PROPOSED SHANGONI GATE DEVELOPMENT WITHIN THE KRUGER NATIONAL PARK, LIMPOPO PROVINCE.

DRAFT BASIC ASSESSMENT REPORT

FOR PUBLIC REVIEW

Public Review Period:

14 February 2017 to 17 March 2017

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REPUBLIC OF SOUTH AFRICA

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Basic assessment report in terms of the Environmental Impact Assessment Regulations, 2014, promulgated in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended.

Kindly note that:

1. This **basic assessment report** is a standard report that may be required by a competent authority in terms of the EIA Regulations, 2014 and is meant to streamline applications. Please make sure that it is the report used by the particular competent authority for the activity that is being applied for.
2. This report format is current as of **08 December 2014**. It is the responsibility of the applicant to ascertain whether subsequent versions of the form have been published or produced by the competent authority
3. The report must be typed within the spaces provided in the form. The size of the spaces provided is not necessarily indicative of the amount of information to be provided. The report is in the form of a table that can extend itself as each space is filled with typing.
4. Where applicable **tick** the boxes that are applicable in the report.
5. An incomplete report may be returned to the applicant for revision.
6. The use of "not applicable" in the report must be done with circumspection because if it is used in respect of material information that is required by the competent authority for assessing the application, it may result in the rejection of the application as provided for in the regulations.
7. This report must be handed in at offices of the relevant competent authority as determined by each authority.
8. No faxed or e-mailed reports will be accepted.
9. The signature of the EAP on the report must be an original signature.
10. The report must be compiled by an independent environmental assessment practitioner.
11. Unless protected by law, all information in the report will become public information on receipt by the competent authority. Any interested and affected party should be provided with the information contained in this report on request, during any stage of the application process.
12. A competent authority may require that for specified types of activities in defined situations only parts of this report need to be completed.
13. Should a specialist report or report on a specialised process be submitted at any stage for any part of this application, the terms of reference for such report must also be submitted.
14. Two (2) colour hard copies and one (1) electronic copy of the report must be submitted to the competent authority.

15. Shape files (.shp) for maps must be included in the electronic copy of the report submitted to the competent authority.

PROJECT DETAILS

Title	:	Environmental Impact Assessment Process Proposed Shangoni Gate Development within the Kruger National Park, Limpopo Province.
Report compiled by	:	Company Name: Envirolution Consulting Author: Mr Thabang Sekele Postal Address: P.O.Box 1898, Sunninghill, 2157 Telephone Number: 0861 44 44 99 Fax Number: 0861 62 62 22 Email: thabang@envirolution.co.za
Client	:	South African National Parks (SANParks)
Report Status	:	Draft Basic Assessment Report for public review
Review Period	:	**14 February 2017 to 17 March 2017**

DETAILS OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER (EAP)

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EAP Qualifications	BSc (Hons)		
EAP Registrations/ Associations	Registered with the South African Council for Natural Scientific Professions (No: 400049/12)		

Details of the EAP's expertise to carry out Basic Assessment procedures

Envirolution Consulting (Pty) Ltd was contracted by SANParks as the independent environmental consultant to undertake the Basic Assessment Process for the proposed project. Envirolution Consulting Pty Ltd is not a subsidiary of or affiliated to SANParks. Furthermore, Envirolution Consulting does not have any interests in secondary developments that may arise out of the authorisation of the proposed project.

Envirolution Consulting is a specialist environmental consulting company providing holistic environmental management services, including environmental impact assessments and planning to ensure compliance with environmental legislation and evaluate the risk of development; and the development and implementation of environmental management tools.

The Envirolution Consulting team have considerable experience in environmental impact assessments and environmental management, and have been actively involved in undertaking environmental studies, for a wide variety of projects throughout South Africa, including those associated with linear developments.

The EAPs from Envirolution Consulting who are responsible for this project are (refer to **Appendix H** for CVs):

Gesan Govender – The principle environmental assessment practitioner (EAP) for this project is a registered Professional Natural Scientist and holds an Honours Degree in Botany. He has over 15 years of experience within the field of environmental management. His key focus is on strategic environmental assessment and advice; management and co-ordination of environmental projects, which includes integration of environmental studies and environmental processes into larger

engineering-based projects and ensuring compliance to legislation and guidelines; compliance reporting; the identification of environmental management solutions and mitigation/risk minimising measures; and strategy and guideline development. He is currently responsible for the project management of EIAs for several diverse projects across the country.

Mr. Thabang Sekele forms part of the project team and acts as the Project Manager for all phases of the project. Thabang holds a BA (Environmental Management) from the University of South Africa. Thabang's key focus is on strategic environmental assessment and advice; management and co-ordination of environmental projects, which includes integration of environmental studies and environmental processes into larger engineering-based projects and ensuring compliance to legislation and guidelines; environmental auditing and compliance reporting; the identification of environmental management solution and mitigation/risk minimising measures; environmental auditing, monitoring and reporting compliance. Thabang is currently an Environmental Assessment Practitioner at Envirolution Consulting (Pty) Ltd.

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SECTION A: ACTIVITY INFORMATION

Has a specialist been consulted to assist with the completion of this section?	YES✔	NO

If YES, please complete the form entitled "Details of specialist and declaration of interest" for the specialist appointed and attach in Appendix I.

1. PROJECT DESCRIPTION

a) Describe the project associated with the listed activities applied for

1. Project Background

South African National Parks (hereafter ''SANParks") is proposing the Shangoni Gate Development. This development will consist of the Shangoni visitor's entrance gate into the Kruger National Park (KNP), a reception facility; a new surfaced road of approximately 50,6 km in length with a road reserve wider than 13,5 m and three high level bridges where the road will span the Shingwedzi River twice and once over the Tshanga tributary. The development is coupled with a picnic site; camping site and tented rest camp. The entire activity is collectively referred to as "the Shangoni Gate Development". In terms of the National Environmental Management Regulations 2014, under sections 24(5) and 44 of the National Environmental Management Act, 1998 (Act No. 107 of 1998) the proposed development requires authorisation from the Department of Environmental Affairs as the competent authority, as the proposed development triggers the activities and thresholds listed in Government Notice R983 and R985 of the Environmental Impact Assessment Regulations, 2014. The aforesaid development is located within the Kruger National Park.

Please refer to the locality Map (Figures 1-4), an A3 size Map is attached within **Appendix A** of this BAR.

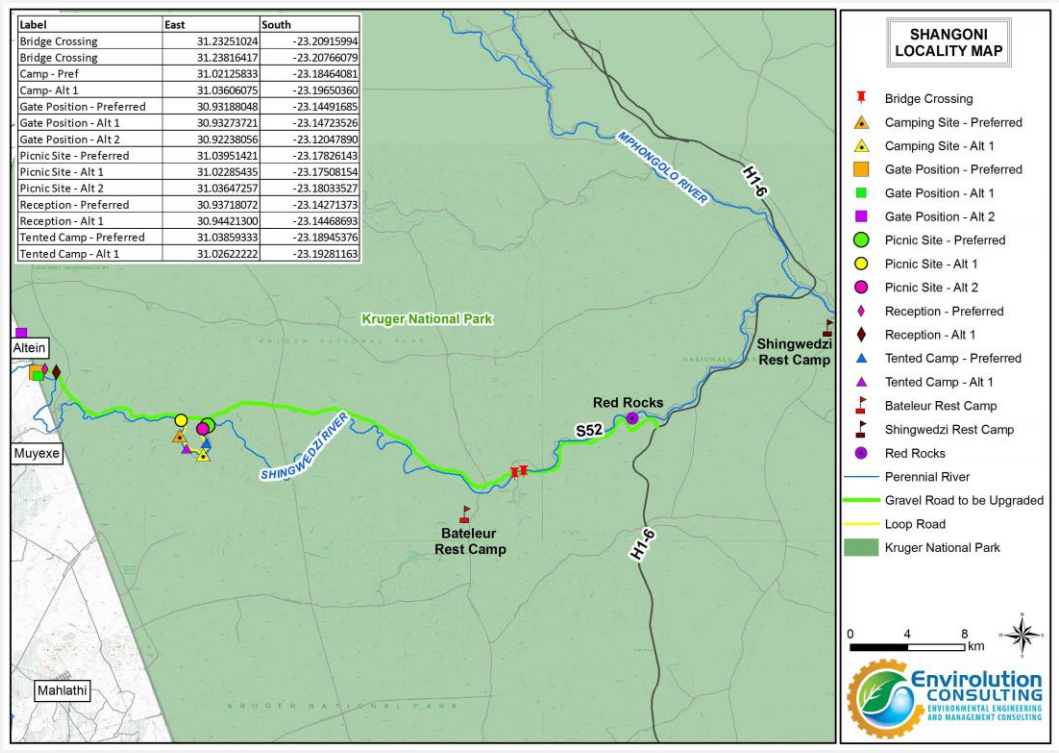

Figure 1: Shangoni Gate Development locality map.

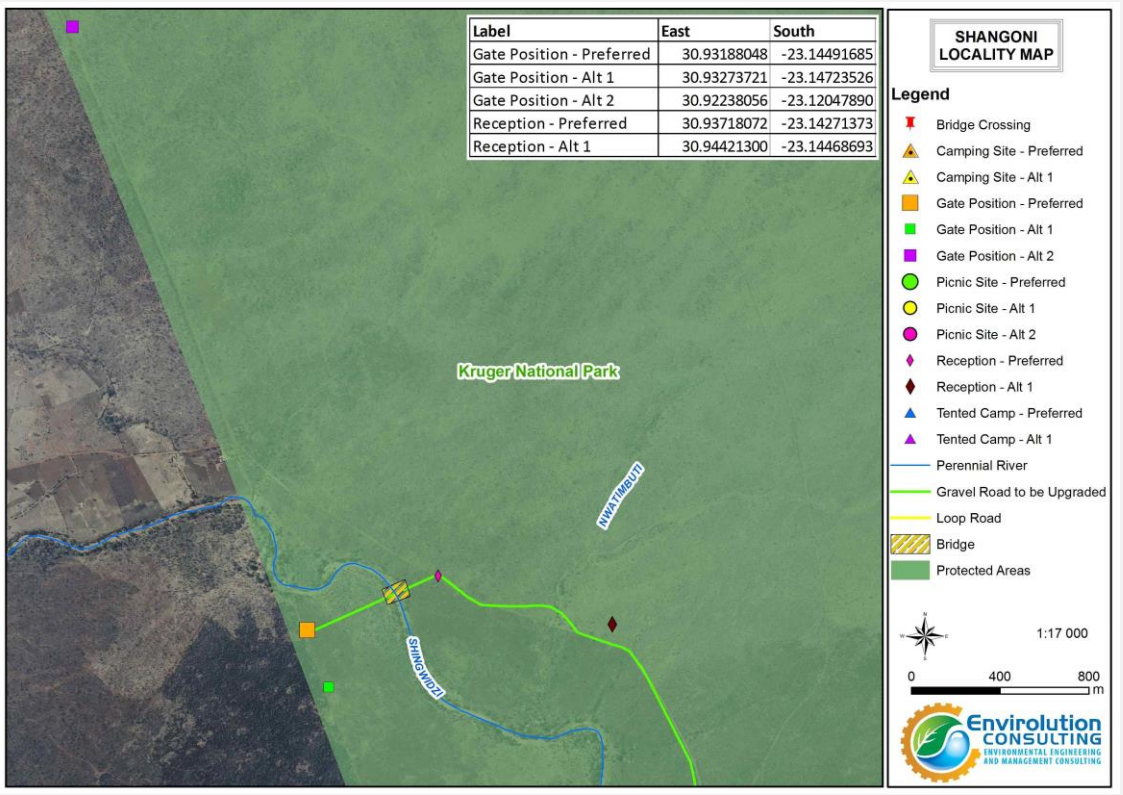

Figure 2: A zoomed in map version of the entrance gate position and reception area.

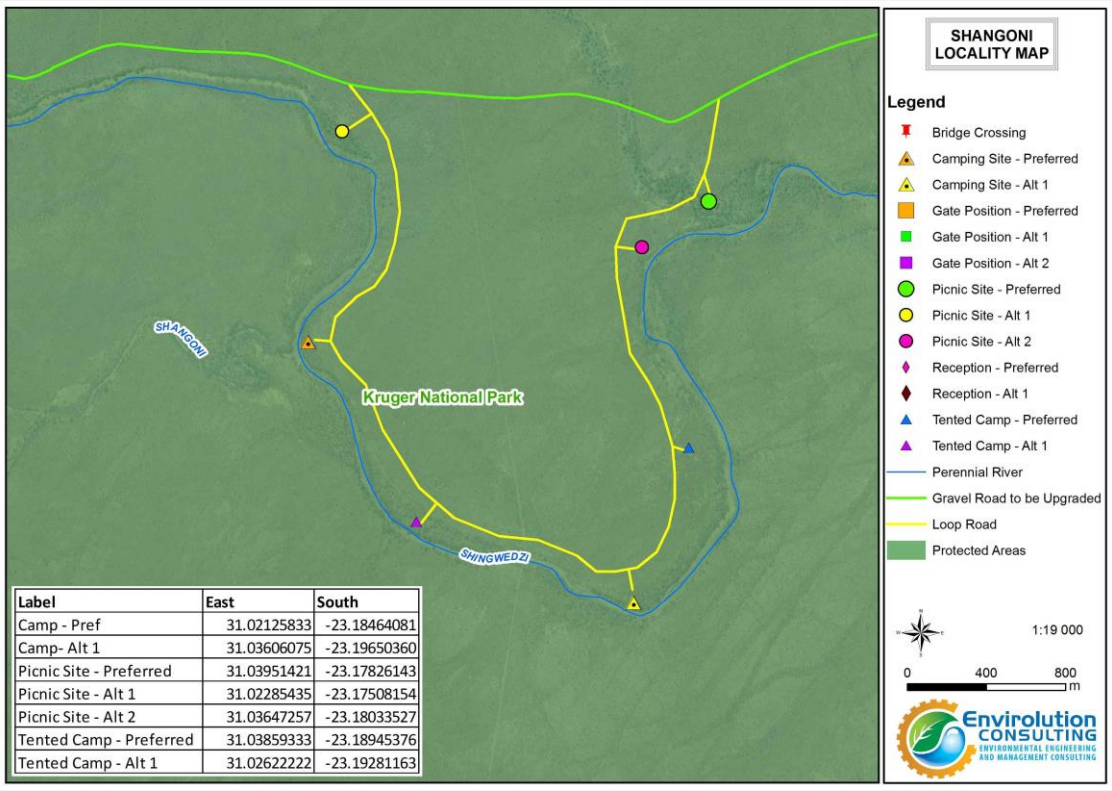

Figure 3: A zoomed in map version of the Shingwedzi River loop of the proposed picnic site, camping site and tented camp site along with the loop road.

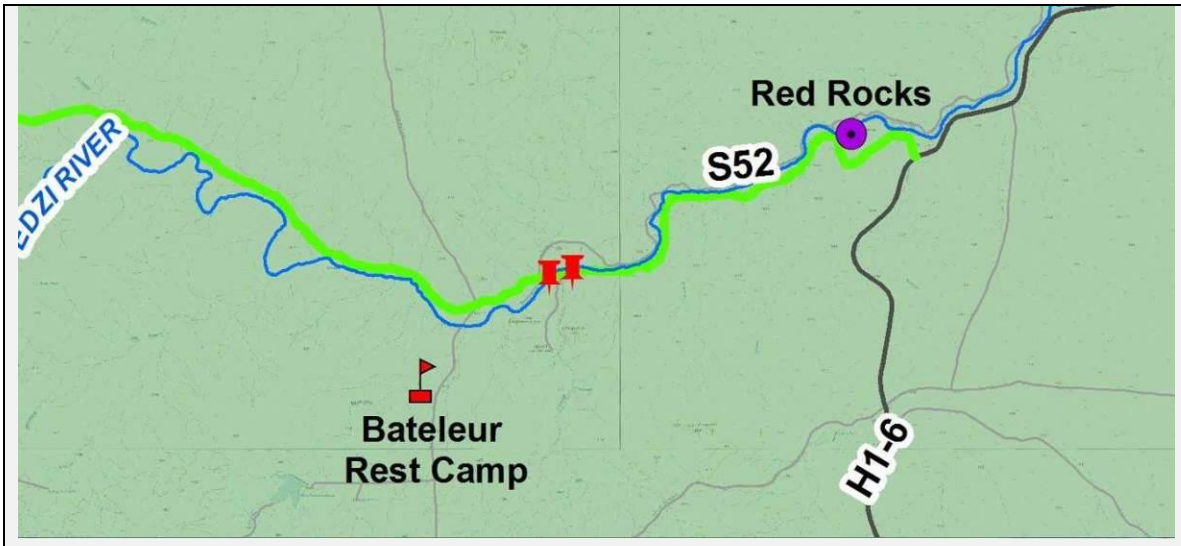

Figure 4: The second Shingwedzi River bridge crossing and the Tshanga Tributary bridge crossing.

The Shangoni Gate Development is described in detail as follows:

1. **Shangoni Visitors' Entrance Gate**

The entrance gate will include a visitors waiting lane of at least 200 m in length just before (i.e. West) of the gate; a small office, guard house and low-usage toilet facilities. The entire entrance gate facility with its associated infrastructure will occupy a footprint of approximately 10000 m^2 (1 hectare). Three locational alternative sites have been proposed by SANParks for the placement of the Shangoni visitor's entrance gate position and for assessment in this basic assessment process.

*1.1. Gate Position – **Preferred Alternative** (Orange square on Figure 1):*

The proposed and preferred site is located close to where the Shingwedzi River enters the Park near the Altein village and will have a footprint of approximately up to 1 hectare (ha). Centre coordinates are 23° 8' 41.701" S, 30° 55' 54.770" E; this site is situated on the Makuleke Sandy Bushveld, there is no human occupation immediately outside of the KNP fence and the land is used for cattle grazing. The woodland is denser on the outside of the KNP fence with more open grassland evident inside the park, possibly as a result of the KNP fire policy. This gate position alternative is ideally placed as it is linked to the planned road developments commissioned by Road Agency Limpopo (RAL) in which entails the creation of the Malamulele and Giyani tourism corridors (see **Appendix J10**). The planned road leading to the Preferred Gate position alternative will start from the junction where the two road corridors meet to up until the gate position. Also, from a technical and engineering perspective of the pre-feasibility studies that have taken place (see **Appendix J9**), this position is ideal. This alternative is ideal for the positioning of the gate to reach the desired objective. Some sections of the RAL commissioned road developments have already commenced and are in line with this preferred alternative gate position. It is important to note that the position of the Preferred Gate position alternative is profoundly reliant on the current outside road developments as the current planning RAL has conducted has taken into consideration this Preferred Gate position alternative. No fatal environmental flaws have been identified during the assessment of this Preferred Gate position alternative.

- **Motivation summary for Gate Position – Preferred Alternative** ***(Orange square)***

It must be noted that the Preferred gate alternative is more feasible in regards to its development as compared to the other gate alternatives by virtue of being linked to the planned outside road developments commissioned by Road Agency Limpopo (RAL) (see **Appendix J10**), these developments are as follows:

- Development of Road D3745 from Malamulele to the Tourist Hub intersection/crossing;
- Development of Road D3641 that links Road D3745 and existing Road D3799;
- The Re-alignment of Road D3799 to link with the Tourism Hub intersection/crossing.

Please note that the Tourism Hub intersection/crossing themed "the last stop before Shangoni" is a strategic tourism location as it will be the junction where tourist inflows (Giyani and Malamulele corridors) to the Shangoni gate will merge and lead to the proposed gate.

Some of these roads have commenced with construction; Road D3745 from Malamulele to the Tourist Hub intersection/crossing and Road D3641 are 90% complete (see Appendix E6h Minutes of the Shangoni Gate Technical Committee meeting held on 18 0ctober 2016).

One must take note that RAL has already put forward a budget and planning for the current and next financial year based on the Entrance Gate (Preferred Alternative) position. If the Entrance Gate (Preferred Alternative) position is not selected by SANParks then opportunity to have the tourism corridor road developments commissioned by RAL will cease due to the fact that any other position is not in line with RAL's current planning and budget and will therefore result in the high likelihood of not being included in the short to medium term budget and plans of RAL as they have other regions to develop in the province.

1.2. *Gate Position –* ***Alternative 1*** *(**Green square** on Figure 1):*

Alternative 1 gate position lies approximately 300 m south of the preferred gate position alternative site with centre coordinates of 23° 08' 50.047" S, 30° 55' 57.854" E. This Alternative 1 position is located in a similar environment as that of the preferred alternative site. This position is ideally not preferred as it will not be consistent with the RAL commissioned tourism corridor road development taking place outside the park. Also, it was found during the pre-feasibility studies conducted that this site is less preferred from a technical and engineering perspective. It is important to note that RAL has not factored this Alternative 1 gate position into their planning of the outside road developments (tourism corridor road development) and therefore it means that this alternative will result in the loss of opportunity to be included in RAL's road infrastructure development budget for the current and next financial year. The consequence will be the stoppage on the roll out of the much needed Malamulele and Giyani tourism corridors because this alternative is not in the plans of RAL. The aftermath will entail the loss of employment opportunities to the local communities, loss business opportunities for local enterprises and overall loss of much needed economic stimulation in the region.

1.3. *Gate Position –* ***Alternative 2*** *(**Purple square** on Figure 1)*

Alternative 2 lies approximately 3 km north of the preferred alternative gate position on the north side of the Shingwedzi river entering the park. The centre coordinates of the gate position Alternative 2 are 23°07'13.87"S, 30°55'20.59"E This gate alternative is not preferred because it is not consistent with the RAL commissioned tourism corridor road development taking place outside the park. Also, it was found during the pre-feasibility studies conducted that this site is less preferred from a technical and engineering perspective. And just like Gate position Alternative 1, RAL has not factored this Alternative 2 gate position into their planning of the outside road developments and therefore it means that this alternative will result in the loss of opportunity to be included in RAL's road infrastructure development budget for the current and next financial year. This will in result the stoppage on the roll out of the much needed Malamulele and Giyani tourism corridors because this alternative is not in the plans of RAL. The aftermath will entail the loss of employment opportunities to the local communities, loss business opportunities for local enterprises and overall loss of much needed economic stimulation in the region.

