

**CEN INTEGRATED ENVIRONMENTAL
MANAGEMENT UNIT**



Environmental and Rural Development Specialist

**FINAL Environmental Impact Report for the Proposed
Construction of a landing strip at Kwandwe Private Game
Reserve, Makana Municipality**

Project Title:

FINAL Environmental Impact Report for the Proposed Construction of a landing strip at Kwandwe Private Game Reserve, Makana Municipality

Project Applicant: C-SA Properties Pty Ltd

Reference Number: EC04/LN2/M/12-83

Environmental Assessment Practitioner:

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Executive Summary

Introduction

CEN Integrated Environmental Management Unit was appointed by C-SA Properties Pty Ltd to undertake an environmental assessment (Scoping and EIA) for the proposed construction of a landing strip on Ptn 3 (Koodoos Run) (a Ptn of Ptn 2) of the Farm Nooitgedagt No 92 at Kwandwe Private Game Reserve near Grahamstown in the Makana Municipality.

The environmental decision making authority for the EIA is the Provincial Department of Economic Development, Environmental Affairs and Tourism. An environmental impact report is required in terms of the Regulations promulgated under Section 24(5) read with Section 44 of the National Environmental Management Act 107 of 1998 as amended (Government Notice R.543 in Government Gazette 33306 of 10 December 2010).

Terms of Reference

The Terms of Reference established for the proposed environmental assessment are:

- ❖ Give a comprehensive description of the environment that may be affected by the proposed development; and discuss the manner in which the associated activities may affect various components thereof
- ❖ Engage the public and relevant stakeholders throughout the EIA process and incorporate their comment into the EIR.
- ❖ Consider alternatives for the project and do a comparative assessment to determine which is most appropriate in terms of environmental sensitivity and economic feasibility
- ❖ Conduct the necessary environmental investigations and analyse specialist reports to assess impacts that were raised during the scoping phase
- ❖ Suggest sound mitigation measures to minimize predicted impacts

