

**Environmental Scoping Report for the Proposed
Expansion of the Pietermaritzburg Airport**

September 2016



Institute of
Natural Resources

Environmental Scoping Report for the Proposed Expansion of the Pietermaritzburg Airport

FINAL REPORT

Prepared for



Prepared by



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LIST OF ACRONYMS

ABM	Area Based Management
AMP	Airport Master Plan
APP	Airport Precinct Plan
BID	Background Information Document
C&RR	Comments and Response Register
CAA	Civil Aviation Authority
CBD	Central Business District
CoB	Chamber of Business
CSIR	Council for Scientific and Industrial Research
DBSA	Development Bank of South Africa
DEDTEA	Department of Economic Development, Tourism and Environmental Affairs
DUT	Durban University of Technology
DWA	Department of Water Affairs
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
ECA	Environmental Conservation Act
ECH	eThebeni Cultural Heritage
EIA	Environmental Impact Assessment
EIR	Environmental Impact Report
EMF	Environmental Management Plan
EMPr	Environmental Management Programme
ESR	Environmental Scoping Report
FGM	Focus Group Meeting
GA	General Aviation
GNR	Government Notice Regulation
GVA	Gross Value Added
ha	Hectares
HIA	Heritage Impact Assessment
I&APs	Interested and Affected Parties
ICAO	International Civil Aviation Organization
ICT	Information Communication and Technology
IDP	Integrated Development Plan
IEMP	Msunduzi Municipality Integrated Environmental Management Policy
INM	Integrated Noise Model
INR	Institute of Natural Resources
KSIA	King Shaka International Airport
MM	Msunduzi Municipality
MSA	Municipal Systems Act
NCAP	National Civil Aviation Policy
NEM: BA	National Environmental Management: Biodiversity Act
NEMA	National Environmental Management Act
NHRA	National Heritage Resources Act
NPC	Non Profit Company
NWA	National Water Act
PES	Present Ecological State
PMB	Pietermaritzburg
PPP	Public Participation Process
RoD	Record of Decision
S&EIA	Scoping and Environmental Impact Assessment
SACAA	South African Civil Aviation Authority

SANRAL	South African National Roads Agency
SEA	Strategic Environmental Assessment
SEMP	Strategic Environmental Management Plan
SIA	Social Impact Assessment
SPLUMA	Spatial Planning and Land Use Management Act
TIA	Traffic Impact Assessment
ToR	Terms of Reference
UKZN	University of KwaZulu-Natal
VNACON	VNA Consortium
WULA	Water Use License Application

1. INTRODUCTION

Pietermaritzburg Airport (previously known as Oribi Airport) is owned by the Msunduzi Municipality (MM) and serves the city of Pietermaritzburg and surrounds as well as the outer west suburbs of Durban. Outcomes of sustainability assessments conducted for the airport indicate that the airport has operational constraints which restrict the expansion of services¹. To improve the service provision of the both operators and the public at large, and to effectively meet the increasing growth in passenger and cargo volumes and air traffic movements, the MM has proposed the expansion of the Pietermaritzburg Airport. The proposed expansion takes into account the factors cited above and links it with other future opportunities that have arisen in relation to Pietermaritzburg Airport. These opportunities include the development of industrial, commercial and other complimentary land-uses within the Municipal owned land adjacent to the current Airport operations.

In terms of the National Environmental Management Act (No. 107 of 1998) (NEMA) the proposed expansion will result in the transformation of more than 20ha of indigenous vegetation and thereby triggers the need for environmental authorisation. The MM has accordingly made application to the KwaZulu-Natal Department of Economic Development, Tourism & Environmental Affairs (EDTEA) for environmental authorisation. The application will be supported by an Environmental Scoping and Impact Report (ESIR) as per the EIA Regulations of December 2014. The MM appointed the Institute of Natural Resources NPC (INR) as the Independent Environmental Assessment Practitioner to prepare the application and manage the associated EIA process.

PURPOSE OF THIS REPORT

In accordance with Appendix 2 of the EIA regulations this Environmental Scoping Report (ESR) describes:

- The EIA process and state of this application.
- The project and alternatives (project site, layout and technology) for assessment.
- The receiving environment (social, economic, cultural and biophysical).
- The issues and impacts identified in the scoping process (How the project will impact on the different elements of the receiving environment during different phases of development (planning, construction and operation).
- The proposed scope of specialist investigations and the methods to be undertaken in the EIA Phase.
- The method for assessing the sustainability of the project – against which the Department will make a decision on the application.

The draft ESR was circulated for a 30 day comment period that culminated on 16 September 2016. The process and methods for circulating the document, and the comments and response document associated with this review process are documented in the Public Participation Report (PPP report). This report has been submitted to the competent authority (KwaZulu-Natal Department of Economic Development, Tourism and Environmental Affairs – EDTEA) for consideration in terms of section 22 of the EIA regulations.

¹ Pietermaritzburg Master Plan Report, 2014

2. THE EIA PROCESS

This process is being undertaken in accordance with the EIA regulations promulgated in December 2014 in GNR 982, 983, 984, 985 in Government Gazette 38282, in terms of Section 24 of the National Environmental Management Act, Act 107 of 1998. This section:

- Summarizes the EIA process including the phases and timeframes.
- Defines the relationship between the EIA and other regulatory processes.
- Defines the role of this document in the process.
- Describes the Public Participation Process (PPP) and role of Interested and Affected Parties (I&APs) in the process.

2.1. Overview

The proposed development triggers listed activities (see section 3.1) in “Listing Notice II” of the EIA regulations. As such, the application for environmental authorisation is required to follow the full Environmental Scoping and Impact Reporting Process (S&EIR). The S&EIR (referred to as the Process from here on) comprises of two main phases, namely Scoping and the Environmental Impact Reporting phases. The Process, the specific timing associated with the different phases and the alignment of the Process with other regulatory processes is summarized in Figure 1. This graphic summary is referred to in the description of the various elements that follows.

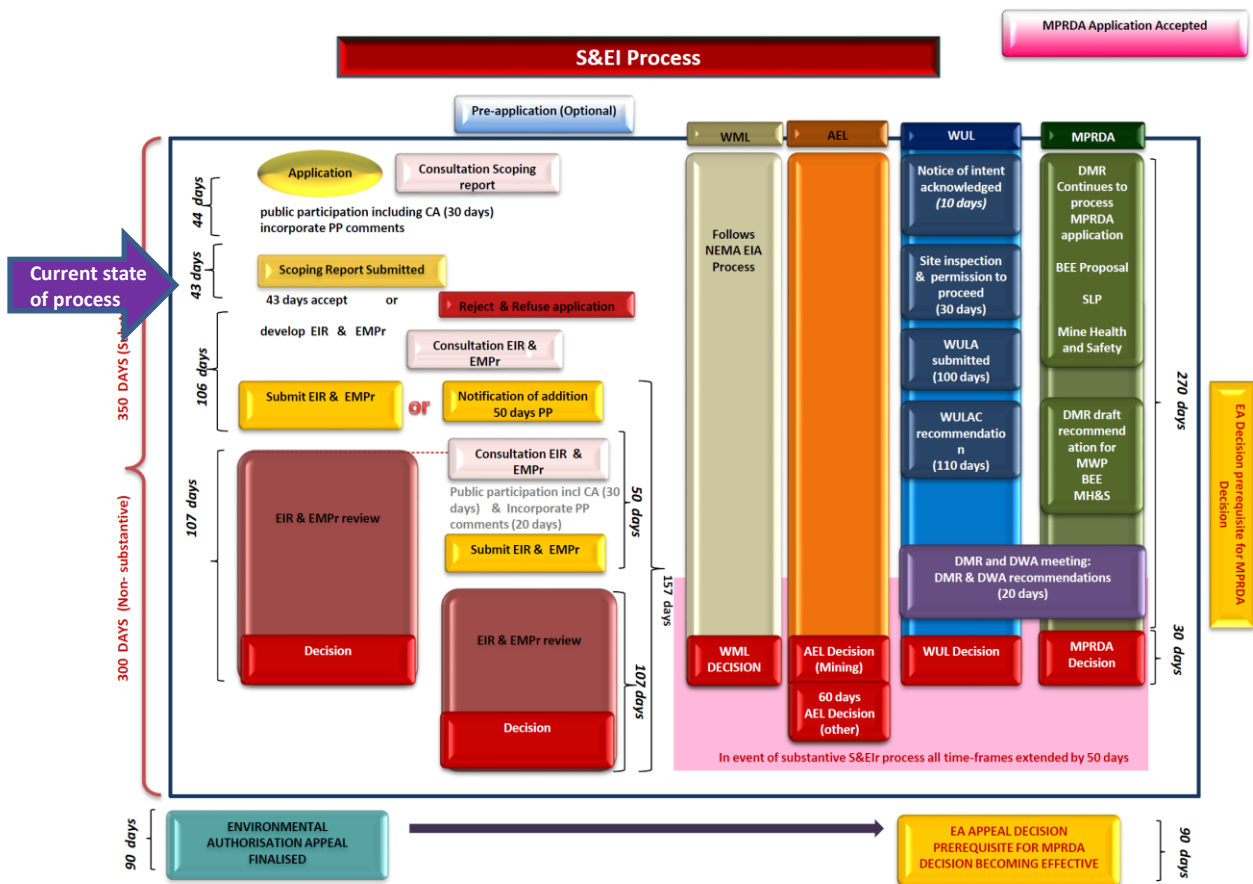


Figure 1: Overview of the SEIR & alignments with other regulatory processes (Source: DEA, 2014)

As indicated in Figure 1 the overall process can take a maximum of 300 days, or 350 days in the event that the competent authority (CA) requires further information following review of the Draft Environmental Impact Report and Draft Environmental Management Plan. The application was submitted on the same day as the Draft ESR was circulated for comment (18 August 2016). The comment period closed on 16 September 2016. The state of the process is indicated in Figure 1 (purple arrow) i.e. the document has been submitted to the CA for consideration.

The EIA process provides for alignment of decision making with other regulatory processes as required in terms of the legislative framework defined in Section 3 of this report. Examples of these include Waste Management License (WML), Atmospheric Emission License (AEL), Water-use licensing (WUL) or Mining authorisation in terms of the Minerals and Petroleum Resources Development Act (MPRDA). The EIA regulations therefore require that the PPP involve consultation with all relevant government agencies to establish which of the Acts listed in Section 3 apply and what the process and information requirements are in order that they are aligned with the EIA process.

2.1.1. Role-players

The key role-players in this EIA process are as follows:

- **Applicant**
As the landowner and project proponent, the Msunduzi Municipality is the applicant. They are responsible for making the application and complying with/implementing any conditions associated with a positive decision. The MM is represented by Mr David Gengan.
- **Competent Authority (CA)**
The competent authority is the Umgungundlovu regional office of KwaZulu-Natal Department of Economic Development, Tourism and Environmental Affairs (EDTEA).
- **Directly Affected Landowner**
In terms of the requirements of sub-regulation 39(1) of the EIA regulations, permission is required from a landowner on whose property the activity is proposed, if the applicant is not the owner or person in control of the land. Transnet owns the property Erf 1910, which is the servitude within which the railway line is located and is directly affected by the proposed new access roads that forms part of the development application. The MM has obtained formal landowner consent on the appropriate form from Transnet in terms of this requirement. As required by the regulations, this formal permission has been included with the application submitted to the competent authority.
- **Environmental Assessment Practitioner (EAP)**
In terms of Section 12 (1) of the EIA regulations, the applicant is required to appoint an independent Environmental Assessment Practitioner (EAP) to manage the application and process. The EAP is the Institute of Natural Resources NPC (INR), a locally based non-profit company, represented by David Cox. As required in terms of the EIA regulations, a CV for the EAP is included as Appendix 1.
- **Registered Interested and Affected Parties (I&APs)**
The EIA regulations define “registered I&APs” as all interested and affected parties registered and affected parties whose name is recorded in the register opened for the

application in terms of regulation 24. The register of I&APs is included in the Public Participation Report which forms Appendix 3 to this report.

2.1.2. Pre-Application Meeting

A pre-application meeting was held with the CA on 19 June 2015 at which the project was described to the CA. It was explained that the Municipality will provide the bulk infrastructure but that the specific elements of the project will be developed by private investors, and that the uptake of these opportunities will take place over an extended period. Consequently, the different land-uses and infrastructure are defined to the point of type e.g. light industrial/mixed commercial, with approximate specifications provided (location, floor space and building height). The detailed designs and building plans will be the responsibility of the developers. The Environmental Management Plan will therefore only be a framework Environmental Management Programme (EMPr).

The CA confirmed that this was acceptable with the understanding that any significant deviation in development type or specifications may trigger an application for amendment. The detailed designs, building plans and EMPr would be subject to authorisation by the MM, the CA and any other relevant Government Department. At the meeting and in subsequent correspondence it was confirmed that:

- The listed activities to be triggered required that the S&EIR process would apply.
- In terms of the PPP “As indicated, according to Reg 41(2)(b)(ii) (2014 Regs), owners , persons in control of and occupiers of the land adjacent to the site must be given a written notice. Adjacent = bordering onto the site”. This confirmed that landowners’ of all adjacent properties to the Airport needed to be formally notified.

2.1.3. Application

The MM has submitted an application for Environmental Authorisation to the CA. The application has been processed and allocated the following reference number: DC22/0036/2016.

2.1.4. Scoping Phase

Scoping involves consultation with government authorities, the proponent and stakeholders during which the objectives are to:

- Raise awareness of the project.
- Describe the status of the receiving environment prior to the commencement of the proposed developments for the expansion of the airport.
- Identify and describe issues and potential impacts to the receiving environment.
- Identify and select feasible alternatives for further assessment.
- Define the terms of reference for the assessment phase.

The scoping phase culminates in the submission of an Environmental Scoping Report that includes a Terms of Reference (ToR) for the EIA. In terms of the NEMA EIA regulations, the relevant authority (DEDTEA) must accept the ToR before the applicant may proceed with the EIA.

2.1.5. The EIA Phase

The EIA phase is concerned with the detailed assessment of the impacts associated with the issues identified in the scoping phase. The impacts are assessed according to the methodology described in the ToR for the EIA and applied to the alternatives identified in the scoping phase. The findings of the EIA form the basis for a decision by the relevant authorities regarding the proposed activity.

2.1.6. The Public Participation Process

A primary principle of the EIA process is open public participation in the decision-making process. The public participation process (PPP) is an important aspect of the EIA process as it provides the mechanism through which I&APs are able to participate in the EIA and inform the resulting decision. Section 41 of the 2014 NEMA regulations list the requirements governing the PPP, such as the conduction of PPP, that the activities undertaken as part of the PPP are recorded, and that the outcomes of the process are documented. The PPP for this project has therefore been conducted in accordance with the NEMA regulations. The methods applied, activities undertaken and the outcomes of the PPP to date are detailed in Chapter 7 of this Environmental Scoping Report (ESR). The full PPP report forms Appendix 3 of this document.

2.2. Content and Structure of the Environmental Scoping Report

This report addresses the requirements for the scoping phase of the EIA process as outlined in the NEMA regulations of December, 2014. A number of interested and affected parties (I&APs) particularly decision makers, the local population and the scientific community, have an interest in helping to deliberate the Terms of Reference of the EIA, and scoping is designed to canvass their views. Technically, the scoping report serves to inform the EIA process by identifying and describing potentially significant environmental issues and prioritizing them in terms of the type and level of investigation that is required to understand and assess the impacts to a point where they will support balanced decision making.

This Environmental Scoping Report is structured to fulfil the requirements of a Scoping report as stipulated in Appendix 2 of the NEMA EIA Regulations, 2014. A large amount of information and discussion has therefore been generated during the Scoping phase. Chapters 1 to 4 provide the introductory information that establishes the context within which the Scoping phase has been undertaken. Chapter 5 describes the proposed infrastructural development as per the 1st phase of development. Chapter 6 gives an overview of the receiving environment that may be affected by the proposed developments Chapter 7, 8 and 9 are the inputs and outcomes of the active engagement with the public and other &APs about the proposed expansion of the PMB airport, while chapter 10 outlines the terms of reference to be investigated in the assessment phase. Table 1 below summarises the report structure.

Table 1: S&EI Report Structure

CHAPTER	CONTENT
1	Introduction
2	Describes the EIA process
3	Outlines the relevant policies, the legal and institutional Framework taken into account
4	Establishes the context within which the expansion of the airport was proposed

CHAPTER	CONTENT
5	Describes the proposed infrastructural development as per the 1st phase of development
6	Describes the existing baseline environment
7	Are the inputs and outcomes of the active engagement with the public and other &APs about the proposed expansion of the PMB airport
8	Outlines the alternatives considered
9	Details the scoping of impacts
10	Outlines the Terms of Reference for the EIA study
11	References
12	Appendixes

Further to the general overview of the report structure, the EIA regulations detail content requirements for environmental scoping report. Table 2 guides where the scoping requirements have been addressed in this scoping report.

Table 2: Summary of the Scoping Report requirements

REQUIREMENTS OF THE REGULATIONS	SECTION OF THE REPORT WHERE THE REQUIREMENT IS ADDRESSED
a) Details of the EAP.	i) Section 2.1.1 Role-players ii) Appendix 12.1. EAP Curriculum Vitae
b) The location of the activity, including cadastral details	i) Section 5.4. Land Tenure, Use and Zonation ii) Section 5.3 Project Location and Extent.
c) A plan which locates the proposed activity or activities applied for at an appropriate scale, or if its -	Section 5.
d) A description of the scope of the proposed activity including i) All listed and specific activities triggered, ii) A description of the activities to be undertaken; including associated structures and infrastructure;	i) Section 3.2 Regulations ii) Section 5.5 Proposed Infrastructure and Land-use
e) A description of the policy and legislative context - within which the development is proposed including the identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning framework and instruments that are applicable to this activity and are to be considered in the assessment process;	Chapter 3 Legal Framework
f) A motivation for the need and desirability – for the proposed development of the activity in the context of the preferred location.	Section 4.2. Need and Desirability
g) A full description of the process followed to reach the preferred activity, site and location within the site and alternatives	Chapter 8. Alternatives and PPP process (Appendix 3)
i) A plan of study for undertaking the environmental impact assessment process to be undertaken including alternatives to be considered.	i) Chapter 8. Alternatives ii) Chapter 10. Terms of Reference for the EIA Phase
h) An undertaking under oath or affirmation by the EAP in relation to – i) The correctness of the information provided in the report: ii) The inclusion of comments and inputs from stakeholders and interested and affected parties; and iii) Any information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs by interested or affected parties. A description of the alternatives to be considered and assessed within the preferred site, including the option of not	i) Declaration of Independence ii)

REQUIREMENTS OF THE REGULATIONS	SECTION OF THE REPORT WHERE THE REQUIREMENT IS ADDRESSED
proceeding with the activity;	
i) An undertaking under oath or affirmation by the EAP in relation to the level of agreement between the EAP and interested and affected parties on the plan of study for undertaking the EIA;	i) To be included in the final ESR
j) Where applicable any specific information required by the competent authority; and	None requested.
k) Any other matters required in terms of section 24 (4) (a) and (b) of the Act.	None identified

3. LEGAL FRAMEWORK

Sustainable development is governed by a legal framework which encompasses guiding legislation in the form of the NEMA which defines the principles of sustainability and integrated environmental management, and then a range of Acts under the themes of land-use planning and development, resource conservation and utilisation, and waste management and pollution control. This structure includes a range of Policies, Acts and associated Regulations which are applicable at a National, Provincial and Local (municipal) scale. As discussed in Section 2.1, it is a requirement in the EIA process that all other relevant legislation is identified and that the process, information requirements and decision making is aligned with the EIA process. Given the extensive nature of the legal framework, only the Acts, policies and regulations relevant to this project are listed in this section. Relevance was established through:

- i. A review of project activities against the legislation to identify if the proposed infrastructure or activities ‘trigger’ the need for authorisation or a license under the Act.
- ii. Engagement with the government Departments and agencies responsible for the administration of the Act.

3.1. Environmental Legislation

This section describes the purpose of the relevant Acts with a summary of the specific requirements for the projects defined in Table 3 below.

- **The National Environmental Management Act No. 107 of 1998**

The National Environmental Management Act No. 107 of 1998 (NEMA) provides principles and guidelines to be considered in environmental planning and development. It provides for cooperative environmental governance by confirming governments role in ensuring sustainable development and the role of society in participating in environmental governance. Chapter 5 of NEMA provides for integrated environmental management and promotes ‘the application of appropriate environmental management tools in order to ensure the integrated environmental management of activities’ such as EIAs. An EIA is being conducted to analyse and predict the nature and extent of the consequences of particular activities associated with the proposed development on the receiving environment. In general, NEMA is the parent statute under which a suite of environmental laws and regulations have been developed, as detailed below.

- **National Water Act (NWA) No. 36 of 1998**

The Act provides for Water Resource planning; the classification of water resources and setting of associated management objectives; Prevention and remedy of pollution and emergency incidents; Licensing of water use; Establishment and operation of water management institutions; Monitoring, assessment and information management; Offences and remedies.

- **National Environmental Management: Waste Act, No. 59 of 2008**

Seeks to reform the law regulating waste management in order to protect health and the environment by providing reasonable measures for the prevention of pollution and ecological degradation and for securing ecologically sustainable development; to provide for

institutional arrangements and planning matters; to provide for national norms and standards for regulating the management of waste by all spheres of government; to provide for specific waste management measures; to provide for the licensing and control of waste management activities; to provide for the remediation of contaminated land; to provide for the national waste information system; to provide for compliance and enforcement; and to provide for matters connected therewith. In support of the Waste Act of 1998 is the National Waste Information Regulations of 2012 guiding the documentation and maintenance of a waste information data base.

- **Environmental Conservation Act (ECA) Act No. 73 of 1989**

The Act provides for the effective protection and controlled utilization of the environment and for matters incidental thereto. Section 25 promotes the development of Noise Control Regulations. The administering the noise control regulations were devolved to provincial and local authorities. However, of the nine provinces, only three provinces namely, Free State, Gauteng and Western Cape have developed Noise Regulations.

- **National Environmental Management: Biodiversity Act (NEM: BA) No. 10 of 2004**

The Act make provision for the management and conservation of South Africa's biodiversity within the framework of the National Environmental Management Act, 1998; the protection of species and ecosystems that are threatened or in need of protection to ensure the maintenance of their ecological integrity; the sustainable use of indigenous biological resources; the fair and equitable sharing of benefits arising from bioprospecting involving indigenous biological resources; the establishment and functions of a South African National Biodiversity Institute; and for matters connected therewith.

- **National Heritage Resources Act (NHRA) No. 25 of 1999**

The Act introduces an integrated and interactive system for the management of the national heritage resources; promotes good government at all levels, and empower civil society to nurture and conserve their heritage resources so that they may be bequeathed to future generations; lays down general principles for governing heritage resources management throughout the Republic; introduces an integrated system for the identification, assessment and management of the heritage resources of South Africa; establishes the South African Heritage Resources Agency together with its Council to co-ordinate and promote the management of heritage resources at national level; sets norms and maintain essential national standards for the management of heritage resources in the Republic and to protect heritage resources of national significance; enables the provinces to establish heritage authorities which must adopt powers to protect and manage certain categories of heritage resources; provides for the protection and management of conservation-worthy places and areas by local authorities; and also provides for matters connected therewith.

- **Spatial Planning and Land Use Management Act (SPLUMA), No. 16 of 2013**

The purpose of Act is to provide a framework for spatial planning and land use management in the Republic; to specify the relationship between the spatial planning and the land use management system and other kinds of planning; to provide for the inclusive,

developmental, equitable and efficient spatial planning at the different spheres of government; to provide a framework for the monitoring, coordination and review of the spatial planning and land use management system; to provide a framework for policies, principles, norms and standards for spatial development planning and land use management; to address past spatial and regulatory imbalances; to promote greater consistency and uniformity in the application procedures and decision-making by authorities responsible for land use decisions and development applications; to provide for the establishment, functions and operations of Municipal Planning Tribunals; to provide for the facilitation and enforcement of land use and development measures; and to provide for matters connected therewith. The Act is supported by the 2014 Draft Regulations in Terms of the Spatial Planning and Land Use Management Act, 16 of 2013.

- **Municipal Systems Act (MSA) No. 32 of 2000**

The Municipal Systems Act sets out legislation that enables municipalities to uplift their communities by ensuring access to essential services. The Act defines the legal nature of a municipality as including the community and clarifies the executive and legislative powers of municipalities. It seeks to boost effective local government by establishing a framework for municipal planning, performance management and use of resources.

- **Civil Aviation Act No. 13 of 2009**

The CAA provides for the regulation and control of aviation in South Africa, and provides for additional measures directed at more effective control of the safety and security of aircraft, airports and the like. Section 155(m)(iv) makes provision for the general operating rules, flight rules and air traffic rules in respect of civil aviation, including the prevention of nuisances arising from air navigation, aircraft factories, aerodromes or other aircraft establishments, including the prevention of nuisance due to noise or vibration originating from the operation of machinery in aircraft on or above aerodromes, whether by the installation in aircraft or on aerodromes of means for the prevention of such noise or otherwise.

Table 3: Summary of the key legal sections applicable to the project

NATIONAL LEGISLATION	KEY SECTION
National Water Act, No 36 of 1998 (NWA)	Chapter 3 - Protection of Water Resources Chapter 4 - Use of Water <i>21 (c) impeding or diverting the flow of water in a watercourse.</i> <i>21 (i) altering the bed, banks, course or characteristics of a watercourse.</i>
National Environmental Management: Waste Act, No. 59 of 2008	Chapter 2 - National Waste Management Strategy, Norms and Standards Chapter 4 - Waste Management Measures Chapter 6 - Waste Information Chapter 7 - Compliance and Enforcement Regulations
Environmental Conservation Act (ECA), Act No. 73 of 1989	Part 1 - Policy For Environmental Conservation Part 3 - Protection of Natural Environment Part 4 - Control Of Environmental Pollution Part 5 - Control Of Activities Which May Have Detrimental Effect On

	the Environment Part 6 - Regulations
National Environmental Management: Biodiversity Act No. 10 of 2004 (NEMBA)	Chapter 4: Threatened or protected ecosystems and species Part 1 - Protection of threatened or protected ecosystems
National Heritage Resources Act, No 25 of 1999 (NHRA)	Chapter 1 - National Environmental Management Principles Chapter 4 - Fair Decision-Making and Conflict Management Chapter 5 - Integrated Environmental Management Chapter 7 - Compliance And Enforcement
Spatial Planning and Land Use Management Act (SPLUMA), No. 16 of 2013	Chapter 5 - Land Use Management
Municipal Systems Act, No 32 of 2000 (MSA)	Chapter 4 - Community Participation Chapter 5 - Integrated Development Planning
Civil Aviation Act 13 of 2009	Section 6 addresses the acquisition of land and rights in connection with airports Section 155(m)(iv) CAA Regulations

3.2. Regulations

- **The National Environmental Management Act, EIA Regulations**

The NEMA EIA Regulations of December 2014, are administered by the Department of Economic Development, Tourism and Environmental Affairs in the KwaZulu-Natal province. These regulations have been promulgated in terms of NEMA and identify three lists of activities which may not commence without an environmental authorisation from the relevant competent authority. While all the activities listed in the regulations ('the listed activities') require an environmental authorisation, the lists distinguish between two classes of activities, those requiring a basic assessment and those requiring a full scoping and environmental impact report. Listing Notice 3 identifies activities which may not commence without an environmental authorisation in specifically identified geographical areas only. A further set of regulations (the EIA Regulations) set out the procedure to be followed in compiling, submitting, processing and considering an application for an environmental authorisation. These regulations stipulate who may conduct EIAs, what EIAs must consist of, the decision-making criteria and timelines, public participation requirements and the procedure for lodging appeals against decisions taken. While the EIA regulations govern those activities listed under NEMA, not all environmentally detrimental activities associated with the proposed project are included in the lists.

- **EIA Listed Activities**

To efficiently screen and identify the listed activities, it is essential to understand the project development requirements. The process to be followed and list of activities triggered primarily depends on the final layout, infrastructure requirements and their specifications.

Table 4 below gives an overview of the identified listed activities in Listing Notice 1 and Listing Notice 2 activities are those “that may have a substantial detrimental effect on the environment.” These listed activities are subject to the EIA process, the EIA regulations of 2014 were promulgated in terms of Section 25 of the NEMA. In terms of these regulations, authorisation is required before one can proceed with such an activity, and for which an application needs to be made to the relevant authority.

Table 4: Listed activities applied for

Listing Notice 1 – GNR 983 – Activities Requiring that a Basic Assessment process if followed	
Activity	Description and Relevant Activity
12	<i>New access road from Market road across a stream/valley.</i>
19	<i>Construction of the new access road from Market road at the point the railway line crosses the stream/riparian area.</i>
27	<i>Development of combined new infrastructure on grassed areas.</i>
61	<i>Expansion of an airport; Any of the new planned infrastructures will result in physical alteration beyond the existing footprint.</i>
Listing Notice 2 – GNR 984 – Activities Requiring that an Environmental Impact Assessment process if followed	
Activity	Description and Relevant Activity
8	<i>Combination of proposed activities.</i>
15	<i>Expansion of an airport; Any of the new planned infrastructures will result in physical alteration beyond the existing footprint.</i>
Listing Notice 3 – GNR 985 – Activities Requiring that an Environmental Impact Assessment process if followed	
Activity	Description and Relevant Activity
12(b) xi & xii	<i>The clearance of an area of more than 300m² of indigenous vegetation.</i>
14 (iii) and (xii) 14 (d) (viii)	<i>Construction of the new access road from Market road at the point the railway line crosses the stream/riparian area, particularly bridges and infrastructure.</i>

- **The Civil Aviation Regulations**

The Civil Aviation Regulations, 2011 Part 139.02.25 provides for the maintenance of aerodrome environment management programme in accordance with the provisions of the Environment Conservation Act, 1989 and the regulations made thereunder.

- **Noise Regulations**

Section 25 of the Environmental Conservation Act (ECA) Act No. 73 of 1989 promotes the development of Noise Regulations. The administration of the regulations was devolved to provincial and local authorities. However, of the nine provinces, only three provinces namely, Free State, Gauteng and Western Cape have developed Noise Regulations. Kwazulu Natal does not have any binding Noise regulations, noise management of aviation activities is guided by the international standards of the International Civil Aviation Organization (ICAO).

- **International Civil Aviation Organization (ICAO) codes**

The ICAO developed a range of standards, policies and guidance material for the application of integrated measures to address aircraft noise and engine emissions embracing technological improvements, operating procedures, proper organization of air traffic, appropriate airport and land-use planning, and the use of market-based options. ICAO adopted three major environmental goals, to:

- a. limit or reduce the number of people affected by significant aircraft noise;
- b. limit or reduce the impact of aviation emissions on local air quality; and
- c. limit or reduce the impact of aviation greenhouse gas emissions on the global climate.

- **ICAO Annex 16** has a set of Standards and Recommended Practices (SARPs) for Environmental Protection. It further makes reference to applicable ICAO documentation dealing with the management of environmental impacts from aviation and associated activities.

- **ICAO: Guidance on Environmental Assessment of Proposed Air Traffic Management Operational Changes**

The purpose of the guidelines is to provide airport operators, air navigation service providers and other stakeholders with environmental assessment guidance to support decision making when analysing proposed air traffic management (ATM) operational changes. The guidance provides high-level environmental assessment principles intended to facilitate the use of a consistent approach for assessing the environmental impacts of operational changes.

- **ICAO: Aerodrome standards**

The aerodrome code describes the criteria used to categorise airports; that is the type of activities at the airport, including commercial service, primary, cargo service, reliever, and general aviation airports and by the size of aircraft the airport has been designed to handle. PMB airport has been classified as a 2c airport based on the provision of a 190m stopway bringing the full structural pavement to a total length of 1 787m (PMB Master plan, 3.1.1, 2014)

3.3. Policy Framework

- **Climate Change Policy**

The Climate Change Policy for Msunduzi Municipality of 2014² primarily provides a well-defined direction for responding to climate change risks and challenges. The main goal is to ensure that Msunduzi's Carbon footprint is reduced and the city is able to adapt to climate change related impacts and ensure the availability of preferences when decisions need to be made regarding adaptation and mitigation. The relevance, effectiveness and implementation of this policy is managed through on-going monitoring, evaluation and review to ensure it reflects the most recent developments in climate change science and technology, and delivers on the Municipality's statutory responsibilities.

- **Environmental Management Framework**

² Climate Change Policy for Msunduzi Municipality, 2014

The gazetting and adoption of the Msunduzi Municipality Environmental Management Framework (EMF) of 2010³ as per Chapter 8 of the EIA Regulations of 2014 promulgated in terms of NEMA brings Listing Notice 3, GNR 985 into effect. In principle, the EMF informs development planning that supports sustainable development within the Municipality. Through specialist studies, it provides a good indication of the existing environmental conditions within the municipal area. Its broad objectives include the identification of opportunities and constraints that guide site specific studies such as EIA and will also be used to inform decision making and the development application process for the proposed expansion of the PMB airport. The development and adoption of EMF is detailed in Part 1 of Chapter 8: General Matters of the EIA Regulations of 2014 promulgated in terms of NEMA.

- **White Paper on National Civil Aviation Policy, 2015**

Airport activities in general and aircraft operations in particular could have a major impact on the local environment as a whole. The National Civil Aviation Policy (NCAP) is focused more on the metropolitan and urban areas to facilitate the integration of the airport into its built environment and to ensure optimal utilisation of the development opportunities which the airport presents. Chapter 7 of the NCAP addresses the interaction between an airport and its environment and vice versa, and attempts to deal with all the aspects of land-use, which are not directly related to the operation of the airport. The airport environment in broad terms refers to the vicinity or area of influence of an airport. As such, the area of influence of an airport includes the airside as well as the landside of the airport. It also includes the geographic areas surrounding the airport, which are directly or indirectly affected by the airport or airport operation and vice versa. It therefore follows that the policy under this theme includes integrated development planning, land use on and around the airport and local emergency- and bulk municipal services, and development of the airport precinct and surrounding areas. Chapter 12 particularly deals with the environmental impact of aircraft operations. This impact includes noise and air pollution as well as human-induced climate change.

³ Msunduzi Municipality Environmental Management Framework, 2010

4. PROJECT CONTEXT, NEED AND DESIRABILITY

This section provides a short summary of the Airport's history which notes the various stages of growth and challenges in its development and which have negatively affected the sustainability of the Airport. It summarizes the numerous investigations into options and analysis for 'turning the Airport around' and the positive outcomes of implementing several of these in the past 5 years.

This background provides context for understanding the proposed additional expansion that is necessary to sustain the 'turn around' and forms the focus of the application for environmental authorisation i.e. the need for and desirability of the proposed expansion.

4.1. Development Context

Construction of the Airport was completed in March 1931 when the municipality also received a license to operate from the Civil Air Board⁴. A flying school was opened in 1938, and the Aerodrome was then leased to the Defence Authorities for the duration of the war and for a year afterwards. The City Engineer took over the Aerodrome in 1945 from the Defence Authorities. Over time, concern about the state of the runway led to extensive investment by the Defence Department and the city council, culminating in an official ceremony marking the opening of the Oribi Aerodrome in July 1967. While the Airport provides a service to General Aviation (GA) and there has been significant demand for increase in the GA facilities so this revenue stream will increase, the sustainability of the airport and its contribution to the regional economy⁵ depends on the scheduled passenger services and associated "belly" freight.

The Municipality has continued to run the airport but not without subsidizing the provision of this service. This subsidy was estimated to be approximately R 5.5 million in 2007⁶. Various factors have limited the ability to increase the primary revenue stream in the past, notably:

- The short runway which limits the regular use by low cost, short haul aircraft. The passenger aircraft used were historically low capacity twin propeller aircraft.
- The topography of the area (specifically World's view Ridge), which affects the approach from the North-West which is the primary approach given the prevailing wind. The terrain caused the final approach to be offset from the runway, and the height from which landing decision was made to be relatively high. This made it difficult to obtain visual contact, particularly in poor weather conditions.
- The use of ground based Non-directional Beacons and their susceptibility to transmission inaccuracies, especially during thunderstorm activities.

The combination of these factors limited the number of passengers that could be transported per flight and frequent diversions to Durban particularly in summer, reducing passenger confidence in using Pietermaritzburg Airport. It also limited the amount of airlines able or willing to operate from the Airport which reduced competition. This has a negative impact on ticket prices.

⁴ The history presented in this section is a summary drawn from the historical overview of the airport presented in the 2007 Economic Impact study by Coetzee and Oldham.

⁵ Coetzee, C. and Oldham, G. 2007 calculated the total revenue accruing from Airport related activities to be R65.8million (direct, indirect and induced) and that 189 jobs were derived from the operation of the airport. The roughly estimated value add to the GDP was R23.9 million.

⁶ Coetzee, C. and Oldham, G. 2007. Economic Impact Study of the Pietermaritzburg Airport. University of KwaZulu-Natal.

An analysis of aircraft arrivals at the Airport showed a generally declining trend between January 2003 and March 2010 (Internal feasibility and Economic Assessment Study, 2010).

Further factors identified in the various investigations as limitations to reversing the declining use of the Airport included:

- Need for additional parking.
- Resurfacing of the runway.
- Development of a parallel taxiway.
- Upgrade of the terminal facilities.
- Amendments to the institutional and business arrangements for managing the Airport.
- Optimization of the unutilized municipal land adjacent to the airport.

The municipality has commissioned various studies over the years to establish how to optimize this asset and reverse the increasing subsidization resulting from declining use of the Airport. These investigations even considered alternative sites for the Airport and selling the facility.

The outcomes of these studies were reviewed in the 2010 Feasibility and Economic Study conducted in 2010. The Municipality made a decision to retain the Airport and implement the recommendations coming out of this investigation. This included the development of a Master Plan for the Airport as an update to the existing plan, dated 1996. The outcomes of the study also served as motivation for securing R40 million from Provincial Treasury to address requirements for improving the sustainability of the Airport.