2. Reception facility

The visitor's reception facility will include a public reception area, offices, security structures, a shop, public toilet facilities, visitors parking, ablution facilities and an education centre. The entire reception facility will occupy a footprint of approximately 1 ha. Two alternative sites have been proposed by SANParks for assessment in this BA report as follows:

*2.1. Reception facility – **Preferred Alternative** (Pink diamond on Figure 1):*

Centre coordinates of 23° 08' 33.769" S, 30° 56' 13.851" E the site is situated on Makuleke Sandy Bushveld dominated by Mopani veld approximately 700 m north east of the Gate Position (Preferred Alternative). This alternative is preferred because it is closer to the gate position (preferred alternative) site which makes it optimal for management of people (traffic) movement between the gate and reception facility. Also, the location is influenced by the bridge crossing position that was deemed technically feasible by the engineers during the pre-feasibility studies.

Motivation summary for Reception facility – Preferred Alternative *(Pink diamond)*

The Preferred Alternative is motivated due to the fact that it is the closest to the first bridge crossing area and thus logistically preferred in terms of managing activities between the gate position (Preferred Alternative) and the Reception facility (Preferred Alternative). This alternative will also mean less vegetation clearance between the gate position and reception facility would take place when compared to Reception facility (Alternative 1).

*2.2. Reception facility – **Alternative 1** (Brown diamond on Figure 1)*

Centre coordinates of 23° 8' 40.873" S, 30° 56' 39.167" E the alternative site 1 is located approximately 740 m south east of the reception facility preferred alternative position and shares similar environmental characteristics as that of the preferred site. However, for the purposes of optimal t

Both sites are located within in the Kruger National Park

3. New tarred Access Road and its associated bridge crossings (gravel road to be upgraded)

The road will start from the Shangoni Gate Entrance and cross over the Shingwedzi river for the first time by means of a high level single lane bridge (please refer to **Appendix C** for the bridge design illustrations) to join the same alignment as that of the existing gravel road to run approximately 1.9 km, from here it transects through woodland vegetation in a south east direction for approximately 1,2 km and then continues to run on the existing gravel Shangoni Rangers' road for approximately 35 km before it links into the existing S52 gravel public road between Shingwedzi and Bateleur bush camp where it once again crosses the Shingwedzi River (red pin) and then crosses the Tshanga Tributary (red pin) in approximately 800 m to then end at its juncture with the H1-6 tourist road. The entire road will have width of 6m. The road will also cross many other smaller drainage lines throughout its course by means of low level bridges and crossings. The entire new tarred access road is approximately 50.6km in length with a road reserve of 13.5 metres. No Alternatives have been considered for the road alignment upgrade due to the fact that approximately 90% of the road to be upgraded already exists as a gravel road.

Please refer to **Appendix C** for the bridge designs and illustrations associated with the road upgrade and **Appendix A** for the Google earth image of the location of the second Shingwedzi River bridge crossing and the Tshanga Tributary bridge crossing. Please refer to **Appendix A3** for the drainage lines and river crossings map of the proposed road upgrade and **Appendix J7a** for the drainage lines and river crossings coordinates.

3.1. Shangoni Loop road

This road will is intended to provide access to the proposed tourism facilities of the picnic site, tented camp, and camping sites. The road will be tarred and will be approximately 8 km in length and will have a width of 6m. It will start from the road to be upgraded near the Picnic site Alternative 1 and travel along the northern bank of the looping section of the Shingwedzi River in the vicinity of the proposed tourist amenities and re-join the road to be upgraded again. No Alternatives have been considered for the loop road alignment as this road will be starting from the ranger road to be upgraded going on the northern bank of the Shingwedzi loop of which is the most practical route of access to all the proposed tourist amenities along this river loop.

The river and significant drainage line crossing points by proposed gravel road upgrade are indicated in **Appendix A3**.

4. Picnic sites

The picnic site will have the following infrastructure:

- Thatched umbrellas
- Braai areas
- Outdoor kitchens
- Car and bus parking areas
- Central ablution facilities.

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The picnic site will occupy a footprint of approximately 1 hectare (ha). These sites are proposed to be fenced with standard electrified solar assisted KNP fencing infrastructure. Three alternative sites have been proposed by the developer for assessment in this basic assessment process as detailed below. The proposed development is a low-profile and low impact development that does not include permanent structures. The picnic sites would be above the flood line during normal seasonal high water but they would be inaccessible during extreme flood events. The southern bank of the river opposite the proposed picnic site is classified by SANParks as a "wilderness area". The site is preferred because of its close proximity to the proposed Shangoni gate (approximately 10 km) and easy accessibility for day visitors

*4.1. Picnic Site – **Preferred Alternative** (Green circle on Figure 1)*

Centre coordinates of 23° 10' 41.741" S, 31° 2' 22.251" E approximately 10 km from the proposed Shangoni gate position. This preferred alternative is located amongst dense Mopaneveld near the junction of a large drainage line (its tributary) and the Shingwedzi river. This site is located among riverine forest and has denser vegetation than the other alternative sites thus making it more ideal for the desired development, where some trees can be retained for their shade value.

Motivation summary for Picnic Site – Preferred Alternative *(Green circle)*

This site is located among riverine forest and has denser vegetation than the other alternative sites thus making it more ideal for the desired development, where some trees can be retained for their shade value.

*4.2. Picnic Site **- Alternative 1** (**Yellow Circle on** Figure 1)*

This site is located approximately 1700 m east of the picnic site (preferred) alternative. Centre coordinates are 23° 10' 30.294" S, 31° 1' 22.276" E. It is equally located on a higher vegetation density as the preferred alternative. Picnic site Alternative 1 has been sited to avoid a large drainage line leading to the Shingwedzi River.

*4.3. Picnic Site **- Alternative 2** (**Pink Circle** on Figure 1)*

This alternative is located 240 m south west of the preferred picnic site facing a river bend of the Shingwedzi river and is the least densely vegetated alternative of the three with centre coordinates of 23° 10' 49.207" S, 31° 2' 11.301" E.

5. Tented camps

A maximum of 12 self-catering tents with *en-suite* bathrooms on timber platforms will be erected on high ground overlooking the Shingwedzi river bend. Staff housing and a reception office will be located nearby. Additional infrastructure includes water sourced from existing underground boreholes, a soak away septic tank and reed bed for onsite treatment of sewage. Access will be via a short (approximately 600m) dirt road from the existing two spoor management road that is linked to the proposed road to be upgraded (Shangoni – Shingwedzi road).

Tents would be positioned to have river and woodland views. The rustic tented camps and the camping site will be located approximately 10 m from each other within the Shingwedzi River loop.

These sites are proposed to be fenced with standard electrified solar assisted KNP fencing infrastructure. Staff accommodation will be based on the outer edges of tented camp site area and low impact modular style structures will be built on concrete flooring. Further infrastructure will include central ablution facilities and outdoor kitchen.

The sites would be above the flood line during normal seasonal high water but it would be vulnerable to flooding during extreme flood events. The southern bank of the river opposite the proposed tented camp sites is classified by SANParks as a wilderness area. The proposed sites are located amongst riverine woodland and close to forest patches.

*5.1. Tented camp – **Preferred Alternative** – (Purple triangle on figure 1)*

The preferred picnic site by the developer with centre coordinates of 23° 11' 22.034" S, 31° 2' 18.936" E is located on the south eastern end of the Shingwedzi river loop (refer to **Figure 3**).

*5.2. Tented camp – **Alternative 1** (Blue triangle on figure 1)*

This site is located approximately 1.3 km east of the proposed and preferred site and is furthest away from the Shingwedzi river and the White-backed vulture nests as opposed to the proposed and preferred tented camp site. The centre coordinates are 23° 11' 34.122" S, 31° 1' 34.400" E.

Motivation summary for Tented Camp – Alternative 1 *(Purple triangle)*

This site motivated and most preferred by this basic assessment as it is located outside the 500 m buffer radius as recommended by the Avifauna specialist in order to limit disturbance to the Endangered White Backed Vulture nests.

6. Camping sites

A maximum of 20 camping and/or caravan sites will be located about 200m away on the high bank of the Shingwedzi River. Fencing of the sites is intended. The proposed sites are located among riverine woodland and close to forest patches. The camps would be positioned to have river and woodland views, similar to the tented camps site. These sites are proposed to be fenced with standard electrified solar assisted KNP fencing infrastructure. Staff accommodation will based on the outer edges of camp site area and will be and low impact modular style structures, and built on concrete flooring. Further infrastructure will include central ablution facilities and outdoor kitchen.

*6.1. Camping sites – **Preferred Alternative** – (Yellow triangle)*

This site is located on the southernmost end of the prominent Shingwedzi river loop with centre coordinates of 23° 11' 4.707" S, 31° 1' 16.530" E. This site is also within close proximity to the identified active nests of the *Critically Endangered* White-backed Vulture along the Shingwedzi River. This site too is least preferred by this basic assessment as it lies within a 500m radius buffer of the White-backed Vulture nests as recommended by the avifauna specialist (**Appendix D1**).

*6.2. Camping sites – **Alternative 1** – (Orange triangle)*

The Alternative 1 site is located at the westernmost end of the Shingwedzi river bend and is near non-perennial drainage line that that feeds into the Shingwedzi river. The centre coordinates are 23° 11' 47.413" S, 31° 2' 9.819" E. This site is considered ideal for the stated purpose of the camping site as

it is furthest away from any active White-backed Vulture nests.

The entire development will be designed to ensure that all structures blend into the natural environment.

Motivation summary for Tented Camp – Alternative 1 ***(Orange triangle)***
This site motivated and most preferred by this basic assessment as it is located outside the 500 m buffer radius as recommended by the Avifauna specialist in order to limit disturbance to the Endangered White Backed Vulture nests.

7. Ancillary services/infrastructure

7.1. Electricity supply

The buildings that form part of the development *viz*, Entrance Gate, Reception facility, Picnic area, Tented camp and Camp site facilities, will be developed in an environmental friendly manner. A solar or a Hybrid Solar system will be used, having a generator as a backup for the critical equipment such as servers and security systems that will be used at the gate. The Tented Camp and Camping site will be served by Solar installations.

7.2. Water supply

Water provision for each of the sites will be from existing boreholes and via underground reticulation. The proposed development will take cognizance of the scarcity of water in the region and water conservation measures will be built into the design of all proposed facilities. Ground water, supplemented by storm water will be utilised in preference to abstraction of surface water. Grey water sewage will be used for garden irrigation. Architectural design of buildings and facilities will focus on water conservation and recycling. Water-wise education and information programmes will be incorporated into construction and operating/maintenance plans. Surface water will not be abstracted from the river to meet development needs. The yield required shall be determined according to KNP requirements and in line with the KNP Water Distribution Policy (**Appendix J5)** and Management Plan. The existing borehole at the Rangers camp will be investigated on whether it can sufficiently supply the gate and reception facilities.

7.3. Sewerage and grey water management

The proposed amenities will be provided with a combination of full waterborne sanitation and dry toilet systems. All sewerage and grey water effluent will be diverted to septic tanks from where it is disposed of by means of a soil percolation system (soak away) and/or planted soil filter (reed beds). The reed bed design will allow water to flow below the surface of the reed bed through gravel media. The reed plants are planted in the gravel.

8. KNP Management Plan

The proposed development will be in line with the Kruger National Park Management Plan as it will tie in with the KNP Management Plan's mission of maintaining biodiversity in all its natural facets and fluxes, to provide human benefits and build a strong constituency and preserve as far as possible the wilderness qualities and cultural resources associated with the Park.

9. KNP Zonation Plan

The proposed road development footprint is situated along the High Intensity Leisure Zone while the proposed tourism amenities are situated within the Low Intensity Leisure Zone as per the Kruger National Park Zonation Plan and Map **(Appendix J4 and J4a)**. This zonation plan has been adopted in accordance with the Conservation Development Framework that is in line with the National Environmental Management Protected Areas Act. The mission of the KNP Zonation Plan is to manage areas of national/international biodiversity, scenic beauty and cultural heritage importance. The KNP Zonation Plan was approved by the Minister of the then Department of Water and Environmental Affairs in June 2013 **(Appendix J4b)**.

10. Need and desirability

The rationale behind the new gate is to stimulate socio-economic development among communities in the region and to provide easier access into the park from Giyani and Thohoyandou. Essentially, the proposed development will add a new gate midway between Pafuri Gate and Phalaborwa Gate to the KNP and provide access from the Giyani and Thulamela communities. The proposed development will potentially provide numerous economic possibilities which will mainly benefit the surrounding communities. The proposed development fits the tourism strategy of development of underdeveloped nodes of which one of the nearby communities has been identified as a presidential poverty node. It must be noted that this proposed Shangoni Gate development inside the Kruger National Park forms part of a larger Tourism Development Plan in the region that includes improved road access from Malamulele up to the proposed gate position, three-star lodges outside the park, heritage sites with business opportunities (old gold mine and other heritage sites), and commercial developments to cater for the potential traffic that will pass through the area, training opportunities, job creation and poverty alleviation.

The existing gravel (restricted) ranger's road will be upgraded to a tar road that will allow visitors to travel towards the Shingwedzi and Mopani rest camps from the new gate. Most of the surfaced road will follow the alignment of the existing gravel road, apart from a new section near the proposed entrance gate and reception facility. Additionally, the entire Shangoni development will aim to offer many advantages to the surrounding rural communities such as providing a boost to tourism-oriented businesses and businesses whose focus is not directly related to tourism, such as filling stations or grocery stores. This development is envisioned to inject much needed tourist Rands into struggling local communities and can be developed into a sustainable means of economic development, bringing a potential year-round flow of income to the area. From a tourist point of view, the new gate entrance will introduce the tourist to a new cultural aspect of the Kruger National Park and help in developing an appreciation and understanding of an area's natural beauty, ecosystem, and cultural value.

Environmental awareness objectives will be realised by way of Environmental education activities that will be provided to educate children and adults on the ecosystems and history of the Kruger National Park at the reception education centre. Environmental interpretation will be provided in the form of tree identification, booklets describing the surrounding ecosystems and general environmental information.

11. Location of study area

The Kruger National Park covers a large and varied area that covers almost 2 million hectares or 20 000 km2 of South Africa's Lowveld, bordering Mozambique in the east and Zimbabwe in the north. Its elongated shape is approximately 350 km from north to south and on average 60 km wide, with rivers providing natural boundaries in the south and north and the Lebombo hills bounding the east. To the west, the park is predominantly bordered by private and provincial nature reserves and many high-density communal areas. The development footprint area is located more towards the north western extent of the Kruger National Park.

12. Climate of study area

The study sites lie north of the Tropic of Capricorn and have a hot and dry climate. The area receives an annual average rainfall of less than 500 mm (Venter *et al* 1996). Weather records from Shingwedzi Camp report an average of 412 mm. It is also characterized by high evaporation rates of about 1700 mm p.a. (Fouché and Vlok 2012). Precipitation is highly seasonal with 86% of annual rain falling in the six months from October to March. It is also very variable from one year to the next. The winters are very dry. The area is frost free, with a high mean annual temperature of about 21.7ºC.

b) Provide a detailed description of the listed activities associated with the project as applied for

Listed Activity	Description of project activity
R983 Listing 1 Activity 9 (i) and (ii)	
The development of infrastructure exceeding 1000 metres in length for the bulk transportation of water or storm water- (i) with an internal diameter of 0,36 metres or more (ii) with a peak throughput of 120 litres per second or more excluding where- (a) such infrastructure is for bulk transportation of water or storm water or storm water drainage inside a road reserve; or (b) where such development will occur within an urban area.	Some water reticulation pipes from the existing boreholes will be longer than 1000 m in length with internal diameters larger than 0.36 meters for water supply to the proposed Shangoni Gate Development facilities. Also, some water reticulation pipes for bulk transportation of water will and/or storm water will have a peak throughput of 120 litres per second or more.
R983 Listing 1 Activity 10 (i) and (ii)	

The development and related operation of infrastructure exceeding 1000 metres in length for the bulk transportation of sewage, effluent, process water, waste water, return water, industrial discharge or slimes – (i) with an internal diameter of 0,36 metres or more (ii) with a peak throughput of 120 litres per second or more excluding where- (a) such infrastructure is for bulk transportation of sewage, effluent, process water, waste water, return water, industrial discharge or slimes inside a road reserve; or (b) where such development will occur within an urban area.	Some sewage waste reticulation pipes to and from septic tanks will be longer than 1000 m in length with internal diameters larger than 0.36 meters to service the sewage/grey water generated from the proposed Shangoni Gate Development facilities. Also, Some sewage waste reticulation pipes to and from septic tanks will have a peak throughput of 120 litres per second or more to service the sewage/grey water generated from the proposed Shangoni Gate Development facilities.
R983 Listing 1 Activity 12 (ii) and (xii)	
The development of- (iii) bridges exceeding 100 square metres in size (x) buildings exceeding 100 square metres in size (xii) infrastructure or structures with a physical footprint of 100 square metres or more where such development occurs- (a) within a watercourse excluding- (aa) the development of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour; (bb) where such development activities are related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies; (cc) activities listed in activity 14 in Listing Notice 2 of 2014 or activity 14 in Listing Notice 3 of 2014, in which case that activity applies; (dd) where such development occurs within an urban area; or	All the bridges and crossings combined to be constructed over the Shingwedzi River, Tshanga Tributary and other drainage lines will exceed 100m^2 in size combined and will have a total footprint of more than 100m^2 and will be located within a watercourse. The proposed Shangoni Gate building amenities will be more than 100 m^2 in size within a watercourse.

(ee) where such development occurs within existing roads or road reserves.	
R983 Listing 1 Activity 19 (i)	
The infilling or depositing of any material of more than 5 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 5 cubic metres from- (i) a watercourse but excluding where such infilling, depositing, dredging, excavation, removal or moving – (b) is for maintenance purposes undertaken in accordance with a maintenance plan.	All the bridges combined to be constructed over the Shingwedzi River, Tshanga Tributary and other drainage lines will entail excavating and removing soil material more than 5 cubic metres from the river banks (watercourse) and infilling of concrete for foundation structures. In addition Several dry drainage lines will be crossed by the proposed road. Infilling, depositing, dredging, excavation, removal or moving from or into a watercourse will be part maintenance activities undertaken in accordance with a maintenance plan during the operational phase. This will be included as a maintenance plan in line with the Kruger National Park Management Plan.
R983 Listing 1 Activity 24 (ii)	
The development of- (ii) a road with a reserve wider than 13,5 meters, or where no reserve exists where the road is wider than 8 metres.	The road to be developed and upgraded will be wider than 8 metres and will have a reserve wider than 13,5 metres.
R983 Listing 1 Activity 25	
The development and related operation of facilities or infrastructure for the treatment of effluent, wastewater or sewage with a daily throughput capacity of more than 2000 cubic metres but less than 15000 cubic metres.	Reed beds linked to septic tanks will be established within the proposed amenities for the treatment of effluent, wastewater and/or sewage with a daily throughput capacity of more than 2000 cubic metres but less than 15000 cubic metres.
R983 Listing 1 Activity 27 (i)	
The clearance of an area of 1 hectares or more, but less than 20 hectares of indigenous vegetation, except where such clearance of indigenous vegetation is required for- (i) the undertaking of a linear activity (ii) maintenance purposes undertaken in accordance with a maintenance management plan.	Clearance of more than 1 hectare but less than 20 hectares of indigenous vegetation will be required for the entire Shangoni Gate development construction related activities and maintenance activities during the operational phase. This will be included as a maintenance plan in line with the Kruger National Park Management Plan.
R983 Listing 1 Activity 30	

Any process or activity identified in terms of section 53(1) of the National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004).	The entire development activity is identified in terms of section 53(1) of the National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004) where the Minister may, by notice in the Gazette, identify any process or activity a listed ecosystem as a threatening process.
R985 Listing 3 Activity 3 (a) & (b) (ii) (aa)	
The development of masts or towers of any material or type used for telecommunication broadcasting or radio transmission purposes where the mast or tower- (a) is to be placed on a site not previously used for this purpose; and (b) will exceed 15 metres in height In Limpopo ii. Outside urban areas, (aa) A protected area identified in terms of NEMPAA, excluding conservancies. (cc) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority; (dd) Sites or areas identified in terms of an International Convention; (ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans; Core areas in biosphere reserves; (gg) 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; (hh) Areas seawards of the development setback line or within 1 kilometre from the high-water mark of the sea if no such development setback line is determined; or	Telecommunications masts will be positioned on top of proposed Shangoni Gate Development buildings or on the ground, depending on the design and technical specifications. These will exceed 15m in height in the Kruger National Park, which is located in Limpopo Province.