- ❖ Develop a draft environmental management programme

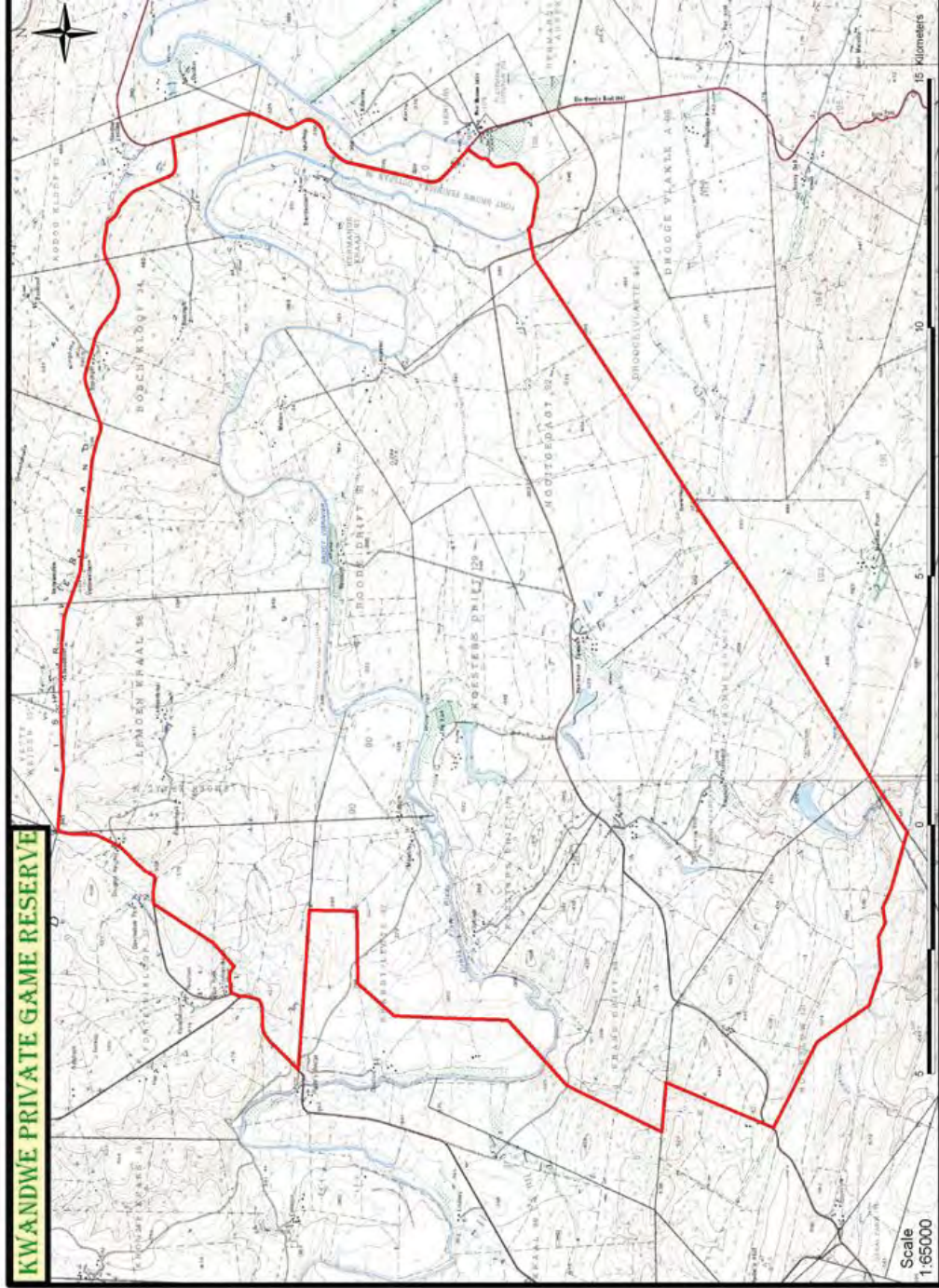
Structure of the Report

Chapter 1 of the report introduces the integrated environmental management philosophy and details the requirements of the environmental impact assessment legislation. **Chapter 2** presents a detailed description of the proposed development site. **Chapter 3** describes the affected environment of the sub-region and the site of the proposed development. **Chapter 4** describes the project proposal and puts it in line with planning principles for the area. **Chapter 5** describes the methodology used in identifying and assessing impacts and alternatives. **Chapter 6** describes project alternatives and does a comparative assessment to select the most appropriate. **Chapter 7** identifies potential significant impacts and assesses them. **Chapter 8** details the public participation process. **Chapter 9** concludes the Environmental Impact Report, and provides an environmental statement regarding the proposed development. **Chapter 10** presents a draft Environmental Management Programme. **Chapter 11** is a list of references used in this report.

Property Description

Kwandwe Private Game Reserve is situated in the Great Fish River Valley approximately 35 km north of Grahamstown and is accessible off the R67 which forms the eastern boundary of the reserve. The reserve is approximately 22 000 ha in size and is surrounded by state and privately owned land (e.g. nature reserves, farm, army base). The Great Fish River flows through the reserve for approximately 25 km and all the watercourses drain towards it (Bissett, 2004).

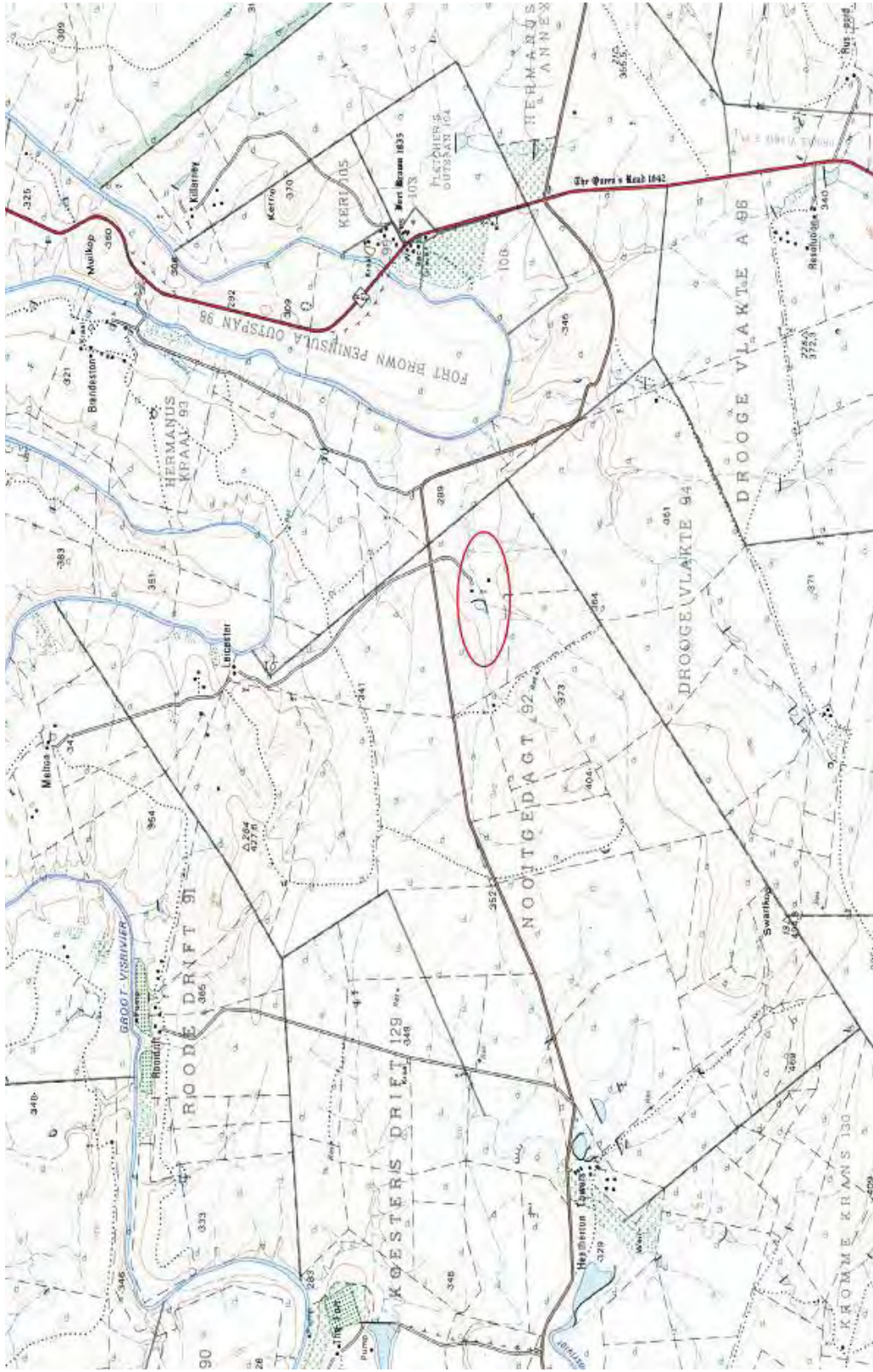
Kwandwe is privately owned and was established as a conservation area in 1999. Prior to this, the land was utilized for ostrich and small stock farming. The perimeter is fenced with electrical fencing. Existing structures and infrastructure includes a reception area, a landing strip, roads, dams, 4 lodges, and staff accommodation.