The investment from Provincial Government and additional private sector inputs resulted in among others, the following improvements in the infrastructure and operations of the Airport which were completed by 2013:

- Upgrade of the terminal building.
- Resurfacing of the runway and apron.
- Construction of new parking facilities by a private service provider through a concession. The car park houses several car hire services.
- The implementation of the Global Navigation Satellite System (GNSS) system by Airlink.
- Further navigational improvements and new runway lighting.
- Rebranding of the Airport from Oribi to Pietermaritzburg coupled with improved signage

These various improvements importantly enabled the use of the Airlink BAE/146/200, 97 seater aircraft with a capacity more than double the Turboprop aircraft previously employed. This has resulted in:

- i. A significant reduction in the number of flight diversions (65 in 2006 – 6 in 2015) as safety and reliability issues have been overcome.
- ii. Increase in total passenger use (arriving and departing) - almost doubled from 2006 (77 832) to 129 848 (2015).
- iii. A positive impact on the Net Cash flow of the Airport from a negative position (-R 2 989 000) in 2008/9 to a positive position in 2016/17 (R 2 888 000).

In summary, there has been a significant improvement in the use and sustainability of the Pietermaritzburg Airport.

The following additional factors and trends further support the MMs further optimization of the Airport through the proposed development:

- i. The emergence of the aerotropolis or airport city concept, which identifies major airports as engines of local economic development, attracting aviation-linked businesses of all types to their environs. These include, among others, time-sensitive manufacturing and distribution facilities; hotel, entertainment, retail, convention, trade and exhibition complexes; and office buildings that house air-travel intensive executives and professionals. While not a 'major' airport, the vacant land surrounding the airport has been identified with several investors expressing interest in:
 - a. Industrial land. There has been considerable interest from industrial developers for the land adjoining the airport which is approximately 17ha and already zoned for industrial use.
 - b. The technology-hub. During the master plan process, the KZN Cabinet approved the establishment of four Technology Hubs in the province, one of which was for Pietermaritzburg. It was agreed that the ideal site would be at the airport, and the master plan makes provision for this. The province has secured funding from the EU for the design and infrastructure costs of establishing the hubs. The funds will be dispersed based on the readiness of each site. The concept plan for the Pietermaritzburg hub has been completed. The municipality has received letters of intent from four prospective tenants, including the DUT who is planning to establish an Aviation Academy, and an aircraft engine manufacturer. One of the prospective tenants is a consortium that proposes to build a multi-sports complex with a velodrome, which is likely to be used for the 2022 Commonwealth Games
 - c. Commercial options on areas within the Airport precinct.
 - d. The high existing demand for increased General Aviation. There is a long standing waiting list of private and commercial operators who are seeking to store their aircraft at Pietermaritzburg Airport. The closure of Virginia Airport may further increase this demand.
- ii. The inconvenience of travel to King Shaka International Airport (KSIA) which has increased the user catchment for Pietermaritzburg Airport.
- iii. The establishment of a new entity to manage the airport and the adjacent precinct. The revenue from this will be ring fenced to improve the sustainability of the airport and reduce the financial burden on the municipal budget.

4.2. Need and Desirability

While the current situation is far improved, the *need* remains to further improve the sustainability of the Pietermaritzburg Airport through continued growth in the scheduled flights and GA activity as well as harnessing opportunities presented by vacant unutilized municipal land adjoining the Airport.

The further development is considered as *desirable* as it aims to reduce/alleviate current subsidization; generate increased job and economic activity at a local scale and to the broader Municipal GDP. Further, the Airport properties are owned by the municipality and are zoned for airport and related uses. It is considered desirable to optimize this asset.

5. PROJECT DESCRIPTION

As described in chapter 4, the MM is considering the development of the Airport more broadly than in just in terms of Air traffic. The MM has commissioned a range of investigations to inform the optimal development of the Airport and adjoining municipal land in relation to the surrounding Airport 'precinct'. These investigations have been drawn from in defining the project description. Their purpose and outcomes are therefore summarised as context to the project description.

5.1. Feasibility Investigations and Planning

Since the conception of the proposal to expand the Pietermaritzburg airport, numerous high level studies have been conducted to investigate the feasibility and identification of constraints and opportunities related to the development with the intention of ensuring that this facility could contribute positively to economic growth, employment generation and municipal revenue in the future. These studies have informed the conceptualisation of the project as defined in this section in terms of the layout and extent of the various project elements. It is therefore important to understand the background to and purpose of each as context to the project description that follows.

5.1.1. Airport Master Plan

The master plan was commissioned in 2011 and finalised in 2014⁷. The Master Plan is presented in phases. The MP development requirements for a particular phase are determined by the demand that will be reached by the time the next phase of development comes on line. The MP process involved a Status Quo analysis and a demand analysis in defining three development phases namely Phase 1 (2025); Phase 2 (2040), and Phase 3 (2050). The MP presents requirements for each phase in terms of:

- Airside infrastructure.
- Landside infrastructure.
- Terminal building.
- Utilities and other Airport facilities.
- Land-use for the rest of the site and other developments.

It is important to note that:

- The EIA is only being undertaken for elements defined in Phase 1 of the Master Planning process shown in Figure 2
- The layout and elements shown in the MP Phase 1 layout (Figure 2) are not what is being applied for (see detailed layout). The project definition has been amended based on interaction with the Airport Precinct planning team and engagement with Interested and Affected Parties in the Environmental Scoping process.

⁷ Delta Built Environment Consultants. August 2014. Pietermaritzburg Airport Master Plan, Final Report. Ref P13096/R2584.



Figure 2: Phase 1 layout (Source: Airport Master Plan)

5.1.2. Airport Precinct Plan

The Airport Precinct Plan (APP) of 2016⁸ was commissioned by the Municipality in line with the Aerotropolis of Airport City concept, which seeks to optimize their role of the airport through links to the immediate/local context and the broader regional economy.

The creation of a knowledge, logistics and manufacturing linked into the national aviation network, the logistics platform of the N3 development corridor, the surrounding region and which provides a sustainable learning, training, and production hub for the City centred on aviation services, logistics, production and research is the ultimate vision of the Airport Precinct conceptual framework. To this end, the plan explores in detail and describes clearly the various facilities, their uses and capacities as derived and assumed for the two development phases on the basis of the data provided by the Master Plan with the intention of maximizing non-aeronautical revenue and fueling growth within the Msunduzi Municipality and surrounds. In addition, the plan further translates the concept plan into specific and spatially referenced development projects, urban designs and development guidelines that will contribute to the establishment of the Airport Precinct.

The project has proceeded to the point of a Draft Precinct Plan which is currently under review. This Draft plan has drawn on the Status quo and Draft Concept Plan⁹ in translating this understanding

⁸ Airport Precinct and Management Plan for the Pietermaritzburg Airport and Surrounds, 2016

⁹ Draft Airport Precinct Plan, June 2016. Prepared by Markewicz and Redman Partnership in collaboration with Royal Haskoning DHV. Prepared for Msunduzi Municipality.

into specific and spatially referenced development projects, urban designs and development guidelines that will contribute to the establishment of the Airport Precinct. Once finalized, the Precinct Plan will be further translated into an implementation framework for the Municipality, other spheres of Government and the private sector can respond to. Figure 3 summarizes the Draft Spatial Concept and shows the extent of the precinct.

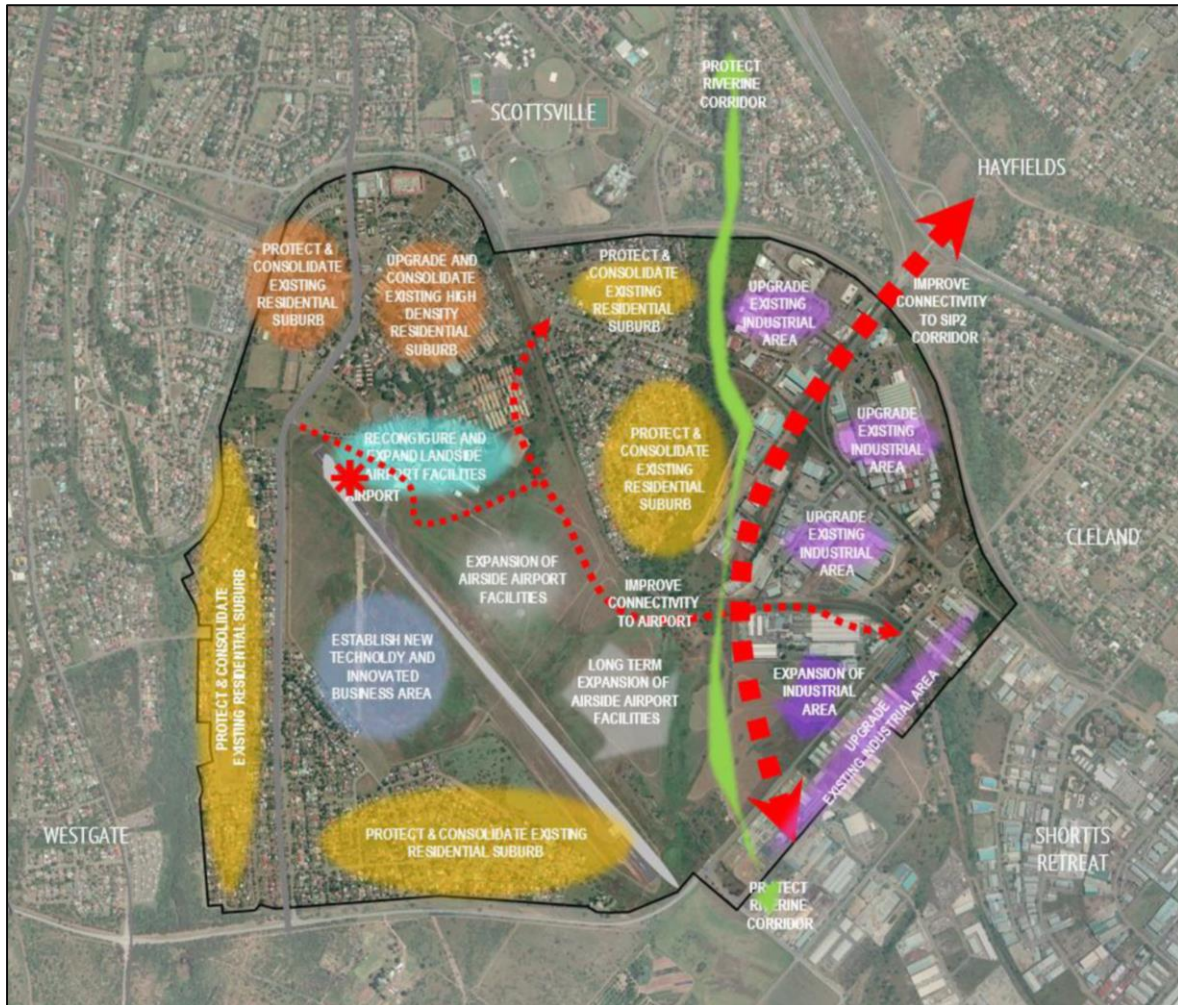


Figure 3: Draft Precinct Plan (Source: Draft Spatial Concept)

The Draft Precinct Plan further provides similar spatial outputs to Figure 3 for the Physical linkages and interventions, Sub-precincts and Environmental Upgrades and enhancements. It also provides guidelines for each of the sub-precincts. In summary, the scoping process for the EIA has informed the Precinct plan and vice versa, notably the access routes to the airport were proposed by the planning team who include airport specialists, as well as certain adjustments to the Phase 1 layout as indicated in the Master Plan.

5.1.3. Technology Hub Feasibility Study

The definition of a Technology Hub is: *“An enterprise associated with research, design and related activities in the high-technology sector which is accommodated in park type work environment which is specifically created for the industrial needs of the enterprises concerned”*.

The technology hub concept primarily revolves around the Sustainable Model for a Knowledge Economy, an integration of institution, enterprise and business with the intention of promoting innovation. The four core functions of a technology hub include knowledge, innovation, enterprise and business.

A study¹⁰ was commissioned in 2013 to investigate the feasibility of establishing a Technology hub in the Msunduzi municipality. The provincial treasury subsequently secured international funding to initiate the development of Technology Hubs at four locations across the Province namely Richards Bay, Margate, Newcastle and Pietermaritzburg. GWI Project Management Group were appointed to allocate these funds across the four sites depending on the state of readiness for each and have been responsible for establishing the layout and design of the techno-hub provided in this report.

5.1.4. DBSA Feasibility Study

The Development Bank of South Africa (DBSA) provides financial and planning assistance and other project support services to the local municipalities to improve service delivery. The MM secured funding for a feasibility study into two specific elements of the proposed expansion and DBSA appointed VNA Consulting to undertake the work:

- The proposed new access routes to the airport and the portion of industrial land to the south west, achieved through the extension of Market Road.
- The development of additional hangars and associated infrastructure to service the demand for additional general aviation use.

These investigations will assist in assessing the alternatives proposed for these components of the expansion and high level design that will inform the EIA investigations. In addition, the feasibility studies require a Traffic Impact Assessment (TIA) to inform the Market Road extension. A TIA is also a need of the EIA process for the broader Airport area. The terms of reference for the TIA to be managed by the VNA consulting team have been developed with input from the Municipality Roads section and the INR as the EIA consultant.

5.2. Nature of Development Planning and Roll-Out

With the feasibility and planning studies in 5.1 as context, the following points need to be understood regarding the nature and timing of the project roll out as well as the financing thereof.

- In the case of several of the land-uses such as the industrial zone, the Municipality will provide the bulk services but the cost of the top structure will be at the expense of the private investors.
- In the case of major supporting infrastructure like the Market Road access, this may be financed with support from other institutions. For example, the DBSA may assist in financing the Market Road extension depending on the outcomes of the feasibility study.
- Consequently, the various land-uses and infrastructure will be developed in relation to market demand and the availability of finance over the duration of this phase 1 (to 2025), rather than as a consolidated project over an intense 2-3 year development period.
- The most likely developments to take place first are:

¹⁰ KZN Technology Hub Feasibility Assessment – Msunduzi Value Proposition, 2013

- The Techno-hub, for which funding may be available from Treasury for the bulk infrastructure and services. There is also considerable interest from various investors in several of the use-zones within the Hub.
- GA facilities where there has been a long standing waiting list.
- There has also been ongoing discussion with investors interested in the industrial land, so this area may also be developed sooner rather than later.

The new legal entity (see section 5.2) being established to operate the airport will be tasked with increasing the sustainability of the airport financial situation and raising revenue for the various projects.

Given that the various projects (industrial, commercial and hotel) will in most cases be developed by the private sector, the MM is only able to apply for environmental authorisation at the level of proposed land-use zoning e.g. (industrial, mixed use) which have restrictions in terms of what use may take place. The specifications of associated infrastructure are also provided in terms of location and extent (floor space, heights) which are fixed. The investors will be responsible for the detailed designs and getting the necessary building and any other permits.

5.3. Project Location and Extent

Msunduzi Municipality (MM) is approximately 640 square kilometres in extent and located at the centre of the uMgungundlovu District Municipal, about 80 km North West of Durban along the N3. Figure 4 provides an indication of the extent and locality of MM. The Pietermaritzburg Airport, formerly known as Oribi Airport, is located within the MM boundary. Table 5 provides an indication of the location and extent of the Pietermaritzburg Airport in relation to Pietermaritzburg town. The Airport is located in the outskirts of Pietermaritzburg, owned and managed by the local MM and serves the city of Pietermaritzburg and surrounds as well as the outer west suburbs of Durban.

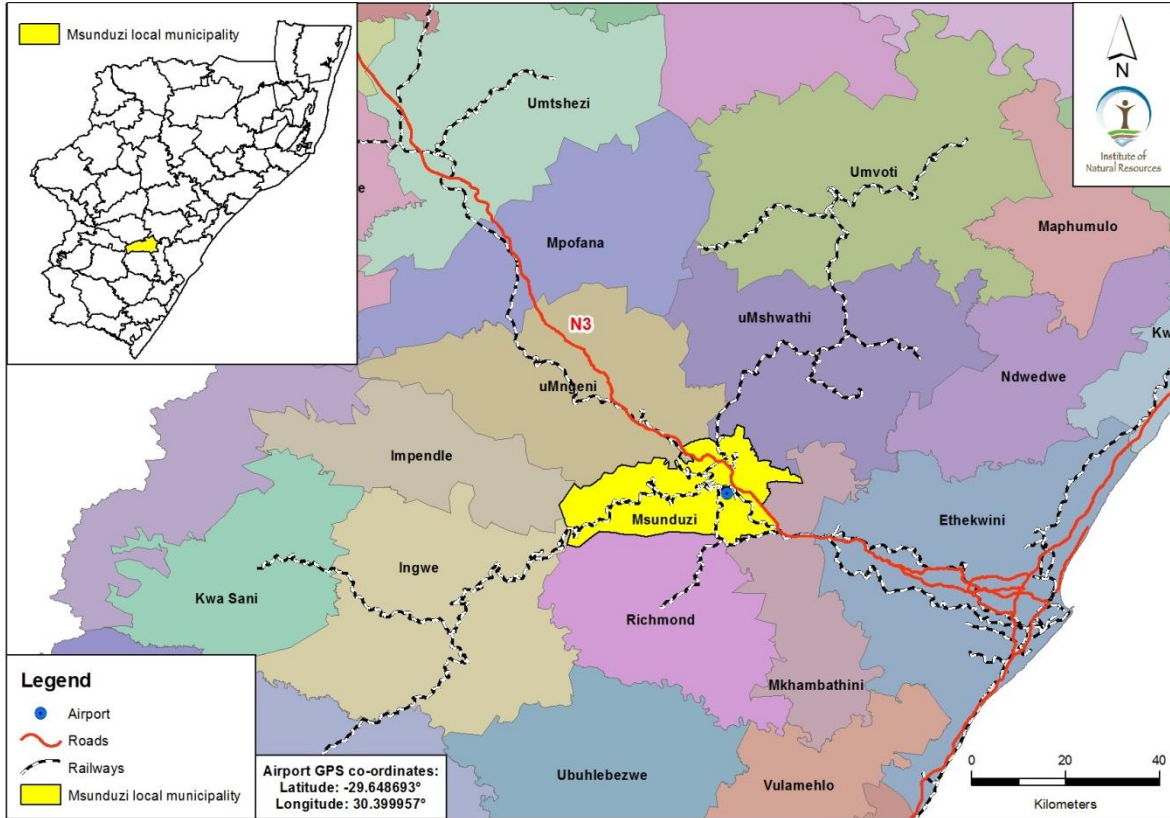


Figure 4: Location of Msunduzi Municipality in relation to Umgungundlovu District Municipality

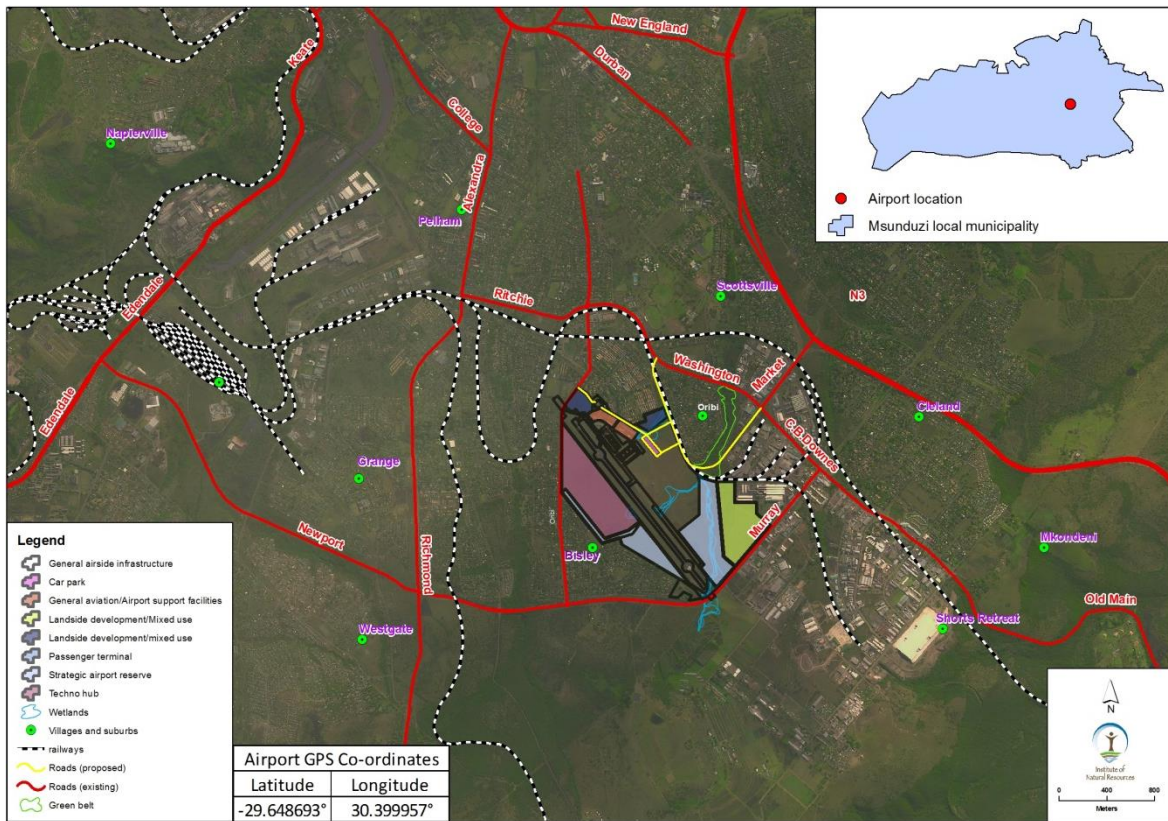


Figure 5: Location of Pietermaritzburg airport in relation to MM

5.4. Land Tenure, Use and Zonation

Expansion is proposed on the existing Airport Property (Remainder of Erf 10 000 and the adjoining properties: Rem of Erf 870, Erf 10159, Rem of Erf 1589, a portion of Erf 1910 all of Pietermaritzburg) as summarised in Table 5 below. Four of the land portions are owned by the Msunduzi except for a portion of Erf 1910 which is owned by Transnet

Table 5: Summary of the land parcels

ERF No.	Surveyor General Code	Area (Ha)
R E / 8 7 0	N O F T 0 2 5 8 0 0 0 0 0 8 7 0 0 0 0 0 0	16.1
R E / 1 5 8 9	N O F T 0 2 5 8 0 0 0 0 1 5 8 9 0 0 0 0 0 0	18.1
R E / 1 9 1 0	N O F T 0 2 5 8 0 0 0 0 1 9 1 0 0 0 0 0 0 0	0.45
R E / 1 0 0 0 0	N O F T 0 2 5 8 0 0 0 1 0 0 0 0 0 0 0 0 0	145.42
R E / 1 0 1 5 9	N O F T 0 2 5 8 0 0 0 1 0 1 5 9 0 0 0 0 0 0	12.69

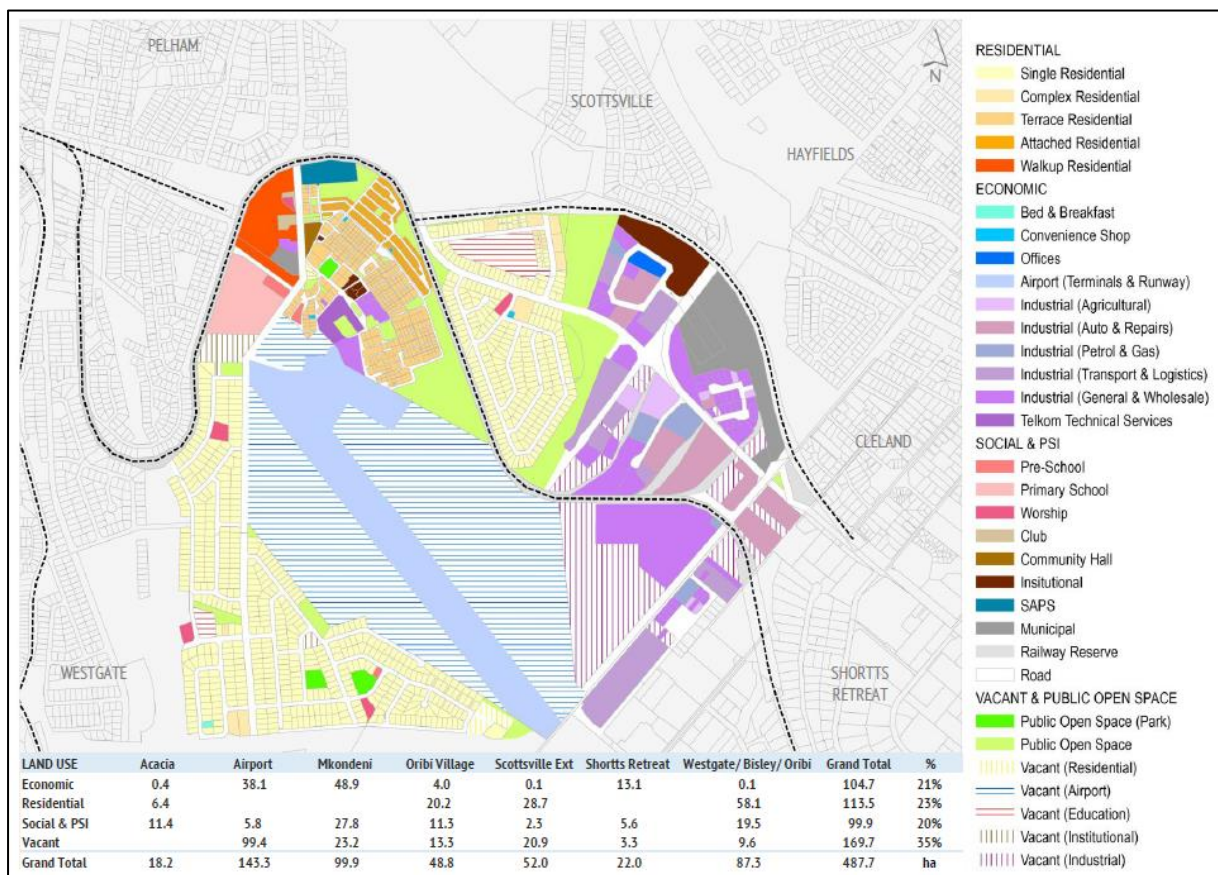


Figure 6: Land-use within the Airport Precinct (Source: Precinct Plan - Status Quo Report)

The land-use map for the precinct shows the amount of vacant land within and adjacent to the Airport. It is sections within these areas that are proposed for utilization in phase 1 as described below.

5.5. Existing Infrastructure

Figure 7 **Error! Reference source not found.** illustrates the existing infrastructure at the airport including the airside, landside infrastructure and the terminal building. The capacity and condition of the existing facilities, infrastructure, utilities and roads at the airport were some of the key influential factors for the expansion of the airport.

5.5.1. Airside infrastructure

Runway

The portion of the runway that represents the full structural pavement strength is 1 597m, with a stopway of 190m, giving a total length of 1 787m. This equates to an ICAO classification 2C airport. The stopway is, however, an area beyond the runway which can be used for deceleration in the event of an aborted take-off and should provide capable support without causing structural damage to the aircraft. SA Airlink utilises the stopway when departing from Runway 34 to gain distance for take-off for their Jetstream 41.

Taxiway

The gradient of the main taxiway, connecting the apron to runway is steep and undesirable, and a limited number of jets can be catered for on the runway and taxiway at a time.

Apron areas

The insufficient parking/apron area is a safety concern for the commercial aircraft as it can only accommodate one plane at a time for departure, passengers cannot board while another plane is preparing for departure. Its current position of the apron area and taxiway in front of the terminal building is a development constraint for expansion.

Navigation Aids, Visual aids and Signage

Recently added are the VOR/DME, NDB's, GNSS Let-down procedure and airfield ground lighting, PAPI's at thresholds, which has improved airport's efficiency.

5.5.2. General Aviation

There are existing development plans, which provide for expansion of the current General Aviation area. The uncertainty about the future of Virginia Airport, Pietermaritzburg Airport may attract some of General aviation business. This has a significant impact on the planning of the general aviation site and most probably parking for small aircraft, which will be demand driven.

5.5.3. Landside Infrastructure

Access Roads

The airport is located approximately 6km south of the CBD of Pietermaritzburg, and is 3.5km from the N3 freeway and 2km from the R56. Direct access into the airport is through Phazyn Road off Oriibi Road.

ENVIRONMENTAL SCOPING REPORT FOR THE PROPOSED EXPANSION OF THE PIETERMARITZBURG AIRPORT



Figure 7: Existing infrastructure layout

Parking Areas

Servest Parking is responsible for the facility which houses the seven car rental firms and the private shuttle service. The location of the current designated drop-off and collection area is viewed as being unsuitable by some users; however, the preferred area is restricted and defined by the concession terms.

5.5.4. Terminal Building

The terminal building covers an area of about 1 200m² in public amenities including check-in counters, arrival and departure lounges, a VIP lounge, a cargo office, an airport management office, an ATM, a coffee shop and ablution facilities as shown in Figure 8 below. The layout and facilities within the terminal building were upgraded as part of the capacity of the terminal building has been deemed insufficient based on the growth in passenger numbers at the airport. Table 6 below summarises the extent of the different facilities in the terminal building.

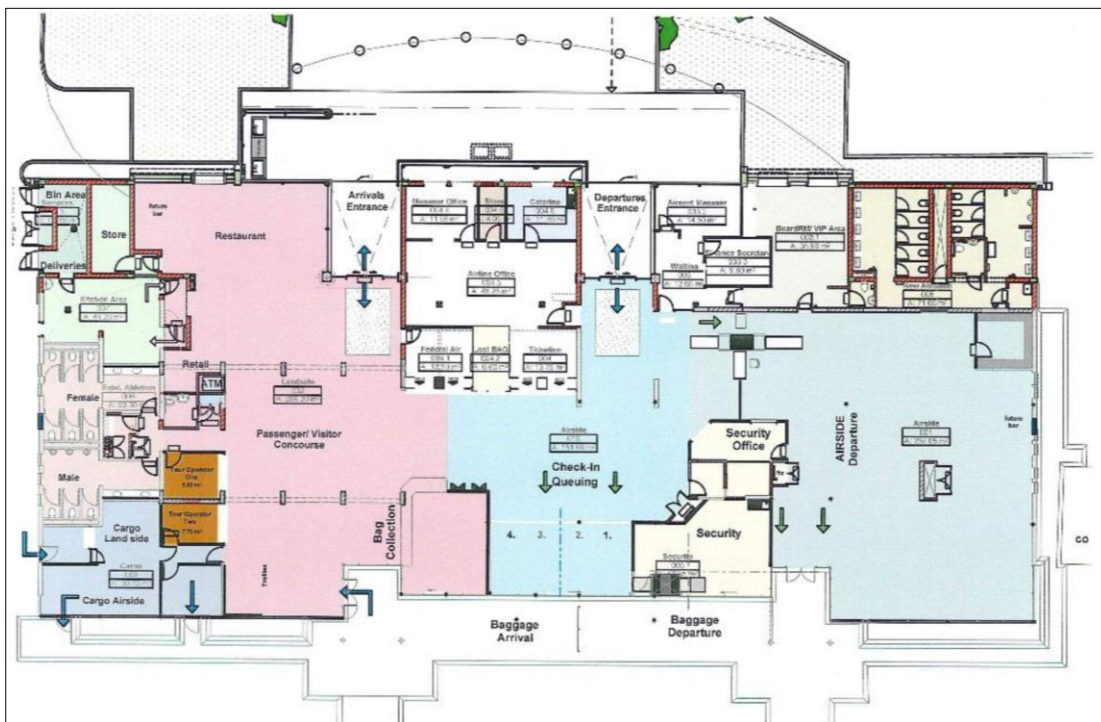


Figure 8: Layout of the existing terminal building

Table 6: Extent of the facilities in the terminal building

AREA	FACILITY	SUBDIVIDED AREAS (M ²)	TOTAL AREAS(M ²)
Offices	Airline Offices (Federal Air)	107.60	255.60
	Airport Management	36.95	
	Boardroom/VIP	35.90	
	Tour operators	16.30	
	Security	58.85	
Ablutions	Old	59.30	130.95
	New	71.65	
Kitchen	-	57.35	57.35
Arrivals	Restaurant/Future bar	173.20	296.20
	Arrival Concourse	*95.00	
	Baggage Claim	*28.00	
Departures	Check-in counters	*30.50	408.95
	Queuing	*60.00	
	Open Space	61.40	
	Airside Lounge	257.05	
Cargo	-	50.70	50.70
Total area			1 200

5.5.5. Other facilities and utilities

The other facilities and services at the airport site which were assessed include;

- Control tower
- Fire and rescue facility
- Fuel
- Car hire facility
- Hangars
- Utilities assessed included:
 - Electricity
 - Water
 - Sewerage
 - Communication.

5.6. Proposed Infrastructure and Land-use

The project involves the expansion or addition of the following components which are detailed below:

- **Airside Infrastructure:** Extension of the taxiway to service an extension of the aircraft apron.
- **General Aviation:** Reconfiguration of existing hangars, and expanded facilities for aircraft maintenance and repair.
- **Terminal Building:** Site allocated for future expansion of the terminal building.
- **Landside Infrastructure:** Improved access via a link to Washington and/or Market Roads, new parking area and drop off zone, an industrial zone, and mixed commercial zones.
- **Technology Hub:** Located between the runway and western boundary of the airport (Oribi Road) that provides for the following zones: special sports, mixed use/commercial, mixed use residential/hotel, aviation hub, education/techno-hub, and light industrial.
- **Open Space/Conservation:** Assigned to sensitive riparian systems and open space.

5.6.1. Airside Infrastructure

The airside infrastructure consists of the following elements shown in Figure 9.

Runway

No extensions to the existing runway are required. The total length of the existing runway is 1597m with a stop way of 190m; the classification of the runway will therefore remain an ICAO Code 2C runway; however the length does cater for certain code 3C aircraft to be able to operate at this airport. The runway is adequate to serve the current aircraft mix. The Land use plan further indicates reservations for the associated RW strip and non-instrument simple approach lighting systems.

Taxiways

For planning purposes the taxiway infrastructure including the relevant clearances have been laid out for full ICAO Code C aircraft (up to 36 m wingspan), this to cater for the possible long term future introduction of this aircraft category. An initial parallel Taxi Way will be developed to serve the extended apron.



Figure 9: Layout and extent of the elements comprising of the phase 1 of the project

Aprons

The new apron will be parallel to the runway on the eastern side. This phase incorporates a flexible extension of the existing apron where the indicated area allows for several parking configurations to be determined and implemented as per actual demand. However, for planning purposes six ICAO Code B aircraft stands and three ICAO Code C (e.g four AVRO RJ 85) stands have been provided. It will have an area of 14 000m² (200m wide and 70m deep). It is noted that currently the airport is used by smaller code C aircraft with a wingspan of around 26 m only. The indicated parking arrangement is therefore indicative. The proposed modular arrangement can be easily extended in future if demand dictates so. Between the several apron stands associated apron taxi lanes have been planned, further land reservation has been made for apron service roads.

Navigation Aids

Navigation aids will be upgraded and implemented concurrent with the terminal building, runway and taxiway system extensions to be compliant with ICAO’s and CAA’s standards.

Visual Aids and Signage

With the extension of the runway, taxiway system and the new terminal building, the visual aids and signage need to be upgraded to be compliant with ICAO’s and CAA’s standards.

Table 7 lists the land use facilities including a brief description of the function served by Airside facilities.

Table 7: Description of the airside infrastructure

Main Category	Typical Facility Type	General Description
Airside Infrastructure	Runway Infrastructure	Asphalt runway pavements and associated pavement marking, Runway graded (grass) strip, Airfield Ground Lighting elements, ducting and manholes, special airport systems equipment, metrological equipment and storm water drainage elements. Intended use: Aircraft, controlled access.
	Taxiway Infrastructure	Asphalt taxiway pavements, associated pavement marking graded (grass) taxiway strips, airfield ground lighting elements, ducting and manholes, storm water drainage elements: Intended use: Aircrafts, controlled access.
	Apron Infrastructure	Concrete or asphalt pavements, associated markings, floodlighting masts, ducting and manholes, drainage elements. Intended use: Aircraft, Airport Service Vehicles, passengers, restricted access.

5.6.2. General Aviation

It is envisaged during phase 1 that the existing GA hangar facilities will be reconfigured and the area optimised in order to accommodate the growing demand for GA operations. Once the new terminal building becomes operational the existing terminal facilities can be reconfigured for use by private and business aviation as well. It should be noted that the Master plan report does provide forecasted figures for the GA developments at PZB. However the land use plan takes a flexible approach to accommodate any required capacity beyond the areas provided in phase 1 in the areas of the ultimate phase. There are two alternative sites for the extension of the GA area. The preferred option is immediately adjacent the existing GA area. The alternative is via separate access from Gladys Manzi (Murray) Road. The GA extensions will include facilities for aircraft maintenance and

repair. Table 8 lists the land use facilities for including a brief description of the function served by the GA facilities.

Table 8: Description of the General Aviation infrastructure

Main Category	Typical Facility Type	General Description
General Aviation	Aircraft Hangars	Hangars to be used for parking of privately owned aircraft. Building heights for hangars are up to 8m for code B and 15m for Code C.
	Aircraft Maintenance and Repair facilities	Aircraft Maintenance and Repair activities are assumed to be mostly related to General Aviation although if scheduled flights intensify at some stage limited routine line maintenance services might be provided for by the airlines. MRO facilities are assumed to be located in the areas indicated for GA. These facilities will consist of hangars with workshops and warehousing for storage of equipment and parts.
	Aero Club facilities / Flight School	The current PZB Aero Club has facilities on the existing airport, During the development of the airport activities of the Aero club and Private Pilot Training Activities are assumed to continue and expand. Facilities like a club house, instruction rooms and hangars are assumed to be located within the areas indicated for GA.