Areas on the watercourse side of the development setback line or within 100 metres from the edge of a watercourse where no such setback line has been determined;	
R985 Listing 3 Activity 4 (a) (ii)(aa)	
The development of a road wider than 4 metres with a reserve less than 13,5 metres. (a) In Limpopo ii. Outside urban areas, in: aa) A protected area identified in terms of NEMPAA, excluding disturbed areas. National Protected Area Expansion Strategy Focus areas; (cc) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority; (dd) Sites or areas identified in terms of an International Convention; (ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans; Core areas in biosphere reserves; (gg) 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 areas of a biosphere reserve, excluding disturbed areas; or (hh) Areas seawards of the development setback line or within 1 kilometre from the high-water mark of the sea if no such development setback line is determined.	The road upgrade alignment will be wider than 4 metres and will have a reserve of less than 13,5 metres inside the Kruger National Park which is classified as a protected area located in the Limpopo Province.
R985 Listing 3 Activity 6 (a)(ii)	
The development of resorts, lodges, hotels and tourism or hospitality facilities that sleeps 15 people or more. (a) In Limpopo ii. Outside urban areas, in:	The proposed Shangoni development will entail the establishment of 12 rustic tented camps and 12 camping sites where guests can sleep overnight.

aa) A protected area identified in terms of NEMPAA, excluding disturbed areas. National Protected Area Expansion Strategy Focus areas; (cc) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority; (dd) Sites or areas identified in terms of an International Convention; (ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans; Core areas in biosphere reserves; (gg) 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; (hh) Areas seawards of the development setback line or within 1 kilometre from the high-water mark of the sea if no such development setback line is determined; or Areas on the watercourse side of the development setback line or within 100 metres from the edge of a watercourse where no such setback line has been determined;	
R985 Listing 3 Activity 12 (a)(i)(ii)(iii)(iv)	
The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan. (a) In Limpopo i. Within any critically endangered or endangered ecosystem listed in terms of section 52 of the NEMBA or prior to the publication of such a list, within an area that has been identified as critically endangered in the National Spatial Biodiversity Assessment 2004 Within critical biodiversity areas identified in bioregional management plan. plans; iii. Within the littoral active zone or 100 metres inland from high water mark of the sea or an	Clearance of more than 300 square metres or more of indigenous vegetation will be required for the entire Shangoni gate development construction and maintenance related activities in accordance to a maintenance management plan that is in line with the Kruger National Park Management Plan within the Kruger National Park which is classified as a protected area.

estuarine functional zone, whichever distance is the greater, excluding where such removal will occur behind the development setback line on erven in urban areas; or iv. On land, where, at the time of the coming into effect of this Notice or thereafter such land was zoned open space, conservation or had an equivalent zoning.	
R985 Listing 3 Activity 14 (iii)(x)(xii)(a)(ii)	
The development of – (iii) bridges exceeding 10 square metres in size; (x) buildings exceeding 10 square metres in size; (xii) infrastructure or structures with a physical footprint of 10 square metres or more; (a) within a watercourse; (c) if no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse (a) In Limpopo ii. Outside urban areas, in: aa) A protected area identified in terms of NEMPAA, excluding conservancies National Protected Area Expansion Strategy Focus areas; (cc) World Heritage Sites; (dd) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority; (ee) Sites or areas identified in terms of an International Convention; (ff) Critical biodiversity areas or ecosystem service areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans; (gg) Core areas in biosphere reserves; Areas within 10 kilometres from national parks or	All the bridges combined to be constructed over the Shingwedzi River, Tshanga Tributary and other drainage lines will exceed 10 square metres in size combined. Some buildings associated with the development will be exceed 10 square metres and will be within 32 m of a watercourse in the Kruger National Park.

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; (ii) Areas seawards of the development setback line or within 1 kilometre from the high-water mark of the sea if no such development setback line is determined	
R985 Listing 3 Activity 18 (a)(ii)	
The widening of a road by more than 4 metres, or the lengthening of a road by more than 1 kilometre (a) In Limpopo ii. Outside urban areas, in: (aa) A protected area identified in terms of NEMPAA, excluding conservancies. (bb) National Protected Area Expansion Strategy Focus areas; (cc) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority; (dd) Sites or areas identified in terms of an International Convention; (ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans; (ff) Core areas in biosphere reserves; (gg) 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; (hh) Areas seawards of the development setback line or within 1 kilometre from the high-water mark of the sea if no such development setback line is determined; or Areas on the watercourse side of the development setback line or within 100 metres from the edge of a watercourse where no such setback line has been determined.	The gravel road to be upgraded will be widened by more than 4 metres and/or will be lengthened by more than one kilometre within the Kruger National Park which is classified as a protected area.

2. FEASIBLE AND REASONABLE ALTERNATIVES

"alternatives", in relation to a proposed activity, means different means of meeting the general purpose and requirements of the activity, which may include alternatives to—

(a) the property on which or location where it is proposed to undertake the activity;
(b) the type of activity to be undertaken;
(c) the design or layout of the activity;
(d) the technology to be used in the activity;
(e) the operational aspects of the activity; and
(f) the option of not implementing the activity.

Describe alternatives that are considered in this application as required by Appendix 1 (3)(h), Regulation 2014. Alternatives should include a consideration of all possible means by which the purpose and need of the proposed activity (NOT PROJECT) could be accomplished in the specific instance taking account of the interest of the applicant in the activity. The no-go alternative must in all cases be included in the assessment phase as the baseline against which the impacts of the other alternatives are assessed.

The determination of whether site or activity (including different processes, etc.) or both is appropriate needs to be informed by the specific circumstances of the activity and its environment. After receipt of this report the, competent authority may also request the applicant to assess additional alternatives that could possibly accomplish the purpose and need of the proposed activity if it is clear that realistic alternatives have not been considered to a reasonable extent.

The identification of alternatives should be in line with the Integrated Environmental Assessment Guideline Series 11, published by the DEA in 2004. Should the alternatives include different locations and lay-outs, the co-ordinates of the different alternatives must be provided. The co-ordinates should be in degrees, minutes and seconds. The projection that must be used in all cases is the WGS84 spheroid in a national or local projection.

a) Site alternatives

Gate Position

Preferred Alternative				
Description	Lat (DDMMSS)	Long (DDMMSS)	Decimal Degrees - South	Decimal Degrees - East
Four corner coordinates for the Preferred site for the Shangoni Gate Entrance Gate	23°8' 40.045" S	30°55' 52.968" E	-23.14445687	30.93138001
	23°8' 40.046" S	30°55' 56.483" E	-23.14445729	30.93235645
	23°8' 43.297" S	30°55' 56.485" E	-23.14536026	30.93235693
	23°8' 43.299" S	30°55' 52.970" E	-23.14536075	30.93138049
Alternative 1				
Description	Lat (DDMMSS)	Long (DDMMSS)	Decimal Degrees - South	Decimal Degrees - East
Four corner coordinates for the Alternative 1 Site for the Shangoni Gate	23°8' 48.922" S	30°55' 53.806" E	-23.14692265	30.93161266
	23°8' 48.923" S	30°55' 57.321" E	-23.14692308	30.93258912
	23°8' 52.174" S	30°55' 57.323" E	-23.14782604	30.93258961
	23°8' 52.176" S	30°55' 53.807" E	-23.14692265	30.93161266
Alternative 2				
Description	Lat (DDMMSS)	Long (DDMMSS)	Decimal Degrees	Decimal Degrees -

			- South	East
Four corner coordinates for the Alternative 2 Site for the Shangoni Gate	23° 7' 11.981" S	30° 55' 18.741" E	-23.11999474	30.92187242
	23° 7' 11.970" S	30° 55' 22.252" E	-23.11999181	30.92284791
	23° 7' 15.207" S	30° 55' 22.274" E	-23.12089090	30.92285378
	23° 7' 15.228" S	30° 55' 18.751" E	-23.12089677	30.92187536

Reception Facility

Preferred alternative				
Description	Lat (DDMMSS)	Long (DDMMSS)	Decimal Degrees - South	Decimal Degrees - East
Four corner coordinates for the Preferred site for the Reception Facility	23°8' 32.173" S	30° 56' 12.090" E	-23.14227015	30.93669154
	23°8' 32.174" S	30° 56' 15.605" E	-23.14227054	30.93766796
	23°8' 35.425" S	30° 56' 15.607" E	-23.14317350	30.93766848
	23°8' 35.427" S	30° 56' 12.091" E	-23.14317403	30.93669206
Alternative 1				
Description	Lat (DDMMSS)	Long (DDMMSS)	Decimal Degrees - South	Decimal Degrees - East
Four corner coordinates for the Alternative site for the Reception Facility	23°8' 39.154" S	30°56' 37.314" E	-23.14420955	30.94369840
	23°8' 39.156" S	30°56' 40.829" E	-23.14420989	30.94467483
	23°8' 42.406" S	30°56' 40.831" E	-23.14511286	30.94467540
	23°8' 42.408" S	30°56' 37.316" E	-23.14511343	30.94369896
Alternative 3				
Description			Lat (DDMMSS)	Long (DDMMSS)

Picnic sites

Preferred alternative				
Description	Lat (DDMMSS)	Long (DDMMSS)	Decimal Degrees - South	Decimal Degrees - East
Four corner coordinates for the Preferred site for the Picnic site	23°10' 40.067" S	31°02' 20.674" E	-23.17779626	31.03907606
	23°10' 40.066" S	31°02' 24.190" E	-23.17779601	31.04005274
	23°10' 43.316" S	31°02' 24.194" E	-23.17869898	31.04005395
	23°10' 43.320" S	31°02' 20.678" E	-23.17870014	31.03907726
Alternative 1				
Description	Lat (DDMMSS)	Long (DDMMSS)	Decimal Degrees - South	Decimal Degrees - East
Four corner coordinates for the Alternative 1 site for the Picnic site	23°10' 28.395" S	31°01' 20.385" E	-23.17455405	31.02232907
	23°10' 28.394" S	31°01' 23.901" E	-23.17455391	31.02330573
	23°10' 31.645" S	31°01' 23.905" E	-23.17545687	31.02330683
	23°10' 31.649" S	31°01' 20.389" E	-23.17545793	31.02233017
Alternative 2				
Description	Lat (DDMMSS)	Long (DDMMSS)	Decimal Degrees - South	Decimal Degrees - East
Four corner coordinates for the Alternative 2 site for	23°10' 47.539" S	31°02' 09.488" E	-23.17987197	31.03596902
	23°10' 47.538" S	31°02' 13.005" E	-23.17987175	31.03694572
	23°10' 50.789" S	31°02' 13.009" E	-23.18077471	31.03694691

the Picnic site	23°10' 50.793" S	31°02' 09.493" E	-23.18077585	31.03597021

Camping Sites

Preferred alternative				
Description	Lat (DDMMSS)	Long (DDMMSS)	Decimal Degrees - South	Decimal Degrees - East
Four corner coordinates for the Preferred site for the Picnic site	23°11' 45.766" S	31°02' 08.054" E	-23.19604619	31.03557046
	23°11' 45.765" S	31°02' 11.570" E	-23.19604596	31.03654727
	23°11' 49.016" S	31°02' 11.574" E	-23.19694892	31.03654846
	23°11' 49.020" S	31°02' 08.058" E	-23.19695006	31.03557164
Alternative 1				
Description	Lat (DDMMSS)	Long (DDMMSS)	Decimal Degrees - South	Decimal Degrees - East
Four corner coordinates for the Alternative site for the Picnic site	23°11' 3.063" S	31°1' 14.796" E	-23.18418427	31.02077680
	23°11' 3.063" S	31°1' 18.313" E	-23.18418413	31.02175353
	23°11' 6.314" S	31°1' 18.317" E	-23.18508709	31.02175462
	23°11' 6.317" S	31°1' 14.800" E	-23.18508814	31.02077789
Alternative 3				
Description			Lat (DDMMSS)	Long (DDMMSS)

Tented Camps

Preferred alternative				
Description	Lat (DDMMSS)	Long (DDMMSS)		
Four corner coordinates for the Preferred site for the Tented Camps	23°11' 32.366" S	31°1' 32.827" E	-23.19232379	31.02578527
	23°11' 32.365" S	31°1' 36.343" E	-23.19232363	31.02676205
	23°11' 35.616" S	31°1' 36.347" E	-23.19322659	31.02676318
	23°11' 35.620" S	31°1' 32.831" E	-23.19322767	31.02578639
Alternative 1				
Description			Lat (DDMMSS)	Long (DDMMSS)
Four corner coordinates for the Alternative site for the Tented Camps	23°11' 20.290" S	31°2' 17.163" E	-23.18896942	31.03810091
	23°11' 20.289" S	31°2' 20.680" E	-23.18896918	31.03907767
	23°11' 23.540" S	31°2' 20.684" E	-23.18987214	31.03907887
	23°11' 23.544" S	31°2' 17.168" E	-23.18987329	31.03810211
Alternative 3				
Description			Lat (DDMMSS)	Long (DDMMSS)

In the case of linear activities:

Please note that the gravel road to be upgraded and the loop road are interlinked and should not be considered as alternatives of each other.

Also, the culvert design drawings will be created only once the Environmental Authorisation is in place which is where an engineer will be appointed to create the culvert drawings. A KNP road manual has been included as **Appendix J6** which indicates what will considered in the design of storm water infrastructure such as bridge culverts. However, Pre-feasibilty Engineering Services Report (**Appendix**

J9) indicated that the following types of culverts were considered in the preparation of the cost estimate:
Four types and or sizes of culverts were used in the pre-feasibility engineering estimate viz :

- 20 x 600mm dia pipe,
- 30 x 1,5m x 15m box culvert and
- 17 x (2)1,5m x 1,5m box culvert and
- 6 x concrete drift.

This shall be refined during the preliminary design stage.

New tarred Access Road and its associated bridges (gravel road to be upgraded)

	Latitude (S):	**Longitude (E):**	**Decimal Degrees - South**	**Decimal Degrees - East**
• Starting point of the activity	23º08'40.20"S	30º55'53.60"E	-23.14491685	30.93188048
• Middle/Additional point of the activity	23°10'07.85"S	31°07'33.47"E	-23.16884722	31.12596389
• End point of the activity	23°10'46.09"S	31°19'20.98"E	-23.17946944	31.32249444

Loop road along Shingwedzi River loop

	Latitude (S):	**Longitude (E):**	**Decimal Degrees - South**	**Decimal Degrees - East**
• Starting point of the activity	23º10'21.52"S	31º01'22.83"E	-23.17264444	31.02300833
• Middle/Additional point of the activity	23º11'47.36"S	31º02'09.96"E	-23.19648889	31.03610000
• End point of the activity	23º10'27.81"S	31º02'12.81"E	-23.17439167	31.03689167

For route alternatives that are longer than 500m, please provide an addendum with co-ordinates taken every 250 meters along the route for each alternative alignment.

In the case of an area being under application, please provide the co-ordinates of the corners of the site as indicated on the lay-out map provided in Appendix A of this form.

b) Lay-out alternatives

Preferred Alternative		
Description	Lat (DDMMSS)	Long (DDMMSS)
Alternative 1		
Description	Lat (DDMMSS)	Long (DDMMSS)
Alternative 3		
Description	Lat (DDMMSS)	Long (DDMMSS)

c) Technology alternatives

Alternative 1 (preferred alternative)
Alternative 2
Alternative 3

d) Other alternatives (e.g. scheduling, demand, input, scale and design alternatives)

Alternative 1 (preferred alternative)		
Alternative 2		
Alternative 3		

e) No-go alternative

The No-go option implies that the Project does not proceed, and will thus comprise of SANParks not going ahead with the proposed Shangoni development.

This option is assessed as the ―No go alternative in this basic assessment report.

Paragraphs 3 – 13 below should be completed for each alternative.

3. PHYSICAL SIZE OF THE ACTIVITY

a) Indicate the physical size of the preferred activity/technology as well as alternative activities/technologies (footprints):

Gate position

Alternative:	**Size of the activity:**
Preferred Alternative	1 hectare = 10000m^2
Alternative 1	1 hectare = 10000m^2
Alternative 2	1 hectare = 10000m^2

Bridge crossings Shingwedzi River and Tshanga Tributary (All three high level bridges)

Please note the gravel road to be upgraded will cross three points of a watercourse (The first Shingwedzi River crossing, the second Shingwedzi River crossings and the Tshanga Tributary crossing). These crossings will be by means of a high level bridge crossing.

Alternative:	**Size of the activity:**
Alternative A1[1] (preferred activity alternative)	13m x 150m = 1950m^2
Alternative A2 (if any)	m^2
Alternative A3 (if any)	m^2

Reception Facility

Alternative:	**Size of the activity:**
Preferred Alternative	1 hectare = 10000m^2
Alternative 1	1 hectare = 10000m^2
Alternative A3 (if any)	m^2

Picnic sites

Alternative:	**Size of the activity:**
Preferred Alternative	1 hectare = 10000m^2
Alternative 1	1 hectare = 10000m^2
Alternative 2	1 hectare = 10000m^2

Tented camp sites

Alternative:	**Size of the activity:**
Preferred Alternative	1 hectare = 10000m^2
Alternative 1	1 hectare = 10000m^2
Alternative 2	1 hectare = 10000m^2

Camp Sites

Alternative:	**Size of the activity:**
Preferred Alternative	1 hectare = 10000m^2
Alternative 1	1 hectare = 10000m^2

[1] "Alternative A.." refer to activity, process, technology or other alternatives.

Alternative A3 (if any)	m²

or, for linear activities:

New tarred Access Road and its associated bridges (gravel road to be upgraded)

Alternative:	**Size of the activity:**
Preferred Alternative	50600m x 13m =657800m²
Alternative 1	
Alternative A3 (if any)	m²

Loop road along Shingwedzi River loop

Alternative:	**Size of the activity:**
Preferred Alternative	8000m x 13m =104000m²
Alternative 1	
Alternative A3 (if any)	m²

b) Indicate the size of the alternative sites or servitudes (within which the above footprints will occur):

Shangoni Gate entrance, Reception Facility, New tarred Access Road and its associated bridge (gravel road to be upgraded) including loop road, Picnic sites, Camp Sites and Tented Camps.

The Size of the site/servitude of the abovementioned developments are the same as physical size of the activity indicated above in 3(a).

4. SITE ACCESS

Does ready access to the site exist?	YES✔	NO
If NO, what is the distance over which a new access road will be built		m

Describe the type of access road planned:

Existing gravel roads provide access to site. However a new tarred road and loop road is planned. The road will start from proposed gate entrance location and then cross over the Shingwedzi River by means of a bridge running via the new reception facility to follow the corridor of an existing ranger road for approximately 1,5 km up to a gravel road junction where it will transect woodland vegetation to run in a south east direction for approximately 1,2 km. From here it will follow the existing Shangoni Rangers' road for approximately 35,6 km to the existing gravel public road S52 between Shingwedzi and Bateleur bush camp where it then ends at its juncture with the H1-6 tourist road.

Include the position of the access road on the site plan and required map, as well as an indication of the road in relation to the site.

5. LOCALITY MAP

An A3 locality map must be attached to the back of this document, as Appendix A. The scale of the locality map must be relevant to the size of the development (at least 1:50 000. For linear activities of more than 25 kilometres, a smaller scale e.g. 1:250 000 can be used. The scale must be indicated on the map.). The map must indicate the following:

- an accurate indication of the project site position as well as the positions of the alternative sites, if any;
- indication of all the alternatives identified;
- closest town(s;)
- road access from all major roads in the area;
- road names or numbers of all major roads as well as the roads that provide access to the site(s);
- all roads within a 1km radius of the site or alternative sites; and
- a north arrow;
- a legend; and
- locality GPS co-ordinates (Indicate the position of the activity using the latitude and longitude of the centre point of the site for each alternative site. The co-ordinates should be in degrees and decimal minutes. The minutes should have at least three decimals to ensure adequate accuracy. The projection that must be used in all cases is the WGS84 spheroid in a national or local projection).

A locality map is attached within **Appendix A**

6. LAYOUT/ROUTE PLAN

A detailed site or route plan(s) must be prepared for each alternative site or alternative activity. It must be attached as Appendix A to this document.

The site or route plans must indicate the following:

- the property boundaries and numbers of all the properties within 50 metres of the site;
- the current land use as well as the land use zoning of the site;
- the current land use as well as the land use zoning each of the properties adjoining the site or sites;
- the exact position of each listed activity applied for (including alternatives);
- servitude(s) indicating the purpose of the servitude;
- a legend; and
- a north arrow.

A site route plan is attached within **Appendix A**

7. SENSITIVITY MAP

The layout/route plan as indicated above must be overlain with a sensitivity map that indicates all the sensitive areas associated with the site, including, but not limited to:

- watercourses;

- the 1:100 year flood line (where available or where it is required by DWS);
- ridges;
- cultural and historical features;
- areas with indigenous vegetation (even if it is degraded or infested with alien species); and
- critical biodiversity areas.

The sensitivity map must also cover areas within 100m of the site and must be attached in Appendix A.

A sensitivity map is attached within **Appendix A**

8. SITE PHOTOGRAPHS

Colour photographs from the centre of the site must be taken in at least the eight major compass directions with a description of each photograph. Photographs must be attached under Appendix B to this report**.** It must be supplemented with additional photographs of relevant features on the site, if applicable.

Site photographs are attached within **Appendix B**

9. FACILITY ILLUSTRATION

A detailed illustration of the activity must be provided at a scale of at least 1:200 as Appendix C for activities that include structures. The illustrations must be to scale and must represent a realistic image of the planned activity. The illustration must give a representative view of the activity.

Facility Illustrations are attached within **Appendix C**

10. ACTIVITY MOTIVATION

Motivate and explain the need and desirability of the activity (including demand for the activity):

1. Is the activity permitted in terms of the property's existing land use rights?	YES✔	NO	Please explain
The activity is permitted and is consistent with the land use activities of the Kruger National Park in terms of tourism activities. The SANParks zoning plan is used to guide development and protection of wilderness areas within the park.			
2. Will the activity be in line with the following?			
(a) Provincial Spatial Development Framework (PSDF)	YES✔	NO	Please explain
The Protected Areas Conservation Development Framework and Management Plan recognises the Kruger National Park as a protected area. The proposed development is aligned with the PSDF which is consistent with the Protected Areas Conservation Development Framework and Management Plan.			
(b) Urban edge / Edge of Built environment for the area	YES✔	NO	Please explain
This development falls outside the urban edge within a protected area.			