➤ Figure: A plan showing extent of Kwandwe Private Game Reserve.

The activities are proposed on Ptn 3 (Koodoos Run) (a Ptn of Ptn 2) of the Farm Nooitgedagt No 92 (approximate central GPS co-ordinates: 33°07' 54.34"S 26°35' 35.73"E). The figure below is an extract from a 1:50 000 topographical map that shows the relative location of the proposed landing strip.

The area proposed for the landing strip is situated just west of the entrance gate to the reserve in an area between the public road and a non-perennial drainage feature to the south (refer to the Google Earth image below). Most of the area slopes relatively gently in a south-easterly direction towards the drainage area. The area available for a landing strip (as determined by the proximity of the drainage feature to the road and topography) becomes limited in a westerly direction as the drainage feature gets closer to the road. Natural changes in vegetation occur in a gradient from the riparian area to the road from *Acacia*-dominated riparian vegetation, to thicket on slopes and typical noorsveld in flatter areas closest to the road. In the central and eastern portion of the site, evidence of sheet wash and pedestal development are noted which is probably a result of a combination of factors including naturally shallow soils that are susceptible to erosion, low vegetation cover (typical of noorsveld and possibly previous overgrazing), runoff from the road etc. The site was previously used for stock farming and areas in the eastern section show signs of overutilization.



➤ Figure: Extract of a 1:50 000 topographical map showing the relative location of the landing strip (in red).



➤ Figure: A Google Earth image showing the relative location of the landing strip (in red).