5.6.3. Landside Infrastructure

Mixed-Commercial Use

Mixed use area reservations are proposed on the northern end of the airport. A 75-125 room Hotel is proposed for the area between Oribi Road and the existing Airport entrance. The hotel buildings will be a maximum of two storeys supported by parking facilities for guests and staff. A second mixed use/commercial zone is proposed in the area adjacent immediately adjacent Oribi Village along the proposed new access road that links into Washington Road.

Industrial Zone

The first phase will accommodate a new industrial zone of approximately 17 hectares which will accommodate land uses and activities similar to those in the existing and adjacent industrial estate (i.e. manufacturing, logistics, warehousing).

5.6.4. Airport Access

The current airport access road (Pharazyn Way) off Oribi Road will be retained as an access point to the General Aviation portion of the airport once the other access routes are established. The following additional airport access is proposed:

- i. A new access road off Oribi-Road. This will run along the boundary with Oribi Village and extend to the new parking area and terminal building once they are established.
- ii. A new road that links the new access off Oribi Road to Washington Road providing a 'loop' system'.
- iii. A new access road connecting the airport directly with the N3 via Market Road. This road (Market Road extension) will also provide access to the light industrial area off Gladys Manzi (Murray) Road. The new GA sites may also require an access road off Gladys Manzi

(Murray) Road to enable direct access to those sites, should this alternative emerge as the most feasible through the EIA process.

A new access road, off Oribi Road, will be required to service the new proposed Techno Hub on the western side of the runway. An additional access road could be a direct link with Gladys Manzi (Murray) Road via Long Road, which requires partial new constructed roads.

5.6.5. Parking

A new parking area is proposed adjacent to the proposed position for the new passenger terminal building. This parking area will be used for staff, passenger and VIP parking. The car rental offices can also be relocated to this location. A section of the existing parking area will remain as such for this phase which could provide additional parking dedicated for the GA related facilities and airport staff. It should be noted that Servest, who manage the parking area have a contract until 2024 with an option to extend by 5 years. In terms of this contract they have an agreement with the Municipality to extend the parking area by approximately 12 800m² towards Pharazyn Way and adjacent the water reservoir in the area identified for the hotel. This area is shown in the following diagram and the extension is likely to commence in the short term.

The timing of a move for the parking area to the new site adjacent the new terminal building shown in Figure 9 is dependent on when alternative access is developed and the terminal building needs to move. These options are described further under the section dealing with alternatives.



Drop-off / public transport curbs Public Parking

At the main access road a loop is to be provided to maintain flow of traffic, while parking and drop-off zones remain connected. Terminal frontage roads with kerb for drop-off and pickup of passengers will be provided here with a bypass.

Car hire facilities

Car rental parking and offices are located in the parking area. The timing and design would be undertaken in collaboration with the holders of this concession and in terms of their lease agreement.

Table 9 lists the land use facilities including a brief description of the function served by the land-side Infrastructure

Table 9: Description of the landside Infrastructure

Main Category	Typical Facility Type	General Description
Landside infrastructure	Access roads and circulation roads	Dual lane (bi-directional) airport access roads (asphalt) and single lane circulation roads (one direction). Street furniture and street lighting elements, storm water drainage elements. Intended use: Secondary arterial classification.
	Passenger and Staff Parking	Ground level, passenger car parking, asphalt or concrete block parking pavements, walkways, street furniture, gate house, drainage elements and street lighting.
	Drop-off/public transport curbs	Terminal frontage roads with kerb for drop-off and pickup of passengers.
	Car hire facilities	Car rental parking and offices

- Considered planning of the mixed uses should encourage movement of people as well as innovation through potential synergies.
- Buildings embody the aspirations of businesses as world leaders and innovators through their architectural expression and forms.
- The human mind is encouraged to test perceived boundaries through “creative space”.
- Traditional office typologies with confined or restrained spaces are to be avoided. Generous natural lighting, ventilation, form, colour, and open spaces are to be encouraged.
- In terms of energy efficiency and design, buildings should as a minimum comply with the requirements of SANS 204.
- Green Star and LEED certification of buildings are to be encouraged.
- Sources of renewable energy should be investigated and integrated in the planning of the hubs.

5.6.6. Passenger Terminal Building

The passenger terminal building currently provides an acceptable service level but is at capacity and will need to be expanded if passenger traffic further grows. It is assumed that in the first phase an increase in passenger traffic is initially accommodated by (temporary) expansion of the existing terminal. At some stage however a new passenger terminal development more centrally located around the expanded airside facilities is envisaged. This new position will also provide an opportunity to improve the landside road accessibility to the airport. The new terminal building is assumed to be a first phase of a modular extendable terminal to meet further growth in demand. Table 10 lists the passenger terminal building facilities for including a brief description of the function served by the passenger terminal building.

Table 10: Description of the passenger terminal facilities

Main Category	Typical Facility Type	General Description
Passenger Terminal Facilities	Passenger Terminal Building	Passenger Terminal Building where passengers board and alight flights. Consisting of: a central arrival/departure hall, commercial concessions (bars/restaurants shops) check in area, waiting lounges, airport and airline offices, and ablution facilities. A two storey passenger building is envisaged.

Electricity

For Phase 1, the supply will remain to the terminal building, however, it may need to be augmented should the power required exceed the existing capacity. Further reticulation will be required for apron lighting and for the proposed GA area. Sufficient capacity should be provided to allow for future phases of the GA facilities.

Water Supply

The nearest bulk reservoir is adjacent to the existing passenger terminal. It is understood that the bulk water system has sufficient capacity; however, pressure is a concern due to the relative elevations of the airport and reservoir. Additionally a bulk water main runs diagonally under the primary runway and an engineering assessment should be undertaken to determine the suitability of this configuration in the long-term. For Phase 1 the reticulation to the terminal should be upgraded to meet the additional requirements and address the current issues relating to the existing infrastructure. Additionally, a new supply will be required for the GA area, which is anticipated to be connected from the adjacent residential network.

Wastewater

The Municipality has indicated that sufficient bulk supply is in place (or at least planned) in terms of wastewater trunk mains and treatment capacity. For Phase 1, the existing supply to the terminal will need to be upgraded to meet the additional demand. Reticulation will need to be provided for the GA areas.

Storm Water

For Phase 1, improvements to the current storm water arrangements are recommended. The passenger terminal and fire station often experience flooding due to the slopes of the adjacent taxiway and aprons. A cut-off drain will be required. Storm water management will also be required for the new GA areas. A storm water management plan will form part of the Environmental management plan and requirements.

5.6.7. Technology Hub

The definition of Technology Hub is "An enterprise associated with Research, development, design and related activities in the high-technology sector which is accommodated in a park-type environment which is specifically created for the industrial needs of the enterprises concerned".

From an environmental perspective, to note is the institution design incorporating environmental principles into the design process, to reduce the overall human health and environmental impact that may arise across the techno hub's life cycle. These include:

- Large areas of green space are retained for the benefit and recreation of the employees and building occupants.
- Public spaces become informal outdoor boardrooms where networking and socialisation takes place.
- Provision of services, entertainment and recreation facilities, and proximity to accommodation can make hubs self-contained micro cities.

- Full integration with universities, tertiary institutions, and research institutes encourage growth in research and development.
- Research and development rich environments attract businesses investment in the hub through linkages with learning institutions.

The site set aside for the Technology hub is about 25 ha. The table below depicts the conceptual zones envisaged for the technology hub of Msunduzi. This plan is based on a specific model formulated for this hub. The concept involves six specific zones, each with a sub zone. The six zones and sub zones are tabulated below with related functions.

Table 11 Summary of uses within the techno-hub zones

Zone	Sub-zone		Function
Mind Zone	Education	Research Zone	Laboratories (analytical, science and computer)
	Education	Student Zone	Studios (for Master and PHD students) and an interpretation centre which could be used by schools as a part of science education to instil an innovation culture in school children
Innovation Zone	Light Industrial	Testing Zone	Experimentation, materials and products testing for innovations designed
	Light Industrial	Development Zone	Laboratories for simulation, CAD, CFD, IT and product design
	Light Industrial	Engineering Zone	Consists of a learning factory for rapid prototyping, workshops and CNC Machining as well as product development
	Light Industrial	Data Zone	LAN lab with Computational Capacity and Product Testing and a server farm with unlimited connectivity and bandwidth.
Enterprise Zone	Enterprise Zone	Business Support Zone	Hub Management & Marketing/Branding is to be located in this zone and is the heart of the daily operations of the entire technology hub. Functions include: <ol style="list-style-type: none"> 1. Business Management & Marketing 2. Business Development & Planning 3. Consulting 4. Enterprise Finance <ol style="list-style-type: none"> a. Venture Capital b. Training and Mentoring 5. Skills Transfer 6. International and national business networking and linkages between research centres, industries, international technology parks, are created by the management body. 7. Property management function It also serves as the interface for the Mind/Innovation/Business zones.
	Enterprise Zone	Start-up Zone	The start-up zone consists of the following services:

			<ol style="list-style-type: none"> 1. Start-up Incubator 2. Innovator/Entrepreneur Development Program 3. Central Services <ol style="list-style-type: none"> a. Reception & Secretarial b. Boardrooms c. Video Conferencing d. Meeting Spaces e. Computer Lab f. IT Services g. Telecommunications 4. Studios <ol style="list-style-type: none"> a. Hot Desk (for ICT services) b. Small Tenants c. Medium Tenants
Public Zone	Mixed Commercial use	Convention Zone	<p>The convention sub zone is equipped to involve a multi-functional space for:</p> <ol style="list-style-type: none"> 1. Skills transfer 2. Information & Knowledge Dissemination 3. Multifunctional Conference Spaces 4. Exhibition Space 5. 300+ Seat Auditoria / Cinema
	Mixed Commercial use	Life Zone	<p>The life sub zone consists of the following retail support services for tenants and employees:</p> <ol style="list-style-type: none"> 1. Cafes & Restaurants 2. Retail Services <ol style="list-style-type: none"> a. Convenience Store b. Banking & Post c. Hair & Beauty
	Sports	Body Zone	<p>The body sub zone includes the following in order to create a multifunctional and mixed use environment servicing the everyday needs of people.</p> <ol style="list-style-type: none"> 1. Gym 2. Sports & Recreation
	Mixed use/Residential/Hotel	Accommodation	<ul style="list-style-type: none"> • Short to Long Stay (hotels) • Spa
Business Zone	Mixed commercial use	Multi-tenanted Buildings	This sub zone allows for office or other space to be taken up by small to medium existing enterprise
	Mixed commercial use	Single-tenanted Buildings	This sub zone allows for office or other space to be taken up by medium to large existing enterprise.
Energy Zone		Solar Roof Zone	<ul style="list-style-type: none"> • Roof Mounted Solar Panel Farm
		Solar Terrestrial Zone	<ul style="list-style-type: none"> • Ground Based Solar Panel Farm • Energy Capacity • Power Security
Other	The spatial concept allows for parking, landscaping and interactive open spaces including a lake. A transport zone for shuttle services and taxi and bus drop offs is also compensated for within this plan.		

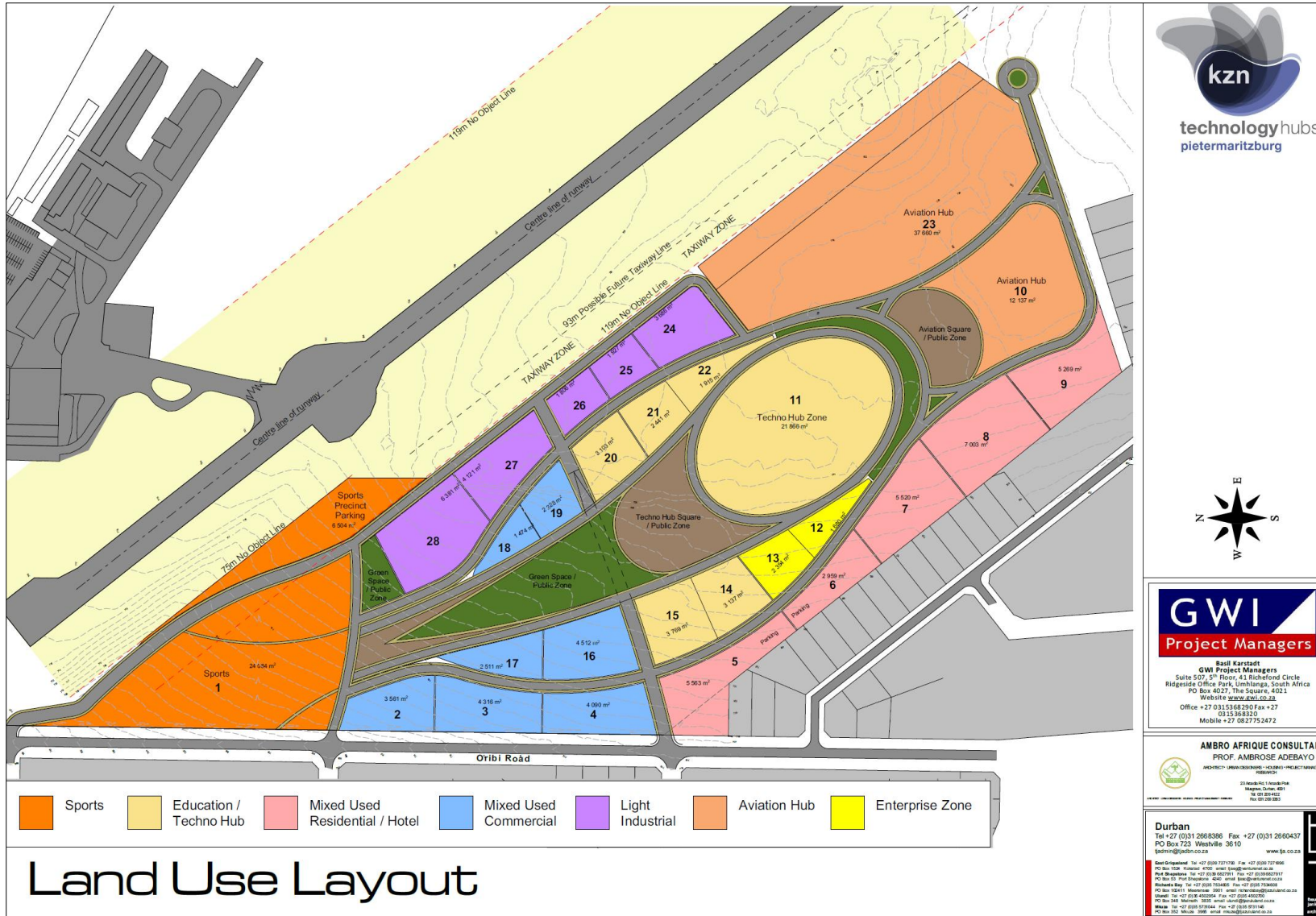


Figure 10: Layout of the proposed land-use within the Techno hub

5.7. Open Space

Like any development well-managed open space protects the natural green infrastructure, preserving important environmental and ecological functions such as storm-water runoff, amelioration of water quality issues, and erosion control. The Msunduzi Municipality Environmental Management Framework (EMF) identifies conservation priorities throughout the municipality, and wetland areas are regarded as sensitive areas which have to be preserved protected and free from intensive development.

Conservation Zones and Buffer zones

Conservation zones relating to sensitive areas and habitats have been identified for protection. In addition buffer zones between residential and airport related land uses have been provided. A significant portion of the land parcel with the wetlands has been set aside as strategic reservation in order to ensure the protection of a healthy system. An open space buffer of 30m has been assigned, primarily to protect the sensitive riparian systems and open land. The reserve is primarily an important riparian corridor along, and around the water bodies. It serves as a physical link to and between significant sources of biodiversity (from the Bisley nature reserve south of the airport extending all the way up to Msunduzi River past the Hayfields reserve) to prevent local species extinctions in the Msunduzi Municipal Area. This indicative buffer will be refined through specialist investigations in the EIA process.

5.8. Institutional Structure

The municipality is in the process of 4 municipal entities, one of which is the Airport Entity. Municipal Entities are established on the same basis as State Owned Enterprises, where the companies established have a majority shareholding from government. In the case of the Airport Entity, it is envisaged that a “mini ACSA” will be established to operate and manage the airport. The entity will be managed by an independent Board comprising of Executive and Non-Executive Directors, with Non-Executive Directors in the majority, and the chairperson being a Non-Executive Director. One of the areas of management for the entity will be the development of vacant land in the airport, and in the precinct around the airport. The Technology Hub project will be one of the first development projects that will be managed by the Airport Entity. A Property Development division is proposed in the organizational structure of the new entity, and a process will be developed for the management of the Techno Hub, including a dedicated sub-unit that will manage the marketing of the site, and tenanting and other issues.

6. OVERVIEW OF THE RECEIVING ENVIRONMENT

This section provides an overview of the key characteristics of the biophysical, socio-economic and cultural/historical heritage environment within the project and surrounding area. The description of the affected environment is drawn from:

- A range of available information sources which are referenced throughout.
- Two specialist investigations undertaken in 2001 when the EIA was originally commissioned these being wetland delineation and functional assessment in Appendix 4, and a Heritage Impact Assessment in Appendix 5.
- The various reports prepared as part of the Precinct Planning contract by the Markewicz - Redman Partnership (MPP).
- Unpublished information provided by I&APs during the PPP.

6.1. Geology and Topography

The impact on the environment can be minimized and/or reversed by understanding the relevant geotechnical and environmental aspects of a specific area and applying adequate planning or mitigation measures to limit the impacts of development on the state of the environment. From the information reviewed for Geotechnical Overview of the Msunduzi Municipality as part of the Environmental Management Framework, it was concluded that the Dwyka group sequence, dolerite and shale is dominant in the study site. The Dwyka group is commonly characterized by hard core stones and weathered profiles posing a development constraint in excavation which in some instances, this may increase the development costs. Tillite soils are derived from Dwyka sediments. These soils form hard stony clay which drains poorly, is usually slightly acidic and becomes waterlogged in the wet season. Figure 112 highlights the broad underlying geological features in the area. The area is superimposed on dolerite, which in comparison to the largely shale surroundings is a much harder material and therefore more resistant to erosion. As a result the available energy is used to erode the channel systems up the wetlands, which is likely, has been the cause for the formation of gullies. This geological feature is enhanced by the presence of an old raised railway line directly downstream of the toe of these two wetlands, which has resulted in a 'pinch / narrowing' in the channeled system. Generally, geotechnical conditions can and do vary over small distances and development potential for any site require investigations in detail prior to development. Given the natural variation in geology a geotechnical study will be undertaken for all areas defined for development (see Section 1: Terms of Reference for EIA Phase).



Figure 11: Geology and Topography of the study site

The airport has latitude and longitude coordinates of 29°38'48"S 30°23'54"E, at an elevation of 2423 feet (739 meters). A slope analysis conducted for the municipality in 2009¹¹ concluded that the land to the south of the runway is gently sloping with a gradient less steep than 1 metre in 3 metres (1:3). The 5m contours are also shown in Figure 11 above indicate the land sloping away from the higher flat on which the runway is located towards the wetland and Blackburnough Stream system. A detailed topographical survey¹² has been conducted as part of the planning for the Techno-hub site, which also includes small portions of the site to the East of the runway.

6.2. Climate and Air Quality

The climate and local weather in Msunduzi are strongly influenced by topography; the higher lying areas in the north and west of the municipality are colder and receive more rainfall than the lower lying areas in the south and east. The Pietermaritzburg city is located in a hollow formed by the valleys of the uMsunduzi River and its tributaries. On clear winter nights cold dense air flows down slope into the city bowl, much like water. This fills the valley floor with cold, dense air creating an inversion that prevents pollutants from escaping. This air movement also brings pollutants from the entire municipal area into the valley where it remains trapped by the inversion layer. The majority of industry within Msunduzi has developed within this inversion layer as this land is both flat and in close proximity to both road and rail transport routes. As a result the city suffers short-term peaks in pollution despite relatively few heavy industries.

¹¹ Msunduzi Consolidated SDF Review July 2009

¹² Survey of the Pietermaritzburg Airport for Technology Hub Development. August 2015. Prepared by Global mapping South Africa for GWI.

There are a number of industries in Mkhondeni industrial area, which lies within the airport precinct area. Mkhondeni is an industrial hub with aluminum and steel production and factories among others, with emissions contributing to the degraded air quality within the area. There are no heavy polluting industries proposed as part of this project. The primary cause of additional air pollution will be in the form of additional vehicular traffic.

6.3. Natural Systems and Biodiversity

The Msunduzi Environmental Management Framework (SRK, 2010) is the primary informant of areas of biodiversity value and environmental issues such as air and water pollution as well as environmental risk such as flooding. It also highlights natural areas and systems that supply levels of ecosystem services. These have all been combined in the establishment of an integrated development constraints map. As indicated in Figure 13, the airport site is identified as an area posing high development constraints.

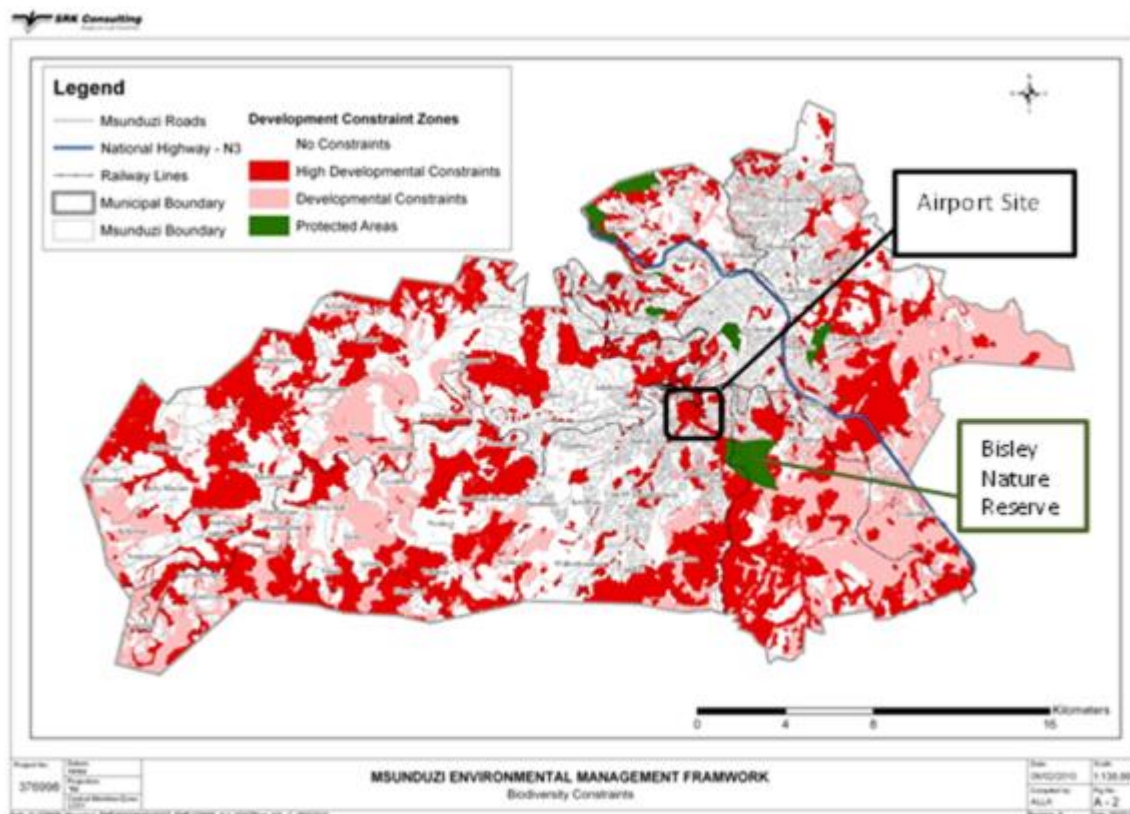


Figure 12: Development constraints within MM (Source: SRK, 2010)

Figure 12 also shows the close proximity of the development site to the Bisley Valley Nature Reserve. Bisley Valley Nature Reserve is situated on the western side of Pietermaritzburg airport on Murray Road going toward Mkhondeni. This thorn veld reserve is 250 ha and managed by the Msunduzi Municipality and includes a variety of habitats including grassland, open and closed woodland, and thickets. There is a variety of bushveld birds, giraffe, impala and zebra. The proposed expansion will not impact directly on the Nature Reserve, the close proximity and forms a small part of the catchment for the stream system running through the Airport, there is a need to consider ecological linkages via the aquatic system between the Reserve and downstream systems.

Further analysis of the EMF report for the area indicates that the trigger for this category of constraint in terms of biodiversity is the occurrence of wetlands and grasslands on the site (Figure 123).

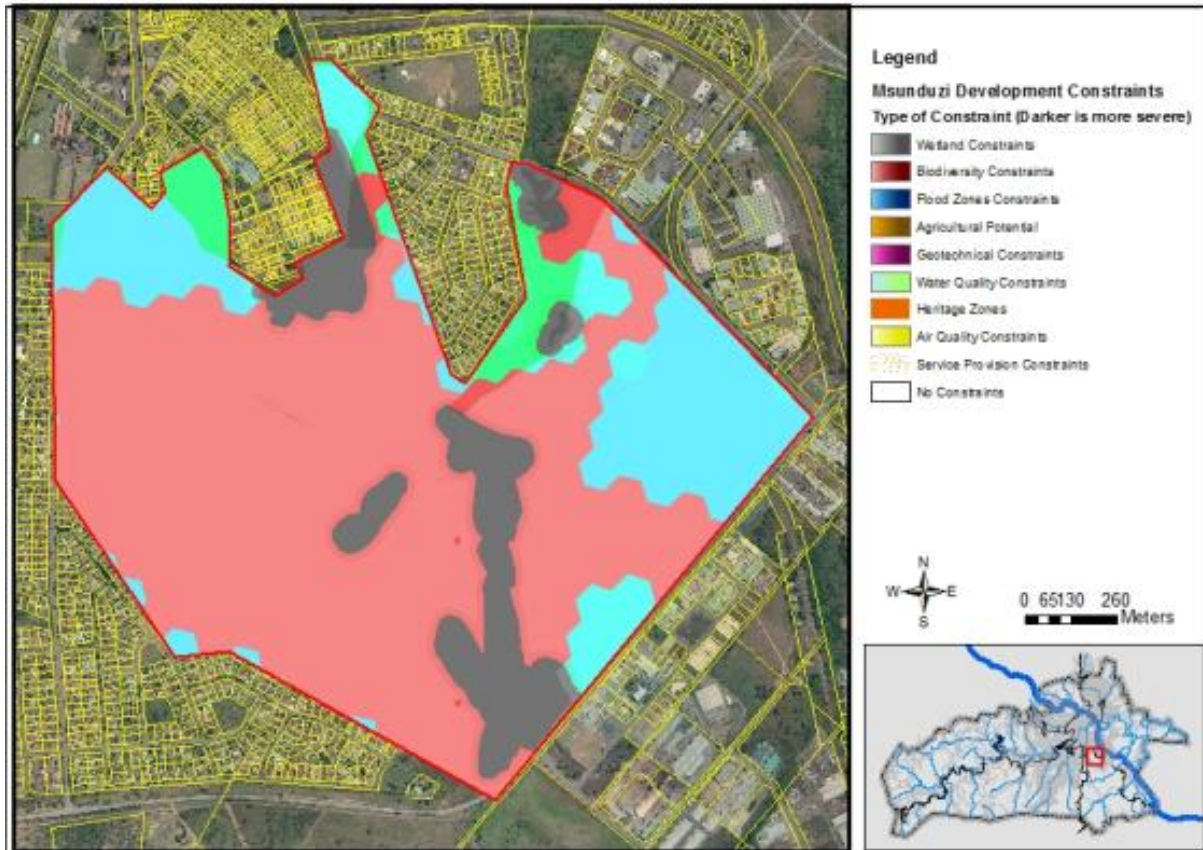


Figure 13: Environmental Constraints (Source: SRK, 2010)

Figure 134 shows the extent of wetland and grassland on the project site which is considerable, particularly in the case of grassland. It is these areas in which the various projects components and infrastructure will be developed.

6.3.1. Grasslands

The grassland is of varying quality. In the area to the west (techno-hub site) of the runway it is relatively disturbed as it was utilised in work undertaken to extend and resurface the runway. The grassland in the remaining undeveloped sections is less transformed. However, given the use of this land to support Airport activities, the grassland is managed to support aviation i.e. it is kept short to reduce risk of fire and use by birds that may result in air strikes, and to limit any interference with instrument and visual operations of the airport (which requires clearing of bushes and trees). The habitat and biodiversity value of the grassland is consequently considered limited. The grassland does however provide a very important ecological function in buffering storm-water flow into the wetland system and also assists in filtering pollutants. Certain wetland fauna also require adjacent grassland habitat, and wetland/river systems provide corridor services to aquatic and terrestrial species. A buffer area to wetland and riparian areas therefore form a variety of important functions.



Figure 14: Location and extent of the natural systems on the project site

6.3.2. Aquatic Systems

Given the linear nature of aquatic systems, it is necessary to consider the systems within a project site in relation to the catchment up and downstream of the study site. The study site is located in the Msunduzi catchment. According to the EMF (2010), this catchment is highly modified with no absorption capacity which can be loosely translated to poor water quality. To ensure catchment rehabilitation to an acceptable level as per municipal requirements, there is need for catchment management interventions prior to any further development within the catchment. Figure 156 shows how the project area forms the headwaters of the stream which links the site to the Msunduzi River.



Figure 15: Overview of the drainage system

6.3.3. Wetlands

Wetlands are specialized systems valued for the range of ecosystem services they supply. A draft wetland assessment was undertaken by INR in 2011 to inform the master planning process. It involved delineating the wetlands on site, assessing their present ecological state (PES), and determined the level of ecosystem services provided. This assessment is included as Appendix 4 Figure 167 below shows the wetland areas identified within the study site. However, even though these systems are seriously or largely modified their remaining functional abilities and provision of ecosystem services cannot be ignored when considering areas for development for the Airport expansion.



Figure 16: Wetlands within the study site

6.4. Socio-Economics¹³

The following is a collation of background information that describes the nature, status and condition of the socio-economic component of the receiving environment. This understanding is necessary to contextualize issues identified and highlight those of potentially high significance.

The Pietermaritzburg Airport precinct area falls within the *Central Business District (CBD), Ashburton and Eastern Areas* Area Based Management (ABM) region of the Msunduzi Municipality (MM). CBD

¹³ The contents of this section have been extracted from:

- Msunduzi Local Municipality. (No Date). Integrated Development Plan (IDP) Review for 2015/16. Msunduzi Local Municipality IDP Office. Pietermaritzburg.
- Urban-Econ. (2013). KZN Technology Hub Feasibility Assessment – Msunduzi Value Proposition. Prepared for the Department of Economic Development and Tourism and KZN Provincial Treasury. Durban.

functions as the primary market area for the MM and a place of power concentration (economic, political and financial), investment, and rates revenue generation. The region also provides social interaction and integration opportunities, is a tourism destination and acts as a gateway to the surrounding tourist destinations. The Capital City status has contributed to the economic and development growth and stability of the region.

The CBD, Ashburton and Eastern Areas ABM is the main employer with the Municipality's working population, with a large portion being employed in governments departments, while other in the industrial sector, particular in areas such as Willowton, Pelham, Mkhondeni and Northdale. The ABM is also home to the major education institutions in the Municipality, namely the University of KwaZulu-Natal (UKZN) and Durban University of Technology, which are in the Scottsville area, and the UNISA and FET College/s which are in the central (CBD) areas. Although the ABM's land use is dominated by thornveld and grasslands, the region is predominantly used for residential purposes. The area is also home to important transport corridors as it accommodates a large proportion of the N3, which also connects provincial corridors, and hosts the city's airport and railway station.

The area immediately surrounding the airport is characterised by different types of land-use, namely low and middle income residential areas (Oribi Heights, Oribi Village, Bisley and Scottsville Extension), industrial areas (Mkondeni and Shortts Retreat) and open space/reserve and agricultural areas (Bisley Nature Reserve and Ukulinga Agricultural Research Centre).

There are several schools in the surrounding area, such as crèches and day cares (i.e. Humpty Dumpty Playshool, Cotton Tail Day Cottage Care Centre, Kalinka Edu Care), and a primary school (Bisley Park Primary). There are also several churches such as the Faith Baptist Church, Faith in Action Church Ministries and the NCF/One life Church. In addition, the area is home to two sporting clubs (the Maritzburg Racing Pigeon Combine and a Vintage Sports Car club).

In terms of commercial entities within the residential areas (therefore excluding the car hire services etc. that operate within the airport boundary, and the industrial sector), there are several shops (such as Emilys Supermarket and Emilys Liquors) and service providers (Hair Dynamix, Ma Nails and Hair Bar). From a tourism perspective, there are various small scale businesses such as lodges and BnBs (e.g. Acacia Park Lodging, Kings Hill BnB, Tudor Lodging, Kwa Ntofo Ntofo BnB) and transport/tour agencies (TM Tours, Here2There shuttle service). There are also several informal, small scale business entities within the residential areas.

Socio-Economic Overview of the Msunduzi Local Municipality

The MM is located in the Umgungundlovu District Municipality, and is home to the Capital and second largest city on KwaZulu-Natal, Pietermaritzburg. Situated approximately 45 minutes' drive from Durban, the MM is astride the N3 corridor, one of the busiest development corridors in the country, which connects the Durban and Gauteng economic hubs. The MM is one of seven local municipalities in the District, and contributes 8% and 70% to the Gross Value Added (GVA) of the KZN province and District Municipality respectively. The MM is not a key tourism hub, hosting an array of events, but its capital status has resulted in it being a political and administrative hub for the province.

The MM consists of 37 wards, covering an area of approximately 590.6 km², and predominantly urban to peri-urban in nature, with some rural residential areas. The table below summarises the key statistics of the MM.

Table 12: Municipal summary of key statistics¹⁴

Total Population	618 536
Number of Households	163 993
Average Household Size	3.6
Population Growth Rate (2001 – 2011)	1.12% p.a
Male: Female	45.45 : 54.55
Female Headed Households	45.2%
Unemployment	33%
Flush Toilets Connected To Sewerage	51.6%
Weekly Refuse Removal	53.2%
Piped Water Inside Dwelling	47.9%
Electricity For Lighting	91.9%

The MM is subject to several advantageous components, such as:

- Its strategic location along the N3 corridor and in close proximity to the Durban Port and the King Shaka International Airport (KSIA)
- Its good transport networks (road, air and rail)
- Is an administrative and service centre for the inland region
- Is home to leading tertiary institutions such as the UKZN and the Durban University of Technology (DUT)
- Is well equipped with services (commercial, community and infrastructure)
- Has an established business base with an integrated Chamber of Business (CoB)
- Its manufacturing basis which includes textiles, agriculture (timber, beef, dairy, agri-processing), aluminium, construction material, clothing and leather goods, motor components, and steel.
- It being a tourist destination which drives the increase of hotels and restaurants
- Its assortment of development projects and planned growth

Msunduzi Municipality Social Overview

As indicated in the recent census (2011), the average annual population growth rate in the MM of 1.21%, having risen from 552 837 people in 2001 to 618 536 people in 2011. There has been an increase in the number of households (130 292 to 163 993 in 2001 to 2011 respectively), however the household size has decreased from 4.0 to 3.6 persons per households. As indicated in the table above, there are more females than males in the MM, which is a trend that has strengthened since 2001. The majority of the MM's population (68.4%) is within the economically active age bracket (15 to 64 years), while approximately a quarter of the population (26.6%) is under the age of 15, and the remaining 5% are over the age of 64. Although the dependency ration of people within in 15 to 64 age cohort has decreased by 5.3%, it still remains high at 46.2%.

In terms of education in the MM, there has been positive change between 2001 and 2011, with a 5.4% decrease in the percentage of adults of the age of 20 with no schooling (record of 5.5% in 2001). In line with this trend, there has also been an increase in the percentage of adults with a matric qualification, having risen from 24.5% in 2001 to 33.7% in 2011. In addition, those who have

¹⁴Msunduzi Local Municipality. (No Date). Integrated Development Plan (IDP) Review for 2015/16. Msunduzi Local Municipality IDP Office. Pietermaritzburg.

obtained higher qualifications have also increased from 9.2% to 13.1% in 2001 and 2011 respectively. Despite these positive trends, the number of children of school-going age that are attending school has decreased from 66 789 in 2001 to 62 737 in 2011.

One of the main concerns in the MM is the prevalence of HIV/Aids. It has been recorded that the uMgungundlovu District Municipality, in which the MM falls, had the highest prevalence of the highest prevalence of HIV/Aids in the province and country in 2010¹⁵. The HIV/Aids prevalence rate in the MM was 42.3% (2010). Table 133 below provides an overview of the population dynamics and opportunities in the MM.

Table 13: Msunduzi Municipality population SWOT analysis¹⁶

<p>KEY ISSUES RELATING TO POPULATION</p> <ul style="list-style-type: none"> • A growing population with a growing number of households, but with a decreasing average household size. • A population that is predominantly within the economically active age groups, and one where people within the working age groups are less dependent on those who are employed. • A population that is improving in levels of skills development and literacy shown by the improving levels of schooling and post schooling qualifications. • A population with the highest level of HIV/Aids infection in the province. • A population with a relatively high level of child headed households. 	
<p>STRENGTHS</p> <ul style="list-style-type: none"> • A stabilising population growth rate. • A relatively low number of child- headed households • The majority of the population in the economically active age cohorts 	<p>WEAKNESSES</p> <ul style="list-style-type: none"> • High number of economically vulnerable households • Places of residence some distance from work opportunities. • High levels of unemployment.
<p>OPPORTUNITIES</p> <ul style="list-style-type: none"> • The majority of the population in the economically active age cohorts • Good levels of education amongst adults • Improving levels of literacy and tertiary training. 	<p>THREATS</p> <ul style="list-style-type: none"> • High levels of HIV/Aids • Increasing in migration

Msunduzi Municipality Economic Overview

In 2014, the MMs GDP showed signs of positive growth following the 2010 period of negative growth (3.85% for 2010). The census indicates that there has been a decline in the unemployment level, the percentage of unemployed economically active adults having decreased from 48.2% in 2001 to 33% in 2011. This trend is mirrored by the youth (15-34 years) unemployment rate, which has decreased from 58.2% to 43.1% in 2001 and 2011 respectively.

