 4-5**
P	Probability	Refer to **Table 4-6**

The significance weightings for each potential impact are as follows:

OVERALL SCORE	SIGNIFICANCE RATING (NEGATIVE)	SIGNIFICANCE RATING (POSITIVE)	DESCRIPTION
< 30 points	**Low**	**Low**	where this impact would not have a direct influence on the decision to develop in the area
31 - 60 points	**Medium**	**Medium**	where the impact could influence the decision to develop in the area unless it is effectively mitigated
> 60 points	**High**	**High**	where the impact must have an influence on the decision process to develop in the area

4.2.2 MITIGATIONS

The impact significance without mitigation measures will be assessed with the design controls in place. Impacts without mitigation measures in place are not representative of the proposed development's actual extent of impact, and are included to facilitate understanding of how and why mitigation measures were identified. The residual impact is what remains following the application of mitigation and management measures, and is thus the final level of impact associated with the development. Residual impacts also serve as the focus of management and monitoring activities during Project implementation to verify that actual impacts are the same as those predicted in this EIAR.

The mitigation measures chosen are based on the mitigation sequence/hierarchy which allows for consideration of five (5) different levels, which include avoid/prevent, minimise, rehabilitate/restore, offset and no-go in that order. The idea is that when project impacts are considered, the first option should be to avoid or prevent these from occurring in the first place if possible, however, this is not always feasible. In the event that this is not

attainable, the impacts can be allowed, however they must be minimised as far as possible by considering the best location or technology for example so that little damage is encountered. In the event that impacts are unavoidable, the next goal is to rehabilitate or restore the areas impacted back to their original form after project completion. Offsets are then considered if all the other measures described above fail in order to remedy high negative impacts. If no offsets can be done on a potential impact which sees the full destruction of any ecosystem for example, the no-go option is considered so that another activity or location is considered in place of the original plan.

The mitigation sequence/hierarchy is shown in **Figure 4-1** below.

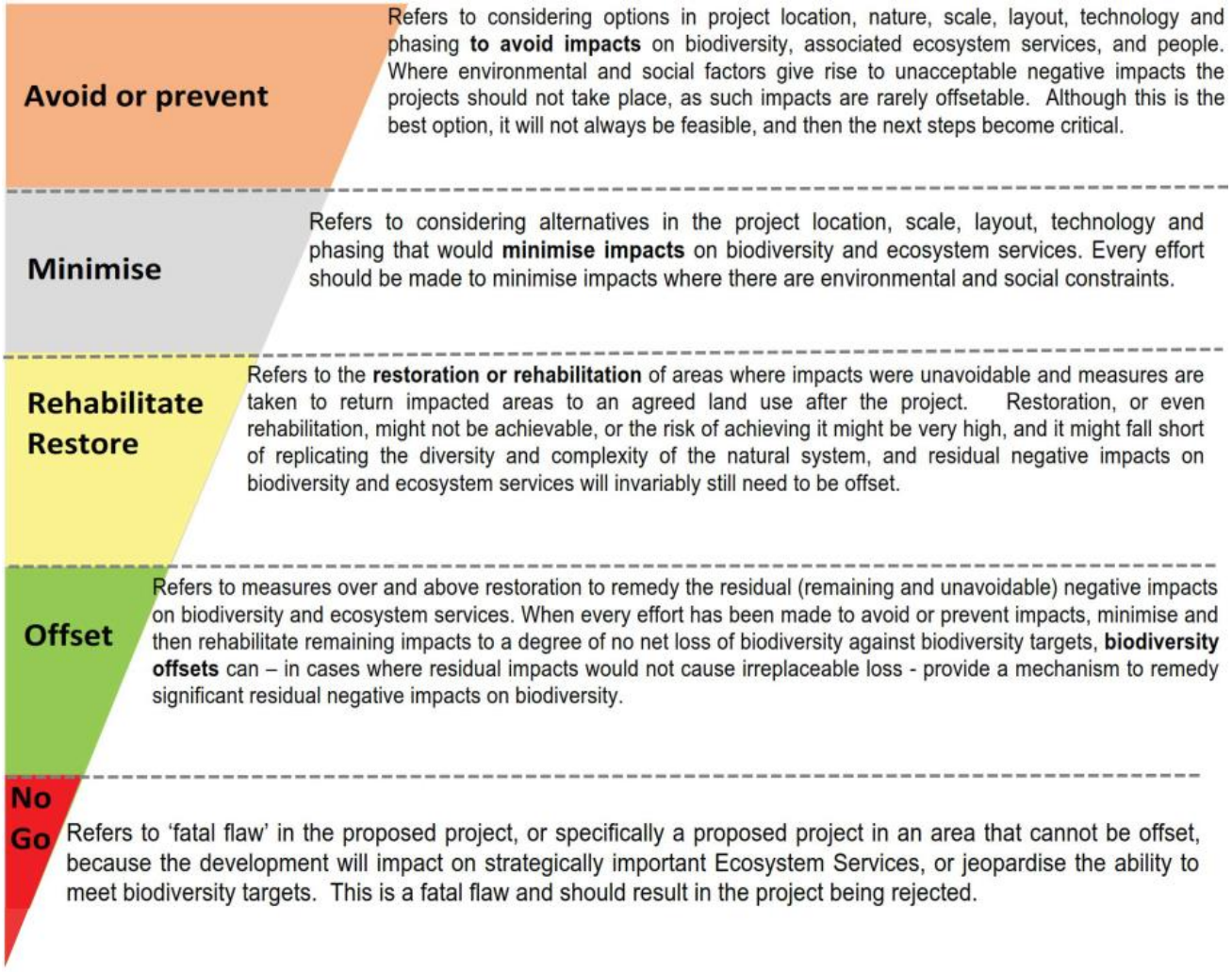

Figure 4-1: Mitigation Sequence/Hierarchy

4.3 STAKEHOLDER ENGAGEMENT

In accordance with the NEMA, GNR 326, Chapter 6, the following activities have taken place or are proposed to take place within the EIAR review period or beyond.

4.3.1 I&AP CONSULTATION

The public participation process must include consultation with (1) the competent authority, (2) every state department that administers a law relating to the matter, (3) all organs of state which have jurisdiction in respect of the activity to which the application relates, (4) all potential, or, where relevant, registered interested and affected parties. In order to satisfy this requirement, the EAP will undertake the following consultations:

- Competent Authority - DEA is the competent authority related to this application although the project is located in the EC since the applicant is a parastatal. The EAP undertakes to engage in on-going communications with the DEA (preferably directly with the allocated case officer).
- All organs of state which have jurisdiction in respect of the activity to which the application relates:
  - National Level: The Department of Agriculture, Forestry and Fisheries (DAFF) was added to the commenting authorities for the FSR review period.
  - National Level: The DEA Biodiversity Conservation Unit was added to the commenting authorities following a request from the DEA Integrated Environmental Authorisations section for the FSR review period.
  - National Level: The South African Heritage Resources Agency will be added to the commenting authorities in for the FSR review period;
  - Provincial Level: Given that the activity is located within the EC Province, the Department of Economic Development, Environmental Affairs and Tourism (DEDEAT) will form a commenting authority during the process.
  - Local Level: (OR Tambo District Municipality and King Sabata Dalindyebo Local Municipality) The KSD LM is the local authority governing the proposed project area. The Municipality is responsible for managing the various wards which make up the proposed project area and surrounds. The project area is in Ward 13. The ward councillor will be a primary target for the proposed project in an effort to communicate the project to as greater stakeholder database as possible, especially considering the local neighbours will be the most affected stakeholder grouping.
- All potentially registered I&APs – The property where the project is to take place is owned by the local community and the CDC provided the EAP with a stakeholder database of all the relevant personnel. The database will be updated following any stakeholder request to be registered. A search for the title deeds will be done on the WinDeed website to confirm landowners in the area. The use of site notices, Notification Letters, email and sms will be used as methods in which to reach potentially interested and affected parties.

The latest stakeholder database is included within this report as **Appendix C-1**.

All registered I&APs, which have a direct effect on the proposed project or are directly or indirectly impacted by the proposed project, have the right to lodge a comment/question on the project (until such time that the appeals process comes to a close).

4.3.2 NOTIFICATION OF POTENTIAL I&APS

In accordance with GNR 326 Section 41(2)(a-b) all potential I&APs have been notified of the project through the site notices and press notices placed during the Scoping Phase, refer to section 3.3 of this EIAR for further details.

Should the EAP identify an affected stakeholder, and be made aware of his/her existence by the ward councillor, efforts will be made to ensure his/her participation in the stakeholder engagement process [as required by Section 41(2) (e) of Chapter 6].

Any stakeholder who submitted a comment along the course of the process was automatically registered on the project specific stakeholder database.

All stakeholder comments that have been received to date have been incorporated. All the comments received during the Scoping review period were included in the final Scoping Report in the form of a CRR as an appendix and submitted to the competent authority.

4.3.3 PUBLIC REVIEW OF DRAFT EIAR

The draft EIAR was be placed on public review for a period of 30 days from **10 August 2018** to **10 September 2018**, at the Mthatha Library and the Mthatha High School. The report was also been made available on the WSP website (https://www.wsp.com/en-ZA/services/public-documents) for the same duration. The website report was not accompanied by appendices due to report size restrictions, however, they were available on request from the EAP.

All registered stakeholders and authorising/commenting state departments were notified of the public review period as well as the locations of the draft EIAR via email and bulk sms.

4.3.4 COMMENT AND RESPONSE REPORT

All concerns, comments, viewpoints and questions (collectively referred to as 'issues') raised during the draft EIAR review period have been documented and responded to adequately in a CRR included as **Appendix C-8** in this final EIAR. The CRR records the following:

- List of all issues raised;
- Record of who raised the issues;
- Record of where the issues were raised;
- Record of the date on which the issue was raised; and
- Response to the issues.

4.3.5 SUBMISSION AND DECISION-MAKING

After the draft EIAR public review period ends, the DEA will be allocated 107 days to review the final EIAR. The DEA must within this specified timeframe, either grant an integrated environmental authorisation in respect of all or part of the activity applied for or refuse the environmental authorisation.

The final EIAR will be submitted on **29 October 2018** with a decision expected to be made on or before **06 March 2019**.

5 NEED AND JUSTIFICATION

The SEZ will open opportunities for job creation during construction and operational phases. Given the existing limited economic activities in the Wild Coast region, it anticipated that at least 60% of the required plant and machine operators can be sourced locally and they would already be trained and have gained experience. However, a likely balance of 40% of the required plant and machine operators will need to be trained. Typically, it takes three months to train and license an operator and, in the case of overhead cranes, heavy equipment and interlink trucks, it will take approximately six months. However, what ameliorates the situation in the Wild Coast region, and even gives an advantage, is that it is an area where there are many retrenched mineworkers and many of these workers have plant and machine operating skills developed to a high level.

It is expected that the total economy-wide value-add for the EC Province will increase by R826.4 million per annum, resulting from the development of the WCSEZ. In summary, the cumulative contribution of the proposed WCSEZ to the EC economy is expected to be R28.4 billion over a period of 30 years.

Other strengths of the proposed project include:

- Availability of primary sector for agro-processing industry in the Wild Coast region;
- Land available for development;
- Existing Airport infrastructure for logistics;
- Equidistance to local high growth markets such as Durban in the North Easterly direction and Buffalo City/Nelson Mandela Bay in the South Westerly direction;
- Excellent ease of doing business relative to other African countries;
- Strong industrial potential and logistics relative to other underdeveloped areas;
- Availability of potential labour for semi-skilled and unskilled Human Capital;
- Relatively cheap lifestyle compared to the rest of the country;
- Fulfils the goals of the KSDLM spatial development framework (SDF) which seeks to access land around the towns and settlements for formalised economic development including retail, office and commercial uses;
- Closer to the main roads, R61 and N2 for logistics linkages; and
- There is political will in the Province to foster the development of the WCSEZ.

Furthermore, the opportunities presented created by the project include:

- Develop WCSEZ into a state of the art zone, supplying larger markets within the agro-processing, Services and Tourism Sectors;
- Service a highly lucrative market through the existing infrastructure base in South Africa;
- Profitability and viability of projects and WCSEZ;
- Stimulate regional and national economic activity;
- Increase local employment through skills development and skills transfer initiatives;
- Strengthen South Africa's industrial capabilities;
- Improve economic outlook of the EC Province and the country; and
- Create employment and business opportunities for citizens of the WC Region and EC generally.

In addition to the reasons above, it must also be noted that the O.R. Tambo District Municipality Council has endorsed the Wild Coast SEZ a number times in its Strategic Planning and IDPs. It currently has a draft District Development Plan Vision 2030 that again integrates the SEZ.

6 PROJECT DESCRIPTION

6.1 LOCATION OF THE PROPOSED DEVELOPMENT

The criteria for selecting a suitable location for the SEZ are based on those characteristics required for the development of a commercial node such as an Agri-park, SEZ and other sectoral nodes. The main characteristics required are as follows:

a) Proximity to residential areas, being an industrial development node a radius of five to ten kilometres was used;

b) Demographics should favour a skilled to semi-skilled and employable age population of between 18 and 55 years old;

c) Potential economic opportunities;

d) Accessibility to various modes of transport is recommended, i.e. rail, port, aerodrome and road for the transportation of raw materials and finished goods to markets;

e) Quality bulk infrastructure to support the identified economic cluster. Bulk infrastructure includes high voltage (HV) electricity, water, sewerage, roads and storm water management and Information and Communications Technology (ICT);

f) Favourable environmental conditions, not within designated biodiversity areas and with accept space envelop;

g) Relatively flat, with good drainage and geologically sound;

h) Physical land requirement of approximately 100-500 ha, preferably Municipal owned and zoned for industrial purposes; and

i) Alignment to current development strategies.

The pre-feasibility study identified the area around the Mthatha Airport as meeting the above criteria. However, land ownership in this area is very sensitive and the traditional authorities (chiefs) believe that they own the land. The traditional structures and local authorities have been identified and negotiations to secure the land for Phase 1 of the WCSEZ have progressed as far as achieving an agreement. There already is a community structure elected to deal with land issues and future developments in this area.

The land earmarked for Phase 1 of the WCSEZ is deemed to be within the Mthatha Airport precinct and was therefore believed to be under the ownership of government. While this may be true to some extent, in that the Minister of the National Department of Transport (DoT) is deemed to have custodianship of all Airport land, in actual fact the land has not been vested in the National Department of Public Works (DPW) because it was never surveyed and, as such, has no Surveyor General Diagrams. Consequently, while in practice the EC DoT is undertaking developments on the land, vesting from DPW is still outstanding.

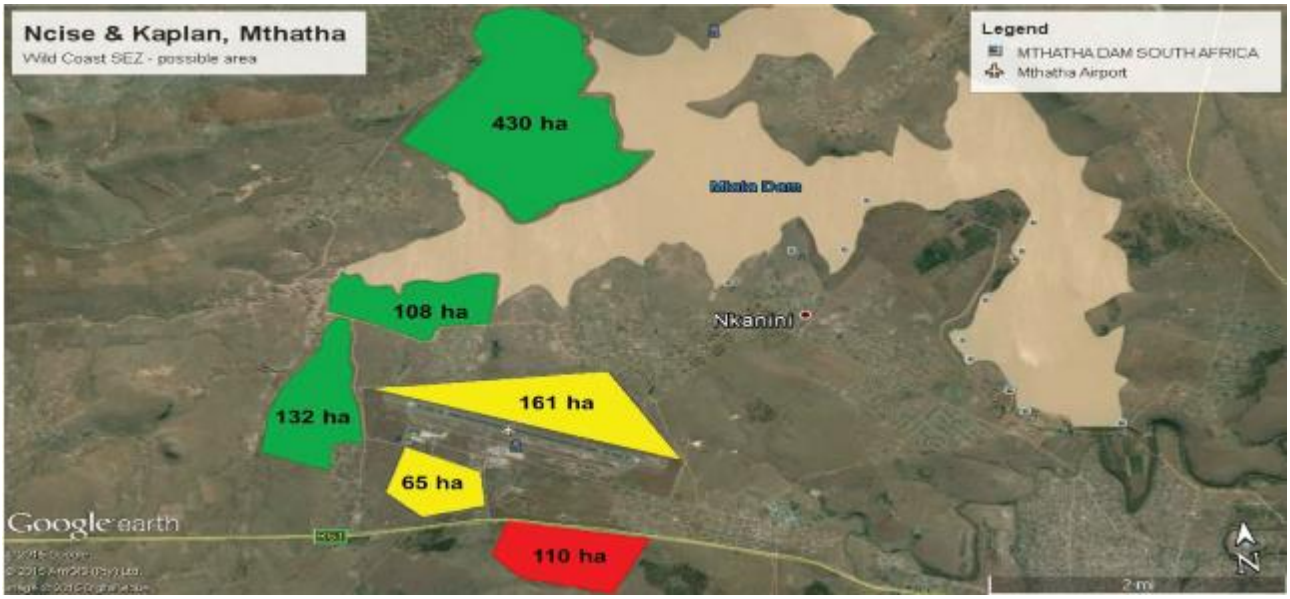

Figure 6-1: Phase 1 Area in Yellow

The reason for the land not having Surveyor General Diagrams is apparently that there are “quit rental” issues outstanding and, until these are sorted out, it is likely to be difficult to obtain such diagrams.

A further complication is that the claim for restitution of land rights, logged for Mthatha Dam and Airport and the Lutshaba Nature Reserve by the Kwa-Link Ncise Community, has been accepted by the Commission on Restitution of Land Rights and the claim was subsequently gazette as shown in **Figure 6-2**.

38803 GOVERNMENT GAZETTE, 22 MAY 2015

NOTICE 452 OF 2015

GENERAL NOTICE IN TERMS OF THE RESTITUTION OF LAND RIGHTS ACT, 1894
(ACT NO.22 OF 1994)

Notice is hereby given in terms of section 11 (1) of the Restitution of Land Rights Act, 1994 (Act No, 22 of 1994 as amended) that a claim for restitution of land rights on:

REFERENCE	612/2/D/963/010/12
CLAIMANT	Kwili Caleb Gxaxisa (Upper Ncise Community Claim)
PROPERTY	Mthatha Airport
DISTRICT	Mthathal OR Tambo
MEASURING	428 hecataras
DEED OF TRANSFER	
DATE SUBMITTED	07/01/1998
BONDHOLDER	
CURRENT OWNER	Department of Transport

Has been submitted to the Regional Land Claims Commissioner and that the Commission on Restitution of Land Rights will investigate the claim in terms of the provisions of the Act ir course. Any person who has an interest in the above-mentioned land is hereby invited to submit, within sixty (60) days from the publication of this notice; any comments/information t

The Regional Land Claims Commissioner
Department of Rural Development and Land Reform
Land Restitution Support Office: Eastern Cape
PO Box 1375
East London
5200

Mr. LH. Maphuthe
Regional Land Claims Commissioner

Figure 6-2: Government gazette extract

The proposed SEZ will run through the land parcel outlined in **Table 6-1** below based on the property description and cadastral information provided in the map (including points) attached as **Appendix B**.

Table 6-1: Coordinates of the Phase 1 North Site

POINTS	LATITUDE	LONGITUDE
A	31°32'20.74"S	28°39'26.82"E
B	31°32'20.94"S	28°40'54.38"E
C	31°32'22.39"S	28°40'57.29"E
D	31°32'21.99"S	28°40'59.42"E
E	31°32'21.48"S	28°40'59.68"E
F	31°32'20.91"S	28°41'00.58"E
G	31°32'20.99"S	28°41'10.29"E
H	31°33'04.73"S	28°41'35.32"E

Table 6-2: Coordinates of the Phase 1 South Site

POINTS	LATITUDE	LONGITUDE
J	31°32'49.08"S	28°39'41.64"E
K	31°32'51.99"S	28°39'49.78"E
L	31°32'53.54"S	28°39'52.74"E
M	31°33'01.42"S	28°40'07.57"E
N	31°33'03.65"S	28°40'12.65"E
P	31°33'18.67"S	28°40'12.72"E
Q	31°33'21.53"S	28°39'45.51"E
R	31°33'09.09"S	28°39'31.65"E

The extent of this particular land claim is 428 ha covering the entire Airport Precinct including the runway. The Mthatha Airport land claim extent is shown in **Figure 6-3** below.

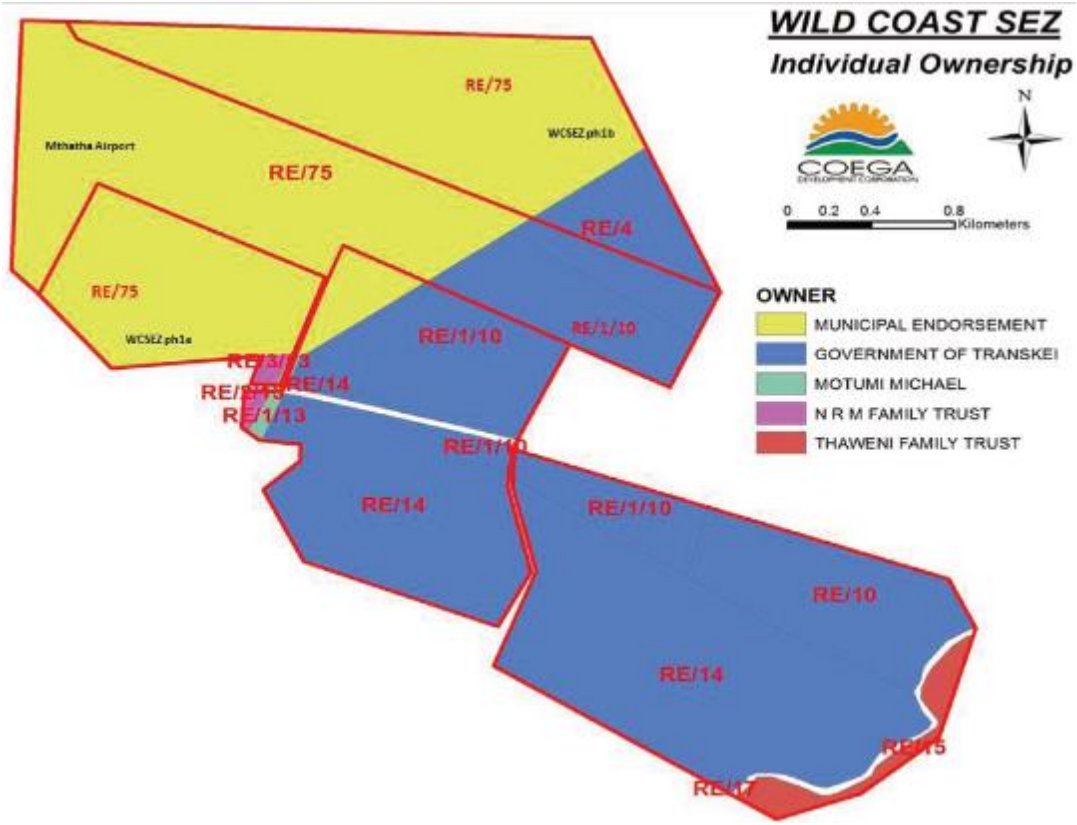

Figure 6-3: Mthatha Airport land claim extent

The Ncisa and Fairfield community land claim extent is shown in **Figure 6-4** below.

Figure 6-4: Ncisa and Fairfield land claim

The implication is that the Regional Land Claims Commissioner for the EC is in the process of finalising the claim, having received no objections/comments following a 60 day public process that has now elapsed. Upon approval of this claim by the Minister of Rural Development and Land Reform, the land will be transferred to a holding entity established as a Communal Property Association in terms of the Communal Property Association Act (Act No.28 of 1996). This means that, subsequent to the transfer process, negotiations must be held with the community to discuss community benefits accruing from the use of their land.

While it is not inconceivable that the land cannot be returned to the community because of its strategic nature and the amount of investment that has gone into land improvements, the reality is that, whatever the outcome, the process now being followed will undoubtedly delay obtaining ownership of or control over the land which is essential for the designation of the WCSEZ on this site.

The WCSEZ Project Management Office (PMO) established a working committee that met on 26 August 2015 and also on 10 September 2015, to find an expedient way of dealing with the land claim. Furthermore, the lack of integration of the various plans for the airport site was becoming a risk, as a common approach needs to be forged to integrate these various plans being developed for the airport site by the EC DoT, the WCSEZ and the ORTDM. The following resolutions were taken at the last meeting:

i. The Surveyor General and EC (DoT) to map out the extent of the aviation related site as well as the non-aviation extent considering the noise contour zones. This is with a view to returning the non-aviation land extent to the community for their negotiation with potential developers;

ii. The exhumation of burial sites and erection of a monument must be expedited;

iii. Establishment of underlying “quit rent” agreements and subsequent survey of the Airport land;

iv. Urgent community consultations around proposed projects on the Airport land and discussion of possible benefits’ models; and

v. Urgently report to the EC Provincial Cabinet Executive Committee on alternatives including the relocation to state land or re-packaging of the Project as a Sector Development Zone (Agro-industrial Park) or under another project such as the emerging Agri-park Cluster project.

6.2 PROPOSED PROJECT DEVELOPMENT ACTIVITIES

The purpose of this final EIAR focuses on the clearing of the land as well as the construction of required services and infrastructure to serve the SEZ when it is operational.

6.2.1 INFRASTRUCTURE FOR SEZ PHASE 1

It is a common cause that coherent planning, the provision of infrastructure and the delivery of municipal services can enhance, or prevent, the delivery of the WCSEZ in the Mthatha area, where Phase 1 will be only the initial development. Infrastructure development and associated utilities in the WCSEZ will be done mainly in response to the needs and requirements of investors from the agro-processing sector. In this section, infrastructure includes physical water supply, waste water collection, electricity supply, roads, solid waste disposal and ICT.

The current proposal is to situate the WCSEZ in the vicinity of the existing Mthatha Airport. Mthatha Airport is situated 15 km west of the city, some 200 m off the R61. The airport is therefore on the outskirts of Mthatha and is surrounded by Mthatha Dam and several rural villages.

Mthatha Airport had been receiving little attention until the 2010 Soccer World Cup and that major event was the catalysis for the extension and upgrading work. This was done very much as a one-off development and there was not much consideration of other development work in the area.

POTABLE, SEWER AND STORM WATER PIPELINES

The project will need to provide internal services to future tenants in the form of potable water, sewer and storm water reticulation. This will entail the establishment of potable water, sewer and storm water pipelines within the WCSEZ to service the tenants. The tenant individual connections to tie into the potable, sewer and storm water

pipelines will be determined when the individual specific activities are applied for as it will be based on the individual facility designs.

This will entail the establishment of approximately 7 000 m of potable water and 12 000 m of stormwater pipelines within the project area. Furthermore, approximately 7 000 m of sewer pipelines are expected to be developed within the project area. It must be noted that the design stage of these pipelines has not been reached yet and as such, the worst case design scenario of triggering the 0.36 m internal diameter and 120 l/s peak throughput thresholds have been considered for this activity.

ACCESS ROADS

The project intends to provide access roads to be used by the future tenants of the WCSEZ. The internal roads within the WCSEZ are anticipated to be wider than 8 m. These will be developed following the clearance of the WCSEZ and will be designed to fit in with the proposed power lines, pipelines for potable water, sewer lines and storm water lines.

A 2 200 m road will be constructed on the south portion of the project site. Approximately 800 m of this road will be a 40 m reserve road and 1 300 m will be a 20 m reserve road. Internal roads of approximately 9 000 meters on the north portion of the project site will be developed and these have a reserve of 6 m. Please note that the design stage of the roads has not been reached yet and as such, the worst case design scenario of exceeding the 4 meter width threshold has been considered for this activity.

WCSEZ SUPPORT INFRASTRUCTURE

The site will require support infrastructure in the form potable water reservoirs and stormwater attenuation dams. The reservoirs will purely serve as temporary storage areas for water supplied in order to serve the requirements of the WCSEZ. It must be noted that the design stage of these structures has not been reached yet and as such, the worst case design scenario of exceeding the 100 square metre threshold has been considered for the construction of each of the four stormwater attenuation ponds and for each of the proposed three reservoirs.

ELECTRICITY SUPPLY

The electrical supply to the airport is provided by Eskom and not the KSDLM. That supply is at 22 kV and was planned solely to serve the airport. However, such a supply can be considered a fairly strong supply, which ultimately could support a demand of around 15/20 MW and hence accommodate Phase 1 of the WCSEZ. The airport is 10 km away from the nearest existing Municipal electrical infrastructure, so it would be a challenge for the Municipality to extend the electrical infrastructure to the airport. Also, the existing Municipal electrical infrastructure is close to maximum demand. It is therefore expected that any further expansion of the electricity service would remain the responsibility of Eskom. There are no current problems with the maintenance of the Eskom electrical supply.