(c) Integrated Development Plan (IDP) and Spatial Development Framework (SDF) of the Local Municipality (e.g. would the approval of this application compromise the integrity of the existing approved and credible municipal IDP and SDF?).	YES✔	NO	Please explain
The approval of this application will not compromise the integrity of the approved IDP. The Mopani District Municipality IDP states that it has a legislative mandate to promote their localities in order to attract investment and tourists who will then inject cash into the local economy, thus create jobs. This projects is in line with this mandate.			
(d) Approved Structure Plan of the Municipality	YES✔	NO	Please explain
The Structure Plan of the Municipality recognises the Kruger National Park as a protected area, and the proposed development is aligned with the Protected Area's Conservation Development Framework and Management Plan.			
(e) An Environmental Management Framework (EMF) adopted by the Department (e.g. Would the approval of this application compromise the integrity of the existing environmental management priorities for the area and if so, can it be justified in terms of sustainability considerations?)	YES✔	NO	Please explain
Any EMF recognises the Kruger National Park as a protected area, and the proposed development is aligned with the Protected Area's Conservation Development Framework and Management Plan.			
(f) Any other Plans (e.g. Guide Plan)	YES✔	NO	Please explain
• Kruger National Park Management Plan, 2008 • SANParks Zoning specifically relating to the Peripheral Development Zoning • SANParks Concession Manual and Best Practice Manual • SANParks Roads Manual • Kruger National Park Tourism Management Plan (2007-2011) • Marula Strategic Environmental Assessment.			
3. Is the land use (associated with the activity being applied for) considered within the timeframe intended by the existing approved SDF agreed to by the relevant environmental authority (i.e. is the proposed development in line with the projects and programmes identified as priorities within the credible IDP)?	YES✔	NO	Please explain
The proposed development is in line with the National Development Plan, Mopani District Municipality IDP and SDPs, which relate to the provision of tourism infrastructure and development.			
4. Does the community/area need the activity and the associated land use concerned (is it a societal priority)? (This refers to the strategic as well as local level (e.g. development is a national priority, but within a specific local context it could be inappropriate.)	YES✔	NO	Please explain
Yes, the proposed development will provide the proximate areas and communities an easier access to the KNP. The proposed development will provide much needed employment and business opportunities to the surrounding communities. This development is seen as contributor to socio-economic development on a local level, and can be considered a priority on this level.			

5. Are the necessary services with adequate capacity currently available (at the time of application), or must additional capacity be created to cater for the development? (Confirmation by the relevant Municipality in this regard must be attached to the final Basic Assessment Report as Appendix I.)	YES✔	NO	Please explain
Potable water will be sourced via existing on-site boreholes, electricity will be generated on site via solar technology and sewage will be treated through septic tanks. Solid waste will be transported to local municipal waste facility. The closest facility to the proposed Shangoni entrance gate is the Giyani Local Municipal licensed waste facility. This facility currently receives solid waste, commercial / non-hazardous industrial wastes, and construction waste generated.			
6. Is this development provided for in the infrastructure planning of the municipality, and if not what will the implication be on the infrastructure planning of the municipality (priority and placement of services and opportunity costs)? (Comment by the relevant Municipality in this regard must be attached to the final Basic Assessment Report as Appendix I.)	YES✔	NO	Please explain
One of the mandates of the Greater Giyani of Local Municipality which is the jurisdiction local municipality is the promotion, marketing and, if applicable, the development of any tourism attraction within the area of the municipality with a view to attract tourists; to ensure access, and municipal services to such attraction, and to regulate structure and control.			
7. Is this project part of a national programme to address an issue of national concern or importance?	YES	NO ✔	Please explain
The proposed project does not address any issue of national concern or importance.			
8. Do location factors favour this land use (associated with the activity applied for) at this place? (This relates to the contextualisation of the proposed land use on this site within its broader context.)	YES✔	NO	Please explain
The site is located in the Kruger National Park, a Protected Area, where conservation and ecotourism are the primary land uses.			
9. Is the development the best practicable environmental option for this land/site?	YES✔	NO	Please explain
The development proposes use of the site for eco-tourism based tourism sight-seeing, accommodation and day activities which aligns with and supports the conservation function of the greater Kruger National Park. No development type other than eco-tourism based activities and facilities would be appropriate for this site.			

10. Will the benefits of the proposed land use/development outweigh the negative impacts of it?	YES✔	NO	Please explain
The benefits associated with the development of the proposed Shangoni gate development within the Kruger National Park will be positive, contributing to economic growth, community beneficiation and diversification of the Kruger National Park's tourism offering. Negative impacts may be mitigated thorough sensitive planning and other appropriate mitigation measures employed during construction and operation.			
11. Will the proposed land use/development set a precedent for similar activities in the area (local municipality)?	YES	NO✔	Please explain
No, a precedent will not be set with this development as similar developments are already in existence within the Kruger National Park.			
12. Will any person's rights be negatively affected by the proposed activity/ies?	YES	NO✔	Please explain
No infringement of an individual's rights is anticipated with regards to this project.			
13. Will the proposed activity/ies compromise the "urban edge" as defined by the local municipality?	YES	NO✔	Please explain
No, the activities are within a Protected Area, which is beyond the Urban Edge.			
14. Will the proposed activity/ies contribute to any of the 17 Strategic Integrated Projects (SIPS)?	YES✔	NO	Please explain
Yes, this proposed development will result in the development of road infrastructure in the surrounding rural village communities that will lead to the proposed gate area. Thus SIPS 11 is associated with this proposed development in terms of rural infrastructure.			

15. What will the benefits be to society in general and to the local communities?	Please explain
The benefits associated with the development of the proposed Shangoni gate development within the Kruger National Park include: • Contributing to local economic growth through the establishment of a viable economic activity; • Community beneficiation through shareholding, as well as, through the creation of employment opportunities and skills development, increased income generation for local entrepreneurs and service providers; • Diversification of the Kruger National Park's tourism offering.	
16. Any other need and desirability considerations related to the proposed activity?	Please explain
None have been identified at this stage.	

17. How does the project fit into the National Development Plan for 2030?	Please explain

The key objectives of the National Development Plan for 2030 are to have an economy that will create more jobs, specifically for the young and unskilled population, and to alleviate poverty and inequality. The proposal to increase employment and growth include the raising of exports, focusing on areas where South Africa already has advantages, such as, tourism and providing regional tourism packages to increase value for money for tourists.

The tourism and hospitality industries can play a major role in this regard. It is anticipated that the proposed development of the Shangoni Gate facility and related developments will contribute to job creation and employment opportunities, skills development and transfer, training and environmental education during both the construction and operational phases.

18. Please describe how the general objectives of Integrated Environmental Management as set out in section 23 of NEMA have been taken into account.

The proposed project has been undertaken according to section 23 of the National Environmental Management Act (NEMA) (No 107 of 1998) and in this respect, the following has been considered:

- An Application for Environmental Authorization was filed with the Department of Environmental Affairs.
- A public participation process was implemented whereby all interested and affected parties, as well as, compliance authorities were identified and information distributed to them in the form of a Background Information Document; comprehensive advertisements were placed in both a national and local newspaper; site notices were placed in and around the affected areas and community; I&AP forum meetings were attended to discuss the project.
- Specialist studies were conducted where it was deemed necessary.
- Potential impacts on the receiving environment in terms of aesthetics, biodiversity, cultural heritage and socio-economics have been assessed for all three phases of development (planning and design, construction and operational). Comprehensive and appropriate mitigation measures have been described for all identified impacts.

Other objectives of IEM that have been taken into account include the consideration of risk, consequences and alternatives.

19. Please describe how the principles of environmental management as set out in section 2 of NEMA have been taken into account.

The purpose of this Environmental Impact Assessment study is to ensure that potential environmental risks associated with the proposed Shangoni Gate development are identified and that the impacts associated therewith are investigated and managed or mitigated to acceptable levels.

The main and applicable principles of environmental management as set out in Section 2 of NEMA emphasises the following:

- Environmental management placing people and their needs at forefront of its concern, and serve their physical, physiological, developmental, cultural and social interests equitably – the proposed developments are in line with the park zoning plan and physical disturbance

will be minimal. Potential pollution aspects have been addressed and can be mitigated successfully through implementation of the EMP. I&APs and Stakeholders are allowed the opportunity to consider and submit comment in terms of the proposal.

- Socially, environmentally and economically sustainable development – the potential need and desirability of the proposed facilities have been given specific attention (Marketing Analysis) to determine whether there is a need and or demand for the facilities. The different markets (demands) have been identified and an overall positive economic impact is expected.
- Consideration for ecosystem disturbance and loss of biodiversity – No rare or endangered plant species or other conservation worthy species will be lost or damaged.
- Pollution and environmental degradation – the development proposal does include the potential for pollution impacts, particularly pollution of soil and ground water. Specific attention has been paid to the possibility of pollution and various mitigation and monitoring measures are proposed in this BAR and EMPr. It is anticipated that with the diligent implementation of all these measures, pollution will be avoided to a great extent, and the significance rating of potential contamination will be low.
- Landscape disturbance – The development of the sites are considered in line with the park zoning plan.
- Waste avoidance, minimisation and recycling – the EMPr attached to this report promotes the adoption of an integrated waste minimisation approach. The attached EMPr describes the waste disposal methods to be adopted, and is in line with the principles of waste avoidance, minimisation and recycling.
- Responsible and equitable use of non-renewable resources – energy saving is applicable to this application, energy saving measures have been recommended in this report which include energy saving bulbs, solar systems.
- Avoidance, minimisation and remedying of environmental impacts; - Total avoidance will result in no additional tourist facilities and improvement of supporting service infrastructure. Various mitigation measures, especially in the operational phase, have however been incorporated to ensure environmental impacts are kept to a minimum.
- Interests, needs and values of interested and affected parties – this process provides potential interested & affected parties and other key stakeholders with ample opportunity for comment, review and input on the process and available documentation. Details of the public participation process undertaken are included in **Appendix E** of this report and will be reported on in the DBAR.

- Access of information – members of public, interested & affected parties, key stakeholders and relevant state departments are all provided with the available documentation contained in this DBAR.
- Promotion of community well-being and empowerment – the development will allow some opportunity for community empowerment through construction and operational phase job opportunities. In accordance with community wellbeing principles, the construction team will consist of people employed from local environments.

11. APPLICABLE LEGISLATION, POLICIES AND/OR GUIDELINES

List all legislation, policies and/or guidelines of any sphere of government that are applicable to the application as contemplated in the EIA regulations, if applicable:

Title of legislation, policy or guideline	Applicability to the project	Administering authority	Date
National Environmental Management Act (NEMA), No. 107 of 1998.	In terms of Section 24(1) of NEMA, the potential impact on the environment associated with these listed activities must be considered, investigated, assessed and reported on to the competent authority (the decision-maker) charged by NEMA with granting of the relevant environmental authorisation. A Basic Assessment process is required to be undertaken for the proposed project.	Department of Environmental Affairs	1998
National Water Act No 36 of 1998.	The bridge to be constructed will interact within 500 m of the Shingwedzi river. Also, water abstraction from underground aquifers by means of existing boreholes will take place. The above activities trigger listed activities in the water act. A water use licence will be required. The access road to be upgraded will cross drainage lines on its corridor.	Department of Water Affairs and Sanitation	1998
National Environmental Management: Protected Areas Act (Act No. 57 of 2003)	The development will take place inside the Kruger National Park of which is classified as a protected area.	Department of Environmental Affairs	2003
National Forests Act, 1998 (Act No. 84 of 1998)	The development will entail the clearing of trees found within the development area. Protected vegetation will need a permit from the Department of Agriculture, Forestry and Fisheries.	Department of Agriculture, Forestry and Fisheries.	1998
National Environmental Management Waste Act No	No waste license activities are applicable to this project. The	Department of Environmental Affairs	1998

59 of 2008	developer will however be required to store and manage waste in accordance with the requirements of this Act and associated Standards.		
National Heritage Resources Act No. 25 of 1999	The NHRA legislates the necessity for cultural and heritage impact assessment in areas earmarked for development, which exceed 0.5 hectares (ha) and where linear developments (including pipelines) exceed 300 metres in length. The development entails the construction of a 50,6 km road, reception facilities, picnic, camp and tented sites.	South African Heritage Resources Agency (SAHRA)	1999
National Environmental Management: Air Quality Act (Act No 39 of 2004)	Measures in respect of dust control (S32) and National Dust Control Regulations of February 2014. Measures to control noise (S34) - no regulations promulgated yet. No permitting or licensing requirements arise from this legislation. However, National, provincial and local ambient air quality standards (S9 - 10 & S11) to be considered. Measures in respect of dust control (S32) and the National Dust Control Regulations of February 2014.	Department of Environmental Affairs	2004
National Environmental Management: Biodiversity Act (Act 10 of 2004)	This development will have bearing on the KNP's current biodiversity state by way of some vegetation clearance that will take place and the development mainly affecting the Shingwedzi River and its riparian habitat. This act is relevant because its aim is the protection of species and ecosystems that warrant national protection and the sustainable use of indigenous biological resources.	Department of Environmental Affairs	2004

12. WASTE, EFFLUENT, EMISSION AND NOISE MANAGEMENT

a) Solid waste management

Will the activity produce solid construction waste during the construction/initiation phase?

YES✔	NO

If YES, what estimated quantity will be produced per month?

Could not be determined at this stage

How will the construction solid waste be disposed of (describe)?

Solid waste produced during construction will be stored on designated construction areas specified by the Environmental Control Officer (ECO) and later be removed to either Greater Giyani Municipal solid waste disposal facility. Building rubble and solid construction waste (such as vegetation debris, sand, gravel, concrete and spoil material) that cannot be used for filling and rehabilitation and other litter and waste (including packaging, plastics, scrap metals etc) generated during the construction phase will be removed from the Park by the contractor.

Where will the construction solid waste be disposed of (describe)?

General waste will be removed from the Park by the contractor and disposed of at the Greater Giyani municipal solid waste facility in Giyani which is the nearest licensed solid waste facility. Safe disposal certificates must be obtained and kept on site for the duration of the construction phase.

Solid waste, generated from construction and land clearing (e.g. vegetation debris, sand, gravel, rocks) will be used for filling, rehabilitation and storm water protection features where required.

Will the activity produce solid waste during its operational phase?

YES✔	NO

If YES, what estimated quantity will be produced per month?

m^3

How will the solid waste be disposed of (describe)?

Inorganic general waste will be segregated (into recyclable / non-recyclable components) onsite and transported to an approved re-cycling depot or to an approved landfill site outside the KNP. The contractor / applicant will apply waste management techniques that aim to avoid and reduce the volume of waste generated at the reception facility, camp sites and picnic sites as per the recommendations included in the Environmental Management Plan.

If the solid waste will be disposed of into a municipal waste stream, indicate which registered landfill site will be used.

Giyani Municipal solid waste facility (See waste licence attached as **Appendix J2)**

Where will the solid waste be disposed of if it does not feed into a municipal waste stream (describe)?

Solid waste, generated from construction and land clearing (e.g. vegetation debris, sand, gravel, rocks) will be used for filling, rehabilitation and storm water protection features where required. Other Non-recyclable and non-re-usable general waste will feed into the municipal waste stream (Giyani Municipal solid waste facility).

If the solid waste (construction or operational phases) will not be disposed of in a registered landfill site or be taken up in a municipal waste stream, then the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

Can any part of the solid waste be classified as hazardous in terms of the NEM:WA?	YES	NO✔

If YES, inform the competent authority and request a change to an application for scoping and EIA. An application for a waste permit in terms of the NEM:WA must also be submitted with this application.

Is the activity that is being applied for a solid waste handling or treatment facility?	YES	NO✔

If YES, then the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA. An application for a waste permit in terms of the NEM:WA must also be submitted with this application.

b) Liquid effluent

Will the activity produce effluent, other than normal sewage, that will be disposed of in a municipal sewage system?	YES	NO✔
If YES, what estimated quantity will be produced per month?	N/A	
Will the activity produce any effluent that will be treated and/or disposed of on site?	YES	NO✔

If YES, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

Will the activity produce effluent that will be treated and/or disposed of at another facility?	YES	NO✔

If YES, provide the particulars of the facility:

Facility name:			
Contact person:			
Postal address:			
Postal code:			
Telephone:		**Cell:**	
E-mail:		**Fax:**	

Describe the measures that will be taken to ensure the optimal reuse or recycling of waste water, if any:

Septic tank –

Wastewater will enter the first chamber of the septic tank, allowing solids to settle and scum to float. The settled solids are anaerobically digested, reducing the volume of solids. The liquid component flows through the dividing wall into a second chamber, where further settlement takes place, with the excess liquid then draining in a relatively clear condition from the outlet into the soak away. The remaining impurities are trapped and eliminated in the soil, with the excess water eliminated through percolation into the soil (eventually returning to the groundwater), through evaporation, and by uptake through the root system of plants and eventual transpiration.

c) Emissions into the atmosphere

Will the activity release emissions into the atmosphere other that exhaust emissions and dust associated with construction phase activities?	YES	NO✔
If YES, is it controlled by any legislation of any sphere of government?	YES	NO✔

If YES, the applicant must consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.
If NO, describe the emissions in terms of type and concentration:

N/A

d) Waste permit

Will any aspect of the activity produce waste that will require a waste permit in terms of the NEM:WA?	YES	NO✔

If YES, please submit evidence that an application for a waste permit has been submitted to the competent authority

Even though treatment of waste will occur on site, a waste permit will not be required because sewage waste to be treated on site will not be in excess of 10 tons and thus below the threshold that trigger the need for a waste licence.

e) Generation of noise

Will the activity generate noise?	YES	NO✔
If YES, is it controlled by any legislation of any sphere of government?	YES	NO✔

Describe the noise in terms of type and level:

Standard construction noise (i.e. heavy vehicles and site work) may be expected at the active construction sites.

SANParks and contractors must take into consideration that the project areas are located within a natural environment and that noise could be a major disturbance/nuisance for fauna and visitors to the park. Construction noise levels must be kept within acceptable limits and must not be of such nature as to detract from the natural experience for visitors.

13. WATER USE

Please indicate the source(s) of water that will be used for the activity by ticking the appropriate box(es):

Please note that proof of water use license application initiation correspondence with DWS is attached as **Appendix J5a**

Municipal	Water board	Groundwater (Borehole) ✔	River, stream, dam or lake	Other	The activity will not use water

If water is to be extracted from groundwater, river, stream, dam, lake or any other natural feature, please indicate the volume that will be extracted per month:

Reception facility:
KNP requires the following facilities as per the engineering pre-feasibility studies :-
Male 3 toilets & 6 urinals & 5 hand wash basins
Female 9 toilets & 5 hand wash basins
Provision must be made for peaks for 120 passenger busses.
Provision for staff: Allows for 5 single quarters and 2 x 2 bedroom flats.

Summary-

Staff members	9 x 200 litre	= 1,800
Bus peaks	120 x 16 litre	= 1,800
Office space	400 litre / 100 m2	= 400
		= 4,000 l/day

Tented camp:
Allowance for 10 x double tent units each with it's own on suite shower, h.w.b and toilet i.e.

Guests	20 x 150 litre	= 3,000 l/day
Staff	2 x 150 litre	= 300 l/day
		= 3,300 l/day

Camp site:
20 stands, average 3 people / stand

Guests	20 x 3 x 150 litre /day	= 9,000 l/day
Staff	2 x 150 litre /day	= 300 l/day
		= 9,300 l/day

Picnic Site
In terms of water demand, the peak demand shall be for a 120 passenger bus again.

Guests	120 x 15	= 1,800 l/day
Staff	2 x 150	= 300 l/day
		= 2,100 l/day

Approximately 561 000 litres

Does the activity require a water use authorisation (general authorisation or water use license) from the Department of Water Affairs?	YES✔	NO

If YES, please provide proof that the application has been submitted to the Department of Water Affairs.

Reed bed waste water infiltration system:

Types of plants for the reed beds

Macrophyte type plants will be used in the reed bed construction. *Phragmites mauritianus* and *Typha latifolia* are proposed to be used as the reed bed plants. Other types of plants to be considered are *Baumea articulate, Bolboschoenus fluviatilis*, *Eleocharis sphacelata, Lepironia articulate*, *Phragmites australis* (Common reed).

Capacity of the reed beds

The standard reed bed water depth will be 0.5 metres. In regards to length and width; the reed bed will have a length to width guideline ratio of between 4:1 and 1:1.

Table 1: An example of the ratio in practice

Water Depth (m)	Surface Area/Person (m2) (Greywater only)#
0.30	5
0.40	4
0.50	3
0.75	3

Based on a grey water generation rate of 90 L/person/day

Inlet and outlet pipes to be used

A 100mm PVC sewer pipe will be used for inlet spreader and outlet collection pipes. A series of 5-10mm holes will drilled in the sewer pipe to allow for wastewater to discharge enough holes will be drilled to allow the wastewater to flow easily through the reed bed. The inlet pipe will be placed as close to the gravel surface as possible but remain covered by gravel. The gravel coverage will be to prevent vermin entering the inlet pipe and then entering the tourist amenities, to avoid human contact and to prevent the escape of unpleasant odours. Please refer to the reed bed design layout in **Appendix C8.**

These capacity estimates may slightly vary based on the exact position selected.

14. ENERGY EFFICIENCY

Describe the design measures, if any, which have been taken to ensure that the activity is energy efficient:

The buildings that form part of the Kruger National Park Shangoni Entrance Gate, Picnic area, Tented camp and caravan facilities, will be done as environmental friendly as possible. A Solar installation for the Entrance gate with its associated facilities will be costly but definitely possible to do, we recommend that a Hybrid Solar system be used to have a generator as a backup for the critical equipment such as servers and security systems that will be used at the gate. The Rustic Tented Camp and Camp site will be served by Solar installations.

Describe how alternative energy sources have been taken into account or been built into the design of the activity, if any:

As detailed above.

SECTION B: SITE/AREA/PROPERTY DESCRIPTION

Important notes:

1. For linear activities (pipelines, etc) as well as activities that cover very large sites, it may be necessary to complete this section for each part of the site that has a significantly different

environment. In such cases please complete copies of Section B and indicate the area, which is covered by each copy No. on the Site Plan.

Section B Copy No. (e.g. A): [ ]

Please note that the all aspects of the Shangoni Gate Development occur in a similar environment and therefore duplication of this section has not been deemed necessary.

2. Paragraphs 1 - 6 below must be completed for each alternative.

3. Has a specialist been consulted to assist with the completion of this section? YES✔ | NO

If YES, please complete the form entitled "Details of specialist and declaration of interest" for each specialist thus appointed and attach it in Appendix I. All specialist reports must be contained in Appendix D.

