

**DRAFT ENVIRONMENTAL IMPACT ASSESSMENT
REPORT**

**PROPOSED LANDUSES (BASKET OF RIGHTS) AT
THE BRAM FISCHER INTERNATIONAL AIRPORT,
BLOEMFONTEIN**

PREPARED FOR:

Airports Company of South Africa
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INTERNATIONAL AIRPORT
AIRPORTS COMPANY SOUTH AFRICA

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February 2014

**DEA Ref: DEA/EIA/0001731/2013
NEAS Ref 14/12/16/3/3/2/482**



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EXECUTIVE SUMMARY

This draft Environmental Impact Assessment Report (DEIR) serves as documentation in support of the assessment phase as part of an Environmental Impact Assessment (EIA) process being carried out for the proposed Landuses (Basket of Rights) on the Boulevard Precinct at the Bram Fischer International Airport in Bloemfontein. *The Environmental Partnership* has been commissioned by the proponent, *Airports Company South Africa (ACSA)* to undertake this EIA.

In 2009, the Bram Fischer International Airport was rezoned to a Special Use Zone with specific rights to accommodate the existing development including the Road Lodge Hotel which was constructed in 2010. In 2012, the Special Use Zone was amended to include additional developments (hospital, warehousing, self-storage and business premises) within the Boulevard Precinct. This EIA is being conducted in support of ACSA's application for a further amendment to the Special Zone Cxxi in the form of the Basket of Rights application to accommodate further developments on the Boulevard Precinct.

LEGISLATIVE REQUIREMENTS

According to Regulation 545 of the National Environmental Management Act (NEMA) (107 of 1998), as amended, a full EIA is required and this involves scoping (identification) and assessment of issues with a comprehensive public participation process.

NEMA GNR 544: Listing 13

The construction of facilities or infrastructure for the storage, or for the storage and handling, of a dangerous good, where such storage occurs in containers with a combined capacity of 80 but not exceeding 500 cubic metres;

NEMA GNR 545: Listing 15

Physical alteration of undeveloped, vacant or derelict land for residential, retail, commercial, recreational, industrial or institutional use where the total area to be transformed is 20 hectares or more; except where such physical alteration takes place for:

- (i) linear development activities; or
- (ii) agriculture or afforestation where activity 16 in this Schedule will apply.

PROJECT PROPOSAL

ACSA is applying for further amendment to the existing Special Use Zone in the form of the Basket of Rights application to accommodate further developments on the Boulevard Precinct. The precinct has been conceptually divided into three sub-precincts for the purposes of this report. The landuses proposed within these three sub-precincts will have a total bulk of approximately 176 500m² and will comprise the following:

- a) Offices
- b) Commercial
- c) Motor car dealer and showroom
- d) Two service stations with and convenience shops
- e) Retail / shops
- f) Auctioneer business
- g) 100 bed hotel with 80 seat conferencing facility
- h) 300 seat conferencing facility and showground
- i) Medical facilities
- j) Industry, including industrial shops
- k) Warehousing and distribution centres / warehouse wholesale
- l) Car rental
- m) Logistics centre

In terms of the assessment of alternatives, three petrol station locations will be assessed. Of the three, the two locations having the lowest environmental impact will be considered.

PUBLIC PARTICIPATION

Public participation is an essential component of the Environmental Impact Assessment process and is used to introduce the proposed development to the public. The draft Scoping Report (DSR) was made available to Interested and Affected Parties (I&APs) for their comment using the following methods:

- Media notices were published in both a local and a regional newspaper inviting members of the public to submit their comments on the proposal. The media notice included an invitation to attend a public forum where the project proposal was discussed.
- An Information Sheet (summary of the DSR) was distributed to land owners and occupants of land adjacent to the site via fax, email or post. The Information Sheet was also faxed, emailed or posted to organs of state and identified I&APs.

- A copy of the DSR was made available on www.enviropart.co.za and copies were placed at the Information Desk at the Bram Fischer International Airport for public review.
- A public forum was held on 09 May 2013 at the Bram Fischer International Airport Terminal, First Floor from 4:00pm to 6:45pm.
- Due to a lack of interest from the general public, the Final Scoping Report (FSR) was submitted to the regulatory authority without being made available to the public for comment as no changes were made to the report.
- Following the *Department of Environmental Affairs'* (DEA) request for additional information, an addendum to the FSR was compiled and submitted to the regulatory authority. An Information Sheet providing a summary of the addendum to the FSR was distributed to the identified I&APs. However, no comments were received.

The issues identified during the scoping and assessment phases will also inform the planning and design of the landuse developments. This DEIR will be submitted to the regulatory authorities and registered I&APs for comments.

IDENTIFIED POTENTIAL IMPACTS

The following potential issues and impacts were identified by the project team and I&APs during the scoping phase:

- Air quality Impacts
- Heritage Impacts
- Paleontological Impacts
- Archaeological Impacts
- Groundwater Impacts
- Stormwater Pollution
- Infrastructure and Services Impacts
- Traffic Impacts
- Visual Impacts
- Construction related disturbances

The botanical and faunal impacts were screened out during the scoping phase and were not assessed any further.

The table below summarises the impact ratings associated with each of the assessed impacts:

IDENTIFIED IMPACTS	Boulevard Precinct		ALTERNATIVES						
			No-Go	Alternative 1: Petrol Station 1		Alternative 2: Petrol Station 2		Alternative 3: Petrol Station 3	
	Without mitigation	With mitigation		Without mitigation	With mitigation	Without mitigation	With mitigation	Without mitigation	With mitigation
Air Quality	Med (-)	Low (-)	N/A	Low (-)	Low (-)	Low (-)	Low (-)	Low (-)	Low (-)
Heritage	Low (-)	Low (-)	N/A	Low (-)	Low (-)	Low (-)	Low (-)	Low (-)	Low (-)
Paleontology	Med (-)	Low (-)	N/A	Med (-)	Low (-)	Med (-)	Low (-)	Med (-)	Low (-)
Archaeology	Low (-)	Low (-)		Low (-)	Low (-)	Low (-)	Low (-)	Low (-)	Low (-)
Groundwater Pollution	Low (-)	Low (-)	N/A	Med (-)	Low (-)	Med (-)	Low (-)	Med (-)	Low (-)
Groundwater (Construction-related)	Med (-)	Low (-)	N/A	Med (-)	Low (-)	Med (-)	Low (-)	Med (-)	Low (-)
Stormwater	High (-)	Med (-)	N/A	Med (-)	Low (-)	Med (-)	Low (-)	Med (-)	Low (-)
Infrastructure & Services	High (-)	Med (-)	N/A	Low (-)	Low (-)	Low (-)	Low (-)	Low (-)	Low (-)
Traffic	High (-)	Med (-)	N/A	Med (-)	Low (-)	Med (-)	Low (-)	Med (-)	Med (-)
Visual	Med (-)	Low (-)	N/A	Low (-)	Low (-)	Low (-)	Low (-)	Low (-)	Low (-)
Construction-related disturbances	Med (-)	Low (-)	N/A	Low (-)	Low (-)	Low (-)	Low (-)	Low (-)	Low (-)

Based on the assessment undertaken, it is recommended that out of the three petrol stations being proposed, Alternatives 1 and 2 be approved. Two alternatives, in the form of Alternatives 1 and 2 should be approved to service the proposed expansion of the landside activities at the Bram Fischer International Airport. Alternatives 1 and 2 have a lower traffic impact than Alternative 3 as they allow for a linear traffic flow within the airport precinct.

THE WAY FORWARD

This DEIR is being made available to all registered I&APs for a 40 day commenting period and is available on *The Environmental Partnership's* website: www.enviropart.co.za. Registered

I&APs are invited to submit their comments on or before [Monday, xx-14](#) April 2014. Comments may be submitted to **Tarryn Solomon** via fax, email or post at the following details:

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PO Box 945
Cape Town
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Tel: 021 422 0999

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[A copy of the report is available for public review at the Information Desk at the Bram Fischer International Airport.](#) All comments received by the end of the commenting period will be submitted to the regulatory authority for their consideration.

ABBREVIATIONS

ACSA	Airports Company South Africa
CBD	Central Business District
CEMPr	Construction Environmental Management Programme
DEA	Department of Environmental Affairs
DSR	Draft Scoping Report
DEIR	Draft Environmental Impact Assessment Report
EA	Environmental Authorisation
EIA	Environmental Impact Assessment
FSR	Final Scoping Report
FEIR	Final Environmental Impact Assessment Report
GA	General Aviation
ICAO	International Civil Aviation Organisation
NEMA	National Environmental Management Act
SAAF	South African Air Force
SABS	South African Bureau of Standards

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Figure 1a: Locality Map
Figure 1b: Locality Map

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- Annexure 2 Acknowledgement of Receipt of Application to EA
- Annexure 3 DEA's confirmation of Acceptance of FSR
- Annexure 4 Ecological Study
- Annexure 5 Comment from Heritage Free State
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- Annexure 9 Media Notices
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- Annexure 11 Information Sheet 1 (Summary of DSR)
- Annexure 12 Proof of Notification of DSR to I&APs
- Annexure 13 Public Forum Attendance Register
- Annexure 14 Information Sheet 2 (Summary of addendum to the FSR)
- Annexure 15 Proof of Notification of Addendum to the FSR to I&APs
- Annexure 16 Draft Environmental Management Programme (EMPr)

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1. BACKGROUND AND INTRODUCTION

1.1. BACKGROUND

This report serves as documentation in support of the assessment phase as part of an Environmental Impact Assessment (EIA) process being carried out for the Proposed Landuses (Basket of Rights) at the Boulevard Precinct of the Bram Fischer International Airport, Bloemfontein (see Figure 1a and 1b).

As part of the broader airports upgrade programme, *Airports Company South Africa (ACSA)*, the proponent, is exploring opportunities for landside development at the Bram Fischer International Airport (see Figure 1a and 1b: Locality maps). The airport site (subdivision 3 of the Farm Sunnyside No. 2620) is located within the urban edge and is zoned Special Use Zone in terms of the Bloemfontein Town Planning Scheme No. 1 of 1954, and has been conceptually divided into 5 precincts. In 2012, ACSA was granted an amendment to the Special Use Zone which allows the proponent to implement four landside developments, namely, a private hospital, warehousing, offices and self-storage facilities. ACSA wishes to obtain further development rights and is therefore applying for an amendment to the current zoning to permit additional landuse developments within the Boulevard Precinct. The Boulevard Precinct is a commercial precinct centred around the Airport Approach Road and is bounded on its eastern edge by the aviation fence line (See Figure 2: Precinct Plan on Page 17 of this report).

1.2. INTRODUCTION

In terms of the National Environmental Management Act (NEMA, Act No. 107 of 1998), as amended, the proposed development triggers activities which will require authorisation from the competent environmental authority, namely the *Department of Environmental Affairs (DEA)*. *The Environmental Partnership* (see Annexure 1: Details and Expertise of EAP) has been commissioned by ACSA, to undertake this EIA at the Bram Fischer International Airport. Using information gathered during the EIA process and the recommendations made by the independent environmental assessment practitioner and the relevant specialist, the regulatory authority will arrive at a decision as to whether authorisation should be granted for the project.

The sequence of documents produced thus far for this EIA include:

- The DEA application for Environmental Authorisation (EA);

- The draft Scoping Report (DSR) which was distributed for the purpose of incorporating the views of Interested and Affected Parties (I&APs) in the EIA Process;
- The final Scoping Report (FSR) which was submitted to the regulatory authority;
- A Plan of Study for the EIA which outlines the proposed assessment process methodology informing all subsequent reports;
- An Addendum to the FSR; and
- This draft Environmental Impact Assessment Report (DEIR)

The application form for environmental authorisation was acknowledged by the DEA (see Annexure 2), thereby formalising the commencement of the EIA process. In addition, the DEA has provided written confirmation of the acceptance of the FSR and Plan of Study for the proposed activity (see Annexure 3: DEA's confirmation of acceptance of the FSR).

1.3. REPORT STRUCTURE

This report is structured as follows:

Chapter One	Provides the introduction and background to the study
Chapter Two	Provides a description of the legislative requirements and the related policy and planning frameworks
Chapter Three	Provides the methodology to the study
Chapter Four	Description of the study area
Chapter Five	Description of the project components
Chapter Six	Description of the public participation process
Chapter Seven	Discussion and assessment of the identified potential impacts
Chapter Eight	Conclusion of the report and description of the way forward

2. LEGISLATIVE REQUIREMENTS

There are a number of regulatory requirements at the local, provincial and national level with which the proposed project must conform. The National Environmental Management Act (NEMA, 107 of 1998), as amended, forms the core legislation informing the EIA process and therefore this Act is discussed in relation to the proposal. Several other Acts have also been identified as having direct bearing on the proposal and these are presented below. This list is non-exhaustive and does not preclude any other laws that are not identified below.