The KSDLM would prefer to be the electricity service provider to the WCSEZ but this requires mutual agreement by the parties. There is an Eskom 132 kV line close to the location of the WCSEZ and that line should have sufficient capacity to service the further Phases of the WCSEZ but note the comment in the previous sentence. Seven electrical substations are proposed to be constructed to support the requirements of the project site when it is up and running.

The concept plan is showing the roads, pipelines and electrical supply lines is indicated in **Figure 6-6** and **Figure 6-6** below.

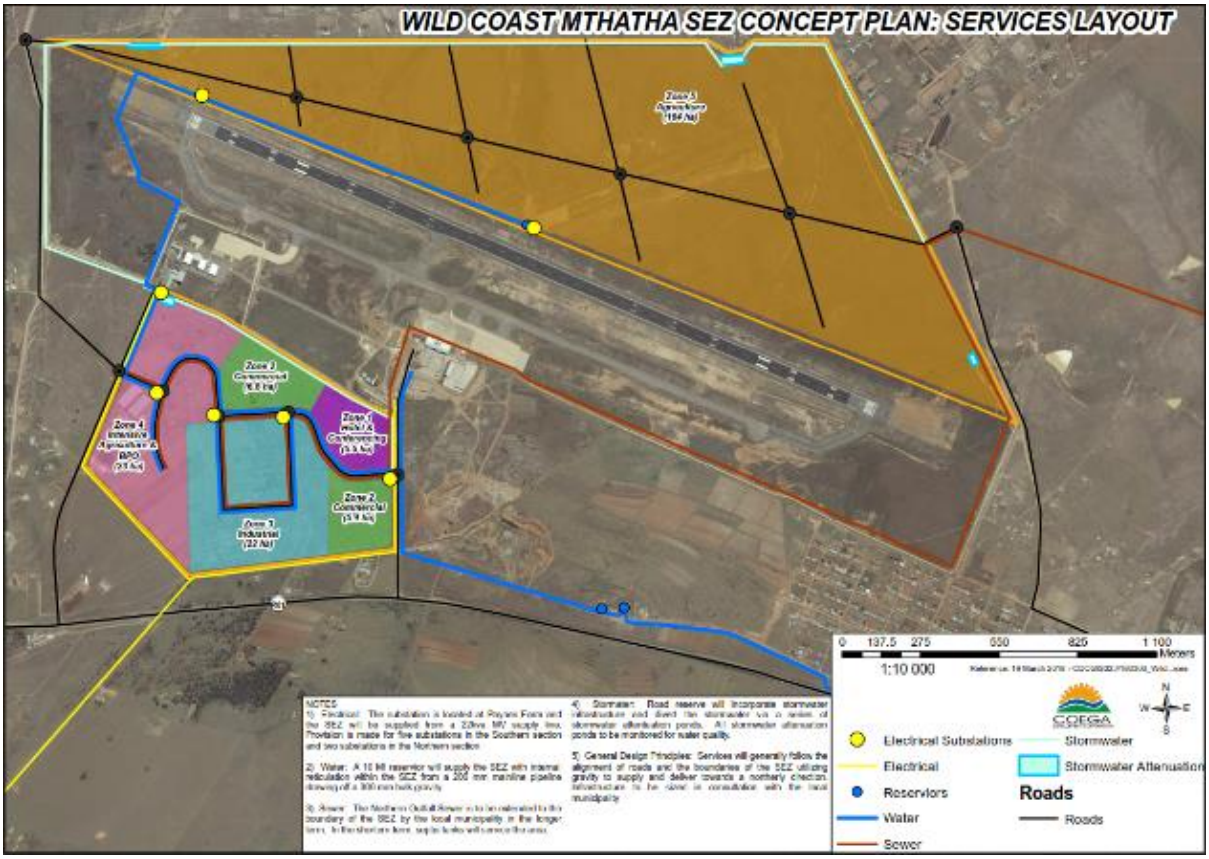

Figure 6-5: Original Services Layout Map

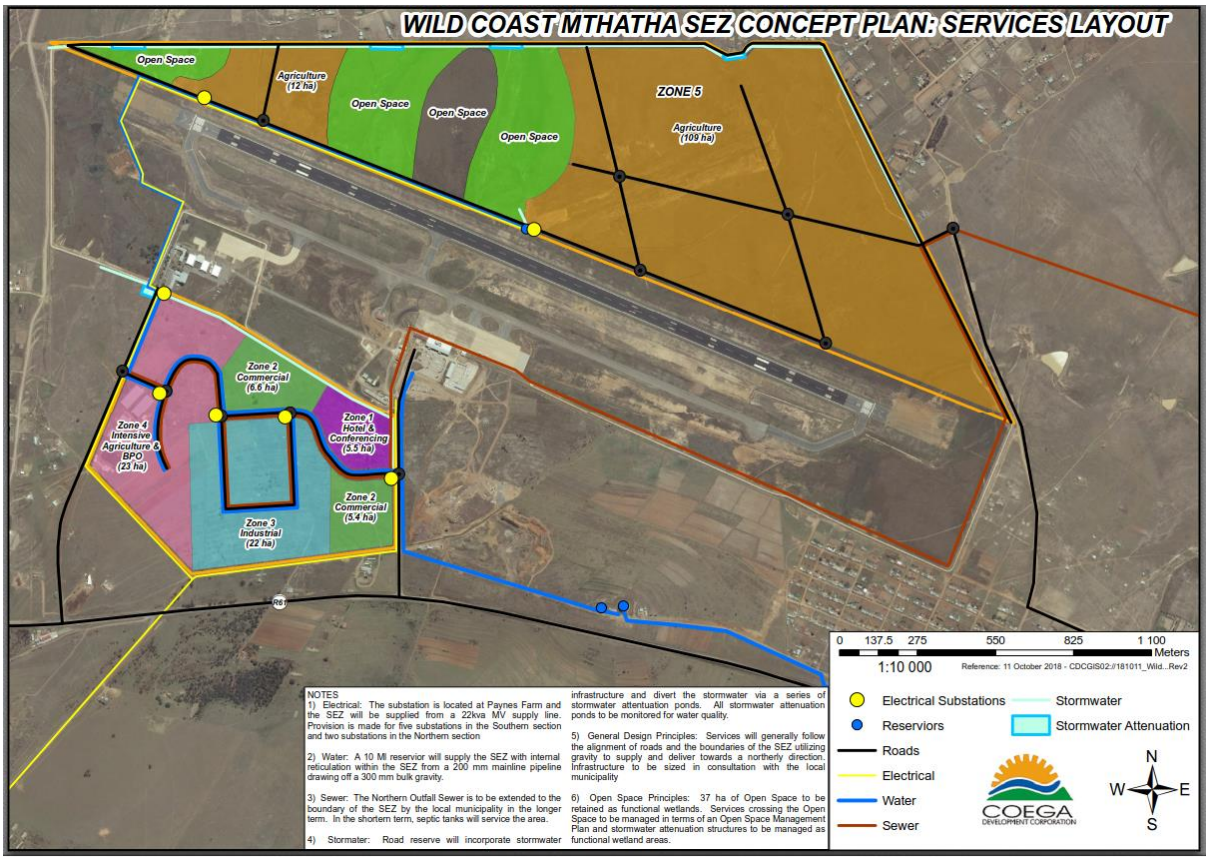

Figure 6-6: Final Services Layout Map

6.2.2 PROPOSED FACILITIES IN PHASE 1

The concept plan for Phase 1 is an agro-processing hub adjacent to Mthatha Airport. The proposed initial (Phase 1) land take for the WCSEZ is 226 ha, with approximately 143 ha allocated for the 14 types of facilities identified (110 ha) plus further land (32 ha) required for roads, servitudes for municipal services and open spaces. The existing infrastructure is shown in **Figure 6-7** below.

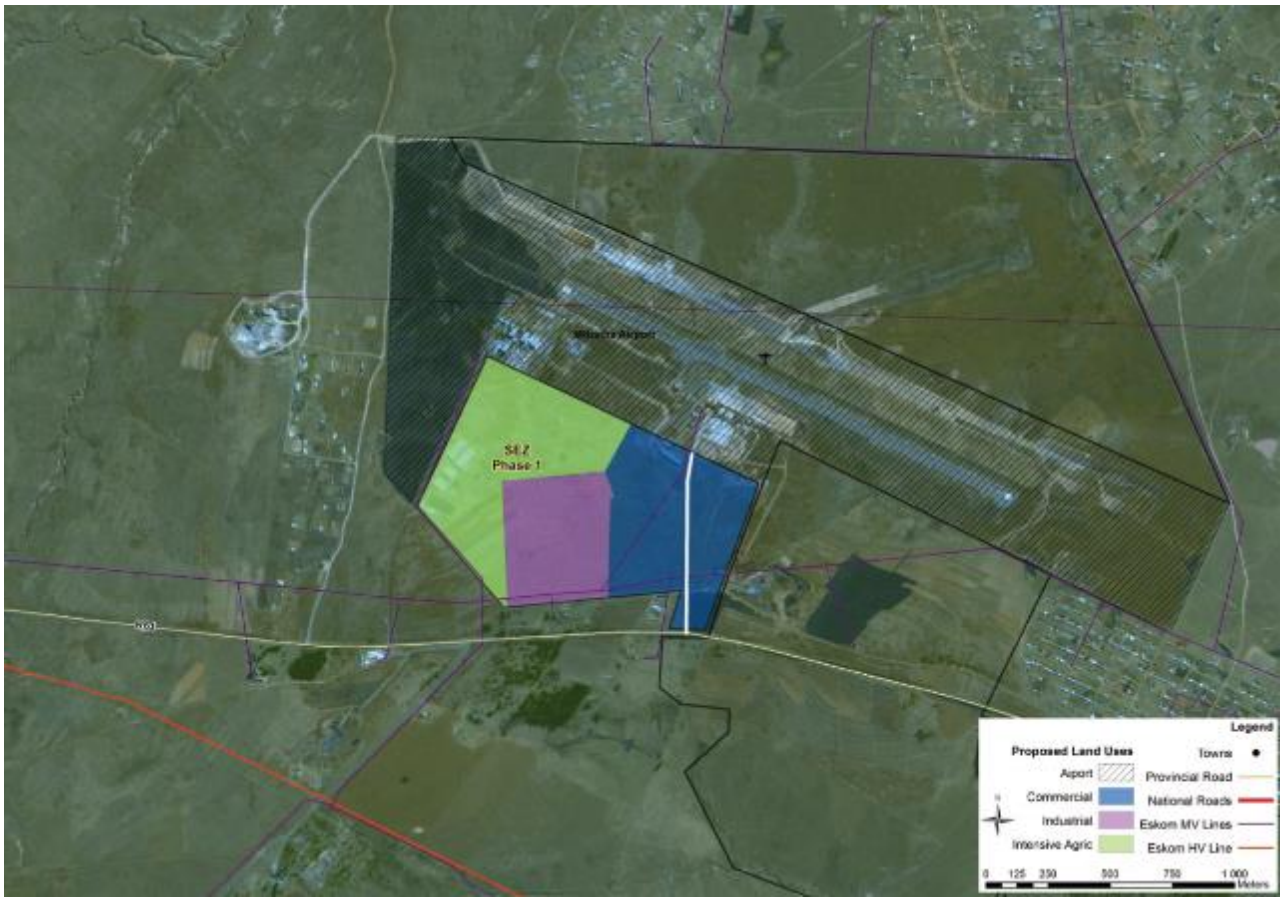

Figure 6-7: Existing infrastructure

An investigation was carried out by Aurecon on the ground as well as through interviews and discussions with local municipal infrastructure officials, the Municipality's planners and Eskom. The current state of the existing infrastructure would not be adequate for the proper development of the WCSEZ in the Airport's environs. However, the O.R. Tambo District Municipality (ORTDM), King Sabata Dalindyebo Local Municipality (KSDLM) and the South African National Roads Agency Limited (SANRAL) have plans to upgrade services in the Airport area.

6.3 BASIC PROCESS DESCRIPTION

The purpose of this final EIAR is to support the establishment and clearance of the WCSEZ but not aimed at any specific individual activity that will be conducted on the WCSEZ as well as the construction of access roads, power lines, and construction of potable water, sewer and storm water pipelines.

The entire WCSEZ development will be limited to 500 ha of mixed development precinct that will be developed in two phases. The first phase (226 ha) will comprise sector development industrial cluster that will include a hotel facility aimed at supporting both the agriculture sector and later for tourism. The development of a hotel will be for the commercial sector and not for the DTI's account.

The remainder of the development will comprise of mixed development of industrial platforms, accommodation and commercial platforms and will mainly be financed by private sector.

The first phase will potentially comprise the following:

- Fourteen (14) sector development projects for Phase 1 mainly in the agro-processing sector. These will include an innovation platform to house SMME agro-processors as well as research and development. The 14 priority projects include:
  - A tunnel/hydroponic farming project twenty hectares in extent;
  - A vegetable processing and packaging facility three hectares in extent;
  - A fresh water fish processing and packaging facility three hectares in extent;
  - A meat processing facility three hectares in extent;
  - Cold storage facilities suitable for meat, vegetables and fruit eight hectares in extent;
  - A fruit processing and packaging facility three hectares in extent;
  - An essential oil processing facility three hectares in extent;
  - A logistics and distribution facility two hectares in extent;
  - Maize storage facilities and silos ten hectares in extent;
  - A maize milling facility five hectares in extent; (this will take into consideration existing mills in the area);
  - A dairy processing facility with warehousing seven hectares in extent;
  - A wool sourcing (inclusive of sorting and classing) facility five hectares in extent;
  - A shared administrative and services facility two hectares in extent, and;
  - A multi-user agro-processing incubator aimed at smaller and seasonal producers four hectares in extent with innovation and research facilities for the development of new products.
- A construction period of twelve (12) years, 2018 – 2030 is proposed for Phase 1 of the WCSEZ;
- The WCSEZ is estimated to create about 3 313 jobs during construction and 1 840 operational jobs, which will be people working in the SEZ precinct. The total economy wide, direct, indirect and induced jobs are estimated at 12 626;
- Land around the Mthatha Airport of approximately 226 ha (gross) has been identified for Phase 1 of the WCSEZ; and
- The Department of Economic Development, Environmental Affairs and Tourism (DEDEAT) is anticipated to be the owner (shareholder) of the SEZ Entity of Phase 1.

The value proposition of the WCSEZ is to provide a competitive and highly efficient cluster that positions itself as the leading location for agro-processing, and business services activities within South Africa, in response to investor demand. This value proposition will be achieved through active investment promotion in the targeted sectors and the construction of bulk enabling infrastructure to serve the WCSEZ. Investment promotion will be complemented by ensuring an ease of doing business in the WCSEZ through the provision of one-stop-shop services, incentives, innovation platform, a competitive and transparent market environment, and timeous and efficient responses to investors' market requirements. The Wild Coast is an ideal location for the development of a SEZ because of the extent of land available in close proximity to Mthatha Airport and national roads. The Wild Coast Region is also competitively located between high growth markets such as Durban in a North Easterly direction and Buffalo City/Nelson Mandela Bay in a South Westerly direction.

The SEZ Operator is required to ensure that investors locating in the Zone are commercially viable, thus providing a sustained income for the WCSEZ. The EC DEDEAT, in partnership with the DTI, mandated the PMO of the CDC to assist in the development of a feasibility study and business plan for the proposed WCSEZ.

The final product of the project is shown in the concept plan in **Figure 6-8** and **Figure 6-9** below.

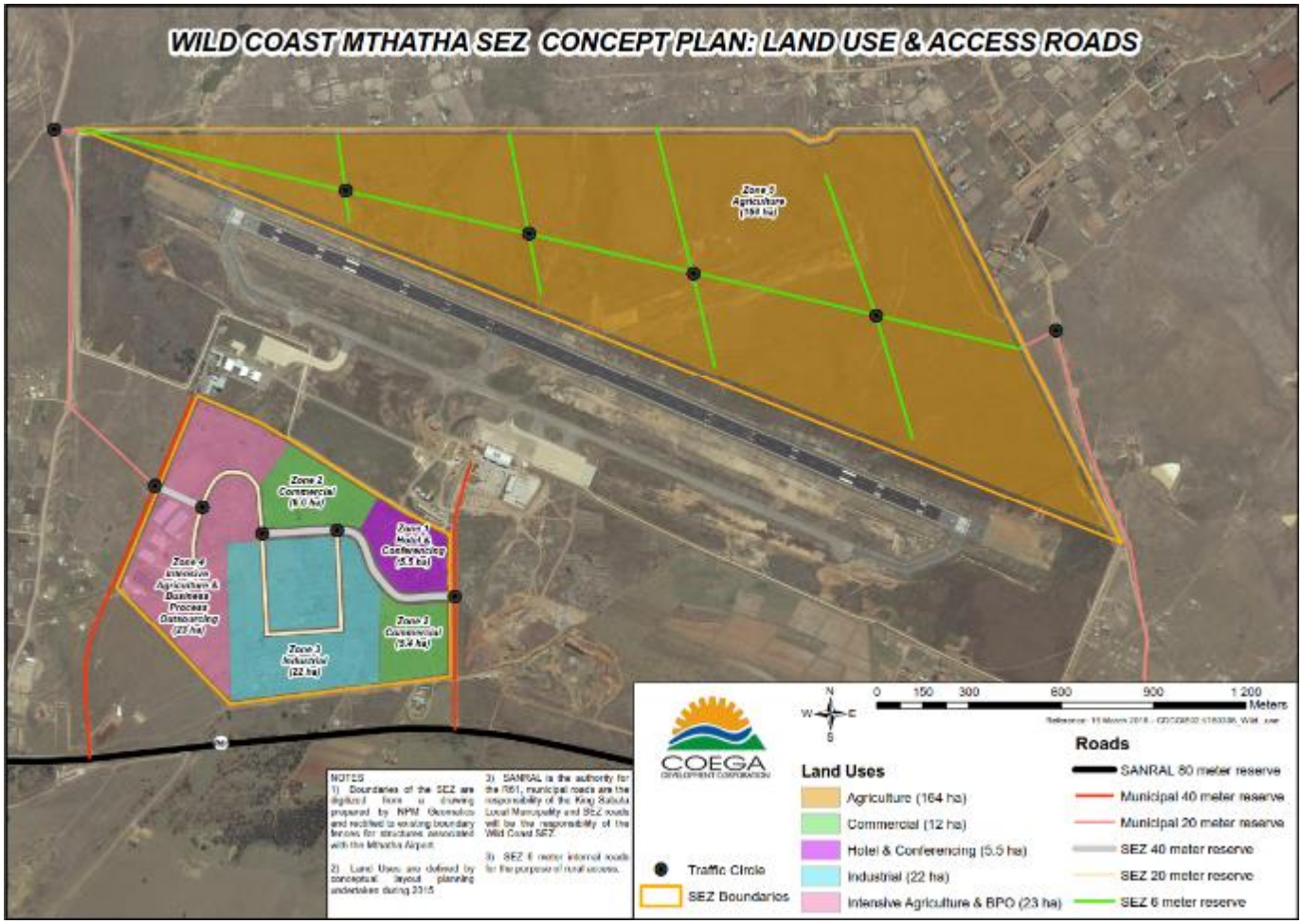

Figure 6-8: Original Land Use and Access Roads Concept Plan

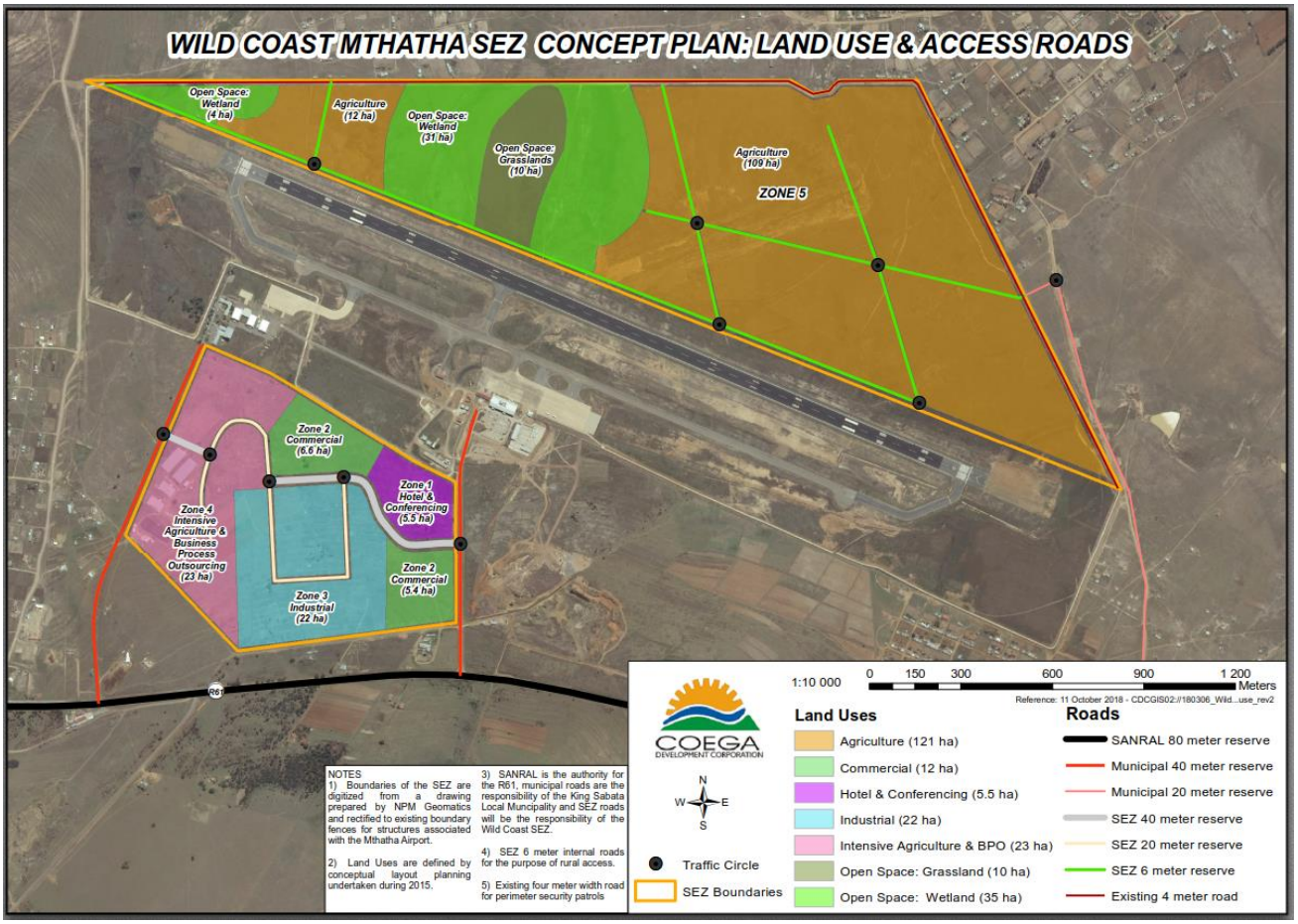

Figure 6-9: Final Land Use and Access Roads Concept Plan

7 IDENTIFICATION OF ALTERNATIVES

An S&EIR process is to include an analysis of reasonable alternatives to the proposed project such as alternative sites, routes, engineering options, layouts and technologies in terms of their potential Environmental and Social impacts, the feasibility of avoiding these impacts and where this is not possible the approach to mitigating the identified impacts.

There are two types of project alternatives, these are:

- Concept Level Alternatives which relate to site, technology and process alternatives; and
- Detailed Level Alternatives which related to working methods and mitigation measures.

The higher level concept alternatives are addressed in this section as detailed level alternatives are addressed through the identification and implementation of mitigation measures. The objective of the comparison of alternatives is to outline how the Project represents an optimised design that is technically and financially feasible whilst minimising overall environmental and social impacts. As part of the alternatives assessment it is important to consider the proposed project not being implemented and therefore the 'Do Nothing' or 'No Go' alternative. The concept level alternatives are presented in this section below.

7.1 NO-GO ALTERNATIVE

The no-go alternative for this project would entail continuation of the status quo. The following negative impacts would result:

- There will be no economic boost in the region which would have fed into the agro-processing, services and tourism sectors;
- The anticipated job and skills development opportunities the project presents will not be generated as the project would have sourced 60% of the required plant and machine operators locally;
- There will be a derailment in the proposed strategies for the O.R. Tambo District Municipality's Strategic Planning and IDPs;
- There will be underutilisation of the available land which could otherwise be productive and beneficial to the local communities as they are the landowners; and
- There will be a derailment in the intended progress as mandated by strategic projects as spelled out by the NDP.

Although the no-go alternative sees the continuation of the status quo and leads to missed opportunities, there are positive impacts it provides. These include:

- All negative impacts discussed in Section 8 of this report are avoided if this alternative is choses;
- There will be a conservation of the three wetland bodies and the related ecosystems observed on the site;
- There will be a preservation of the hydrology and geohydrological nature of the site;
- There will be a protection on the related environmental sensitivities on the site including the biodiversity; and
- There will be a potential to preserve any heritage and palaeontological resources in the area as the site is flagged as a high risk area for palaeontological resources.

7.2 LOCATION

Six land parcels situated in close proximity to the Mthatha Airport were identified as potential areas of development for inclusion in the SEZ. Of the six land parcels, two have been selected as focus areas for Phase 1 of the WCSEZ and covers a combined are of approximately 226 ha. The two land parcels are situated adjacent to the Mthatha Airport. The entire WCSEZ development will be limited to 500 ha of mixed development precinct that will be developed in two phases.

The Mthatha area was chosen in order to boost the economic power in the region. At this point, the main areas in the Eastern Cape that enjoy the majority of the economic power are Port Elizabeth and East London respectively. As such, in order to raise the economic profile of Mthatha as well as the surrounding small towns and villages, the area was chosen as the location for powerful node to help solve the unemployment and economic gap in the region. This will see the development of the first rural metro in the country.

7.2.1 SEZ LAND SELECTION CRITERIA

The criteria used for selecting a suitable location for the WCSEZ are based on those characteristics required for the development of an industrial node; SEZ's are a type of sectoral node. The main characteristics required are as follows:

a) Proximity to residential areas, being an industrial development node a radius of five to ten kilometers was used;

b) Demographics should favour a skilled to semi-skilled and employable age population of between 18 and 55 years old;

c) Potential socio-economic opportunities;

d) Accessibility to various modes of transport, i.e. rail, sea port, airport and road for the transportation of raw materials (agricultural produce) and products to markets;

e) Quality bulk infrastructure to support the identified economic cluster; quality in this context means fit-for-purpose and assessed on whole life with planned maintenance. Bulk infrastructure includes High Voltage electricity, water, sewerage, roads and storm water management and ICT;

f) Favourable environmental conditions, meaning not within designated biodiversity areas and acceptable air quality envelop;

g) Relatively flat, with good drainage and geologically sound; and

h) Physical land requirement of approximately 100-500 hectares, preferably government owned and already zoned for industrial purposes.

The proposed Phase 1 project area is indicated in yellow in **Figure 7-1** below.

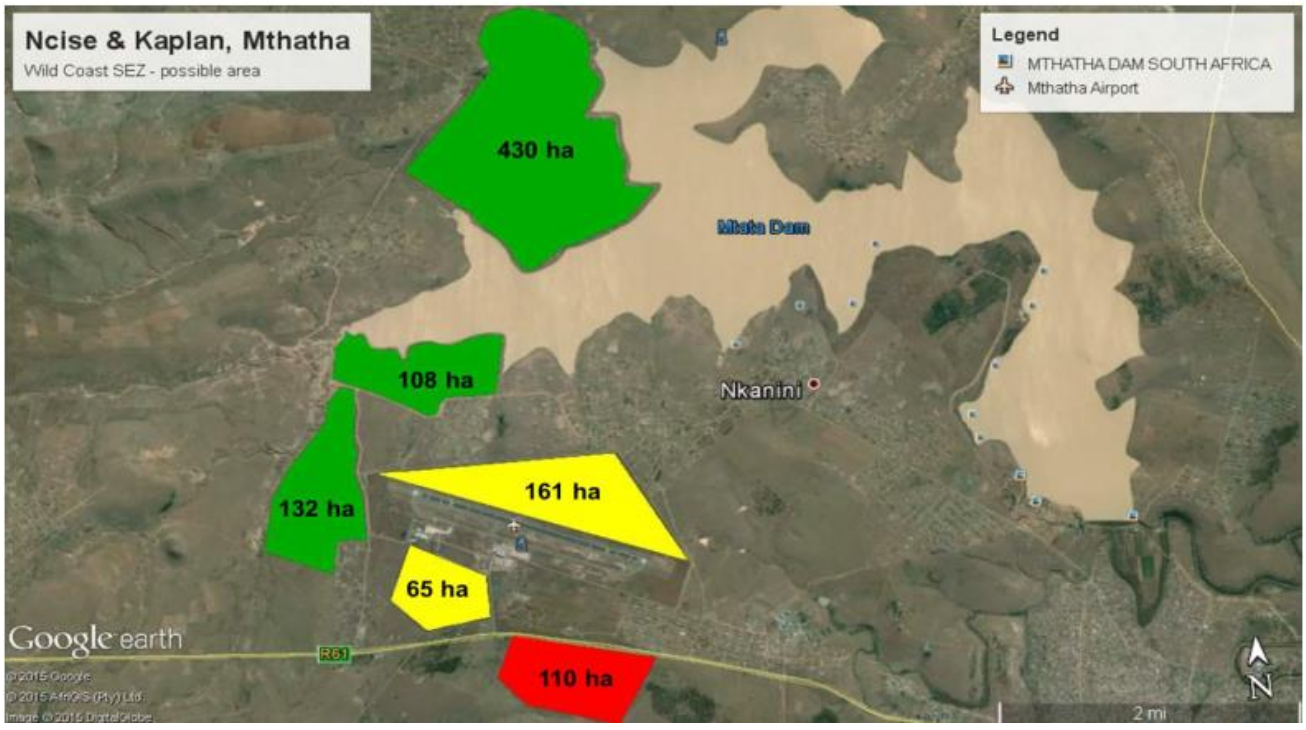

Figure 7-1: Proposed Project Area

Feasibility studies were conducted and after evaluation of land around the districts, the land from the Mthatha Airport which is non-aviation land (indicated in yellow) was identified for Phase 1 of the WCSEZ.