The development proposal

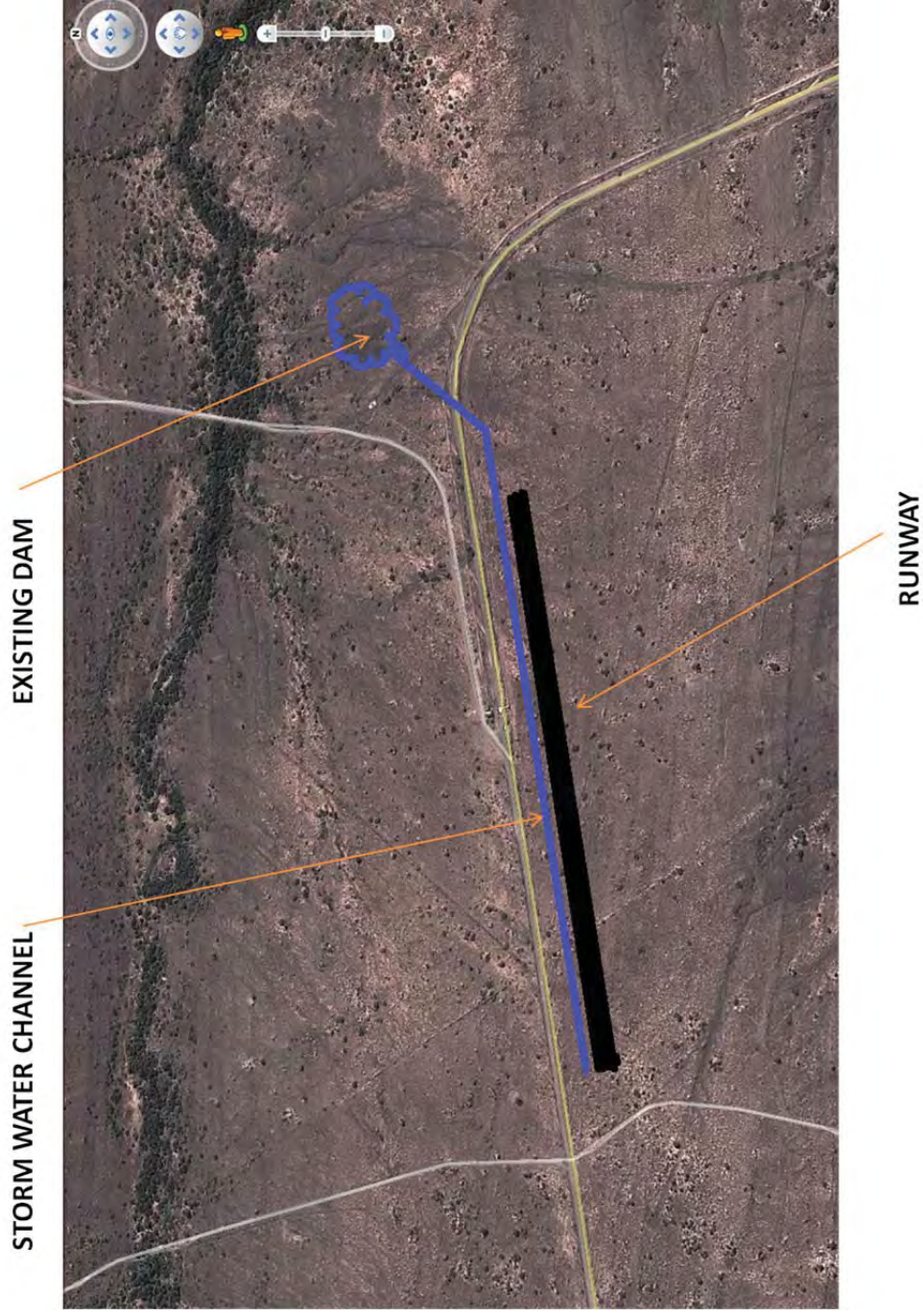
It is proposed to construct the following structures and infrastructure:

- ❖ A runway for the owners and guests of Kwandwe Private Game Reserve to land their airplanes (refer to figures inserted below):
 - Length: 2 km
 - Width: asphalt-surfaced area is 25 m (140 m disturbance footprint including clear zones)
 - The runway will be fenced and clear zones will be grassed or vegetated with low growing cover.
 - A grassed stormwater channel/V-drain will be constructed along the length of the runway adjacent to and north of the 25 m paved surface and on the southern side of the public road. Stormwater runoff from the runway will be diverted via the channel to an existing earth dam NE of the runway. The length of the channel is approximately 2109 m at a depth varying between 150 and 221 mm at the lowest end of the runway. The stormwater channel will have energy dissipaters at 500 m intervals to break stormwater flow that ultimately diverts stormwater to a retention facility. The engineers have proposed to manipulate an existing dam to act as a retention facility by dropping the pond invert level into the hill, and vegetating it with grass. The pond will only receive water during rainfall events. The proposed retention pond and V-drain will prevent erosion of the hillside and siltation of the drainage feature below.
 - No additional infrastructure typically associated with runways will be required (e.g. hangars, parking, fuel storage)
 - The existing landing strip will be decommissioned and the site rehabilitated
 - The following aircraft are expected to land at the landing strip:
 - Cessna 210: landing frequency - October to April: twice a week, May to September: twice a month
 - Piper Seneca: landing frequency - October to April: twice a month, May to September: once every 2 months
 - Cessna Caravan: landing frequency - October to April: once a month, May to Sept: once every 2 months
 - King Air/Pilatus 12: landing frequency - October to April: once a month, May to Sept.- once every 3 months

- ❖ The construction period is estimated at approximately 6 to 8 months, weather permitting.
- ❖ The landing strip will be surfaced with asphalt that will be sourced from Port Elizabeth and trucked to site. Once placed, the asphalt surface is trafficable within 3 hours.
- ❖ The number of trucks and construction vehicles anticipated on the public road during construction is 10 per day at 10 trips per day. No road closures will be required during construction phase, and no safety measures will need to be put in place on the public road for when aeroplanes land in operational phase.