- National Environmental Management Act (107 of 1998)
- National Environmental Management: Waste Act (59 of 2008)
- National Water Act (36 of 1998)
- National Environmental Management: Air Quality Act (39 of 2004)
- National Heritage Resources Act (25 of 1999)
- Aviation Act (74 of 1962)

National Environmental Management Act (107 of 1998)

GNR 544	
Activity Listing 13	The construction of facilities or infrastructure for the storage, or for the storage and handling, of a dangerous good, where such storage occurs in containers with a combined capacity of 80 but not exceeding 500 cubic metres;
GNR 545	
Activity Listing 15	Physical alteration of undeveloped, vacant or derelict land for residential, retail, commercial, recreational, industrial or institutional use where the total area to be transformed is 20 hectares or more; except where such physical alteration takes place for: (i) linear development activities; or (ii) agriculture or afforestation where activity 16 in this Schedule will apply.

According to Regulation 545, a full EIA is required and this involves scoping (identification) and assessment of issues with a comprehensive public participation process. In defining the most suitable study approach, the following principles that underpin the EIA legislation provide a valuable touchstone. These are:

- Informed and accountable decision-making.
- The concept of the environment to encompass both biophysical as well as socio-economic components.
- A consultative and participatory approach to planning with I&AP involvement.
- The consideration of alternatives
- In mitigating negative impacts and enhancing positive impacts, a net benefit to the environment is achieved.

Guidelines consulted

- NEMA EIA Regulations (2010)
- Relevant provincial and local policy and planning frameworks
- Civil Aviation Organisation Standards
- DEA's Guidelines on Public Participation in the EIA Process (2012)
- Guidelines of the South African Bureau of Standards

The local policy and planning framework is discussed below in terms of its relation to the proposed project.

2.1. POLICY AND PLANNING FRAMEWORKS

The Mangaung Metropolitan Integrated Development Plan (2012 – 2016)

The Integrated Development Plan is a five year plan for development within the Mangaung Municipality. The following sections have been extracted from the Mangaung IDP.

The objective for economic development stated in the IDP is to grow and develop the economy through working programmatically with a wide range of stakeholders (*other spheres of government, academic institutions, medical associations, business and civil society*) and exploiting the full strength inherent in the economy. The municipality will be placing specific emphasis on the following:

- Attracting both local and international investors
- Building partnerships for improving skills and capacity building
- Broadening partnership in economic development
- Promote competitiveness in the local market.
- Facilitate Industrial Development and Integrated Human Settlement Development towards the east of the City, especially along the vicinities of N8 Development zone.

This objective for the built environment is to deal with distortions of the municipality's spatial configuration as it relates to housing, transport, economic development and community infrastructure.

According to the ***Mangaung Spatial Development Framework***, Bloemfontein is the economic hub of the Mangaung Metropolitan Municipal area and will remain the locus for future developments. Recently there have been extensive retail and residential building developments in and around the Bloemfontein area.

3. THE BRIEF

3.1. TERMS OF REFERENCE

To demonstrate their environmental responsibility, ACSA has appointed *The Environmental Partnership* to assess the environmental impacts associated with the proposed landside developments. Furthermore, the appointment will ensure that the proponent complies with the legislated requirements in terms of the EIA Regulations (2010) as well as Government Notice R544 and R545 of NEMA (107 of 1998) which typically comprise the following actions:

- participating in proposal formulation
- public consultation
- scoping (identification of issues)
- assessment and evaluation

The actions described above are the standard procedures required by NEMA (107 of 1998). These actions are key aspects of the EIA process and are briefly described below:

Formulation of the study:

Prior to the initiation of the actual study and the public participation process, input into the proposal and alternatives is provided to ensure that biophysical, social, heritage and planning constraints are taken into consideration during proposal formulation. This is to ensure that reasonable alternatives are presented to the public and taken into the assessment phase.

Public consultation throughout the EIA process

A public participation process will be undertaken throughout this study to ensure that I&APs are given an opportunity to participate and to ensure that issues of importance are addressed. The public participation process is reported in more detail in Section 6.

Scoping (identification of issues)

The scoping process allows for the first iteration of public participation, where comments and concerns are acquired from I&APs. It is also the stage at which relevant information is gathered, including defining if any specialist studies are required. The scoping phase identified the issues that are significant enough to be assessed further in this phase of the study.

Assessment and evaluation

This process assesses and evaluates issues that have been identified during the scoping phase. Mitigation measures are provided which aim to lessen the potential environmental impacts resulting from the development. Additionally, a Construction Environmental Management Programme (CEMP) is developed which provides mitigation measures for impacts associated with construction activities.

Submission of the FEIR for decision

Once finalised, the FEIR will be submitted to the authorising body, DEA, for a decision.

3.2. DETAILED DESCRIPTION OF PROCESS

As previously noted, the EIA comprises of two phases; scoping and environmental assessment. This report forms part of the documentation required for the assessment phase of the EIA. The full EIA process is described below.

Project initiation and scoping phase

The following activities have been completed to date:

- Communication with the relevant authorities
- Sourcing and analysing of relevant background information and site inspections
- Compilation and submission of the DEA application for EA to the regulatory authority to provide formal application for the project. The application was acknowledged on 07 March 2013 (see Annexure 2 for Acknowledgement Letter from DEA)
- Identification of the potential impacts that could result from the proposed activity
- Determining the additional information required to assess the potential impacts that have been identified e.g. establishing whether specialists are required and drafting Terms of Reference accordingly
- Compilation of the DSR
- Public participation and consultation- Chapter 6 provides a detailed description of the public participation process.
- Finalisation of the Scoping Report by making required changes.
- Compilation of a Plan of Study for the assessment phase
- Submission of the FSR and Plan of Study to the regulatory authorities
- Following the submission of the FSR to the competent authority, the DEA, additional information was requested. Therefore, an addendum to the FSR was compiled and submitted to the DEA.

- Public participation and consultation- Chapter 6 provides a detailed description of the public participation process.

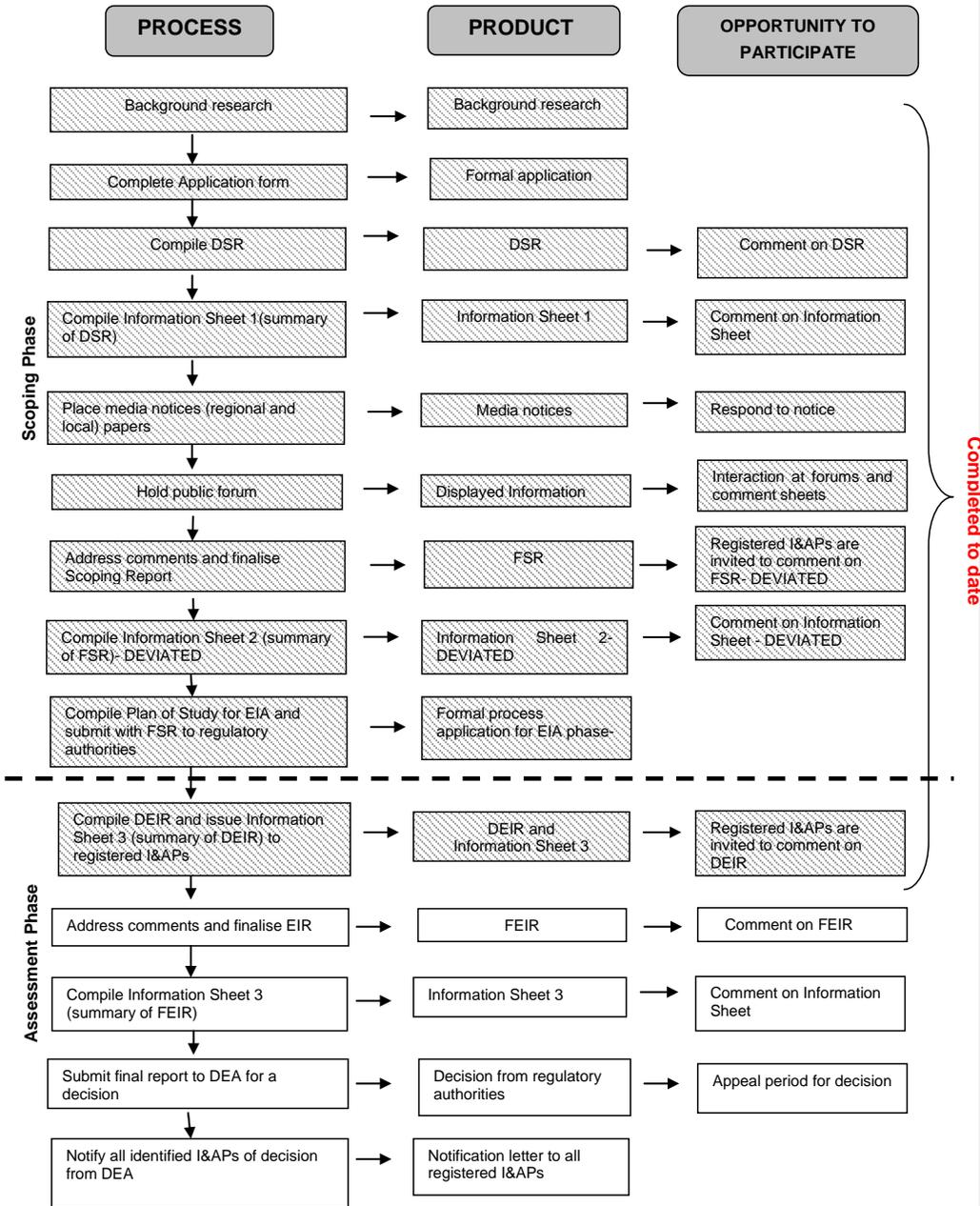
Assessment phase

The following activities have been or will be undertaken during the assessment phase:

- Assessment and evaluation of impacts identified in the scoping phase
- Commissioning and management of a Heritage Practitioner and an Archaeologist-
- Compilation of this DEIR
- Compilation of a draft CEMPr for the construction phase-
- The third iteration of public participation process is described in detail in Chapter 6
- The fourth iteration of public participation process is described in detail in Chapter 6
- Once finalised, the final EIR will be submitted to the DEA for a decision-
- Dissemination of the outcome of the EA to I&APs

Diagram 1 illustrates the process flow for activities undertaken during the scoping and assessment phases. This diagram further demonstrates the progress that has been made to date with respect to completing these phases.

EIA PROCESS FLOW CHART



3.3. ASSUMPTIONS AND LIMITATIONS

- All information received from sources contributing to this project is believed to be correct.
- As detailed design information is not available, the precautionary principle has been adopted in identifying potential impacts.
- The formulation of the alternatives have been severely restricted by the prescripts of several pieces of legislation as described in chapter 5. As a result, the alternatives are very small in extent as opposed to the proposed landuses (Basket of Rights) being sought at the Bram Fischer International Airport which is rather large in extent. Therefore the alternatives, as approved by the DEA, have resulted in some limitations. In essence, the assessment conducted for the three alternatives being proposed may not provide an accurate reflection of the assessment for the entire Boulevard Precinct. Therefore to provide accurate information and a true reflection of the anticipated impacts, the assessment section (section 7.3), highlights the impacts on the entire Boulevard Precinct as well as the impacts associated with the proposed petrol stations.

4. STUDY AREA

4.1. GENERAL DESCRIPTION OF THE STUDY AREA

Mangaung Metropolitan Municipality is in the Free State Province of South Africa and comprises of an extensive rural area and three urban centres namely, Bloemfontein, Botshabelo and Thaba Nchu. Bram Fischer International Airport is located approximately 10km to the east of the Bloemfontein Central Business District. The airport is currently used by domestic airlines and shares the runways with the South African Air Force (SAAF) base. Other activities currently on the airport premises include a hotel, car rental facilities, the SAAF base and Bob Rogers Park (SAAF residential area).

The Boulevard Precinct exhibits low lying grassland vegetation with patches of barren soil. No vegetation of significant conservation value was observed on the site. Care will however need to be taken to conserve any vegetation, fauna or avifauna of significant ecological value as outlined in the ecological study undertaken by T Anderson (2010).

4.2. CLIMATE

The Free State experiences semi-arid climatic conditions. Since most of the province is situated roughly 1 300 m above sea level, the Free State endures hot, arid conditions which vary quite drastically from season to season. The weather is typically of a high-lying inland area and this means that the Free State has rainy summers, very cold winters and a lot of sunshine. Since the year 2010, snowfall has been recorded during winter months in certain parts of the Free State. Bloemfontein is located in the middle of the province and has an average summer temperature of 23°C and an average winter temperature of 8°C (www.southafrica.com/free-state/climate/).

4.3. FLORA

The vegetation in Bloemfontein is predominantly grassland. An ecological study undertaken by Tania Anderson (Anderson, 2010) in precinct B (to the north of Bob Rogers Park and abutted by the eastern boundary of the airport) of the Bloemfontein airport revealed that the main vegetation for this site is dry grassland cover. Three protected species namely, *Ammocharis coranica*, *Eucomis cf. Autumnalis* and *Nerine cf. laticoma*, were observed within planned islands of vegetation. The ecological study undertaken is attached as Annexure 4.