The key characteristics of this locality are:

a) Proximity to the Airport, thus potential for future trans-shipment hub for high value or short shelf-life produce;

b) Proximity to high accessibility transport route, R61 connecting to Queenstown and N2;

c) The land claimants have endorsed the project and the land use is being negotiated for the WC SEZ development and conclude the land around the Mthatha will suitable for Phase 1 of the SEZ development;

d) Bulk infrastructure is being planned and thus the WCSEZ's requirements for industrial (agri-processing) use can be incorporated;

e) The land for Phase 1 is almost central point (distance) of the three District Municipalities; and

f) The identified land is within the most populated local Municipality in the region compared to others.

g) Mthatha Airport Phase 1 site almost in the centre of the three District Municipality; and

h) Most of the population in the 3 districts is around KSDLM area.

i) Development of a mixed development precinct to de-densify Mthatha and to provide requisite social infrastructure (housing) to support development.

Based on **Figure 7-1** above, the alternative sites are indicated in green and red. Although they share the positive factors as the preferred sites, the 430ha and 108ha sites are directly adjacent to the Mthatha Dam. The 132ha site lies away from the dam, however the community owning the land are not willing to have their land used for this purpose while the 110ha space (in red) is earmarked for future development. Due to these factors, the proposed site is the best available site for the proposed development.

7.3 TYPE OF ACTIVITY

This report is intended to motivate for an environmental authorisation with regards to the clearance of natural vegetation on the proposed Phase 1 area as well as the construction of access roads, power lines, construction of potable water, sewer and storm water pipelines. It does not assess the potential impacts of each individual activity as this will be done when each activity is confirmed and the relevant designs and specifications in place to make an appropriate assessment. However, the proposed projects for development of the available land area include:

- Tunnel/hydroponic farming (peppers, tomatoes and others);
- 1 x Vegetable processing and packaging facility;
- 1 x Fresh water fish processing and packaging facility;
- 1 x Meat processing facility;
- Cold storage for meat, vegetables and fruit;
- 1 x Fruit processing and packaging facility;
- Essential oil processing facility;
- Logistics and distribution facility;
- Storage and silos;
- Maize milling facility;
- Dairy processing facility with warehousing;
- Wool scouring;
- Shared administration facilities; and
- Multi-user agro-processing incubator and innovation platform.

The impact assessments with regards to each activity listed above will be done when the relevant planning is complete and the investors pick a suitable development.

7.4 TECHNOLOGY

This was not assessed as this report focuses on the land clearance, construction of access roads, power lines, construction of potable water, sewer and storm water pipelines. The specific individual industrial and commercial activities or projects that will be on the SEZ will assess their specific technology alternatives during their individual environmental authorisation application processes.

8 DESCRIPTION OF THE BASELINE ENVIRONMENT

8.1 CLIMATE

8.1.1 REGIONAL OVERVIEW DESCRIPTION

The Mthatha climate is mild, and generally warm and temperate. Mthatha has a significant amount of rainfall during the year even in the driest month. The climate is classified as Cfb (also known as oceanic, marine or maritime climate) by the Köppen-Geiger system. This climate is characterised by cool summers (relative to the latitude) and cool winters. The annual temperature range is narrow with a few temperature extremes. Oceanic climates have a monthly mean temperature below 22°C in the warmest month and above 0°C in the coldest month. There is no clearly defined dry season as the rainfall is evenly distributed through the year. The average annual temperature in Mthatha is 17.5°C. In a year, the average rainfall is 693 mm with the lowest precipitation experienced in June, with an average of 16 mm. March has the most precipitation at an average of 99 mm. The Mthatha climograph is show in **Figure 8-1** below.

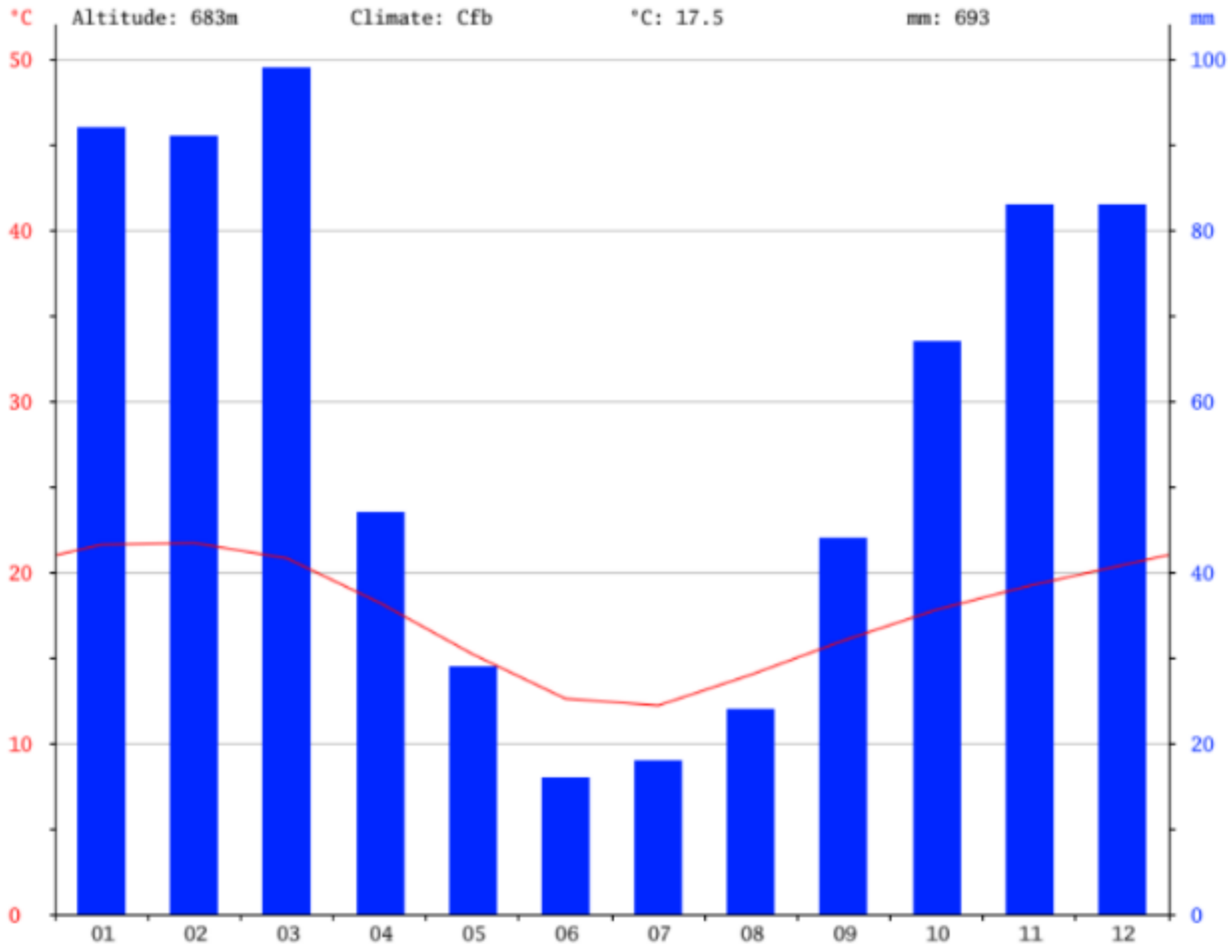

Figure 8-1: Mthatha Climograph (Source: climate-data.org)

The difference in precipitation between the driest and wettest months is 83 mm. the average temperatures vary by 9.5°C over the course of a year as shown by the climate table in **Figure 8-2** below.

	January	February	March	April	May	June	July	August	September	October	November	December
Avg. Temperature (°C)	21.6	21.7	20.8	18.2	15.2	12.6	12.2	14	16	17.8	19.2	20.4
Min. Temperature (°C)	16	16.3	15.2	11.8	7.8	4.3	3.9	6	8.9	11.5	13.4	14.6
Max. Temperature (°C)	27.2	27.2	26.5	24.7	22.6	20.9	20.6	22	23.2	24.2	25	26.3
Avg. Temperature (°F)	70.9	71.1	69.4	64.8	59.4	54.7	54.0	57.2	60.8	64.0	66.6	68.7
Min. Temperature (°F)	60.8	61.3	59.4	53.2	46.0	39.7	39.0	42.8	48.0	52.7	56.1	58.3
Max. Temperature (°F)	81.0	81.0	79.7	76.5	72.7	69.6	69.1	71.6	73.8	75.6	77.0	79.3
Precipitation / Rainfall (mm)	92	91	99	47	29	16	18	24	44	67	83	83

Figure 8-2: Mthatha Historical Data / Climate Table (Source: climate-data.org)

8.1.2 TEMPERATURE

The average temperatures of oceanic climates are cool temperatures with some minor extremes in temperature which are infrequent. As mentioned before, the annual temperature range is narrow with a few temperature extremes. The monthly mean temperature is below 22°C in the warmest month and above 0°C in the coldest month.

February is the hottest month of the year at an average temperature of 21.7°C while July is the coldest at an average temperature of 12.2°C. This is as shown in **Figure 8-3** below.

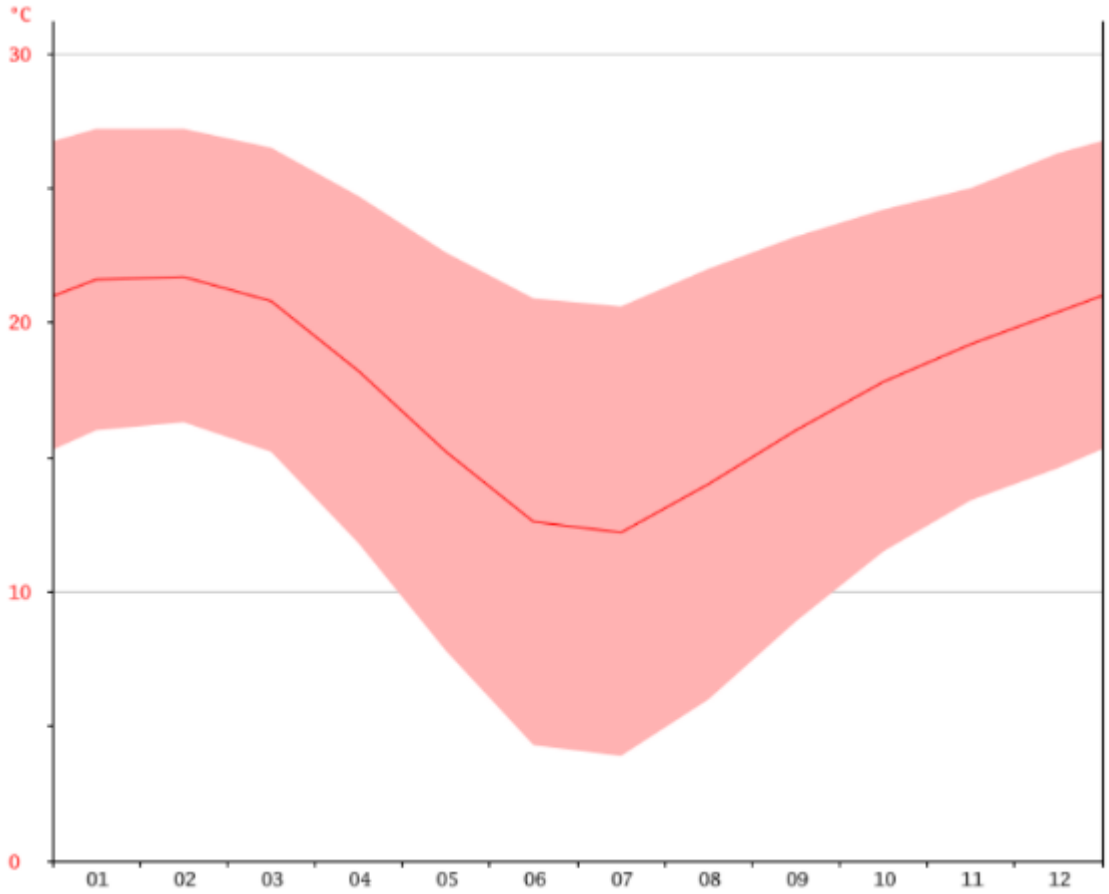

Figure 8-3: Mthatha Temperature Graph (source: climate-data.org)

8.1.3 RAINFALL

Oceanic climates are characterised by adequate and reliable rainfall over the course of a yet with extended months of rainy and cloudy conditions. As mentioned before, there is no clearly defined dry season as the rainfall is evenly distributed through the year. The average annual rainfall is 693 mm with the lowest precipitation experienced in June, with an average of 16 mm. March has the most precipitation at an average of 99 mm.

The KSD area receives a significant amount of rain in winter months for the coastal areas, however, the inland receives 80% or more of the rainfall in the 6 months from October to March (81% at Mthatha). The monthly precipitation trend in Mthatha over the last year is shown in **Figure 8-4** below.

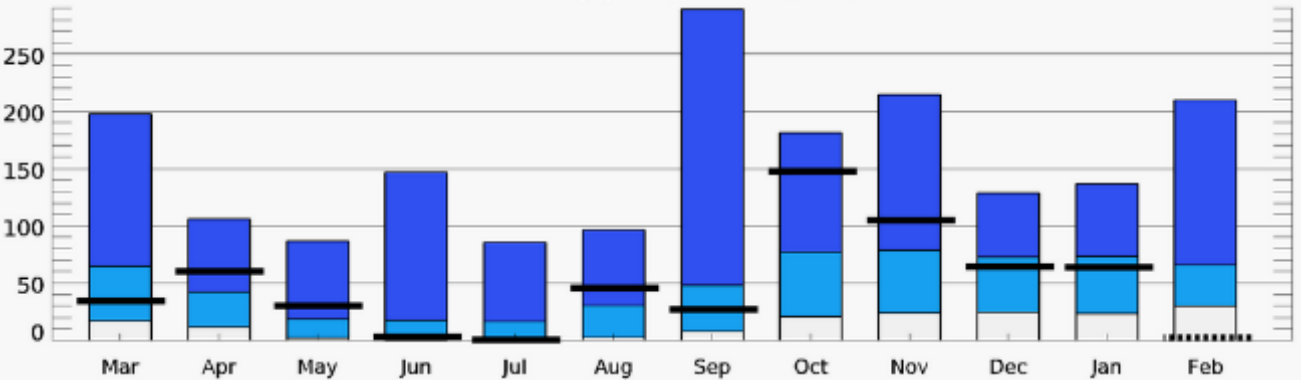

Figure 8-4: Monthly Precipitation (Source meteoblue.com)

8.1.4 LOCAL WIND FIELD

Based on the available meteorological data, winds originate predominantly from the South East (14.4% of the time) especially in the months of January to April and then August to December. Wind speeds are generally slow to moderate. Calm conditions, which are defined as wind speeds less than 1 m/s, occur infrequently. The chart in **Figure 8-5** below shows the days per month the wind reaches a certain speed around the Mthatha Airport.

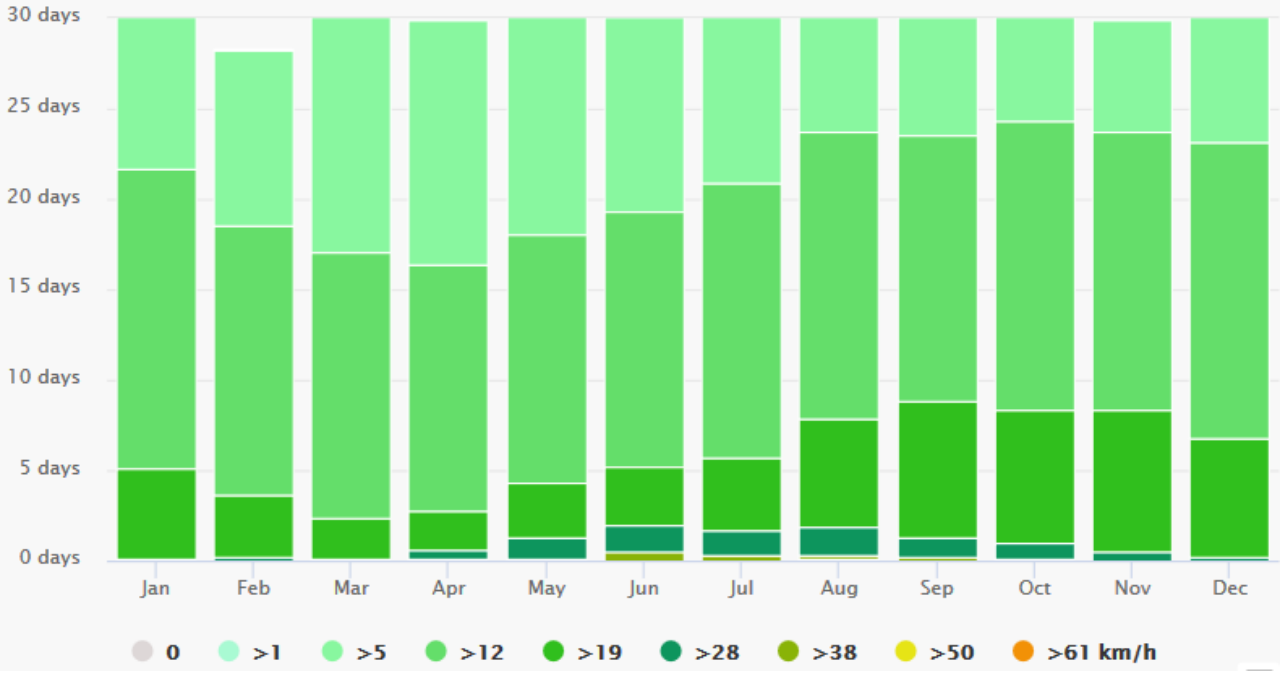

Figure 8-5: Mthatha Airport Wind Speed Chart

The wind rose in **Figure 8-6** below shows how many hours per year the wind blows from a particular direction around Mthatha Airport.

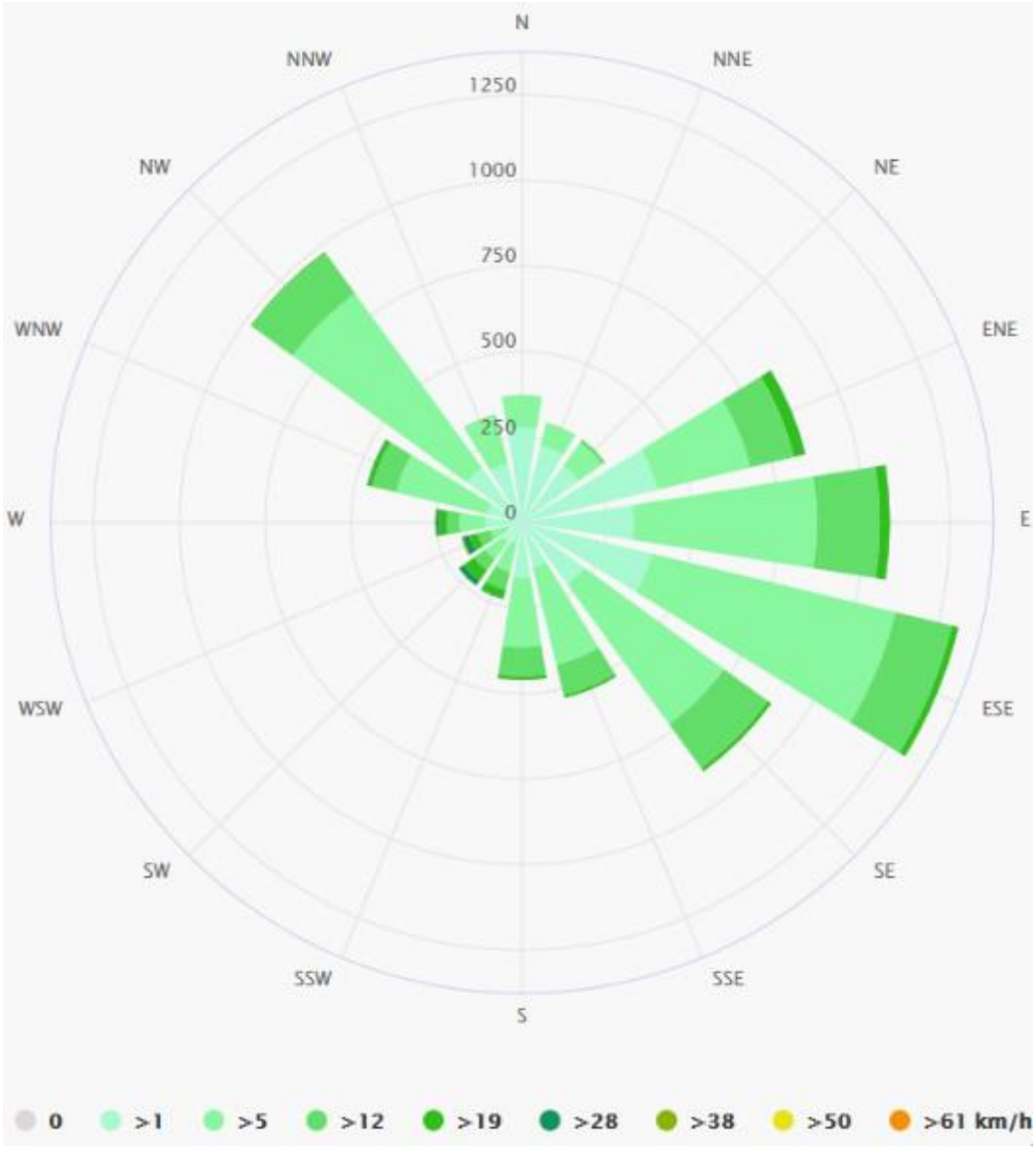

Figure 8-6: Mthatha Airport Wind Rose

8.2 TOPOGRAPHY

8.2.1 SITE DESCRIPTION

The proposed project site is such that the wetlands and any storm water from the airport drains northwards towards the Mthatha Dam as it is downslope of the proposed WCSEZ. The neighbouring communities to the East, South and West are generally at a higher topography from the proposed project site. This means that the locality of the project area has a general higher elevation from the south with the north being downslope. **Figure** 8-7 below shows the elevation profile from the proposed project site to the north towards the Mthatha Dam where the drainage is directed to. The elevation profile is based on the line segment shown.

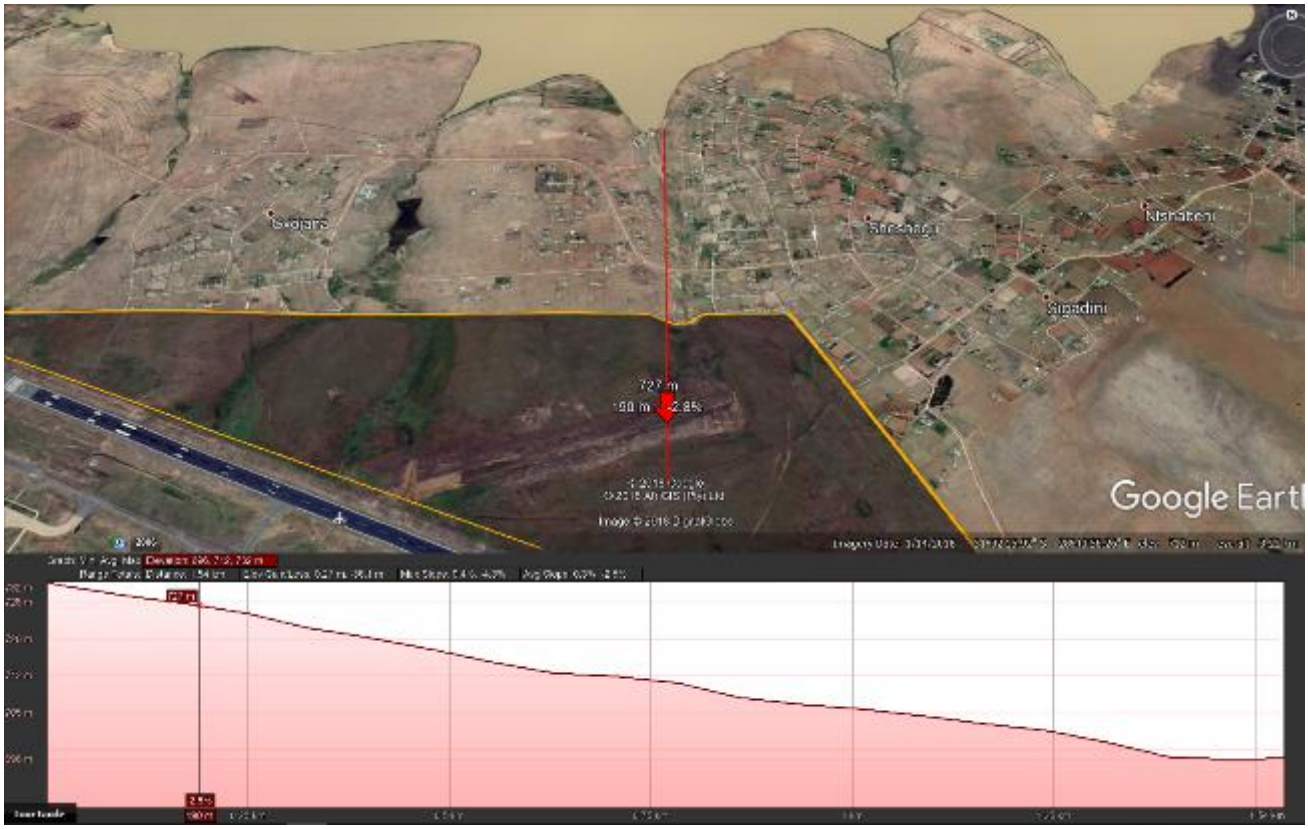

Figure 8-7: Elevation Profile to the North

8.3 GEOLOGY

8.3.1 REGIONAL SETTING

The study area is mainly underlain by sedimentary rocks (sandstones and shales), through which magmas have intruded to form dolerite dykes and sills. Kimberlites, diatremes and other centres of volcanic activity also occur at a number of localities within KSDLM.

The soils in the area are closely related to the underlying geology and geomorphology of the region. The soils are arable and most of the productive soils are cultivated. The area has no mineral resources of major economic scale, however, crush stone and building sand are found in the area.

8.3.2 SITE SETTING

The two project areas are largely underlain at depth by Early Triassic fluvial sediments of the Katberg Formation (Tarkastad Subgroup, Lower Beaufort Group) with an extensive dolerite intrusion along the southern margin, close to the R61.The sedimentary bedrocks are almost entirely mantled by thick Late Caenozoic soils and gravels as well as alluvium and *vlei* deposits along shallow drainage lines.

The geology of the Mthatha Airport study region, situated within the south-eastern sector of the Main Karoo Basin, is shown on 1: 250 000 sheet 3128 Mthatha (Karpeta & Johnson 1979). Most of the SEZ Phase 1 project area is underlain by Early Triassic (*c*. 250 Ma = million years old) fluvial sediments of the **Katberg Formation** which forms the lowermost subunit of the Tarkastad Subgroup (Upper Beaufort Group, Karoo Supergroup). The overlying Burgersdorp Formation crops out just to the west according to the geological map so it is possible that sandstone-dominated Katberg facies and mudrock-dominated Burgersdorp facies interfinger in this area. Levels of tectonic deformation in the region are low, with most of the Karoo Supergroup succession being

subhorizontal. The southern part of the project area, closer to the R61, overlies an Early Jurassic intrusive sill of the **Karoo Dolerite Suite** whose outcrop runs well to the south, in part along the contact between the Katberg and Burgersdorp Formations. The thick dolerite intrusion is deeply weathered to crumbly, khaki-grey *sabunga*, as well seen in the main quarry area (**Figure 8-8**). Baking of Katberg country rocks to quartzite and hornfels along intrusive contacts can be expected in the subsurface here. Levels of bedrock exposure throughout the study area are very poor due to a thick mantle of colluvial to alluvial gravels and soil as well as pervasive grassy vegetation.