Figure 17: GDP per sector for the Msunduzi Municipality (2012) Figure 17 below indicates the key economic sectors that drive the MM and the percentage that they contribute to the GDP, according to the 2012 Treasury statistics. The dominate sectors are Community Services, Finance, Transport, Trade and Manufacturing.

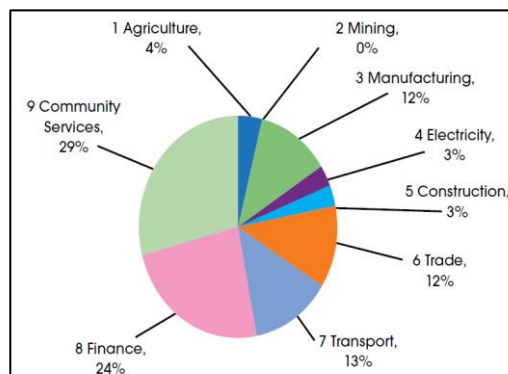


Figure 17: GDP per sector for the Msunduzi Municipality (2012)

¹⁵ According to the annual Department of Health anti-natal survey undertaken at state hospitals

¹⁶ Msunduzi Local Municipality. (No Date). Integrated Development Plan (IDP) Review for 2015/16. Msunduzi Local Municipality IDP Office. Pietermaritzburg

In terms of the Gross Value Added (GVA), which is a measure of the value of goods and services produced in an area, the Municipality’s GVA comprises of tertiary (69%), manufacturing (25%) and agricultural (6%) activities. The tertiary sector is driven by retail trade and business services, and a large portion of the manufacturing component is reliant on the commercial agricultural capacity of the surrounding municipalities. The main economic sectors contributing to the GVA are general government (19%), business services (14%), wholesale and retail trade (10%), and Transport and communication (9%). The Information Communication and Technology (ICT) is also a key sector with a growing at a rate of 7.5%, and is positively impacted by the 3.8% growth rate of the electrical machinery and apparatus sector. Alongside recent major developments (such as the Victoria Country Club Golf Estate, Liberty Midlands Mall, the Golden Horse Casino and Hotel, and 'Motor City'), property development is also on the rise in the MM, with developments ranging from residential estates to light industrial, hotel and conferring facilities, commercial enterprises, and logistics and warehousing.

As previously indicated, the MM is fortunate in that it has a number of economic advantages, namely: locational (its central location and its situation along the N3 corridor – a primary logical corridor linking two key economic hubs, Durban and Gauteng); natural/geographic (highly fertile land); human capital (array of good schools and tertiary education facilities); and institutional (capital city of the province). Table 144 below provides an overview of the economy’s dynamics and opportunities in the MM.

Table 14: Msunduzi Municipality Economy SWOT analysis

<p>KEY ISSUES RELATING TO THE ECONOMY</p> <ul style="list-style-type: none"> • A positive GDP and GVA for the municipal economy with an upward trend curve. • Unemployment figures, although relatively high, are improving and showing a downward trend. • The Municipality has a number of sectors that have a competitive and comparative advantage and require further support and assistance from the Municipality and other government sectors. • LED Studies for the Municipality show that there are opportunities in agriculture, agri-process, wood and wood products, tourism, logistics, ICT, and manufacturing to varying degrees. This is summarized as follows: <ul style="list-style-type: none"> - Agriculture - adding value to local produce taken from the surrounding rural areas and municipalities. - Tourism - Increasing events and improving business tourism numbers. - Logistics - growing Msunduzi as a logistics centre for breaking bulk between inland and the coast as well as supply chain management services, especially the cold chain with links to Dube Trade Port. - Manufacturing - linked to agriculture and tourism, for example agricultural chemicals, and to automotive components, as well as wood and wood products 	
<p>STRENGTHS</p> <ul style="list-style-type: none"> • Economic growth is positive. • Unemployment is on the decline. • The number of unemployed youth is on the decline. • The economy has well- established secondary and tertiary sectors. • The percentage of unemployed youth is on the decline. • The Municipality is the provincial capital. 	<p>WEAKNESSES</p> <ul style="list-style-type: none"> • Limited space available for industrial expansion. • Labour residing long distances from places of employment. • The need to review the LED strategy.
<p>OPPORTUNITIES</p> <ul style="list-style-type: none"> • Adding value to agricultural produce. • Increasing events in the Municipality. • The development of the logistical potential of the Municipality’s location. • Expanding manufacturing in the areas of agricultural chemicals, automotive components, and wood products. 	<p>THREATS</p> <ul style="list-style-type: none"> • The impacts of the on-going Global financial crisis. • Globalisation and competition with manufacturers with lower overhead costs.

6.5. Heritage

Phase 1 of the Heritage Impact Assessment (HIA) of the proposed expansion of the PMB airport, as required by the NEMA 107 of 1998, in compliance with section 38 of the National Heritage Resources Act (NHRA) No. 25 of 1999 identified the PMB Aero Club House as a heritage resource. The PMB Aero Club House is a building over sixty years located next to the modern airport terminal building. Its continued use for the same purpose over a period over sixty years, including, its expansions contribute to give medium to high heritage significance at community-specific and local levels, for its historic, social and cultural values. Currently, the Aero Club House is merit formal protection as a grade IIB heritage resource not graded but protected, the MM will require a permit from Amafa Kwazulu-Natal (The Provincial Heritage Resources Authority) for its alteration or demolition¹⁷.

6.6. Surrounding Land-Use

Since the initial construction of the airport, the surrounding land has naturally developed. As defined in the Status Quo Assessment the airfield site, contained within the airfield boundary fence, covers an area of approximately 89ha, however, there is significant area of undeveloped municipal owned land available which falls directly alongside the airfield, as depicted in the master plan, increasing the study area for the Master Plan to an area of approximately 157.45ha. Table 155 sets out the developable areas adjacent to the airport for the Ultimate Phase. The adjacent developments are complementary to the municipality's need for industrial land.

Table 15: Extent of the Land uses adjacent to the Pietermaritzburg airport

AREA	m ²
Mixed Commercial	
At Oribi Road Entrance	17 344
Adjacent to new terminal	52 099
Total	69 443
Industrial	
Adjacent to Gladys Manzi Road	197 440
Adjacent to runway & new access road	114 541
Adjacent to general aviation & Oribi Street	38 253
Total	350 234

¹⁷ Phase 1 of the Heritage Impact Assessment (HIA) of the proposed expansion of the PMB airport

7. PUBLIC PARTICIPATION PROCESS

The Public Participation Process (PPP) plays a key role in the scoping process, and achieving various objectives, from creating awareness of the project to identifying the issues and impacts. This section provides a summary methods employed and activities undertaken during the PPP. The full PPP report is included as Appendix 3.

7.1. Scoping Phase PPP

To effectively engage I&APs in the Scoping Phase of the S&EIA for the proposed PMB Airport expansion, numerous methods were applied, ranging from initial notification and a Public Meeting, to Focus Group Meetings and individual comment. The PPP consisted of three main components: i) Notification, ii) Engagement, and iii) Comments and Response, as elaborated below. The final component of this phase was the circulation of the Draft Environmental Scoping Report (ESR) for comment, from which the ESR was revised and finalised (this report). Refer to the Scoping Phase PPP Report (Appendix 3) for further details and all records (minutes, adverts, email communication) and the Comment and Response Register (Appendix 2).

7.1.1. Notification

I&AP Register

An initial I&AP register was developed, using records from previous engagements regarding the proposed developments, as well as municipal data pertaining to those land owners within the precinct. Through advertisements, notifications and meetings, this register continued to grow, to ensure that I&APs were notified with information and engagement meetings where relevant. This register will be continually updated throughout the PPP in the EIA Phase. I&APs were able to register via the following means:

- Attendance at meetings
- Email
- Facsimile
- INR webpage¹⁸
- Phone (land line and cell)
- SMS portal

Background Information Document (BID)

The BID in was completed and distributed digitally via email and made available on the INRs website. Registered letters with a printed copy of the BID were sent to adjacent land owners. In addition, the document was presented and distributed at the Scoping Phase Public Meeting, and was made available at publicly accessible locations surrounding the airport¹⁹, namely:

- Emily's Supermarket (20 Emily Rd, Scottsville Extension)
- Kalinke Educational and SAVF Welfare Organisation (Oribi Village)
- Scottsville Clinic (1 Oribi Rd, Scottsville)

¹⁸ <http://inr.org.za/scoping-and-eia-for-the-proposed-expansion-of-the-pietermaritzburg-airport-2/>

¹⁹ Local I&APs were notified via SMS and email that hard copies of the BID were available at those locations

Adjacent Land Owners

Land owners adjacent to the PMB Airport (neighbouring the Airport property boundary) were directly notified of the SEIA for the proposed development. Using municipal data, a total of 75 land owners were identified (this excludes property owned by the Natal Housing Board and the Msunduzi Municipality). Land owners were provided with a covering letter and a copy of the BID. Initially, letters were delivered through a 'Drop and Sign' process to 39 land owners, and several hand delivered at the Scoping Phase Public Meeting (8 December 2015). The outstanding notification letters were sent via registered mail to land owners, of which 15 were delivered, and 21 were unclaimed.

Public Notices and Advertisements

Suitable locations to display public notices were identified, and 15 notices were placed in publically accessible and visible locations in the area surrounding the airport on 2 December 2015. These locations were:

- Bisley Park Primary School
- Emily's Supermarket
- Kalinka Educare Pre-school
- Mndeni Meats (Market Road)
- NCF Church (Alexandra Rd Extension)
- Pelham Senior Primary School
- Pelham Supermarket
- Pick 'n Pay in Polly Shorts Centre
- Spar in Southgate Shopping Centre
- St Vincent's Church
- PMB Airport (five notices)

In addition, advertisements were placed in the following newspapers:

- Natal Witness Echo (19 November 2015)
- Echo (19 November 2015)
- Eyethu (26 November 2015)

The public notices provided I&APs with information about the proposed development and the SEIA, and with the contacts and details for registering as an I&AP.

Inform Councillors and Key Interested Parties

The Ward Councillors of wards 24 (Bisley) and 36 (Mkondeni, Cleland) were consulted in the initial stages of the PPP, as well as the Councillors of the adjacent wards and wards along the flight corridor. Surrounding (adjacent) landowners and key I&APs, such a relevant government departments, were also notified and engaged in the PPP.

7.1.2. Engagement

To obtain comment, perceptions, concerns and opportunities from I&APs, a series of public engagement meetings were conducted. In addition, I&APs were able to submit written comment via email, post, facsimile and the INR website until 15 February 2016.

A typical challenge of public consultation and engagement is that the opinions and perceptions of the 'loudest voice' dominate conversation, resulting in an unrealistic representation of all I&AP types. To mitigate this, a series of smaller engagements were conducted after an initial public meeting, with focus groups based on types of I&APs. This enabled each focus group (whose members are likely to have similar perceptions and visions) to have their comments captured. This also provides the opportunity for stakeholders to focus on concerns or issues that may only be applicable to them, therefore providing a more in-depth engagement process that resulted in a greater level of understating.

Public Meeting

An initial public meeting was conducted on 8 December 2015 at the Bisley Park Primary School. This provided I&APs with the opportunity to register (if they had not done so already). This also provided the platform for the BID to be presented as a means of giving I&APs an adequate understanding of the proposed airport expansion. The purpose of the Scoping Phase Public Meeting was to:

- Create awareness and meet I&APs
- Introduce assessment team
- Identify headline concerns and opportunities

The minutes of this meeting were distributed electronically to all those who attend the meeting as well as registered I&APs, while hard copies of the minutes were made publicly available at the following communal locations:

- Oribi Clinic (Oribi Road)
- SAVF Centre (Oribi Village)
- Emily's Supermarket (Emily Road)

Focus Group Meetings

The Focus Group Meetings (FGMs) were conducted in a workshop format, using a participatory mapping exercise (maps and images of the proposed expansion options) to enable I&APs to provide informed insight into the Scoping Phase. This informal process, conducted with relatively small groups of stakeholders, enabled for stakeholders to 'map-out' their thoughts, ideas, concerns and opportunities in a constructive manner. The key aim of the FGMs was to understand the relationship between the anticipated impact/s and the receiving environment, and identify the concerns and opportunities perceived by I&APs. This provided stakeholders with the confidence that their 'voice has been heard', and thus provides a suitable benchmark for the PPP going forward. Based on engagements with various stakeholders and the outcomes of the Public Meeting, the following 7 FGMs were conducted:

- Airport Operators and Tenants
- Industrial Sector
- Oribi Village Residents
- Bisley and Scottsville Extension Residents
- Flight Path – Hilton, Wembley and Surrounds
- Broader PMB business sector
- Authorities and Government Agencies

Registered I&APs were notified via email and SMS of the details of the FGMs, and digital versions of the minutes circulated via email. Hard copies of the local residents FGMs were made available to publically accessible locations and relevant I&APs notified via SMS.

Airport Information Stand

In addition to the Focus Group Meetings, two INR team members were stationed at the PMB Airport during peak hours (a Monday morning and Friday evening) to provide information to public airport users and capture any comments they may have. Several passengers informally discussed the proposed expansion with the project team members and registered as I&APs, but no formal comment was submitted.

Additional Meetings

To gain further insight and clarification on queries and comments raised by I&APs, various meetings and email correspondences were conducted. The outcomes of these engagements were fed into the Environmental Scoping Report. Records of these correspondences are as follows:

- Transnet meeting to confirm their position on the future of the 'market' railway service line (Appendix 15 of the Scoping Phase PPP Report)
- Airport tenant meeting to discuss the Draft Environmental Scoping Report - 12 September 2016 (Appendix 16 of the Scoping Phase PPP Report)
- Meeting and communications with ATNS and Airlink to determine the flight path noise impact areas and gain clarity on future scheduled flight – 1 September 2016 (Appendix 17 of the Scoping Phase PPP Report)

7.1.3. Comment and Response Register

All of the comments received were compiled in a Comment and Response Register (C&RR), demonstrating the details of the I&AP that made the comment, what the comment pertains to and the response. The C&RR (Appendix 2) is a vital tool in preparing the Scoping Report and the Plan of Study for the EIA phase that follows as it provides a list against which to check that all issues of concern have been, or will be, addressed.

The PPP will be important in providing feedback in the Environmental Impact Reporting Phase, primarily to provide feedback on the outcomes and findings of the detailed assessment. I&APs will use this understanding to then comment on the outcomes which will inform a decision by the competent authority. The plan of study for the PPP in the EIA phase is included in the final section which outlines the Terms of Reference for the EIA phase.

8. ALTERNATIVES

The EIA regulations define “alternatives” as: *“different means of meeting the general purpose and requirements of the activity, which may include alternatives to the: Site (location of property), Type of Activity to be undertaken; Design or Layout; Technology to be used”*.

It is a specific requirement of the EIA regulations that the SEIR process includes the identification and consideration of feasible alternatives in the scoping process for assessment in the EIR phase of the process. The value of this requirement is that alternatives are a form of mitigation, in that certain options may reduce the nature, extent or duration of one or more impacts, on one or more aspects of the receiving environment. The following section presents an outline of the alternatives which were identified in the scoping process, the motivation therefore and why certain types of alternatives were not considered.

8.1. Alternative Site

No alternative site has been considered on the basis that the proposed site:

- Is owned by the Municipality,
- Is an operational and licensed airport and has been for over 75 years.
- Is zoned for Airport and associated activities,
- As discussed in section 4.2, the Municipality has identified opportunities to improve the financial sustainability of this enterprise and increase its contribution to the local and regional economy. The implementation of certain of these opportunities and improvements since 2010, has seen a marked improvement in the sustainability of the Airport. There is also interest from investors and funders to take up the various other opportunities provided through the proposed expansion. Considering any other site would undermine the progress made in this regard.
- The costs of establishing a new airport when there is growth in the performance of the current Airport motivates against considering this.

Lastly, it should be noted that there have at points in recent years been motivation from various parties that any further development of Pietermaritzburg airport is flawed because of the topographical constraints and length of the runway which prevents larger planes from landing there. This reduces the potential for growth and competition which leads to high ticket prices. Based on these arguments, it has been motivated that an alternative site be considered in the Camperdown region. The proposed site falls within the neighboring Municipality to Msunduzi Municipality. Given that the Municipality is not able to invest beyond its geographical borders, this site is not an option. Furthermore, as discussed in section 4.2, the improvements to navigation aids and other developments have increased the size of planes that can land, with a concomitant increase in scheduled passengers (numbers have approximately doubled between 2010 and 2015).

8.2. Alternative Type of Activity

As the site is designed, zoned for and has a license to operate as an Airport, the consideration of alternative ‘core’ use is not an option. While the core function of the airport has not changed, the application of the Aerotropolis or Airport City concept has seen the addition of alternative land-uses within the adjacent land. The selection of these land-uses is in response to market demand and

zoning of this land, and they are complimentary to other uses in the Airport Precinct or the Airport itself. They are therefore considered appropriate Land-use/types.

8.3. Alternative Layout

There are two elements of the proposed expansion for which alternative layouts were identified in the scoping process. The reason and detail of these is described below.

8.3.1 Alternative Site for the Extension of General Aviation Infrastructure

There has been considerable demand for additional GA facilities, notably ‘hangar space’ for some time. A longstanding concern of the existing GA users at the Airport is that the GA and commercial aircraft and activities are not separated. As described at the Airport Users Focus Group meeting (See appendix 4) the users explained that ‘mixing’ commercial and light aircraft presents safety risks. Through the scoping process, the Airport User Group identified the site shown as ‘New GA Alternative II’. The site is located between the two wetlands with access off Gladys Manzi/Murray Road.

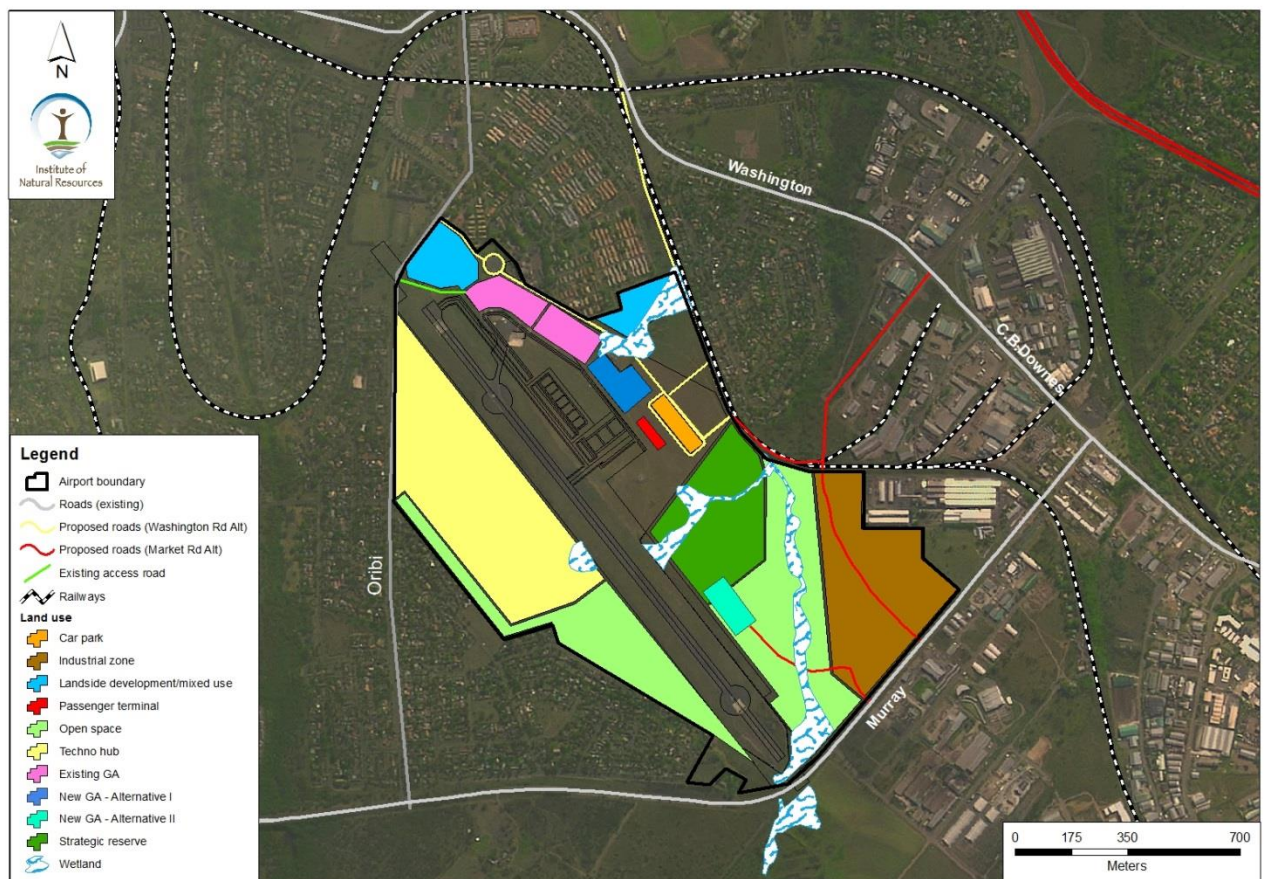


Figure 18: Project layout showing alternatives

The alignment is routed along an existing dirt track. This site would have the following benefits and issues:

- It would separate GA and Commercial aircraft, hereby reducing current issues.
- This location of the site would also mean that lighter aircraft would not have to taxi the full extent of the runway which is currently the case and unnecessary use of ‘runway time’.

- This alternative would be costly because it would require a new access road, other bulks such as water and sanitation and potential levelling of the area.
- The access road would need to cross the wetland, adding additional negative impact to the system.
- Use of this option would also require that the hangars did not affect line of site from the control tower.

The alternative site for the expanded GA area is shown in Figure 18 as 'New GA alternative I'. It is located adjacent to the existing GA facilities. While cost will likely be lower as it will be an extension of the existing developed area, the level of division between commercial and GA aircraft may not be as clear. The feasibility of these two options (technical, cost, environmental impact etc) is being investigated as part of the DBSA funded feasibility study. The outcomes of this study will indicate which of these is most appropriate and inform the assessment in the EIA phase.

8.3.2 Alternative Access Routes

Access to the Airport is currently poor with only one entry road which is reached after navigating through suburbs. The Precinct Planning team proposed new access route, titled the "Proposed Roads – Washington Road Alt", shown in yellow in Figure 19. This alternative involves a new access off Oribi Road and then a loop through to the proposed new parking area and Washington Road adjacent the railway line.

The other alternative involves the extension of Market Road (Titled Proposed Roads -Market Road Alt and shown in red in Figure 18). This option requires crossing of the railway line and then a link to the Washington Road loop and an additional extension to service the industrial zone to the south west and link in to Gladys Manzi/Murray Road.

The preferred alternative option is that both the Washington Road loop and the Market Road extensions are constructed. The Market Road extension does however require crossing of the railway and river/wetland system in a steep area which may prove costly and have significant impact on the natural system. Establishing whether Transnet will transfer the railway servitude to the Municipality will be fundamental in assessing this option because it may alleviate the need for an additional/new bridge/crossing. The DBSA funded feasibility investigation will provide the information required for the EIA phase investigation.

8.4. Alternative Design/Technology

As described in section 5.2 the detailed designs will be the responsibility of developers who take up the opportunities created by the new Municipal entity. It will be their responsibility to investigate alternative technology and design to achieve a more sustainable outcome. The options they consider will be guided by the EMPR developed as part of the EIA, and other municipal policies.

8.5. No-go Option

This is a standard requirement and considers the situation where none of the proposed development takes place and the Airport continues in its current form.

8.6. Alternative Sequencing of Developments

As discussed in section 5.2, the timing and rollout of the various elements in the proposed plan is dependent on demand and more importantly the finance to initiate the development. These unknowns affect when the various elements being established, effectively alternative sequencing.

The timing for the development of the new access roads is a key determinant in the sequencing of the other infrastructural elements. Moving the terminal building to the new site, and therefore the parking area because it needs to be located adjacent the terminal, is dependent on finance being obtained to develop the new access roads to Washington and/or Market roads. In the event that these roads are not constructed the terminal building may not need to move before the end of phase 1 – i.e. 2025. If the parking area did move before then, the Municipality is obliged in terms of the contract with the tenant to pay for the costs of such a move.

8.7. Alternative Flight Paths

Alternative flight paths will be assessed by ATNS to determine potential flight paths for commercial/schedule aircrafts in order to have a lesser impact on the receiving environment.

9. SCOPING OF IMPACTS

The aim of the scoping phase is to identify and define the issues and impacts that require additional investigation in the EIR phase. Impacts can be defined as “where an aspect of the proposed development impacts on one or more elements of the receiving environment”. The impact can either be positive or negative.

The issues and impacts have been identified through:

- A review of available information to define the state of the receiving environment (i.e. the location, extent, sensitivity, conservation value) of systems and features, both in the social, economic, heritage and biophysical components of the receiving environment. This review also identified existing environmental issues in Msunduzi Municipality and the project area e.g. poor water quality in the Mngeni Catchment and the poor state of wetlands systems.
- Public Participation Process – the extensive process complimented the literature and data review by assisting in identifying sensitive features and associated issues e.g. the very intense negative impact of noise on the Bisley Park Primary School.

The relationships between the project elements and activities have been mapped against the receiving environment to define the impacts and issue. What follows is a summary of the impact/s on the natural, social and/or economic environment in the airport, local and/or boarder municipal context. Each table presents the impacts of each proposed activity/infrastructure of the different

type of receiving environment in the applicable phases of the proposed development. Where possible, a spatial (visual) representation of the possible impacts has been mapped. Based on this scoping, the Terms of Reference (ToR) for the EIA could be determined, indicating which specialist assessment will be conducted to assess the issues raised.

The following activities/infrastructure is proposed as part of the proposed development:

- **Airside Infrastructure**
 - **Runway** - Continuous maintenance of existing runway
 - **Taxiway** - New taxi way of 15m width + shoulders, 256m long
 - **Aprons** - Construction of new apron area 14 000m² (200m wide and 700m deep), will be parallel to the runway.
 - **Navigation Aids** - To be upgraded to meet ICAO standards

- **Landside Infrastructure**
 - **Roads** - Main access off Oribi road; Direct link from Gladys Manzini; New access rod to N3 via Market road; Destruction of existing GA precinct to construct an access road linking the existing parking to the proposed road network; Road around the airport for patrolling
 - **Parking areas** - Public parking (12 800m²) along Pharazyn way towards Oribi road adjacent to the reservoir
 - **Staff and VIP parking** - Yet to be negotiated with Servest
 - **Car Hire facilities** - Will be allocated space in the new parking area
 - **Terminal building** - Requires 2360m²; Will be expanded in Phase 1 and relocated in phase 2

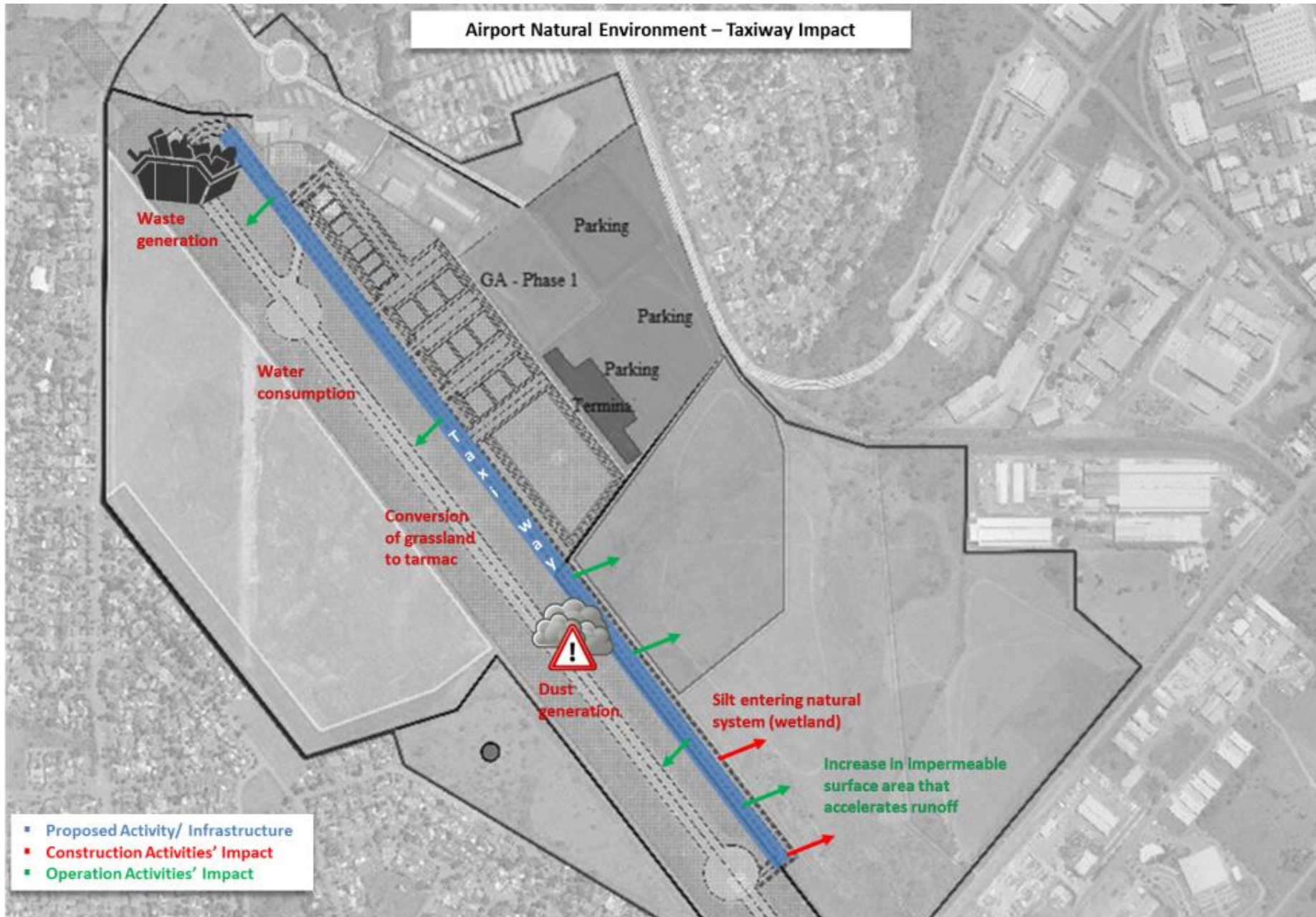
- **Utilities**
 - **GA Precinct** - 38 250m²
 - **Cargo facility** - Parallel to the apron in line with the TB
 - **Fire and rescue facility** - Current location and capacity is sufficient; Relocate in phase 2
 - **Control tower** - Sufficient for current ops
 - **Water supply** - Reticulation to the terminal should be upgraded; New supply will be required for the GA; 7.6.2 Engineering Assessment should be done to determine suitability of current configuration in the long term
 - **Waste water** - Existing supply to the terminal needs to be upgraded; Reticulation needed for the GA areas
 - **Stormwater** - Improvements to the current storm water needed; Passenger terminal and fire station often experience flooding due to the slopes (cut off drain required); New storm water management will; be required for GA area.

9.1. Natural Environment

9.1.1. Airport Natural Environment

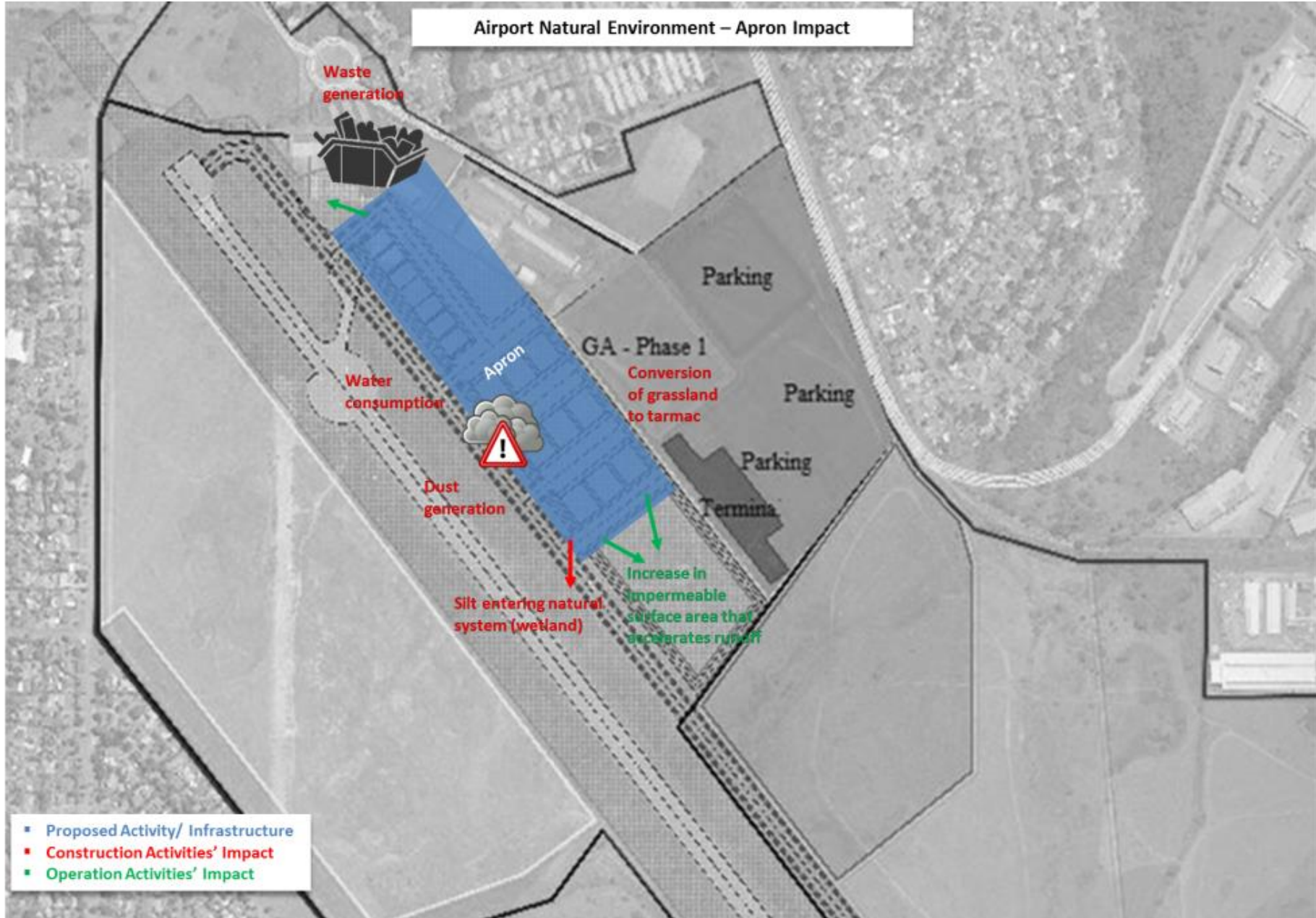
AIRPORT NATURAL ENVIRONMENT				
Proposed Activity/Infrastructure	Receiving Environment	Phase ²⁰	Impact on Receiving Environment	ToR for EIA Phase
Airside Infrastructure (Taxiway)	Airport Natural Environment (natural corridor, wetland and grassland)	Construction Activities	<p>Dust - Excavation and construction activities will result in the dislodging of soil, causing dust (air pollution) within the airport's vicinity. The movement of heavy construction vehicles is also likely to contribute to this impact.</p> <p>Silt - Excavation and construction activities will result in the dislodging of soil and likely erosion, causing siltation of nearby water systems (water quality implication). The movement of heavy construction vehicles is also likely to contribute to this impact.</p> <p>Waste – hazardous and non-hazardous waste generation during construction of the taxiway will impact the surrounding natural environment if not managed correctly.</p> <p>Natural habitat - Conversion from grassland to tarmac will result in the loss of grassland (natural habitat).</p> <p>Water – Water consumption during construction places strain on resources (may be need for a Water Use Licence depending on where water is sourced from).</p>	<ul style="list-style-type: none"> • Air Quality (EMPr) • Biodiversity Assessment • Geotechnical Assessment • Storm Water Management (EMPr) • Waste Management (EMPr) • Wetland Assessment • Water Quality Management (EMPr)
		Operation Activities	<p>Surface runoff - Area converted from grassland to tarmac will increase surface runoff, which will impact the wetland buffer (and thus the natural corridor), the surrounding grassland and the strategic airport reserve.</p>	