4.4. FAUNA

During an ecological survey undertaken by Tania Anderson in Precinct B of the airport it was determined that faunal species which include scrub hare, cape ground squirrel, African wild cat, suricate, and yellow mongoose could be present on the site (Anderson, 2010). This conclusion was drawn based on indicators of faunal activity which were observed on the site. Avifauna which were observed during the study include the laughing dove, little swift, barn swallow, southern ant eating chat, desert cisticola, cloud cisticola and the house sparrow. Of these potential faunal species, the African wild cat is classified with a vulnerable status (Anderson, 2010). See Annexure 4.

4.5. GEOLOGY AND SOILS

According to Mucina and Rutherford (2006 in Anderson, 2010), the geology of Bloemfontein comprises sedimentary mudstones and layers of sandstone mainly of the Adelaide subgroup (Beaufort Group, Karoo Supergroup). A deep layer of red sand (> 300 mm) of aeolian origin covers the more clayey B-horizons in some areas. Soil forms such as arable Hutton, Bainsvlei and Bloemdal are also present.

In a study undertaken for the draft Development Framework for the airport, geotechnical surveys revealed that the airport exhibits a perched water table with varying levels. Tests undertaken in April 2008 revealed that the water table is between 1.8m and 5.6m. However a test undertaken on a proposed distribution road indicated that the water table was as shallow as 200mm below the natural ground level (NM & Associates, 2010).

4.6. HERITAGE RESOURCES

The landscape does not exhibit any heritage value and no heritage resources have been identified within the immediate vicinity of the proposed development. The heritage significance of the site also relates to the potential paleontological and archaeological resources. Therefore, a paleontological assessment and an archaeological assessment was undertaken. Due to a lack of archaeological remains in the area, it is not anticipated that the site contains archaeological or historical material of significance.

With regards to the paleontology of the site, it is underlain by the continental sediments of the Beaufort Group which is renowned for its rich fossil assemblages of plants of the *Glossopteris* Flora of Gondwana (seed fern) with the associated insects and other invertebrates, trace fossils and rare vertebrate remains such as dicynodont therapsids (mammal-like reptiles). Within the context of the study area, the potential fossiliferous bedrocks are overlain by fossil-poor

superficial sediments of younger age belonging to the Quaternary to Recent age.(Almond, 2014).

4.7. WATER RESOURCES

The site does not exhibit any surface water features, however there are artificial drainage lines traversing the site. There are two rivers located within one kilometer of the airport boundary, namely the Bloemsig River to the northwest and Bloemspruit to the southeast. The Bloemspruit River is located on the opposite side of the N8 highway and is a tributary of the Modder River. The Bloemspruit River is in poor ecological condition due to the pollution and impacts caused by the surrounding agricultural activities, infilling of the catchment and the presence of invasive alien plant species.

4.8. EXISTING INFRASTRUCTURE

4.8.1. The Existing Road Network

The Bloemfontein Airport is well connected to main routes such as the N8, N6 and N1. This offers regional accessibility to the airport. The National Road 8 (N8) connects the airport to the Northern Cape via Kimberley, the N6 provides access to the Eastern Cape Province while the N1 connects it to the Western Cape, Gauteng and the Northern Free State.

The Boulevard Precinct is accessible from the N8, a dual carriageway freeway with two lanes in each direction oriented east-west. Single lane off-ramps from the N8 intersect with the Airport Approach Road (the Boulevard) at stop controlled intersections. The Boulevard is a north-south orientated dual carriageway, four lane arterial road with two 3.5m wide lanes in each direction and a 3.5m wide paved central median. Paved pedestrian walkways are situated on either side of the Boulevard which is a private road owned by ACSA. Currently, access from the Boulevard is provided to an existing hotel and car rental offices and facilities.

The Bob Rogers Park Access Road and Maselspoort Road intersect with the Boulevard at a traffic circle approximately 650m north of the N8. The Bob Rogers Park Access Road is a 7.0m wide two-lane two-way road with a 16m wide road reserve. The access road to Bob Rogers Park is also an ACSA-owned road.

Maselspoort Road is a provincial road with two 3.5m wide lanes which widens to four lanes in proximity with the intersection with the Boulevard. It provides access to the Bloemspruit Air Force Base and areas north-east of the N8 interchange.

4.8.2. Water Reticulation

A 250mm water pipeline exists on the site, which provides bulk water services to among others the aviation activities and the existing activities on the Boulevard Precinct. The total estimated daily water demand for the full development is 1.8 ML per day.

4.8.3. Sewer and wastewater

The draft Development Framework for the airport indicates that there are no sewer and wastewater infrastructure connections to the municipal systems. Currently, all sewer and wastewater is processed at a shared sewer treatment plant (operated by the Department of Public Works) at the Air Force base located on the southeastern section of the property. However, its capacity has been reached and it cannot be utilised for any further development.

The installation of the municipal bulk sewer reticulation has been completed and will be used until the sewage treatment plant to be located east of the Boulevard and south of the Maselspoort Road is in operation. An EIA for the sewage treatment plant was undertaken as a separate project and an environmental approval was granted on 14 February 2014.

4.8.4. Stormwater

Stormwater drainage has been an ongoing issue on the property which drains onto the airside and eventually enters the Renosterpruit River. In the southern sections of the property, stormwater exits through drainage ditches established along the boundaries of the premises and into the Bloemspruit River. Due to the flat topography, a drainage solution is required to prevent flooding. ACSA has designed and will implement various infrastructural interventions which include a stormwater management strategy.

4.8.5. Electrical infrastructure

In terms of electricity, the airport gets its power supply from Estoire Distribution centre in Rudolf Greyling. The current power connection to the airport is provided at the JBM Hertzog substation. Data received from ACSA has revealed that there has been a significant increase in electricity consumption at the Bram Fischer International Airport and a sustained increase is expected.

Based on load forecasting, it has been projected that the existing 11 kV network and substations, as well as the supply from Centlec will be running out of capacity once the new proposed development is implemented. It has been forecasted that there will be an increase of

approximately 70% in the Aviation Building and 51% on the External Landuse. Over a 20 year period, the anticipated demand will peak to 4.608kVA.

5. PROJECT PROPOSAL AND ALTERNATIVES

5.1. PROPONENTS MOTIVATION

Bram Fischer International Airport is owned by the ACSA and is located within the urban edge and zoned Special Use Zone Cxxi in terms of the Bloemfontein Town Planning Scheme No. 1 of 1954. In 2009, the entire Subdivision 3 of the Farm Sunnyside No. 2620 was rezoned to a Special Use Zone with specific rights to accommodate the existing development including the road lodge hotel which was constructed in 2010. In 2012, the Special Use Zone was amended to include a number of landside developments at the Boulevard Precinct comprising a 150-bed private hospital, warehousing, offices and self-storage facilities. Furthermore, the airport is located along the N8 Corridor and has been identified by the Mangaung Metropolitan Municipality as one of the corridor nodes, and is perceived as a catalyst to its successful development. The proposal to obtain a basket of rights for further development will therefore increase the economic viability of the airport and contribute towards the development along the N8 Corridor.

5.2. SITE LOCATION

Bram Fischer International Airport (subdivision 3 of the Farm Sunnyside No. 2620) is located approximately 8km to the east of the Bloemfontein CBD. The airport is conceptually divided into 5 Precincts (See Figure 1 overleaf) and ACSA has landuse rights in place for the development of a portion of one precinct known as the Boulevard Precinct. The Boulevard Precinct is a commercial precinct, located south of the existing terminal building and northeast of the Bob Rogers Park which is the SAAF base residential area. The proposed basket of rights will apply to further landuse developments within the Boulevard Precinct. See Annexure 7 for Site Photographs.



Figure 1: Precinct Plan

5.3. PROJECT PROPOSAL

ACSA is applying for a further amendment to the existing Special Use Zone in the form of the basket of rights application to accommodate further developments within the Boulevard Precinct. The precinct has been conceptually divided into three sub-precincts for the purposes of this report. The extent of each sub-precinct is shown in the table below (see Figure 2 on Page 24 of this report to view the extent of the sub-precincts):

SUB-PRECINCT	AREA(m ²)
Sub-precinct 1	92834
Sub precinct 2	63538
Sub-precinct 3	20095

As a general principle, land parcels fronting onto the Boulevard (Airport Road) will be used for commercial activities such as offices and retail / shops which allow sites to be bulked up to create a more positive public environment. Blocks back from the Boulevard will optimally be reserved for landuses that can mitigate the difference in height of blocks along the Boulevard; and those uses accommodated in warehouse-type, ground related structures will be located close to the airside boundary. Sub-precinct 1 comprises the blocks located along (on either side) the Boulevard from the traffic circle at the intersection with Road A, and northwards up to the existing hotel. To the west, the sub-precinct is bounded by Road F and by Road D to the east. Sub-precinct 2 is enclosed by the Boulevard (Airport Road) to the west and Maselspoort Road to the north and east. Sub-precinct 3 is located on the north eastern portion of the precinct, close to the aviation fence line.

The landuses proposed within these three sub-precincts will have a total bulk of approximately 176 500m² and will comprise:

- a) Offices
- b) Commercial
- c) Motor car dealer and showroom
- d) Two service stations and convenience shops
- e) Retail / shops
- f) Auctioneer business
- g) 100 bed hotel with 80 seat conferencing facility
- h) 300 seat conferencing facility and showground
- i) Medical facilities
- j) Industry, including industrial shops
- k) Warehousing and distribution centres / warehouse wholesale

- l) Car rental
- m) Logistics centre

The landuses listed above have been allocated to the various sub-precincts as shown in the table below. The exact positioning of each landuse within each sub-precinct is undefined, however the landuses will be rationally laid within the respective precincts.

SUB PRECINCT	LANDUSE	AREA (m ²)
Sub Precinct 1	Offices	27 150
	Commercial	5 814
	Motor car dealer and showroom	10 000
	2 x service station and convenience shop	8 798
	Retail / shops	12 000
	Auctioneer business	2 742
	100 bed hotel with 80 seat conferencing facility	3 830
	300 seat conferencing facility and showground	17 500
	Medical facilities	5 000
Sub Precinct 2	Industry, including industrial shops	43 482
	Warehousing and distribution centres / warehouse wholesale	20 056
Sub Precinct 3	Car rental	20 095
	*Logistics centre – this will be converted from the car rental facility in the long term	

In addition to the above landuses, the proponent is applying for rights to develop approximately 100 000m² of mixed use bulk on the Boulevard Precinct in the future. The landuse composition of this additional bulk has not been defined at this stage, given that this development will occur in the long term.

5.4. ALTERNATIVES

Section 24 of NEMA (Act No. 107 of 1998), as amended, prescribes that reasonable and feasible alternatives must be considered in the EIA process. The formulation of the alternatives being proposed is based on a range of factors as further described in the following sections. The prescripts of the Aviation Act, International Civil Aviation Organisation (ICAO) and South African Bureau of Standards (SABS), specific legislative, environmental, and development

framework constraints have informed the landuse plan. It has been challenging to present feasible alternatives against very specific legislative, site, environmental, and development framework constraints, hence the alternatives being proposed in this report relate to the positioning of petrol stations to service the landuse activities on the Boulevard Precinct.

5.4.1. Factors Influencing the Nature of Landuse at Airports

Two main aspects should be noted in understanding the nature and design of landuses around airports with particular reference to the Bram Fischer International Airport, as described below:

- a) The proposal is based upon (restricted by) the prescripts of the Aviation Act – Act No. 74 of 1962 and the ICAO standards, with respect to obstacle limitations and surfaces. These prescribe the height of buildings permitted on and around airports as well as the suitable location for structures. As a principle, the permitted height increases with increasing distance from the flight path / runways, which by implication informs the location and nature of all activities including economic activities. For example, commercial / office developments which are accommodated in multi-storey buildings are located further from the runway, while industrial, warehousing, distribution facilities and car rental depots which do not require high structures, are located closer to the runway.
- b) The proposal is informed and restricted by the guidelines of the SABS, which are developed to guide development in the areas surrounding airports to mitigate the impact of aircraft noise. Recommendations on landuse and development in the vicinity of an airport with regards to aircraft noise are outlined in the SABS South African National Standard (SANS) 10103. In essence, the noise impact decreases with increasing distance from the runways, which implies that the landuses less sensitive to noise are located closer to the runway, while those sensitive to noise are located further.

The proposed commercialisation of the Boulevard Precinct at the Bram Fischer International Airport was developed strictly in adherence to the above considerations, meaning that the design of the precinct cannot change without contravening the prescriptions of the Aviation Act, ICAO standards, and the SABS SANS 10103. As such, an alternative proposal which may contravene these guidelines is (by implication) not feasible and therefore cannot be considered as a feasible alternative.

Both the prescriptions of heights and noise limit the site's landuse planning opportunities given that the land parcel available for development is relatively restricted as a result of other constraints such as road networks and environmental considerations, including stormwater runoff.

5.4.2. The Development of the Landside Planning Process

The landuse plan developed is a product of a long multi-disciplinary planning and design process initiated in 2007, involving planners, environmental consultants, botanists and engineers. Throughout the holistic planning process, there have been various iterations and revisions (which ultimately culminated in the current landuse plan) but none of which could be considered feasible from all perspectives: social, economic and environmental. This process is summarised below.

a) The formulation of a Development Framework

The development framework commenced in 2007 with the preparation of a Status Quo Report with the aim of recommending measures to be implemented to address the short term landside / non-aviation requirements of the airport. In 2010, the final draft Development Framework for the airport was submitted to Mangaung Municipality and the Free State Provincial Government. The framework was approved and now used as a basis for guiding development in and around the airport.