Figure 8-8: Main Quarry Area

Useful geological descriptions of the predominantly braided fluvial deposits of the Katberg Formation are given by Johnson (1976), Hancox (2000), Johnson *et al.* (2006), Smith *et al.* (2002) and for the Mthatha sheet area in particular by Karpeta and Johnson (1979). More detailed sedimentological accounts are provided by Stavrakis (1980), Hiller and Stavrakis (1980, 1984), Haycock *et al.* (1994), Groenewald (1996), Neveling (1998) and Pace *et al.* (2009) (Fig. 7). The Katberg Formation forms the regionally extensive, sandstone-rich lower portion of the mainly fluvial Tarkastad Subgroup (Upper Beaufort Group) that can be traced throughout large areas of the Main Karoo Basin. Its thickness in the Mthatha 1: 250 000 sheet area is not recorded by Karpeta and Johnson (1979) but further west within the Eastern Cape it reaches a maximum thickness of some 400 m, while thicknesses of 240-260 m are more usual. The predominantly braided fluvial Katberg succession comprises (a) prominent-weathering, pale buff to greyish, tabular or ribbon-shaped sandstones up to 60 m thick that are interbedded with (b) recessive-weathering, reddish or occasionally green-grey mudrocks. Up to four discrete sandstone packages can be identified within the succession. Katberg channel sandstones are typically rich in feldspar and lithic grains (*i.e.* lithofeldspathic). They build laterally extensive, tabular, multi-storey units with an erosional base that is often marked by intraformational conglomerates up to one meter or more thick consisting of mudrock pebbles, reworked calcrete nodules and occasional rolled fragments of bone. While the basal Katberg succession is often marked by a major cliff-forming sandstone unit, in some areas there is a transitional relationship with the underlying Adelaide Subgroup that is marked by a broadly upward-thickening series of sandstone sheets. Cliff-forming outcrops of the Katberg Formation are composed of amalgamated channel

sandstone facies with only a small proportion of overbank mudrocks. Internally the moderately well-sorted sandstones are variously massive, horizontally-laminated or tabular to trough cross-bedded while heavy mineral laminae occur frequently. Sphaeroidal carbonate concretions up to 10 cm across, sometimes secondarily ferruginised, are common. The predominantly purple-brown Katberg mudrocks are typically massive with horizons of pedocrete nodules (calcretes) and mudcracks but packages of thin-bedded grey-green and purple-brown mudrocks passing up into heterolithic successions of thinly interbedded grey-green fine sandstone and siltstone are also occasionally seen.

Mudrock as well as sandstone exposure within the present study area is very limited indeed due to extensive mantling of these recessive-weathering rocks by superficial sediments (soils, scree, downwasted gravels, hillwash *etc*). The only examples of Katberg bedrocks encountered during the field survey comprised excavated blocks of khaki-green, finely-laminated sandstone and slickensided grey-green siltstone along the northern perimeter of the Phase 1 North area.

Figure 8-9: Angular Blocks of Grey to Khakhi Sandstones of the Katberg Formation

Extensive road cuttings through Katberg sandstones are seen along the R61 some 5 km ESE of the airport. They comprise a thick package of brown-weathering, medium- to thick-bedded, medium-grained sandstones with erosional bases and horizons with irregular rounded hollows probably representing weathered-out carbonate concretions (**Figure 8-10**).

Figure 8-10: Medium-bedded Tabular Brown-weathering Sandstones of the Katberg Formation

Thick Late Caenozoic alluvial deposits are associated with the Mthatha River and its major tributaries to the north of the project area but are not mapped within the area itself. However, modest thicknesses of alluvial gravels, sands and muds as well as muddy *vlei* deposits may be expected along the small drainage lines seen here (*e.g.* in Phase 1 North area). Elsewhere basal doleritic and sandstone gravels and overlying brownish sandy to silty soils with sparse gravels – including occasional hornfels stone artefacts - are locally exposed in small-scale erosion gullies and artificial excavations. Overlying the dolerite outcrop in the Phase 1 South area the soils are markedly ferruginous and reddened (lateritic) with frequent development of fine ferricrete glaebules in the subsoil as shown in **Figure 8-11**.

Figure 8-11: Reddened Lateritic Soils Overlying the Weathered Dolerite Outcrop in the Dolerite Quarry East of Phas 1 South Area

Several exposures of massive, poorly-sorted gravelly to sandy deposits seen in the airport vicinity may represent artificially reworked rock rubble rather than natural alluvial or colluvial sediments (**Figure 8-12**).

Figure 8-12: Gullied Deposit of Sandy to Gravelly Material and Ferricrete Glaebules on a Steep S-facing Scarp North of the Airport Runway

8.4 SURFACE WATER

8.4.1 REGIONAL AND SITE SETTING

The study area is mainly within the T20B quaternary catchment and partially within the T20C quaternary catchment. Both quaternary catchments are drained by the Mthatha River which is part of the Mzimvubu to Keiskamma Water Management Area (WMA). The proposed WCSEZ area is upslope from the south west 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 80 km south east of the planned development which then terminates at the South Indian Ocean, approximately 85 km south east of the study area as shown in **Figure 8-13** below.

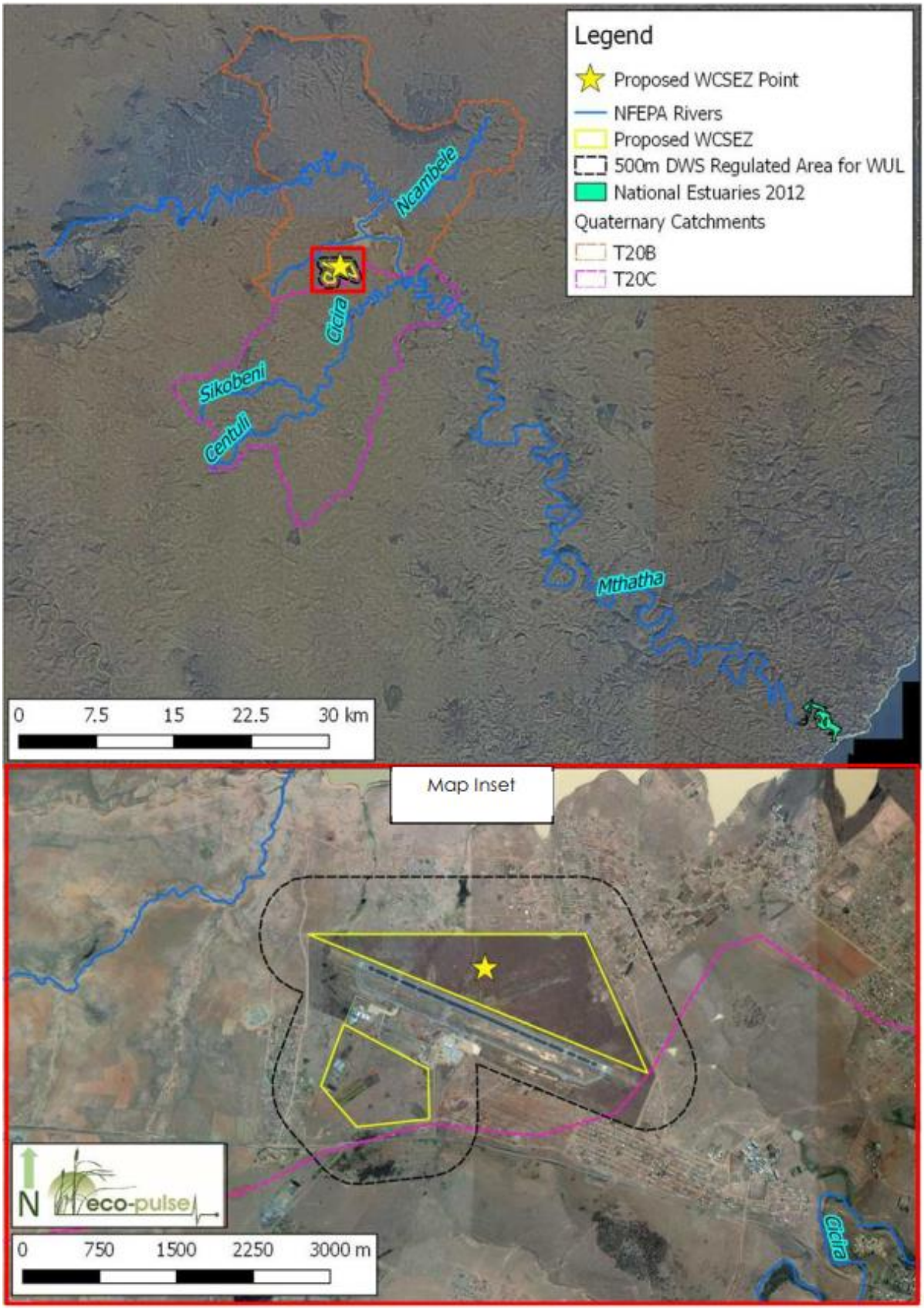

Figure 8-13: Regional and Local (Site) Drainage Setting

8.4.2 WETLANDS

According to the Wetland Habitat Impact Assessment Report by Eco-Pulse Environmental Consulting Services (Eco-Pulse, report number EP341-02), **Appendix E-3**, the infield delineation enabled the identification and mapping of seven wetland systems, including six wetland 'seeps' and one artificial wetland (wetland W6) created by a leaking bulk water pipeline infrastructure. The wetland systems identified are within the DWS regulated area for water use licensing (i.e. within a 500 m buffer of the project development site). The location and extent of wetlands is indicated on the map in **Figure 8-14** 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 and this is likely to pose a potentially significant constraint to development on this portion. The southern portion does is also associated with wetlands including the artificial wetland. The breakdown of the wetlands indicated below is as follows:

Northern property:

i. Wetland Unit W1: 63.8Ha Seep Wetland
ii. Wetland Unit W2: 61.6Ha Seep Wetland
iii. Wetland Unit W3: 14.1Ha Seep Wetland
iv. Wetland Unit W4: 35.7Ha Seep Wetland

Southern property:

v. Wetland Unit W5: 24.6Ha Seep Wetland
vi. Wetland Unit W6: 0.56Ha Artificial Wetland
vii. Wetland Unit W7: 1.04Ha Seep Wetland

Detailed descriptions of each wetland unit, including type, habitat/vegetation characteristics and notable existing impacts are provided in Table 7 of the Eco-Pulse report (EP341-02) attached as **Appendix E-3**.

The wetlands are northward draining systems that drain towards Mthatha Dam and located within quaternary catchment T20B and characterised by moderate precipitation and high evapotranspiration 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.

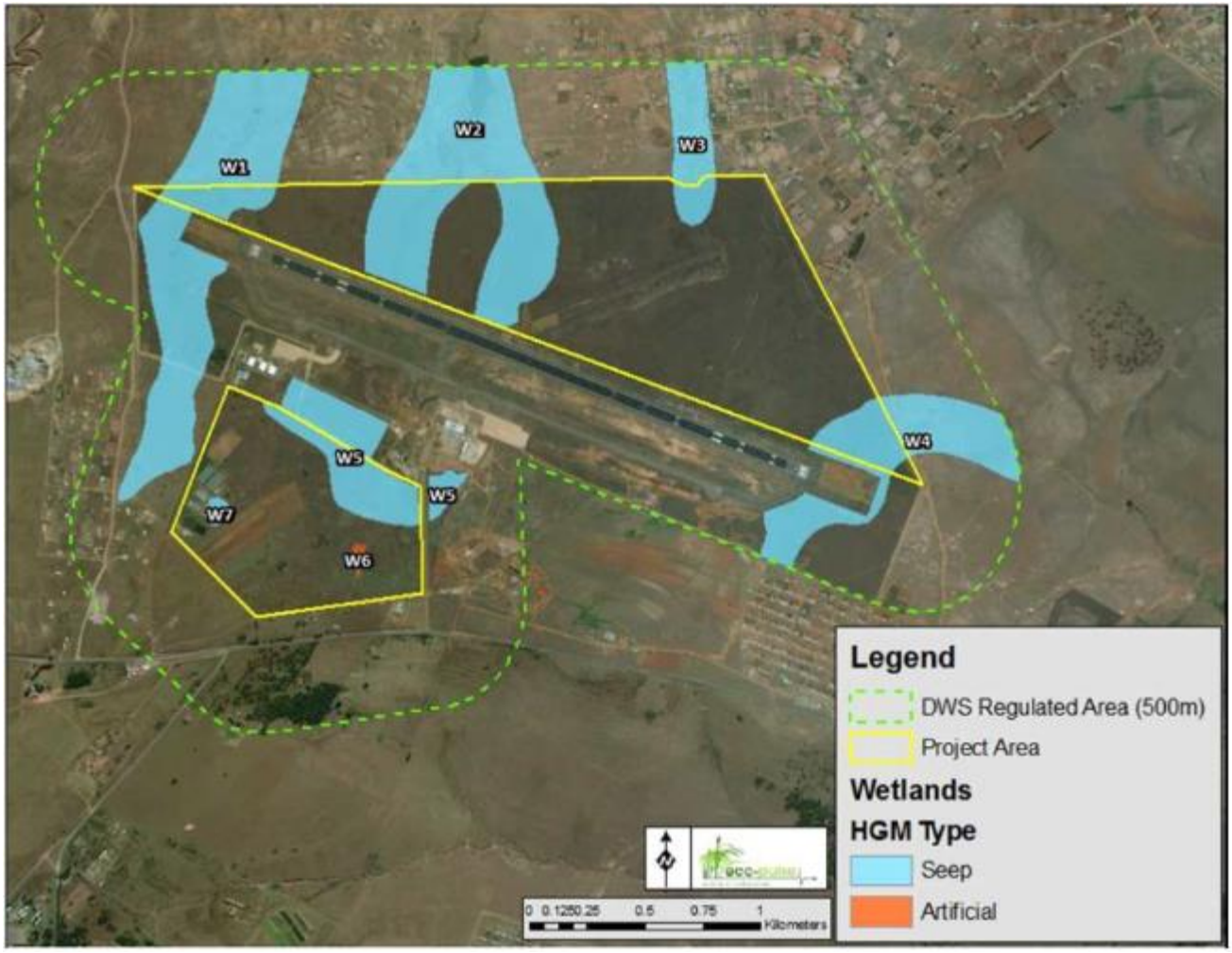

Figure 8-14: Wetland Map

Based on the site assessment undertaken by Eco-Pulse in 2012 for the Mthatha 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.

The results of the wetland PES assessment indicate that two of the wetlands (Units W2 & W5) were assessed as being 'Moderately Modified' ('C' PES) which implies that a moderate change in ecosystem process and loss of natural habitat and biota has taken place but the natural wetland habitat remains predominately intact. The remaining four (4) wetlands were assessed as being 'Largely Modified' ('D' PES) which implies that a large change in ecosystem processes and loss of natural habitat and biota has occurred.

Key existing impacts affecting the condition of the various wetland units include:

- Permanent vegetation and habitat transformation by the Airport runway, artificial instream dams, access roads and storm water infrastructure;
- Inundation of the wetland habitat caused by the impeding of flows behind structures such as access roads, fill embankments, etc.
- Direct discharge of storm water into wetlands, creating 'artificially wetter' conditions;

- Historic drainage of wetlands;
- Limited erosion of the wetland habitat;
- Limited sediment deposition within low lying areas; and
- Overgrazing of wetland vegetation outside the Mthatha Airport precinct by livestock (cattle).

AQUATIC CONSERVATION PRIORITIES HIGHLIGHTED IN THE ECBCP

According to the Eastern Cape Biodiversity Conservation Plan (ECBCP), aquatic conservation priorities highlighted for the project area and planned development site include the catchment draining north towards the Mthatha Dam (**Figure 8-15**) which has been identified as an aquatic critical biodiversity area (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).

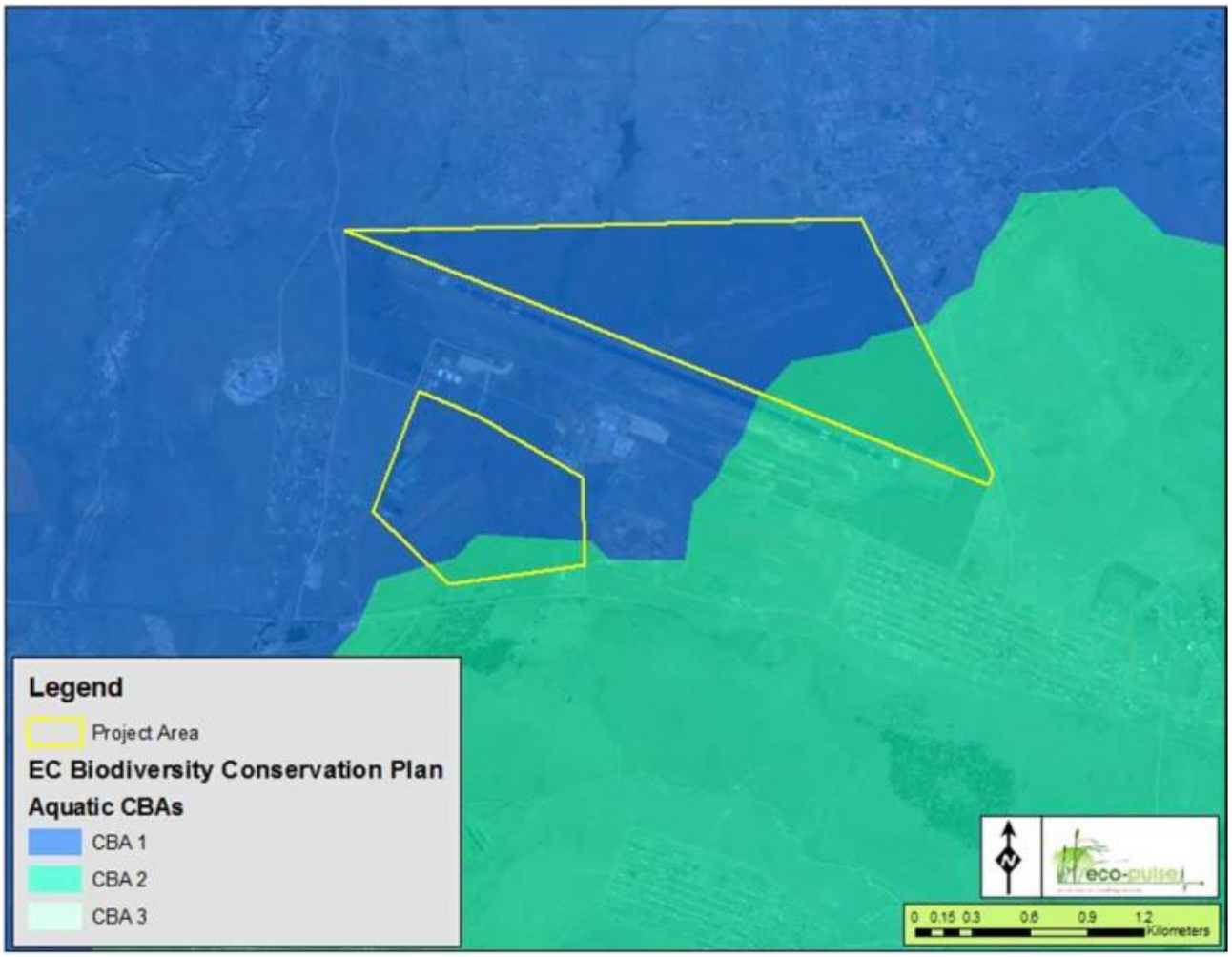

Figure 8-15: Aquatic CBA Map

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.

8.5 GROUND WATER

8.5.1 SITE DSCRIPTION

The Eco-Pulse Wetland Habitat Impact Assessment Report (**Appendix E-3**) identified seven wetland units, which included six seep-type wetland systems and one artificial wetland system within the proposed project area. 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. Seepage-type wetland systems contribute to the recharge of groundwater systems and the nature of the wetlands influences the nature of the groundwater in the area.

8.6 LAND USE AND CAPABILITY

The criteria used for selecting a suitable location for the WCSEZ are based on those characteristics required for the development of an industrial node; SEZ's are a type of sectoral node. The main characteristics required are as follows:

a) Proximity to residential areas, being an industrial development node a radius of 5-10 km was used;

b) Demographics should favour a skilled to semi-skilled and employable age population of between 18 and 55 years old;

c) Potential socio-economic opportunities;

d) Accessibility to various modes of transport, i.e. rail, sea port, airport and road for the transportation of raw materials (agricultural produce) and products to markets;

e) Quality bulk infrastructure to support the identified economic cluster; quality in this context means fit-for-purpose and assessed on whole life with planned maintenance. Bulk infrastructure includes high voltage electricity, water, sewerage, roads and storm water management and ICT;

f) Favourable environmental conditions, meaning not within designated biodiversity areas and acceptable air quality envelop;

g) Relatively flat, with good drainage and geologically sound; and

h) Physical land requirement of approximately 100-500 ha, preferably government owned and already zoned for industrial purposes.

Upon evaluating land around the 3 districts, it was from land around the Mthatha Airport, approximately 226 ha (gross) which is non-aviation land has been identified for Phase 1 of the WCSEZ.

The area is characterised by agricultural land with good potential as indicated in the feasibility study as well as the KSDLM Integrated Development Plan (IDP). The IDP also indicates that agriculture has the most number of cooperatives developed with the KSDLM's support in the area (49), however, due to the potential in the area, this can be increased and produce further jobs. The land cover pattern is largely determined by topographical and climatic factors that for agricultural activity.

The proposed development or land use zones are shown in **Figure 8-16** below.

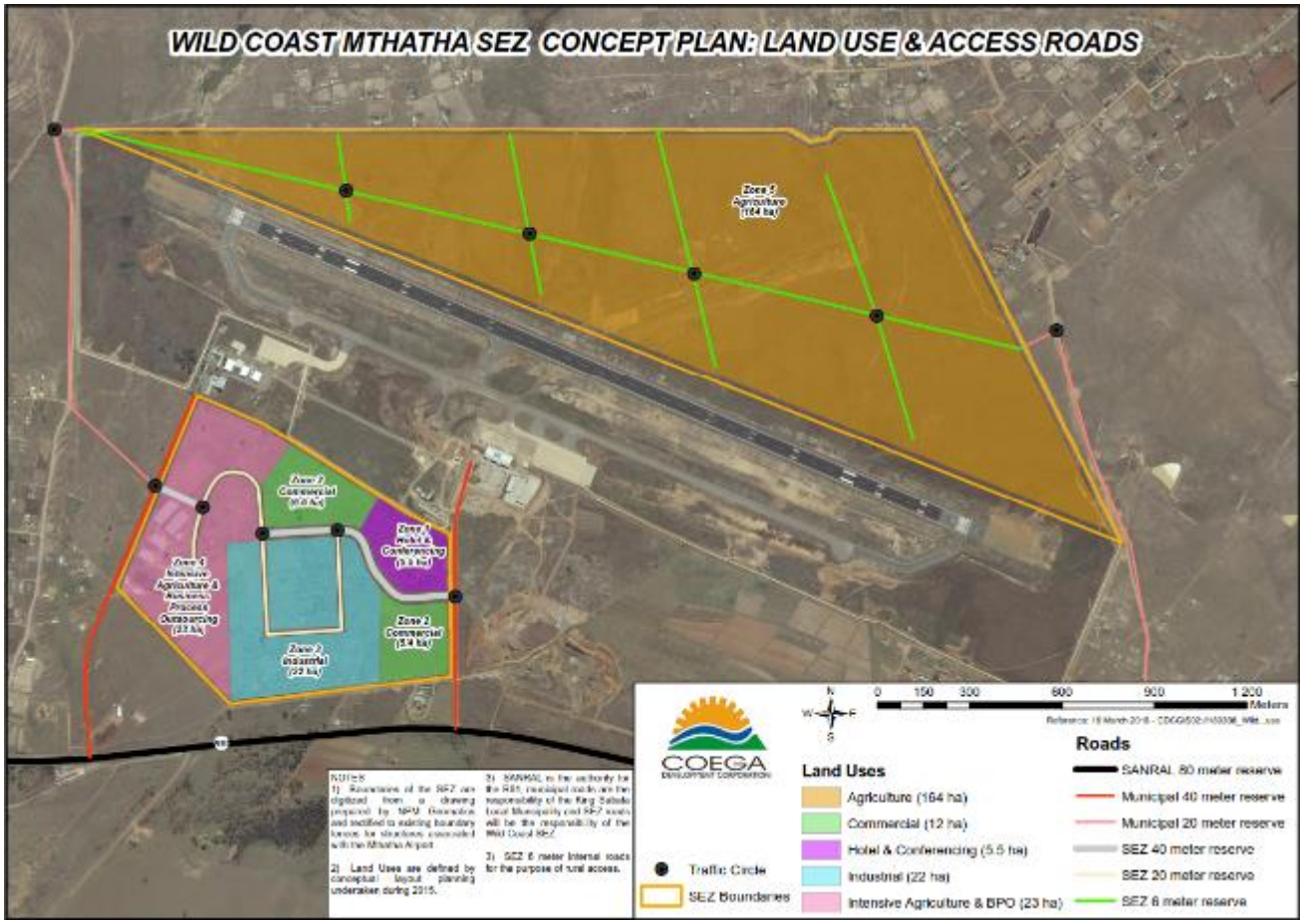

Figure 8-16: Original Agro-Processing Hub Development / Land Use Zones

8.7 AIR QUALITY

8.7.1 REGIONAL DESCRIPTION

There was a recent major revision of air quality management in South Africa which saw a shift from source based air quality management approach under the Atmosphere Pollution Prevention Act (No. 45 of 1965) (APPA) to an ambient based approach under the National Environmental Management: Air Quality Act (No. 39 of 2004(AQA). This means that the responsibility for air quality management has been shifted to the local authority level (district and metropolitan municipalities) as part of their IDP.

The key causes of air quality issues are:

- Burning of tyres during winter season;
- The public transport sectors (taxis, trucking, buses) are responsible for emitting pullulates in the form of exhaust fumes;
- Uncontrolled, extensive and unnecessary burning grasslands;
- Lack of public awareness of air quality issues and legislated pollution prevention; and
- Lack of appropriately skilled monitoring and enforcement.

The ORTDM is in the process of developing its air quality management plan, however, based on the district's IDP, the air quality in the municipality is relatively good as there are no major industries. Although there are no pollution statistics for the KSDLM, the greenhouse emissions can be measured by estimating the CO_2 emissions from energy carriers like vehicles, paraffin, coal and firewood.

8.8 FLORA AND FAUNA

8.8.1 FLORA

The project area has a wide range of habitats which include upland and coastal grassland, Afromontane and coastal forest, valley thicket, thorny bushveld, coastal and marine habitats. According to the Threatened Ecosystem coverage for the country which was interrogated, the project area and planned development site is located within the Eastern Valley Bushveld (Least Threatened) and Mthatha Moist Grassland (Endangered). A desktop aquatic and terrestrial ecological scoping report by Eco-Pulse Environmental Consulting Services (Eco-Pluse, report number EP341-01), **Appendix E-1**, provided national, provincial and regional conservation planning information with an overview of the site as shown in **Figure 8-17** below.

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) Ecosystem Threat Status NBA 2011	Eastern Valley Bushveld (SVs6)	Untransformed vegetation within the portion north of Umthatha Airport	Least threatened, Nominally protected
	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**

Figure 8-17: Key Conservation Context

According to the desktop Eco-Pulse report (**Appendix E-1**), 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).

Two wetland vegetation groups 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.

EASTERN CAPE BIODIVERSITY CONSERVATION PLAN

The 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 EC. 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.