➤ Figure: A Google Earth image showing the proposed position and alignment of the landing strip.



- **Figure: An indication of the position of the existing earth dam to which stormwater will be discharged.**

Consideration of Alternatives

The no-go alternative

The 'no-go' option assumes the *status quo*, i.e. the current landing strip is used. This has a number of implications for management and funding of the reserve. The current landowner has a jet which cannot land on the existing landing strip as it is too short. It is also not possible to extend the existing landing strip as the slope drops off too steeply to accommodate the required extension. Since the reserve is privately owned it relies on funds from guests to operate. It is therefore key that the necessary upgrades to the reserve infrastructure that facilitate tourism (and funding) are done, as long as these are in line with the greater management goals of the reserve and do not compromise conservation principles and environmental processes. An extract from the Environmental Management Plan for the reserve illustrates the purpose of the reserve:

'Kwandwe was established in 1999 with the major aims of creating a viable ecotourism venture that at the same time plays a role in conserving the ecosystems of the Fish River Valley '.

The 'no go' option will be used as a baseline throughout the assessment process against which potential impacts will be compared in an objective manner. Five site alternatives were considered for the landing strip.

Site alternatives

Five site alternatives were considered for the landing strip.

There is an existing landing strip on the reserve; however it is too short to land the owner's jet. The option of extending the existing strip was considered, however the slope on the south-western extent of the strip drops too steeply making this impossible. The option of upgrading portion of the public access road that runs through the reserve to function as a landing strip with controlled thoroughfare was discussed with the District Roads Engineer. Correspondence to date indicates that this is not an option. The option of using previous irrigation areas along the Fish River was also explored; however no sites were of the required length (2 km).

The reserve manager considered five alternative locations for the landing strip using the following criteria:

1. Little to no impact on the reserve's business of photographic based eco-tourism. This means the strip should be located out of prime areas used by game or areas with good vistas, and should preferably be located on the periphery of the reserve.
2. As little as possible impact on aesthetics of the area.
3. Limited impact on the biophysical environment.
4. Safety issues – i.e. angles of approach, slope, presence of ridges and valleys etc
5. Wind direction: the prevailing wind direction is south-west and the strip will have to be orientated west-east.

Option A:

This option is on the periphery of the property and has limited impact on criteria 1, 2, 4 and 5.

Option B:

Mature communities of *Pappea capensis* and an elevated position (which makes it highly visible) make this site unsuitable.

Option C:

This option has merit because it is flat and will require little manipulation, however it is situated in the middle of the prime game viewing area. The impact on the reserve tourism business will therefore be too high.

Option D:

The area is flat and it therefore topographically suitable. However, the hills on either side of the site are a safety concern, and the area has good deep soil and communities of climax grasses. Placing an airstrip in this area would also create aesthetic impacts.

Option E:

This is not an option because of the hills to the south west.