Entire Shangoni Gate development

Property description/physical address:

Province	Limpopo Province
District Municipality	Mopani District Municipality and Vhembe District Municipality
Local Municipality	Greater Giyani Local Municipality and Thulamela Local Municipality
Ward Number(s)	N/A
Farm name and number	Kruger National Park North No.449 - MT
Portion number	449
SG Code	T0MT00000000044900000

Please see **Appendix J15** for Kruger National Park Property details

Where a large number of properties are involved (e.g. linear activities), please attach a full list to this application including the same information as indicated above.

Current land-use zoning as per local municipality IDP/records:

Protected Area.

In instances where there is more than one current land-use zoning, please attach a list of current land use zonings that also indicate which portions each use pertains to, to this application.

Is a change of land-use or a consent use application required? YES | NO✔

1. GRADIENT OF THE SITE

Indicate the general gradient of the site.

Gate position

Preferred:

Flat✔	1:50 – 1:20✔	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5

Alternative 1:

Flat✔	1:50 – 1:20✔	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5

Alternative S3 (if any):

Flat	1:50 – 1:20	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5

Reception Facility

Preferred:

Flat✔	1:50 – 1:20✔	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5

Alternative 1:

Flat✔	1:50 – 1:20✔	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5

Alternative S3 (if any):

Flat	1:50 – 1:20	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5

New tarred Access Road and its associated bridges (gravel road to be upgraded) including loop road

Alternative 1:

Flat✔	1:50 – 1:20✔	1:20 – 1:15	1:15 – 1:10✔	1:10 – 1:7,5✔	1:7,5 – 1:5	Steeper than 1:5

Alternative S2 (if any):

Flat	1:50 – 1:20	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5

Alternative S3 (if any):

Flat	1:50 – 1:20	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5

Picnic Site

Preferred:

Flat✔	1:50 – 1:20✔	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5

Alternative 1:

Flat✔	1:50 – 1:20✔	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5

Alternative 2:

Flat✔	1:50 – 1:20✔	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5

Camping Site

Preferred:

Flat✔	1:50 – 1:20✔	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5

Alternative 1:

Flat✔	1:50 – 1:20✔	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5

Alternative S3 (if any):

Flat	1:50 – 1:20	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5

Tented Camp Site

Preferred:

Flat✔	1:50 – 1:20✔	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5

Alternative 1:

Flat✔	1:50 – 1:20✔	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5

Alternative S3 (if any):

Flat	1:50 – 1:20	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5

2. LOCATION IN LANDSCAPE

Entire Shangoni Gate Development and its respective alternatives

Indicate the landform(s) that best describes the site:

2.1 Ridgeline		2.4 Closed valley	✔	2.7 Undulating plain / low hills	✔
2.2 Plateau		2.5 Open valley		2.8 Dune	
2.3 Side slope of hill/mountain		2.6 Plain	✔	2.9 Seafront	
2.10 At sea					

3. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

Is the site(s) located on any of the following?

Entire Shangoni Gate Development and its respective alternatives

	All respective Alternatives:		Alternative S2 (if any):		Alternative S3 (if any):	
Shallow water table (less than 1.5m deep)	YES	NO✔	YES	NO	YES	NO
Dolomite, sinkhole or doline areas	YES	NO✔	YES	NO	YES	NO
Seasonally wet soils (often close to water bodies)	YES	NO✔	YES	NO	YES	NO

Unstable rocky slopes or steep slopes with loose soil	YES	NO✔	YES	NO	YES	NO
Dispersive soils (soils that dissolve in water)	YES	NO✔	YES	NO	YES	NO
Soils with high clay content (clay fraction more than 40%)	YES	NO✔	YES	NO	YES	NO
Any other unstable soil or geological feature	YES	NO✔	YES	NO	YES	NO
An area sensitive to erosion	YES ✔	NO	YES	NO	YES	NO

If you are unsure about any of the above or if you are concerned that any of the above aspects may be an issue of concern in the application, an appropriate specialist should be appointed to assist in the completion of this section. Information in respect of the above will often be available as part of the project information or at the planning sections of local authorities. Where it exists, the 1:50 000 scale Regional Geotechnical Maps prepared by the Council for Geo Science may also be consulted.

4. GROUNDCOVER

Entire Shangoni Gate Development and its respective alternatives

Indicate the types of groundcover present on the site. The location of all identified rare or endangered species or other elements should be accurately indicated on the site plan(s).

Natural veld - good condition✔	Natural veld with scattered aliens	Natural veld with heavy alien infestation[E]	Veld dominated by alien species[E]	Gardens
Sport field	Cultivated land	Paved surface	Building or other structure	Bare soil

If any of the boxes marked with an "[E] "is ticked, please consult an appropriate specialist to assist in the completion of this section if the environmental assessment practitioner doesn't have the necessary expertise.

5. SURFACE WATER

Indicate the surface water present on and or adjacent to the site and alternative sites?

Entire Shangoni Gate Development and its respective alternatives

Perennial River	YES✔	NO	UNSURE
Non-Perennial River	YES✔	NO	UNSURE
Permanent Wetland	YES	NO✔	UNSURE
Seasonal Wetland	YES✔	NO	UNSURE
Artificial Wetland	YES	NO✔	UNSURE
Estuarine / Lagoonal wetland	YES	NO✔	UNSURE

If any of the boxes marked YES or UNSURE is ticked, please provide a description of the relevant watercourse.

The main watercourse likely to be affected by the proposed activities is the Shingwedzi River. This river is classified as a non-perennial river, ephemeral in nature. Non-perennial ephemeral rivers are defined as rivers that have no active water flow for between 3 – 6 months in a year. A large number of smaller non-perennial rivers are also likely to be impacted by the proposed activities. The majority of these smaller rivers are also classified as non-perennial rivers although they are more likely to be episodic in nature. Episodic rivers are defined as rivers without active water flow for 9 months of the year or more. Both Ephemeral Rivers and Episodic Rivers are further characterised by high variability and high unpredictability as is evident in the occasional flooding of the Shingwedzi River.

The Shingwedzi River (which originates near the town of Malamulele) is a dominant feature of the study site. It arises about 40 km to the North West near Thohoyandou. It is along this river that the road upgrades will occur and the picnic site and rest camp constructed. This river flows from west to east. It confluences with the Tshange River downstream from the Bateleur Bushveld Camp and later drains into the Olifants River which in turn drains into the Limpopo River which drains into the Indian Ocean. No major tributaries enter the Shingwedzi upstream from the KNP and there are no dams. The catchment of the Shingwedzi River is well populated with village settlements with no significant industrial development other than scattered mines, most of which are no longer operational.

6. LAND USE CHARACTER OF SURROUNDING AREA

Entire Shangoni Gate Development and its respective alternatives

Indicate land uses and/or prominent features that currently occur within a 500m radius of the site and give description of how this influences the application or may be impacted upon by the application:

Natural area ✔	Dam or reservoir	Polo fields
Low density residential	Hospital/medical centre	Filling station [H]
Medium density residential	School	Landfill or waste treatment site
High density residential	Tertiary education facility	Plantation
Informal residential [A]	Church	Agriculture
Retail commercial & warehousing	Old age home	River, stream or wetland ✔
Light industrial	Sewage treatment plant [A]	Nature conservation area ✔
Medium industrial [AN]	Train station or shunting yard [N]	Mountain, koppie or ridge
Heavy industrial [AN]	Railway line [N]	Museum
Power station	Major road (4 lanes or more) [N]	Historical building
Office/consulting room	Airport [N]	Protected Area ✔
Military or police base/station/compound	Harbour	Graveyard
Spoil heap or slimes dam [A]	Sport facilities	Archaeological site
Quarry, sand or borrow pit	Golf course	Other land uses (describe)

Please note that the proposed development footprint is situated within the High Intensity Leisure Zone and Low Intensity Leisure Zone as per the Kruger National Park Zonation Plan.

If any of the boxes marked with an "N "are ticked, how this impact will / be impacted upon by the proposed activity? Specify and explain:

N/A

If any of the boxes marked with an "An" are ticked, how will this impact / be impacted upon by the proposed activity? Specify and explain:

N/A

If any of the boxes marked with an "H" are ticked, how will this impact / be impacted upon by the proposed activity? Specify and explain:

N/A

Does the proposed site (including any alternative sites) fall within any of the following:

Critical Biodiversity Area (as per provincial conservation plan)	YES	NO✔
Core area of a protected area?	YES✔	NO
Buffer area of a protected area?	YES	NO✔
Planned expansion area of an existing protected area?	YES	NO✔
Existing offset area associated with a previous Environmental Authorisation?	YES	NO✔
Buffer area of the SKA?	YES	NO✔

If the answer to any of these questions was YES, a map indicating the affected area must be included in Appendix A.

7. CULTURAL/HISTORICAL FEATURES

Entire Shangoni Gate Development and its respective alternatives

Are there any signs of culturally or historically significant elements, as defined in section 2 of the National Heritage Resources Act, 1999, (Act No. 25 of 1999), including Archaeological or paleontological sites, on or close (within 20m) to the site? If YES, explain:	YES	NO✔
	Uncertain	
N/A		

If uncertain, conduct a specialist investigation by a recognised specialist in the field (archaeology or palaeontology) to establish whether there is such a feature(s) present on or close to the site. Briefly explain the findings of the specialist:

A Heritage Impact Assessment was undertaken for this proposed development, See **Appendix D5**

Will any building or structure older than 60 years be affected in any way?	YES	NO✔
Is it necessary to apply for a permit in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999)?	YES	NO✔

If YES, please provide proof that this permit application has been submitted to SAHRA or the relevant provincial authority.

8. SOCIO-ECONOMIC CHARACTER

Entire Shangoni Gate Development and its respective alternatives

a) Local Municipality

Please provide details on the socio-economic character of the local municipality in which the proposed site(s) are situated.

Note: This section is based on data retrieved from the Greater Giyani Local Municipality 2013/14 IDP as the 2015/16 is not electronically available.

Level of unemployment:

Greater Giyani Local Municipality:

As far as the local populations are concerned, the 2011 Census noted that within Greater Giyani Local Municipality there is a population of 244,218. Of the 48 065 economically active people in the municipality, 47,0% are unemployed. The unemployment rate among the youth (15 – 34 years) is higher at 61,2 %.

Thulamela Local Muncipality:
The Thulamela Local municipality has an unemployment rate of 43,8% as per the 2011 census. The municipality has a total of 75 592 employed people and 58 917 unemployed individuals. The unemployment rate among the youth (15 – 34 years) is higher at 58,3%.

Economic profile of local municipality:

Greater Giyani Local Municipality:

Key sectors of the local economy are manufacturing, trade, catering, government, finance, transport, communications and agriculture. The labour force consists of skilled and semi-skilled people and also a large percentage of unskilled people.

Table A: Household incomes (Greater Giyani)

Income	*Percentage*
None income	15,7%
R1 - R4,800	9,6%
R4,801 - R9,600	17,1%
R9,601 - R19,600	21,8%
R19,601 - R38,200	18,7%
R38,201 - R76,4000	7,2%
R76,401 - R153,800	4,3%
R153,801 - R307,600	3,3%
R307,601 - R614,400	1,6%
R614,001 - R1,228,800	0,3%

R1,228,801 - R2,457,600	0,1%
R2,457,601+	0,1%

Thulamela Local Muncipality:
The municipality's economic growth potential is in agriculture and eco-tourism. Most people in the district derive their livelihood through agricultural pursuits. The main occupation sector is agriculture (commercial and subsistence).

Table B: Household incomes (Thulamela)

Income	*Percentage*
None income	11,9%
R1 - R4,800	8,9%
R4,801 - R9,600	16,4%
R9,601 - R19,600	23,9%
R19,601 - R38,200	19,8%
R38,201 - R76,4000	7,6%
R76,401 - R153,800	5,3%
R153,801 - R307,600	3,8%
R307,601 - R614,400	1,8%
R614,001 - R1,228,800	0,3%
R1,228,801 - R2,457,600	0,1%
R2,457,601+	0,1%

Level of education:

Greater Giyani Local Municipality:

The majority of 45.5% of the population have primary education and 35.7% have secondary education while the minority of 0.8% attaining higher education. Education levels in the study area are very low and have resulted in low percentage of the population having high skilled jobs.

Table C: Level of Education percentage (Greater Giyani)

Group	Percentage
No Schooling	2,5%
Some Primary	45,4%
Completed Primary	6,4%
Some Secondary	35,7%
Completed Secondary	9%
Higher Education	0,8%
Not Applicable	0,2%

Thulamela Local Municipality:
Only 4,7% of the population have tertiary education and more than 40% are still in Grade 8– Grade 12 (secondary school). 10% had no schooling.

Table D: Level of Education percentage (Thulamela)

Group	Percentage
No Schooling	2,3%
Some Primary	42,7%
Completed Primary	6,4%

Some Secondary	36%
Completed Secondary	9,6%
Higher Education	1,9%
Not Applicable	1,1%

b) Socio-economic value of the activity

What is the expected capital value of the activity on completion?	R 10,500,000	
What is the expected yearly income that will be generated by or as a result of the activity?	Year 1 = R 2,867,773 Year 2 = R 3,972,494 Year 3 = R 5,199,315 Year 4 = R 6,559,811 Year 5 = R 7,562,210	
Will the activity contribute to service infrastructure?	YES	NO✔
Is the activity a public amenity?	YES✔	NO
How many new employment opportunities will be created in the development and construction phase of the activity/ies?	An estimated 51 employment opportunities will be created during operation. The exact figure for construction phase is unknown at this stage.	
What is the expected value of the employment opportunities during the development and construction phase?	Year 1 = R 852,000 Year 2 = R 920,160 Year 3 = R 993,773 Year 4 = R 1,073,275 Year 5 = R 1,159,137	
What percentage of this will accrue to previously disadvantaged individuals?	85 - 100%	
How many permanent new employment opportunities will be created during the operational phase of the activity?	51	
What is the expected current value of the employment opportunities during the first 10 years?	Unknown at this stage	
What percentage of this will accrue to previously disadvantaged individuals?	85 - 100%	

9. BIODIVERSITY

Entire Shangoni Gate development and its respective amenity alternatives

Please note: The Department may request specialist input/studies depending on the nature of the biodiversity occurring on the site and potential impact(s) of the proposed activity/ies. To assist with the identification of the biodiversity occurring on site and the ecosystem status consult http://bgis.sanbi.org or BGIShelp@sanbi.org. Information is also available on compact disc (cd) from the Biodiversity-GIS Unit, Ph (021) 799 8698. This information may be updated from time to time and it is the applicant/

EAP's responsibility to ensure that the latest version is used. A map of the relevant biodiversity information (including an indication of the habitat conditions as per (b) below) and must be provided as an overlay map to the property/site plan as Appendix D to this report.

a) Indicate the applicable biodiversity planning categories of all areas on site and indicate the reason(s) provided in the biodiversity plan for the selection of the specific area as part of the specific category)

Systematic Biodiversity Planning Category				**If CBA or ESA, indicate the reason(s) for its selection in biodiversity plan**
Critical Biodiversity Area (CBA)	Ecological Support Area (ESA)	Other Natural Area (ONA) ✔	No Natural Area Remaining (NNR)	**Please note:** The vegetation specialist found that Critical Biodiversity Areas are not present within the Kruger National Park, though they are indicated for areas adjacent to the Park (Figure 6 of Vegetation Assessment Report in **Appendix D2**). The information on the Systematic Biodiversity Planning Categories (CBA, ESA, ONA, NNR) is municipality specific. The entire Kruger National Park is classified as a Protected conservation area.

b) Indicate and describe the habitat condition on site

<table>
<tr><th>Habitat Condition</th><th>Percentage of habitat condition class (adding up to 100%)</th><th>Description and additional Comments and Observations
(including additional insight into condition, e.g. poor land management practises, presence of quarries, grazing, harvesting regimes etc).</th></tr>
<tr><td>Natural</td><td>99%</td><td>The specialist vegetation assessment indicated that four (4) different vegetation types are found within the proposed development footprint. These are, from west to east: Makuleke Sandy Bushveld, Tsende Mopaneveld, Mopane Gabbro Shrubveld and Subtropical Alluvial Vegetation. Further to this; eleven vegetation mapping units were identified along the transect. See below table:

Mapping units:
<table>
<tr><th>Mapping units / Plant Community</th><th>Sensitivity</th><th>Mucina & Rutherford (2006)</th></tr>
<tr><td>1. Senegalia nigrescens - Colophospermum mopane Woodland</td><td>Medium</td><td>Maluleke Sandy Bushveld (SVl1) [rather Lowveld Rugged Mopaneveld SVmp6)]</td></tr>
<tr><td>2. Sandy Colophospermum mopane – Terminalia sericea Woodland</td><td>Medium</td><td>Tsende Mopaneveld</td></tr>
<tr><td>3. Tsende Sandveld</td><td>Medium-High</td><td>Tsende Mopaneveld</td></tr>
<tr><td>4. Colophospermum mopane Woodland</td><td>Medium</td><td>Tsende Mopaneveld</td></tr>
<tr><td>5. Terminalia prunioides – Colophospermum mopane Bush</td><td>Medium-High</td><td>Tsende Mopaneveld (rather Lowveld Rugged Mopaneveld)</td></tr>
<tr><td>6. Colophospermum mopane – Vachellia tortilis Open Shrubveld</td><td>Medium-High</td><td>Sodic patches in Mopane Basalt Shrubveld</td></tr>
<tr><td>7. Shrub Mopane</td><td>Medium-Low</td><td>Mopane Basalt Shrubveld</td></tr>
<tr><td>8. Mopane Gabbro Shrubveld</td><td>Medium</td><td>Mopane Gabbro Shrubveld</td></tr>
<tr><td>9. Drainage Lines</td><td>High</td><td>Various</td></tr>
</table></td></tr>
</table>

		10. Flood Plains – High – Subtropical Alluvial Vegetation 11. Shingwedzi River Riparian – High – Subtropical Alluvial Vegetation
Near Natural (includes areas with low to moderate level of alien invasive plants)	%	
Degraded (includes areas heavily invaded by alien plants)	%	
Transformed (includes cultivation, dams, urban, plantation, roads, etc)	1%	An existing gravel road is found within the study area.

c) Complete the table to indicate:

(i) the type of vegetation, including its ecosystem status, present on the site; and

(ii) whether an aquatic ecosystem is present on site.

Terrestrial Ecosystems		**Aquatic Ecosystems**						
Ecosystem threat status as per the National Environmental Management: Biodiversity Act (Act No. 10 of 2004)	Critical	Wetland (including rivers, depressions, channelled and unchanneled wetlands, flats, seeps pans, and artificial wetlands)			Estuary		Coastline	
	Endangered							
	Vulnerable							
	Least Threatened✔	YES✔	NO	UNSURE	YES	NO✔	YES	NO ✔

d) Please provide a description of the vegetation type and/or aquatic ecosystem present on site, including any important biodiversity features/information identified on site (e.g. threatened species and special habitats)

The proposed Shangoni Gate development will impact on the following **vegetation** habitats:

1. *Senegalia nigrescens-Colophospermum* mopane Woodland:

This Woodland is located on the western boundary of the KNP, on both sides of the Shingwedzi River. The preferred and alternative sites for the Shangoni Gate are located here. Within the KNP boundary fence, the vegetation is cleared for a fire break and also for a track along the fence. The preferred and alternative sites for the reception building and associated infrastructure are also located within this plant community, but on the north-eastern side of the Shingwedzi River. The access road will cross this plant community from the Gate, via a bridge over the Shingwedzi River, to the Reception site.

According to Mucina and Rutherford (2006) this vegetation is mapped as Maluleke Sandy Bushveld (SVl1), however, the detailed vegetation survey on the site indicates that the vegetation rather represents Lowveld Rugged Mopaneveld (SVmp6), which occurs directly west of the KNP western boundary fence. This is particularly indicated by the prominence of *Senegalia nigrescens.*

Other prominent trees that were recorded here include *Colophospermum mopane, Terminalia sericea, Combretum collinum* and *Combretum imberbe*. Although the herbaceous layer has a very low cover, species such as *Cenchrus ciliaris* and *Urochloa mosambicensis* were conspicuously present. Forbs were found only scattered with very low cover.

The fence-line effect of the western boundary fence is very conspicuous, with *Senegalia nigrescens* totally dominant west of the fence, outside the KNP, but much less prominent east of the fence inside the KNP, where *Colophospermum mopane* is more prominent.

The following plant species were recorded from the *Senegalia nigrescens-Colophospermum* mopane Woodland found at the specific proposed development sites and along the proposed road transect:

The sites of the proposed Shangoni Gate and Reception area, and the area of the road to connect the Gate with the Reception area, are covered with Mopane bushveld with medium plant species richness, but two nationally protected tree species occur, namely *Combretum imberbe* and *Philenoptera violacea*. It is doubted that any individuals of *Combretum imberbe* will be in the way of the proposed development, though several smaller (up to 1.5 m tall) individuals of *Philenoptera violacea* occur within the transect. A permit from the provincial department of Forestry is needed to remove, or even cut, nationally protected trees (The Conservation of Agricultural Resources Act, 1983 (Act 43 of 1983) and the National Forests Act, 2006 (Act 84 of 1998 as amended in 2006). This area is furthermore transected by the Shingwedzi River and also a few small, dry drainage lines and the road will have to cross these.

2. Sandy *Colophospermum m*opane-Terminalia sericea Woodland

This woodland occurs along the proposed road transect from about 23º09'14.8"S; 30º56'56.9"E south-eastwards to about 23º09'45.1"S; 30o57'23.6"E. The north-western part of this road cuts through natural woodland vegetation, while the south-eastern part runs on the existing ranger's road. The road will cross small drainage lines.

The most prominent tree species are *Colophospermum mopane*, *Senegalia nigrescens*, *Combretum apiculatum*, *Combretum collinum* and *Terminalia sericea*. The herbaceous layer was quite dry, but the grasses *Bothriochloa radicans*, *Urochloa mosambicensis*, *Schmidtia pappophoroides* and *Cenchrus* ciliaris were locally prominent, while some forbs occurred scattered in the veld, but they were never dominant.