The development framework conceptually divided the site into 5 precincts: The Boulevard, Terminal, Grasslands, Airport Industria and General Aviation (see Figure 1 on Page 17). It should be noted that none of these precincts can be viewed in isolation as they are integrated with each other. This implies that for example, the structuring elements for the Boulevard Precinct cannot be changed without revising the development framework of the entire site, which is restricted by the legislation and guidelines noted above in section 5.4.1.

b) Development guidelines for the Boulevard Precinct

In 2012, building upon the site's development framework, ACSA commissioned a design guidelines report for the Boulevard Precinct to provide direction with regards to the physical development of the precinct. The report outlines the different ways in which the precinct can be developed to optimise landuse and establish a set of development guidelines. It provides an indication of the potential nature and form of development, the road network and the proposed network of open spaces.

The report recommended that as a general principle, the land parcels fronting onto the Boulevard Precinct to be reserved for commercial activities such as offices which allow the sites to be bulked up to create a more positive public environment. Blocks located layer(s) back from the Boulevard will optimally be reserved for commercial / manufacturing activities that can mitigate the difference in the heights of blocks along the Boulevard and those along the airside

boundary. Warehousing, storage, distribution facilities, car rental depots, manufacturing and light industrial uses should be located to the east of the site adjacent to the taxiway.

Since development within the airport precinct needs to conform to a number of specific planning and design parameters and taking into account the above restrictions and pieces of legislation, the following alternatives have been formulated and are being assessed in this report.

5.4.3. Petrol Station Site Alternatives

The proposal is for the development of several landuse developments within the Boulevard Precinct. The alternatives, however, relate only to the locations of the proposed petrol stations. Three feasible locations have been identified, two of them within Sub-precinct 1 of the Boulevard Precinct and the third one situated between Bob Rogers Park and Road A (see Figure 2 on Page 24). Of the three that are being proposed, only two are required to service the future developments at the Bram Fischer International Airport. In this EIA process, an assessment of the environmental implications of all three petrol stations has been undertaken and two petrol station locations with the lowest impact from an environmental perspective, are recommended.

It should be noted that the exact locations of the petrol stations are not being proposed. Instead, the development blocks in which they will be located are being proposed at this stage and the exact locations will be determined following the finalisation of access design.

Petrol station 1: To be located in Sub-precinct 1, bounded by Road A to the south, Road F to the west and the Boulevard to the east.

Petrol station 2: To be located in Sub-precinct 1, bounded by the Boulevard to the west, Road D to the east and Road A to the south.

Petrol station 3: To be located in Sub-precinct 3, south of Road A, and bounded by the Boulevard to the east and Bob Rogers Park to the south.

The proposed alternatives, as stated in the FSR, the addendum to the FSR and the Plan of Study dated August 2013 was approved by the DEA in October 2013. This provided the basis for the assessment of the alternatives undertaken in this DEIR.

5.4.4. No-go Option

This option implies that the site would remain as is and that no rights for further developments within the Boulevard Precinct would be granted at this time.

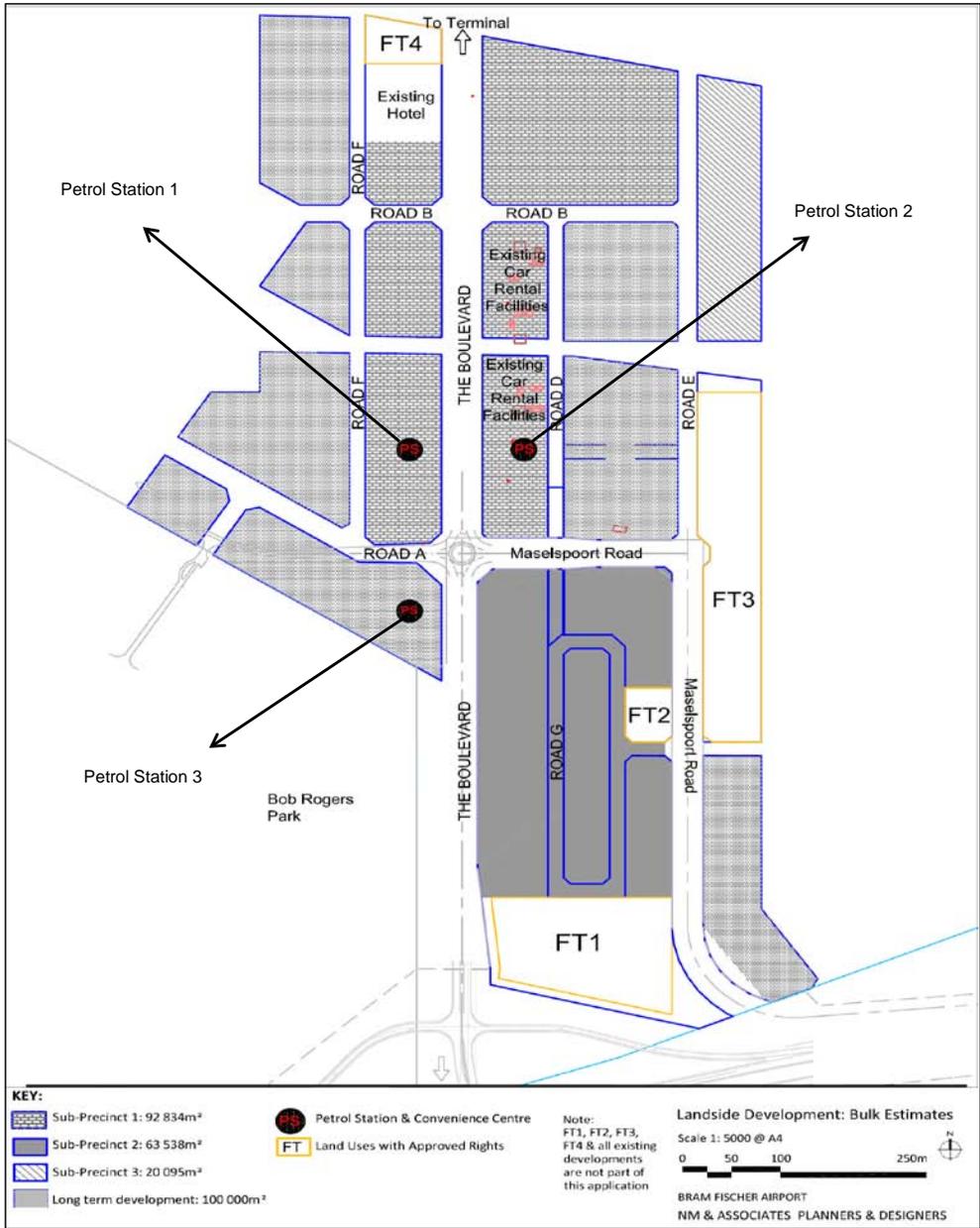


Figure 2: Petrol Station Alternatives

5.4.5. Proposed Associated Infrastructure

5.4.5.1. Proposed Internal Road Network

In order to accommodate the proposed developments as discussed in Section 5.3, the internal road network needs to be upgraded to allow for greater access and mobility within the airport precinct. A Traffic Impact Assessment (TIA) was undertaken and is documented in Section 7.3.6 of this report.

At present, the existing road layout allows one-way movement past the airport terminal thus forming a one-way loop around the building. As such, vehicles, including fuel tankers and heavy vehicles, exit the General Aviation Precinct via the said loop thus driving past the airport terminal building. This is a safety concern for pedestrians and passenger vehicles at the drop-off / pick-up area. Therefore to address the above-mentioned issue, a Roads Master Plan was compiled for the Bram Fischer International Airport Development in 2010 and thereafter updated in 2012. The proposed internal road network is shown in Figure 3 on the next page.

A more developed internal road network is proposed to accommodate commercial activities within the Boulevard Precinct. The internal roads are labelled A to G. Roads A to C distribute traffic in an east-west direction and Roads D to F are oriented north-south, parallel to the Boulevard (see Figure 3 on page 26). Road G forms a crescent in the southeastern portion of the development. Roads A to G will be 7.0m wide with two 3.5m wide lanes, a 0.3m wide channel adjacent to each lane and road reserve of 16m.

For the purposes of the proposed landuse developments, the access road to Bob Rogers Park will be realigned according to the alignment of Road A to provide future access to the western portion of the development. Road A will be extended into the adjacent residential area of Estoire (a settlement to the west of the Grasslands Precinct and northwest of Bob Rogers Park) in the long term.

Road B is proposed to intersect with the Boulevard at a second traffic circle, 400m north of Road A and will extend northwest into the Grasslands Precinct and east towards Road E. The traffic circle at the intersection of The Boulevard and Road B will be constructed with two 4.5m wide circulating lanes, a central island with a diameter of 20m and a 3.5m wide reinforced concrete apron. The GA Access Road will be realigned to Road C which extends westward direction. Similar to Road A, Road C will be extended into Estoire. The proposed Road D runs in a north-south direction, extending southwards from Road B and intersects Road E. Road E runs parallel to the Boulevard, linking the airport terminal to the Boulevard Precinct. The proposed Road F is located east of the Boulevard and intersects Road A, B and C. Road G is proposed on the southeastern corner of the Boulevard Precinct, designed to intersect Maselspoort Road.

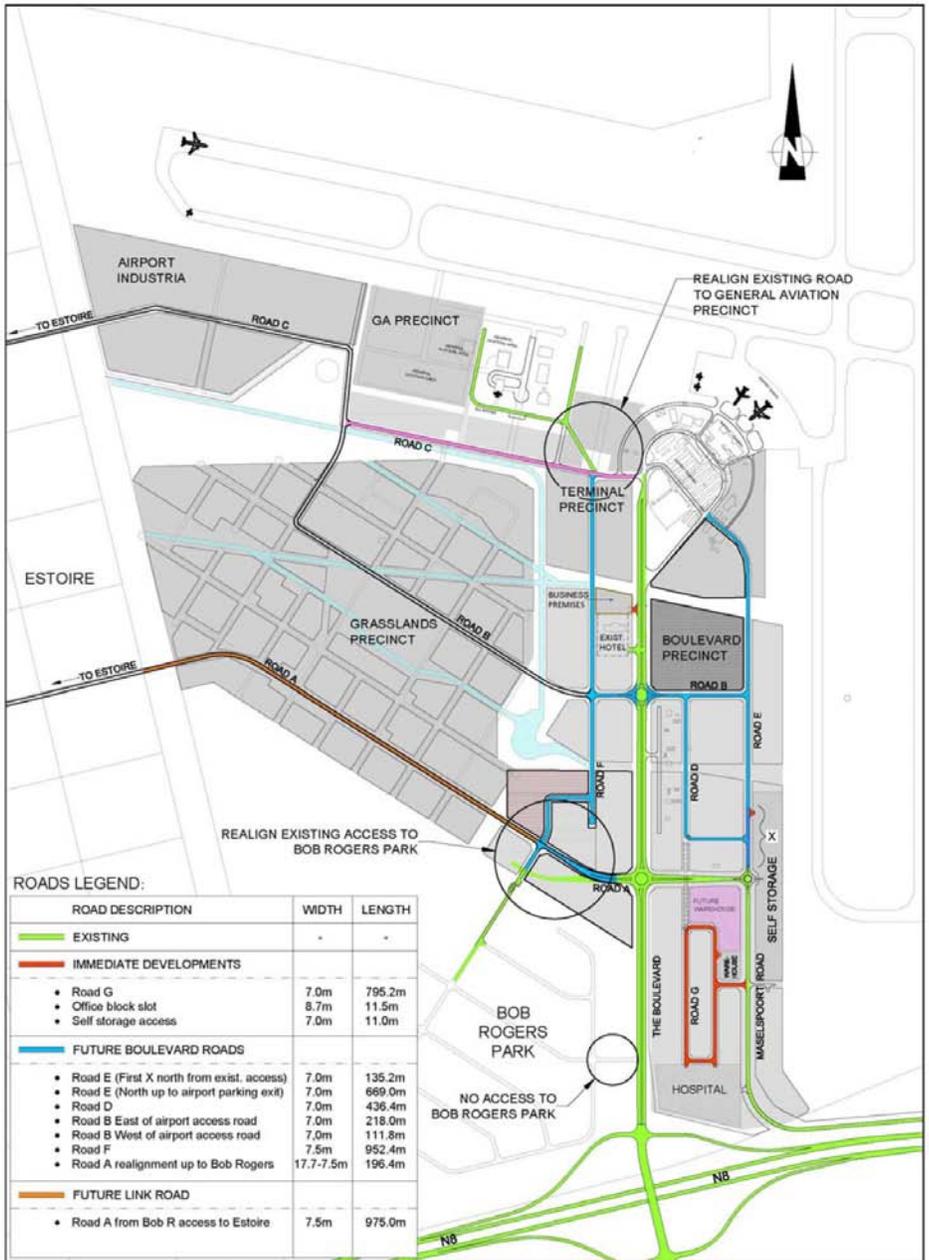


Figure 3: Proposed Internal Road Network

5.4.5.2. *Proposed Bulk Water Reticulation System*

The full development can be served from the existing 250 mm diameter pipe, fed from the Maselspoort Water Purification Works. It will be able to deliver full development demand of 24.5 l/s domestic supply and 50 l/s fire supply. If the treatment works shuts down, an emergency flow can be supplied from the Hamilton Park Reservoir with a capacity of 56 826 m³. If the existing Mangaung Municipality Reservoir cannot accommodate the two-day storage, a reservoir of 3.6 mega litres is required. The proponent, ACSA, is currently in negotiation with the Mangaung Municipality with regards to the possible construction of a reservoir at a later stage.