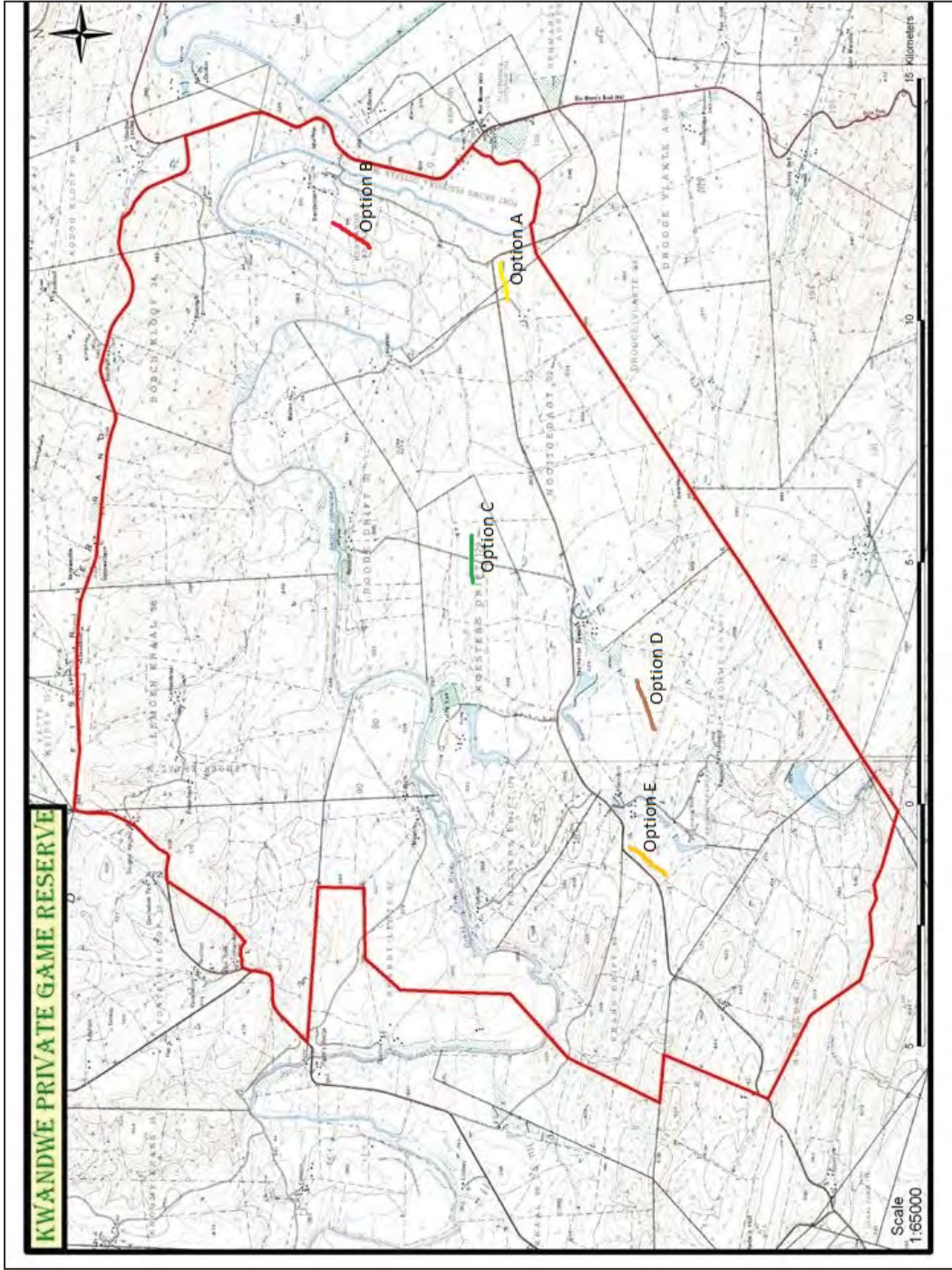
The table below summarises the acceptability of each option according to the criteria listed above. The only option that does not have any criteria that are 'unacceptable' is Option A – this is therefore the preferred option that will be assessed in this EIA.

➤ **Table: Criteria used to assess the 5 site alternatives for the landing strip**

	Option A	Option B	Option C	Option D	Option E
Impact on the reserve's business	Acceptable	Unacceptable	Unacceptable	Unacceptable	-
Aesthetic impacts	Acceptable	Unacceptable	Unacceptable	Unacceptable	-
Biophysical impacts	Vegetation composition varies from thicket near the drainage area and on slopes to noorsveld on flatter areas at the top of the site near the road. The eastern extent of the landing strip shows signs of previous over-utilisation. Moderate impact	Mature stands of <i>Pappea capensis</i> trees. Moderate impact	Low impact	Good deep soil and communities of climax grasses – good grazing for fauna	-

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Safety issues	Acceptable	Acceptable	Acceptable	Acceptable	Compromised by hills on either side of site	Fatally flawed because of hills to the west. Other factors not considered further
Wind direction	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	-



➤ Figure: Five sites were considered for placement of the landing strip.

Listed Activities

National Environmental Management Act (Act 107 of 1998)

The Minister of Environmental Affairs and Tourism has in terms of sections 24 and 24D of the National Environmental Management Amendment Act (Act No. 107 of 1998), listed the activities that require an environmental assessment.

In terms of the Environmental Impact Assessment Regulations, 2010, made under section 24(5) of the Act and published in Government Notice R.543 in Government Gazette 33306 of 10 December 2010 the following activities are subject to an assessment.