²⁰ Refers to the phase 1 of the proposed development



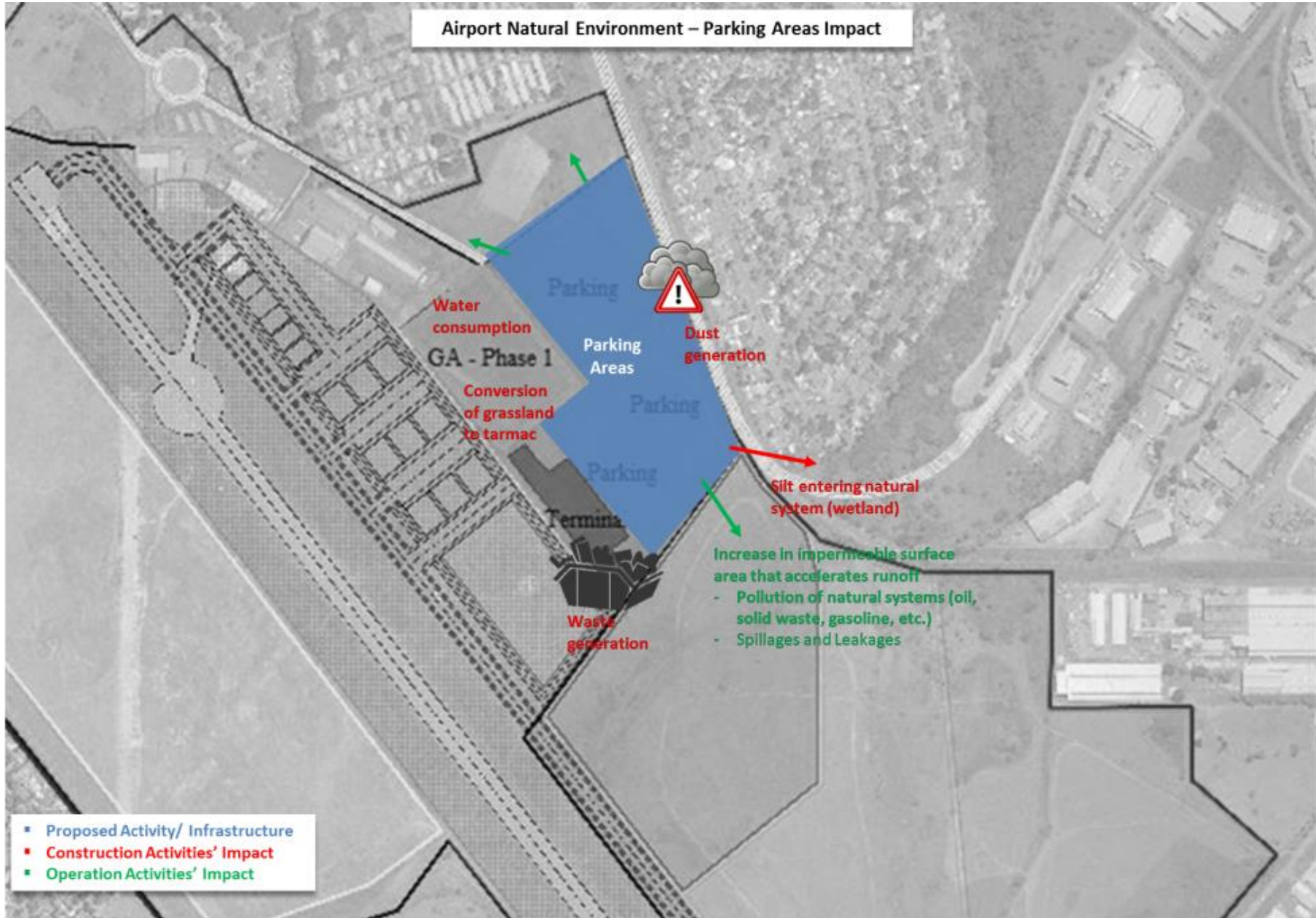
ENVIRONMENTAL SCOPING REPORT FOR THE PROPOSED EXPANSION OF THE PIETERMARITZBURG AIRPORT

AIRPORT NATURAL ENVIRONMENT				
Proposed Activity/Infrastructure	Receiving Environment	Phase	Impact on Receiving Environment	ToR for EIA Phase
Airside Infrastructure (Apron)	Airport Natural Environment (grassland)	Construction Activities	<p>Dust - Excavation and construction activities will result in the dislodging of soil, causing dust (air pollution) within the airport's vicinity. The movement of heavy construction vehicles is also likely to contribute to this impact.</p> <p>Silt - Excavation and construction activities will result in the dislodging of soil and likely erosion, causing siltation of nearby water systems (water quality implication). The movement of heavy construction vehicles is also likely to contribute to this impact.</p> <p>Waste – hazardous and non-hazardous waste generation during construction of the apron will impact the surrounding natural environment if not managed correctly.</p> <p>Natural habitat - Conversion from grassland to tarmac will result in the loss of grassland (natural habitat).</p> <p>Water – Water consumption during construction places strain on resources (may be need for a Water Use Licence depending on where water is sourced from).</p>	<ul style="list-style-type: none"> • Air Quality (EMPr) • Biodiversity Assessment • Geotechnical Assessment • Storm Water Management (EMPr) • Waste Management (EMPr) • Wetland Assessment • Water Quality Management (EMPr)
		Operation Activities	<p>Surface runoff - Area converted from grassland to tarmac will increase surface runoff, which will impact the wetland buffer (and thus the natural corridor), the surrounding grassland and the strategic airport reserve.</p>	



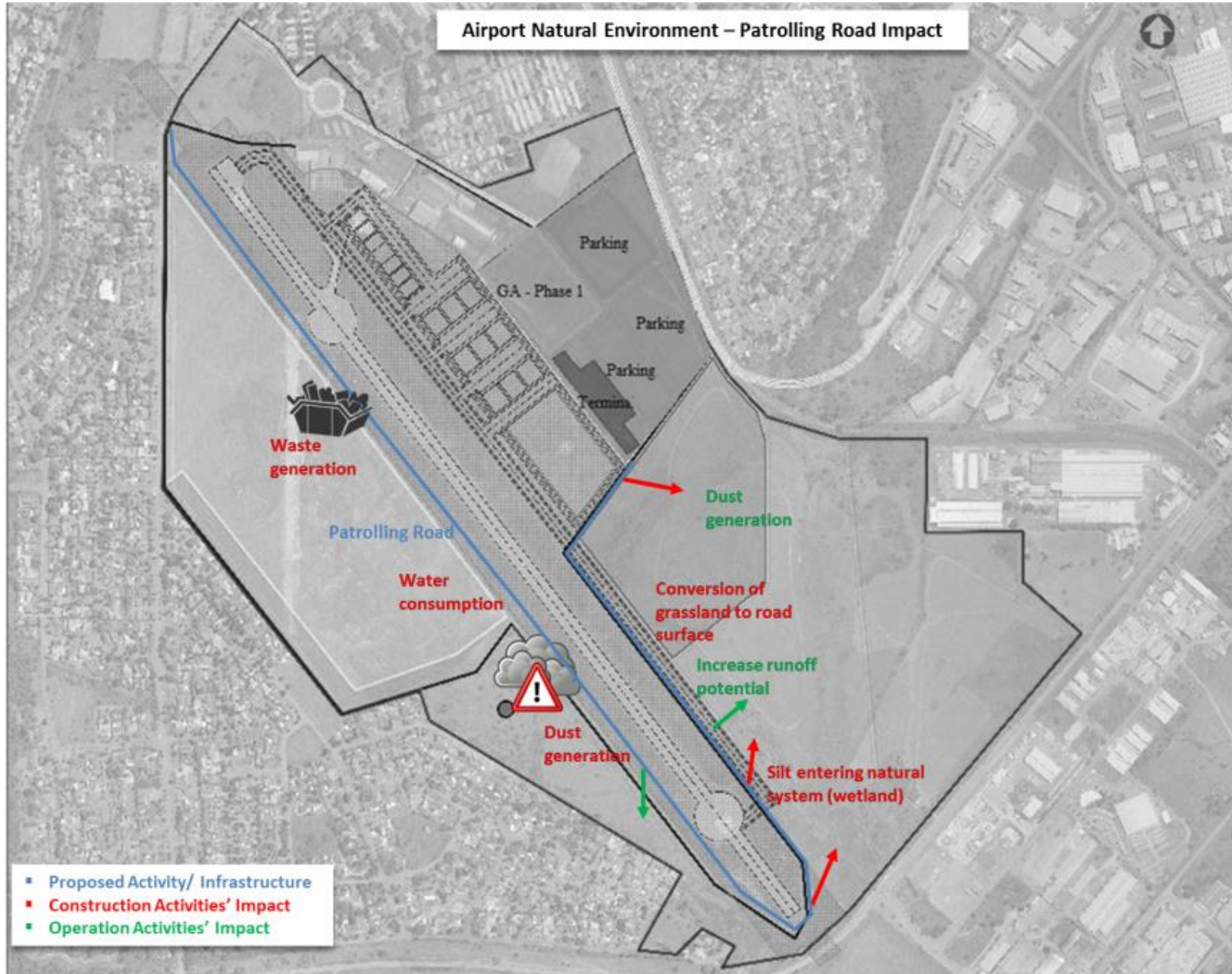
ENVIRONMENTAL SCOPING REPORT FOR THE PROPOSED EXPANSION OF THE PIETERMARITZBURG AIRPORT

AIRPORT NATURAL ENVIRONMENT				
Proposed Activity/Infrastructure	Receiving Environment	Phase	Impact on Receiving Environment	ToR for EIA Phase
Parking Areas	Airport Natural Environment (natural corridor, wetland and grassland)	Construction Activities	<p>Dust - Excavation and construction activities will result in the dislodging of soil, causing dust (air pollution) within the airport's vicinity. The movement of heavy construction vehicles is also likely to contribute to this impact.</p> <p>Silt - Excavation and construction activities will result in the dislodging of soil and likely erosion, causing siltation of nearby water systems (water quality implication). The movement of heavy construction vehicles is also likely to contribute to this impact.</p> <p>Waste – hazardous and non-hazardous waste generation during construction of the parking areas will impact the surrounding natural environment if not managed correctly.</p> <p>Natural habitat - Conversion from grassland to tarmac will result in the loss of grassland (natural habitat).</p> <p>Water – Water consumption during construction places strain on resources (may be need for a Water Use Licence depending on where water is sourced from).</p>	<ul style="list-style-type: none"> • Air Quality (EMPr) • Biodiversity Assessment • Geotechnical Assessment • Storm Water Management (EMPr) • Waste Management (EMPr) • Wetland Assessment • Water Quality Management (EMPr)
		Operation Activities	<p>Surface runoff velocity - Area converted from grassland to tarmac will increase surface runoff, which will impact the surrounding grassland.</p> <p>Spillages and Leakages - Impact associated with stationary vehicles that discharge hydro-carbons, which are likely to enter the surrounding natural system through surface runoff.</p>	



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AIRPORT NATURAL ENVIRONMENT				
Proposed Activity/Infrastructure	Receiving Environment	Phase	Impact on Receiving Environment	ToR for EIA Phase
Patrolling Road	Airport Natural Environment (natural corridor, wetland and grassland)	Construction Activities	<p>Dust - Excavation and construction activities will result in the dislodging of soil, causing dust (air pollution) within the airport's vicinity. The movement of heavy construction vehicles is also likely to contribute to this impact.</p> <p>Silt - Excavation and construction activities will result in the dislodging of soil and likely erosion, causing siltation of nearby water systems (water quality implication). The movement of heavy construction vehicles is also likely to contribute to this impact.</p> <p>Waste – hazardous and non-hazardous waste generation during construction of the apron will impact the surrounding natural environment if not managed correctly.</p> <p>Natural habitat - Conversion from grassland to tarmac will result in the loss of grassland (natural habitat).</p> <p>Water – Water consumption during construction places strain on resources (may be need for a Water Use Licence depending on where water is sourced from).</p>	<ul style="list-style-type: none"> • Air Quality (EMPr) • Biodiversity Assessment • Geotechnical Assessment • Storm Water Management (EMPr) • Waste Management (EMPr) • Wetland Assessment • Water Quality Management (EMPr)
		Operation Activities	<p>Surface runoff - Area converted from grassland to a road surface will increase surface runoff, which will impact the surrounding grassland.</p> <p>Dust - Dust generated from use of the patrolling road may have an air quality implication.</p> <p>Silt – Erosion and runoff from the use of the road may result in disturbance to the natural system (wetland and corridor).</p>	



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AIRPORT NATURAL ENVIRONMENT				
Proposed Activity/Infrastructure	Receiving Environment	Phase	Impact on Receiving Environment	ToR for EIA Phase
Fuel Farm	Airport Natural Environment (natural corridor, wetland and grassland)	Planning and Design	<p>Risk - Consideration of the current positioning of the fuel farm/s and how they may impact or be impacted by other proposed development. Associated risk may have a negative implication of the surrounding natural environmental, particularly if fuel enters the natural system.</p> <p><i>Note: The relocation of the fuel farm will be dependent on the relocation of the General Aviation area to the new location.</i></p>	<ul style="list-style-type: none"> • <i>Not applicable (Fuel Farm not being moved in Phase 1)</i>
Water Supply Infrastructure	Airport Natural Environment (natural corridor, wetland and grassland)	Planning and Design	<p>Slope and Elevation - Consideration of slope, elevation and other influential component when designing such infrastructure.</p>	<ul style="list-style-type: none"> • Air Quality (EMPr) • Geotechnical Assessment • Storm Water Management (EMPr) • Waste Management (EMPr) • Water Quality Management (EMPr)
		Construction Activities	<p>Dust - Excavation and construction activities will result in the dislodging of soil, causing dust (air pollution) within the airport's vicinity. The movement of heavy construction vehicles is also likely to contribute to this impact.</p> <p>Silt - Excavation and construction activities will result in the dislodging of soil and likely erosion, causing siltation of nearby water systems (water quality implication). The movement of heavy construction vehicles is also likely to contribute to this impact.</p> <p>Waste – hazardous and non-hazardous waste generation during construction of the infrastructure will impact the surrounding natural environment if not managed correctly.</p> <p>Water – Water consumption during construction places strain on resources (may be need for a Water Use Licence depending on where water is sourced from).</p>	
		Operation Activities	<p>Surface runoff - Increase in underground infrastructure may impact the lands' ability to absorb water, thus increasing surface flow and potentially degraded the surrounding natural environment in terms of increased water velocity and pollution.</p>	

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Proposed Activity/Infrastructure	Receiving Environment	Phase	Impact on Receiving Environment	ToR for EIA Phase
Waste Water Infrastructure	Airport Natural Environment (natural corridor, wetland and grassland)	Planning and Design	<p>Slope and Elevation - Consideration of slope, elevation and other influential component when designing such infrastructure.</p> <p>Increase Pressure - Consideration of the risk of pollution from increased pressure on the system.</p>	<ul style="list-style-type: none"> • Air Quality (EMPr) • Geotechnical Assessment • Storm Water Management (EMPr) • Waste Management (EMPr) • Water Quality Management (EMPr)
		Construction Activities	<p>Dust - Excavation and construction activities will result in the dislodging of soil, causing dust (air pollution) within the airport's vicinity. The movement of heavy construction vehicles is also likely to contribute to this impact.</p> <p>Silt - Excavation and construction activities will result in the dislodging of soil and likely erosion, causing siltation of nearby water systems (water quality implication). The movement of heavy construction vehicles is also likely to contribute to this impact.</p> <p>Waste – hazardous and non-hazardous waste generation during construction of the infrastructure will impact the surrounding natural environment if not managed correctly.</p> <p>Water – Water consumption during construction places strain on resources (may be need for a Water Use Licence depending on where water is sourced from).</p>	
		Operation Activities	<p>Surface runoff - Increase in underground infrastructure may impact the lands' ability to absorb water, thus increasing surface flow and potentially degraded the surrounding natural environment in terms of increased water velocity and pollution.</p>	

ENVIRONMENTAL SCOPING REPORT FOR THE PROPOSED EXPANSION OF THE PIETERMARITZBURG AIRPORT

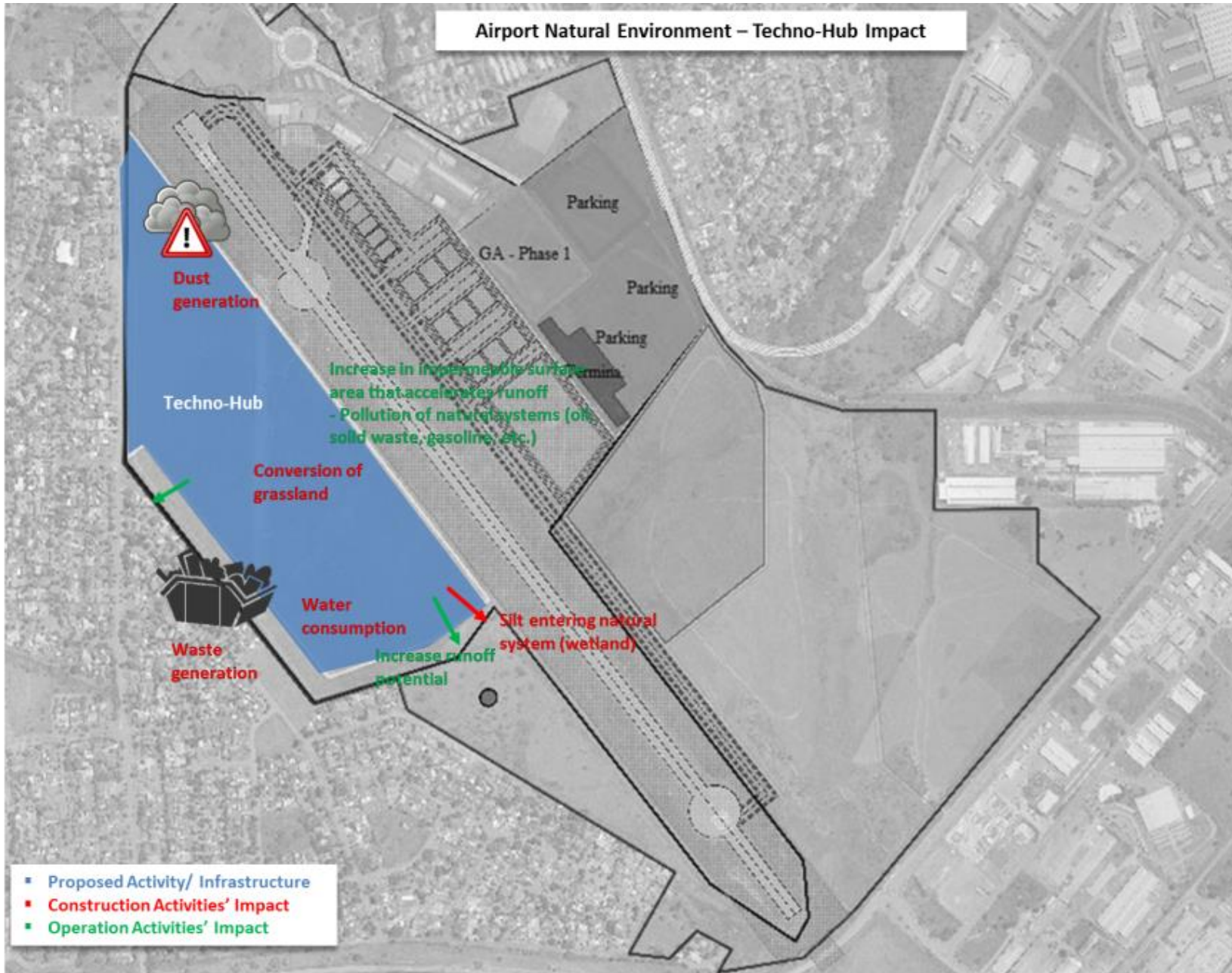
Proposed Activity/Infrastructure	Receiving Environment	Phase	Impact on Receiving Environment	ToR for EIA Phase
Storm Water Infrastructure	Airport Natural Environment (natural corridor, wetland and grassland)	Planning and Design	<p>Slope and Elevation - Consideration of slope, elevation and other influential component when designing such infrastructure. Incorrect or poor design may result in future implication such as flooding and pollution of the natural environment.</p>	<ul style="list-style-type: none"> • Air Quality (EMPr) • Geotechnical Assessment • Water Quality Management (EMPr) • Storm Water Management • Waste Management (EMPr)
		Construction Activities	<p>Dust - Excavation and construction activities will result in the dislodging of soil, causing dust (air pollution) within the airport’s vicinity. The movement of heavy construction vehicles is also likely to contribute to this impact.</p> <p>Silt - Excavation and construction activities will result in the dislodging of soil and likely erosion, causing siltation of nearby water systems (water quality implication). The movement of heavy construction vehicles is also likely to contribute to this impact.</p> <p>Waste – hazardous and non-hazardous waste generation during construction of the infrastructure will impact the surrounding natural environment if not managed correctly.</p> <p>Water – Water consumption during construction places strain on resources (may be need for a Water Use Licence depending on where water is sourced from).</p>	
		Operation Activities	<p>Surface runoff - Increase in underground infrastructure may impact the lands’ ability to absorb water, thus increasing surface flow and potentially degraded the surrounding natural environment in terms of increased water velocity and pollution.</p>	

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AIRPORT NATURAL ENVIRONMENT				
Proposed Activity/Infrastructure	Receiving Environment	Phase	Impact on Receiving Environment	ToR for EIA Phase
Techno-Hub	Airport Natural Environment (natural corridor, wetland and grassland)	Planning and Design	Resource Efficiency – Reduce impact on natural environment but making use of efficient techniques and technologies such as solar power.	<ul style="list-style-type: none"> • Air Quality (EMPr) • Biodiversity Assessment • Geotechnical Assessment • Storm Water Management (EMPr) • Waste Management (EMPr) • Wetland Assessment • Water Quality Management (EMPr)
		Construction Activities	<p>Dust - Excavation and construction activities will result in the dislodging of soil, causing dust (air pollution) within the airport’s vicinity. The movement of heavy construction vehicles is also likely to contribute to this impact.</p> <p>Silt - Excavation and construction activities will result in the dislodging of soil and likely erosion, causing siltation of nearby water systems (water quality implication). The movement of heavy construction vehicles is also likely to contribute to this impact.</p> <p>Waste – hazardous and non-hazardous waste generation during construction of the Techno-Hub will impact the surrounding natural environment if not managed correctly.</p> <p>Natural habitat - Conversion from grassland to infrastructure (buildings, parking areas, etc.) will result in the loss of grassland (natural habitat).</p> <p>Water – Water consumption during construction places strain on resources (may be need for a Water Use Licence depending on where water is sourced from).</p>	
		Operation Activities	<p>Surface runoff - Area converted from grassland to buildings and infrastructure will increase surface runoff, which will impact the surrounding natural environment in terms of increased water velocity and pollution.</p> <p>Water - Impervious surfaces associated with the construction of the facility are a source of water pollution, as rainwater running off of surface tends to pick up gasoline, motor oil, heavy metals, trash and</p>	

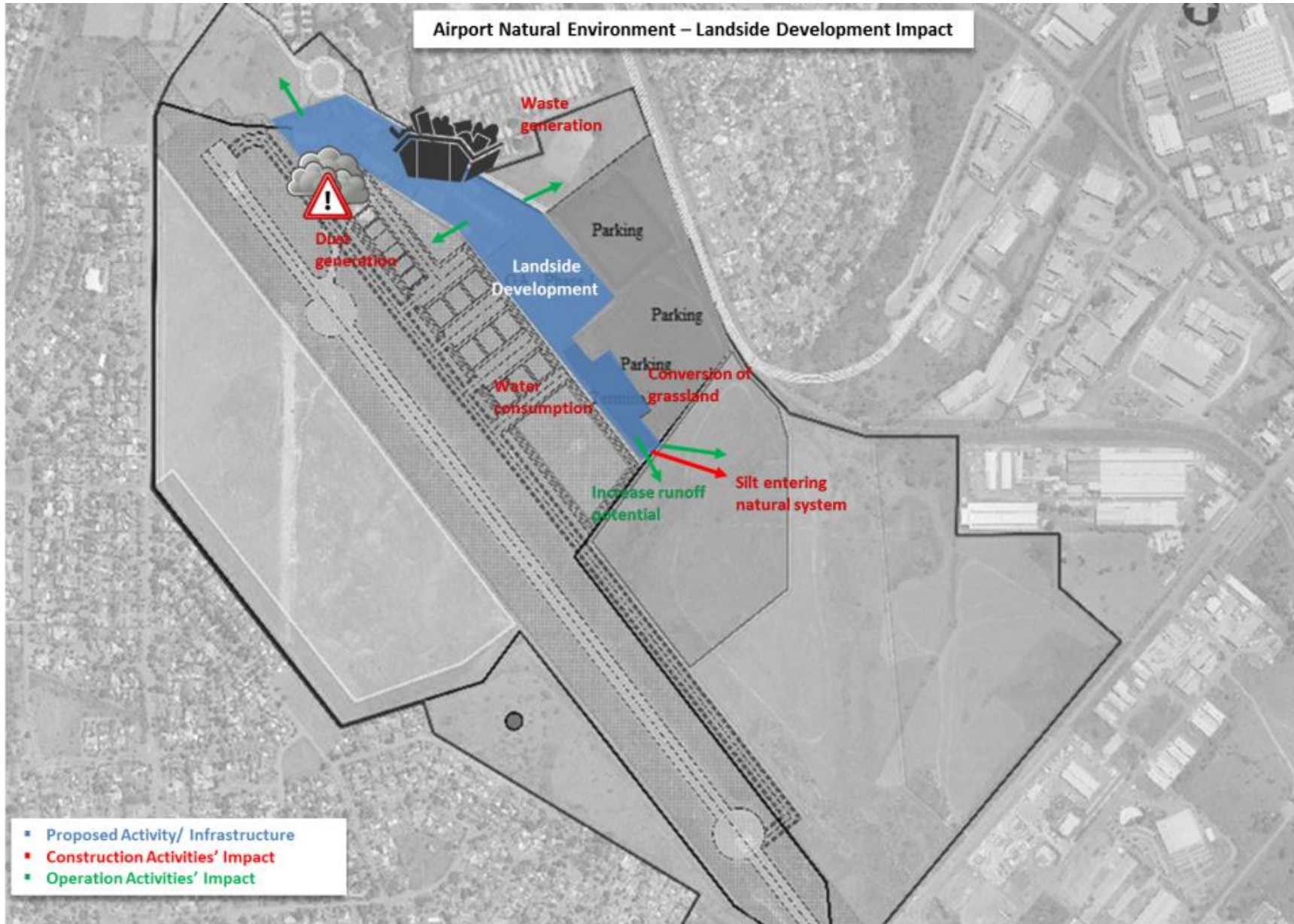
ENVIRONMENTAL SCOPING REPORT FOR THE PROPOSED EXPANSION OF THE PIETERMARITZBURG AIRPORT

			<p>other pollutants. Such substances subsequently enter the natural environment.</p> <p>Stationary vehicles - Impact associate with stationary vehicles (within the Techno-Hub Facility) that discharge oil and other harmful substances, which are likely to enter the surrounding natural system.</p>	
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ENVIRONMENTAL SCOPING REPORT FOR THE PROPOSED EXPANSION OF THE PIETERMARITZBURG AIRPORT

AIRPORT NATURAL ENVIRONMENT				
Proposed Activity/Infrastructure	Receiving Environment	Phase	Impact on Receiving Environment	ToR for EIA Phase
Landside Infrastructure (terminal building and extension of GA facilities)	Airport Natural Environment (natural corridor, wetland and grassland)	Construction Activities	<p>Dust - Excavation and construction activities will result in the dislodging of soil, causing dust (air pollution) within the airport's vicinity. The movement of heavy construction vehicles is also likely to contribute to this impact.</p> <p>Silt - Excavation and construction activities will result in the dislodging of soil and likely erosion, causing siltation of nearby water systems (water quality implication). The movement of heavy construction vehicles is also likely to contribute to this impact.</p> <p>Waste – hazardous and non-hazardous waste generation during construction of the Techno-Hub will impact the surrounding natural environment if not managed correctly.</p> <p>Natural habitat - Conversion from grassland to infrastructure (buildings, walkways, etc.) will result in the loss of grassland (natural habitat).</p> <p>Water – Water consumption during construction places strain on resources (may be need for a Water Use Licence depending on where water is sourced from).</p>	<ul style="list-style-type: none"> • Air Quality (EMPr) • Biodiversity Assessment • Geotechnical Assessment • Storm Water Management (EMPr) • Waste Management (EMPr) • Wetland Assessment • Water Quality Management (EMPr)
		Operation Activities	<p>Surface runoff - Area converted from grassland to buildings and infrastructure will increase surface runoff, which will impact the surrounding natural environment in terms of increased water velocity and pollution.</p> <p>Water - Impervious surfaces associated with the construction of facilities are a source of water pollution, as runoff deposits pollutants in natural systems.</p>	



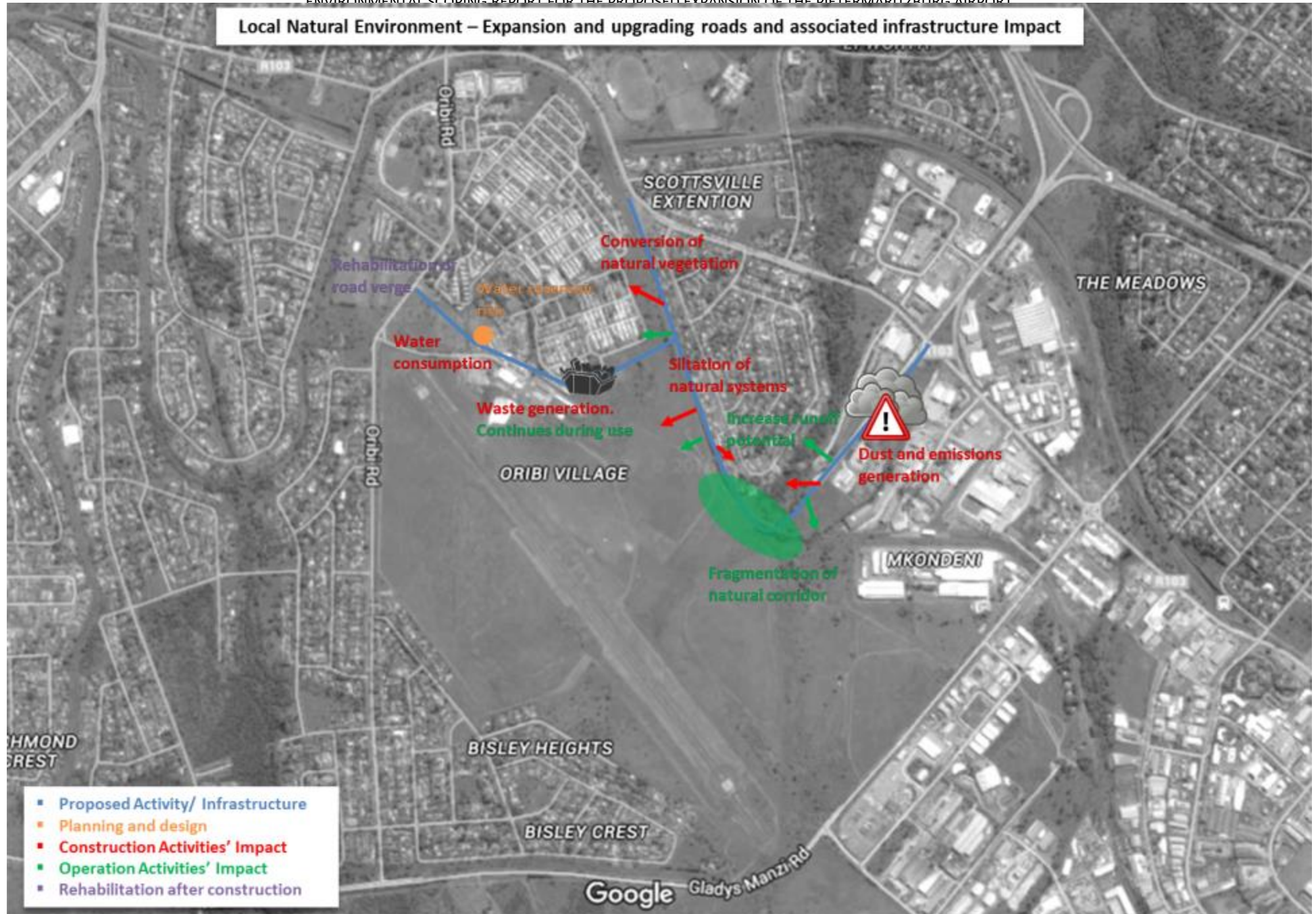
9.1.2. Local Natural Environment

LOCAL NATURAL ENVIRONMENT				
Proposed Activity/Infrastructure	Receiving Environment	Phase	Impact on Receiving Environment	ToR for EIA Phase
Expansion and upgrading roads and associated infrastructure	Adjacent natural environment (grassland, wetland, natural corridor)	Planning and Design	Water reservoir - Consideration of the risk associated with incorporating the water reservoir into the proposed road network.	<ul style="list-style-type: none"> • Air Quality (EMPr) • Biodiversity Assessment • Traffic Impact Assessment • Waste Management (EMPr) • Water Quality Management (EMPr)
		Construction Activities	<p>Dust - Excavation and construction activities will result in the dislodging of soil, causing dust (air pollution) within the precinct area. The movement of heavy construction vehicles is also likely to contribute to this impact.</p> <p>Silt - Excavation and construction activities will result in the dislodging of soil and likely erosion, causing siltation of nearby water systems (water quality implication). The movement of heavy construction vehicles is also likely to contribute to this impact.</p> <p>Waste – hazardous and non-hazardous waste generation during construction will impact the surrounding natural environment if not managed correctly.</p> <p>Natural habitat - Conversion from grassland to tarmac will result in the loss of natural habitat and grassland. The proposed Market Road extension road will fragment the natural corridor and wetland system.</p> <p>Water – Water consumption during construction places strain on resources (may be need for a Water Use Licence depending on where water is sourced from).</p>	
		Operation Activities	<p>Water - Impervious surfaces, such as a tarmac, are a source of water pollution, as rainwater running off of roads tends to pick up gasoline, motor oil, heavy metals, trash and other pollutants.</p> <p>Waste - Solid and effluent waste generated which enters natural systems.</p> <p>Natural Habitat - Roads create barriers and therefore restrict animal movement and lead to habitat fragmentation.</p>	

ENVIRONMENTAL SCOPING REPORT FOR THE PROPOSED EXPANSION OF THE PIETERMARITZBURG AIRPORT

		Rehabilitation after Construction	Road Verge - Rehabilitation of road verge after construction has an impact on the air quality.	
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Local Natural Environment – Expansion and upgrading roads and associated infrastructure Impact



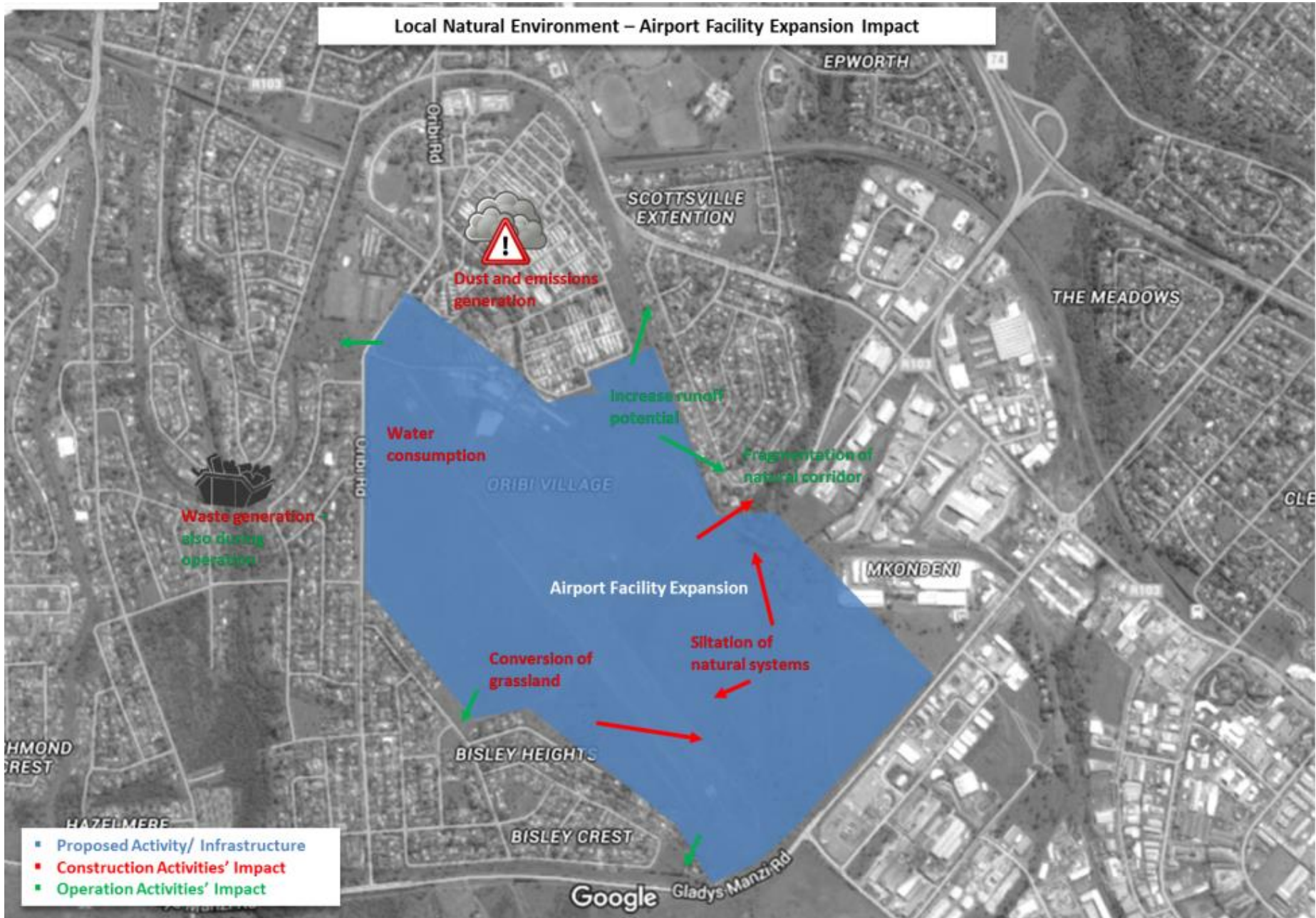
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LOCAL NATURAL ENVIRONMENT				
Proposed Activity/Infrastructure	Receiving Environment	Phase	Impact on Receiving Environment	ToR for EIA Phase
Current and Increased Air Traffic	Broader Natural Environment	Operation Activities	Air pollution - The current and potentially increasing air traffic affects the local environments air quality and, in turn, the functioning of natural systems.	<ul style="list-style-type: none"> • Air Quality (EMPr) • Traffic Impact Assessment