This is natural bushveld with medium to High species richness and the nationally protected tree *Philenoptera violacea* was present. A permit from the provincial department of Forestry is needed to remove, or even cut, nationally protected trees (The Conservation of Agricultural Resources Act, 1983 (Act 43 of 1983) and the National Forests Act, 2006 (Act 84 of 1998 as amended in 2006).

3. Tsende Sandveld

The Tsende Sandveld (Gertenbach 1983) occurs widespread in the region, and a large part of the route of the proposed road will transect this plant community. This landscape is undulating granite terrain with distinct uplands and bottomlands. Amphibolite from the Swaziland System occurs fairly regularly and the remainder of the landscape is intersected by numerous dolerite intrusions. An interesting phenomenon about the dolerite intrusions is that they have a south-west/north-east orientation (Gertenbach 1983). The dominant woody plants of this landscape are as follows: On the sandy uplands within the slightly undulating landscape, Combretum apiculatum is quite prominent and *Colophospermum mopane, Cissus cornifolia, Albizia harveyi, Mundulea sericea, Terminalia sericea, Grewia bicolor, Dichrostachys cinerea. Sclerocarya caffra, Dalbergia melanoxylon, Peltophorum africanum, Strychnos madagascariensis and Commiphora africana* also present. However, moving towards the bottomlands the soil becomes more clayey and *Colophospermum* mopane becomes totally dominant, with *Combretum apiculatum* and most of the other sand-loving species are absent.

The species richness in this area is very high, but this is a result of the mosaic of upland sandy and lowland clayey areas in the undulating landscape. Several drainage lines and dolerite dykes in the area also cross the road. Although several individuals of the nationally protected trees *Sclerocarya birrea*, *Combretum imberbe* and *Philenoptera violacea* were noted, very few will be in the transect of the road. Nevertheless, a permit from the provincial department of Forestry is needed to remove, or even cut, nationally protected trees (The Conservation of Agricultural Resources Act, 1983 (Act 43 of 1983) and the National Forests Act, 2006 (Act 84 of 1998 as amended in 2006).

4. *Colophospermum* mopane Woodland

Some areas within the Tsende Sandveld, especially flat the areas with amphibolite, have reddish clayey soils and these areas are covered with vegetation where *Colophospermum mopane* is totally dominant, with very few other woody species present. The grass layer is also fairly open. Due to the flat, relatively monotonous landscape and vegetation, only limited drainage lines occur, and relatively few species are present. The protected tree *Philenoptera violacea* was locally present, but probably not in the way of the proposed road.

5. *Terminalia prunioides – Colophospermum mopane* Bush

This plant community is restricted to rocky areas between 23º12'30.1"S; 31º11'58.1" E and 23º12'32.1"S; 31º13'50.2"E. This is very dense bush, with *Terminalia prunioides* and *Colophospermum mopane* dominant. This vegetation is related to the Letaba River Rugged Veld (Gertenbach 1983), rather than the Tsende Mopaneveld (Mucina and Rutherford 2006). This plant community occupies a relatively small area along the Shingwedzi River, and particularly the area within the study site. Although the nationally protected tree *Sclerocarya birrea* was noted in this vegetation, it is doubted that it will be in the way of the proposed road.

6. *Colophospermum mopane – Vachellia tortilis* Open Shrubveld

This plant community is restricted to sodic soils, along the S52. The soil is often bare, with very limited herbaceous vegetation and with only few trees and shrubs. The soil is highly erodible and therefore this ecosystem has a medium-high ecological sensitivity. [At one locality close to the road and adjacent to the open shrubveld (approx. 23º10'37.1"S; 31º17'47.5"E) is a small hill with sandy soil and dominated by *Combretum apiculatum*]. The most prominent woody species include *Vachellia tortilis*, *Colophospermum mopane* and *Salvadora* australis. This vegetation is restricted to low-lying sodic soil causing it to be ecologically sensitive.

7. Shrub Mopani

A small patch shrub mopane occurs at the eastern end of the proposed road (S52), close to the H1-6 main road. The *Colophospermum* mopane shrubs are 1-1.5 m tall. Very limited other woody species are present. This plant community is very small within the study site, has low species richness and contains no protected species.

8. Mopane Gabbro Shrubveld

A very small patch of this vegetation occurs at about 23º12'45.5"S; 31º13'24.6"E.

This area is dominated by *Colophospermum* mopane. The vegetation is similar to the Shrub Mopane and are not described further.

9. Dry Drainage lines

Several dry drainage lines will be crossed by the proposed road. These ecosystems are considered to be wetlands (National Water Act, 1998 (Act No. 36 of 1998). Some of these drainage lines are quite wide with a sandy bed, while others are narrow and almost not noticeable. This report does not include any wetland or river assessment, though an overview of the vegetation of these drainage lines is given.

Most of the general plant species that occur in the Mopane bushveld are also present in or along the drainage lines, but the vegetation is generally taller. The dominant woody plants include *Combretum apiculatum*, *Senegalia nigrescens* and *Colophospermum mopane.* However, *Cissus cornifolia, Albizia harveyi, Mundulea sericea, Terminalia sericea, Grewia bicolor, Dichrostachys cinerea, Sclerocarya caffra, Dalbergia melanoxylon, Peltophorum africanum, Strychnos madagascariensis and Commiphora africana* are also abundantly present.

The species richness in this area is very high in and along the drainage lines. Although several individuals of the nationally protected trees *Sclerocarya birrea*, *Combretum imberbe* and *Philenoptera violacea* and to a lesser degree *Elaeodendron transvaalensis* were noted, very few will be in at the specific localities where the road will cross the drainage lines. A permit from the provincial department of Forestry is needed to remove, or even cut, nationally protected trees (The Conservation of Agricultural Resources Act, 1983 (Act 43 of 1983) and the National Forests Act, 2006 (Act 84 of 1998 as amended in 2006).

10. Flood Plains

The Shingwedzi River is a relatively dry, seasonal river that has flowing water only seasonally, during higher rainfall years. However, great floods may occur occasionally. Flood plains do occur at some localities, usually directly outside the riparian on the banks of the River. Particularly prominent are the floodplains in the river loop where the development of a picnic site, tented camp site and camping site is planned.

The floodplains are generally flat sandy plains with scattered large trees but with a scanty herbaceous layer. The most abundant large trees include *Spirostachys africana*, *Diospyros mespiliformis Philenoptera violacea*, Croton *megalobotrys*, *Vachellia robusta*. The grass cover is scanty, with large bare patches of soil. Prominent grass species are *Panicum coloratum* and *Urochloa mosambicensis.* Conspicuous forbs that were noted include *Sida cordifolia* and *Justicia flava.*

Both the preferred and alternative proposed sites for the development of a picnic site, tented camp and camping site are located within the flood plains along the Shingwedzi River. The soil, vegetation and plant species composition of all these sites are similar. Although this ecosystem is regarded as ecologically sensitive, the proposed development is low-profile and low impact developments that do not include permanent structures. The more permanent structures e.g. ablution blocks, staff

accommodation, parking areas etc. are located in the Mopaneveld directly adjacent to the flood plain.

11. Shingwedzi River

The Shingwedzi River enters the KNP on the western boundary and flows eastwards past Shingwedzi Rest Camp and then to the eastern boundary where it flows into Mozambique. The new road basically runs along the Shingwedzi River from the western boundary (Shangoni Gate) to the H1-6 main road, close to Shingwedzi Rest Camp. A properly constructed (high) bridge will have to be constructed over the River, between the new gate and the proposed Reception facilities. The road will again cross the Shingwedzi River and also the Tshanga River at existing low water bridges. Furthermore the new picnic site, tented camp site and camp site will be developed on the flood plains of the Shingwedzi River. The dominant plant species along these rivers are *Spirostachys africana, Diospyros mespiliformis, Vachellia robusta, Ficus sycomorus, Gymnosporia senegalensis, Vachellia robusta* and *Philenoptera violacea*. The herbaceous cover is scanty and varies annually. All river systems in South Africa are considered to be ecologically sensitive (The National Environment Management Act, 1998, National Water Act 1998).

Further to the above, the proposed Shangoni Gate development i.e Entrance Gate, Reception facility, bridge over the Shingwedzi River, new road alignment, existing ranger road to be upgraded, picnic site, camping site and tented camp site will impact on the following **wetland & river** habitats:

Hydrology

The study area falls into the second Water Management Area (WMA), Levuvu and Lethaba. The eastern section of the site in which the new gate and reception infrastructure is located, falls in Quarternary Catchment B90F. The eastern section falls in Quarternary Catchment B90G. The mean annual precipitation (MAP) value for the study site is 681mm (per annum) and the mean annual transpiration (MAT) is 1329 (Macfarlane et al, 2013). The ratio of MAT to MAP is thus 0.5 which means that, in this catchment, the precipitation rate is lower than the evaporation rate. Consequently, wetlands and rivers in this area are sensitive to changes in regional hydrology, particularly where their catchment becomes transformed and the water available to sustain them becomes redirected. The catchment of the Shingwedzi River is relatively small comprising of approximately 5300 km2, the Shingwedzi sub-catchment has a natural MAR of 90 and an ecological reserve of 14 million m³ a-1 (Fouché & Vlok, 2012; DWAF 2004a). The Shingwedzi River is located in one of the drier sub-catchments of the South African component of the Limpopo River Catchment (Fouché & Vlok, 2012).

The Shingwedzi River (which originates near the town of Malamulele) is a dominant feature of the study site. It arises about 40 km to the North West near Thohoyandou. It is along this river that the road upgrades will occur and the picnic site and rest camp constructed. This river flows from west to east. It confluences with the Tshange River downstream from the Bateleur Bushveld Camp and later drains into the Olifants River which in turn drains into the Limpopo River which drains into the Indian Ocean. No major tributaries enter the Shingwedzi upstream from the KNP and there are no dams. The catchment of the Shingwedzi River is well populated with village settlements with no significant industrial development other than scattered mines, most of which are no longer operational (Shangoni Gate Pre-feasibility Study, 2013).

SECTION C: PUBLIC PARTICIPATION

1. ADVERTISEMENT AND NOTICE

Publication name	Titimuleni Nthavela Newspaper
Date published	15-30 April 2016 publication

Publication name	The Sunday Times
Date published	24 April 2016

Site notice position:	**Latitude**	**Longitude**
Giyani CBD (Corner Main Road and R81)	23º18'30.14"S	30º41'09.88"E
Giyani CBD (along R81 near Shoprite)	23º18'22.03"S	30º41'10.14"E
Altein Village	23º08'00.10"S	30º54'21.02"E
Muyexe Village	23º11'30.14"S	30º55'08.93"E
Madonsi Tribal Authority Offices (Makhubela Village)	22º59'55.32"S	30º44'16.17"E
Ntlhaveni Tribal Authority Offices (245 Boltman A Madonsi)	22º53'46.07"S	30º54'31.38"E
Malamulele Tribal Authority Offices (Stand 115 Peni Village)	22º00'09.49"S	30º41'30.61"E
Proposed Shangoni Gate location	23º08'40.20"S	30º55'53.60"E
Bataleur Bushveld Camp	23º14'03.55"S	31º12'07.16"E
Shingwedzi Rest Camp	23º06'31.82"S	31º26'08.07"E
SANParks headquarters Skukuza	24º59'42.58"S	31º35'44.18"E
SANParks head office Pretoria	25º45'57.47"S	28º12'14.89"E
SANParks Official website		
Date placed	18 – 27 April 2016	

Include proof of the placement of the relevant advertisements and notices in Appendix E1.

2. DETERMINATION OF APPROPRIATE MEASURES

Provide details of the measures taken to include all potential I&APs as required by Regulation 41(2)(e) and 41(6) of GN 733.

Key stakeholders (other than organs of state) identified in terms of Regulation 41(2)(b) of GN 733

Please refer to **Appendix E16** for a full list of I&APs and Stakeholders.

Shangoni Gate Development Forum

Title, Name and Surname	Affiliation/ key stakeholder status	Contact details Tel number	e-mail address
Chauke, HP	Mapinani Community Land Claim	072 349 7429	hlenganiphineas@gmail.com
Cllr. Shimange , MI	Greater Giyani Local Municipality	083 398 1927	Mshimange@gmail.com
Kriel, ME	LEDET	-	krielem@ledet.gov.za
Mabasa , WY	SANParks	082 807 3919	william.mabasa@sanparks.org
Mabasa, MG	Council of Muyexe	082 448 4127	mabasamg@webmail.co.za
Mabunda , SL	Greater Giyani Local Municipality	0765224319	mabundasl@greatergiyani.gov.za
Maluleke, SG	Thulamela Local Municipality	082 511 8291	malulekesg@thulamela.gov.za
Manamela, NE	LEDET	0824197464	manamelane@ledet.gov.za
Nyambi, HA	SANParks	082 990 5374	Aurel.nyambi@sanparks.org
Ngwenya, MR	SANParks	0799542178	Reuben.ngwenya@sanparks.org
Shivuri, RD	Mtititi TSC	0763387328	rdshivuri@gmail.com
Shilawa, GM	Muyexe	0763644453	-
Rapholo, MB	LEDET	0795295554	rapholomb@ledet.gov.za
Johnnes	JS	063169513	
Shilows, JM	Mahlathi Community	0826894658	Fieldhgh18@gmail.com
Chauke, GS	Mandonsi Tribal Authority	0783864598	-
Sekele, TA	Envirolution Consulting	086 144 4499	thabang@envirolution.co.za
Hosi Madonsi, EW	Madonsi Chief	0710047348	Madonsi.chief@gmail.com
Chauke, MW	Madonsi CPA	0762024556	Stark.chauke@gmail.com
Mabapa, MD	Madonsi CPA	0795903746	-
Michavi, GP	Peni-Nghotsa (Mapindani) Land Claims	0736108302	-
Shiburi, MS	Peni-Nghotsa Land (Mapindani) Claims	0837445188	-
Maake, TD	SANParks	0847379669	Tebogo.maake@sanparks.org
Muhlanga, P	Plange	0722744660	pmuhlanga@gmail.com
Sithole, NM	Mtititi-Altein Community	0738331512	Noel4@gmail.com

SWL	TOL	07811581308	Stelhem@ivlc.co.za
Nkuna, JW	Malamulele Task Team	0832933150	drjnkelna@mweb.co.za
Chavani, PJ	Thulamela Local Municipality	0835704062	joechavani@gmail.com
Ndhlovu, OJ	Strisa	0826764806	jamesndhlovu@gmail.com
Nxumalo, BC	Malamulele Task Team	0730281643	hosinxumalo@gmail.com
Shilowa, NR	Mahlathi Royal Council	0718015128	-
Makhubele, GE	Malamulele Task Team	0788409483	-
Maswanganyi, KA	GGM	0799669808	Kayela.alinah@gmail.com
Tim	Mopani District Municipality		tim@mopani.gov.za
Dion	Mopani District Municipality		dion@mopani.gov.za
Mavunda, V	Mopani District Municipality		mavundaV@mopani.gov.za
Marivate, C	Vhembe District Municipality		marivatec@vhembe.gov.za

Include proof that the key stakeholder received written notification of the proposed activities as Appendix E2. This proof may include any of the following:

- e-mail delivery reports;
- registered mail receipts;
- courier waybills;
- signed acknowledgements of receipt; and/or
- or any other proof as agreed upon by the competent authority.

3. ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES

Summary of main issues raised by I&APs	Summary of response from EAP
Hi Thabang Hope you are well? Thank you very much for providing us with notification letter and locality maps. Will provide comments and input if required, in due course. Mr Andrew Batho	Thank you, looking forward to your interaction.

Afzelia Environmental Consultants	
Good Morning Thabang Further to our telephonic conversation please could I be registered as a Interested & Affected Party for the Shangoni Gate Development? I would also like a copy of the BID. Thanking you in anticipation. Kindest regards Debbie Wessels Head of Department Private Projects	Thank you for your interest in this project. This email serves to inform you that you have been registered on Envirolution Consulting's database for the Kruger National Park Shangoni Gate project. You will be notified once the Draft Basic Assessment Report is available for comment. Kindly find the attached I&AP letter of which also serves as the project's BID document.
Kindly register me as an interested and affected party. Mr Frans van Aardt	This email serves to inform you that you have been registered on Envirolution Consulting's database for the Kruger National Park Shangoni Gate project. You will be notified once the Draft Basic Assessment Report is available for comment.
Dear Thabang, Please could you register me as an IAP on this project. Thank you Fred de Groot.	Dear Fred, Thank you for your interest in this project. This email serves to inform you that you have been registered on Envirolution Consulting's database for the Kruger National Park Shangoni Gate project. You will be notified once the Draft Basic Assessment Report is available for comment.
Hi Thabang. Please can you register my details as an Interested and Affected party regarding the proposed new entrance gate and tourist facility at Shangoni Thank you. Ian Leach	Dear Ian, Thank you for your interest. Your stance is duly noted. This email serves to inform you that you have been registered on Envirolution Consulting's database for the Kruger National Park Shangoni Gate project. You will be notified once the Draft Basic Assessment Report is available for comment.
Hello, Thabang!	Dear Richard,

I would like to register as an IAP regarding the proposed developments around Shangoni Gate and Redrocks Road in Kruger Park. Richard Prinsloo	Thank you for your interest. This email serves to inform you that you have been registered on Envirolution Consulting's database for the Kruger National Park Shangoni Gate project. You will be notified once the Draft Basic Assessment Report is available for comment.
Hi Thabang Trust that you are well. Please register me as an I&AP for the proposed development. I am also an EAP and PrSciNat Mr Ronaldo Retief	Dear Ronaldo, Thank you for your interest. This email serves to inform you that you have been registered on Envirolution Consulting's database for the Kruger National Park Shangoni Gate project. You will be notified once the Draft Basic Assessment Report is available for comment.
Dear Sir/Ms, Please register me as an I&AP for the proposed development. Mr Rouen Heiberg	Dear Rouen, This email serves to inform you that you have been registered on Envirolution Consulting's database for the Kruger National Park Shangoni Gate project. You will be notified once the Draft Basic Assessment Report is available for comment.
Good day! Please register me as an IAP for the proposed Shangoni Gate and related developments in the Kruger NP and send me all relevant documents. Thank you! Ms Silvia Swoboda	Good Morning Silvia, This email serves to inform you that you have been registered on Envirolution Consulting's database for the Kruger National Park Shangoni Gate project. You will be notified once the Draft Basic Assessment Report is available for comment.
Dear Thabang I believe Envirolution has been appointed to manage the EIA process for the Shangoni Gate of the Kruger National Park. Please add me to the list of interested and affected parties, using this e-mail address for correspondence.	Dear Tony, This email serves to inform you that you have been registered on Envirolution Consulting's database for the Kruger National Park Shangoni Gate project. You will be notified once the Draft Basic Assessment Report is available for

Tony Swemmer Manager: SAEON Ndlovu Node Phalaborwa Kruger National Park	comment.
I would like to be registered as an IAP with regards to the above proposed development in the Kruger National Park. Yours sincerely, Vanessa Gueli	Dear Vanessa, This email serves to inform you that you have been registered on Envirolution Consulting's database for the Kruger National Park Shangoni Gate project. You will be notified once the Draft Basic Assessment Report is available for comment.
Please register me as an I&AP for the Developments in the Shangoni area of the Kruger National Park. Where can I get details of the plans? Mr Gerhard Smit	Good Day Gerhard, Once the Draft BAR is released for public review, it will contain all the facility illustrations, plans and designs. This email serves to inform you that you have been registered on Envirolution Consulting's database for the Kruger National Park Shangoni Gate project. You will be notified once the Draft Basic Assessment Report is available for comment.
Attention; Mr Thabang Sekele Dear Sir, I wish to notify you that I wish to be included as an Interested and Affected Party in relation to this proposed development. Please also send me the initial information on this proposed development. Kind regards, Nigel Fernsby. Telephone; Pretoria 012 659 0087.	Dear Rose Fernsby, This email serves to inform you that you have been registered on Envirolution Consulting's database for the Kruger National Park Shangoni Gate project. You will be notified once the Draft Basic Assessment Report (DBAR) is available for comment. This DBAR will contain further information that is related to this proposed development. Attached is the notification letter regarding this proposed development.
To whom it may concern, I am against this kind of development in the Kruger National park and you are kindly	Dear Adam Goloda Your stance is duly noted. This email serves to

requested to register me as an interested and affected party. Adam Goloda	inform you that you have been registered on Envirolution Consulting's database for the Kruger National Park Shangoni Gate project. You will be notified once the Draft Basic Assessment Report is available for comment.
I am against this kind of development in the Kruger National park and you are kindly requested to register me as an interested and affected party. Kind regards Anne-Marie	Your stance is duly noted. This email serves to inform you that you have been registered on Envirolution Consulting's database for the Kruger National Park Shangoni Gate project. You will be notified once the Draft Basic Assessment Report is available for comment.
I am against this kind of development in the Kruger National park and you are kindly requested to register me as an interested and affected party. Kind regards HP Schutte	Your stance is duly noted. This email serves to inform you that you have been registered on Envirolution Consulting's database for the Kruger National Park Shangoni Gate project. You will be notified once the Draft Basic Assessment Report is available for comment.
Dear Sir, You are kindly requested to register me as an interested and affected party. SANParks is on the way to make the Parks become a playground for people who are not really interested in our heritage of wildlife, original fauna and untouched nature. My heart is aching. I have been coming to South Africa visiting the National parks for the last 30 years, but I am slowly coming to the sad conclusion, that my family's kind of living nature is slowly disappearing with all the new additions that SANParks is thinking up. Ms Lisbeth Scalabrin	Dear Lisbeth, This email serves to inform you that you have been registered on Envirolution Consulting's database for the Kruger National Park Shangoni Gate project. You will be notified once the Draft Basic Assessment Report (DBAR) is available for comment. Your concerns will be noted and considered in the compilation of the DBAR.
To Whom it may concern I hereby wish to register as an interested party against this development. This is not what conservation is about and	Dear Penny and Robert, Your stance is duly noted and will be indicated in the Draft Basic Assessment Report (DBAR). This email serves to inform you that you have been registered on Envirolution Consulting's database

already the Park is under extreme pressure with poaching et al. This is in total contradiction to what I believe SANParks mandate should be which is the conservation of the Kruger National Park for the future of all South Africans and not the commercialisation thereof for financial gain. Ms Penny and Mr Robert Legg	for the Kruger National Park Shangoni Gate project. You will be notified once the DBAR is available for comment.
We object to the opening of the gate into KNP near Muyexe's side. Reasons: 1.There will be a lot of trees that will be cut than at Altein's side. 2.There will be uneconomical use of funds by building a bridge if it goes to Muyexe's side. 3. It will be too close to the river if it goes to Muyexe's side. 4. There is enough space in Altein's side for building reception and an educational site like the one in Punda Maria without cutting many trees. 5. Google earth can be used to show more clarity. 6. There had never been waterlogged in Altein's side. Refer to attached pictures. Mr Elvis Mahlaule Altein community member	Dear Elvis, Your concerns are respectfully noted. Our comments with regards to your stated reasons are as follows: Please take note that the proposed gate position is positioned at 23° 8' 41.701" S, 30° 55' 54.770" E which is nearer to the community of Altein (see on google maps) and is in accordance to Kruger National Park Management Plan and Zonantion Plan. With regards to the tree cutting outside of the park, we as the Environmental Impact Assessment (EIA)consultants are not in an ideal position to comment as our EIA assessment have been conducted inside the park along the development footprint. From an environmental view, we as the EIA consultants cannot fully comment in terms of the economical use of funds for developments outside the Kruger National Park. We as the EIA consultants have been appointed to conduct an EIA assessment for the proposed Shangoni developments inside the Kruger National Park. This email serves to inform you that you have been registered on Envirolution Consulting's database for the Kruger National Park Shangoni Gate project. You will be notified once the Draft Basic Assessment Report is available for comment.