Listing Notice	Activity No.	Activity Description
544	9	The construction of facilities or infrastructure exceeding 1000 metres in length for the bulk transportation of water, sewage or storm water (i) with an internal diameter of 0,36 metres or more; or (ii) with a peak throughput of 120 litres per second or more Project activity: Construction of a v-drain to transfer stormwater runoff from the landing strip to an existing earth dam
	11	The construction of: (xi) infrastructure or structures covering 50 square metres or more where such construction occurs within a watercourse or within 32 metres of a watercourse, measured from the edge of a watercourse, excluding where such construction will occur behind the development setback line Project activity: the western extent of the landing strip is within 32 m of the riparian fringe of an ephemeral stream to the south. This is not strictly buildings or infrastructure, since this section of the landing strip will be a clearance/safety zone which is an area that is vegetated and maintained to be free of bush. However, impacts associated with creating and maintaining this zone will be assessed in the EIA
	23	The transformation of undeveloped, vacant or derelict land to – (ii) residential, retail, commercial, recreational, industrial or institutional use, outside an urban area and where the total area to be transformed is bigger than 1 hectare but less than 20 hectares; Project activity: the landing strip will require that land greater than 1 ha in size be transformed from vacant and undeveloped to a landing strip

Listing Notice	Activity No.	Activity Description
	24	The transformation of land bigger than 1000 square metres in size, to residential, retail, commercial, industrial or institutional use, where, at the time of the coming into effect of this Schedule <u>or thereafter</u> such land was zoned open space, conservation or had an equivalent zoning Project activity: the landing strip is proposed in a protected area which has an intended conservation use/zoning. The activity will result in the transformation of land that exceeds 1000 m² in size.
545	7	The construction of (ii) runways or aircraft landing strips longer than 1,4 kilometres Project activity: the construction of the landing strip
546	13	The clearance of an area of 1 hectare or more of vegetation where 75% or more of the vegetative cover constitutes indigenous vegetation (a) Critical biodiversity areas and ecological support areas as identified in systematic biodiversity plans adopted by the competent authority (c) in the Eastern Cape (ii) outside urban areas in (aa) A protected area identified in terms of NEMPAA, excluding conservancies (ff) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or from the core area of a biosphere reserve Project activity: clearance of vegetation to construct the landing strip.
	14	The clearance of an area of 5 hectares or more of vegetation where 75% or more of the vegetative cover constitutes indigenous vegetation (a) in the Eastern Cape (i) All areas outside urban areas Project activity: clearance of vegetation to construct the landing strip
	16	The construction of (iv) infrastructure covering 10 square metres or more where such construction occurs within a watercourse or within 32 metres of a watercourse, measured from the edge of a watercourse (a) in the Eastern Cape (ii) outside urban areas in

Listing Notice	Activity No.	Activity Description
		<p>(aa) A protected area identified in terms of NEMPAA, excluding conservancies</p> <p>(ff) Critical biodiversity areas or ecosystem service areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans</p> <p>(hh) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or from the core area of a biosphere reserve</p> <p>Project activity: the western extent of the landing strip is within 32 m of the riparian fringe of an ephemeral stream to the south. This is not strictly buildings or infrastructure, since this section of the landing strip will be a clearance/safety zone which is an area that is vegetated and maintained to be free of bush. However, impacts associated with creating and maintaining this zone will be assessed in the EIA</p>

Methodology

The specific methodology adopted in identifying and assessing impacts and project alternatives is described in Chapter 5. The methodology was designed to meet the requirements of the EIA Regulations (2006 and 2010) and Guidelines published in support of the regulations.

Public Participation

Public participation was done in accordance with Chapter 6 (Regulations 54) of the EIA Regulations (2010) and Guideline 4 published in assistance of interpretation of these regulations.

Identification of Interested and Affected Parties

The standard media advertisements were placed in *The Herald* and *Die Burger* on 14 November 2013. Two site notices were erected – one at the entrance to the reserve and the other on the R67.

The Draft Scoping Report identified potential impacts associated with the proposed landing strip. All identified stakeholders were notified and asked to participate in the environmental process. The Draft Scoping report was submitted to DEDEAT and all registered parties were sent a link to download an electronic copy of the full report and notified of the importance of commenting and identifying any issue which CEN IEM Unit may have overlooked and which they feel needs to be addressed in the final Scoping Report and EIA. Comments received from stakeholders were incorporated into a Final Scoping Report and Plan of Study for EIA and submitted to DEDEAT for review. Permission to move forward to EIA was granted by DEDEAT on 3 June 2013.

The same process was followed with the Draft EIR. The period for submission of comments by stakeholders on the draft report has expired, and no response has been received.

Below is a “comments and response sheet” including all issues raised by Interested and Affected Parties, as well as the response by the Environmental Assessment Practitioner.