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LOCAL NATURAL ENVIRONMENT				
Proposed Activity/Infrastructure	Receiving Environment	Phase	Impact on Receiving Environment	ToR for EIA Phase
Airport Facility Expansion (includes all expansions and new developments, and associated infrastructure)	Broader Natural Environment (natural corridors and water systems)	Construction Activities	<p>Dust - Excavation and construction activities will result in the dislodging of soil, causing dust (air pollution) within the precinct area. The movement of heavy construction vehicles is also likely to contribute to this impact.</p> <p>Silt - Excavation and construction activities will result in the dislodging of soil and likely erosion, causing siltation of nearby water systems (water quality implication). The movement of heavy construction vehicles is also likely to contribute to this impact.</p> <p>Waste – hazardous and non-hazardous waste generation during construction will impact the surrounding natural environment if not managed correctly.</p> <p>Natural habitat - Conversion from grassland to tarmac will result in the loss of natural habitat and grassland. The proposed Market Road extension road will fragment the natural corridor and wetland system.</p> <p>Water – Water consumption during construction places strain on resources (may be need for a Water Use Licence depending on where water is sourced from).</p>	<ul style="list-style-type: none"> • Air Quality (EMPr) • Biodiversity Assessment • Traffic Impact Assessment • Waste Management (EMPr) • Water Quality Management (EMPr)
		Operation Activities	<p>Water - Impervious surfaces, such as a tarmac, are a source of water pollution, as rainwater running off of roads tends to pick up gasoline, motor oil, heavy metals, trash and other pollutants.</p> <p>Waste - Solid and effluent waste generated which enters natural systems.</p> <p>Natural Habitat - Roads create barriers and therefore restrict animal movement and lead to habitat fragmentation.</p>	



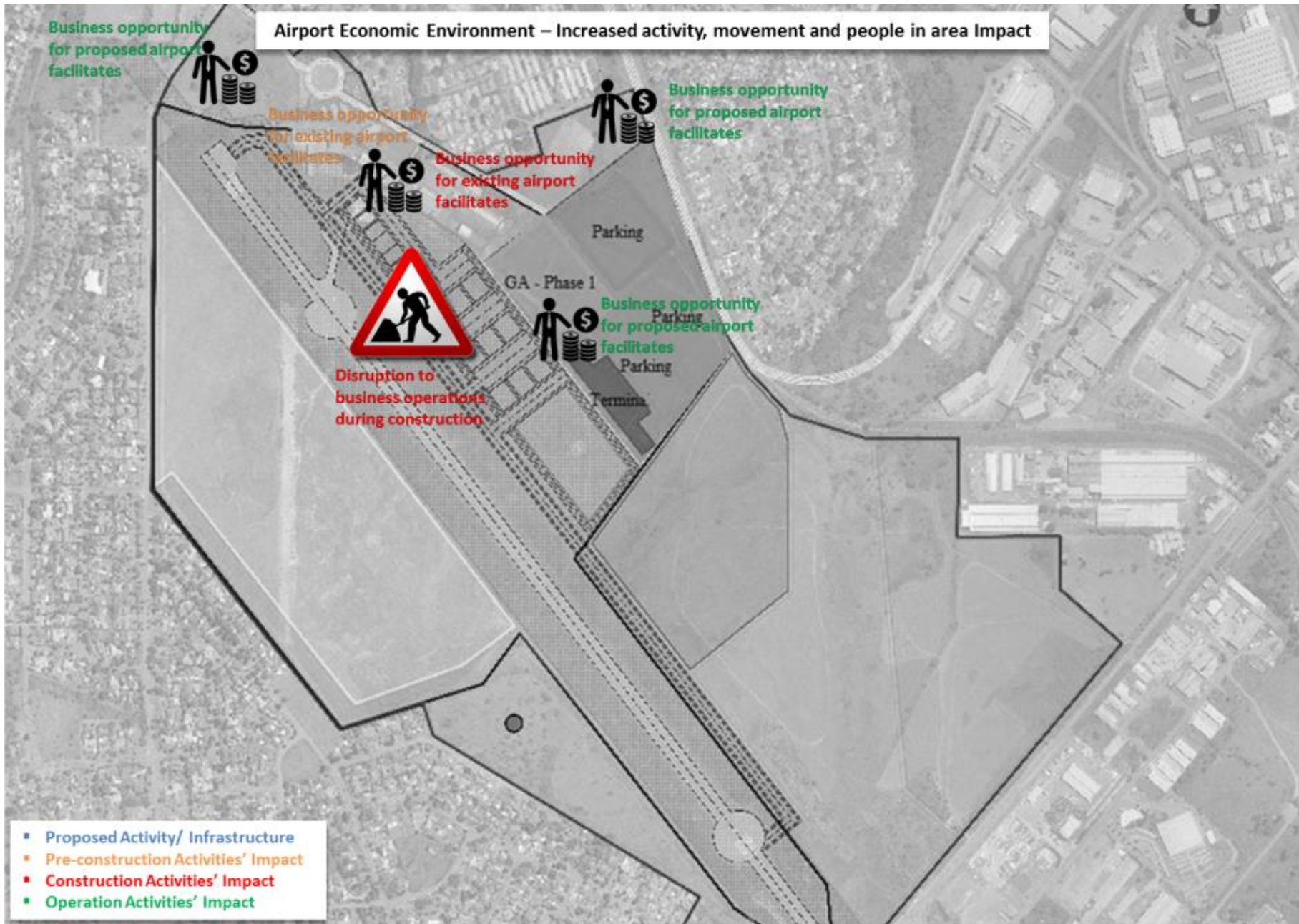
9.1.3. Broader Msunduzi Municipality Natural Environment

BROADER MSUNDUZI MUNICIPALITY NATURAL ENVIRONMENT				
Proposed Activity/Infrastructure	Receiving Environment	Phase	Impact on Receiving Environment	ToR for EIA Phase
Current and Increased Air Traffic	Broader Natural Environment	Operation Activities	Air pollution - The current and potentially increasing air traffic affects the Municipality's air quality and, in turn, the functioning of natural systems.	<ul style="list-style-type: none"> • Air Quality (EMPr)
Airport Facility Expansion (includes all expansions and new developments, and associated infrastructure and roads)	Broader Natural Environment (natural corridors and water systems)	Construction Activities	<p>Dust - Excavation and construction activities will result in the dislodging of soil, causing dust (air pollution) within the precinct area. The movement of heavy construction vehicles is also likely to contribute to this impact.</p> <p>Silt - Excavation and construction activities will result in the dislodging of soil and likely erosion, causing siltation of nearby water systems (water quality implication). The movement of heavy construction vehicles is also likely to contribute to this impact.</p> <p>Waste – hazardous and non-hazardous waste generation during construction will impact the surrounding natural environment if not managed correctly.</p> <p>Natural habitat - Conversion from grassland to tarmac will result in the loss of natural habitat and grassland. The proposed Market Road extension road will fragment the natural corridor and wetland system. This is likely to have cumulative effects for the movement of animals through natural corridors in the Municipality</p> <p>Water – Water consumption during construction places strain on resources (may be need for a Water Use Licence depending on where water is sourced from).</p>	<ul style="list-style-type: none"> • Air Quality (EMPr) • Biodiversity Impact Assessment • Traffic Assessment • Waste Management (EMPr) • Water Quality Management (EMPr)
		Operation Activities	<p>Water - Impervious surfaces, such as a tarmac, are a source of water pollution, as rainwater running off of roads tends to pick up gasoline, motor oil, heavy metals, trash and other pollutants.</p> <p>Waste - Solid and effluent waste generated which enters natural systems in the municipality.</p> <p>Natural Habitat - Roads create barriers and therefore restrict animal movement and lead to habitat fragmentation.</p>	

9.2. Economic Environment

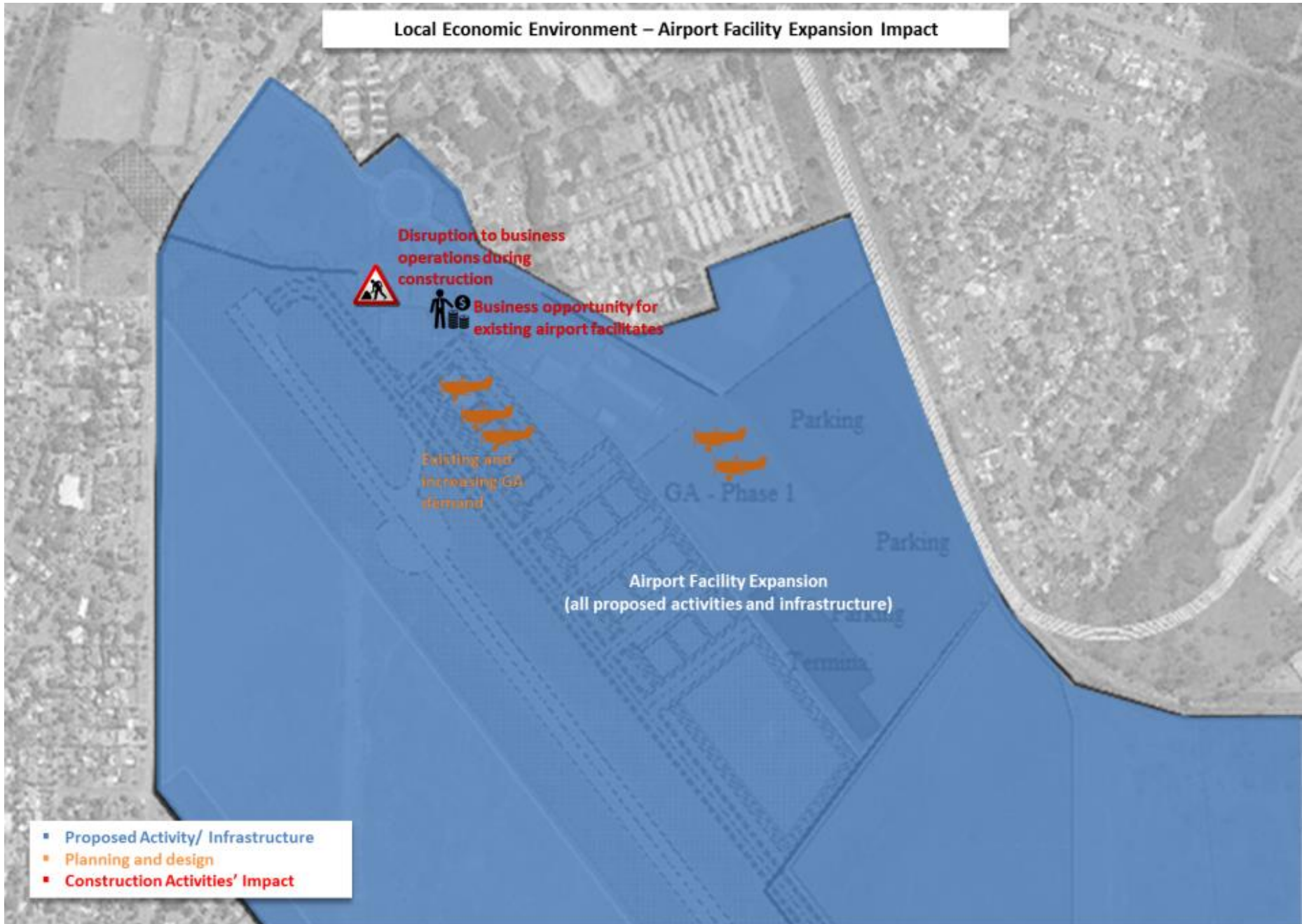
9.2.1. Airport Economic Environment

AIRPORT ECONOMIC ENVIRONMENT				
Proposed Activity/Infrastructure	Receiving Environment	Phase	Impact on Receiving Environment	ToR for EIA Phase
Increased activity, movement and people in area	Airport businesses and operations	Pre-Construction Activities	Business Opportunity - Increase in people in the area can positively affect airport related business (e.g. car hire, coffee shop, commercial airline)	<ul style="list-style-type: none"> Social Impact Assessment
		Construction Activities	Business Opportunity - Increase in people in the area can positively affect airport related business (e.g. car hire, coffee shop, commercial airline) Operations - Impact of construction on daily operation of airport and associated activities/business.	
		Operation Activities	Business Opportunity - Increase in people in the area can positively affect airport related business (e.g. car hire, coffee shop, commercial airline, etc.). This may also positively affect the costs associated with commercial air travel (possible increase in airline competitors).	



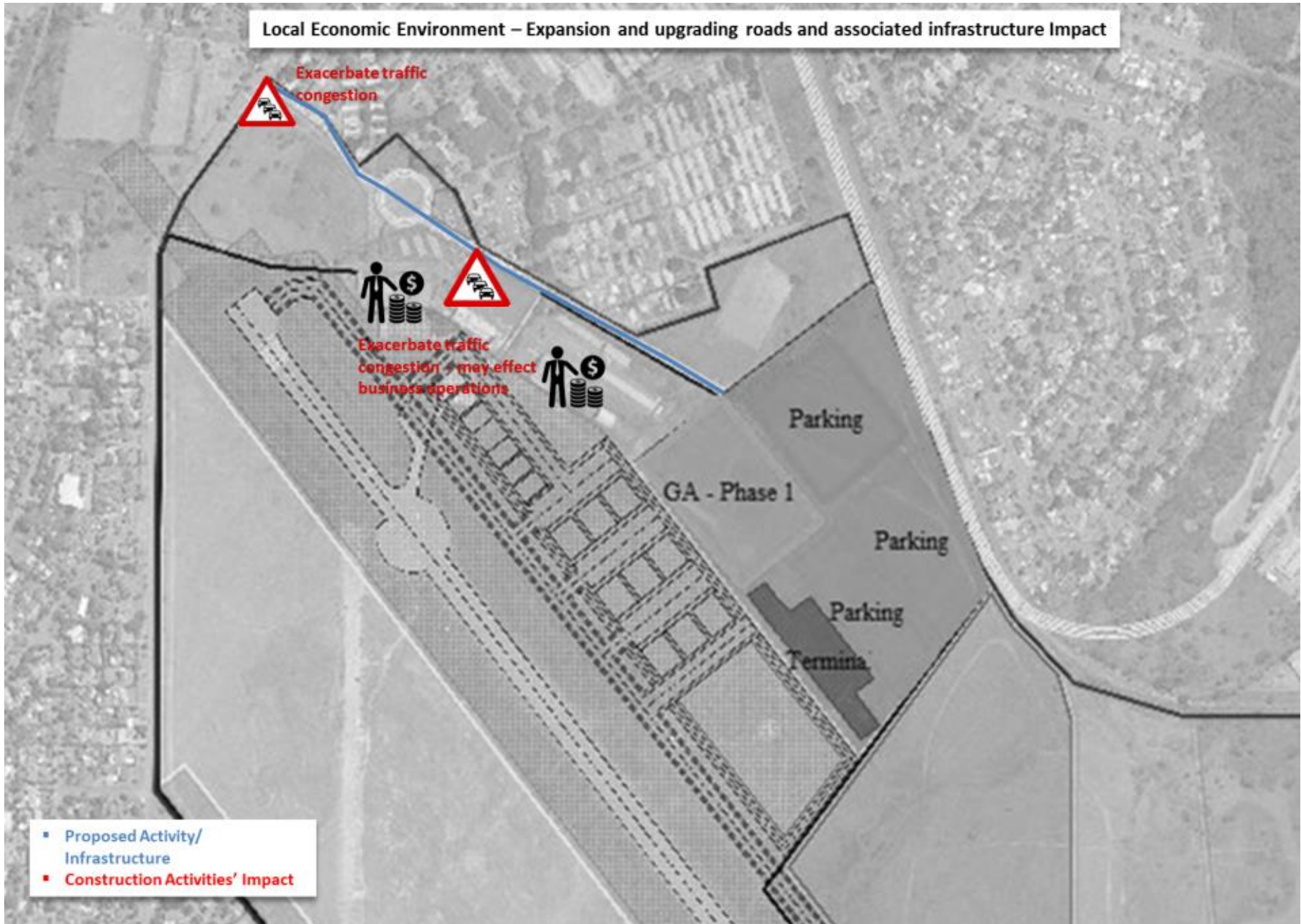
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AIRPORT ECONOMIC ENVIRONMENT				
Proposed Activity/Infrastructure	Receiving Environment	Phase	Impact on Receiving Environment	ToR for EIA Phase
Airport Facility Expansion (includes all expansions and new developments, and associated infrastructure and roads)	Airport businesses and operations	Planning and Design	<p>Demand - There is significant demand for General Aviation (GA) sector expansion and hangerage space that needs to be considered in the planning. (Also need to ensure that runway if level)</p> <p>Layout - The layout of airport’s proposed buildings and infrastructure must not negatively impact the control towers’ visibility. Consider the taxiway entrance onto runway – should be central to reduce time on runway.</p>	<ul style="list-style-type: none"> • Social Impact Assessment • Geotechnical Assessment
		Construction Activities	<p>Operations - Impact of construction on daily operation of airport and associated activities/business.</p> <p>Business Opportunity - Increase in people in the area due to the airport expansion, which may positively affect the municipalities economy (e.g. use of airport facilities, support local businesses, investment in the municipality). Although several opportunities for the municipality to leverage investment, namely the Techno-Hub, mixed use development (commercial, hotel, etc.), an Aviation academy and cluster, a Multi Sports Complex and an Enterprise Zone.</p>	



ENVIRONMENTAL SCOPING REPORT FOR THE PROPOSED EXPANSION OF THE PIETERMARITZBURG AIRPORT

AIRPORT ECONOMIC ENVIRONMENT				
Proposed Activity/Infrastructure	Receiving Environment	Phase	Impact on Receiving Environment	ToR for EIA Phase
Expansion and upgrading roads and associated infrastructure	Airport businesses and operations	Construction Activities	Operations - Impact of construction on daily operation of airport and associated activities/business.	<ul style="list-style-type: none"> Social Impact Assessment



9.2.2. Local Economic Environment

LOCAL ECONOMIC ENVIRONMENT				
Proposed Activity/Infrastructure	Receiving Environment	Phase	Impact on Receiving Environment	ToR for EIA Phase
Increased activity, movement and people in area	Bisley, Scottsville Extension and Oribi Areas	Pre-Construction Activities	Business Opportunity - Increase in people in the area can positively affect local business (e.g. tuck shops, convenience stores, accommodation facilities)	<ul style="list-style-type: none"> • Social Impact Assessment
		Construction Activities	<p>Business Opportunity - Increase in people in the area can positively affect local business (e.g. tuck shops, convenience stores, accommodation facilities)</p> <p>Pressure on Existing Facilities - Need to upgrade and/or increase local facilities, particularly schools, due to the increase pressure and demand and as result of more activity in the local area. Service facilities such as water and waste infrastructure and provision will also experience increased pressure during the construction phase.</p>	
		Operation Activities	<p>Business Opportunity - Increase in people in the area can positively affect local business (e.g. tuck shops, convenience stores, accommodation facilities)</p> <p>Pressure on Existing Facilities - Need to upgrade and/or increase local facilities, particularly schools, due to the increase pressure and demand and as result of more activity in the local area.</p> <p>Pressure on Existing Infrastructure - Local area is already experiencing service delivery constraints (water shortages), which is likely to worsen with the increase in pressure on such service infrastructure as a result of additional facilities and activity in the area..</p>	
Airport Facility Expansion (includes all expansions and new developments, and associated infrastructure and roads)	Bisley, Scottsville Extension and Oribi Areas	Planning and Design	Employment and Skills Development Opportunities - Make use of local contractors, sub-contractors and labour, and upskilling of local residents.	<ul style="list-style-type: none"> • Social Impact Assessment
		Pre-Construction Activities	Employment and Skills Development Opportunities - Make use of local contractors, sub-contractors and labour, and upskilling of local residents.	
		Construction	Employment and Skills Development Opportunities - Make use of local	

ENVIRONMENTAL SCOPING REPORT FOR THE PROPOSED EXPANSION OF THE PIETERMARITZBURG AIRPORT

		Activities	contractors, sub-contractors and labour, and upskilling of local residents.	
		Operation Activities	<p>Employment and Skills Development Opportunities - Make use of local contractors, sub-contractors and labour, and upskilling of local residents.</p> <p>Local Business and Education Facilities - Likely to have positive implications on local business and education facilities (e.g. Kalinka EduCare Centre, which can currently only be accessed via a dirt road)</p>	
Expansion and upgrading roads and associated infrastructure	Precinct Area	Planning and Design	<p>Existing Infrastructure - Existing infrastructure, namely the water reservoir, should be carefully considered to avoid future impacts on the proposed development (consider decommission and removal if not in use).</p> <p>Existing plans - Consideration of existing road network plans of the South African National Roads Agency (SANRAL).</p>	<ul style="list-style-type: none"> • Social Impact Assessment
		Construction Activities	Roads and Associated Infrastructure - Construction vehicles and increased traffic on local road network is likely to degrade the condition of local infrastructure.	
		Operation Activities	Roads and Associated Infrastructure - Possibly upgrades of and additions to existing road networks and associated infrastructure (intersections, pavements, walkways, etc.)	
		Rehabilitation after Construction	Roads and Associated Infrastructure - Degraded local road networks may require rehabilitation.	
Techno-Hub	Bisley, Scottsville Extension and Oribi Residents	Operation Activities	Access - Enable local community to access and make use of Techno-Hub facilitates (educations and sport/recreational).However, the cost associated with the facility may be too high for the local communities.	<ul style="list-style-type: none"> • Social Impact Assessment

9.2.3. Broader Msunduzi Municipality Economic Environment

BROADER MSUNDUZI MUNICIPALITY ECONOMIC ENVIRONMENT				
Proposed Activity/Infrastructure	Receiving Environment	Phase	Impact on Receiving Environment	ToR for EIA Phase
Airport Facility Expansion (includes all expansions and new developments, and associated infrastructure and roads)	Msunduzi Municipality's economy	Pre-Construction Activities	Business Opportunity - Increase in people in the area can positively affect the municipalities economy (e.g. use of airport facilities, support local businesses, investment in the municipality)	<ul style="list-style-type: none"> • Social Impact Assessment
		Construction Activities	Business Opportunity - Increase in development activities in the area can positively affect the municipalities economy (e.g. use of airport facilities, support local businesses, investment in the municipality)	
		Operation Activities	<p>Business Opportunity - Increase in people in the area due to the airport expansion, which may positively affect the municipalities economy (e.g. use of airport facilities, support local businesses, investment in the municipality). Although several opportunities for the municipality to leverage investment, namely the Techno-Hub, mixed use development (commercial, hotel, etc.), an Aviation academy and cluster, a Multi Sports Complex and an Enterprise Zone.</p> <p>Rates - Possible positive implication on rate payers in the municipality (assess likelihood of reduced rates as a result of airport being self-sufficient).</p>	
Expansion and upgrading roads and associated infrastructure	Msunduzi Municipality's road infrastructure	Planning and Design	Existing Plans - Design should consider the road developments on SANRALS plans and National Road Planning, and alternatives posed by I&APs.	<ul style="list-style-type: none"> • Social Impact Assessment • Traffic Impact Assessment
		Construction Activities	Road and Associated Infrastructure - Cumulative impacts on the condition of roads and associated networks, as they are likely to experience increased traffic volumes as a result of traffic increases and diversions during construction.	
		Operation Activities	Road and Associated Infrastructure - Cumulative impacts on the condition of roads and associated networks, as they are likely to experience increased traffic volumes as a result of traffic increases and diversions during construction.	

9.3. Social Environment

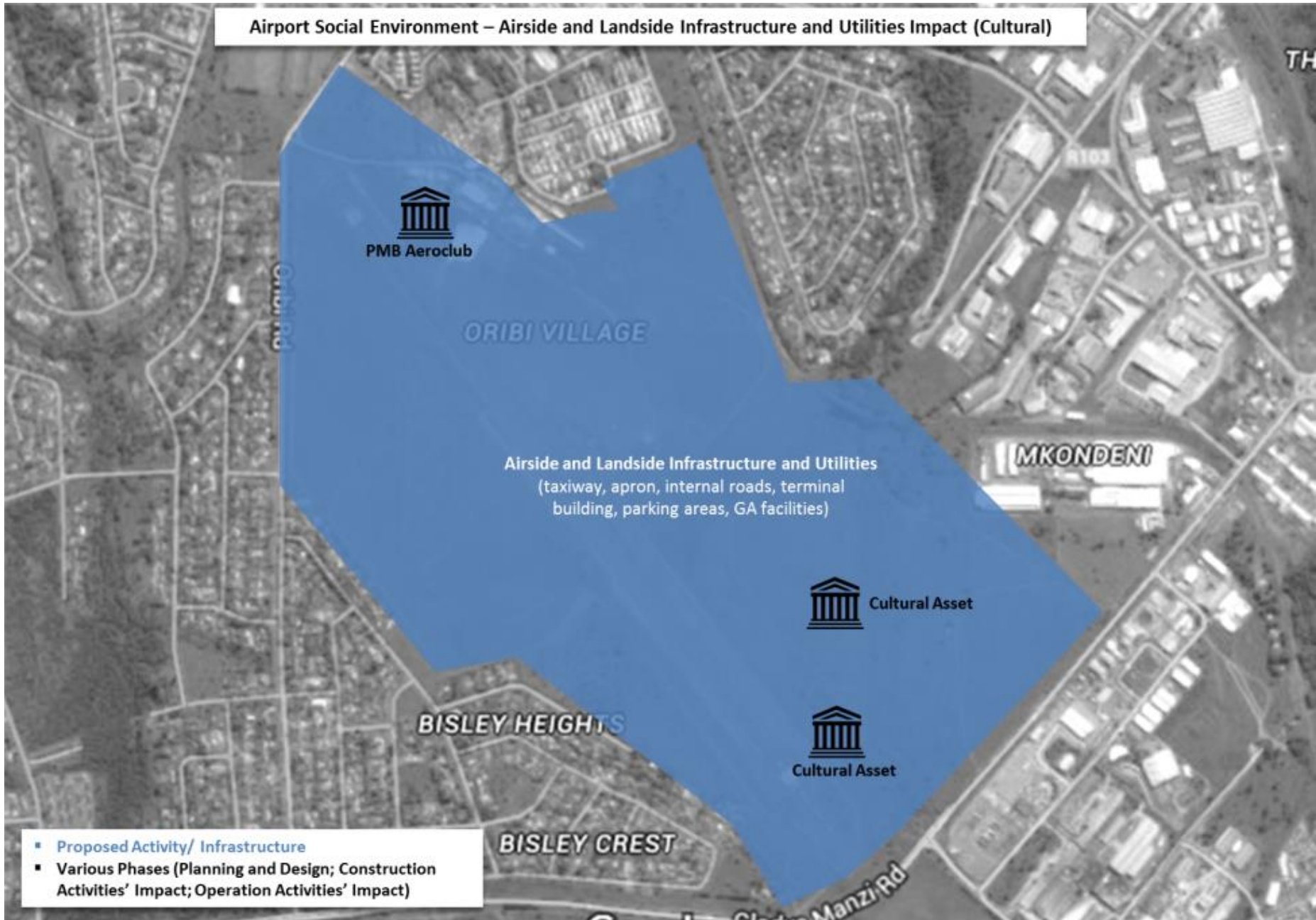
9.3.1. Airport Social Environment

AIRPORT SOCIAL ENVIRONMENT				
Proposed Activity/Infrastructure	Receiving Environment	Phase	Impact on Receiving Environment	ToR for EIA Phase
Airside and Landside Infrastructure (taxiway, apron, internal roads, terminal building, parking areas, GA facilities)	Airport users, tenants and operators	Construction Activities	<p>Health - Pollution (air and solid) generated during construction infrastructure. Excavation and construction activities will result in the dislodging of soil, likely causing dust (air pollution), and the movement of heavy construction vehicles is also likely to contribute to this impact. Waste generated (in particular building rubble) during construction impact the immediate social environment if not managed correctly. The influx of temporary contractors and labour into the area could pose a disease risk.</p> <p>Safety - Security risk associated with increase in the movement of people (labour, contractors, etc.) into the airport facility. The risk of construction occurring while the airport is still in operation also poses a security concern.</p> <p>Traffic - Construction activities result in more, and heavier, vehicles within the airport. Increase in traffic implicates traffic flows and likely congestion, particularly in existing congested areas.</p> <p>Noise - Increase of vehicles, and the type of vehicles (construction vehicles), is likely to result in a noise implications for airport users, tenants and operators. Construction activities also contribute to noise pollution for the airport social environment.</p> <p>Water - Increase pressure on water provision as construction activities consume excessive amount of water, thus impacting the availability.</p>	<ul style="list-style-type: none"> • Air Quality (EMPr) • Noise Assessment • Social Impact Assessment • Security and Safety (EMPr) • Waste Management (EMPr) • Water Quality Management (EMPr)
		Operation Activities	<p>Open spaces - Loss of natural area (grasslands) that will be converted into airside infrastructure is likely to have social well-being implications (reduced open space and recreational areas).</p> <p>Water - Increase pressure on water provision as expansion of airport facilities will result in a higher water demand.</p>	



ENVIRONMENTAL SCOPING REPORT FOR THE PROPOSED EXPANSION OF THE PIETERMARITZBURG AIRPORT

AIRPORT SOCIAL ENVIRONMENT				
Proposed Activity/Infrastructure	Receiving Environment	Phase	Impact on Receiving Environment	ToR for EIA Phase
Airside and Landside Infrastructure and Utilities (taxiway, apron, internal roads, terminal building, parking areas, GA facilities)	Historical and cultural assets within the airport boundary	Planning and Design	Cultural Assets - Consideration of PMB Aeroclub historic building and the two archaeological sites in planning.	<ul style="list-style-type: none"> Heritage Assessment
		Construction Activities	Archaeological and Heritage Assets - Possible negative impacts of construction activities on the archaeological and heritage sites/assets.	
		Operation Activities	Archaeological and Heritage Assets - Possible negative impacts of operation activities (use of Aero Club building, boundary road, runway) on the archaeological and heritage sites/assets.	



AIRPORT SOCIAL ENVIRONMENT				
Proposed Activity/Infrastructure	Receiving Environment	Phase	Impact on Receiving Environment	ToR for EIA Phase
Fuel Farm	Airport users, tenants and operators	Planning and Design	Risk - Consideration of the current positioning of the fuel farm/s and how they may impact or be impacted by other proposed development. Associated risk may have a negative implication of the airport users, tenants and operators.	<ul style="list-style-type: none"> • <i>Not applicable (Fuel Farm not being moved in Phase 1)</i>

9.3.2. Local Social Environment

LOCAL SOCIAL ENVIRONMENT				
Proposed Activity/Infrastructure	Receiving Environment	Phase	Impact on Receiving Environment	ToR for EIA Phase
Expansion and upgrading roads and associated infrastructure	Bisley, Scottsville Extension and Oribi Areas (Residents, businesses, schools)	Planning and Design	<p>Water Reservoir - Consideration of the risk associated with incorporating the water reservoir into the proposed road network.</p> <p>Road Network - Consider access for local residents in planning (e.g. access point into Scottsville Extension and Oribi residential areas off the proposed link road)</p> <p>Safety - Unused and dilapidated railway line (between Scottsville Extension and Oribi residential area) poses a security risk. Its removal is recommended.</p>	<ul style="list-style-type: none"> • Air Quality (EMPr) • Noise Assessment • Social Impact Assessment • Security and Safety (EMPr)
		Construction Activities	<p>Health - Pollution (air and solid) generated during construction of roads and associated infrastructure. Excavation and construction activities will result in the dislodging of soil, likely causing dust (air pollution), and the movement of heavy construction vehicles is also likely to contribute to this impact. Waste generated (in particular building rubble) during construction impact the immediate social environment if not managed correctly.</p> <p>The influx of temporary contractors and labour into the area could pose a disease risk.</p> <p>Safety - Increase number of people entering and moving through the local area could pose a security risk to local residents, schools and businesses. Movement of construction vehicles along road network is likely to place a</p>	<ul style="list-style-type: none"> • Traffic Impact Assessment • Waste Management (EMPr) • Water Quality Management (EMPr)

			<p>risk on residents and school children commuting (walking, driving, public transport).</p> <p>Traffic - Construction activities result in more, and heavier, vehicles on the local roads. Increase in traffic implicates traffic flows and likely congestion, particularly in existing congested areas.</p> <p>Noise - Increase of vehicles, and the type of vehicles (construction vehicles), is likely to result in a noise implications in areas surrounding road networks. Noise generated by general construction activities will also contribute to this impact.</p> <p>Water - Increase pressure on water provision as construction activities consume water, thus impacting the availability.</p>	
		<p>Operation Activities</p>	<p>Security Risk - Increase number of people entering and moving through the local area could pose a security risk to local residents, schools and businesses. Increase traffic may have a safety risk for residents and school children commuting (walking, driving, public transport).</p> <p>Traffic - Increased activity in the area may result in an increase of local roads users (e.g. Techno-Hub, Hotel, Mixed-Use areas, increase in commercial airline flights, increase in private aircraft tenants, etc.). Increase in traffic implicates traffic flows and likely congestion, particularly in existing congested areas.</p> <p>Noise - The increase of vehicles is likely to result in a noise implication in areas surrounding road networks.</p> <p>Water - Increase pressure on water provision as expansion of airport facilities will result in a higher water demand.</p>	

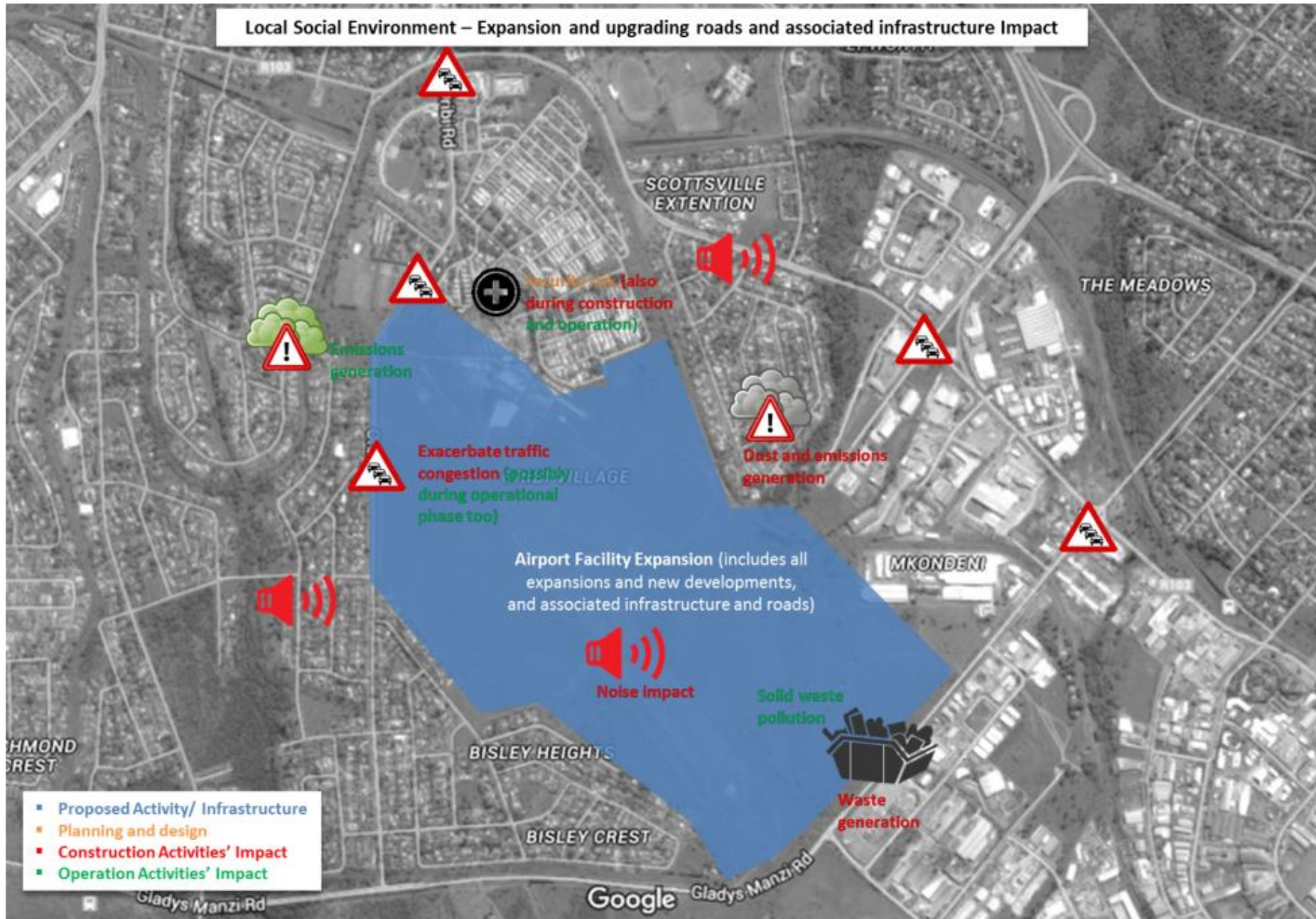


ENVIRONMENTAL SCOPING REPORT FOR THE PROPOSED EXPANSION OF THE PIETERMARITZBURG AIRPORT

LOCAL SOCIAL ENVIRONMENT				
Proposed Activity/Infrastructure	Receiving Environment	Phase	Impact on Receiving Environment	ToR for EIA Phase
Airport Facility Expansion (includes all expansions and new developments, and associated infrastructure and roads)	Bisley, Scottsville Extension and Oribi Areas (Residents, businesses, schools)	Pre-Construction Activities	Security - Increase number of people entering and moving through the local area could pose a security risk to local residents, schools and businesses.	<ul style="list-style-type: none"> • Air Quality (EMPr) • Noise Assessment • Social Impact Assessment • Security and Safety (EMPr) • Traffic Impact Assessment • Waste Management (EMPr) • Water Quality Management (EMPr)
		Construction Activities	<p> Health - Pollution (air and solid) generated during construction of infrastructure. Excavation and construction activities will result in the dislodging of soil, likely causing dust (air pollution), and the movement of heavy construction vehicles is also likely to contribute to this impact. Waste generated (in particular building rubble) during construction impact the immediate social environment if not managed correctly. The influx of temporary contractors and labour into the area could pose a disease risk. </p> <p> Security - Increase number of people entering and moving through the local area could pose a security risk to local residents, schools and businesses. Movement of construction vehicles along road network is likely to place a risk on residents and school children commuting (walking, driving, public transport). </p> <p> Traffic - Construction activities result in more, and heavier, vehicles on the local roads. Increase in traffic implicates traffic flows and likely congestion, particularly in existing congested areas. </p> <p> Noise - Noise generated by construction activities will affect the local social environment. The increase of vehicles, and the type of vehicles (construction vehicles), is likely to result in a noise implications in areas surrounding road networks. </p> <p> Water - Increase pressure on water provision as construction activities consume water, thus impact the availability. </p>	
		Operation Activities	Security Risk - Increase number of people entering and moving through the local area could pose a security risk to local residents, schools and businesses. Increase traffic may have a safety risk for residents and school children commuting (walking, driving, public transport).	