Water required for firefighting purposes will be provided from the same reticulation as that for the domestic water supply. Based on opening two fire hydrants simultaneously, there is adequate supply and pressure to meet the fire requirements. The domestic storage reservoir will be utilised for the fire demand storage.

5.4.5.3. *Proposed Sewer and Wastewater System*

As the N8 corridor has been identified as one of the corridor nodes to increase the economic viability of the area, service delivery is being promoted. A new municipal bulk reticulation system has been installed and the municipality has confirmed that the proposed development can connect to it. (The wastewater will be discharged to a new wastewater treatment works, situated to the south of the proposed development, within the airport precinct. The EIA for a wastewater treatment works was undertaken as a separate project and the EA was granted on 12 February 2014).

In the interim, the existing bulk reticulation will be able to accept the estimated 16.23 l/s to be generated from the full development before the final completion of the wastewater treatment works.

5.4.5.4. *Proposed Stormwater System*

A stormwater management plan has been compiled to mitigate the effects of increased water runoff from hardened areas. As such, a central major stormwater route has been included in the layout and will collect runoff from the minor system. The overland runoff will be mostly collected in open channels, either lined or grassed depending on the velocity of the flow. In addition, the Estoire Development, to the west of the airport precinct, necessitates the construction of a stormwater cut-off canal to divert water away from the airport precinct and it is expected to be completed by 2019.

Furthermore, a series of channels will direct the overland runoff to the existing box culverts running under the N8 Road. An overland flood route has been included in the layout to cater for extreme events. Additionally, stormwater management will comprise on-site attenuation as well as larger off-site attenuation which have been included in the design and layout. Also, each road stormwater discharge will be provided with an attenuation chamber which will reduce the concentrated flow and act as a silt trap.

5.4.5.5. *Proposed Electrical Reticulation System*

The electrical reticulation will be upgraded to accommodate the proposed landuse developments. This will involve the relocation of the existing primary cable to a new supply point and it will consist of the construction of two switching stations, installation of equipment for both stations. The secondary electrical network will be fed from different sources thus avoiding cramped switching in Substation A which is equipped with an 11 kV board. Therefore the switching arrangement will be less complicated and a degree of flexibility will be provided to accommodate further development.

It is recommended that the new ACSA switching station must be in the vicinity of the Centlec's switching station in order to reduce the primary cable lengths. The proposed upgrade of the electrical network is essential to accommodate the increase in electrical demand as a result of the proposed new developments in the Boulevard Precinct.

6. PUBLIC PARTICIPATION

Public participation forms an integral part of the EIA process and plays an essential role. To ensure that all issues relevant to the project were identified during the scoping phase, a comprehensive public participation process was undertaken.

The public participation process was initiated in April 2013. It consisted of introducing the project to the general public and informing them of the process to be followed. Furthermore, it provided an opportunity for I&APs (see Annexure 8) to comment on the proposed development. No comments were received on the DSR and prompted very little public interest. As such, the FSR was not distributed to the general public including the registered and key I&APs but was submitted to the DEA for approval.

Following the submission of the FSR, the Department made a request for additional information to be submitted in the form of an addendum to the FSR. The purpose of the aforementioned document was to provide clarification about the alternatives being proposed and the restrictive conditions influencing the formulation of such alternatives. The addendum to the FSR was submitted and thereafter accepted by the regulatory authority in October 2013. A copy of the addendum to the FSR was distributed to the registered I&APs, however no comments were received.

The following activities were undertaken as part of the public participation process for the scoping phase:

- The placement of media notices in a local and regional newspaper (See Annexure 9: Media Notices)
- Placing site notices in conspicuous locations at the airport terminal to inform the public of the proposed development (see Annexure 10)
- The distribution of Information Sheet 1 (providing a summary of the DSR, See Annexure 11: Information Sheet and Annexure 12: Proof of Notification of DSR to I&APs); and 2
- A public forum in the form of an Open House¹ (See Annexure 13: Public Forum Attendance Register).

¹ An Open House provides an opportunity for members of the public to discuss the findings of the DSR with the project team

- The distribution of Information Sheet 2 (providing a summary of the addendum to the FSR, See Annexure 14: Information 2 and Annexure 15: Proof of notification of addendum to the FSR to I&APs).

Two public participation iterations will be undertaken during the assessment phase. The processes that have or will be undertaken as part of the public participation iterations include the following:

- Distribution of the DEIR for comment
- Distribution of the FEIR for comment

The various aspects of public participation for both the scoping and the assessment phase are discussed in greater detail below.

6.1. FIRST ITERATION OF PUBLIC PARTICIPATION

6.1.1. Identification of Interested and Affected Parties

Key I&APs were identified early in the EIA process (See Annexure 8: List of I&APs). Details of identified I&APs were recorded in a database which included names, details of their organisations and applicable contact details. Members of the public who attended the public forum (see section 6.1.5 and Annexure 13) were added to the I&AP database.

As a result of the issues identified to date, the following organs of state are considered key stakeholders:

- Free State Department of Economic Development, Tourism & Environmental Affairs
- Mangaung Metropolitan Municipality
- Mangaung Department of Environmental Management
- Free State Department of Police, Roads and Transport
- Free State Department of Water Affairs

These organs of state were provided with information relating to the project and were provided with an opportunity to comment on the proposed development. No comment has been received to date.

6.1.2. Placement of Media Notices

As part of the public participation process, media notices informing the general public of the project, the EIA process, the availability of the DSR for comment and inviting them to a public forum, was placed in a local newspaper, namely *Bloemnuus*, and a regional newspaper, namely *Free State Times*. The media notices provided members of the public with an opportunity to register as I&APs and inform them that an Information Sheet was available upon request. The media notice invited members of the public to attend the Public Forum which was held on 9 May 2013 (see section 6.1.5 and Annexure 13). Contact details of the Environmental Practitioner were also provided (See Annexure 9: Media Notices).

6.1.3. Distribution of Information Sheet 1

An Information Sheet 1, summarising the DSR and extending an invitation to all I&APs to attend the public forum was made available. The Information Sheet was distributed to identified I&APs (See Annexure 11: Information Sheet and Annexure 12: Proof of Notification of DSR to I&APs).

6.1.4. Distribution of the Draft Scoping Report

Identified I&APs were notified of the availability of the DSR and received an Information Sheet 1 – a summary of the DSR. To make the DSR available for public comment, a copy of the report was placed at the Information Centre of the Bram Fischer International Airport and on www.enviropart.co.za.

Key organs of state were provided with an electronic and / or hard copy of the DSR for their perusal and comment.

6.1.5. Public Forum

A public forum was held on 9 May 2013 at the Bram Fischer International Airport Terminal, First Floor. Members of the public were invited to attend the forum where they could view information on the project proposal and consult with members of the project team on the proposed development. The forum afforded attendees with the opportunity to raise concerns, comments and ask questions on the proposal. The public forum was held from 4.00 p.m. to 6.45 p.m. and markers were placed in the terminal to direct attendees to the venue room (See Annexure 13: Public Forum Attendance Register).

6.2. SECOND ITERATION OF PUBLIC PARTICIPATION

6.2.1. *Distribution of Information Sheet 2 (Summary on the addendum)*

Due to a low level of interest in the proposed development, the FSR was submitted to the competent authority, the DEA but was not distributed to the identified I&APs. As previously stated, following the submission of the FSR, the Department requested additional information to be submitted in the form of an addendum. Therefore an Information Sheet 2 was compiled summarising the addendum to the FSR and was distributed to the key I&APs. They were provided with an opportunity to comment on the additional information (See Annexure 14: Information Sheet 2 and Annexure 15: Proof of Notification). It was confirmed, with the regulatory authorities, that should any comments on the addendum be received, these comments would be captured and addressed in the DEIR. To date, no comments have been received on the addendum.

6.2.2. *Distribution of the Addendum to the Final Scoping Report*

The addendum to the FSR was submitted and thereafter accepted by the Department (see Annexure 3). The relevant Organs of State were also provided with a copy of the addendum to the FSR. There was no commenting period on the addendum to the FSR but it was stated that any comments received, will be captured in the Comments and Responses Table and addressed accordingly, in the DEIR. However, no comments have been received to date.

6.3. THIRD ITERATION OF PUBLIC PARTICIPATION ON THE DEIR

The third iteration of public participation is focused on allowing registered I&APs to comment on the DEIR. The following steps have or will be undertaken as part of this iteration of public participation:

6.3.1. *Distribution of the Draft Environmental Impact Assessment Report*

Identified I&APs will be notified of the availability of the DEIR and will receive an Information Sheet 3 – a summary of this DEIR. To make this DEIR available for public viewing, a copy of the report will be placed at the Information Desk at the Bram Fischer International Airport and on the website: www.enviropart.co.za for the duration of the commenting period.

Key organs of state will be provided with an electronic and / or hard copy of this DEIR for their perusal and comment.

Highly probable (where the impact is most likely to occur)

Definite (where the impact will occur)

- ◆ Significance of impact:
 - Low (natural and/ or social functions and/ or processes are *slightly* altered)
 - Medium (natural and/ or social functions and/ or processes are *notably* altered)
 - High (natural and/ or social functions and/ or processes are *substantially* altered)

The following potential impacts and issues were identified by the EAP, I&APs and the project team during the scoping phase and public participation iterations:

7.2 SCREENED IMPACTS

7.2.1 Botanical Impacts

Boulevard Precinct and Fuel Station Alternatives 1, 2 and 3

Potential impact and discussion

As previously stated in section 4.3, the vegetation in Bloemfontein is predominantly grassland. A broad ecological assessment was undertaken for the whole of the airport precinct and based on the presence of natural endangered vegetation, only the Grassland Precinct was further investigated. Therefore an ecological study was undertaken by Tania Anderson (Anderson, 2010) within the Grassland precinct. The study concluded that three protected species, namely *Ammocharis coranica*, *Eucomis cf. Autumnali* and *Nerine cf. laticoma*, were observed within planned islands of vegetation. This study was not undertaken within the Boulevard Precinct because it was identified as being of lower sensitivity than the Grassland Precinct. Although, the findings highlight the presence of potential sensitive flora in the Grassland Precinct which may also be on the proposed site this is deemed to be of low probability and significance. The impact was therefore screened out during the scoping phase.

7.2.2 Faunal Impacts

Boulevard Precinct and Fuel Station Alternatives 1, 2 and 3

Potential impact and discussion

In the ecological study conducted by Tania Anderson (Anderson, 2010) inference was made to the faunal species that may likely be present within the airport premises, based on the quality of the surrounding habitat. It was assumed that several faunal species might be identified in proximity to the site. These included Scrub hare, Cape Ground Squirrel, African Wild Cat, Surricate and Yellow Mongoose. Of these animal species, the African Wild Cat is classified as a vulnerable species. The proposed development may impact on the quality of habitat for different species, however only one animal species was identified to be vulnerable and its presence is only assumed. Although this study was not undertaken within the Boulevard Precinct, the findings highlight potential sensitive fauna which may also be on the proposed site. Due to the low probability and significance of the impact, it was screened out of the scoping phase.

Recommendations

A precautionary approach should be adopted. Care should be taken to observe any potential signs that may indicate the presence of faunal species on the proposed site. Recommendations for dealing with potential faunal species should they be found on the site, will be included in the EMPr (see Annexure 16) as a precaution to prevent potential impacts on fauna.

7.3 ASSESSED IMPACTS

As per the Plan of Study dated August 2013 approved by the DEA, the following impacts are assessed. The alternatives (previously described in chapter 5) being proposed relate to the locations of petrol stations within the Boulevard Precinct to service future landside activities on the precinct. Each impact assessed below is firstly discussed broadly with regards to the Boulevard Precinct and then narrowed down to the proposed alternatives.

7.3.1. Air Quality Impacts

Boulevard Precinct

Potential impact and discussion

One of the activities being proposed is the establishment of an industrial area within Sub-precinct 2 of the Boulevard Precinct and at this stage, the industrial activities have not yet been finalised. However, due to the nature of the development it is anticipated that there will be a

negative impact on the air quality of the immediate environment as industrial activities are likely to emit pollutants in the atmosphere. Industrial pollution poses a threat to human health as well as environmental health.