The ECBCP maps the site as a Terrestrial CBA level 1 & 2 (T2) (**Figure 8-18**), 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 8-18: Terrestrial CBA Map

The ECBCP also identifies the portion of land to the north and north east of the project area (surrounding Mthatha Dam) as a Provincial Protected Area: Luchaba Nature Reserve (

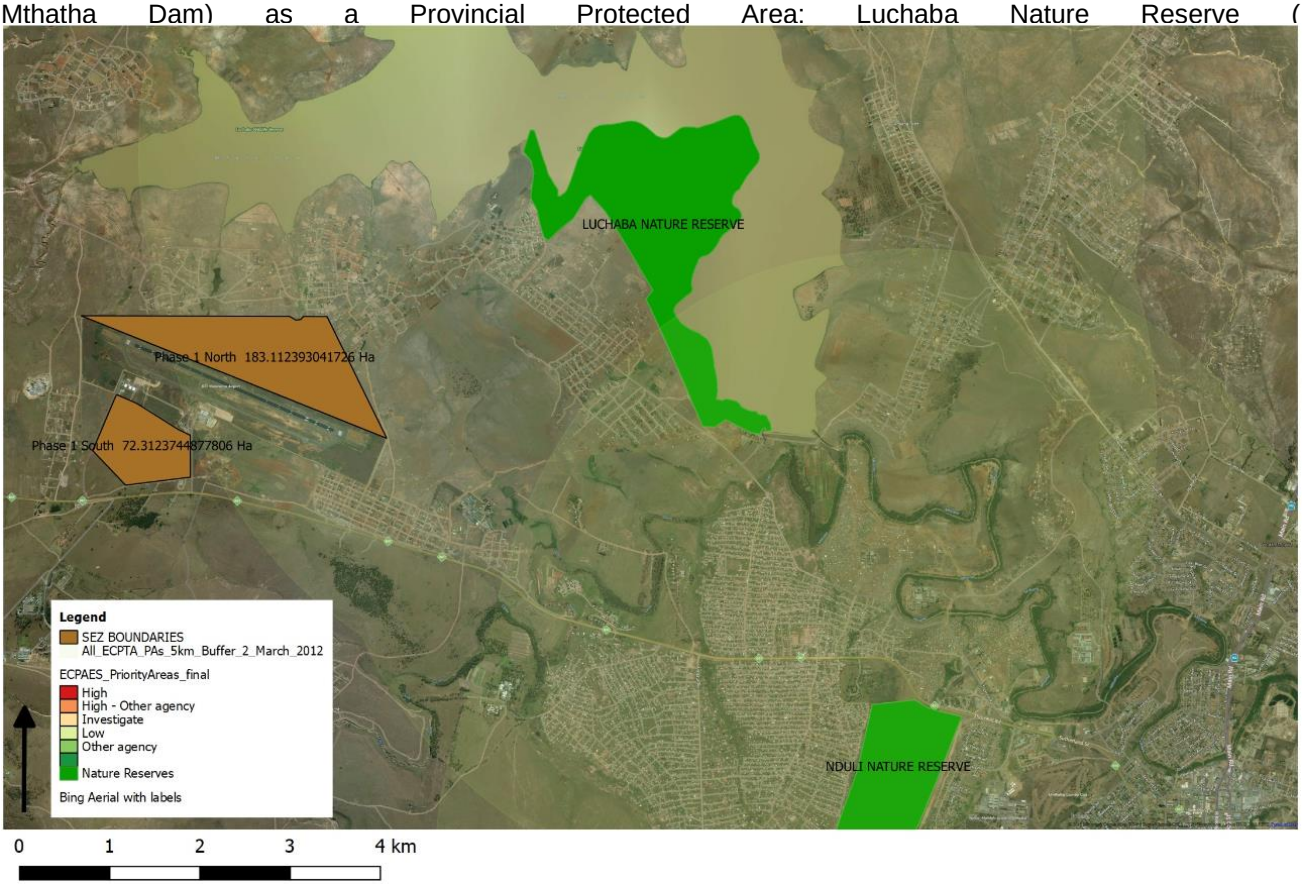

Figure 8-20 below), however, this is outside of the proposed project boundary as shown below. This is an approximately 460 ha provincial nature reserve which hosts a variety of wildlife, with a series of wetlands and grasslands that support rare and threatened cycads and a wide selection of birds including 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.

It must be noted that the Terrestrial Impact Assessment report by Eco-Pulse (**Appendix E-2**) indicated that a small part of the northern portion of the proposed project area was within the Luchaba Nature Reserve. Following discussions with the authorities, the Eastern Cape Parks and Tourism Agency (ECPTA), it was resolved that the site was not within the Nature Reserve. Furthermore, it was pointed out by the ECPTA that there are existing developments between the proposed project area and the Luchaba Nature Reserve, adding to the fact that it will not affect the protected area.

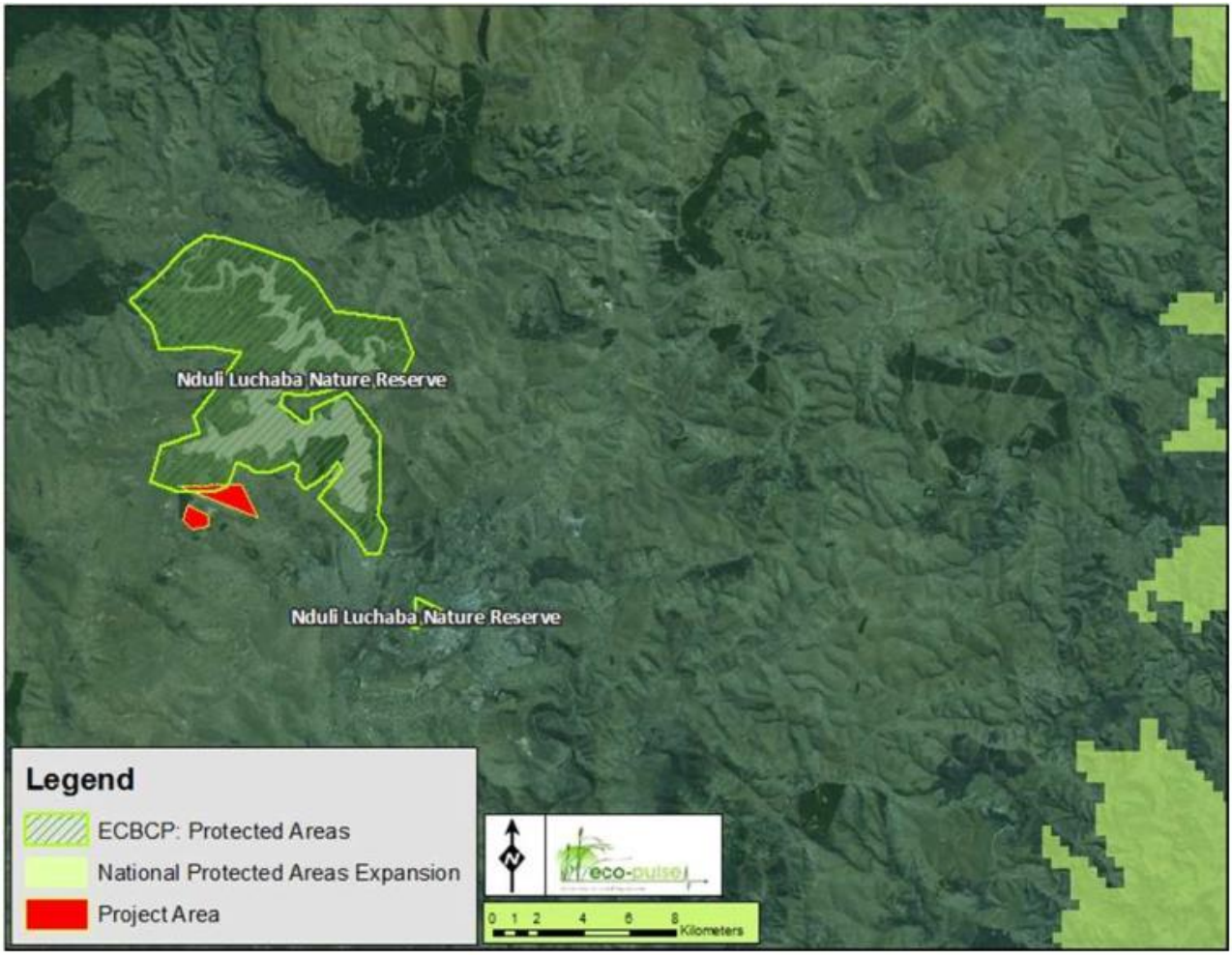

Figure 8-19: Initial Protected Areas Extent

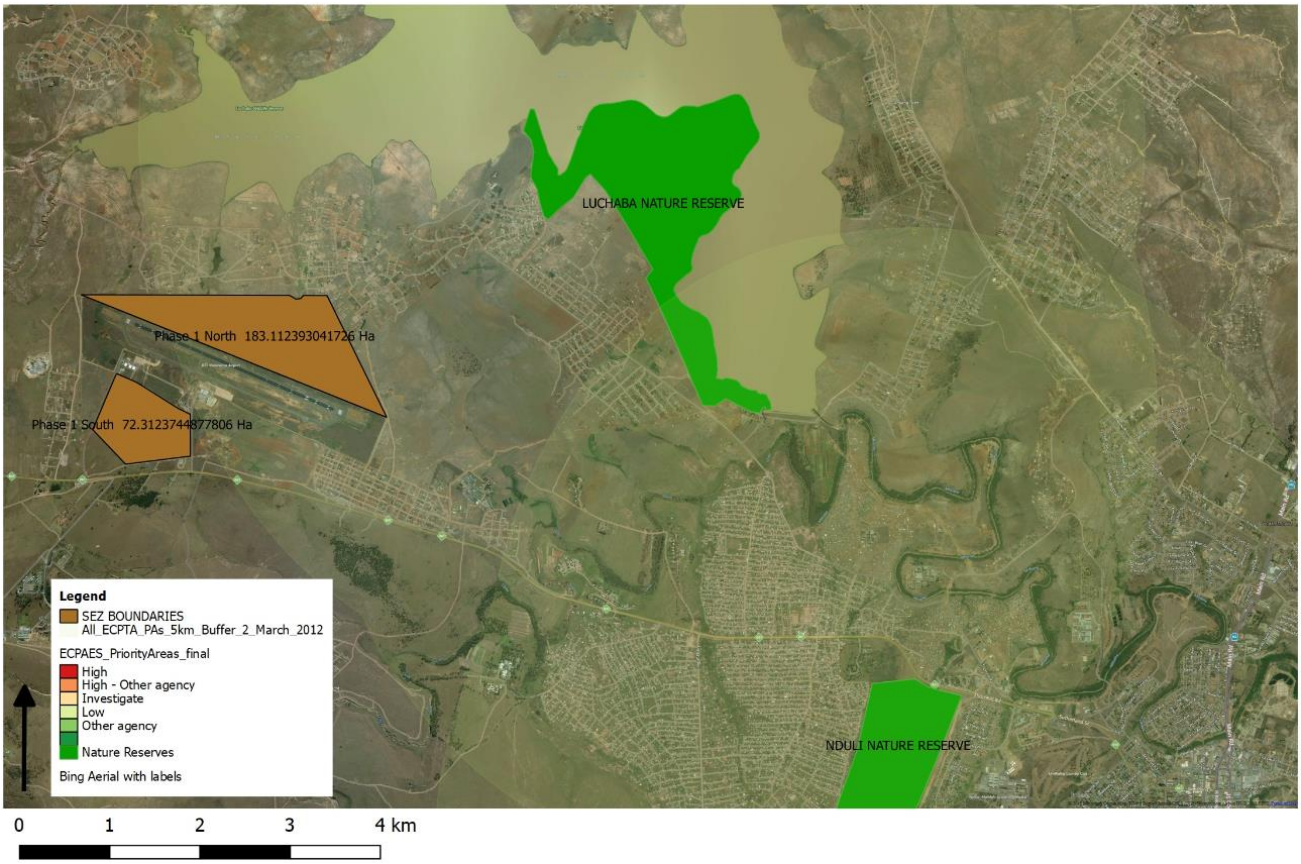

Figure 8-20: Extent of the Nduli & Luchaba Nature Reserve provided by the ECPTA

Interrogation of SANBI's online threatened species database for the quarter degree grid square 3128DA highlighted 4 species for consideration (refer to **Figure 8-21**, below). Of the 4 species highlighted, only 2 were identified as being 'possible' to potentially occur within remaining untransformed/intact grassland habitat in the project study area. The 2 plant species (*Brachystelma caffrum* and *Crinum macowanii*) will therefore be the focus during detailed vegetation surveys of the site to be undertaken.

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

Figure 8-21: Flora of Conservation Significance

BASELINE ASSESSMENT

Eco-pulse conducted a full Terrestrial Ecological Assessment (Report number EP341-03), **Appendix E-2**, terrestrial vegetation communities were identified for the site and surrounding area, including:

- **Slightly Modified Primary Mthatha Moist Grassland**: considered to be predominantly intact and of 'moderately-high' EIS (ecological importance/sensitivity) and found exclusively on the northern property and accounting for roughly 141 hectares (ha) of the property; and
- **Degraded Secondary Grassland**: considered to be in a degraded/seriously modified condition and of 'Low' EIS and found exclusively on the southern property and accounting for roughly 45 hectares (ha) of the property.

Protected plants occurring on the site appeared to be restricted to the southern property where two individuals of the species *Gladiolus ecklonii* were identified in the field.

As mentioned before, the Mthatha Moist Grassland is a listed ecosystem classified as Vulnerable (VU) in terms of GNR 1002.

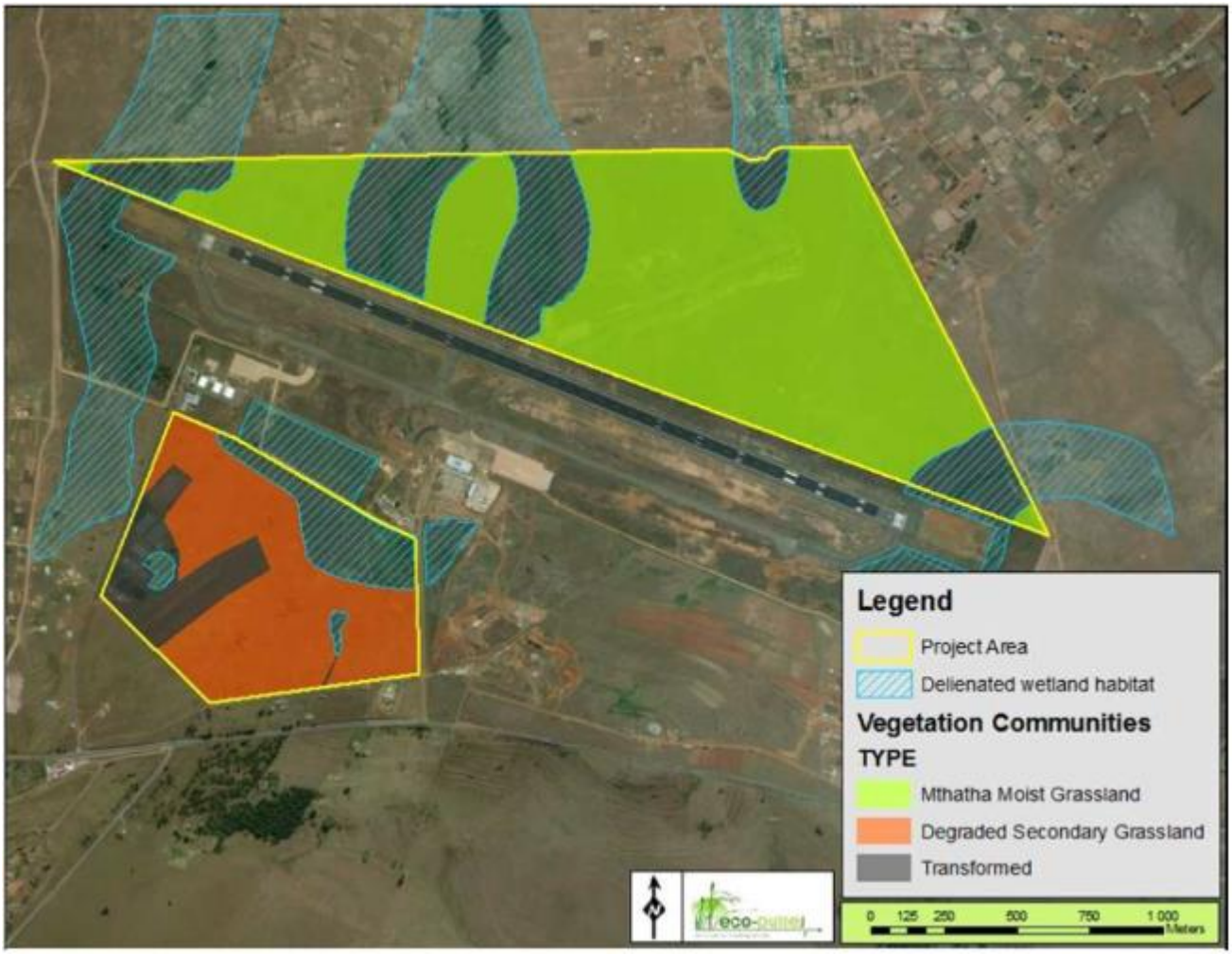

Figure 8-22: Site Vegetation

8.8.2 FAUNA

MAMMALS

The potential occurrence (POC) 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 available as Table 7 in the desktop Eco-Pulse report (**Appendix E-1**). The lack of species-specific habitat for most of the mammals listed in Table 7 of the desktop Eco-Pulse (**Appendix E-1**) report 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.

According to the desktop POA undertaken for the study area and habitat for species was ground-truthed in the field in March 2018, **Appendix E-1**. The findings of the fauna POC assessment indicate:

- The lack of species-specific habitat for most of the mammals, reptiles and amphibians 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 and domesticated livestock disturbance associated with human occupation in the area as well as increased grazing pressure.
- 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.
- Various endemic species of reptiles could potentially utilise the site, but are unlikely to persist in great numbers. All reptile species are sensitive to major habitat alteration and fragmentation. As a result of human presence in the area coupled with livestock grazing disturbances, alterations to the original reptilian fauna are expected to have already occurred.
- Amphibian species of conservation concern are unlikely to be present at the site or within the surrounding wetland/aquatic habitats due to the lack of sutable habtiat provided for key species.
- Grassland habitat lost is unlikely to support populations of nesting/breeding bird species of conservation importance. 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.

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 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. 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, 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).

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.

Important Bird Areas (Cape Vulture Colonies) have been identified within 50 km of the project area and are unlikely to be of much significance to this project. 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 EC region highlighted in the EC Conservation Plan (Berliner & Desmet, 2007);

ii. Species records found in the 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).

The summary POC for bird species is indicated in Table 8 of the desktop Eco-Pulse report (**Appendix E-1**).

REPTILES

A number of endemic and near-endemic reptile species, including lizards, snakes and skinks, modelled to occur in this region of the EC and could potentially reside in the more intact grassland and wetland/riverine habitats in the study area. 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. A summary of the reptile species of conservation in the study area is shown in Table 9 of the Eco-Pulse report.

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 suitable habitat provided for key species such as the Endangereed Kloof Frog (*Natalobatrachus bonebergi*). The summary of POC of amphibian species in the study area is shown in Table 10 of the desktop Eco-Pulse report (**Appendix E-1**).

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 POC.

8.9 HERITAGE AND PALAEONTOLOGY

8.9.1 HERITAGE REGIONAL AND SITE DESCRIPTION

A desktop Heritage Impact Assessment conducted by Frans Prins of Active Heritage (**Appendix E-4**) using the archaeological databases housed in the KwaZulu-Natal Museum and the SAHRA inventory of heritage sites in the Eastern Cape Province. The SAHRIS website was also consulted in order to locate additional sites and to evaluate the results of previous surveys near the study area. In addition, the available archaeological and historical literature covering the Eastern Cape was also consulted. Aerial photographs covering the project area was scrutinised for potential Iron Age and Historical period structures.

According to the desktop report, the available databases and literature did not suggest that any heritage features or sites of the following categories occur on the project area with regards to:

- Archaeological Sites;
- Living Heritage Sites;
- Cultural Landscapes; and
- Sites or areas with oral traditions attached to it.

Following the desktop study, a ground survey using accepted archaeological methodology was conducted on 20 July 2018 by Frans Prins of Active Heritage (**Appendix E-5**). The consultant also spoke to local community members during this survey in order to assess the recent history and heritage significance of the project area.

Nineteen features that appeared to be graves associated with abandoned Thembu/Xhosa Homesteads (Umzi) occur on Plot 2 during the desktop study. The follow-up ground survey and assessment of these features indicated that they were indeed grave sites associated with abandoned homesteads. However, all these graves have been exhumed and reburied. All that remains of them are empty holes as the burials appear to have been left to collapse once the grave contents have been removed. The consultant managed to locate an old Xhosa man, Ntate Mtolo, who used to live in this area. According to Ntate Mtolo, the people who lived in the area all left the area when the Mthatha Airport was built in the 1970's. They left for an area known as Cold Link Location that is situated to the south of Mthatha Dam. People with the following clan names used to live in the area: Mtolo, Zulu, Maqoma and others. Acording to Ntate Mtolo, none of the homesteads then were older than 20 years old at the time of the resettlement. That means that the oldest abandoned homestead is approximately 50 years old. According to national heritage legislation, a feature or site must be at least 60 years old before it is protected by heritage legislation. Therefore none of the abandoned homesteads can be classified as heritage features as such and they merit no further discussion. It is not certain if any of the graves were older than 60 years. However, as they have all been removed and reburied elsewhere their relevance is insignificant in terms of the project area.

8.9.2 PALAEONTOLOGY

The project area falls within a red zone as characterised by the SAHRIS Fossil Sensitivity Map. Accordingly, a field assessment, by a SAHRA accredited palaeontologist, and protocol for finds will be required before any development may take place. This is indicated in **Figure 8-23** below.

Figure 8-23: Palaeontological Sensitivity

The Katberg Formation is considered to be palaeontologically highly sensitive based on the important post-extinction continental biotas of Early Triassic age recorded from this unit in the Main Karoo Basin (SAHRIS website). A compilation map of known fossil vertebrate sites from the Beaufort Group of the Main Karoo Basin (Nicolas 2007) emphasises the lack of records from the former Transkei region including the Mthatha area (**Figure 8-24**). Rather than simply due to a lack of fossils here, the main reasons are probably low levels of surface exposure (soil, colluvial, alluvial and vegetation cover), high levels of subsurface humid climate weathering, as well as the paucity of palaeontological field studies in the region.

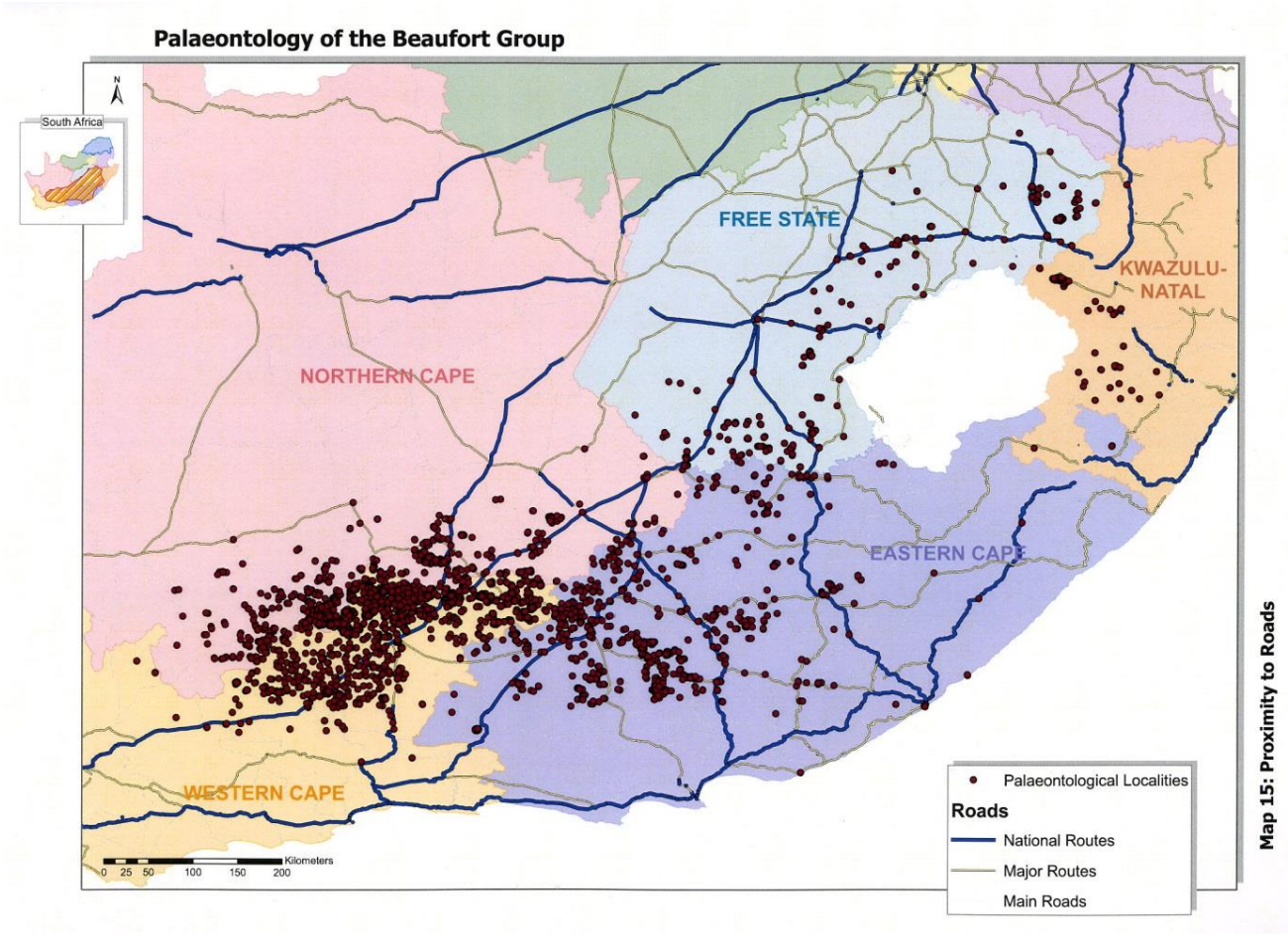

Figure 8-24: Distribution of Recorded Fossil Vertebrate Localities within the Beaufort Group (Main Karoo Basin)

The Katberg Formation is known to host a diverse and palaeontologically important terrestrial fossil biota of Early Triassic (Scythian / Induan - Early Olenekian) age, i.e. around 252 million years old (Groenewald & Kitching 1995, Rubidge 2005, Smith et al. 2012). The biota is dominated by a range of therapsids ("mammal-like reptiles"), amphibians and other tetrapods, with rare vascular plants and trace fossils, and has been assigned to the Lystrosaurus Assemblage Zone (LAZ). This surprisingly rich fossil assemblage characterizes Early Triassic successions of the upper part of the Palingkloof Member (Adelaide Subgroup) as well as the Katberg Formation. It should also be noted that while the dicynodont Lystrosaurus is also recorded from the uppermost beds of the Latest Permian Daptocephalus Assemblage Zone it only becomes super-abundant in Early Triassic times (e.g. Smith & Botha 2005, Botha & Smith 2007 and refs. therein).

No fossil remains were recorded from the Katberg Formation bedrocks or from the overlying superficial deposits in the Mthatha Airport area during the present field survey. This may be largely attributable to the paucity of bedrock exposure here, but deep chemical weathering of the bedrocks (as exemplified by the dolerites) as well as thermal metamorphism by large dolerite intrusions may also have compromised fossil preservation.

8.10 TRAFFIC

The project site is adjacent to the Mthatha Airport, however, this airport only serves two flights per day on the Mthatha-Johannesburg route. As the route is not that busy, the traffic in the area is not expected to be dense with the R61 expected to be the main access road that leads to the project site as well as surrounding communities. The area is mainly rural and is not expected to have a large number of cars per capita. No formal traffic impact assessment (TIA) has been done or is required.

8.11 SOCIO ECONOMIC PROFILE

8.11.1 REGIONAL SETTING

Over 80% of the Wild Coast population live in rural area that comprises three District Municipalities, namely Alfred Nzo District Municipality ANDM, ORTDM and Amathole District Municipality (excluding Buffalo City Municipality) and is home to 3.1 million people. The Wild Coast Region covers approximately 26% (44 420 km^2) of the EC's land area with an average population density of 77 people per square km. The region has underdeveloped infrastructure, suppressed industrial and agricultural development, high levels of poverty and elevated unemployment at 43.7%. However, the population in this region has grown at an annual average growth rate of 0.3% between 1995 and 2013, which is a lower rate compared to other EC regions and the country as a whole.

Despite clearly having a developmental potential and a reasonable economic growth figure, over the past ten (10) years the region has seen an unacceptably high average unemployment rate of 43.7%. The region is extremely poor. Almost two-thirds (61%) of people living in the EC are below the poverty line of R620 per person per month, most of which live in the Wild Coast region. For many, income poverty is compounded by lack of access to basic services, in particular water and sanitation. In the circumstances prevailing in the region, the reliance on the tertiary sector, attributed to mainly government services, would not have much impact in reducing the high unemployment rate, the weak industrialisation situation and the unfulfilled agricultural potential that is characterised by high levels of unskilled and semi-skilled labour.