ENVIRONMENTAL SCOPING REPORT FOR THE PROPOSED EXPANSION OF THE PIETERMARITZBURG AIRPORT

LOCAL SOCIAL ENVIRONMENT				
Proposed Activity/Infrastructure	Receiving Environment	Phase	Impact on Receiving Environment	ToR for EIA Phase
			<p>Traffic - Increased activity in the area may result in an increase of local roads users (e.g. Techno-Hub, Hotel, Mixed-Use areas, increase in commercial airline flights, increase in private aircraft tenants, etc.). Increase in traffic implicates traffic flows and likely congestion, particularly in existing congested areas.</p> <p>Noise - The increase of vehicles is likely to result in a noise implication in areas surrounding road networks.</p> <p>Water - Increase pressure on water provision as expansion of airport facilities will result in a higher water demand.</p>	



ENVIRONMENTAL SCOPING REPORT FOR THE PROPOSED EXPANSION OF THE PIETERMARITZBURG AIRPORT

LOCAL SOCIAL ENVIRONMENT				
Proposed Activity/Infrastructure	Receiving Environment	Phase	Impact on Receiving Environment	ToR for EIA Phase
Airport Facility Expansion (includes all expansions and new developments, and associated infrastructure and roads)	Historical and cultural assets within the prince area	Planning and Design	Archaeological and Heritage Assets - Consideration of the heritage resources, archaeological sites and zones of architectural and historical significance within the precinct area in the planning.	<ul style="list-style-type: none"> Heritage Assessment
		Construction Activities	Archaeological and Heritage Assets - Possible negative impacts that construction activities may have on the architectural and historical resources in the precinct area.	



ENVIRONMENTAL SCOPING REPORT FOR THE PROPOSED EXPANSION OF THE PIETERMARITZBURG AIRPORT

LOCAL SOCIAL ENVIRONMENT				
Proposed Activity/Infrastructure	Receiving Environment	Phase	Impact on Receiving Environment	ToR for EIA Phase
Vacant Land Plots	Bisley, Scottsville Extension and Oribi Areas	Planning and Design	<p>Safety - An increase in development and employment opportunities in the local area may result in the establishment informal settlements in open areas, as people migrate to the area. This could amalgamate into a security risk (increase in criminal activity), and is therefore a need for local planning avoid negative such implications on the local community.</p> <p>Recreational Facilities - Vacant land plots are important recreational facilities (used for sports, as playgrounds, etc.) for the local community, and therefore need to be considered in the planning and design.</p> <p>Noise and Visual - Vacant land plots act as noise and visual barriers, particularly between residents and industrial zones. It is important to maintain these to uphold the social environment.</p>	<ul style="list-style-type: none"> • Noise Assessment • Social Impact Assessment

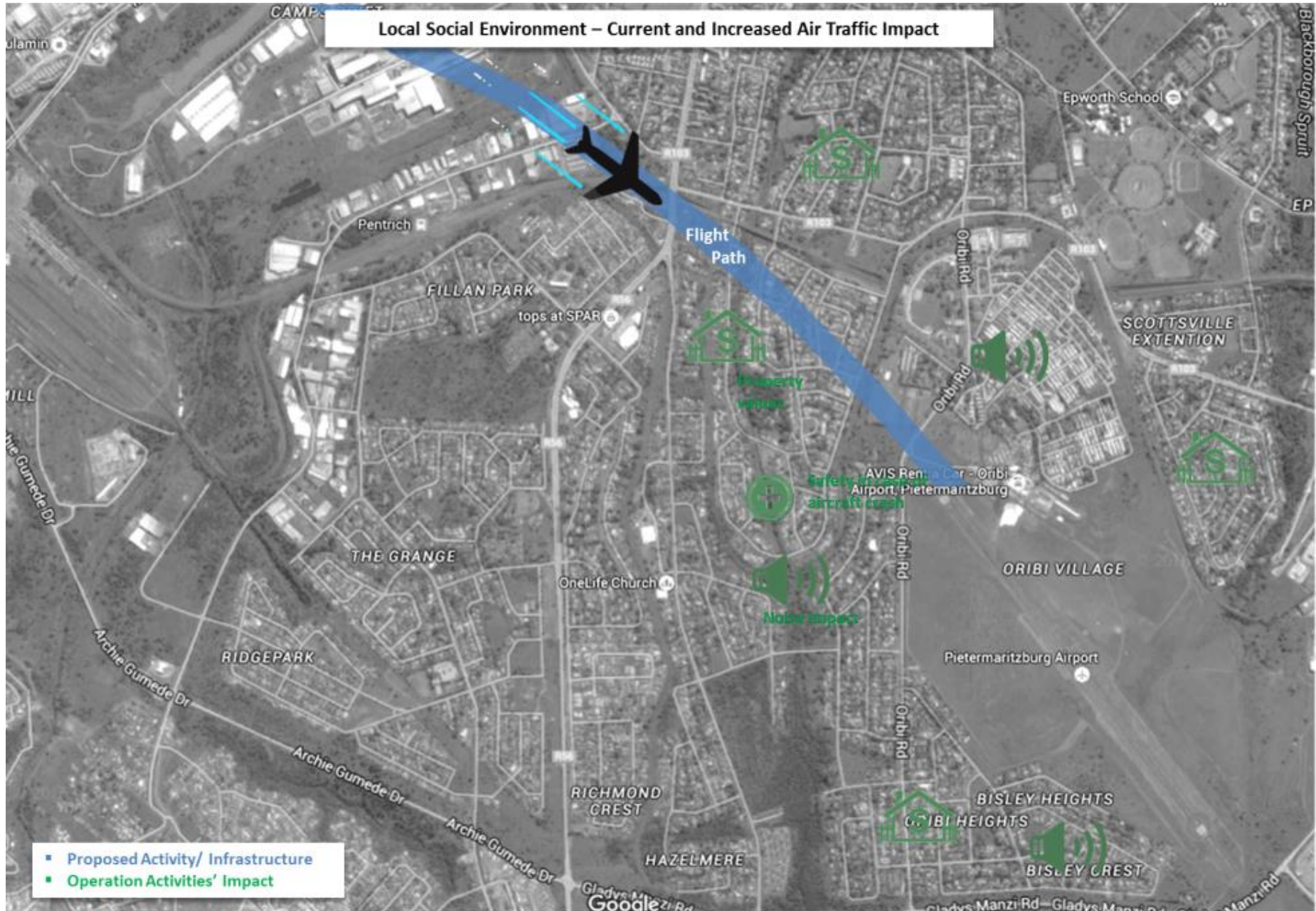
ENVIRONMENTAL SCOPING REPORT FOR THE PROPOSED EXPANSION OF THE PIETERMARITZBURG AIRPORT

LOCAL SOCIAL ENVIRONMENT				
Proposed Activity/Infrastructure	Receiving Environment	Phase	Impact on Receiving Environment	ToR for EIA Phase
Techno-Hub	Bisley, Scottsville Extension and Oribi Areas	Construction Activities	<p>Visual - Construction activities, equipment, movements etc. related to the conversion of open grassland area to buildings (Techno-Hub). There is a direct visual impact for Bisley Residents.</p> <p>Traffic - Movement (access) of construction vehicles in the local area, which is likely to result in traffic congestion.</p> <p>Safety - Increase of people in the local area due to construction activities could result in a safety concern for local residents, business and airport tenants, users and operators.</p>	<ul style="list-style-type: none"> • Noise Assessment • Social Impact Assessment • Traffic Impact Assessment
		Operation Activities	<p>Visual - Direct visual impact for Bisley Residents due to the conversion of open grassland area to buildings (Techno-Hub).</p> <p>Noise - Noise pollution generated during from Techno-Hub activities, particularly impacts on Bisley and Oribi Residents.</p> <p>Traffic - Movement (access) of Techno-Hub users in the local area, which is likely to result in congestion.</p> <p>Access - Local community's ability to access the facilities (educational and recreational) that will be part of the Techno-Hub development.</p> <p>Safety - Risk associated with the close proximity of Techno-Hub to runway.</p> <p>Knowledge Hub - The facility is likely to stimulate the local social environment as the knowledge hub may stimulate skills development and general social upliftment.</p>	



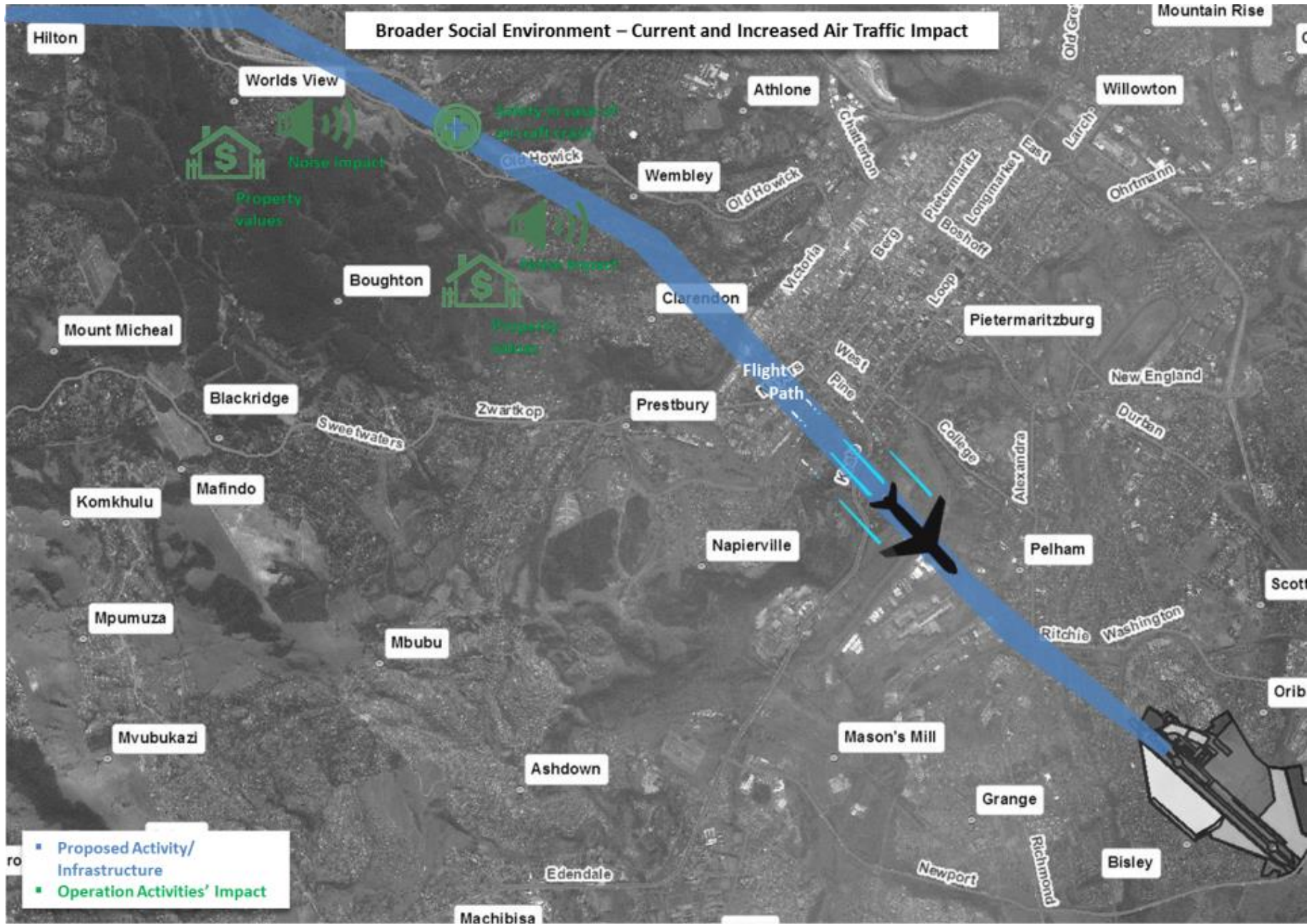
ENVIRONMENTAL SCOPING REPORT FOR THE PROPOSED EXPANSION OF THE PIETERMARITZBURG AIRPORT

LOCAL SOCIAL ENVIRONMENT				
Proposed Activity/Infrastructure	Receiving Environment	Phase	Impact on Receiving Environment	ToR for EIA Phase
Current and Increased Air Traffic	Bisley and Oribi Areas (Residents, businesses, schools)	Operation Activities	<p>Noise - Noise generated along the flight paths of both scheduled and general aviation aircrafts. Noise implication from take-off, taxi and landing of commercial and general aviation aircrafts. The majority (95%) of the flights arrive and depart from the East (over the Bisley and Oribi Residential areas). The number of flights per day as well as times (irregular and/or intermittent) of flights departing and arriving at the airport impact the noise pollution along the flight corridor</p> <p>Health - Heat (<i>although it was indicated by aviation specialists that this is not possible</i>) and dust implications generated by commercial and general aviation aircrafts during landing and take-off.</p> <p>Infrastructure - Buildings along the flight corridor are compromised in terms of infrastructural integrity due to the noise (and vibration) generated</p> <p>Property Values - Noise implications may impact property values, particularly if irregular, increased and/or intermittent.</p> <p>Safety - Concern regarding the safety of local residents and school in the occurrence of an aircraft accident/crash. Need for an early warning system to notify affected community.</p> <p>Lack of Noise Contours and Thresholds - <i>Noise contours of the commercial aircraft flight corridor have not been conducted for the Pietermaritzburg Airport, and therefore noise thresholds specific for the Airport have not been set. Currently, the National Civil Aviation Policy is being applied but the lack of local context conditions may screw the applicability of these thresholds. There are also no set times, or time constraints, for general aviation aircrafts.</i></p>	<ul style="list-style-type: none"> • Air Quality (EMPr) • Geotechnical Assessment • Noise Assessment • Valuation Assessment • Safety and Security (EMPr) • Social Impact Assessment



9.3.3. Broader Msunduzi Municipality Social Environment

BROADER MSUNDUZI MUNICIPALITY SOCIAL ENVIRONMENT				
Proposed Activity/Infrastructure	Receiving Environment	Phase	Impact on Receiving Environment	ToR for EIA Phase
Current and Increased Air Traffic	Extended flight path areas	Operation Activities	<p>Noise - Noise implication generated along the flight paths of both scheduled and general aviation aircrafts. The extended flight path (over residential areas in the North-East of Pietermaritzburg, such as Wembley, Hilton, Worlds Views, Athlone, Winterskloof, etc.) experience noise pollution as a result of the arriving aircrafts, in particular. These areas are of higher elevation and thus affects by the noise pollution created by the commercial and private aircrafts. The number of flights per day as well as times (irregular and/or intermittent) of flights departing and arriving at the airport impact the noise pollution along the flight corridor</p> <p>Property Values - Noise implications may impact property values, particularly if irregular, increased and/or intermittent flights.</p> <p>Healthcare Facilities - Healthcare facilities (e.g. Greys and Hilton Life Hospitals) along the extended flight path may be subject to noise pollution generated by aircraft, which is of concern due to the nature of.</p> <p>Safety - Concern regarding the safety of those along the extended flight path in the occurrence of an aircraft accident/crash. Need for an early warning system to notify affected community.</p> <p>Lack of Noise Contours and Thresholds - <i>Noise contours of the commercial aircraft flight corridor have not been conducted for the Pietermaritzburg Airport, and therefore noise thresholds specific for the Airport have not been set. Currently, national standards are being applied but the lack of local context conditions may screw the applicability of these thresholds. There are also no set times, or time constraints, for general aviation aircrafts.</i></p>	<ul style="list-style-type: none"> • Air Quality (EMPr) • Geotechnical Assessment • Noise Assessment • Valuation Assessment • Safety and Security (EMPr) • Social Impact Assessment



BROADER MSUNDUZI MUNICIPALITY SOCIAL ENVIRONMENT				
Proposed Activity/Infrastructure	Receiving Environment	Phase	Impact on Receiving Environment	ToR for EIA Phase
Expansion and upgrading roads and associated infrastructure	Precinct and surrounds	Planning and Design	Road Network - Consider access for local residents in planning (e.g. access point into Scottsville Extension and Oribi residential areas off the proposed link road)	<ul style="list-style-type: none"> Traffic Impact Assessment <i>Consultation with SANRAL and Municipality Road Planning Unit</i>
		Construction Activities	Traffic - Construction activities result in more, and heavier, vehicles on the local roads. Increase in traffic implicates traffic flows and likely congestion, particularly in existing congested areas; namely Mkondi Industrial area, and commutative impacts on surrounding residential areas.	
		Operation Activities	Traffic - Increased activities in the area result in an increase of local roads users (e.g. Techno-Hub, Hotel, Mixed-Use areas, increase in commercial airline flights, increase in private aircraft tenants, etc.). Increase in traffic implicates traffic flows and likely congestion, particularly in existing congested areas; namely Mkondi Industrial area, and commutative impacts on surrounding residential areas.	

Alternatives

- Recycling of building rubble (waste) from one area to another needs to be considered in the planning
- Consider positive implication of upgrading of road network on air pollution
- Use of energy efficient and alternative technologies, making use of natural light and heating, and incorporating natural environment into facilities.

10. TERMS OF REFERENCE FOR EIA PHASE

10.1. Summary of Issues

In conclusion of the scoping phase, the process enabled the identification of the major issues to be investigated in the EIA phase discussed in section 10.2 below. However, to note, are other aspects presented in Table 166 which were not raised as key issues of concern during the scoping phase, but will be addressed in the Environmental Management Programme (EMPr) drawn by INR.

Table 16: Summary of key issues to be addressed in the EMPr

ASPECT	MANAGEMENT
Water	Water Quality Management
	Resource consumption monitoring
Energy	Resource consumption monitoring
Air	Air Quality Management
Waste	Waste Management
Visual impact on air traffic control	Visual Assessment
Fuel farm location	Risk Assessment
Safety and security	Social Impact Assessment Safety and Security
Paved surfaces	Storm Water Management
Dust	Dust management
Birds	Bird management

10.2. Context to Assessments

Specialist studies by renowned experts in the field will be undertaken to address all the key issues identified once the EDTEA has given the go ahead. This will enable recommendations to be incorporated into the project design at an early stage of the project cycle. This section discusses briefly the objective, the output, duration the proposed methodology for each specialist study.

Table 17: Summary of issues to be addressed in the EIA

KEY ISSUES IDENTIFIED	EIA TOR	SPECIALIST
Traffic congestion Traffic Safety issues for local residents	Traffic Impact Assessment	Royal HaskoningDHV
Sensitive areas <ul style="list-style-type: none"> • Wetlands • Biodiversity 	Wetland Assessment	INR
Cumulative noise	Noise Assessment	IMA Trader 20 cc
Paved surfaces	Storm Water Management (EMPr)	
Risk to infrastructure from unstable geology.	Geotechnical Assessment	Terratest
Impact on property values	Valuation Assessment	Mills Fitchet
Social and economic impact	Social Impact Assessment	INR
Archaeological and Heritage Assets	Heritage Assessment	eThembeni Cultural Heritage (ECH)

The proposed expansion will impact the regional economy, influence the value of properties due to changes in noise levels, air quality and traffic, which also have potential impact on health of residents. The socio-economic assessment will therefore draw on the various studies in undertaking an integrated socio-economic assessment. Specific studies accounted for are a property valuation and an economic assessment.

The purpose of the assessment will be to identify and evaluate the potential socio-economic impacts that the proposed expansion on the lives and circumstances of people affected. The outcomes of the assessment enable means to reduce, remove and prevent such impacts from occurring. Alongside the identification of adverse socio-economic impacts, the assessment will also evaluate means to maximise potential beneficial impacts of the proposed expansion, which may include impacts such as employment and business opportunities, improved standards of living and community upliftment, education and training, among others.

The anticipated impacts will be considered in both direct and indirect terms. Types of impacts to be examined would include direct economic impacts (in terms of revenue, taxation, balance of payments and balance of trade, employment, including job creation and job retention) and indirect economic impacts (expenditure in related and supporting industries, suppliers etc., skills and technology upgrading impacts, further job creation). From the social impact side, issues such as the displacement of existing socio-economic activities, impact of pollution, noise, traffic congestion, implications for bulk infrastructure capacities, tenancies and relocations, obstruction of views and health hazards will be investigated. Empowerment, skills development and social responsibility programmes will also be addressed and may be identified as mitigation measures for negative social impacts, if any. A cost-benefit analysis will be undertaken taking full account of the costs and benefits to airport stakeholders including users of the expanded airport facilities in the case of the “expansion option” and of the restricted airport facilities under a “do nothing / no action option”. This analysis will be municipal wide.

The social impact assessment will:

- Describe the nature of the receiving socio-economic environment (status and state)
- Identify and describe likely impacts
- Identify potential mitigation and management measures
- Assess the significance of impacts via an accepted assessment methodology for pre and post mitigation scenario.
- Provide recommendations regarding management and mitigation – these will feed into the EMP.

It is important to ensure that the social impact assessment is integrated with the other specialist studies in order to achieve the following:

- Identification and assessment of cross cutting issues and cumulative impacts.
- Ensure co-ordination between investigations that rely on outputs from other studies. For example, the socio-economic assessment will rely on outputs from the noise study, the cultural assessment, the PPP, the economic investigation and property valuation assessment.

- Make the linkages between the impacts to the biophysical environment and the resultant consequence for human users, for example changes in air quality that impact nearby residents.

Development takes place within socio-ecological contexts where the various elements are interrelated. The scoping phase has tried to build understanding of these in the project context. A common criticism of the EIA process is that the specialist investigations fail to take these relationships into account.

In this case, there are also various feasibility and planning investigations under way that have bearing on the EIA phase, and vice versa. Figure 1920 shows the relationship between the various specialist investigations, the planning and feasibility studies, and the EMPR.

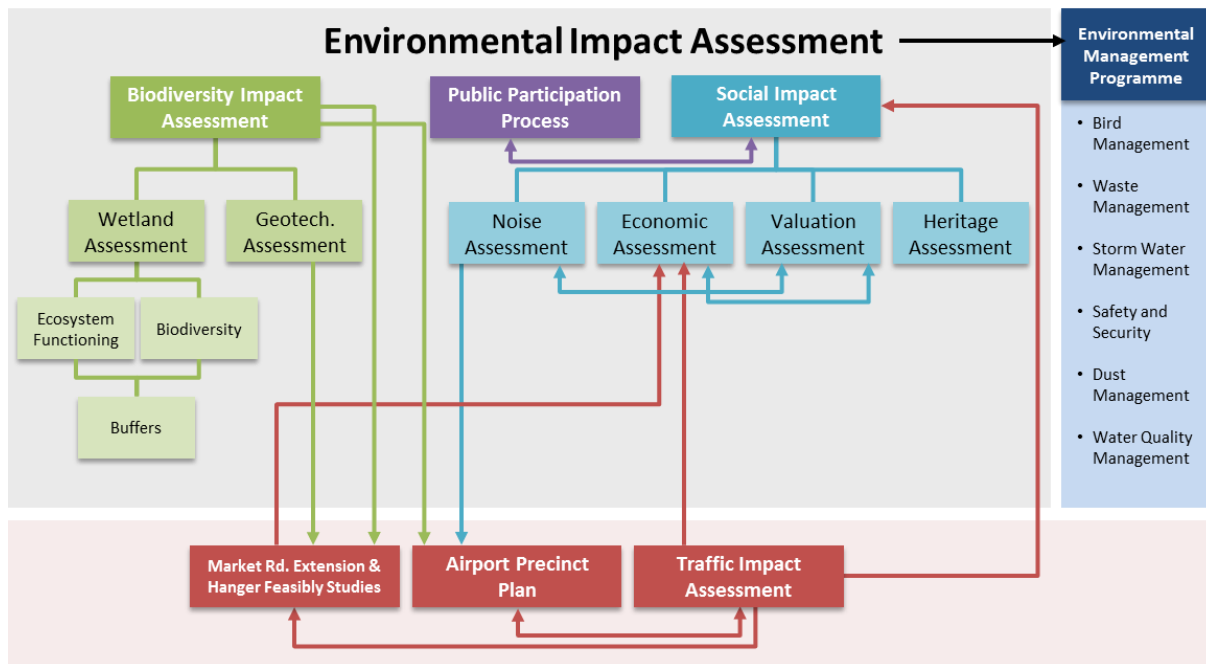


Figure 19: Network of the EIA specialist studies

10.3. Terms of Reference for EIA

10.3.1. Wetland Assessment

Objective

The primary objective for the wetland assessment is to provide specialist input into the planning process.

Approach

Once detailed plans are available the assessment of potential impacts on wetlands will be undertaken (i.e. the EIA process). The wetland assessment will initially provide specialist input into the planning process and once detailed plans have been finalized the findings from the assessment will then be taken into consideration for the EIA process. The study will involve;

- the delineation of the wetland zones (i.e. temporary, seasonal and permanent zones) of all wetlands identified on site;
- A WET-Health Assessment (level 2);
- A WET-Ecoservices Assessment (level 2); and
- The provision of recommendations regarding appropriate buffers for all identified wetlands.

Output

A detailed report on the functionality and health of the wetland ecosystems.

Timeframe

2 weeks

Specialist

Institute of Natural Resources

10.3.2. Geotechnical Assessment

Objective

To undertake a basic geotechnical assessment for founding conditions as required for the proposed Airport Expansion Project.

Approach

Areas to be investigated include the:

- Proposed Washington Road – 3.25km
- Proposed Market Road – 2.17km
- New General Aviation Warehouse – Alternative I and II
- Industrial Zone
- Landside Development Zone
- Car Park
- Passenger Terminal Facilities
- Open Space east of the runway

The assessment will be a combination of field investigation, laboratory testing and a detailed description of the geology of the site, recommendations on the founding conditions and bearing capacities for the structures, shallow and perched ground water conditions and ease of excavation for foundations and along the road alignments.

A series of forty-eight (48No.) trial pits will be mechanically excavated making use of a Tractor-loader-backhoe (TLB). The trial pits will be geotechnically characterized by a professionally registered Engineering Geologist using recognised methods and guidelines for soil and rock profiling. Trial pits will be backfilled after the investigation using the “last-out-first-in” method. The representative disturbed samples will be retrieved from the trial pits and submitted to Soilco Materials Investigation (Pty) Ltd, a SANAS accredited laboratory for geotechnical testing.

In the structural development zones, twenty-eight (28No.) trial pits will be excavated in the designated development zones to a maximum investigation depth of 3.00 below NGL or to earlier refusal. Twenty-eight (28No.) Dynamic Cone Penetrometer (DCP) tests will be conducted adjacent to the trial pits in order to empirically derive the estimated allowable safe bearing pressures of the underlying subsoils. DCP tests will be conducted to depths of 3.00m or to earlier refusal and a full grading analysis (including hydrometer), Atterberg Limits 15No. laboratory test will be undertaken.

The investigation will also extend the Road Prism. Approximately twenty (20No.) trial pits will be excavated at suitable intervals along the proposed road alignments and car park, to a maximum investigation depth of 1.00 below NGL or earlier refusal. DCP tests will be conducted adjacent to the trial pits to a maximum depth of 1.00 m below NGL or earlier refusal.

Provision has been made for the following laboratory tests:

Grading analysis, Atterberg Limits	6No.
Maximum Dry Density (MOD AASHTO)	6No.
California Bearing Ratio (CBR)	6No.

Output

The final report will include:

- A locality plan indicating the trial pits positions.
- Trial pit profile descriptions will be reproduced using DotPlot, indicating the presence of groundwater and the coordinates of each trial pit.
- Results and interpretations of all surface exposures.
- The results and interpretation of the laboratory testing will be included.
- Suitability and categorisation of the in-situ material for use in the road layerworks.
- Comments and recommendations regarding founding conditions for structures.
- Rock levels and groundwater level conditions (perched/permanent).

Time frame

The final geotechnical report will be issued upon receipt of the laboratory test results, within 5 weeks of appointment.

Specialist

Terratest

10.3.3. Noise Impact Assessment

Objective

To characterize the noise environment and monitor the current baseline and measure the efficacy of future noise emission reduction strategies.

Approach

Noise has been identified as one of the most significant environmental aspects of an airport. In order to monitor the current baseline and measure the efficacy of future noise emission reduction

strategies, a specialist study (Environmental Noise Impact Assessment) is required. Such a study comprises baseline noise assessment (Phase One) and an integrated noise model (INM) (Phase Two) which will evaluate aircraft noise impacts in the vicinity of the Pietermaritzburg Airport and a noise management plan (possible Phase Three). IMA Trader 20 cc (IMA) will conduct the noise specialist study in three phases as outlined below.

Phase 1: Baseline Noise Assessment

- a) Noise Impacts associated with the proposed development will be assessed in accordance with SANS 10103:2004 (updated 2008) which is the Code of Practice for the determination and limitation of disturbance around and aerodrome due to the noise from aeroplanes.
- b) Focused noise measurements using a SANAS-calibrated CasellaCEL™ sound level meter will be conducted at a fifteen (15) minute intervals during day- and night-time periods, with the daytime period commencing at 06:00 and ending at 22:00 and the night-time period commencing at 22:00 and ending at 06:00, as described in SANS 10103. All sound level measurement procedures will be undertaken according to the relevant South African Code of Practice SANS 10103. Sound level measurements will be taken with an SABS-calibrated Type 1 Integrating Sound Level Meter and monitoring results will be compared with the relevant guideline rating levels as provided in SANS 10103.

Noise parameters to be recorded include:

- LAeq The equivalent continuous sound level normally measured on an A-weighted decibel scale.
 - LAmx The maximum sound pressure level of a noise event, normally measured on an A-weighted decibel scale.
 - LA90 This parameter indicates the noise levels the receiving environment is exposed to 90% of the time.
 - LA10 This parameter indicates the noise levels that the receiving environment will be exposed to 10% of the time.
- c) A minimum of thirty measurements will be strategically selected from the identified receptors, where measurements will be taken whilst aircraft are landing and take-off, and with no aircraft noise to offer comparison. Measurements will be taken over a working week day and weekend for comparison (both day and night). Based on consultation with I&APs and ATNS, two areas along the typical flight path were identified as potentially having the greatest exposure to noise impacts associated with commercial aircrafts (Figure 201 below) – namely the i) areas surrounding the airport, and ii) areas along the extended flight path that (which are at higher elevations, and therefore higher exposure than other areas along the flight path).

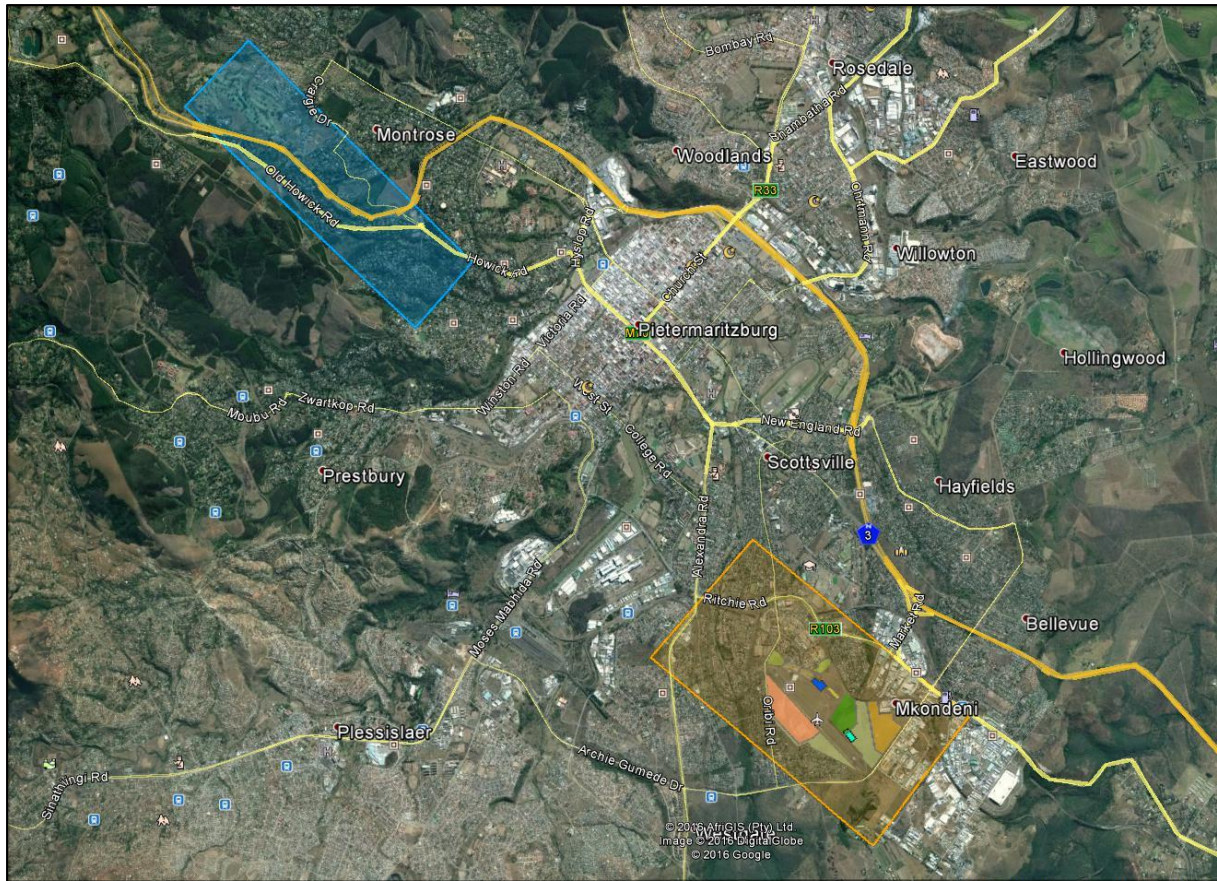


Figure 20: Study areas for the Noise Impact Assessment and the Property Valuations Assessment (ORANGE - area surrounding the airport; BLUE - highly impacted areas along the flight path)²¹

Based on these two study areas, monitoring points will include areas surrounding the airport (including residential areas and sensitive receptors such as schools) and areas along the extended flight path (including residential areas such as Wembley and Worlds’ View, and sensitive receptors in those areas). Monitoring points will also include areas along the flight path that area not within the defined study area (for example sensitive receptors and residential areas in Hilton). The baseline measurements will account for aircraft noise as well as other airport noise, such as movement of maintenance vehicles, etc. Extraneous noise from local roads will also be identified separately (including non-airport noise). Long-term meteorological data will be obtained from the automatic weather station run by The South African Weather Service at Pietermaritzburg Airport to analyse typical wind fields and patterns dominating each study area. Wind field conditions will be measured and noted at all survey points as this is a critical determinant of sound transmission.

Note. The purpose of the baseline assessment is not to verify the model as the baseline measurements will include noise from sources other than aircraft.

Phase two: Integrated Noise Model

- a) An Integrated Noise Model (INM) is the recognised model in the SANS Code of Practice for Airport Noise SANS 10117. The model will be used to generate noise contours (noise

²¹ These study areas were defined based on input from I&APs and consultation with ATNS (refer to Appendix 3: PPP Report – Appendix 17 for further detail).

footprint) for the airport indicating current noise levels as well as a noise footprint once the airport upgrade has been completed. The modelling will take into account the new airplane flight paths for landing and take-off scenarios as well as possible increase flights and noise from a different category or model of aircraft. Aircraft ground operations can also cause noise nuisance to communities living close to airports.

- b) Modelled noise levels will be compared against the criteria in SANS 10117 and SANS 10103. SANS 1013 (the Code of Practice for the Measurement Rating of Environmental Noise with respect to Land Use, Health, Annoyance and Speed Communication), which gives an indication of the criteria for an assessment of annoyance. SANS 10103:2003 recommends maximum noise levels for residential and non-residential areas. This Code of Practice lists the recommended maximum ambient sound levels which should not be exceeded, which include corrections for tonal character and impulsiveness of the noise. This is also known as the rating level for the ambient noise (Lr).

Note. The model will not include an assessment of the noise generated during the construction phase of the proposed development.

Phase three: Noise Management Plan

- a) All relevant environmental noise data will be collated into an appropriate database and GIS format. A basic GIS raster surface grid map of the proposed site and surrounding areas will be created using GIS grid tools to produce a blanket coverage output. Once all additional data from the aforementioned noise study has been collated in to a GIS, the development will be classified as having a high-, medium- or low-risk impact on selected receptors and surrounding areas. General limitations will be assigned based on the impact of the noise pollution or nuisance on possible sensitive receptors.
- b) A management plan will be compiled to summarise the data sources, information obtained, and interpretation at a strategic level, limitations and recommendations for further study as well as mitigation measures for inclusion in the project design as well as during operation of the airport.

Phase 1 will be conducted, and decision to proceed with Phase 2 (modelling) will only be taken once the outcomes of Phase 1 have been considered. Phase 2 will be proceeded to if:

- it is anticipated that there will be a change in the size of aircrafts (that have a greater noise output than existing aircrafts);
- there is a change in the flight path (newly affected areas); and/or
- new flight times that will generate an impact after 22h00 and before 06h00.