Hosi N'wadzekuzeku na Hosi Madosni together with the land claimants inside and outside Kruger National Park, are not in agreement with the plan by Envirolution Consulting about the development of Shangoni Gate. According to the Restitution of Land Rights Act, 1994 (Act no. 22 of 1994), Hosi N'wadzekudzeku together with Hosi Madonsi both did their land claim inside Kruger National Park. The claimed land is between Pongola River in the North and Greater Shingwedzi River in the South until where these two rivers meet near Shingwedzi Rest Camp, and on the West it goes along the boundary from Shingwedzi to Pongola River. We are in disagreement about the following issues: 1. Entrance to Shangoni Gate in Kruger Nationa Park, together with the welcoming office to the Park, where workers will stay or be accommodated and training office. a. We are saying that no one approached Hosi N'wadzekudzeku, Hosi Madosni and the claimants, to discuss about this issues of shifting the gate from where it is today to the new location. We do not disagree with development, but we say the reasons for the shifting of the current gate to the new position was not communicated to us. We are saying that we do not want you to proceed with your works until you sit down with us so that we all have common understanding. The Shangoni Gate should remain where it is today, that is, Malamulele side. 2. Picnic Area: a. We are saying that the picnic area should be done where the current Shangoni Gate is today. 3. Tented area and Caravan Camping site: a. Tented camps must be built on the Malamulele side where the current gate is situated. 4. New Construction of 50,6 km road from Shangoni Gate until H1-6 road between	1) Entrance to Shangoni Gate in Kruger National Park together with the welcoming office to the Park, where workers will stay or be accommodated and training office. a) We are saying that no one approached Hosi N'wadzekudzeku, Hosi Madosni and the claimants, to discuss about this issues of shifting the gate from where it is today to the new location. We do not disagree with development, but we say the reasons for the shifting of the current gate to the new position was not communicated to us. We are saying that we do not want you to proceed with your works until you sit down with us so that we all have common understanding. The Shangoni Gate should remain where it is today, that is, Malamulele side. Our response: Your comment is noted. An additional gate position on the northern side of the Shingwedzi River (Altein side) is now also being proposed as an alternative for development of the Shangoni gate which is the one your submission is referring (see attached map). This position is at the current existing ancillary gate leading into Altein Village from the park. 2) Picnic Area position. a) We are saying that the picnic area should be done where the current Shangoni Gate is today. Our response: The proposed position of the picnic site is not possible to move to the current Shangoni gate (Altein side) as the picnic site is located inside the KNP near the Shingwedzi river loop, envisioned for its optimum position at the majestic river bend and proximity to denser vegetation making it ideal for its shade value. Since this development is located inside the KNP it means that it does not

Shingwedzi Rest Camp and Mopani Rest Camp: a. We support that this road must be constructed from the existing area where Shangoni Gate is and it must stretch until it reached the road from Shingwedzi Rest Camp to Mopani Rest Camp. b. We also support that there must be an entrance gate at this point of Kruger Nationa Park. 5. Building a new Bridge on Shingwedzi River a. We support the building of the new bridge on the river 6. Creation of employment generation, new sewerage area and new irrigation water scheme. a. We support this process but it must be on the side where the gate is, unless you have proven to us the reasons for the new position. 7. Creation of a New Eskom substation to support the new development. a. We also support the creation of this substation at the current gate 8. New entrance gate to be placed next to Giyani. a. We do not support this idea unless you sit down with us and convince us the exact position and the reasons for doing so. b. Following the land claims act, no one is allowed to do any development on the claimed land before communicating with the land owners and agree on the terms and conditions for the new development. Since you know that the land has been claimed by Hosi N'wadzekudzeku, Hosi Madonsi, Hosi Muyexe and Hosi Ndindani, why didn'tyou approach one of the chiefs and give them your proposals before placing your adverts where you placed them? 9. Our resolution on the whole advertisement is as follows: a. We do not fight any new development that comes to our area, but we want SANParks to consult us first. We understand that you might have been appointed by SANParks for a number of years, so SANParks must approach and indicated to us that we must not be surprised	fall under any municipal demarcation because the KNP is classified as a protected wilderness game reserve. 3) Tented area and Caravan Camping site. a) Tented camps must be built on the Malamulele side where the current gate is situated. Our response: Since this development is located inside the KNP it means that it does not fall under any municipal demarcation because the KNP is classified as a protected wilderness game reserve. 4) New Construction of 50,6 km road from Shangoni Gate until H1-6 road between Shingwedzi Rest Camp and Mopani Rest Camp. a) We support that this road must be constructed from the existing area where Shangoni Gate is and it must stretch until it reached the road from Shingwedzi Rest Camp to Mopani Rest Camp. Our response: Your comment is noted. b) We also support that there must be an entrance gate at this point of Kruger National Park. Our response: Your comment is noted. 5) Building a new Bridge on Shingwedzi River a) We support the building of the new bridge on the river Our response: Your comment is noted.

when we see such and such companies, they have already signed the contracts with them, but we would like to see those contracts to satisfy ourselves. b. We as claimant communities want Professionals Engineers to make a presentation to us and convince us why the current position is not fit or suitable for development, if not so, the new development must be done at the current area where Shanoni Gate is currently operating.	6) Creation of employment generation, new sewerage area and new irrigation water scheme. a) We support this process but it must be on the side where the gate is, unless you have proven to us the reasons for the new position. Our response: Your comment is noted. An additional gate position on the northern side of the Shingwedzi River (Altein side) is now also being proposed as an alternative for development of the Shangoni gate which is the one your submission is referring (see attached map). This position is at the current existing ancillary gate leading into Altein Village. 7) Creation of a New Eskom substation to support the new development. a) We also support the creation of this substation at the current gate Our response: Please take note that the buildings that form part of the development viz, Entrance Gate, Reception facility, Picnic area, Tented camp and Camp site facilities, will be developed in an environmental friendly manner. A solar or a Hybrid Solar system will be used for electricity supply, having a generator as a backup for the critical equipment such as servers and security systems that will be used at the gate. The Tented Camp and Camping site will be served by Solar installations. 8) New entrance gate to be placed next to Giyani. a) We do not support this idea unless you sit down with us and convince us the exact position and the reasons for doing so. Our response:

	An additional gate position on the northern side of the Shingwedzi River (Altein side) is now also being proposed as an alternative for development of the Shangoni gate which is the one your submission is referring (see attached map). This position is at the current existing ancillary gate leading into Altein Village. b) Following the land claims act, no one is allowed to do any development on the claimed land before communicating with the land owners and agree on the terms and conditions for the new development. Since you know that the land has been claimed by Hosi N'wadzekudzeku, Hosi Madonsi, Hosi Muyexe and Hosi Ndindani, why didn't you approach one of the chiefs and give them your proposals before placing your adverts where you placed them? Our response: We would like to bring to your attention that on inquiry with the Regional Land Claims Commissioner: Limpopo (RLCCL) we were advised that the N'wadzekudzeku / Madonsi land claim was settled. The RLCC stated that the N'wadzekudzeku / Madonsi Community land claim has been settled through section 42 D which was approved by the Minister on 27 April 2016 with an amount of R14, 977,845.00 for financial compensation of 135 claimant's households and R 48,574,382.53 which will be utilized for development. The official report on the N'wadzekudzeku / Madonsi land claim can be obtained from the Regional Land Claims Commissioner: Limpopo, for your reference. And with regards to Interested and Affected Party (I&AP) notification, we have notified all identified I&APs (including the Chief) by way of official notices sent out, email notifications, physical placement of site notices and announcing the EIA

	process to the Shangoni Gate Development Forum that seats key stakeholders including the N'wadzekudzeku / Madonsi Community leaders on 03 September 2015. This announcement at the Shangoni Gate Development Forum served as prior notification before the placement of adverts of which was done on 29 April 2016 Key stakeholder consultation has been taking place by way of the Shangoni Gate Development Forum. 9) Our resolution on the whole advertisement is as follows: a) We do not fight any new development that comes to our area, but we want SANParks to consult us first. We understand that you might have been appointed by SANParks for a number of years, so SANParks must approach and indicated to us that we must not be surprised when we see such and such companies, they have already signed the contracts with them, but we would like to see those contracts to satisfy ourselves. Our response: Observation noted. However please note that we have notified all identified I&APs (including the Chief) by way of official notices sent out, email notifications, physical placement of site notices and announcing the EIA process to the Shangoni Gate Development Forum that seats key stakeholders including the N'wadzekudzeku / Madonsi Community leaders on 03 September 2015. SANParks did announce the appointment of Envirolution Consulting as Environmental Impacts Assessment consultants for the Shangoni Gate development on their official website. b) We as claimant communities want Professionals Engineers to make a presentation

	to us and convince us why the current position is not fit or suitable for development, if not so, the new development must be done at the current area where Shangoni Gate is currently operating. Our response: An additional gate position on the northern side of the Shingwedzi River (Altein side) is now also being proposed as an alternative for development of the Shangoni gate which is the one your submission is referring (see attached map). This position is at the current existing ancillary gate leading into Altein Village.
Putting forward that the Shangoni gate must remain at the current position at the Altein Rangers (Thulamela Local Municipality) gate position and NOT be across the river to the South (Greater Giyani Local Municipality). Dr Risenga Maluleka Altein-Mtititi Community	Your comment is noted. An additional gate position on the northern side of the Shingwedzi River (Altein side) is now also being proposed as an alternative for development of the Shangoni gate which is the one your submission is referring (see attached map). This position is at the current existing ancillary gate leading into Altein Village.
Putting forward that the current gate location in the Thulamela Local Municipality / Newly formed municipality (Altein Rangers gate) not be moved to the south on the other side of the Shingwedzi River (Greater Giyani Local Municipality). Dr J Nkuna Malamulele Task Team	Your comment is noted. An additional gate position on the northern side of the Shingwedzi River (Altein side) alternative is now also being considered for development of the Shangoni gate which is the one your submission is referring (see attached map). This position is at the current existing ancillary gate leading into Alitein Village.This gate position falls within the Thulamela Local Municipality.
In summary the Mapindani Nghotsa-Khubyane Community are raising an unresolved land claim with SANParks. They are stating that they are the rightful claimants. Mapindani Nghotsa-Khubyane Community.	The Mapindani land claim inside KNP was dismissed by the Regional Land Claims Commission: Limpopo and is now at the Land Claims Court in Randburg, Claim Ref No KRP 2209 with Case No.LCC 87/05.
For other issues raised at the Shangoni Gate Development Forum please refer to **Appendix E6c, e, i, j.**	

4. COMMENTS AND RESPONSE REPORT

The practitioner must record all comments received from I&APs and respond to each comment before the Draft BAR is submitted. The comments and responses must be captured in a comments and response report as prescribed in the EIA regulations and be attached to the Final BAR as Appendix E3.

5. AUTHORITY PARTICIPATION

Authorities and organs of state identified as key stakeholders:

Authority/Organ of State	Contact person (Title, Name and Surname)	Tel No	Fax No	e-mail	Postal address
Limpopo Department of Economic Development, Environment and Tourism (LEDET)	Ms ME Kriel		-	krielem@ledet.gov.za	
LEDET	Mr N Manamela	0824197464		manamelane@ledet.gov.za	
LEDET	Mr Victor Mongwe	082 412 5605		mongwev@ledet.gov.za	
Greater Giyani Local Municipality	Ms SL, Babunda	0765224319		mabundasl@greatergiyani.gov.za	
Thulamela Local Municipality	Mr SG Maluleke	082 511 8291		malulekesg@thulamela.gov.za	
Mopani District Municipality	Mr V Mavunda			mavundaV@mopani.gov.za	
Vhembe District Municipality	C Marivate			marivatec@vhembe.gov.za	
Department of Water Affairs and Sanitation	Khutsho Mabela	012 336 7121			
Department of Water Affairs and Sanitation (Regional Office)	Calitna Baloyi (Regional Officer)	012 336 7096			
Department of Water Affairs and Sanitation	Ms MM Komape	015 290 1463		KomapeM@dwa.gov.za	
Department of Tourism	Morongwa Ramphele	012 444 6551		mramphele@tourism.gov.za	
Limpopo Department of	Miyelani Nkatinqi	015 287 2601			

Rural Development and Land Reform (Director – All Districts)					
The South African Heritage Resources Agency	Mr Andrew Salomon	012 462 4502		asalomon@sahra.org.za	
Cllr M.I Shimange	Greater Giyani Municipality: Councillor	083 398 1927		Mshimange@gmail.com	

Include proof that the Authorities and Organs of State received written notification of the proposed activities as appendix E4.

6. CONSULTATION WITH OTHER STAKEHOLDERS

Note that, for any activities (linear or other) where deviation from the public participation requirements may be appropriate, the person conducting the public participation process may deviate from the requirements of that sub-regulation to the extent and in the manner as may be agreed to by the competent authority.

Proof of any such agreement must be provided, where applicable. Application for any deviation from the regulations relating to the public participation process must be submitted prior to the commencement of the public participation process.

A list of registered I&APs must be included as appendix E5.

Copies of any correspondence and minutes of any meetings held must be included in Appendix E6.

SECTION D: IMPACT ASSESSMENT

The assessment of impacts must adhere to the minimum requirements in the EIA Regulations, 2014 and should take applicable official guidelines into account. The issues raised by interested and affected parties should also be addressed in the assessment of impacts.

1. IMPACTS THAT MAY RESULT FROM THE PLANNING AND DESIGN, CONSTRUCTION, OPERATIONAL, DECOMMISSIONING AND CLOSURE PHASES AS WELL AS PROPOSED MANAGEMENT OF IDENTIFIED IMPACTS AND PROPOSED MITIGATION MEASURES

Provide a summary and anticipated significance of the potential direct, indirect and cumulative impacts that are likely to occur as a result of the planning and design phase, construction phase, operational phase, decommissioning and closure phase, including impacts relating to the choice of site/activity/technology alternatives as well as the mitigation measures that may eliminate or reduce the potential impacts listed. This impact assessment must be applied to all the identified alternatives to the activities identified in Section A(2) of this report.

Please note that the proposed impact mitigation measures are in line with the Kruger National Park Management Plan as it will tie in with the KNP Management Plan's mission of maintaining biodiversity in all its natural facets and fluxes, to provide human benefits and build a strong constituency and preserve as far as possible the wilderness qualities and cultural resources associated with the Park.

Significance matrix for the impacts assessment below is as follows:

The methods and format of the impact tables used in this chapter are in accordance to the requirements of the 2014 Regulations.

- The **nature**, which shall include a description of what causes the effect, what will be affected and how it will be affected.
- The **probability (P)** *of occurrence*, which shall describe the likelihood of the impact actually occurring. Probability will be estimated on a scale of 1–5, where 1 is very improbable (probably will not happen), 2 is improbable (some possibility, but low likelihood), 3 is probable (distinct possibility), 4 is highly probable (most likely) and 5 is definite (impact will occur regardless of any prevention measures).
- The **duration (D)**, wherein it will be indicated whether:
  - the lifetime of the impact will be of a very short duration (0–1 years) – assigned a score of 1;
  - the lifetime of the impact will be of a short duration (2-5 years) - assigned a score of 2;

- medium-term (5–15 years) – assigned a score of 3;
- long term (> 15 years) - assigned a score of 4; or
- permanent - assigned a score of 5;

» The **extent (E)**, wherein it will be indicated whether the impact will be local (limited to the immediate area or site of development) or regional, and a value between 1 and 5 will be assigned as appropriate (with 1 being low and 5 being high):

» The **magnitude (M)**, quantified on a scale from 0-10, where 0 is small and will have no effect on the environment, 2 is minor and will not result in an impact on processes, 4 is low and will cause a slight impact on processes, 6 is moderate and will result in processes continuing but in a modified way, 8 is high (processes are altered to the extent that they temporarily cease), and 10 is very high and results in complete destruction of patterns and permanent cessation of processes.

» the **significance (S)**, which shall be determined through a synthesis of the characteristics described above and can be assessed as low, medium or high;

- the significance rating is calculated by the following formula:

  S (significance) = (D + E + M) x (P)

The significance will be calculated for the Direct Impact of the aspects

» the **status**, which will be described as either positive, negative or neutral.

» the degree to which the impact can be reversed.

» the degree to which the impact may cause irreplaceable loss of resources.

» the *degree* to which the impact can be *mitigated.*

Impacts should be identified for the construction and operational phases of the proposed development. Proposed mitigation measures should be practical and feasible such that they can be realistically implemented by the applicant.

Impacts on the environment

Impacts on environment are indicated for the following developments:

- The new Shangoni Entrance Gate
- Reception Facilities
- Gravel road to be upgraded
- Picnic site, camping site and tented camp site

Negligible: Impact affects the quality, use and integrity of the system/component in a way that is barely perceptible

Low: Impact alters the quality, use and integrity of the system/component but system/component still continues to function in a slightly modified way and maintains original integrity (no/limited impact on integrity).

Moderate: Impact alters the quality, use and integrity of the system/component but system/ component still continues to function in a moderately modified way and maintains general integrity

High: Impact affects the continued viability of the system/component and the quality, use, integrity and functionality of the system or component permanently ceases and is irreversibly impaired (system collapse). Rehabilitation and remediation often impossible. If possible rehabilitation and remediation often unfeasible due to extremely high costs of rehabilitation and remediation.

Table 1; Planning and Design Phase Impacts

PLANNING AND DESIGN PHASE A summary and anticipated significance of the potential direct, indirect and cumulative impacts that are likely to occur as a result of the Planning and Design Phase of the entire proposed Shangoni Gate Development.			
Activity	**Impact summary**	**Significance (after mitigation)**	**Proposed mitigation**

Planning and design phase: Entire Shangoni Gate Development.			
Planning and designing	***Direct impacts:*** The unconsidered and haphazard placement and establishment of the proposed developments may result in higher significance impacts in areas indicated as watercourse buffer areas and Vulture nest areas.	**Low**	• Consider the placement of each proposed site as per the recommendations of the specialists and this BAR and as per the Kruger National Park Zonation Plan and in line with the Kruger National Management Plan. • The developments and associated infrastructure should be planned and laid out in such a way that the total footprint areas are minimised. Facilities and infrastructure will be consolidated and centralised wherever possible.
	Indirect impacts: The introduction of new tourist accommodation and tourism facilities will enhance the overall tourism product and mix within the KNP.	**Positive Impact**	Proposed enhancement: • The development should go ahead as planned with the recommendations of this BAR, Specialist reports and EMPr.
	Cumulative impacts: None	N/A	N/A

A summary and anticipated significance of the potential direct, indirect and cumulative impacts that are likely to occur as a result of the construction phase, Operation and Rehabilitation phase of the proposed Shangoni Gate Development are provided below.

Table 2: Construction Phase Impacts

CONSTRUCTION PHASE: Gate position
Some, though limited, indigenous vegetation will have to be cleared at the location of the Gate entrance. A summary and anticipated significance of the potential direct, indirect and cumulative impacts that are likely to occur as a result of the Construction Phase of

<table>
<tr><td colspan="6">the proposed Shangoni Gate entrance location:</td></tr>
<tr><td colspan="2">Activity</td><td>Impact summary</td><td colspan="2">Significance (with mitigation)</td><td>Proposed mitigation</td></tr>
<tr><td colspan="3"></td><td>Preferred</td><td>Alternative 1</td><td>Alternative 2</td></tr>
<tr><td colspan="6">VEGETATION</td></tr>
<tr><td colspan="2"></td><td>Direct impacts:
• Loss of indigenous vegetation or indigenous plant species due to clearing for construction of the new Shangoni Gate Entrance. Some, though limited, indigenous vegetation will have to be cleared at the location of the new gate entrance.