8.11.2 LOCAL SETTING

According to the KSDLM IDP, agriculture currently contributes 1% to the economic base of the area, which shows that the land with good agricultural potential is underutilised. The key sectors identified for future development include agriculture, forestry, fishing, tourism, construction and property management. The IDP also indicates that 35% of people in the municipality rely on social grants, with 65% of that receiving the child support grant. The statistics also show that 35.5% of the people in the area have no schooling, 32.1% in primary, 29.5% in secondary and only 2.9% of the population with tertiary education. The poverty level in the area sits at 54.5% with the majority of the population (44.9%) earning between R1 001 to R3 500.

9 IMPACT ASSESSMENT

The scoping phase of an S&EIR process is aimed to identify those potential impacts that are most likely to be significant and which need to be assessed as part of the S&EIR process. The determination of anticipated impacts associated with the proposed Project is a key component to the S&EIR process. This Chapter identifies the perceived environmental and social effects associated with the proposed Project. The assessment methodology indicated in **Section 4.2**.

The issues identified stem from those aspects presented in Chapter 7 of this document as well as project description provided. Each significant issue identified is to be investigated further during the S&EIR process. Non-significant issues will be scoped out of the study with reasonable consideration given within the Scoping Report.

The impact assessment will be based on the land clearance in order to set up the SEZ before the individual business activities apply for a space on the SEZ. The impacts associated with the individual business activities on the SEZ will be assessed when they run their own environmental authorisation processes. This section will only look at the land clearance and the setting up of the service infrastructure to serve the SEZ including water, stormwater and sewer pipelines as well as powerlines, electrical substations and roads within the SEZ boundary.

Furthermore, the impact assessment is based on the construction and operational phase only. All closure related impacts will be assessed when the individual businesses conduct authorisation activities before closure. The EMPr must be updated to show the mitigation measure associated with closure. The mitigation hierarchy criteria for each mitigation measure is indicated in brackets after each measure indicated.

9.1 CLIMATE

The potential impacts of the project in the area with regards to climate include:

9.1.1 CONSTRUCTION PHASE

There will be limited expected changes to the climate due to the proposed project as influenced by carbon emissions from machines vehicles on the site during site clearance. The clearance of natural vegetation as well as wetland vegetation will impact the carbon storing potential of the area and hence influence climate change, however, to a small extent. This project focuses on clearance and establishing the SEZ, construction of access roads, power lines, construction of potable water, sewer and storm water pipelines but not the individual industrial or commercial activities that will occur on the SEZ. The impact of construction activities on climate are indicated in **Table 9-1** below.

Table 9-1: Construction Impact on Climate

Potential Impact: **Climate Change**	**Magnitude**	**Extent**	**Reversibility**	**Duration**	**Probability**	**Significance**		**Character**	**Confidence**
Without Mitigation	1	1	1	4	3	**21**	**Low**	(-)	High
With Mitigation	1	1	1	4	2	**14**	**Low**	(-)	High
Mitigation and Management Measures	– Ensure that all vehicles and machines are adequately maintained to minimise any potential emissions that can be harmful to the environment (Minimise).								

9.1.2 OPERATION PHASE

No operational impacts are expected for the project as the proposed redevelopment of the site will have a negligible impact within the existing climate context of the area.

9.2 TOPOGRAPHY

The potential impacts of clearing the site vegetation, construction of access roads, construction of powerlines, potable water, sewer and storm water pipelines to establish the SEZ will have little to no impact on the general topography of the site. No intrusive excavations will be conducted at this state. The potential impacts of the individual activities that will be established once the SEZ is established will need to be evaluated for their potential impacts, however, since they are unlikely to cause a radical shift in the topography of the site.

9.2.1 CONSTRUCTION PHASE

SLOPE OF THE SITE

The construction activities will not significantly change the general nature of the sites topography within the context of the surrounding relatively dense industrial developments. Rehabilitation of the site will be done at the end of construction phase to ensure that it has been reinstated to original form around the footprint of the developed buildings. The impact of the construction phase is indicated in **Table 9-2** below.

Table 9-2: Construction Impact on Slope

Potential Impact: Change of Slope	Magnitude	Extent	Reversibility	Duration	Probability	Significance		Character	Confidence
Without Mitigation	2	1	3	2	3	**24**	**Low**	(-)	High
With Mitigation	1	1	3	1	2	**12**	**Low**	(-)	High
Mitigation and Management Measures	– Ensure that appropriate rehabilitation is done after construction to ensure that there is little to no change in the topography of the site (Rehabilitate/Restore). – Where erosion channels form, they must be re-profiled and top-soiled. The cause of erosion must be investigated and addressed (Rehabilitate/Restore). – Restrict all activities, materials, equipment and persons within the area/s specified (Avoid or prevent and Minimise). – Erect and maintain permanent and/or temporary barricading prior to starting construction and remove from the site post construction (Avoid or prevent and Minimise). – All excavations must be backfilled to the natural surface level (Rehabilitate/Restore). – Stockpiles created during the construction phase must not remain in the operation phase of the project (Rehabilitate/Restore). – All structures comprising the site establishment are removed from the site and surrounding areas (Rehabilitate/Restore). – All rubble is removed from the site to an approved licensed landfill site (Rehabilitate/Restore). – All infrastructure will be designed with closure in mind (Rehabilitate/Restore).								

9.2.2 OPERATION PHASE

No operational impacts are expected for the project as the proposed redevelopment of the site will have a negligible impact within the existing topographical context of the area as the service infrastructure will be set.

9.3 GEOLOGY AND SOILS

The study area is mainly underlain by sedimentary rocks (sandstones and shales), through which magmas have intruded to form dolerite dykes and sills. The soils are arable and most of the productive soils are cultivated.

9.3.1 CONSTRUCTION PHASE

SOIL EROSION

The project leads to a disturbance on the removal of the existing natural grassland. Soil erosion will occur due to the removal of vegetation which may impact negatively on ecosystem function and can lead to silting of nearby surface water sources. Disturbance of soil profiles within wetlands (at road/pipeline crossings) will also render soils susceptible to suspension and transport via surface runoff and result in the sedimentation and increased turbidity of downstream water resources. This may occur as surface runoff transports fine soil particles (e.g. sand, clay and silt) while draining and dewatering of active work areas may result in the discharge of sediment rich water from trenches in order to ensure a dry work area.

The impact of the construction phase on soil erosion is indicated in **Table 9-3** below.

Table 9-3: Construction Impact on Soil Erosion

Potential Impact: Soil Erosion	Magnitude	Extent	Reversibility	Duration	Probability	Significance		Character	Confidence
Without Mitigation	3	3	3	4	5	**65**	**High**	(-)	High
With Mitigation	2	2	3	3	3	**30**	**Medium**	(-)	High
Mitigation and Management Measures	– Clear the approved areas on the site in accordance to the authorisation that is granted (Minimise). – Implement soil erosion management measures and ensure no erosion gullies are allowed to form within the area under management (Minimise). – All excavations and foundations must be inspected regularly for any silting (Minimise). – Appropriate erosion and stormwater management structures must be installed around the construction site (Minimise).								

SOIL CONTAMINATION

During construction activities, the construction trucks as well as hazardous substances stored on the site might spill and contaminate the soil. The impact of the construction phase on soil pollution is indicated in **Table 9-4** below.

Table 9-4: Construction Impact on Soil Contamination

Potential Impact: Soil Contamination	Magnitude	Extent	Reversibility	Duration	Probability	Significance		Character	Confidence
Without Mitigation	2	1	3	4	3	**30**	**Medium**	(-)	High
With Mitigation	1	1	3	4	2	**18**	**Low**	(-)	High
Mitigation and Management Measures	– All construction vehicles, plant, machinery and equipment must be properly maintained to prevent leaks (Avoid or prevent and Minimise). – Plant and vehicles are to be repaired immediately upon developing leaks (Avoid or prevent and Minimise).								

	– Drip trays shall be supplied for all idle vehicles and machinery (Avoid or prevent and Minimise). – No repair work may be undertaken on machinery onsite or campsite area (Avoid or prevent). – Drip trays are to be utilised during daily greasing and re-fuelling of machinery and to catch incidental spills and pollutants (Avoid or prevent and Minimise). – Drip trays are to be inspected daily for leaks and effectiveness, and emptied when necessary. This is to be closely monitored during rain events to prevent overflow (Avoid or prevent and Minimise). – Ensure appropriate handling of hazardous substances (Avoid or prevent). – Keep spill kits onsite and train personnel to use them appropriately (Rehabilitate/Restore). – Fuels and chemicals must be stored in adequate storage facilities that are secure, enclosed and bunded (Avoid or prevent and Minimise).

9.3.2 OPERATION PHASE

SOIL EROSION

During operational phase of the Phase 1 SEZ development, it is expected that there will be increased water inputs to the downstream wetlands from irrigation associated with agricultural land use on the northern property and an increase in hardened surfaces associated with built infrastructure development on the southern property (not to forget asphalt access roads) leading to the reduced infiltration capacity of the ground and increased runoff volumes and rates. All unprotected and exposed soil areas will be at risk of being washed down towards the watercourses leading to erosion and sedimentation of the watercourse. The operational impact of the SEZ is shown in **Table 9-5** below.

Table 9-5: Operation Impact on Soil Erosion

Potential Impact: Soil Erosion	Magnitude	Extent	Reversibility	Duration	Probability	Significance		Character	Confidence
Without Mitigation	3	3	3	4	5	**65**	**High**	(-)	High
With Mitigation	2	2	3	3	3	**30**	**Medium**	(-)	High
Mitigation and Management Measures	– Implement soil erosion management measures and ensure no erosion gullies are allowed to form within the area under management (Minimise). – Ensure that rehabilitation is done following construction to help bind the soil (Rehabilitate/Restore). – Appropriate erosion and stormwater management structures must be installed around the construction site (Minimise).								

SOIL CONTAMINATION

There are no operational phase impacts expected when the site is operational with regards to the infrastructure except with regards to soil contamination in the event the sewer pipeline bursts. The related impact is indicated in **Table 9-6** below.

Table 9-6: Closure Impact on Soil Contamination

Potential Impact: Soil Contamination	Magnitude	Extent	Reversibility	Duration	Probability	Significance		Character	Confidence
Without Mitigation	2	1	3	2	3	**24**	**Low**	(-)	High
With Mitigation	1	1	3	1	2	**12**	**Low**	(-)	High
Mitigation and Management Measures	• Use containment mechanisms to contain spills in the form of plastic sleeves around the pipes to hold any spills until the pipeline is fixed (Avoid or prevent and Minimise). • Ensure regular pipeline maintenance to avoid bursts (Avoid or prevent and Minimise).								

9.4 SURFACE WATER

As indicated before, the study area is mainly within the T20B quaternary catchment and partially within the T20C quaternary catchment. Both quaternary catchments are drained by the Mthatha River which is part of the Mzimvubu to Keiskamma Water Management Area (WMA). The proposed WCSEZ area is upslope from the south west 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. There are four wetland systems within the project site as indicated in the Eco-Pulse report.

9.4.1 CONSTRUCTION PHASE

CONTAMINATION OF SURFACE WATER

The vehicles and machines on the site use oil and fuel which has the potential to leak and be washed away into surface water sources. Washing of any vehicles on the site will impact surface water resources as contaminants are washed down to water resources. Furthermore, the clearance of the project site, construction of access roads, power lines, construction of potable water, sewer and storm water pipelines will leave contaminated loose soil, which can then be eroded to the Mthatha Dam which is downslope of the site to cause silting.

The biggest concern is that there are 4 wetland systems identified by the Eco-Pulse report which are within the project site which will be affected due to any physical activity on them. The impact of the construction phase is indicated in **Table 9-7** below.

Table 9-7: Construction Impact on Surface Water Contamination

Potential Impact: Surface Water Contamination	Magnitude	Extent	Reversibility	Duration	Probability	Significance		Character	Confidence
Without Mitigation	3	3	3	3	4	**48**	**Medium**	(-)	High
With Mitigation	2	2	3	2	3	**27**	**Low**	(-)	High
Mitigation and Management Measures	– Compile and implement a stormwater management plan to control the flow of stormwater and limit the potential of dirty water from mixing with clean water sources (Avoid or prevent and Minimise). – Acquire spill kits to clean up any hydrocarbon or chemical spills during construction, operation and closure to prevent seepage (Rehabilitate/Restore). – All spillage incidents must be reported to the responsible site officer as soon as they occur (Minimise).								

	– Oils, greases, diesel and other chemicals will be stored in the prescribed manner and within bunded areas to prevent surface water contamination (Avoid or prevent and Minimise). – The site should be contoured as according to the conceptual stormwater management plan to allow for surface water to readily drain away and to prevent ponding of water anywhere within the site (Avoid or prevent). – All outlets must be designed to dissipate the energy of outgoing flows to levels that present a low erosion risk (Avoid or prevent and Minimise). – All stormwater generated by the medium to high risk contamination 'dirty' areas must not be allowed to discharge into the surrounding environment (Avoid or prevent and Minimise). – Vehicles must be continuously maintained to ensure the number of hydrocarbon leaks is kept to a bare minimum (Avoid or prevent and Minimise). – No repairs may be undertaken on the site (Avoid or prevent). – Any cement mixing shall be completed on impervious hardstanding surfaces to prevent spillage to the environment (Avoid or prevent). – Mitigate against soil erosion, stormwater run-off control (Minimise). – Separate dirty and clean water by implementing clean and dirty water systems/structures prior to construction to prevent pollution of clean water runoff. The clean and dirty water systems and structures will be properly designed (according to Regulation 704 of the National Water Act) (Avoid or prevent).

DESTRUCTION AND MODIFICATION OF WETLANDS

The construction activities will include going through the existing wetlands to set up the service infrastructure. The erosion potential during the construction phase will also lead to silting of the wetlands if not controlled. Wetland vegetation and habitat can be impacted directly through the complete removal or partial disturbance of existing indigenous wetland vegetation (plants) during construction (i.e. stripping of vegetation and infilling), leading to the deterioration in the wetland vegetation & ecological condition. Based on the proposed development footprint which intends to maximise the available space for development infrastructure and agricultural land use, a total loss of wetland habitat is expected under the current proposed development scenario which does not seek to avoid permanent loss of wetlands.

Should development consider the avoidance of the delineated wetland areas and recommended 15m buffer zones, direct loss of wetland can potentially be avoided and impact significance reduced to an appreciably low level. The only direct impact for the project is then likely to be associated with the crossing of wetlands by services infrastructure (water and wastewater pipelines) and access roads. The necessary establishment of service infrastructure such as sewer/bulk water reticulation through wetlands will result mainly in the temporary destruction of wetland vegetation and habitat which should recover post-construction.

The impact of the construction phase is indicated in **Table 9-8** below.

Table 9-8: Construction Impact on Destruction and Modification of Wetlands

Potential Impact: **Destruction and Modification of Wetlands**	**Magnitude**	**Extent**	**Reversibility**	**Duration**	**Probability**	**Significance**		**Character**	**Confidence**
Without Mitigation	5	3	3	5	5	**80**	**High**	(-)	High
With Mitigation	3	2	3	4	4	**48**	**Medium**	(-)	High
Mitigation and Management Measures	– Clear the approved areas on the site in accordance to the authorisation that is granted (Avoid or prevent and Minimise). – Implement soil erosion management measures and ensure no erosion gullies are allowed to form within the area under management (Avoid or prevent and Minimise).								

	— All excavations and foundations must be inspected regularly for any silting (Minimise). — Appropriate erosion and stormwater management structures must be installed around the construction site (Minimise).

FLOW MODIFICATION

During construction there is a risk that vegetation stripping and bulk earthworks occurring adjacent and upstream of wetlands could result in increased surface runoff volumes and velocities, which can lead to soil erosion and entrain sediment, transporting and discharging this into sensitive downstream wetland areas. Furthermore, roads and pipeline trenches across wetlands for services infrastructure installation may intercept runoff and act as a preferential flow path, channelling runoff containing high concentrations of suspended sediment into wetlands. The effect of enhanced/unnatural sediment deposition on wetlands and instream habitats is well-documented, and can lead to habitat destruction, blanketing of vegetation and temporary disturbance of aquatic breeding and foraging sites as well as refugia. Intolerant species of aquatic biota (fauna and flora) will be most at risk. A temporary change in local hydrological regimes will also likely be as a result from construction activities associated with road and pipeline crossings of wetland, including the use of coffer dams, diversions and dewatering activities to create a 'dry' working area during construction. Coffer dams typically result in the temporary inundation of wetland habitat which often excludes vegetation not adapted to permanently saturated areas.

The impact of the construction phase is indicated in **Table 9-9** below.

Table 9-9: Construction Impact on Flow Modification

Potential Impact: Flow Modification	Magnitude	Extent	Reversibility	Duration	Probability	Significance		Character	Confidence
Without Mitigation	3	3	3	4	5	**65**	**High**	(-)	High
With Mitigation	2	2	3	3	3	**30**	**Medium**	(-)	High
Mitigation and Management Measures	— Clear the approved areas on the site in accordance to the authorisation that is granted (Minimise). — Implement soil erosion management measures and ensure no erosion gullies are allowed to form within the area under management (Avoid or prevent and Minimise). — All excavations and foundations must be inspected regularly for any silting (Minimise). — Appropriate erosion and stormwater management structures must be installed around the construction site (Minimise).								

9.4.2 OPERATION PHASE

CONTAMINATION OF SURFACE WATER

There are no operational phase impacts expected when the site is operational with regards to the infrastructure except with regards to surface water contamination in the event the sewer pipeline bursts. When this occurs, the sewer water can be washed into the surface water bodies and thus, contaminate it. Contaminants which may enter downstream and adjacent wetlands have the capacity to negatively affect the in-stream aquatic habitat and species. Where significant changes in water quality occur, this will ultimately result in a shift in aquatic species composition, favouring more tolerant species and potentially resulting in the localised reduction of sensitive species. Sudden drastic changes in water quality can also have chronic effects on aquatic biota in general, leading to localised extinctions. Accidental and intentional release of the above mentioned contaminants into the environment will alter surface and ground water quality which will eventually flow into downstream wetlands, altering the water quality of the resource in the short-term during construction. Potential consequences of degraded water quality may include:

- **Nutrient enrichment**: Increase in denitrification rate and biological uptake and processing.

- **Organic loading:** Reduces biological uptake and processing, especially at high loadings or if associated with acidification.
- **Acidification**: Usually depresses denitrification, biological uptake and processing and usually results in increased mobility of heavy metals.
- **Turbidity:** Reduces photo-oxidation of some contaminants and usually depresses denitrification rate and biological uptake and processing.
- **Contamination**: Can depress denitrification rate and biological uptake and processing and photosynthesis.
- **Salinization**: Can depress denitrification rate and biological uptake and processing and photosynthesis.

The impact of the operation phase is indicated in **Table 9-10** below.

Table 9-10: Operation Impact on Surface Water Contamination

Potential Impact: Surface Water Contamination	Magnitude	Extent	Reversibility	Duration	Probability	Significance		Character	Confidence
Without Mitigation	2	2	3	3	3	**30**	**Medium**	(-)	High
With Mitigation	1	1	3	2	2	**12**	**Low**	(-)	High
Mitigation and Management Measures	– Use containment mechanisms to contain spills in the form of plastic sleeves around the pipes to hold any spills until the pipeline is fixed (Avoid or prevent). – Ensure regular pipeline maintenance to avoid bursts (Avoid or prevent). – All stormwater generated by the medium to high risk contamination 'dirty' areas must not be allowed to discharge into the surrounding environment (Avoid or prevent). – The pipes need to be constructed to facilitate routine maintenance (i.e. simple, effectual housekeeping) (Avoid or prevent). – All pipes and channels must be checked after any major rainfall events to ensure that there are no blockages and that the water flow will not be restricted in any way (Avoid or prevent).								

DESTRUCTION AND MODIFICATION OF WETLANDS

During operation, there is unlikely to be any further direct or indirect impacts to wetlands located outside of the development footprint. However, the presence of a number of Invasive Alien Plant (IAP) species and undesirable weeds identified on the property creates a risk of alien plant and weed communities expanding and further colonising wetland areas if left unmanaged or poorly managed. This can have a significant impact on local biodiversity by displacing indigenous plants and creating undesirable alien plant-dominated wetland habitat, as well as potentially increasing soil erosion and fire risks. The impact of the operation phase is indicated in **Table 9-11** below.

Table 9-11: Operation Impact on Destruction and Modification of Wetlands

Potential Impact: Destruction and Modification of Wetlands	Magnitude	Extent	Reversibility	Duration	Probability	Significance		Character	Confidence
Without Mitigation	3	2	3	4	4	**48**	**Medium**	(-)	High
With Mitigation	2	1	3	1	3	**21**	**Low**	(-)	High
Mitigation and Management Measures	— Draw up and implement an alien invasive species management plan (Avoid or prevent and Minimise). — Implement soil erosion management measures and ensure no erosion gullies are allowed to form within the area under management (Avoid or prevent and Minimise). — Appropriate erosion and stormwater management structures must be installed around the construction site (Minimise).								

FLOW MODIFICATION

It is expected that there will be increased water inputs to the downstream wetlands from increase in hardened surfaces associated with built infrastructure development on the southern property (not to forget asphalt access roads) leading to the reduced infiltration capacity of the ground and increased runoff volumes and rates. The development of hardened surfaces within a wetland's catchment is recognized as having the potential to either increase or decrease the flows that reach downstream aquatic systems such as wetlands, rivers and streams. Greater volumes of water are generated more quickly while smaller and longer-duration flows that would occur under less developed conditions are reduced or perhaps eliminated. Research has shown that collecting storm water through modern storm drains, culverts, and catchments results in the rapid transport of large volumes of storm water runoff into rivers, lakes, and wetlands at much faster rates and higher volumes than under predevelopment conditions (Sheldon *et al.,* 2003). The amount of impervious surface within a contributing basin is a key influence on hydrologic patterns, and even small changes in watershed conditions have measurable influences on the flows and volumes of water in the system. Increased imperviousness (more hardened or impermeable surfaces) will experience an increase in the magnitude of runoff volume from a given storm event. The "typical" event occurs far more frequently. For example, the peak flows created from a two-year storm event, after urbanization, will occur far more frequently than every two years. Small storm events that did not create measurable peak discharges in natural vegetation conditions create measurable peak runoff flows in urbanized conditions, because the removal of the vegetation makes the same size storm event result in far greater volumes of water reaching aquatic resources such as wetlands and streams. Larger flows with more erosive force may occur in urbanized basins with much greater frequency, for example increasing from once or twice per decade to several times per year. Catchment hardening can also cause a decrease in interflow (shallow subsurface flow) and base flow from the developed catchment, with changes in the volume of interflow typically influencing the hydroperiod of downstream wetlands fed by shallow subsurface flow. Instead of water infiltrating the ground and recharging groundwater which feeds the wetland throughout the dry season, it will flow straight into the wetland and likely be lost to evapotranspiration (during early vegetation succession especially), surface and sub-surface outflow.

Also, poorly designed and implemented instream infrastructure (roads, bridges, culverts, pipelines) could alter the flow regime within affected watercourses. Road bridges and culverts narrower than the width of the watercourse often concentrate flows resulting in erosion of the downstream areas. Infrastructures with a base located above the natural level of the watercourse will result in impounding of flows and inundation of wetland or riparian habitat thus altering the natural saturation regime of the affected watercourse. Overtime the upstream area under inundation will experience increased sediment deposition and destruction of aquatic habitat.

The impact of the operation phase is indicated in **Table 9-12** below.

Table 9-12: Operation Impact on Flow Modification

Potential Impact: Flow Modification	Magnitude	Extent	Reversibility	Duration	Probability	Significance		Character	Confidence
Without Mitigation	4	3	3	4	5	**70**	**High**	(-)	High
With Mitigation	3	2	3	3	4	**44**	**Medium**	(-)	High
Mitigation and Management Measures	– Implement soil erosion management measures and ensure no erosion gullies are allowed to form within the area under management (Avoid or prevent and Minimise). – Ensure that rehabilitation is done following construction to help bind the soil (Rehabilitate/Restore). – Appropriate erosion and stormwater management structures must be installed around the construction site (Minimise).								

9.5 GROUNDWATER

The wetlands on the site 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. Seepage-type wetland systems contribute to the recharge of groundwater systems, therefore can be affected with regards to water quality through impact on the wetland. The proposed SEZ will not utilise groundwater. Water will be supplied from the municipality and no groundwater abstraction will be done on the site.

9.5.1 CONSTRUCTION PHASE

There is a potential to contaminate groundwater resources through the infiltration of any fuels, oils or lubricants used by construction vehicles and machines. Washing of any vehicles on the site will impact the groundwater resources as well as any potential contaminants can seep into groundwater sources. The impact of the construction phase is indicated in **Table 9-13** below.

Table 9-13: Construction Impact on Groundwater Contamination

Potential Impact: Groundwater Contamination	Magnitude	Extent	Reversibility	Duration	Probability	Significance		Character	Confidence
Without Mitigation	3	3	3	3	4	**48**	**Medium**	(-)	High
With Mitigation	2	2	3	2	3	**27**	**Low**	(-)	High
Mitigation and Management Measures	– Compile and implement the conceptual stormwater management plan to control the flow of stormwater and limit the potential of dirty water from mixing with clean water sources (Avoid or prevent and Minimise). – Acquire spill kits to clean up any hydrocarbon or chemical spills during construction, operation and closure to prevent seepage (Rehabilitate/Restore). – All spillage incidents must be reported to the responsible site officer as soon as they occur (Minimise). – Oils, greases, diesel and other chemicals will be stored in the prescribed manner and within bunded areas to prevent surface water contamination (Avoid or prevent and Minimise). – The site should be contoured as according to the conceptual stormwater management plan to allow for surface water to readily drain away and to prevent ponding of water anywhere within the site (Avoid or prevent and Minimise).								

	– All stormwater generated by the medium to high risk contamination 'dirty' areas must not be allowed to discharge into the surrounding environment (Avoid or prevent). – Vehicles must be continuously maintained to ensure the number of hydrocarbon leaks is kept to a bare minimum (Avoid or prevent). – No repairs may be undertaken on the site (Avoid or prevent). – Any cement mixing shall be completed on impervious hardstanding surfaces to prevent spillage to the environment (Avoid or prevent). – Separate dirty and clean water by implementing clean and dirty water systems/structures prior to construction to prevent pollution of clean water runoff. The clean and dirty water systems and structures will be properly designed (according to Regulation 704 of the National Water Act) (Avoid or prevent).

9.5.2 OPERATION PHASE

Contamination is highly unlikely as contamination sources are limited to vehicular fuel or lubricant spills in relation to waste arrival, product departure and parking areas. Vehicular movements will be limited and no impacts are anticipated with regards to groundwater for the majority of the infrastructure. In the event that the sewer line bursts, there will be a potential for groundwater contamination from the released effluent. The impact of the operational phase is indicated in **Table 9-14** below.

Table 9-14: Closure Impact on Groundwater Contamination

Potential Impact: Groundwater Contamination	Magnitude	Extent	Reversibility	Duration	Probability	Significance		Character	Confidence
Without Mitigation	2	1	3	2	3	**24**	**Low**	(-)	High
With Mitigation	1	1	3	1	2	**12**	**Low**	(-)	High
Mitigation and Management Measures	– Use containment mechanisms to contain spills in the form of plastic sleeves around the pipes to hold any spills until the pipeline is fixed (Avoid or prevent and Minimise). – Ensure regular pipeline maintenance to avoid bursts (Avoid or prevent). – All stormwater generated by the medium to high risk contamination 'dirty' areas must not be allowed to discharge into the surrounding environment (Avoid or prevent). – The pipes need to be constructed to facilitate routine maintenance (i.e. simple, effectual housekeeping) (Avoid or prevent and Minimise). – All pipes and channels must be checked after any major rainfall events to ensure that there are no blockages and that the water flow will not be restricted in any way (Avoid or prevent).								

9.6 AIR QUALITY

9.6.1 SENSITIVE RECEPTORS

Receptors are identified as areas that may be impacted negatively due to emissions from the proposed WCSEZ. Examples of receptors include, but are not limited to, schools, shopping centres, hospitals, office blocks and residential areas. The sensitive receptors identified in the areas surrounding the proposed WCSEZ are given in **Table 9-15**. The proposed WCSEZ is located adjacent to the Mthatha airport and other smaller communities.