Sub-precinct 2 is bounded by the Boulevard to the west and Maselspoort Road which runs to the north and east. Bob Rogers Park, the SAAF residential area, is situated to the west of the Boulevard and future industrial activities may have harmful effects on the health of the residents. As there are no other residential areas within close proximity to the airport and thus the air quality impacts will be limited to the above-mentioned residential area and the airport precinct. An increase in the amount of pollutants in the atmosphere may negatively affect the health of residents resulting in respiratory diseases.

It is to be noted that due to the nature of operation, airports are significant sources of air pollution. The pollution load attributed to industrial activities may be insignificant within the given context. Nevertheless should the pollutant concentration exceed acceptable thresholds as prescribed by the National Environmental Management: Air Quality Act (Act 39 of 2004), a license must be obtained from the relevant authorities for the continuation of activities.

Recommendation

All industrial activities to be undertaken must conform to the industry standards.

Petrol stations

Potential impact and discussion of Alternatives 1, 2 and 3

There are fuel vapours that may be released into the surrounding environment during the refuelling of the storage tanks, vehicle refuelling and in the event of a spill or leak. The release of these toxic chemicals into the atmosphere can result in respiratory disorders and photochemical smog. However, it is not anticipated that large quantities of vapours will be emitted and it will be no different to any other petrol station.

Recommendation

- It is recommended that the proposed petrol stations must be equipped with the appropriate technology to suppress fuel vapour emissions into the atmosphere.
- Regular monitoring of the equipment is required to ensure proper functioning. This will prevent the possibility of fuel leaks.

AIR QUALITY IMPACTS									
	No-Go	Boulevard Precinct		Alternative 1: PS 1		Alternative 2: PS 2		Alternative 3: PS 3	
		Without mitigation	With mitigation	Without mitigation	With mitigation	Without mitigation	With mitigation	Without mitigation	With mitigation
Extent	n/a	Immediate	Immediate	Immediate	Immediate	Immediate	Immediate	Immediate	Immediate
Duration	n/a	Long term	Long term	Long term	Long term	Long term	Long term	Long term	Long term
Intensity	n/a	Low	Low	Low	Low	Low	Low	Low	Low
Probability	n/a	Probable	Probable	Probable	Low	Probable	Low	Probable	Low
Significance	n/a	Medium (-)	Low (-)	Low (-)	Low (-)	Low (-)	Low (-)	Low (-)	Low (-)

7.3.2. Heritage Impacts

According to Section 38 (1) and (8) of the NHRA (Act 25 of 1999), the proposed development requires a Heritage Notice of Intent to Develop (NID) be submitted to the regulatory authority. As such, a NID was submitted to Heritage Free State (the relevant provincial authority) for comment. Subsequently, a comment was received stating that the entire Free State Province is viewed as a paleontological sensitive area and thus recommended that paleontological input be sought to determine the paleontological status of the site. See Annexure 5: Comment from Heritage Free State.

However, as Heritage Free State does not process applications relating to Section 38(8) of the NHRA (Act 25 of 1999), it was submitted to the South African Heritage Resources Agency (SHARA) for further consideration. Thereafter, SAHRA requested an archaeological report including mitigation measures and a paleontological assessment to determine the possible impact on existing paleontological resources. A Heritage Impact Assessment (HIA) was thus undertaken which includes an Archaeological assessment as well as a Paleontological assessment of the site. See Annexure 6: Heritage Impact Assessment.

The heritage resources identified on-site consist of the paleontological heritage and resources and the archaeological resources. As such the HIA consists of a Paleontological assessment as well as an archaeological assessment as further discussed in Sections 7.3.3. and 7.3.4. The

overall impact on the broad heritage resources, including *inter alia* the paleontological and archaeological aspects, socio-economic benefits and the cultural landscape is discussed below.

Boulevard Precinct

Potential impact and discussion

The proposed development is situated within the Bram Fischer International Airport along the N9 corridor in Bloemfontein. The landscape does not exhibit any heritage value and no heritage resources have been identified within the immediate vicinity of the proposed development. Therefore, there are no negative impacts anticipated on the cultural landscape. Conversely, there are positive socio-economic impacts on the local community as the proposed development will create employment opportunities and enhance service provision in the area. From an archeological point of view, the area exhibits limited potential for the unearthing of archaeological remains. The impact associated with the proposed landside development on the paleontological heritage is that potential fossils at or beneath the ground surface may be disturbed or damaged. Considering all the aspects of the heritage potential of the Boulevard Precinct, the associated impact is considered to be of low magnitude.

Recommendation

None is being proposed.

Petrol stations

Potential impact and discussion of Alternatives 1, 2 and 3

There are no heritage impacts anticipated from the proposed construction of petrol stations in the Boulevard Precinct.

Recommendations

None is being proposed.

HERITAGE IMPACTS									
	No-Go	Boulevard Precinct		Alternative 1: PS 1		Alternative 2: PS 2		Alternative 3: PS 3	
		Without mitigation	With mitigation	Without mitigation	With mitigation	Without mitigation	With mitigation	Without mitigation	With mitigation
Extent	n/a	Local	Local	Immediate	Immediate	Immediate	Immediate	Immediate	Immediate

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Duration	n/a	Long term	Long term	Long term	Long term	Long term	Long term	Long term	Long term
Intensity	n/a	Low	Low	Low	Low	Low	Low	Low	Low
Probability	n/a	Low	Low	Low	Low	Low	Low	Low	Low
Significance	n/a	Low	Low	Low	Low	Low	Low	Low	Low

7.3.3. Paleontological Sensitivity

Boulevard Precinct and Fuel Station Alternatives 1, 2 and 3

Potential impact and discussion of landside development within the Boulevard Precinct

A paleontological assessment was undertaken and concluded that the Boulevard Precinct is underlain by continental sediments of the Adelaide Subgroup which is part of the Karoo Supergroup, assigned to the Normandien Formation of Late Permian age (299 to 251 million years ago). This particular formation is known for its rich fossil assemblages of plants of the *Glossopteris* Flora of Gondwana (seed fern) with the associated insects and other invertebrates, trace fossils and rare vertebrate remains such as dicynodont therapsids (mammal-like reptiles). However, it should be noted that within the study area, the potential fossiliferous bedrocks are overlain by fossil-poor superficial sediments of younger age belonging to the Quaternary to Recent age (See the Paleontological Impact Assessment attached to the HIA, Annexure 6 to this report). With regards to the Adelaide Subgroup underlying the study area, the following categories of fossils are anticipated:

- Isolated petrified bones as well as articulated skeletons of terrestrial vertebrates such as true reptiles and therapsids
- Aquatic vertebrates such as large, crocodile-like temnospondyl amphibians and palaeoniscoid bony fish
- Freshwater bivalves
- Trace fossils such as worm, arthropod, and tetrapod burrows and trackways, coprolites (fossil droppings)
- Vascular plant remains such as leaves, twigs, roots and petrified woods of the *Glossopteris* Flora, especially glossopterids and arthropytes

The potential impact on the paleontological resources is that the proposed development on the Boulevard Precinct may adversely impact on the potential fossil heritage at or beneath the

surface. This may occur by destroying, disturbing, or permanently sealing fossils which limits the potential to further scientific research.

The potential impacts apply to the construction phase of the proposed development. The activities listed below are considered to have the greatest potential to disturb paleontological resources:

- Site and vegetation clearing
- Levelling, compacting and grading activities
- Trenching and excavations for infrastructure and pipelines
- Laying of foundations for buildings and structures

The pervasive calcretisation and chemical weathering of the near-surface bedrocks have compromised the potential fossil heritage within the Great Karoo. In addition, satellite images and site photos have revealed that the exposure levels of the Adelaide Subgroup bedrocks within the study area are very low implying that the unfossiliferous superficial deposits overlying the bedrock are of low paleontological sensitivity.

Based on the assessment undertaken, the impact of the proposed development on the paleontological resources is considered to be of medium significance (see significance rating classification on pages 33-34).

Recommendations

- Due to the possibility of the aforementioned fossils to be exposed during large scale, deep excavations into the bedrocks during the construction phase, a professional Paleontologist is to be commissioned to monitor all, or at least a sample of works. Such monitoring should occur while the bedrock excavations are fresh and before any infilling, covering or degradation by weathering or plant growth occur.
- Prior to the implementation of the proposed development, a realistic monitoring and mitigation programme should be negotiated between the developer and the Paleontologist contracted. The monitoring programme will contribute towards enhancing the scientific and conservation benefits whilst minimize any potential disruptions. The monitoring should be undertaken by a professional Paleontologist and the following should be undertaken:
 - Field examination of new bedrock excavations
 - Recording of sedimentological and paleontological data
 - Sensible sampling and curation of fossil material
 - Recommendations for any further action required to protect the fossil heritage.

- The Site Engineer / Environmental Control Officer (ECO) must be made aware that all sedimentary deposits have the potential to contain fossils. As a result, he / she should monitor all bedrock excavations
- A chance-find procedure² should be implemented as described in the EMPr.
- Should excavation be required for maintenance and servicing of infrastructure in the future, as far as possible it shall be limited to the disturbed footprint.
- Should bulk works exceed the currently proposed development footprint, SAHRA should be notified.

PALEONTOLOGICAL IMPACTS									
	No-Go	Boulevard Precinct		Alternative 1: PS 1		Alternative 2: PS 2		Alternative 3: PS 3	
		Without mitigation	With mitigation	Without mitigation	With mitigation	Without mitigation	With mitigation	Without mitigation	With mitigation
Extent	n/a	Local	Immediate	Immediate	Immediate	Immediate	Immediate	Immediate	Immediate
Duration	n/a	Long term	Long term	Long term	Long term	Long term	Long term	Long term	Long term
Intensity	n/a	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium
Probability	n/a	High	High	High	High	High	High	High	High
Significance	n/a	Medium	Low	Medium	Low	Medium	Low	Medium	Low

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7.3.4. Archaeological Impacts

Boulevard Precinct and Fuel Station Alternatives 1, 2 and 3

Potential impact and discussion of landside development within the Boulevard Precinct

An Archaeological Impact Assessment has revealed the eastern part of the Boulevard Precinct has been heavily disturbed and the area to the west may have previously been used for agriculture. Therefore due to such disturbance, the site is unlikely to contain archaeological or

² A chance-find procedure highlights the steps to be undertaken whenever new archaeological remains, antiquity or any other object of cultural or archaeological importance are encountered during construction.

historical material of significance. In general, there is a lack of heritage remains in the area. As a result, the study concluded that there is a very low likelihood that the proposed landside development on the Boulevard Precinct will impact on archaeological resources. (See the Archaeological Impact Assessment attached to the HIA, Annexure 6 to this report)

Recommendation

SAHRA should be informed should any buried remains or heritage resources be uncovered in the course of bulk earthworks.

ARCHAEOLOGICAL IMPACTS									
	No-Go	Boulevard Precinct		Alternative 1: PS 1		Alternative 2: PS 2		Alternative 3: PS 3	
		Without mitigation	With mitigation	Without mitigation	With mitigation	Without mitigation	With mitigation	Without mitigation	With mitigation
Extent	n/a	Local	Local	Immediate	Immediate	Immediate	Immediate	Immediate	Immediate
Duration	n/a	Long term	Long term	Long term	Long term	Long term	Long term	Long term	Long term
Intensity	n/a	Low	Low	Low	Low	Low	Low	Low	Low
Probability	n/a	Low	Low	Low	Low	Low	Low	Low	Low
Significance	n/a	Low	Low	Low	Low	Low	Low	Low	Low

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7.3.5. Groundwater Impacts: Pollution

Boulevard Precinct

Potential impact and discussion of landside development within the Boulevard Precinct

According to a geotechnical investigation undertaken in 2008, the site exhibits a perched water table of depths varying between 1.8m - 2.85m within the residual shale. The lower groundwater level is at a depth between 5.4m - 9m. If the wastewater containing pollutants (if any), resulting from the industrial activities is not properly managed, there may be filtration through the soil resulting in pollution loading in the groundwater. In order to eliminate any sources of groundwater contamination, the wastewater must be channelled to the wastewater treatment works before being discharged into the stormwater system.

Recommendation:

- Industrial activities undertaken on site must strictly adhere to national and industry standards.
- Industrial activities must be designed in such a way as to prevent any toxic chemicals and pollutants from entering the natural systems.

Petrol stations

Potential impact and discussion of Alternatives 1, 2 and 3

Groundwater contamination may occur as a result of accidental spillage / leak during refuelling of the storage tanks and the operation of the proposed petrol stations. The fuel storage tanks will be stored underground and therefore there is the possibility of groundwater contamination due to leakages or accidental spills during refuelling.

Recommendation:

- Groundwater contamination can be effectively mitigated by ensuring compliance with the relevant SANS codes pertaining to effective bunding, recovery systems and the adherence to a spill management plan.
- Provision must be made for suitable secondary containment measures, *i.e.*, fuel storage tanks must be placed on a bunded area with a capacity of 110% of the maximum holding capacity.
- Proper monitoring of the fuel reticulation system and the associated equipment has to be undertaken on a regular basis to prevent overfilling and any leakages.
- Spill cleanup equipment must be available at the petrol stations at all times. In addition, all staff members must receive appropriate training to use such equipment.