Likewise, Phase 3 (Noise management Plan) will only be necessary should the outcome of Phase 2 indicate this.

Output

With respect to the project outcomes, IMA will meet the following deliverables:

- PHASE ONE: Baseline characterisation of the receiving environment;
- PHASE TWO: Integrated noise model and predicted impact assessment (*if proceeded to*);
- PHASE THREE: Noise Management Plan (*if proceeded to*);

Specialist

IMA Trader 20 cc

10.3.4. Economic Impact Assessment

Objective

To assess the economic impact of the proposed development on the output, income and employment within the local and regional economy.

Approach

The approach will include:

- An analysis of projects viability for its external effects on the local, regional or national economy. These effects include any change in gross output, value added, remuneration and employment.
- The methodology to be employed is Input- Output (I-O) analysis demonstrating inter-industry relationships in an economy. It shows how the output of one industry is purchased by other industries as well as households, government and exporters. It also shows each sectors expenditure on factors of production, capital and labour, and imports. I-O analysis quantifies the direct and indirect effects of one sector on other sectors and the general economy. I-O modelling can be used, for instance, to indicate the effects of net new investment on the regional economy, including new jobs generated.

In view of the limitations of I-O analysis, with respect to the Pietermaritzburg Airport expansion the approach will consider:

- An initial impact, net new investment, will be spread over a long period (10 or more years) and will consist of a range of projects in different sectors (aeronautical, high tech manufacturing, educational, hotels, business services).
- A considerable uncertainty about the timing and scale of this investment.
- An appropriate and concurrent model is not readily available to produce accurate and reliable predictions for a project as diffuse as the airport expansion.
- There are other technical limitations to I-O models such as assumptions of given prices, no capacity constraints, no capital restrictions and all job created being new and not replacing redundant jobs elsewhere.

Output

Economic Impact Assessment Report

Specialist

George Oldham

10.3.5. Property Valuations

Objective

To determine the impact of the proposed development on the property in the surrounding areas.

Approach

Mills Fitchet Africa Pty Ltd will quantify the impact on property values in the existing and newly impacted areas surrounding the airport, and those affected by noise levels along the increased incoming/outgoing flight paths. The scope of work will include the existing Pietermaritzburg (Oribi) Airport and newly affected surrounds, with particular reference to the flight paths and areas where the noise levels are considered to be a nuisance factor that would impact on property values (refer to the study areas defined Figure 20 above).

The approach to achieve the above will include:

- a) Identification of the properties in the surrounding affected areas, and the incoming and outgoing flight paths using GIS (Global Information System), namely Arc Map, including aerial photography and cadastral overlays.
- b) A detailed research on the current property values in currently affected surrounding areas and flight path areas (prior to expansion), and compare to similar properties in un-affected areas.
- c) Use of the deeds office data on the latest property transfers in the study areas to determine the latest property values.
- d) A comparison will be drawn between similar properties in similar/homogenous neighborhoods, in the affected and un-affected areas, based on current market values.
- e) The effect on property values will be quantified in terms of the differential in property values in monetary terms in the affected and un-affected areas, and expressed as a percentage.
- f) This percentage will then be applied to similar properties in the areas that will be similarly affected by the proposed airport expansion project, to determine the expected impact on property values.
- g) Differentiate between different property types, for example Residential, Commercial, Industrial etc, and consider the unique effects on them where applicable.

Output

Property valuation Report

Time frame

This valuation assignment is expected to be completed in 8 weeks.

Specialist

Mills Fitchet Africa Pty Ltd

10.3.6. Traffic Impact Assessment

Objective

To understand the demands placed on the community's transportation network by the proposed development.

Approach

The traffic impact assessment will be undertaken by Royal HaskoningDHV considering the key traffic issues to be:

- **Accessibility:** this entails ensuring that convenient and efficient access to the proposed development is secured in the interests of entrenching the viability of the project. This accessibility investigation will extend as far as the highest order roads e.g. the N3.
- **Traffic Impact:** All affected elements of the existing road network are to be tested to determine the likely traffic impacts and, should these be significant, mitigation measures are introduced and the road elements retested. This process ensures that the proposal will not negatively impact existing traffic operational quality and will seamlessly become part of the fabric of the localised area.
- **Public Transport and Non-motorised transport:** the opportunities for these aspects of the transport system will be afforded consideration in the study with a view to actively promoting their worth.
- **Safety:** in all of the above public, pedestrian and motorist safety will underscore any recommendations which emerge from the traffic impact study.

The methodology of the traffic study will follow the classic approach and be in accordance with the National Guidelines for Traffic Impact Studies. Principally the following is a step approach which will be followed:

- Traffic data collection
- Site visit, photos, measurement
- Data analysis / diagrams
- Traffic generation, distribution and assignment
- Access condition assessment
- Traffic engineering analysis
- Traffic impact assessment
- Mitigation measures (if any)
- Accessibility assessment
- Public transport and Non-motorised transport
- Safety analysis
- Report and drawings.

Technically, four scenarios will be created for analysis, ie 2016 existing, 2016 full development, 2021 no development and 2021 full development.

Output

Report and drawings.

Specialist

Royal HaskoningDHV

10.3.7. Heritage Impact Assessment

Objective

- To compile a comprehensive inventory of archaeological sites historic buildings and structures within the proposed project area, which include
- To identify the direct and indirect impacts on the site of cultural heritage at the planning stage in order to avoid causing any negative effects.

Approach

The HIA will be undertaken by eThembeni Cultural Heritage (ECH) which is another local company with a wealth of experience in the province and Pietermaritzburg. The HIA will consider all cultural resources as defined under the South African Heritage Resources Act No 25 of 1999, which defines a heritage resource as any place or object of cultural significance i.e. of aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technological value or significance. The proposed approach and scope of work is as follows:

- The identification and mapping of all heritage resources in the area affected
- An assessment of the significance of such resources in terms of the heritage assessment criteria set out in regulations;
- An assessment of the impact of the development on such heritage resources;
- An evaluation of the impact of the development on heritage resources relative to the sustainable social and economic benefits to be derived from the development;
- The results of consultation with communities affected by the proposed development and other interested parties regarding the impact of the development on heritage resources;
- If heritage resources will be adversely affected by the proposed development, the consideration of alternatives; and
- Plans for mitigation of any adverse effects during and after completion of the proposed development.

Output

The Heritage Impact Assessment study will produce a report describing the cultural heritage within the area that may be adversely affected by the proposed project.

Specialist

eThembeni Cultural Heritage (ECH)

10.4.PPP Plan of Study for the EIA phase

The PPP to be conducted in the Environmental Impact Assessment (EIA) phase is designed to achieve three key objectives:

- i. To adequately inform Interested and Affected Parties (I&APs) of the proposed development plans and options, and the status of the application.
- ii. Enable I&APs to comment on draft reports.
- iii. Gain the visions and perceptions of I&APs to advise the specialist assessments and to inform the proposed development planning and ensure appropriate growth of the study area.

This informative and engaging approach is adopted to ensure the commitment and buy-in of all I&APs, both within and outside the precinct study area. The PPP is to be conducted by the Institute of Natural Resources NPC (INR), the S&EIA environmental consultants.

The PPP to be conducted in the EIA Phase will involve the activities detailed in the sub-sections to follow.

10.4.1. Notify Registered I&APs of the Authorities Decision to Proceed to EIA

Upon finalization of the ESR and the C&R report, and confirmation from authorities to proceed with to the EIA, I&APs and the public will be notified of this development. Notification will be made via direct contact (email and/or SMS) to registered I&APs. In addition, the notice, along with the ESR and C&R reports, will be placed on the INRs website for public access.

10.4.2. Circulate Draft EIR for Comment

Specialists will finalise their reports based on the outputs of the workshops, which will then be integrated by the INR into the Draft EIA along with the PPP report. The EIR will also include the draft Environmental Management Programme (EMPR). Specialist reports will be included as appendices to the EIR.

The draft EIR will be presented at a public meeting and made available to I&APs to comment. In addition, the draft EIR will be circulated to I&APs electronically via email and made publically available on the INR website. Hard copies of the draft report will also be made available at publically accessible locations within the area surrounding the PMB Airport, with notifications of its availability sent via SMS to I&APs that do not have access to email. Key role players will be provided with a hard copy of the main draft report, as well as a soft copy (on CD) of the full draft EIR. A 30 day comment period will be provided for I&APs, public and role players to provide comment on the draft EIR.

10.4.3. Compile Comments and Response Register

The outcomes of the public meeting and comments on the draft EIR will be incorporated in a C&R Register, and provide a record of the relevant response (either through a direct response or by indicating where in the revised EIR the comment has been tended to). This C&R register will be circulated with the final EIR.

10.4.4. Compile PPP Report

A PPP Report will be compiled at the end of the process to document the process undertaken, indicated the I&APs and role players engaged in the process, and provide records of all engagement (public meetings, comments and responses, advertisements, etc.).

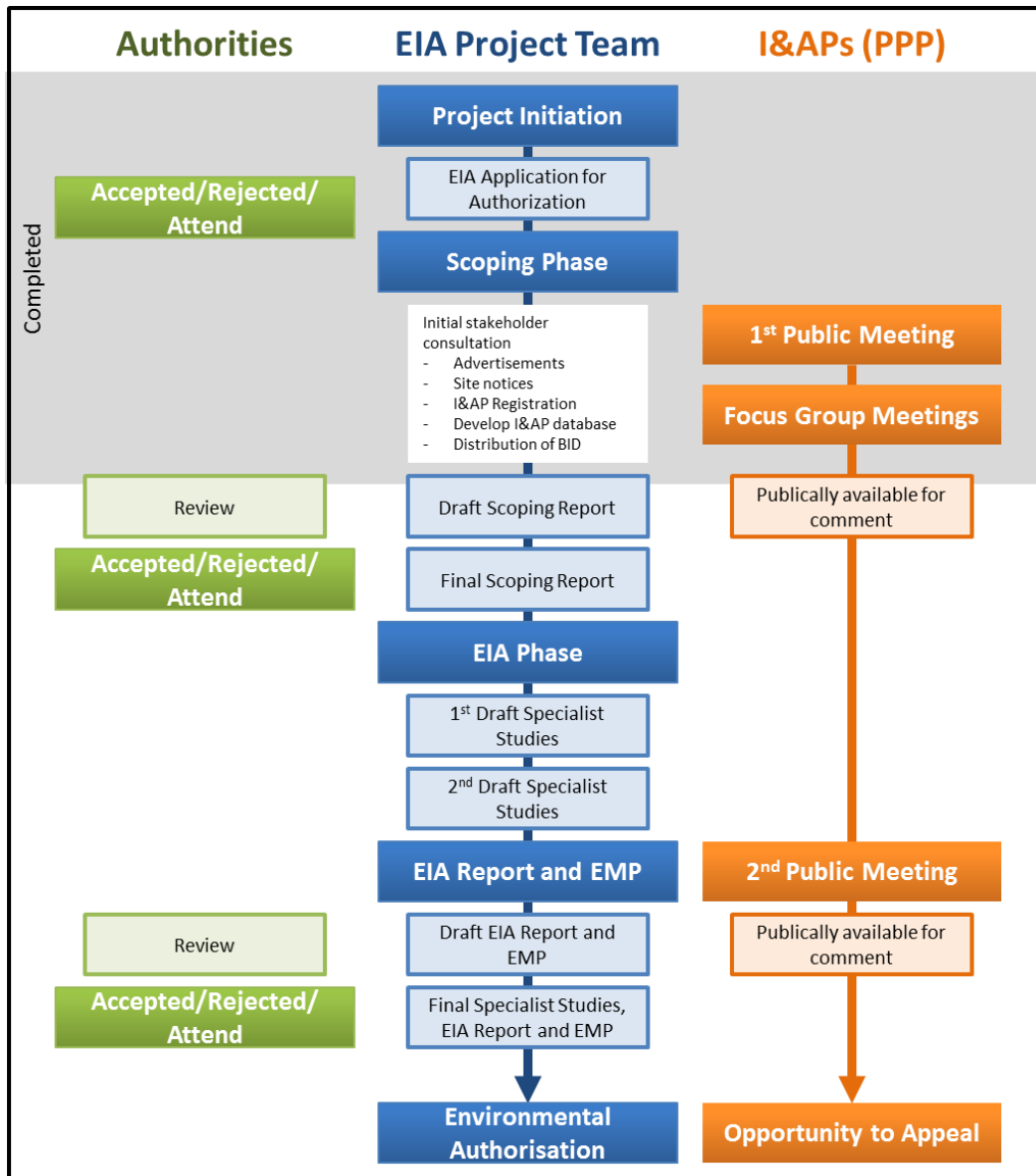
10.4.5. Advertise and Notify I&APs of RoD

Upon finalization of the EIA, all registered I&APs will be notified of the Record of Decision (RoD) directly (via email and/or SMS) and informed about how they may obtain copies. The notification will also be placed at publically accessible locations within the area surrounding the Pietermaritzburg Airport, and be made available in the press. As required, I&APs and the public will also notified of the appeal process.

10.5. Assessment Methodology

An EIA is a systematic approach of identifying and evaluating potential positive and negative impacts of a proposed development on the socio-economic and biophysical environment. The process also enables the identification of mitigation measures aimed aim to minimise and or avoid the potential

negative impacts and enhance the positive impacts. The EIA process is comprised of a series of stages within three main phases; that is the Scoping Phase, Specialist Study Phase and Integration and Assessment Phase. Activities in the three phases run in parallel to each other. The diagram below indicates methodology that has been and will be applied in assessing the significance of the issues and impacts identified (the grey box indicates what has been conducted thus far).



As indicated, the **Scoping Phase** of the assessment has been conducted, with the process amalgamating in this report (**Environmental Scoping Report**).

Specialist studies will be initiated in the **EIA phase** to provide the information necessary to respond to the key issues associated with the proposed project. Each specialist will undertake a detailed investigation to analyse the current situation and assess the various impacts in terms of their anticipated magnitude guided by a methodology in the terms of reference in the Scoping Report. The approach involves gathering of baseline data for identifying and assessing the potential socio-economic and biophysical impacts resulting from the proposed development. The aim of the

specialist study phase is to provide information on the positive and negative impacts associated with the project. The specialists will also recommend mitigation actions that may either enhance potential benefits or minimize negative impacts.

After revision and finalisation of the specialist studies, they are then amalgamated and integrated into the **EIA Report and the EMP**. During this phase, the project team will i) determine the significance of the anticipated impacts on the receiving environment, ii) develop mitigation (negative impacts) and enhancement (positive impacts) measures (which will be included in the EMP), and iii) assess the residual significant impacts (after the application of the mitigatory measures).

To define the significance of identified impacts (the magnitude of the impact and the likelihood of the impact occurring), baseline data will provide that platform for evaluating and describing their extent and nature. Various types of impacts can be anticipated, such as: positive, negative, direct, indirect or cumulative. A systematic approach will be applied to determine the types of impacts anticipated. The criteria used to determine the significance are related to the impacts:

- **Extent** (on-site, local, regional and/or national),
- **Duration** (temporary, short-term, long-term and/or permanent) and
- **Intensity** (negligible, low, medium or high – in relation to the biophysical or socio-economic environment).

Once an assessment is made, the impact **significance** (negative or positive) is rated through a matrix process where the **magnitude** (negligible, low, medium or high) is considered in relation to the **likelihood** (unlikely, likely or definite).

The systematic approach provides a degree of confidence in the assessment, proving backing and logic in the case of uncertainties (where information is insufficient to assess the impact).

It is acknowledged that an EIA is an assessment of future impacts and consequences, which inevitably leaves room for uncertainties due to unknown and unpredictable variables. Therefore, even though impact predictions are based on scientific studies and methodical assessments, some uncertainties will not be able to be entirely resolved. Where significant uncertainty is apparent, it will be indicated and a level of uncertainty provided. Where possible, in the case of uncertainties, the assessment will indicate limits of the maximum likely impact and provide mitigation measures to avoid unknown impacts. In consideration of the above, a conservative approach will be adopted in assessing and determining the level of significance.

Finally, the EIR will be compiled, with the specialist and relevant technical studies included as appendixes. The **Draft EIR** will be made available for public comment and review by authorities, after which it will be amended accordingly, based on the authorities' decision. There will be a second Public Meeting in which the Draft EIR (outcomes of the EIA) will be presented, providing I&APs with the opportunity to provide comment. A record of all comment and engagements will be documented into a PPP Report, which includes a comments and response register, and provided as an annexure to the EIR. Upon issuing of the **Environmental Authorisation** by the Department, all I&APs will notified and be given the opportunity to **appeal** the decision.

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12. APPENDIXES

12.1. APPENDIX 1: EAP Curriculum Vitae

David Cox

Personal Data

Nationality:	South African
ID Number:	7206085158083
Date of Birth:	8 June 1972
Place of Birth:	Port Shepstone, South Africa
Place of Residence:	Nottingham Road, KwaZulu-Natal, South Africa
Marital Status:	Married (3 children)

Education and Professional Training

Institution	Qualifications	Year
University of Natal, Pietermaritzburg S.A.	Masters in Environment & Development <i>(Thesis Title: The Mooi-Mgeni Transfer Scheme: Developing a model for off-site mitigation of wetlands)</i>	1999
University of Natal, Pietermaritzburg S.A.	B Soc Sci (Geography, Law Majors)	1995

Other Training

- GRI Certified Sustainability Reporting 2011
- GRI Indicators Reporting 2011

Key Experience and Expertise

Environmental Planning, Assessment and Reporting

A primary focus area of David's experience is environmental planning, assessment and reporting. He has worked with the full range of Environmental assessment and management tools across the development life cycle. At a strategic level David has been involved in State of Environment Reporting (SoER), Strategic Environmental Assessment (SEA) and he has a keen interest in the interface between development and environmental planning. At a project level David has been involved in feasibility, due diligence and risk assessments for specific projects. He has led numerous Environmental Impact Assessments (EIA) and been responsible for the development and implementation of Environmental Management Plans and Programmes (EMPs). David's experience in such work has been as the project leader. He also has a comprehensive understanding of the relevant regulatory processes, key environmental issues and has managed the stakeholder participation process in the projects he has undertaken. He is experienced in managing large multidisciplinary teams and integrator of specialist inputs.

Institutional Development and Governance

David's training included a legal component which he has applied in work with all spheres of government in improving institutional co-ordination, environmental governance and legal compliance. This experience has involved analysis of the existing institutional structures, roles and responsibilities and co-ordination role-players. He recent projects include the development of National EIA guidelines for social infrastructure projects, a guideline model for improved application of the EIA regulations in relation to local economic development activities by Municipalities, a framework for mitigation banking as a mechanism for wetland conservation in South Africa, and recommendations for the institutional component of the National Biodiversity Strategy and Action Plan. David was also involved in a review of the institutional structure and operation of Resource Use Management Programmes within the provincial conservation organisation. David also provided input to the development of the Province's Environmental Implementation Plan in 2008.

Natural Resources Management

David's master's thesis focussed on wetland assessment and developing a model for off-site mitigation of wetlands. He has built on his experience and skills in the area of natural resources management across terrestrial and water resources with a specific focus on wetlands. His consulting and research projects have involved wetland assessments, the planning of wetland offsets and the investigation of alternative mechanisms for addressing the impact to wetlands, such as mitigation banking. This experience spans consulting and research projects concerned with the development of policy, and tools focussed on improved NRM, with several projects focussed on Integrated Water Resources Management. His general water resource management experience includes several projects focussing on the improved participation of local government in IWRM, and he has undertaken capacity building work with municipalities on IWRM. David's has also worked on several projects which have focussed on the development of decision support tools and mechanisms to facilitate effective integrated water and wetland resources management (IWRM). Examples include incorporation of economic considerations into the determination of the ecological reserve for rivers and the stakeholder consultation component of a protocol for the determination of resource quality objectives for water resources.

Consultation and Participatory Processes

Public participation is a specific requirement of the IEM field. Apart from experience in managing this process in related projects, the majority of David's other work has involved varying degrees of interaction with a wide range of stakeholders including government officials and authorities, rural communities, the private sector and NGOs. Much of this experience is related to work in the Water Sector, notably recent development of the stakeholder consultation component of the national protocol for establishing resource quality objectives for water resources. He has also worked at grass roots levels with affected communities in impact assessments and landowners regarding the implementation of wetland offsets.

Project Management

In his role at the INR, David has been responsible for all aspects of project management, from financial management and final reporting, to co-ordinating large interdisciplinary teams, and being responsible for client liaison and final reporting.

Language Skills

* *underline mother tongue*

** : 1=very good, excellent; 2=good; 3=fair; 4=basic, 5=no knowledge

Language	Speak	Write	Read/Understand
<u>English</u>	1	1	1
Afrikaans	3	3	3

Memberships

IAIAAsa (International Association for Impact Assessment, SA affiliation - KwaZulu-Natal Branch: Current Chairman)

Work Experience

Organisation	Institute of Natural Resources
Position June 2008 - present South Africa, KwaZulu-Natal	Principal Scientist Programme Leader: Integrated Environmental Management (IEM) Programme Responsibilities: <ul style="list-style-type: none"> ▪ Generating work through relationship building, writing research proposal, responding to tenders, profiling the organisation and contributing to strategic direction of the organisation. ▪ Guiding the development of the IEM programme. ▪ Research – leader. ▪ Project Management <ul style="list-style-type: none"> - Client Liaison – technical and financial progress reporting. - Management of sub-consultants – preparing terms of reference, managing quality of final products. - Final reporting – preparation of final reporting for projects. ▪ Mentoring of junior staff.
Position June 1999 – June 2008	Principal Scientist <ul style="list-style-type: none"> ▪ Generating work through proposal writing and responding to tenders.

Senior Scientist	<ul style="list-style-type: none"> ▪ Research - leader and analyst. ▪ Project Management <ul style="list-style-type: none"> - Client Liaison – monthly reporting (progress and financial) - Management of sub-consultants – preparing terms of reference, managing quality of final products - Final reporting – preparation of final reporting for projects.
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Project Experience

CLIENT	PROJECTS EXPERIENCE
Environmental Planning, Assessment and Reporting	
Industrial Development Corporation	Proposed Forestry Expansion in the Eastern Cape Managed the environmental component of a scoping process for proposed development of 24 projects covering approx. 1500ha. Reviewed existing studies to identify key environmental issues, legal requirements and make recommendations regarding further investigation.
De Beers Consolidated Mines	Compliance Review of Alluvial Diamond Mining, Operations Undertook a review of compliance with conditions of environmental authorisation and environmental management programme for diamond mining operations on the Vaal River in the Northern Cape.
The Planning Initiative/ Ethekewini Municipality	Development of a Functional Area Plan and Draft Scheme for the Tongaat and Inyaninga Areas Responsible for the Environmental Sector report which provided spatial definition of the open space system (OSS), with associated principles and guidelines for defining the open space in the functional area plan. The report also included guidelines for detailed planning and conditions of approvals that give effect to the aim and objectives of the OSS.
Eskom	Development of an Environmental Constraints Framework to inform ESKOM Master Planning Project leader responsible for developing and ECF to inform Eskom master planning for Transmission infrastructure in the North Eastern Region of KwaZulu-Natal. An SEA approach was followed in establishing the environmental opportunities and constraints. The approach considered the major components of the Environment (Social, Cultural, biophysical) in terms of both the impact of the environment on Eskom and the impact of Eskom on the environment.
Virtual Consulting Engineers	Basic Environmental Assessment for the Extension of the Tongaat Trunk Sewer Line Project leader for managing the environmental application and assessment of the extension of the Tongaat Trunk sewer Line to link the King Shaka International Airport and DubeTradePort with the regional Tongaat Waste Water Treatment Works.
uMshwathi Municipality	Environmental Management Framework for Mshwathi Municipality. Project leader for development of an environmental management framework for a 20 000ha proposed development node and consolidating the outputs of the Strategic Environmental Assessment into a range of products including Environmental Sensitivity zone and guidelines, Development Planning Guidelines and a strategic environmental management plan designed to address key sustainability issues identified in the SEA.
The Planning Initiative	Environmental component of Rezoning Application for Mount Moreland. Provided environmental input to planning of rezoning application. This input was based on a baseline ecological assessment. Also provided an assessment of the impact of the proposed rezoning application.
Ezemvelo KZN Wildlife	Due diligence Assessment for Proposed Re-development of Royal Natal and Spioenkop Nature Reserves. Responsible for environmental component of a due diligence assessment for the proposed re-development of infrastructure at two nature reserves by the provincial conservation authority.
ACSA	King Shaka International Airport Fuel Storage Facilities: Ground & Surface Water Risk Assessment Responsible for co-ordinating and compiling the risk assessment which was a condition of the authorisation for new KSIA.
Dube-Tradeport	Basic Environmental Assessment for the Proposed Extension of the Tongaat Trunk Sewer Line Responsible for managing the Basic Environmental Assessment process for the extension of bulk sewer line to link the new King Shaka Airport and Dube TradePort to the Tongaat Waste Water Treatment Works.
De Beers Consolidated Mines	Environmental Impact Assessment for proposed Alluvial Diamond Mining Project manager for EIA for proposed mining by De Beers on the Vaal River within Rooipoort Nature Reserve in the Northern Cape Province. Responsible for managing the EIA process, commissioning and co-ordinating specialist input, the public participation process, budget, client liaison and the final reporting.
National Ports Authority	Environmental Impact Assessment - Berth 306 Port of Richards Bay Project manager and lead consultant responsible for providing the following Environmental Services for the Construction of Berth 306 in the Port of Richards Bay: <ul style="list-style-type: none"> - Management of the EIA process. - Development of an Environmental Management Plan (EMP) - Development of an Biomonitoring Programme (BMP) - Monitoring and auditing of the implementation of the EMP and BMP - Identification and management of the licensing process for an offshore borrow site.
TPA Con-	Basic Environmental Assessment and Environmental Management of new local access roads in KwaZulu-Natal Midlands.

CLIENT	PROJECTS EXPERIENCE
sulting/ Department of Transport	Management of the EIA application and scoping process (including public consultation), development of an EMP and monitoring of compliance during construction. Responsibilities also included management of specialist sub-consultants (heritage impact assessment and ecology), budgets, engaging relevant departments, client liaison and final reporting.
KwaZulu-Natal Agricultural Development Trust	Environmental Impact Assessment – Makhathini Cotton Farming Management of the Environmental Scoping Investigation for the proposed development of 2500ha irrigated agricultural estate on the Makhathini Flats. Preparation of application, commissioning specialist studies, management of budget and public participation process, and production of environmental scoping report.
Sappi-Saiccor	Environmental Impact Assessment - Temporary water Storage scheme on the Mkomazi River Management of scoping investigation into impacts associated with two temporary barrages on the Mkomazi River, aimed to ensure the supply of water to Sappi-Saiccor during drought periods. Responsible for management of specialist investigations and compilation of biophysical component of the environmental scoping report.
Impala Irrigation Board	Environmental Management of Paris Dam Member of team managing the environmental component for the development of Paris Dam by Impala Irrigation Board and DWAF. Duties include the preparation of an environmental management plan, developing rehabilitation plans and monitoring their undertaking. Also managed the team of specialist responsible for compiling the environmental operating rules and monitoring programme.
Traffic and Transportation Department, eThekweni Municipality	KwaMashu-Effingham Link Road: A Comparative economic, social and environmental assessment of alternative alignments through the Kenville area Managed a team who investigated the environmental, social and economic costs of two alignments through a residential area so as to advise a decision regarding the most suitable alignment. Responsibilities included commissioning specialist input, identifying impacts and issues and establishing costs and mitigation options for each. Collating information into a report, which compared the total environmental and social costs of the two alignments.
Cathedral Peak Hotel	Environmental Management Plan for Cathedral Peak Hotel Development of an EMP for the CPH which is a 400 hectare property located within the UkhuhambaDrakensberg World Heritage site. The EMP was required for the hotel to meet legal requirements pertaining to overall operation.
Imani-Capricorn	Assessment of environmental impacts of proposed infrastructural and tourism ventures along the Transkalagadi highway in Botswana Assessment of the environmental impacts associated with proposed infra-structural and tourism ventures along the Transkalagadi highway in Botswana.
Environmental Impact Management Services	Peaking Power Plant EIA: Ecological Assessment Provide consolidated ecological assessment (terrestrial and aquatic) for a proposed peaking power plant for two proposed sites near Durban, South Africa. Responsible for managing and integrating specialist studies (Aquatic and terrestrial), compiling consolidated report and managing the budget and client interactions.
Development Bank of South Africa /Imani-TMT Consortium	The C2C Corridor Development and Transport Study of Trans-Kalahari Highway Provided an assessment of environmental impacts as part of the feasibility study for the proposed tarring of the Trans-Kalahari Highway.
ENVIRONMENTAL GOVERNANCE	
National Department of Environmental Affairs	Development of EIA Guidelines for Social Infrastructure Projects Key team member responsible for developing a guideline to improve the efficiency and effectiveness of the EIA process as it relates to social infrastructure development. The guideline highlighted the importance of considering environmental issues in the planning phases, the EIA process, and the post environmental authorisation phase which is often overlooked. The guideline also focussed on better alignment of the EIA and other relevant regulatory processes, which is one of the key challenges in achieving compliance with the legal framework.
Uthungulu District Municipality, KwaZulu-Natal	Development of a Model to Streamline the EIA Process for Local Economic Development Projects in the Uthungulu District Municipality Project Leader responsible for development of a model that addresses the barriers and limitations of the EIA and other regulatory processes on the implementation of Local Economic Development Projects by municipalities. The Uthungulu District Municipality served as the pilot area.
Department of Agriculture and Environmental Affairs	Alignment of the application processes for Agricultural Activities under the Agricultural (CARA) and Environmental (EIA Regulations) Legislation The project aimed to improve the alignment between the legal processes governing the authorisation of agricultural activities. This involved stakeholder consultation and a legal review to determine the legal, institutional, logistical and broader issues resulting in illegal development and tension between role players (government, agric sector and environmental organisations). The outcomes included a model to ensure legal compliance, improved institutional and logistical efficiency and alignment of decision making between relevant authorities.

ENVIRONMENTAL SCOPING REPORT FOR THE PROPOSED EXPANSION OF THE PIETERMARITZBURG AIRPORT

CLIENT	PROJECTS EXPERIENCE
South African Department of Environmental Affairs and Tourism	<p>National Biodiversity Strategy and Action Plan – Institutional Component The NBSAP set out a framework and plan of action for the conservation and sustainable use of the country’s biodiversity. Responsible for stocktaking and assessment phase of the institutional component. This included a review of documentation and consultation with key role players in government and other relevant institutions. The information and feedback was analysed to identify key institutional issues and challenges against which recommendations were provided that informed the final outcome - action plan.</p>
DAEA	<p>KwaZulu-Natal State of the Environment Report Part of a team responsible for developing indicators for reporting on the status of the terrestrial environment (land and biodiversity) in the province. Responsibilities included collection, analysis and presentation of data for indicators associated with different terrestrial environments, as well as final main and relevant chapters of summary report.</p>
Department of Agriculture and Environmental Affairs	<p>Initial review of Section 24G Review applications Co-ordinated a review and analysis of over 800 applications for illegal development activities. Established and analysed a database of applications. Responsible for final report with recommendations to client for dealing with administrative inaccuracies and finalising the applications in terms of legal framework.</p>
NATURAL RESOURCE MANAGEMENT	
European Union	<p>Afromaison - Africa at meso-scale: adaptive and integrated tools and strategies for natural resources management Key team member responsible for developing INRM strategies for the South African Case Study area - the Uthukela District. A major focus was on integrating the research outcomes into practical application through appropriate planning instruments in the District, notably the Environmental Management Framework. An important focus of this work was the institutional alignment required to achieve integration.</p>
Trans-Caledon Tunnel Authority	<p>Mooi Mgeni Transfer Scheme Phase 2: Spring Grove Dam Wetland and Biodiversity Offsets Responsible for the planning of offsets to account for the loss of wetland, river and terrestrial habitats inundated by Spring Grove Dam. This involved a review of the loss within the basin and setting of offset targets in terms of offset policy.</p>
Isimangaliso Wetland Park Authority	<p>Development, Empowerment and Conservation in the Isimangaliso Wetland Park and Surrounding Region Part of a team responsible for a scoping investigation to identify the current state of the catchments and associated issues responsible for decreased freshwater supply to the Estuarine system. Responsible for catchment management specialist investigation and integrated report combining hydrology, geomorphology and literature review.</p>
European Union	<p>LoGo Water: Towards the effective involvement of Local Government in Integrated Water resources Management within the River Basins of the SADC Region The project involved collaboration between SADC based and European researchers and involvement of associated local governments within the 4 riparian states of the Limpopo River Basin. The research component was concerned with identifying and documenting the state of LG involvement in the SADC region, the limitations and barriers to improved involvement of LG and the development of a range of outputs (including tools and guidelines) aimed at overcoming the challenges and issues identified. The project also involved various awareness raising events including a regional workshop and international seminar.</p>
DWA	<p>Development of a Protocol for the Determination of Resources Quality Objectives for Water Resources Part of a team responsible for developing the protocol for setting RQO’s for all water resources in line with the national water act and water resource classification and reserve determination processes. David was responsible for the stakeholder consultation component of the project.</p>
Water Information Network Southern Africa	<p>Promoting the understanding of Integrated Water Resources Management (IWRM) Among Local Governments in the context of Water for Growth and Development The aims of the project as per the title was achieved through a process involving a workshop and learning journey. Responsibilities included the development of the workshop structure and content, development of background and supporting materials, facilitating the workshop proceedings, and drafting of a record of proceedings, project report and article summarising the event and key issues relating to the topic of IWRM and municipalities.</p>
Water Research Commission	<p>Assessing the Appropriateness of Wetland Mitigation Banking as a Mechanism for Securing Aquatic Biodiversity in the Grassland biome of South Africa The project involved a review of the mitigation banking concept as implemented in other countries (notably the USA) and an analysis of the strengths and weaknesses of the concept from the legal, institutional and ecological perspective. An analysis of the appropriateness of the concept to South Africa resulted in a proposed model considered appropriate for the local institutional and legal framework, with recommendations for avoiding the risks and harnessing the benefits associated with the mechanism. The final output was the identification of a pilot catchments and projects to pilot the proposed model and a broad framework for implementing the pilot.</p>
Water Research Commission	<p>Incorporating Economic Considerations in the Determination of the Environmental Reserve for Rivers Member of a team concerned with evaluating the use of a resource economics approach in contributing to the determination of the ecological reserve as described in the National Water Act, No 36 of 1998. The team developed a framework for incorporating economic considerations, developed and tested methods for valuing the ecosystem goods and services provided by Crocodile River in Mpumalanga South Africa.</p>
DWAF/ Umgeni Water	<p>Spring Grove Dam EIA - Specialist Investigation into the Impact on Wetlands and Associated Crane Populations Responsible for the investigation into the impact of the dam on wetlands and affected crane populations. Also required to</p>

CLIENT	PROJECTS EXPERIENCE
	make recommendations regarding for recommendations implementing off-site mitigation of wetlands within the catchment.
Water Research Commission	Off site mitigation for Wetlands Inundated by Spring Grove Dam Specialist investigation: responsible for identifying wetlands and securing agreement from landowners to rehabilitate degraded wetlands. This required mapping and assessing wetlands, landowner consultation, development of rehabilitation, monitoring and maintenance plans.
Department of Water Affairs and Forestry	Thukela Water Project Managing the environmental component of the Thukela Water Project for the feasibility level investigation. This role involved integration of specialist studies on the biophysical impacts, including the geomorphology, hydrology and aquatic studies into the main environmental feasibility report.
DAEA	Assessment of the impact of dumped boiler ash and rubble on a wetland in Willowton, Pietermaritzburg Quantified the loss of wetland area and the impact on ecological functioning and water quality in the surrounding environment from illegally dumped boiler ash and rubble. Assessed the significance of the impact and provided recommendations regarding potential mitigation and future management.
Department of Environmental Affairs and Tourism	National Wetland Inventory – Pilot Study Member of team tasked with investigating the most economical method of mapping the country’s wetlands to a set level of detail.
DWAF	Identification of Candidate Wetlands for Rehabilitation in the Mearns Dam Basin Identification of wetlands suitable for rehabilitation and to recommend measures for implementing rehabilitation. Also required to make recommendations regarding management measures for protecting those wetlands identified as being in good condition.

Publications

Cox, D. Burger, B and Quayle, L. 2011. *The Contribution of SEA to Improved Corporate Environmental Governance: The example of an Environmental Constraints Framework for Project Planning in Eskom Distribution’s Eastern Region*. IAIA Conference 2011.

Cox, D and Pringle K. 2010. *Development of a Model to Support Local Government in the Efficient and Effective Application of the Environmental Impact Assessment Process*. IAIA Conference 2010.

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Cox, D and Kotze, D. 2008. *Assessing the Appropriateness of Wetland Mitigation Banking as a Mechanism for Securing Aquatic Biodiversity in the Grassland Biome of South-Africa*. WRC Report no K8/700.

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Cox, D. Van Nierkerk, K. Govender, V. Anton, B. Smits, S, Sullivan, C.A. Chonguiça, E. Monggae, F, Nyagwambo, L. Pule, R. Berraondo López, M, Bonjean, M. 2008. *Local Government and Integrated Water Resources Management (IWRM) Part I: Reaping the Benefits – How Local Governments Gain from IWRM*

Philip, R, Anton, B. Cox, D. Smits, S, Sullivan, C. A, Chonguiça, E, Monggae, F. Nyagwambo, L. Pule, R, Berraondo López, M. 2008. *Local Government and Integrated Water Resources Management (IWRM) Part II: Understanding the Context – The Role of Local Government in IWRM*.

David has authored in excess of 50 consultancy reports and associated documents during his 15 years in the field.

References

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12.2. APPENDIX 2: Comments and Response Register

See separate file

12.3. APPENDIX 3: Public Participation Process Report

See separate file

12.4. APPENDIX 4: Wetland Assessment Report

See separate file

12.5. APPENDIX 5: Heritage Impact Assessment Report

See separate file