Table 9-15: Location of Sensitive Receptors around the Proposed WCSEZ

RECEPTOR	DISTANCE	DIRECTION
Mthatha Airport	0 km	Adjacent
Gxojana	~500 m	North
Mthatha Dam	~1 km	North
Sheshegu	~500 m	North East
Nkanini	~2.5 km	North East
Ncise	~3 km	East
Efata	~3 km	South East
Hairfield	~1 km	South
Kaplan	~2.5 km	South
Kukani	~4.5 km	South West
Ntaka	~5 km	West
Kuthala	~4 km	West
Matshongwe	~3 km	North West

9.6.2 CONSTRUCTION PHASE

DUST AND EXHAUST EMISSIONS

This EIAR looks at the impacts for the site clearance of the proposed WCSEZ, construction of access roads, power lines, construction of potable water, sewer and storm water pipelines. The site clearance as well as the excavation during construction of access roads, power lines and pipelines is a source of dust emissions that can have a substantial temporary impact on the local air quality situation. Emissions during construction are associated with land clearing, drilling and blasting, ground excavation and cut and fill operations. Dust emissions often vary substantially on a daily basis, depending on the level of activity, the specific operations and the prevailing meteorological conditions. A large portion of the emissions results from equipment traffic over temporary roads at the construction site.

Construction consists of a series of different operations, each with its own duration and potential for dust generation. Construction operations are of a temporary nature, with a definable beginning and end. Dust emissions vary substantially over different phases of the construction process.

The quantity of dust emissions from construction operations is proportional to the area of land being worked and to the level of construction activity. Emissions from heavy construction are positively correlated with the silt content of the soil and the weight and speed of the average vehicle and negatively correlated with the soil moisture content.

During the construction phase, it is expected that fugitive dust emissions will result from the construction of new infrastructure associated with the proposed project. Vehicle activities associated with the transport of equipment to and from the site, and on-site construction equipment traffic may also contribute to elevated fugitive dust levels. Sensitive receptors located in close proximity to the site will experience elevated dust levels during the construction phase although this is anticipated to be short-term and temporary in nature. With the implementation of appropriate mitigation measures such as wet suppression, dust emissions can be minimised and controlled. The impact of the construction phase is indicated in **Table 9-16** below.

Table 9-16: Construction Impact on Dust and Exhaust Emissions

Potential Impact: Dust and Exhaust Emissions	Magnitude	Extent	Reversibility	Duration	Probability	Significance		Character	Confidence
Without Mitigation	2	2	3	1	4	**32**	**Medium**	(-)	High
With Mitigation	1	2	1	2	2	**12**	**Low**	(-)	High
Mitigation and Management Measures	– Conduct dust suppression via water spray during construction to minimise dust emissions from the site activities (Minimise). – All stockpiles must be restricted to designated areas and may not exceed a height of two (2) metres (Minimise). – Ensure that all vehicles and machines are adequately maintained to minimise exhaust emissions (Minimise). – It is recommended that the clearing of vegetation from the site should be selective and done just before construction so as to minimise erosion and dust (Minimise). – No burning of waste, such as plastic bags, cement bags and litter is permitted (Avoid or prevent). – Should construction in areas that have been stripped not be commencing within a short period of time the exposed areas shall be re-vegetated or stabilised (Minimise). – All materials transported to site must be transported in such a manner that they do not fly or fall off the vehicle. This may necessitate covering or wetting friable materials (Minimise).								

9.6.3 OPERATION PHASE

ODOUR

Odour is perceived by our brains in response to chemicals present in the air we breathe. Odour is the effect that those chemicals have upon us. Humans have a sensitive sense of smell and can detect odour even when chemicals are present in very low concentrations.

The main concern with odour is its ability to cause an effect that could be considered 'objectionable or offensive'. An objectionable or offensive effect can occur either where an odorous compound is present in very low concentrations, usually far less than the concentration that could harm physical health, or when it occurs in high concentrations. Where the offensive odour is caused by high concentrations, contaminants in the odour may also be causing direct health effects such as skin, eye or nose irritation, and these should be considered in addition to any potential odour impacts. Repeated or prolonged exposure to odour can lead to a high level of annoyance, and the receiver may become particularly sensitive to the presence of the odour (Ministry for Environment, New Zealand, 2003).

The SEZ will produce odorous emissions in the event that the sewer pipe bursts within the SEZ boundary. The impact of the operation phase on odour is indicated in **Table 9-17** below.

Table 9-17: Operation Impact on Odour

Potential Impact: Odour	Magnitude	Extent	Reversibility	Duration	Probability	Significance		Character	Confidence
Without Mitigation	2	1	3	2	3	**24**	**Low**	(-)	High
With Mitigation	1	1	3	1	2	**12**	**Low**	(-)	High
Mitigation and Management Measures	– Use containment mechanisms to contain spills in the form of plastic sleeves around the pipes to hold any spills until the pipeline is fixed (Minimise). – Ensure regular pipeline maintenance to avoid bursts (Avoid or prevent). – The pipes need to be constructed to facilitate routine maintenance (i.e. simple, effectual housekeeping) (Avoid or prevent).								

9.7 FLORA AND FAUNA IMPACTS

9.7.1 CONSTRUCTION PHASE

Construction activities will have a variety of impacts on the fauna and flora of the site as well as on the surrounding area. As indicated before, the area is within a CBA area with listed endangered species listed especially on the northern sector.

PHYSICAL DESTRUCTION OF FLORA AND FAUNA

Based on the proposed development footprint which intends to maximise the available space for development infrastructure and agricultural land use, a total loss of primary grassland habitat is expected under the current proposed development scenario which does not seek to avoid permanent loss of terrestrial grassland habitat on the northern and southern properties. This is particularly relevant to the northern property where a loss of predominantly intact primary grassland habitat (estimated to be in the region of approximately 141 ha) can be considered to be of **'high' impact significance** based on the extent of transformation and the 'endangered' vegetation status. The loss of large areas of endangered vegetation type is considered significant as this could contribute to a change in the threat status of the vegetation (i.e. from endangered to 'critically endangered' status) and could also play a role in reducing the ability to achieve provincial and national conservation targets set for this vegetation type. This would likely warrant the consideration of a biodiversity offset as a means of compensating for the permanent (residual) impact on terrestrial grassland vegetation communities and habitat.

In addition to the expected loss of primary Mthatha Moist Grassland on the northern property, there is also the potential for the development to result in the loss of provincially protected plant species (i.e. *Gladilous ecklonii*) located on the southern property if measures are not taken to conserve these plants. These plants are however not red-data listed and are species of 'Least Concern' according to SANBI, reducing the intensity and magnitude of impact of any loss of these 'protected' plant species.

The Mthatha Moist Grassland is a listed ecosystem classified as Vulnerable (VU) sitting in a CBA 1 & 2 area. Based off these findings, it was suggested that a Biodiversity Offset Plan be considered to confirm offset targets for residual grassland vegetation and habitat losses, identify suitable offset receiving areas and outline the process for the establishment, governance and management of the offset in collaboration with the assessing environmental and conservation authorities at the national and provincial levels of Government. It must be noted that a Biodiversity Offset should be seen as a last resort measure after all other forms of impact mitigation and development planning have been exhausted. This is because a Biodiversity Offset is typically a complex and costly exercise and these costs and implications should be carefully considered before committing to such a process. As such, this project will not pursue a Biodiversity Offset Plan but will rather settle to conserve a good part of the site and not develop it based on the new proposed layout as indicated in Section 6.

The impact of construction on the endangered species is indicated in **Table 9-18** below.

Table 9-18: Construction Impact on Physical Destruction of Flora and Fauna

Potential Impact: Physical Destruction of Flora and Fauna	Magnitude	Extent	Reversibility	Duration	Probability	Significance		Character	Confidence
Without Mitigation	4	2	3	4	5	**65**	**High**	(-)	High
With Mitigation	3	1	3	4	4	**44**	**Medium**	(-)	High
Mitigation and Management Measures	– Ensure that contractors and staff are well trained, managed and adhere to the mitigation and management measures stipulated in this report (Avoid or prevent and Minimise). – Site clearing is to be limited to only the area necessary for carrying out the specified works and the destruction of vegetation should be minimised. It should be outside of the delineated buffer lines around Wetland 2 (Minimise). – Move any identified sensitive species to nurseries to be maintained (Minimise). – Compile and implement an alien vegetation management plan for the entire site. It must be incorporated into the Environmental Management Programme (particularly the wattle bush) (Minimise). – Ensure that topsoil used for rehabilitation is free of any weed species (Avoid or prevent and Minimise). – Before any vegetation is removed, a suitably qualified person (i.e. on ECO request of a vegetation specialist) shall inspect the study area for any plant/ grass/ tree species that could be transplanted to other similar/ suitable areas. This includes all Red Data or Protected, or rare plants that may be found during the flora site assessment or during construction operations (Avoid or prevent and Offset). – Any medicinal/ protected/ Red Data flora that will have to be removed shall be removed by a suitably qualified specialist and relocated. The applicable responsible person at the provincial department must be notified in the event of such plants being identified, who will then advise the ECO regarding what steps need to be taken and who will be responsible for the relocation and transplantation processes (Avoid or prevent and Offset). – All invader or exotic plant species must be removed from the site and disposed of at a landfill site (Avoid or prevent and Minimise). – Only indigenous floral species (preferably using endemic or local species from the area), which are water wise and require minimal horticultural practices may be used during landscaping and rehabilitation (Rehabilitate/Restore). – Remaining indigenous trees (naturally occurring in the area) should be retained wherever possible (Avoid or prevent and Minimise).								

DEGRADATION AND FRAGMENTATION OF HABITAT

Vegetation clearing and disturbance of natural habitat not only reduces the availability of habitat (refugia/breeding/nesting sites) and food for local wildlife but can also temporarily or even permanently restrict corridor movement between natural areas through associated fragmentation of natural habitat and the severing of natural ecological linkages/corridors. This will be of particular significance where relatively un-impacted grassland areas are affected, especially for existing local wildlife movement corridors. The effect of fragmentation will generally be greater for fauna than for flora and is typically lower for grasslands when compared with typical wooded/forest communities in the region. With the primary grassland being fenced (impervious barrier to species movement) and subject to noise disturbance (airport), this areas is unlikely to be a practical wildlife corridor used by conservation important species, therefore habitat fragmentation is less of an issue. The development would probably have some impact on small mammals such as rodents and shrews, however, there should be adequate adjacent terrestrial grassland habitat retained in surrounding areas for small mammals. Nocturnal species such as hares would generally avoid disturbance through their nocturnal habit and

avifauna would readily move off the site at the first sign of human activity. Excavation for development would have a direct impact on moles through loss of habitat, with the overall extent of impact related to the proportion of area developed. Loss of habitat may have a deleterious impact on ants.

Outside the development footprint, there is bound to be use of the open space area for storage of construction materials, access and setting up a construction site camps. Such activities are likely to result in further degradation of already degraded vegetation communities through vegetation clearing, trampling and soil compaction. Use of heavy machinery within open spaces will likely alter the soil structure underneath. It has been shown that compaction can be up to 200 times greater than in undisturbed land (Trombulak & Frissell, 2000). If soil compaction is not addressed at the cessation of construction, plants that need deep soils will fail to establish themselves. Only plants that do well in shallow and compact soils will establish. Furthermore, construction activities are likely to temporarily denude the vegetation on the site and expose the soils to erosive elements. This could be exacerbated by water flowing down trenches and access roads, as well as from trench de-watering activities. Soil erosion can result in the loss of valuable topsoil and formation of erosion gullies. This can cause localized habitat loss / alteration due to increased sediment deposition or erosion of natural areas. Some of the key ecological effects related to the erosion/deposition of sediment may include:

- Habitat alteration due to increased sediment deposition or erosion of areas;
- Reductions in photosynthetic activity and primary production caused by sediments impeding light penetration;
- Reduced density and diversity of organisms as a result of habitat degradation, blanketing of sites and the establishment of more tolerant taxa or exotic species; and

Exposure disturbed sites to invasion by weeds and other undesirable plants. The impact of the construction phase is indicated in **Table 9-19** below.

Table 9-19: Construction Impact on Degradation and Fragmentation of Habitat

Potential Impact: Degradation and Fragmentation of Habitat	Magnitude	Extent	Reversibility	Duration	Probability	Significance		Character	Confidence
Without Mitigation	2	1	3	4	4	**40**	**Medium**	(-)	High
With Mitigation	1	1	3	4	3	**27**	**Low**	(-)	High
Mitigation and Management Measures	– Ensure that contractors and staff are well trained, managed and adhere to the mitigation and management measures stipulated in this report (Avoid or prevent and Minimise). – Site clearing is to be limited to only the area necessary for carrying out the specified works and the destruction of vegetation should be minimised (Minimise). – Ideally fences should not restrict the natural migratory movements of certain animals. The site offers limited suitable migratory habitat. Electric fences have a negative impact on certain animal species including Bushbabies, geckoes, chameleons, bullfrogs and tortoises. Palisade fencing with adequate gaps is recommended for the conserved public open spaces (Minimise).								

POLLUTION OF SOIL, WATER AND VEGETATION

During the construction phase, there is a chance that soils, water and vegetation may be polluted. Waste products and pollutants generated during the construction phase of the development may include fuels and oils from construction vehicles, cement and concrete products, paints and other hazardous substances; as well as solid waste in the form of building material and litter from labourers. These can potentially enter the surrounding natural grassland environments either directly through disposal/mismanagement of waste products/pollutants or more indirectly through surface runoff during rainfall events. These contaminants have the capacity to negatively affect soil and grassland ecosystems at the site, including sensitive or intolerant species of flora and fauna. When highly toxic pollutants come into contact with plants they often result in the destruction of plant parts (e.g. leaves) ultimately resulting in the death of the plant. Where significant changes in soil/water quality occur, this will ultimately result in a shift in flora and soil microbes species composition, favouring more tolerant species and encouraging the invasion of early successional and alien invasive species and potentially resulting

in the localised exclusion of any sensitive species. As these pollutants can typically linger in the soil for extensive periods of time, they may inhibit the establishment of vegetation during rehabilitation of any disturbed grassland areas.

The impact of the construction phase on flora is indicated in **Table 9-20** below.

Table 9-20: Construction Impact on Pollution of Soil, Water and Vegetation

Potential Impact: Pollution of Soil, Water and Vegetation	Magnitude	Extent	Reversibility	Duration	Probability	Significance		Character	Confidence
Without Mitigation	2	1	1	4	4	**36**	**Medium**	(-)	High
With Mitigation	1	1	1	4	3	**21**	**Low**	(-)	High
Mitigation and Management Measures	– Use containment mechanisms to contain spills in the form of plastic sleeves around the pipes to hold any spills until the pipeline is fixed (Avoid or prevent). – Compile and implement the conceptual stormwater management plan to control the flow of stormwater and limit the potential of dirty water from mixing with clean water sources (Avoid or prevent). – Acquire spill kits to clean up any hydrocarbon or chemical spills during construction, operation and closure to prevent seepage (Rehabilitate/Restore). – All spillage incidents must be reported to the responsible site officer as soon as they occur (Minimise). – Oils, greases, diesel and other chemicals will be stored in the prescribed manner and within bunded areas to prevent surface water contamination (Avoid or prevent). – The site should be contoured as according to the conceptual stormwater management plan to allow for surface water to readily drain away and to prevent ponding of water anywhere within the site (Avoid or prevent and Minimise). – All stormwater generated by the medium to high risk contamination 'dirty' areas must not be allowed to discharge into the surrounding environment (Avoid or prevent). – Vehicles must be continuously maintained to ensure the number of hydrocarbon leaks is kept to a bare minimum (Avoid or prevent and Minimise). – No repairs may be undertaken on the site (Avoid or prevent). – Any cement mixing shall be completed on impervious hardstanding surfaces to prevent spillage to the environment (Avoid or prevent and Minimise). — Separate dirty and clean water by implementing clean and dirty water systems/structures prior to construction to prevent pollution of clean water runoff. The clean and dirty water systems and structures will be properly designed (according to Regulation 704 of the National Water Act) (Avoid or prevent).								

NUISANCE FACTORS (NOISE, VIBRATIONS, LIGHT)

Typical construction activities associated with the establishment of infrastructure are known to generate noise and vibrations. Local wildlife (fauna) generally responds to disturbances caused by human activities according to the magnitude, timing, and duration of the particular disturbance. Human activities can affect an animal's ability to feed, rest, and breed if it is unable to habituate to the disturbance caused (Rodgers & Schwikert, 2003). Anthropogenic activities occurring within a close proximity to natural habitats containing fauna (wildlife) can lead to both the physical disturbance of habitats supporting animal life by construction machinery/labourers (already discussed above under Impacts 1 and 2) as well as the disturbance of fauna due to artificial noise and artificial light pollution at the site during construction. These impacts are generally short lived and limited to the construction period and locally common species already occurring at the site are likely to be less sensitive to noise/light disturbance (due to the proximity of existing rural human settlement) and can probably become habituated at the site. Light pollution will only become a problem if construction activities proceed during the

night or if there is a need to maintain a well-light construction site throughout the night (for safety / security reasons).

The impact of the construction phase on is indicated in **Table 9-21** below.

Table 9-21: Construction Impact due to Nuisance Factors (Noise, Vibrations, and Light)

Potential Impact: Nuisance Factors (Noise, Vibrations, Light)	Magnitude	Extent	Reversibility	Duration	Probability	Significance		Character	Confidence
Without Mitigation	3	2	3	4	4	**48**	**Medium**	(-)	High
With Mitigation	2	1	3	4	3	**30**	**Medium**	(-)	High
Mitigation and Management Measures	– Ensure that vehicles are fitted with noise abatement measures in the event that they are noisy (Minimise). – Conduct regular maintenance on vehicles to minimise noise and vibrations (Minimise). – Consider only working during regular working hours to avoid the use of artificial lighting for construction activities (Avoid or prevent and Minimise). – Vehicles must use designated routes to and from the site (Minimise).								

9.7.2 OPERATIONAL PHASE

DEGRADATION AND FRAGMENTATION OF HABITAT

Following construction and during site operation, the potential disturbance of soil and vegetation within natural areas (and adjacent habitats) typically encourages the establishment of pioneer vegetation and in many cases creates an ideal opportunity and optimal conditions for weeds and IAPs to invade both disturbed and adjacent undisturbed grassland habitat. IAPs can have far reaching detrimental effects on native biota and has been widely accepted as being a leading cause of biodiversity loss. They typically have rapid reproductive turnover and are able to outcompete native species for environmental resources, alter soil chemistry and stability, promote erosion, change litter accumulation, reduce food supply for fauna and soil properties and promote of suppress fire. Failure to manage stripping of vegetation, topsoil and rehabilitation can lead to serious IAP infestation which compromises the quality of habitat provided by the naturally occurring grassland vegetation community. Clearing and disturbance can also result in an increase in edge habitat immediately adjacent to disturbed areas. Edge habitat is characterized by a predominance of generalist and alien species that are usually highly competitive species which can invade areas of established vegetation, resulting in a loss of sedentary species of mature habitats which are normally considered sensitive. Edge effects will be typically lower for grasslands when compared with typical wooded communities such as forests. The spread of existing alien plants within natural areas can be exacerbated if not properly managed and new alien plant species may be introduced to natural areas as a result of human disturbance and re-vegetation using undesirable plants species that are not naturally common to the region.

The impact of the operational phase is indicated in **Table 9-22** below.

Table 9-22: Operation Impact on Degradation and Fragmentation of Habitat

Potential Impact: Degradation and Fragmentation of Habitat	Magnitude	Extent	Reversibility	Duration	Probability	Significance		Character	Confidence
Without Mitigation	2	1	1	4	4	**36**	**Medium**	(-)	High
With Mitigation	1	1	1	4	3	**21**	**Low**	(-)	High
Mitigation and Management Measures	– Ensure that contractors and staff are well trained, managed and adhere to the mitigation and management measures stipulated in this report (Minimise).								

	– Ideally fences should not restrict the natural migratory movements of certain animals. The site offers limited suitable migratory habitat. Electric fences have a negative impact on certain animal species including Bushbabies, geckoes, chameleons, bullfrogs and tortoises. Palisade fencing with adequate gaps is recommended for the conserved public open spaces (Minimise).

POLLUTION OF SOIL, WATER AND VEGETATION

Pollution sources from developments in their operational-phase can vary greatly. Mixed-use development that incorporates a range of land-uses including industry, commercial/retail space and agriculture can typically be associated with the following potential operational phase contaminants:

- **Suspended solids –** associated with runoff from hardened surfaces and bare soils leading to soil erosion and sedimentation.
- **Nutrients** – associated with agricultural runoff and fertilise application.
- **Sewage –** associated with leaks, infrastructure failure and/or storm water ingress into sewer manholes leading to the surcharge of contaminated water.
- **Hydrocarbons, oils and grease** – run-off from parking lots and roads.
- **Toxicants** – run-off containing detergents and other toxic substances used by residents.

During operation, solid and/or liquid wastes stored and handled at the site could enter adjacent environments if not managed adequately and could lead to pollution of the adjacent habitat, flora and fauna. With regards to any access roads planned: roads are also accepted as a source of numerous particulate and chemical pollutants. Acting either as a fertilizer (nitrogen), growth stimulator (carbon dioxide) or pollutant (heavy metals), vehicular emissions play a significant role in transforming road verge plant populations creating so-called 'edge effects' (Angold, 1997) which decrease with distance from the road. Pollution and chemicals on roads can also be dispersed via storm water run-off into the surrounding environment and have far reaching consequences (Coffin, 2007).

The impact of the operational phase is indicated in **Table 9-23** below.

Table 9-23: Operation Impact on Pollution of Soil, Water and Vegetation

Potential Impact: Pollution of Soil, Water and Vegetation	Magnitude	Extent	Reversibility	Duration	Probability	Significance		Character	Confidence
Without Mitigation	2	1	1	4	4	**36**	**Medium**	(-)	High
With Mitigation	1	1	1	4	3	**21**	**Low**	(-)	High
Mitigation and Management Measures	– Use containment mechanisms to contain spills in the form of plastic sleeves around the pipes to hold any spills until the pipeline is fixed (Avoid or prevent). – Compile and implement the conceptual stormwater management plan to control the flow of stormwater and limit the potential of dirty water from mixing with clean water sources (Avoid or prevent). – Acquire spill kits to clean up any hydrocarbon or chemical spills during construction, operation and closure to prevent seepage (Rehabilitate/Restore). – All spillage incidents must be reported to the responsible site officer as soon as they occur (Minimise). – Oils, greases, diesel and other chemicals will be stored in the prescribed manner and within bunded areas to prevent surface water contamination (Avoid or prevent). – The site should be contoured as according to the conceptual stormwater management plan to allow for surface water to readily drain away and to prevent ponding of water anywhere within the site (Avoid or prevent and Minimise). – All stormwater generated by the medium to high risk contamination 'dirty' areas must not be allowed to discharge into the surrounding environment (Avoid or prevent).								

	– Vehicles must be continuously maintained to ensure the number of hydrocarbon leaks is kept to a bare minimum (Avoid or prevent and Minimise). – No repairs may be undertaken on the site (Avoid or prevent). – Any cement mixing shall be completed on impervious hardstanding surfaces to prevent spillage to the environment (Avoid or prevent and Minimise). – Separate dirty and clean water by implementing clean and dirty water systems/structures prior to construction to prevent pollution of clean water runoff. The clean and dirty water systems and structures will be properly designed (according to Regulation 704 of the National Water Act) (Avoid or prevent).

NUISANCE FACTORS (NOISE, VIBRATIONS, LIGHT)

Longer term noise, vibration and light pollution impacts will likely persist during the operational life-span of the development project, and will likely include noise generated by vehicles accessing the site and transporting goods and materials, machinery operating at industrial sites and noise generated by residents, employees and labourers, sirens, etc. The frequency, intensity and the extent of the noise impacts is expected to be relatively high during operation and will also be variable across the site depending on the specific operational land use and activities occurring.

The impact of the operational phase on is indicated in **Table 9-24** below.

Table 9-24: Operation Impact due to Nuisance Factors (Noise, Vibrations, Light)

Potential Impact: Nuisance Factors (Noise, Vibrations, Light)	Magnitude	Extent	Reversibility	Duration	Probability	Significance		Character	Confidence
Without Mitigation	3	2	3	4	4	**48**	**Medium**	(-)	High
With Mitigation	2	1	3	4	3	**30**	**Medium**	(-)	High
Mitigation and Management Measures	– Ensure that vehicles are fitted with noise abatement measures in the event that they are noisy (Minimise). – Conduct regular maintenance on vehicles to minimise noise and vibrations (Minimise). – Consider only working during regular working hours to avoid the use of artificial lighting for construction activities (Avoid or prevent and Minimise). – Vehicles must use designated routes to and from the site (Minimise).								

9.8 PALAEONTOLOGY AND HERITAGE

9.8.1 CONSTRUCTION PHASE

DAMAGE TO HERITAGE RESOURCES

The land clearance will be non-intrusive, however, the construction of roads, power lines and pipelines will be intrusive. The desktop HIA identified abandoned Xhosa/Thembu homesteads on the 65 ha portion to the south of the Mthatha Airport. The site visit conducted did not find any heritage sites. The desktop study indicated 19 possible grave sites. However, the ground survey indicated that all these graves have been exhumed and reburied elsewhere by family members of the deceased approximately 20 to 30 years ago. The impact of the construction phase is indicated in **Table 9-25** below.

Table 9-25: Construction Impact on Heritage Resources

Potential Impact: Damage to Heritage Resources	Magnitude	Extent	Reversibility	Duration	Probability	Significance		Character	Confidence
Without Mitigation	2	2	3	1	2	24	Low	(-)	High
With Mitigation	1	1	3	1	2	12	Low	(-)	High
Mitigation and Management Measures	– Construction activities should be conducted carefully and all activities ceased if any archaeological, cultural and heritage resources are discovered. The South African Heritage Resource Agency (SAHRA) should be notified and investigation conducted before any activities can commence (Avoid or prevent and Minimise). – In the event that any heritage resources are discovered, the chance find procedure provided in the EMPr should be followed (Avoid or prevent and Minimise).								

DAMAGE TO PALAEONTOLOGICAL RESOURCES

As with heritage resources, the land clearance will be non-intrusive, however, the construction of roads, power lines and pipelines will be intrusive. Based on the SAHRIS tool, the area is in a red zone for palaeontology, which is very high risk for presence of palaeontological resources. The intrusive construction activities can lead to discovery and damage to palaeontological resources. The impact of the construction phase is indicated in **Table 9-26** below.

Table 9-26: Construction Impact on Palaeontological Resources

Potential Impact: Damage to Palaeontological Resources	Magnitude	Extent	Reversibility	Duration	Probability	Significance		Character	Confidence
Without Mitigation	2	2	3	1	3	24	Low	(-)	Medium
With Mitigation	1	1	3	1	2	12	Low	(-)	Medium
Mitigation and Management Measures	– The suitably qualified and experienced Environmental Control Officer (ECO) responsible for the construction phase should be made aware of the potential occurrence of scientifically-important fossil remains within the development footprint (Avoid or prevent and Minimise). – During the construction phase all major clearance operations and deeper (> 1 m) excavations should be monitored for fossil remains on an on-going basis by the ECO (Avoid or prevent). – Should substantial fossil remains be encountered at surface or exposed during construction, the ECO should safeguard these, preferably in situ (Avoid or prevent and Minimise). – ECO should alert the Eastern Cape Provincial Heritage Resources Agency, ECPHRA (Contact details: Mr Sello Mokhanya, 74 Alexander Road, King Williams Town 5600; smokhanya@ecphra.org.za) as soon as possible (Avoid or prevent and Minimise). – Construction activities should be conducted carefully and all activities ceased if any archaeological, cultural and heritage resources are discovered. The South African Heritage Resource Agency (SAHRA) should be notified and investigation conducted before any activities can commence (Avoid or prevent and Minimise).								

9.8.2 OPERATION PHASE

There will be little to no impacts with regards to palaeontological resources during operation and decommissioning. This is because all the palaeontological impacts are expected to be realised during the construction phase where there will be intrusive activities.

9.9 TRAFFIC

9.9.1 CONSTRUCTION PHASE

Development of the proposed SEZ has the potential to result in localised traffic impacts. There will be insignificant impact on traffic during the clearance of the proposed project site since only land clearing and road construction equipment, and machines will be brought in and kept on the site until the site is set up.

The impact of the construction phase on the site traffic is indicated in **Table 9-27** below.

Table 9-27: Impact on Increased Traffic on Local and Site Road Network

Potential Impact: **Increased Traffic on Local and Site Road Network**	**Magnitude**	**Extent**	**Reversibility**	**Duration**	**Probability**	**Significance**		**Character**	**Confidence**
Without Mitigation	2	1	1	2	3	**18**	**Low**	(-)	High
With Mitigation	1	1	1	2	2	**10**	**Low**	(-)	High
Mitigation and Management Measures	– On-site dust control should be implemented on unsurfaced roads (Avoid or prevent and Minimise). – All construction related vehicles that will access the site must adhere to exhaust emission regulations (Minimise). – A complaints register must be maintained on site and made accessible to neighbours and surrounding land users (Minimise). – Ensure vehicles are properly maintained so that they do not cause air and noise pollution (Minimise). – Fit vehicles with silences if required to limit the noise pollution (Minimise).								