GROUNDWATER IMPACTS: POLLUTION									
	No-Go	Boulevard Precinct		Alternative 1: PS 1		Alternative 2: PS 2		Alternative 3: PS 3	
		Without mitigation	With mitigation	Without mitigation	With mitigation	Without mitigation	With mitigation	Without mitigation	With mitigation
Extent	n/a	Local	Local	Local	Local	Local	Local	Local	Local
Duratio n	n/a	Short term	Short term	Short term	Short term	Short term	Short term	Short term	Short term
Intensit y	n/a	Low	Low	Mediu m	Low	Mediu m	Low	Mediu m	Low
Probabi lity	n/a	Low	Low	Low	Low	Low	Low	Low	Low
Signific ance	n/a	Low (-)	Low (-)	Mediu m (-)	Low (-)	Mediu m (-)	Low (-)	Mediu m (-)	Low (-)

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7.3.6. Groundwater Impacts: Construction-related pollution

Boulevard Precinct and Fuel Station Alternatives 1, 2 and 3

Potential impact and discussion of landside development within the Boulevard Precinct

According to a geotechnical investigation undertaken in 2008, the site exhibits a perched water table of depths between 1.8m - 2.85m between the residual shale. The lower groundwater level is at a depth between 5.4m – 9m. As such the construction activities on the site may have an impact on the groundwater stored in the perched water table.

Recommendation

This impact can be effectively mitigated through the implementation of a comprehensive EMPr.

GROUNDWATER IMPACTS: CONSTRUCTION RELATED POLLUTION									
	No-Go	Boulevard Precinct		Alternative 1: PS 1		Alternative 2: PS 2		Alternative 3: PS 3	
		Without mitigation	With mitigation	Without mitigation	With mitigation	Without mitigation	With mitigation	Without mitigation	With mitigation
Extent	n/a	Local	Local	Local	Local	Local	Local	Local	Local
Duration	n/a	Short term	Short term	Short term	Short term	Short term	Short term	Short term	Short term
Intensity	n/a	Low	Low	Low	Low	Low	Low	Low	Low
Probability	n/a	Low	Low	Low	Low	Low	Low	Low	Low
Significance	n/a	Medium (-)	Low (-)	Medium (-)	Low (-)	Medium (-)	Low (-)	Medium (-)	Low (-)

7.3.7. Stormwater Impacts

Boulevard Precinct

Potential impact and discussion of landside development within the Boulevard Precinct

Stormwater drainage has presented an ongoing issue on the property. The stormwater drains onto the airside and eventually enters the Renosterpruit River. In the southern sections of the property, stormwater drains via drainage ditches established along the boundaries of the premises and enters the Bloemspruit River. This flat lying area requires a drainage solution to prevent flooding and therefore a stormwater management plan has been compiled.

The development footprint of the landside development totals 176 500m² for all three sub-precincts and an additional 100 000m² for the long-term development. This will lead to the hardening of surfaces over a large extent and therefore will result in an additional overland runoff. A stormwater management plan has been compiled to address the increased stormwater runoff which will be primarily collected in open channels (lined or grassed). Both on-site and off-site attenuation are proposed to polish off the water and will therefore control the quality and quantity of water entering the riverine system. In addition, an overland flood route has been included for extreme events.

Recommendation

- It is recommended that the stormwater management plan compiled for this proposed development is implemented.

Petrol stations

Potential impact and discussion of Alternatives 1, 2 and 3

The potential impact associated with the hardening of surfaces for the establishment of the proposed petrol stations has been discussed above as part of the Boulevard Precinct. Also, there is the potential for stormwater contamination due to spills and leaks from the proposed fuel tanks and the associated infrastructure. Surface spillage during refuelling of storage tanks and vehicles can potentially contaminate the soil and subsequently the overland runoff. This may lead to the transportation of contaminants downstream in the Renosterpruit and Bloemspruit Rivers. In addition, direct seepage into the stormwater system can occur.

Recommendation

- All surface spills must be contained on-site and diverted to an oil / water separator or sump through an appropriate conduit.
- Accidental surface spills must be contained within the confines of the petrol station and diverted to an oil / water separator.

STORMWATER IMPACTS									
	No-Go	Boulevard Precinct		Alternative 1: PS 1		Alternative 2: PS 2		Alternative 3: PS 3	
		Without mitigation	With mitigation	Without mitigation	With mitigation	Without mitigation	With mitigation	Without mitigation	With mitigation
Extent	n/a	Local	Local	Local	Local	Local	Local	Local	Local
Duration	n/a	Short term	Short term	Short term	Short term	Short term	Short term	Short term	Short term
Intensity	n/a	Medium	Medium	Medium	Low	Medium	Low	Medium	Low
Probability	n/a	Low	Low	Low	Low	Low	Low	Low	Low
Significance	n/a	High (-)	Medium (-)	Medium (-)	Low (-)	Medium (-)	Low (-)	Medium (-)	Low (-)

7.3.8. Infrastructure and Services Impacts

Boulevard Precinct and Fuel Station Alternatives 1, 2 and 3

Potential impact and discussion of landside development within the Boulevard Precinct

Due to the large extent of the development being proposed, there may be additional pressure on existing services as further described below:

Bulkwater

A 250mm water pipeline exists on the site providing bulk water from the Maselspoort Water Purification Works to the airport precinct. The total estimated daily water demand for the full development is 24.5 l/s for domestic supply and 50 l/s for fire supply which amounts to 1.8 Mgl per day. In order to further secure bulk water supply, ACSA is in the process of negotiating the

possible construction of a reservoir with the Mangaung Municipality. It has been confirmed that the existing 250mm water pipeline can service the proposed development.

Sewer and wastewater

Currently, all sewer and wastewater is processed at a shared sewer treatment at the Air Force base which is currently at capacity. As a separate project, an EIA is being undertaken for a new wastewater treatment works within the airport precinct to accommodate the wastewater and sewer generated from the operation of the proposed landside activities. However, in the interim, the new municipal bulk reticulation system will be able to accept the estimated 16.23l/s of sewer to be generated from the full development before the final completion of the wastewater treatment works.

Stormwater

In order to address the additional overland runoff to be generated as a consequence of the hardening of surfaces in the Boulevard Precinct, a stormwater management plan has been compiled outlining the required infrastructural interventions. The overland runoff will be mostly collected in open channels, either lined or grassed depending on the velocity of the flow. The other measures to be implemented are cut-off canals, channels to divert water to the existing box culverts under the N8, on-site as well as off-site attenuation. See Section 5.4.6.3 for more detail.

Electrical infrastructure

The airport is supplied from the Estoire Distribution centre in Rudolf Greyling. The current power connection to the airport is provided at the JBM Hertzog substation. Significant increases have been recorded in electricity demand lately at the Bram Fischer International Airport and is only expected to increase even further with the proposed landside developments. Therefore, the electrical reticulation will be upgraded to accommodate the proposed landuse developments consisting of the relocation of the existing primary cable to a new supply point, the construction of two switching stations and the installation of equipment for both stations.

Overall:

Based on the above, the proposed development will place additional pressure on the existing services. The demand for services is viewed as within the acceptable norms for development of such magnitude. Additionally, in anticipation of the proposed development, appropriate measures have been put in place by ACSA as well as Mangaung Municipality to facilitate the implementation of the required services.

Recommendation

- It is recommended that the measures proposed in the stormwater management plan be implemented to mitigate the increasing volume of overland runoff.
- It is recommended that the proposed electrical reticulation system be implemented to service the proposed development.
- All sewer and wastewater must be treated at the wastewater treatment works within the airport precinct once it becomes operational.
- Measures to save water and electricity must be included in the design of the proposed landside buildings.

INFRASTRUCTURE AND SERVICES:									
	No-Go	Boulevard Precinct		Alternative 1: PS 1		Alternative 2: PS 2		Alternative 3: PS 3	
		Without mitigation	With mitigation	Without mitigation	With mitigation	Without mitigation	With mitigation	Without mitigation	With mitigation
Extent	n/a	Local	Local	Local	Local	Local	Local	Local	Local
Duration	n/a	Long term	Long term	Long term	Long term	Long term	Long term	Long term	Long term
Intensity	n/a	Low	Low	Low	Low	Low	Low	Low	Low
Probability	n/a	Probable	Probable	Probable	Probable	Probable	Probable	Probable	Probable
Significance	n/a	High (-)	Medium (-)	Low (-)	Low (-)	Low (-)	Low (-)	Low (-)	Low (-)

7.3.9. Traffic Impacts

Boulevard Precinct

Potential impact and discussion of landside development within the Boulevard Precinct

Due to the nature and magnitude of the proposed development, it is anticipated that a significant increase in traffic within the airport precinct, especially within the Boulevard Precinct will be experienced. A TIA was conducted to analyse the impact of traffic generated by the development on the operation of the surrounding road system and internal road network. The TIA also includes the required improvements to the external roads, intersections and internal road network to provide an acceptable level of service.

A 10 year traffic forecast scenario (up to 2023) was analysed for the development of the Boulevard Precinct with particular reference to the private hospital, warehousing site, self-storage site and office block. In order to understand the cumulative impact, an estimate of the number of trips on the other four precincts was considered. The TIA also considered the cumulative transport impact over the long term landuse developments within the airport area beyond 2023. The trip generation is represented below.

Proposed Development	AM Peak		PM Peak	
	In	Out	In	Out
Landuse developments up to 2023	1035	369	422	1089
Long term landuse developments beyond 2023	1706	1116	1095	1684

With the addition of the proposed development, it is expected that the N8 / Boulevard interchange will operate within acceptable norms. However, should the full development of the Boulevard Precinct be realised in 2023, road upgrading and reconfiguration will be required.

The TIA concluded that the proposed internal road network will adequately accommodate traffic up to 2023. A single lane in either direction and a road reserve of 16m is therefore adequate for Roads A to G (See Figure 3 on Page 26) to service the long term development at the Bram Fischer International Airport.

Recommendations

- It is recommended that the internal road network proposed on Page 26 of this report be implemented incrementally to service the development of the Boulevard Precinct.
- It is recommended that the progress of the development of the Boulevard Precinct be monitored and that the traffic projections and required intersection upgrades be reviewed in a TIA to be prepared in five to seven years.
- In order to accommodate traffic in 2023 after the full development of the Boulevard Precinct, the following must be undertaken after a review of the TIA as stated above.

Southern terminal of the N8 / Boulevard Interchange

- The two existing approach lanes of the northern approach to be maintained and both must be demarcated for use as right turn lanes.

- In order to accommodate two right turn lanes, an auxiliary exit lane must be constructed on the western exit (N8 on-ramp) which can taper into the existing exit lane 150m from the intersection.
- The installation of traffic signals at the southern end of the N8 / Boulevard interchange with the traffic signal cycle length adhering to Mangaung Metropolitan Municipality's requirements.

The Boulevard

- It is recommended that sufficient road reserve be defined along the Boulevard to allow for three lanes per direction if the traffic growth warrants this capacity increase.

Northern terminal of the N8 / Boulevard interchange

- The northern terminal intersection must be converted to a left turn and straight through lane. In the absence of development south of the N8, no vehicles will turn right at this intersection.

Boulevard / Road B intersection

- The construction of Road B is not essential to service the proposed development within the Boulevard Precinct. However, its establishment forms part of a long term plan to provide access to Estoire, a settlement to the west of the airport.
- The construction of Road B warrants a traffic circle with two circulating lanes to be established. Road B will be accessible with one approach and one exit lane.

East-west leg / north-south leg of Maselspoort Road E intersection

- Maselspoort Road has the capacity to accommodate the future traffic volume anticipated due to the landside development on the southeastern section of the Boulevard Precinct. Road E will be constructed as part of the long term development plan to service the long term developments in the airport precinct.

Maselspoort Road / Road G intersection

- This intersection is proposed to accommodate the immediate development within the Boulevard Precinct. The proposed intersection will have one approach and exit lane and no turning lanes.
- Maselspoort Road will have sufficient capacity to accommodate traffic generated post 2023. It is therefore adequate to maintain Maselspoort Road as a two-way, two-lane road.

Petrol stations

Potential impact and discussion of Alternatives 1, 2 and 3

The proposed petrol stations will service the existing activities within the airport precinct as well as the proposed landside development. It is not anticipated that the proposed petrol stations will generate additional traffic but they will be used by vehicles entering and / or leaving the airport precinct. However, the location of the petrol station may impact the traffic flow within the airport precinct.

The TIA recommends positioning the two petrol stations on the development blocks to the east and west of the Boulevard, labelled as Petrol Station 1 and 2 in Figure 2 on Page 26 of this report. The above-mentioned locations allow for easy vehicular access along main access roads. In addition, the placement of the service station on both sides of the Boulevard (within Sub-precinct 1) will reduce the need for vehicles to perform U-turns to access the petrol stations, thereby increasing road safety. Such positioning will allow for a left-in, left-out access points thus maintaining the flow of traffic along the Boulevard.

Petrol station 3 is bordered by Road A and the Boulevard, as indicated in Figure 2 on Page 24 in this report. It is accessible via Road A which is not a main access road but is instead a proposed access road to Bob Rogers Park, the SAAF base residential area. Due to the configuration of Road A, left-in and left-out access will not be feasible and thus resulting in disrupted traffic along the Boulevard.