Table: Comments and Response Sheet

I&AP	Comment	EAP response
N Maumela- AgriLand	<ul style="list-style-type: none"> • Noted application and requested project information. 	<ul style="list-style-type: none"> • Registered and will be kept informed of the process. Sent copies of all documents through the PPP process.
Thembi – DAFF	<ul style="list-style-type: none"> • How many hectares is the construction of an Airstrip and family lodge at Kwandwe • private game reserve 	<ul style="list-style-type: none"> • Below are details of the proposed sizes of the airstrip and lodge - these are estimates at this stage. We will register you on the public participation database and keep you updated of the process. <ul style="list-style-type: none"> ○ Lodge: ~ 3000 m² ○ Airstrip: 2 km x 75 m (~15 ha)
Asanda Sontsele – Eastern Cape Parks and Tourism Agency	<ul style="list-style-type: none"> • Requested to be registered 	<ul style="list-style-type: none"> • Registered and will be kept informed of the process
Ash Davenport	<ul style="list-style-type: none"> • No objections 	<ul style="list-style-type: none"> • Noted, thank you
Department of Water Affairs	<ul style="list-style-type: none"> • Concerns: <ul style="list-style-type: none"> ○ Proximity of residential development to a watercourse - i.e. 1:100 year floodline or riparian zone, whichever is greatest ○ Associated structures or infrastructure within a watercourse • Any development within a 	<ul style="list-style-type: none"> • The lodge has been removed from this application. • No activities will take place within a watercourse and no wetlands will be affected • Sanitation is not required as part of this application. Stormwater management and impacts related to spills are addressed under soil and surface water impacts, and are re-iterated in the

I&AP	Comment	EAP response
	<p>watercourse needs a water use authorisation in terms of Section 21 c and i of the National Water Act</p> <ul style="list-style-type: none"> • The proposed development should not affect any wetlands • The Water Quality Unit requested more information regarding sanitation, stormwater management, contingency plans to deal with spills etc. 	<p>Construction EMPr.</p>
Gavin Shaw	<ul style="list-style-type: none"> • Confirmed receipt of BID 	<ul style="list-style-type: none"> • Registered and will be kept informed of the process
Paul Nel	<ul style="list-style-type: none"> • No objections – please proceed as planned 	<ul style="list-style-type: none"> • Registered and will be kept informed of the process
Richard Stone	<ul style="list-style-type: none"> • Request to be registered 	<ul style="list-style-type: none"> • Registered and will be kept informed of the process
SANDF – Major Robin Collins	<ul style="list-style-type: none"> • First City has no objections 	<ul style="list-style-type: none"> • Noted, thank you

Summary of Predicted Impacts

The Table below summarises the list of impacts that were assessed in Chapter 7 of the full report.

Environmental Component	No-go Alternative	Preferred Alternative: Impact Significance without Mitigation Measures			Preferred Alternative: Impact Significance with Mitigation Measures		
		Impact	Significance	Mitigation Measures	Impact	Significance	Mitigation Measures
Biodiversity	No impact	Long term Biodiversity pattern: high Biodiversity persistence: low	-		Long term Biodiversity pattern: moderate Biodiversity persistence: low	-	
Geology	No impact	No impact					
Soils	No impact	Long term (no rehabilitation). High	-		Short term. Moderate	-	
Surface Water	No impact	Long term (no rehabilitation). Moderate	-		Short term. Low	-	
Waste Management	No impact	Long term, Moderate	-		Short term, Low	-	
Noise	No impact	Construction: temporary Operational: long term Low	-		Construction: temporary Operational: long term Low	-	
Air quality	No impact	Short term, moderate	-		Short term, low	-	
Archaeology	No impact	Long term, low	-		Long term, low	-	

Environmental Component	No-go Alternative	Preferred Alternative: Impact Significance without Mitigation Measures				Preferred Alternative: Impact Significance with Mitigation Measures			
		Impact	Significance	without Mitigation Measures	Impact	Significance	with Mitigation Measures		
Socio-Economic Impacts	Long term, low -	Long term, low		+	Long term, low		+		
Traffic Impacts	No impact	Short term, low		-	Short term, low		-		

Cumulative Impacts

None identified

Decommissioning Impacts

The existing gravel airstrip will be decommissioned, and the area rehabilitated. Potential impacts of this primarily relate to waste management and rehabilitation. The existing gravel surface of the landing strip must be lifted and crumbled – it should be investigated if this material is suitable for use as fill material for the construction of the landing strip or other activities in the reserve, rather than disposing of it to landfill. If it cannot be re-used, material must be appropriately stored and timeously removed to the closest registered landfill site.

The basic rehabilitation procedure should be as follows:

- 1) All materials and bits of rubble must be removed
- 2) The site must be graded to a suitable level that fits in with the surrounding landscape
- 3) Topsoil must be laid, and the surface ripped for re-vegetation
- 4) An indigenous grass cover should be used as a pioneer to stabilize the area. The need for temporary stabilisation measures must be investigated until rehabilitation is complete

- 5) Plants that are removed when constructing the landing strip can be replanted in this area
- 6) It is important that the area is monitored for signs of erosion and alien vegetation encroachment.

If properly managed, decommissioning of the landing strip will have no negative impacts.