9.9.2 OPERATION PHASE

During the operational phase, there is intermittent vehicle movement to and from the site regarding the SEZ service infrastructure for the purpose of maintenance of the pipelines, roads and other structures. The operational impacts will be further evaluated when the individual activities are proposed on the SEZ, especially the cumulative impacts as more industrial, agricultural and commercial activities grow in the SEZ.

The impact of the operation phase on the site traffic is indicated in **Table 9-28** below.

Table 9-28: Operation Impact on Increased Traffic on Local and Site Road Network

Potential Impact: Increased Traffic on Local and Site Road Network	Magnitude	Extent	Reversibility	Duration	Probability	Significance		Character	Confidence
Without Mitigation	1	1	1	4	3	**21**	**Low**	(-)	High
With Mitigation	1	1	1	4	2	**14**	**Low**	(-)	High
Mitigation and Management Measures	– All vehicles to adhere to standard exhaust emission regulations (Minimise). – Ensure vehicles are properly maintained so that they do not cause air and noise pollution (Minimise).								

9.10 SOCIO ECONOMIC PROFILE

As indicated before, the region has underdeveloped infrastructure, suppressed industrial and agricultural development, high levels of poverty and elevated unemployment at 43.7%. Furthermore, the area has high population living under the poverty line. The project will be a stimulus on the local economy and influences future growth. Considerable growth will be realised when the individual business activities commence.

9.10.1 CONSTRUCTION PHASE

PROVISION OF EMPLOYMENT AND SKILLS DEVELOPMENT

The project will provide short term jobs for the local communities especially in the construction field. The project will boost the local economy as there will be investment in the region which will benefit local businesses. The long term jobs can improve on the unemployment rate in the area will occur only when the individual projects commence. The impact of the construction phase on employment and skills development is indicated in **Table 9-29** below.

Table 9-29: Construction Impact on Employment and Skills Development

Potential Impact: Employment and Skills Development	Magnitude	Extent	Reversibility	Duration	Probability	Significance		Character	Confidence
Without Mitigation	1	2	3	2	3	**24**	**Low**	(+)	High
With Mitigation	2	2	3	2	4	**36**	**Medium**	(+)	High
Mitigation and Management Measures	– The project must aim to use local labour in order to benefit the local community. – Train employees to gain skills they can use in the future. – Consult with local communities to boost local business.								

9.10.2 OPERATION PHASE

PROVISION OF EMPLOYMENT AND SKILLS DEVELOPMENT

The project will provide minimal jobs as well as skills development when operational as these will be limited to the maintenance of the service infrastructure. The long term jobs can improve on the unemployment rate in the area will occur only when the individual projects commence. The impact of the operation phase on employment and skills development is indicated in **Table 9-30** below.

Table 9-30: Operation Impact on Employment and Skills Development

Potential Impact: Employment and Skills Development	Magnitude	Extent	Reversibility	Duration	Probability	Significance		Character	Confidence
Without Mitigation	1	2	3	1	2	**14**	**Low**	(+)	High
With Mitigation	2	2	3	2	3	**27**	**Low**	(+)	High
Mitigation and Management Measures	– The project must aim to use local labour in order to benefit the local community. – Train employees to gain skills they can use in the future. – Consult with local communities to boost local business.								

10 ENVIRONMENTAL IMPACT STATEMENT

The essence of any S&EIR process is aimed at ensuring informed decision-making, environmental accountability, and to assist in achieving environmentally sound and sustainable development. In terms of NEMA, the commitment to sustainable development is evident in the provision that "*development must be socially, environmentally and economically sustainable and requires the consideration of all relevant factors…"* NEMA also imposes a duty of care, which places a positive obligation on any person who has caused, is causing, or is likely to cause damage to the environment to take reasonable steps to prevent such damage. In terms of NEMA's preventative principle, potentially negative impacts on the environment and on people's environmental rights (in terms of the Constitution of the Republic of South Africa, Act No. 108 of 1996) should be anticipated and prevented, and where they cannot be altogether prevented, they must be minimised and remedied in terms of "reasonable measures".

In assessing the environmental feasibility of the proposed Wildcoast SEZ, the requirements of all relevant legislation have been considered. The identification and development of appropriate management and mitigation measures that should be implemented in order to minimise potentially significant impacts associated with the project, has been informed by best practice principles, past experience and the relevant legislation (where applicable).

The conclusions of this EIA are the result of comprehensive assessments. These assessments were based on issues identified through the S&EIR process and the parallel process of public participation. The public consultation process has been undertaken according to the requirements of NEMA and every effort has been made to include representatives of all stakeholders within the process.

10.1 ENVIRONMENTAL SENSITIVITIES

The following environmental sensitivities were identified on the site and will require specific applications or measures for mitigation to minimise impact. The proposed project site is located in the following sensitive environments:

- CBA 1 and 2 area;
- Listed ecosystem namely the Mthatha Moist Grassland, classified as Vulnerable (VU);
- Very high sensitivity palaeontological area; and
- Four wetland areas.

The presence of the Mthatha Moist Grassland raises the consideration of a Biodiversity Offset Plan. Due to the high costs and amount of time required, an offset plan is considered as a last resort. As such, this project will not pursue a Biodiversity Offset Plan but will rather settle to conserve a good part of the site and not develop it based on the new proposed layout as indicated in **Figure 10-2**. An alternative plan has been made to limit the amount of sensitive area cleared for development and conserve part of it on the site. As such, no development will occur on Wetlands 1 and 2 including on the grassland area enclosed by Wetland 2. Therefore, development will only occur on the space between Wetland 1 and 2 as well as to the east of Wetland 2 (outside the buffer) including over Wetlands 3 and 4. A water use licensing process will be followed separately for the development within the regulated area of watercourses as required. A map of the potential sensitivities that were investigated is shown in **Figure 10-1** below, while **Figure 10-2** shows the new proposed development footprint.

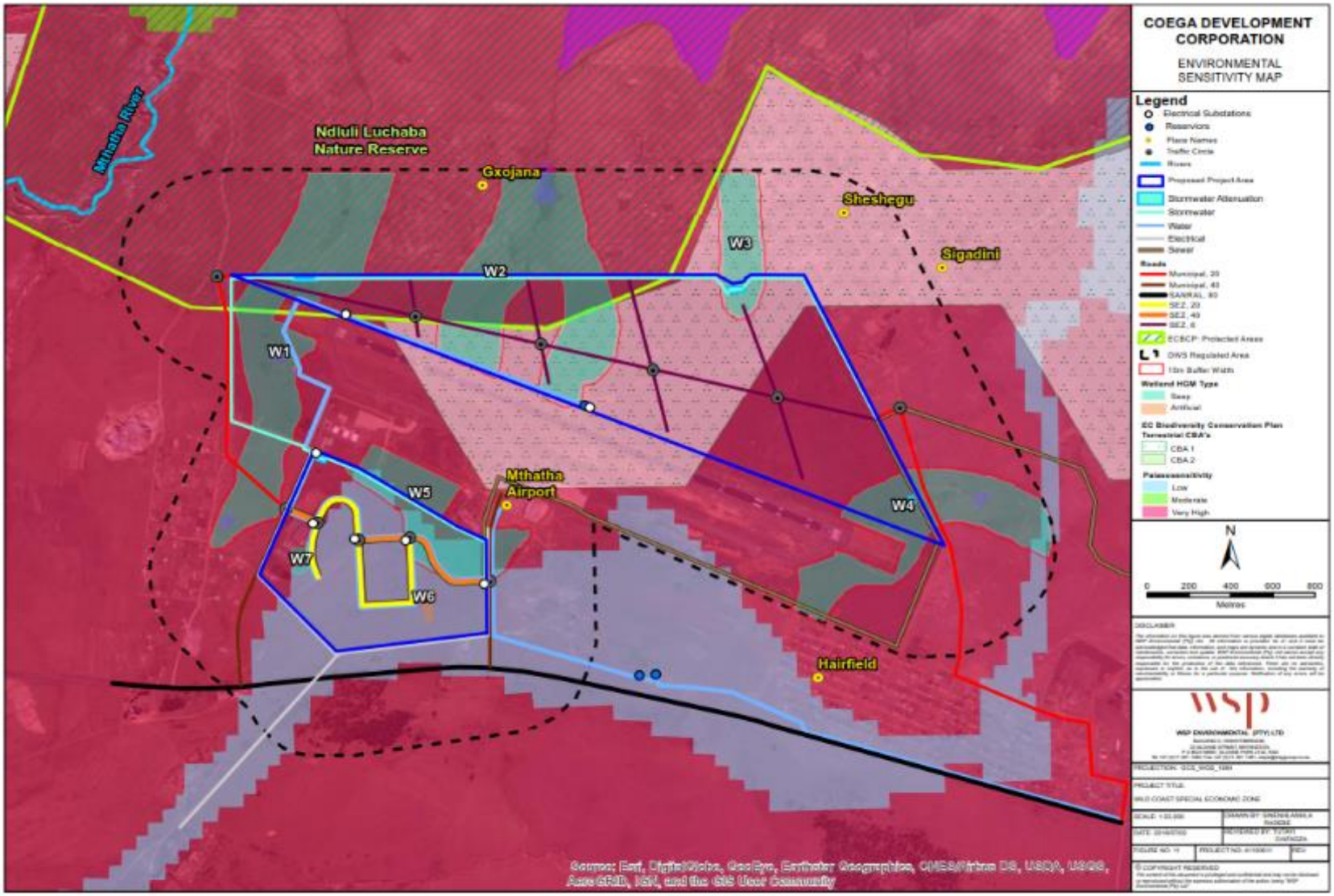

Figure 10-1: Environmental Sensitivities

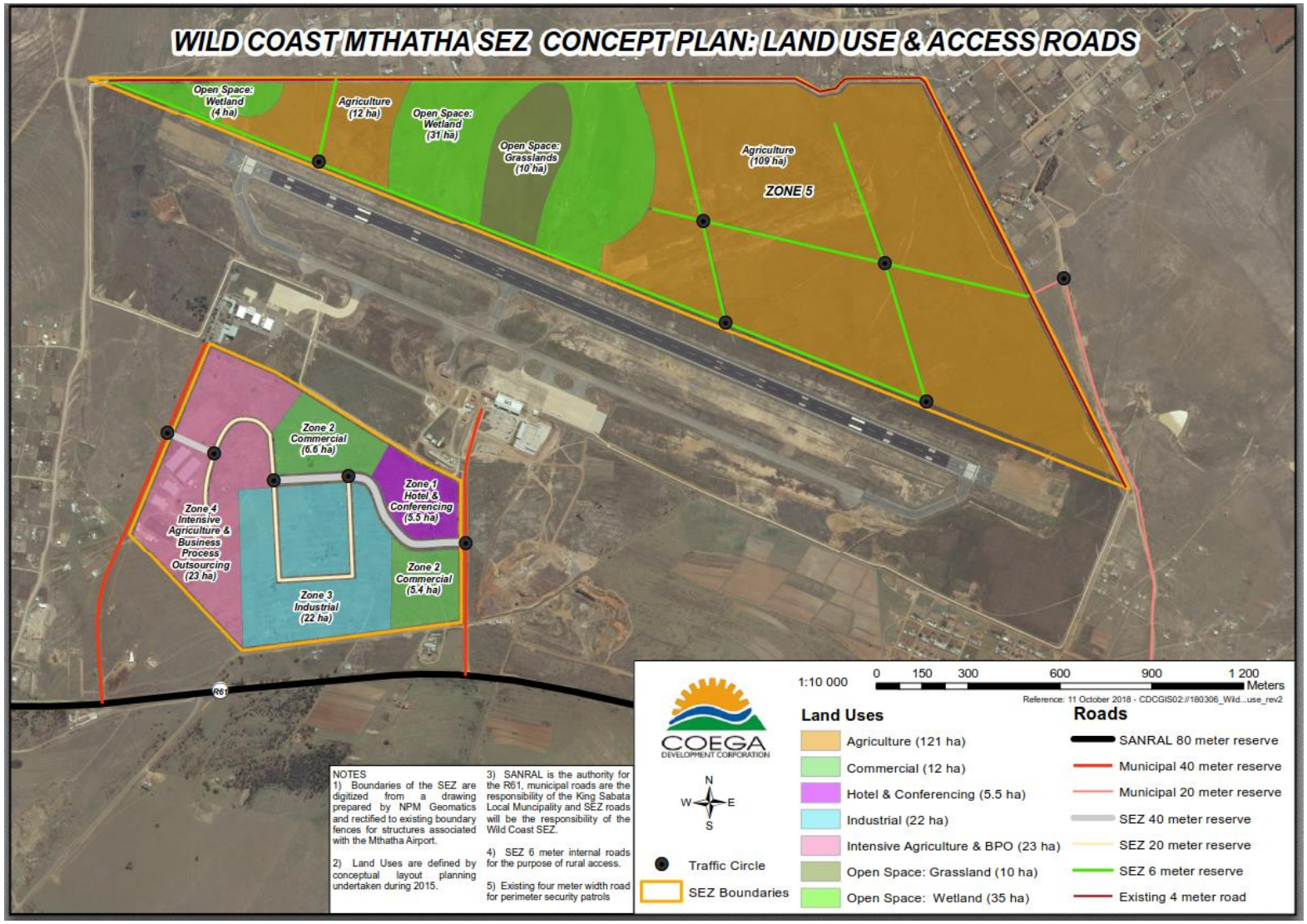

Figure 10-2: New Proposed Development Footprint

SPECIALIST CONCLUSIONS

10.1.1 TERRESTRIAL ECOLOGICAL ASSESSMENT

The Specialist Terrestrial Ecological Assessment undertaken by Eco-Pulse (**Appendix E-2**) identified two (2) terrestrial vegetation communities, including (i) a Slightly Modified Primary Mthatha Moist Grassland of 'moderately-high' EIS located on the northern property and accounting for roughly 141 hectares (ha) of the site and (ii) a Degraded Secondary Grassland of 'Low' EIS and found exclusively on the southern property and accounting for roughly 45 hectares (ha) of the site. Based on the desktop POC assessment for fauna (wildlife) undertaken, the probability of the site being important for hosting Red data listed/threatened populations or even individuals is considered to be relatively low and, the development is expected to have a low impact on faunal species of conservation concern.

Protected plants occurring on the site appeared to be restricted to the southern property where two individuals of the species *Gladiolus ecklonii* were identified in the field. It is recommended that a protected plant rescue and translocation plan must be compiled and implemented and the relevant permit applications for the translocation of protected plants be submitted.

The most significant ecological impact likely to be associated with the proposed development pertains to the potential permanent transformation and loss of a substantial amount of primary Mthatha Moist Grassland vegetation and habitat (~141 ha). Whilst initial measures aimed at the avoidance of impacts in accordance with the 'mitigation hierarchy' come highly recommended (as per Chapter 6 of this report), where avoidance of impacts leading to the transformation of the primary grassland vegetation and habitat will not be practically possible, impacts should warrant the need for a suitable 'Biodiversity Offset' as a means of compensating for the irreplaceable loss of primary Mthatha Moist Grassland. The need and desirability of biodiversity offsets will still need to be confirmed by the regulating authority. A biodiversity offset plan will need to be developed should an offset be pursued by the developer which will require the finalisation of assumed losses, extent of the area to target for an offset (based on losses, threat status of the vegetation type and ecosystem conservation ratios/multipliers), together with the mechanisms and cost implications for doing so to be investigated once confirmation for the need for an offset has been obtained from the regulating authorities.

A Biodiversity Offset should be seen as a last resort measure after all other forms of impact mitigation and development planning have been exhausted. The developer should also be aware that a Biodiversity Offset is typically a complex and costly exercise and these costs and implications should be carefully considered before committing to such a process. As such, this project will not pursue a Biodiversity Offset Plan but will rather settle to conserve a good part of the site and not develop it based on the new proposed layout as indicated in **Figure** 10-2. An alternative plan has been made to limit the amount of sensitive area cleared for development and conserve part of it on the site. As such, no development will occur on Wetlands 1 and 2 including on the grassland area enclosed by Wetland 2. Therefore, development will only occur on the space between Wetland 1 and 2 as well as to the east of Wetland 2 (outside the buffer) including over Wetlands 3 and 4. A water use licensing process will be followed separately for the development within the regulated area of watercourses as required.

10.1.2 WETLAND HABITAT IMPACT ASSESSMENT

The Specialist Wetland Assessment undertaken by Eco-Pulse identified seven (7) wetland units, including six (6) wetland 'seeps' and one (1) artificial wetland that stand to be measurably affected by the development project and triggering water use in terms of Section 21 of the NWA and the need for impact assessment. The wetlands were found to be in a 'moderately modified ('C' PES Class) to 'largely modified' state ('D' PES class) state, with the larger and more intact wetlands considered to be of 'Moderate' Ecological Importance & Sensitivity (EIS) and smaller wetlands of 'Low' to 'Very Low' EIS. Wetlands belonged to one of two wetland vegetation groups associated with the project area: Sub-escarpment Savanna ('endangered' type) and Sub-Escarpment Grassland Group 7 ('critically endangered' type) as defined by NFEPA (SANBI & DWS, 2014).

With good environmental management and adequate mitigation of potential ecological impacts at the site, the overall impact of the proposed development on the ecological condition and functioning of the various wetland

habitats is unlikely to be of such an intensity and extent that the Present Ecological State (PES) will be significantly altered and it is therefore unlikely that the proposed development activities will compromise the ability to meet the water resource management objectives as defined by the Recommended Ecological Category (REC).

Managing impacts such as the direct disturbance of vegetation/habitat and erosion/sedimentation risks will be necessary to maintain the current level of integrity and functioning of aquatic ecosystems (i.e. the management objective set for watercourses assessed) and to this end, a number of recommendations have been made regarding the design of the project and infrastructure as well as the provision of practical mitigation measures and impact management considerations to deal with anticipated construction phase and operational impacts and risks, a number of post-construction rehabilitation guidelines and an ecological monitoring protocol. With adequate mitigation and management measures in place for the construction and operational phases, continued wetland habitat functioning is likely to remain largely unchanged for this project. It therefore comes recommended that Chapters 6 and 7 of this report which deals with 'Impact Mitigation/Management' be referenced in the Environmental Authorisation (EA) for this project as a specific condition of the EA and WULA. With the adequate implementation of the mitigation and management measures prescribed in this report, the overall impact of the project on aquatic ecosystems is considered to be low and there are no fatal flaws or conditions that would make this project unacceptable from an aquatic environment perspective.

However, should the current development plan proposed be authorised by the relevant environmental authorities based on the development motivation and without mitigation aimed at avoiding wetland losses, this will result in the permanent loss of an estimated **56 ha** of wetland area which initially could be considered to be of **'high' impact significance and would warrant the consideration of a wetland/biodiversity offset as a means of compensating for the permanent loss of wetland habitat and functioning (i.e. residual wetland impact)**. An offset will not be pursued due to its complex nature as well as the associated high cost. As such, this project will not pursue a Biodiversity Offset Plan but will rather settle to conserve a good part of the site and not develop it based on the new proposed layout as indicated in **Figure** 10-2. An alternative plan has been made to limit the amount of sensitive area cleared for development and conserve part of it on the site. As such, no development will occur on Wetlands 1 and 2 including on the grassland area enclosed by Wetland 2. Therefore, development will only occur on the space between Wetland 1 and 2 as well as to the east of Wetland 2 (outside the buffer) including over Wetlands 3 and 4. A water use licensing process will be followed separately for the development within the regulated area of watercourses as required.

Other requirements include the need for a Water Use License according to Section 21 (c), (g) and (i) of the National Water Act No. 36 of 1998. Due to the operational management and treatment/discharge of wastewater considered to be a 'moderate' level risk, the development is considered to be exempted from authorisation in terms of the GA (General Authorisation) for Section 21 (c) and (i) water use and a full WULA is required (the GA for Section 21 c and i water use also does not apply for *"…pipelines carrying hazardous materials and to raw water (wastewater) and wastewater treatment works."*).

10.1.3 HERITAGE IMPACT ASSESSMENT

Following the ground survey, the following conclusions were reached:

- None of the homesteads that were resettled when the airport was built were older than 20 years old at the time of the resettlement. That means the oldest abandoned homestead is approximately 50 years old. According to national heritage legislation a feature or site must be at least 60 years old before it is protected by heritage legislation. Therefore none of the abandoned homesteads can be classified as heritage features as such and merit no further discussion. It is not certain if any of the graves were older than 60 years. However, as they have all been removed and reburied elsewhere their relevance is insignificant in terms of the project area.
- Plot 1 appears not to be significant from a general heritage point of view. This has also been confirmed by the ground survey of the area.
- The initial desktop survey identified a large number of abandoned Xhosa/Thembu homesteads, and associated grave sites, on Plot 2 (65Ha). However, the subsequent ground survey indicated that all these graves have been exhumed by family members of the deceased when the area was abandoned in the late 1970's. The abandoned homesteads are all younger than 60 years old and do not have any heritage value.
- A Phase One Paleontological Impact Assessment will need to be conducted of both Plots 1 and 2 before any development may proceed.

- It should be pointed out that the South African Heritage Act requires that all activities should cease immediately should the developers unearth any additional heritage sites or artefacts pending an evaluation by the heritage authorities

10.1.4 PALAENTOLOGICAL SURVEY

It is concluded that the impact significance of the proposed development in terms of palaeontological heritage resources is low. Confidence levels for this assessment are medium due to the very low levels of bedrock exposure in the project area. Pending the potential discovery of significant new fossil remains (e.g. vertebrate bones and teeth, burrows, trackways, plant fossils including petrified wood) during the construction phase of the Phase 1 SEZ development, no further specialist palaeontological studies or mitigation are recommended for this project. There are no fatal flaws to the proposed development as far as fossil heritage is concerned. Provided that the Chance Fossil Finds Procedure outlined below and tabulated in Appendix 1 of the PIA is followed through, there are no objections on palaeontological heritage grounds to authorisation of the proposed Phase 1 SEZ development at Mthatha Airport.

The suitably qualified and experienced Environmental Control Officer (ECO) responsible for the construction phase should be made aware of the potential occurrence of scientifically-important fossil remains within the development footprint. During the construction phase all major clearance operations and deeper (> 1 m) excavations should be monitored for fossil remains on an on-going basis by the ECO. Should substantial fossil remains be encountered at surface or exposed during construction, the ECO should safeguard these, preferably in situ. They should then alert the Eastern Cape Provincial Heritage Resources Agency, ECPHRA (Contact details: Mr Sello Mokhanya, 74 Alexander Road, King Williams Town 5600; smokhanya@ecphra.org.za) as soon as possible. This is to ensure that appropriate action (i.e. recording, sampling or collection of fossils, recording of relevant geological data) can be taken by a professional palaeontologist at the proponent's expense. These recommendations are summarized in the tabulated Chance Fossil Finds Procedure appended as Appendix 1 of the PIA.

The palaeontologist concerned with any mitigation work will need a valid fossil collection permit from ECPHRA and any material collected would have to be curated in an approved depository (e.g. museum or university collection). All palaeontological specialist work would have to conform to international best practice for palaeontological fieldwork and the study (e.g. data recording fossil collection and curation, final report) should adhere as far as possible to the minimum standards for Phase 2 palaeontological studies developed by SAHRA (2013).

These monitoring and mitigation recommendations are to be incorporated into the EMPr for the Phase 1 SEZ development. It should be emphasized that, providing appropriate mitigation is carried out, the majority of developments involving fossiliferous bedrock excavation can make a positive contribution to our understanding of local palaeontological heritage.

10.2 IMPACT STATEMENT

The overall objective of the EIA is to provide sufficient information to enable informed decision-making by the authorities. This was undertaken through consideration of the proposed project components, identification of the aspects and sources of potential impacts and subsequent provision of mitigation measures.

It is the opinion of WSP that the information contained in this document (read in conjunction the final scoping report) is sufficient for the DEA to make an informed decision for the environmental authorisation being applied for in respect of this project.

Mitigation measures have been developed where applicable for the above aspects and are presented within the EMPr (**Appendix G**). It is imperative that all impact mitigation recommendations contained in the EMPr, of which the environmental impact assessment took cognisance, are legally enforced. The impact summary is shown in **Table 10-1** below.

Table 10-1: Impact Summary Table

NO.	IMPACT DESCRIPTION	PHASE	WITHOUT MITIGATION		WITH MITIGATION	
			SIGNIFICANCE	STATUS	SIGNIFICANCE	STATUS
C1	Climate Change	Construction	Low	(-)	Low	(-)
C2	Change of Slope	Construction	Low	(-)	Low	(-)
C3	Soil Erosion	Construction	High	(-)	Medium	(-)
C4	Soil Contamination	Construction	Medium	(-)	Low	(-)
C5	Surface Water Contamination	Construction	Medium	(-)	Low	(-)
C6	Destruction and Modification of Wetlands	Construction	High	(-)	Medium	(-)
C7	Flow Modification	Construction	High	(-)	Medium	(-)
C8	Groundwater Contamination	Construction	Medium	(-)	Low	(-)
C9	Dust and Exhaust Emissions	Construction	Medium	(-)	Low	(-)
C10	Physical Destruction of Flora and Fauna	Construction	High	(-)	Medium	(-)
C11	Degradation and Fragmentation of Habitat	Construction	Medium	(-)	Low	(-)
C12	Pollution of Soil, Water and Vegetation	Construction	Medium	(-)	Low	(-)
C13	Nuisance Factors (Noise, Vibrations, Light)	Construction	Medium	(-)	Medium	(-)
C14	Damage to Heritage Resources	Construction	Low	(-)	Low	(-)
C15	Damage to Palaeontological Resources	Construction	Low	(-)	Low	(-)
C16	Increased Traffic on Local and Site Road Network	Construction	Low	(-)	Low	(-)
C17	Employment and Skills Development	Construction	Low	(+)	Medium	(+)
O1	Soil Erosion	Operation	High	(-)	Medium	(-)
O2	Soil Contamination	Operation	Low	(-)	Low	(-)
O3	Surface Water Contamination	Operation	Medium	(-)	Low	(-)
O4	Destruction and Modification of Wetlands	Operation	Medium	(-)	Low	(-)
O5	Flow Modification	Operation	High	(-)	Medium	(-)

NO.	IMPACT DESCRIPTION	PHASE	WITHOUT MITIGATION		WITH MITIGATION	
			SIGNIFICANCE	STATUS	SIGNIFICANCE	STATUS
O6	Groundwater Contamination	Operation	**Low**	(-)	**Low**	(-)
O7	Odour	Operation	**Low**	(-)	**Low**	(-)
O8	Degradation and Fragmentation of Habitat	Operation	**Medium**	(-)	**Low**	(-)
O9	Pollution of Soil, Water and Vegetation	Operation	**Medium**	(-)	**Low**	(-)
O10	Nuisance Factors (Noise, Vibrations, Light)	Operation	**Medium**	(-)	**Medium**	(-)
O11	Increased Traffic on Local and Site Road Network	Operation	**Low**	(-)	**Low**	(-)
O12	Employment and Skills Development	Operation	**Low**	(+)	**Low**	(+)

11 CONCLUSION

The anticipated environmental impacts associated with the proposed development have been evaluated according to their significance, which is determined as a result of their extent, magnitude, probability and duration. All impacts were assessed with and without management measures in place.

This final EIAR has been structured to comply with the requirements of the Appendix 3 of GNR 324. The report provides a description of the proposed project and details the aspects associated with the construction, operation and decommissioning. The report also includes the methodology followed to undertake both the S&EIR and EIA processes. A detailed description on the existing environment (bio-physical as well as socio-economic) is provided based on findings from the specialist surveys. Stakeholder engagement was undertaken from the onset of the project in a transparent and comprehensive manner. Outcomes of all comments received from the public review periods were recorded and responded to in the final EIAR. Based on the environmental description, specialist surveys as well as the stakeholder engagement a detailed EIA rating has been undertaken and where relevant the necessary management measures have been recommended.

In summary, the EIA process assessed both biophysical and socio-economic environments and identified appropriate management and mitigation measures. The biophysical impact assessment revealed that there are no environmental fatal flaws associated with the proposed project should mitigation and management measures be implemented. In addition, it should be noted that the overall socio-economic impacts associated with the project are positive.

WSP is of the opinion that should the identified mitigation and management measures be implemented the overall impact of the proposed Project is Low to Medium and can therefore by authorised.

The final EIAR will be submitted to the DEA for decision making on **29 October 2018**. All issues and comments submitted to WSP, to date, have been incorporated in the CRR and have been included in **Appendix C-8**.

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