In addition, as Road A is proposed as an access road to Bob Rogers Park, the additional traffic on the road may negatively impact on the residents. Petrol station 3 may result in traffic backing up to the Boulevard and preventing easy access to and from the residential area. As the residential area serves the SAAF base, access points should not be hindered in case of military emergencies. From a traffic point of view, Petrol station 3 has a higher negative impact on traffic and accessibility in and out of Bob Rogers Park than petrol stations 1 and 2 being proposed.

Recommendation

Other than the recommendations provided in the TIA for traffic management within the Boulevard Precinct, the following must be considered:

- From a traffic perspective, petrol stations 1 and 2 are recommended.
- Upon finalisation of the exact location of the proposed petrol stations within the development blocks, auxiliary acceleration and deceleration lanes must be designed to and from the Boulevard
- The left-in, left-out access points must be restricted to the service stations only and should not provide access to any other portion of the airport precinct.

TRAFFIC IMPACTS									
	No-Go	Boulevard Precinct		Alternative 1: PS 1		Alternative 2: PS 2		Alternative 3: PS 3	
		Without mitigation	With mitigation	Without mitigation	With mitigation	Without mitigation	With mitigation	Without mitigation	With mitigation
Extent	n/a	Local	Local	Immediate	Immediate	Immediate	Immediate	Immediate	Immediate
Duration	n/a	Long term	Long term	Long term	Long term	Long term	Long term	Long term	Long term
Intensity	n/a	Medium	Medium	Low	Low	Low	Low	Low	Low
Probability	n/a	Highly Probable	Highly Probable	Highly Probable	Highly Probable	Highly Probable	Highly Probable	Highly Probable	Highly Probable
Significance	n/a	High (-)	Medium (-)	Medium (-)	Low (-)	Medium (-)	Low (-)	Medium (-)	Medium (-)

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7.3.10. Visual Impacts

Boulevard Precinct and Fuel Station Alternatives 1, 2 and 3

Potential impact and discussion of landside development within the Boulevard Precinct

It is anticipated that the proposed development on the Boulevard Precinct will be visible from the Airport Approach Road and part of the N8 highway. Also, the buildings on the Boulevard Precinct will be visible from the residential area in the southwest portion of the airport precinct. The proposed development may be seen as a visual intrusion in the landscape considering that the landscape is largely barren. Development Guidelines were compiled for the Boulevard Precinct to maximise landuses. It is a set of guidelines delineating the appropriate uses of the Boulevard Precinct for the proposed activities on-site as well as creating a positive public environment.

Additionally, with the long term plan to develop the N8 corridor, the proposed development will blend in with other development of similar nature in the area. It is not anticipated that the proposed development will have a significant negative visual impact from the surrounding areas.

Recommendation

- It is recommended that the Development Guidelines compiled for the Boulevard Precinct be adhered to (please see Pages 21 and 22 of this report for more detail).
- Natural vegetation must be used as visual screens (if necessary) from the Boulevard.
- The buildings must be designed in such a way as to complement each other and therefore retain the fabric of the development throughout the Boulevard Precinct.

VISUAL IMPACT									
	No-Go	Boulevard Precinct		Alternative 1: PS 1		Alternative 2: PS 2		Alternative 3: PS 3	
		Without mitigation	With mitigation	Without mitigation	With mitigation	Without mitigation	With mitigation	Without mitigation	With mitigation
Extent	n/a	Local	Local	Immediate	Immediate	Immediate	Immediate	Immediate	Immediate
Duration	n/a	Long term	Long term	Long term	Long term	Long term	Long term	Long term	Long term
Intensity	n/a	Medium	Medium	Low	Low	Low	Low	Low	Low
Probability	n/a	Highly Probable	Highly Probable	Probable	Probable	Probable	Probable	Probable	Probable
Significance	n/a	Medium (-)	Low (-)	Low (-)	Low (-)	Low (-)	Low (-)	Low (-)	Low (-)

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7.3.11. Construction Related Disturbances

Boulevard Precinct and Fuel Station Alternatives 1, 2 and 3

Potential impact and discussion

The construction of the proposed development could have negative impacts on the receiving environment. Disturbances which relate to the construction phase include increased traffic, dust, noise and vibration. These disturbances may impact the surrounding landuses such as the Air Force Base, Bob Rogers Park and the day-to-day functioning of the airport.

Traffic

Traffic to the site will increase during the construction phase due to the additional fleet of construction and transport vehicles commuting to and from the site. Regulating the travelling times of these vehicles can be used to minimise the potential impact on other road users.

Dust

Dust will be generated during excavations and construction works undertaken on the site. This impact is not considered to be highly significant as the site is currently in a barren area and does not have any facilities in the immediate vicinity. This impact can be mitigated by watering the heaps on dry and windy days.

Noise

The use of heavy machinery on site during the construction phase will generate noise that may potentially be a source of nuisance to the Bob Rogers Park residents. However, this impact is considered to be of low significance. Furthermore, as the site is located within the airport precinct which consists of a landing strip, noise levels in the area are already affected by planes landing and taking off from the runway.

Vibration

Vibrations caused during any excavation or drilling exercises are not anticipated to have a significant impact on the surrounding landuses. Furthermore the site is located next to the airport landing strip therefore the area is already affected by vibrations caused by planes passing overhead.

Recommendations

The construction impacts are temporary and can be mitigated in the following methods:

- The implementation of a comprehensive EMPr (See Annexure 16) which consists of the following recommendations amongst other mitigatory measures, to limit the potential negative impacts associated with the construction phase,
 - If required, traffic control and safety shall be done in accordance with the South African Traffic Safety Manual, with the relevant signs, flagmen and barriers being provided at the various accesses. All laws and regulations applicable on road systems within the airport are enforceable on the construction site.
 - Controlling the working hours during which construction activities can be mitigated
 - Limiting the times when the construction vehicles can utilise the main roads
 - Watering of soil stock piles to mitigate dust impacts

- These recommendations are captured and detailed in the draft Construction Environmental Management Programme which is attached to this report as Annexure 16.

CONSTRUCTION RELATED DISTURBANCES									
	No-Go	Boulevard Precinct		Alternative 1: PS 1		Alternative 2: PS 2		Alternative 3: PS 3	
		Without mitigation	With mitigation	Without mitigation	With mitigation	Without mitigation	With mitigation	Without mitigation	With mitigation
Extent	n/a	Immediate	Immediate	Immediate	Immediate	Immediate	Immediate	Immediate	Immediate
Duration	n/a	Short term	Short term	Short term	Short term	Short term	Short term	Short term	Short term
Intensity	n/a	Low	Low	Low	Low	Low	Low	Low	Low
Probability	n/a	Definite	Definite	Definite	Definite	Definite	Definite	Definite	Definite
Significance	n/a	Medium (-)	Low (-)	Low(-)	Low (-)	Low (-)	Low (-)	Low (-)	Low (-)

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8. CONCLUSION AND WAY FORWARD

The Environmental Partnership submits that this DEIR identifies the environmental issues and concerns raised by I&APs, authorities and the project team during the scoping and assessment phases of the project as a result of the proposed development alternatives to date.

Further issues and concerns which are raised by I&APs, authorities and the project team will be incorporated into the final EIR. The issues identified during the assessment phase will also inform the planning and design of the proposed developments. The final EIR will then be submitted to the regulatory authorities for their approval.

The botanical and faunal impacts were screened out during the scoping phase and were not assessed any further. The assessment phase has taken into consideration all issues and concerns that were identified during the scoping phase. This included acquiring more information to assist in determining the significance of the potential impacts relating to:

- Air quality Impacts
- Heritage Impacts
- Paleontological Impacts
- Archaeological Impacts
- Groundwater Impacts
- Stormwater Pollution
- Infrastructure and Services Impacts
- Traffic Impacts
- Visual Impacts
- Construction related disturbances

Recommendation:

It is recommended that the proposed development be approved along with fuel station Alternatives 1 and 2. Alternatives 1 and 2 are being recommended because they allow for a smoother traffic flow within the Boulevard Precinct.

Reasons for preferred alternative:

Based on the assessment of the potential impacts for all three alternatives, Alternatives 1 and 2 have a lower negative impact than Alternative 3 on the traffic along the Boulevard (Airport Approach Road). Alternatives 1 and 2 allow for a left-in, left-out access points thus maintaining the flow of traffic on the Boulevard.

IDENTIFIED IMPACTS	Boulevard Precinct		ALTERNATIVES						
			No-Go	Alternative 1: Petrol Station 1		Alternative 2: Petrol Station 2		Alternative 3: Petrol Station 3	
	Without mitigation	With mitigation		Without mitigation	With mitigation	Without mitigation	With mitigation	Without mitigation	With mitigation
Air Quality	Med (-)	Low (-)	N/A	Low (-)	Low (-)	Low (-)	Low (-)	Low (-)	Low (-)
Heritage	Low (-)	Low (-)	N/A	Low (-)	Low (-)	Low (-)	Low (-)	Low (-)	Low (-)
Paleontology	Med (-)	Low (-)	N/A	Med (-)	Low (-)	Med (-)	Low (-)	Med (-)	Low (-)
Archaeology	Low (-)	Low (-)	N/A	Low (-)	Low (-)	Low (-)	Low (-)	Low (-)	Low (-)
Groundwater Pollution	Low (-)	Low (-)	N/A	Med (-)	Low (-)	Med (-)	Low (-)	Med (-)	Low (-)
Groundwater (Construction-related)	Med (-)	Low (-)	N/A	Med (-)	Low (-)	Med (-)	Low (-)	Med (-)	Low (-)
Stormwater	High (-)	Med (-)	N/A	Med (-)	Low (-)	Med (-)	Low (-)	Med (-)	Low (-)
Infrastructure & Services	High (-)	Med (-)	N/A	Low (-)	Low (-)	Low (-)	Low (-)	Low (-)	Low (-)
Traffic	High (-)	Med (-)	N/A	Med (-)	Low (-)	Med (-)	Low (-)	Med (-)	Med (-)
Visual	Med (-)	Low (-)	N/A	Low (-)	Low (-)	Low (-)	Low (-)	Low (-)	Low (-)
Construction-related disturbances	Med (-)	Low (-)	N/A	Low (-)	Low (-)	Low (-)	Low (-)	Low (-)	Low (-)

The following recommendations may assist in mitigating the potential impacts described above:

- It is recommended that the measures proposed in the stormwater management plan be implemented to mitigate the increasing volume of overland runoff.
- Regular monitoring of the equipment at the proposed petrol stations is required to ensure proper functioning. This will lessen the likelihood of fuel leaks.
- Provision must be made for suitable secondary containment measures, *i.e.*, fuel storage tanks must be placed on a bunded area with a capacity of 110% of the maximum holding capacity.
- Spill cleanup equipment must be available at the petrol stations at all times. In addition, all staff members employed at the proposed petrol stations must receive appropriate training to use such equipment.
- All surface spills must be contained on-site and diverted to an oil / water separator or sump through an appropriate conduit.
- Accidental surface spills must be contained within the confines of the petrol station and diverted to an oil / water separator.
- It is recommended that the proposed electrical reticulation system be implemented to service the proposed development.
- Measures to save water and electricity must be included in the design of the proposed landside buildings.
- It is recommended that the internal road network proposed on Page 26 of this report be implemented incrementally to service the development on the Boulevard Precinct.
- Natural vegetation must be used as visual screens (if necessary) from the Boulevard.
- The implementation of a comprehensive CEMPr (See Annexure 16) to limit the potential negative impacts associated with the construction phase,

This DEIR will be made available for a period of 40 days to the registered I&APs to provide an opportunity to comment on the report. [A copy of the report is available for public review at the Information Desk at the Bram Fischer International Airport and](#)

~~This DEIR will be also distributed to registered I&APs and will be made available on The Environmental Partnership's website: www.enviropart.co.za. Registered I&APs are invited to submit their comments on or before [Monday xxx-14, April 2014](#). All comments received during the commenting period will be submitted to the regulatory authorities for their consideration. Comments may be submitted to **Tarryn Solomon** via fax, email or post at the following details:~~

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10. LIST OF FIGURES AND ANNEXURES

Figure 1a: Locality Map

Figure 1b: Locality Map

Annexure 1 Details and Expertise of EAP

Annexure 2 Acknowledgement of Receipt of Application to EA

Annexure 3 DEA's confirmation of Acceptance of FSR

Annexure 4 Ecological Study

Annexure 5 Comment from Heritage Free State

Annexure 6 Heritage Impact Assessment

Annexure 7 Site Photographs

Annexure 8 List of Registered Interested and affected parties

Annexure 9 Media Notices

Annexure 10 Site Notices

Annexure 11 Information Sheet 1 (Summary of DSR)

Annexure 12 Proof of Notification of DSR to I&APs

Annexure 13 Public Forum Attendance Register

Annexure 14 Information Sheet 2 (Summary of addendum to the FSR)

Annexure 15 Proof of Notification of Addendum to the FSR to I&APs

Annexure 16 Draft Environmental Management Programme (EMPr)