<table>
<tr><th>Description</th><th>Without Mitigation</th><th>With Mitigation</th></tr>
<tr><td>Probability</td><td>Probable (3)</td><td>Probable (2)</td></tr>
<tr><td>Duration</td><td>Short-term (2)</td><td>Short-term (2)</td></tr>
<tr><td>Extent</td><td>Local (1)</td><td>Local (1)</td></tr>
<tr><td>Magnitude</td><td>Minor (2)</td><td>Moderate (1)</td></tr>
<tr><td>Significance</td><td>15 (Low)</td><td>8 (low)</td></tr>
<tr><td>Status (positive or negative)</td><td>Negative</td><td>Negative</td></tr>
</table></td><td>Low</td><td>Low</td><td>Low</td><td>• Limit disturbance of natural vegetation to a minimum.
• Avoid removal of large trees.
• Rehabilitate disturbances immediately after construction.
• Do not plant any non-indigenous trees or shrubs or any garden ornamentals at the gate, use KNP indigenous plant species only.
• Ongoing alien plant control must be undertaken
• Rehabilitated areas must be monitored to ensure the establishment of re-vegetated areas.
• Remove and control all alien woody plant species that may appear during construction.
• No removal of protected trees without permit from Department of Agriculture, Forestry and Fisheries (DAFF).
• Woody plants should only be cut shorter if absolutely necessary.
• Monitor all sites disturbed by construction activities for colonisation by exotics or invasive plants and control these as they emerge.
• Disturbed areas must be rehabilitated immediately after</td></tr>
</table>

					construction has been completed in that area by sowing appropriate indigenous grass species. • During the construction phase workers must be limited to areas under construction and access to the undeveloped riparian areas must be strictly controlled.
	Indirect impacts: • Vegetation fragmentation • No irreplaceable loss of resources is anticipated.	**Low**	**Low**	**Low**	
	Cumulative impacts: • Expected that very little accumulative effects will occur.	**Low**	**Low**	**Low**	

	FAUNA AND AVIFAUNA				
	Direct impacts: • Areas used by birds for foraging and breeding will be destroyed. • The presence of vehicles and construction workers will cause disturbance to avifauna, with the movement and activities of personnel on site and the associated noise, pollution and litter all having a negative effect on terrestrial fauna. • The increase in traffic along the road will result in an increased risk of mortality for mammals, birds, reptiles and amphibians. **Description** | **Without Mitigation** | **With Mitigation**	**Low**	**Low**	**Low**	• The spatial extent of construction activities must be minimized, and as far as possible must be restricted to the areas on which buildings, roads etc will actually be located. • The boundaries of the development footprint areas are to be clearly demarcated and it must be ensured that all activities remain within the demarcated footprint area. • Provide adequate briefing for site personnel and residents. • Any bird nests that are found during the construction period must be reported to the Environmental Control Officer (ECO). • Movement of construction vehicles and workers beyond the boundary of the site must be minimized. In addition, workers must be instructed to minimize

Probability	Probable (3)	Probable (3)			disturbance of birds at all times, and steps must be taken to ensure that no illegal hunting occurs. • No hunting, snaring or trapping animals is allowed. • Disturbance by residents of birds breeding and foraging in the area should be minimized. • The normal rules applicable to visitors to KNP must be strictly enforced. • Driving at night within the site area SANParks staff must be kept to a minimum. • Speed limits must be strictly enforced. It is the opinion of the fauna specialist that the usual speed limit of 65 km/h applicable to SANParks staff is too high to avoid road kills of nocturnal birds, as these birds are often dazzled by oncoming lights. It is thus recommended that a speed limit of 40 km/h be applied to anyone using the new road at night.
Duration	Short-term (3)	Short-term (3)			
Extent	Site (1)	Site (1)			
Magnitude	Minor (2)	Minor (2)			
Significance	**18 (Moderate)**	**18 (Moderate)**			
Status (positive or negative)	Negative	Negative			
Indirect impacts: • Habitat fragmentation and destruction of wildlife corridors; these will be limited the footprint of the entrance gate facility and where loss will in any case exclude mature trees.			**Low**	**Low**	**Low**
Cumulative impacts: • Submitted to be initially minimal and thereafter stabilized, as the development will be relatively very small and most fauna species have relatively high mobility or adaptivity. • Impact to connectivity and ecological services will be insignificant, especially since mammals adapt fast to low-key			**Negligible**	**Negligible**	**Negligible**

	and consistent disturbances. • The modest compounds for the light-footprint Gate Entrance will spatially be insignificant relative to the overall extent of the park, and their impact will be fractional.				
	GROUND AND SURFACE WATER (WATERCOURSES)				
	Direct impacts: • The removal of vegetation and surface water redirection of water during construction activities. • Disturbance of slopes through creation of roads and tracks adjacent to the watercourse. • Changes in water quality due to foreign materials and increased nutrients impact ratings. • Introduction and spread of alien vegetation. • Pollution and contamination of surface water of the Shingwedzi. • Changes in sediment entering and exiting the system. • Changing the quantity and fluctuation properties of the watercourse by for example restricting water flow.	**Low**	**Low**	**Low**	• Consider the various methods and equipment available and select whichever method(s) that will have the least impact on watercourses. • Construction in and around watercourses must be restricted to the dryer winter months where possible. • Retain vegetation and soil in position for as long as possible, removing it immediately ahead of construction / earthworks in that area (DWAF, 2005). • Rehabilitation plans must be submitted and approved for rehabilitation of damage during construction and that plan must be implemented immediately upon completion of construction. • Cordon off areas that are under rehabilitation as no-go areas using danger tape and steel droppers. If necessary, these areas should be fenced off to prevent vehicular, pedestrian and livestock access. • During the construction phase measures must be put in place to control the flow of excess water • Protect all areas susceptible to erosion and ensure that there is no undue soil erosion resultant from activities within and adjacent to the construction camp and work

Description	Without Mitigation	With Mitigation

	Probability	Definite (4)	Probable (3)			areas. • Runoff from the construction area must be managed to avoid erosion and pollution problems. • Implementation of best management practices • Source-directed controls • Buffer zones to trap sediments • Monitoring should be done to ensure that sediment pollution is timeously addressed. • Water-wise education and information programmes must be incorporated into construction plans. • Water saving procedures must be introduced during construction period. • Surface water shall not be abstracted from the river to meet development needs.
	Duration	Medium-term (4)	Medium-term (2)			
	Extent	Limited to Local Area (4)	Limited to Local Area (4)			
	Magnitude	High (8)	Low (4)			
	Significance	**64 (High)**	**30 (Low)**			
	Status (positive or negative)	Negative	Negative			
	Indirect impacts: • Loss and disturbance of watercourse habitat and fringe vegetation impact ratings. • Illness to other water users in the area due to polluted watercourse. • Sedimentation of the watercourse may result in animals changing their waterholes and hence putting a stress on the animals.			**Low**	**Low**	**Low**
	Cumulative impacts: • Disturbance and loss of hydrological function (quality and fluctuation			**Low**	**Low**	**Low**

<table>
<tr><td></td><td>properties) along the Shingwedzi River.</td><td></td><td></td><td></td><td></td></tr>
<tr><td colspan="6">POTENTIAL INCREASE IN ALIENS</td></tr>
<tr><td></td><td>Direct impacts:
Disturbance of indigenous vegetation during construction results in disturbed areas, making suitable habitats for invasive plants, these proliferate in disturbed areas. The entrance gate and construction workers moving around the site area can cause a transport system for seeds and other propagates of plants, particularly of alien invasive plant species.
<table>
<tr><th>Description</th><th>Without Mitigation</th><th>With Mitigation</th></tr>
<tr><td>Probability</td><td>Probable (3)</td><td>Improbable (2)</td></tr>
<tr><td>Duration</td><td>Short term (2)</td><td>Short-term (2)</td></tr>
<tr><td>Extent</td><td>Local (1)</td><td>Local (1)</td></tr>
<tr><td>Magnitude</td><td>Low (3)</td><td>Low (2)</td></tr>
<tr><td>Significance</td><td>18 (Low)</td><td>10 (Low)</td></tr>
</table></td><td>Low</td><td>Low</td><td>Low</td><td>Ongoing alien plant control must be undertaken during construction.
Areas which have been disturbed will be quickly colonised by invasive alien species. An ongoing management plan must be implemented for the clearing/eradication of alien species during the operational phase.
Monitor all sites disturbed by construction activities for colonisation by exotics or invasive plants and control these as they emerge.</td></tr>
</table>

	Status (positive or negative) | Negative | Negative				
	Indirect impacts: • Alien invader plant species pose an ecological threat as they alter habitat structure; lower biodiversity, change ecosystem services and processes e.g. change nutrient cycling and productivity, and modify food webs. Allowing invasive plant species to establish and expand their distribution range without control may have vast accumulative effects. • Fragmentation of local vegetation; increased bush fires as these plants are highly prone to fire.	**Low**	**Low**	**Low**	
	Cumulative impacts: • Increased of woody alien species	**Low**	**Low**	**Low**	
VISUAL IMPACTS					

<table>
<tr>
<td></td>
<td>
Direct impacts:

Construction activities and the presence of construction equipment will cause a disturbance to the existing landscape character.

<table>
<tr><th>Description</th><th>Without Mitigation</th><th>With Mitigation</th></tr>
<tr><td>Probability</td><td>Highly Probable (4)</td><td>Probable (3)</td></tr>
<tr><td>Duration</td><td>Short term (2)</td><td>Short-term (2)</td></tr>
<tr><td>Extent</td><td>Site (1)</td><td>Site (1)</td></tr>
<tr><td>Magnitude</td><td>Low (4)</td><td>Minor (2)</td></tr>
<tr><td>Significance</td><td>28 (Low)</td><td>15 (Low)</td></tr>
<tr><td>Status (positive or negative)</td><td>Negative</td><td>Negative</td></tr>
</table>
</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
<td rowspan="3">

Buildings are to be simple in form and deliberately separated to lessen impact on the environment and allow for placement adjustments during construction to preserve large trees and protected specimens.
Locate construction camps outside the borders of the KNP in areas that is already disturbed to avoid additional disturbance inside the park.
In the event that construction camps are located in the KNP, put stringent restrictions in place to contain the footprint of the camp by temporarily fencing it and clearly demarcating the entire construction area to minimise disturbance of areas outside the construction site.
Keep the construction camp and construction area neat and tidy at all times. Remove any waste products from the site or contain it in an enclosed area to avoid wind blowing waste into the bush.
Implement dust suppression measures during earthworks to minimise the impact of dust clouds.
Appoint a suitable architect and landscape architect to design the infrastructure.
No structure may exceed the height of the surrounding vegetation.
Additional trees and shrubs can be planted around the structures as an offset measure to the loss in vegetation in the footprint of the infrastructure.
All signage should be non-intrusive but clear. No sign boards will be placed on separate frameworks higher than 2 m above the ground level to avoid it exceeding the height of the vegetation.

</td>
</tr>
<tr>
<td></td>
<td>
Indirect impacts:

The impact will only affect the natural character of the visual resource.

</td>
<td>Negligible</td>
<td>Negligible</td>
<td>Negligible</td>
</tr>
<tr>
<td></td>
<td>Cumulative impacts:</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>N/A</td>
</tr>
</table>

<table>
<tr><td></td><td>None</td><td></td><td></td><td></td><td></td></tr>
<tr><td colspan="6">HERITAGE IMPACTS</td></tr>
<tr><td></td><td>Direct impacts:
Construction of the entrance gate could result in the discovery of significant heritage artefacts.

<table>
<tr><th>Description</th><th>Without Mitigation</th><th>With Mitigation</th></tr>
<tr><td>Probability</td><td>2</td><td>2</td></tr>
<tr><td>Duration</td><td>2</td><td>2</td></tr>
<tr><td>Extent</td><td>2</td><td>2</td></tr>
<tr><td>Magnitude</td><td>4</td><td>4</td></tr>
<tr><td>Significance</td><td>13 (Low)</td><td>13 (Low)</td></tr>
<tr><td>Status (positive or negative)</td><td>Negative</td><td>Negative</td></tr>
</table></td><td>Low</td><td>Low</td><td>Low</td><td>• Should any heritage artefacts be exposed during operation of the area where the artefacts were discovered, SANParks Officials shall be notified as soon as possible.
• No artefacts may be removed off site unless authorized by the appropriate authority.</td></tr>
<tr><td></td><td>Indirect impacts:
None</td><td>None</td><td>None</td><td>None</td><td>N/A</td></tr>
<tr><td></td><td>Cumulative impacts:

None</td><td>None</td><td>None</td><td>None</td><td></td></tr>
<tr><td colspan="6"></td></tr>
</table>

<table>
<tr><th colspan="6">NOISE IMPACTS</th></tr>
<tr><td></td><td>Direct impacts:
Noise emissions from construction activities resulting in fauna migrating from noise emission areas.
Some fauna aborting foetuses due to excessive noise.
Flight patterns of avifauna changing.
<table>
<tr><th>Description</th><th>Without Mitigation</th><th>With Mitigation</th></tr>
<tr><td>Probability</td><td>Probable (3)</td><td>Improbable (2)</td></tr>
<tr><td>Duration</td><td>Short-term (2)</td><td>Short-term (2)</td></tr>
<tr><td>Extent</td><td>Limited to Local Area (2)</td><td>Limited to Local Area (2)</td></tr>
<tr><td>Magnitude</td><td>Moderate (6)</td><td>Moderate (5)</td></tr>
<tr><td>Significance</td><td>30 (medium)</td><td>18 (low)</td></tr>
<tr><td>Status (positive or negative)</td><td>Negative</td><td>Negative</td></tr>
</table></td><td>Low</td><td>Low</td><td>Low</td><td rowspan="2">Put up general noise reduction signs
The usage of low noise generators is encouraged
Establish noise attenuation structures around high noise activities eg. metal fabricating activities
Establish noise level threshold consistent with SANParks policies.
Works should be conducted during SANParks mandated day hours.
Speed limits must be strictly enforced. It is the opinion of the fauna specialist that the usual speed limit of 65 km/h applicable to SANParks staff is too high to avoid road kills of nocturnal birds, as these birds are often dazzled by oncoming lights. It is thus recommended that a speed limit of 40 km/h be applied to anyone using the new road at night.</td></tr>
<tr><td></td><td>Indirect impacts:</td><td>Negligible</td><td>Negligible</td><td>Negligible</td></tr>
</table>

<table>
<tr><td></td><td>• A potential change in the ecological cycle of the immediate study area.</td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td>Cumulative impacts:

No significant cumulative impact expected.</td><td>None</td><td>None</td><td>None</td><td>N/A</td></tr>
<tr><td colspan="6">TRAFFIC IMPACTS</td></tr>
<tr><td></td><td>Direct impacts:
• Increase in construction vehicle traffic on the ranger road to upgraded, S54 & H1-6 tourist roads and other internal KNP roads.
• New traffic pressure at the proposed entrance gate.
<table>
<tr><th>Description</th><th>Without Mitigation</th><th>With Mitigation</th></tr>
<tr><td>Probability</td><td>Improbable (2)</td><td>Improbable (2)</td></tr>
<tr><td>Duration</td><td>Short-term (2)</td><td>Very short-term (1)</td></tr>
<tr><td>Extent</td><td>Limited to Local Area (2)</td><td>Limited to Local Area (1)</td></tr>
<tr><td>Magnitude</td><td>Moderate (5)</td><td>Minor (2)</td></tr>
</table></td><td>Low</td><td>Low</td><td>Low</td><td>• Traffic speed signs must be established at sufficient intervals along the construction footprint.
• Establish a speed reduction awareness campaign for the contractors
• No construction vehicles allowed on the roads after between 06:00-18h00
• Implement penalty fines to speed violators.</td></tr>
</table>

	<table><tr><td>**Significance**</td><td>**18 (Low)**</td><td>**8 (Low)**</td></tr><tr><td>**Status (positive or negative)**</td><td>Negative</td><td>Negative</td></tr></table>				
	Indirect impacts: • Increased chance of road kills	**Negligible**	**Negligible**	**Negligible**	
	Cumulative impacts: • No significant cumulative impact expected.	**Negligible**	**Negligible**	**Negligible**	
	AIR QUALITY IMPACTS				
	Direct impacts: • General construction vehicle emissions. These emissions can be considered as insignificant. • Dust fallout from speeding construction vehicles and construction activities. <table><tr><th>Description</th><th>Without Mitigation</th><th>With Mitigation</th></tr><tr><td>**Probability**</td><td>Local (1)</td><td>Local (1)</td></tr><tr><td>**Duration**</td><td>Long-term (4)</td><td>Long-term (4)</td></tr></table>	**Low**	**Low**	**Low**	• Staff vehicles must be sufficiently maintained and serviced. • A daily vehicle maintenance checklist must be conducted on all construction vehicles. • Water spraying dust suppression must be conducted on areas prone to excessive dust fallout at required intervals.

	Extent / Minor (2) / Small (1) **Magnitude** / Highly probable (4) / Improbable (2) **Significance** / **Low (28)** / **Low (12)** **Status (positive or negative)** / Negative / Negative				
	Indirect impacts: • None anticipated	**None**	**None**	**None**	N/A
	Cumulative impacts: • None anticipated	**None**	**None**	**None**	

	SOCIO-ECONOMIC POSITIVE IMPACTS				
	Direct impacts: • Job opportunities created during the construction phase • Local suppliers & contractors to be contracted. **Description** / **Without Mitigation** / **With Mitigation** **Probability** / Local- / Local-	**Low Positive impact**	**Low Positive impact**	**Low Positive impact**	**Enhancement:** • Local employment should as far possible be used for construction. • Contract local suppliers and contractors for construction work to be commissioned. • The developer should implement a training and skills development enhancement programme for locals during the construction phase.

		Regional (2)	Regional (2)			
	Duration	Short-term (1)	Short-term (1)			
	Extent	Small (1)	Low (4)			
	Magnitude	Probable (3)	Probable (3)			
	Significance	**Low (12)**	**Low (21)**			
	Status (positive or negative)	Positive	Positive			
	Indirect impacts: • Stimulation of the region's economic activities. • Local employed people during the construction phase may learn new skills thereby making them more employable in the future. • Improvement of family and community quality of life.			**Positive Impact**	**Positive Impact**	**Positive Impact**	
	Cumulative impacts: • General acceptance of the development and community			**Positive Impact**	**Positive Impact**	**Positive Impact**	**Enhancement:** • Continued involvement of the local neighbouring communities must take place by way of beneficiation

<table>
<tr><td></td><td>cooperation</td><td></td><td></td><td></td><td>initiatives.</td></tr>
<tr><td></td><td colspan="5">SOCIO-ECONOMIC NEGATIVE IMPACTS</td></tr>
<tr><td></td><td>Direct impacts:
Squatting might increase near the KNP fence due to the perception of work.
Increased risk of stock theft, poaching and damage to park infrastructure associated with construction workers.
Construction workers using nearby bushes for ablution.
Improper conduct by construction workers
<table>
<tr><th>Description</th><th>Without Mitigation</th><th>With Mitigation</th></tr>
<tr><td>Probability</td><td>Probable (3)</td><td>Probable (3)</td></tr>
<tr><td>Duration</td><td>Short-term (2)</td><td>Very short-term (1)</td></tr>
<tr><td>Extent</td><td>Limited to Local Area (2)</td><td>Limited to Local Area (1)</td></tr>
<tr><td>Magnitude</td><td>Moderate (6)</td><td>Small (0)</td></tr>
<tr><td>Significance</td><td>30 (medium)</td><td>6(Low)</td></tr>
</table></td><td>Low Negative impact</td><td>Low Negative impact</td><td>Low Negative impact</td><td>Negative impacts mitigation
Implement mitigation measures to monitor and control the activities of construction workers and for the control of nuisance impacts.
Access to the construction site must be strictly controlled and monitored by 24 hour security.
Mechanisms should be implemented to deal with people seeking employment in order to minimise any issues related to the influx of people.
Adequate sanitary and ablutions facilities must be provided for construction workers as standard construction practice.
The Contractor shall provide sanitation and ablution facilities in the form of chemical toilets, at all camps, offices, workshops and construction sites for staff and visitors. A minimum of one toilet per 15 people or within 100 meters of the work site in order to encourage the use of these toilets.
All staff is to use the toilets at all times rather than informal defecation in the environment.
Toilets are not to be located within sensitive areas such as drainage lines and 1:100 year flood lines.
Burning of vegetation including tree trunks and stumps cut during site clearing and establishment shall not be permitted.</td></tr>
</table>

	Status (positive or negative) | Negative | Negative				• Smoking is only allowed in designated safe smoking areas. • No fires for warming or cooking are allowed outside of secured areas in the construction camp.
	Indirect impacts: • Potential protests to the development by the local surrounding communities due the development not providing employment. • Migrant and local construction workers engaging in unsafe sexual activities with local women.	**Negative impact**	**Negative impact**	**Negative impact**	**Negative impacts mitigation:** • Local employment should as far possible be used for construction. • Contract local suppliers and contractors for construction work to be commissioned. • Attention should be given to the awareness of HIV/Aids and STDs in the form of toolbox talks.
	Cumulative impacts: • Local community instability and resistance to the development. • In cases where unplanned / unwanted pregnancies occur or members of the community are infected by an STD, specifically HIV and/or AIDS, the impacts may be permanent and have long term to permanent cumulative impacts on the affected individuals and/or their families and the community.	**Negative impact**	**Negative impact**	**Negative impact**	**Negative impacts mitigation:** • Local employment should as far possible be used for construction. • Contract local suppliers and contractors for construction work to be commissioned. • Attention should be given to the awareness of HIV/Aids and STDs in the form of toolbox talks.

CONSTRUCTION PHASE: Reception facility

Some, though limited, indigenous vegetation will have to be cleared at the location of the Reception facility.
A summary and anticipated significance of the potential direct, indirect and cumulative impacts that are likely to occur as a result of the Construction Phase of the proposed Shangoni Development.

Activity	Impact summary	Significance (after mitigation)		Proposed mitigation
		Preferred	Alternative 1	
VEGETATION				
	Direct impacts: • Loss of indigenous vegetation or indigenous plant species due to clearing for construction of the Reception facility. Some, though limited, indigenous vegetation will have to be cleared at the location of the reception facility.	**Low**	**Low**	• Limit disturbance of natural vegetation to a minimum. • Avoid removal of large trees. • Rehabilitate disturbances immediately after construction. • Do not plant any non-indigenous trees or shrubs or any garden ornamentals at the gate, use KNP indigenous plant species only. • Ongoing alien plant control must be undertaken • Rehabilitated areas must be monitored to ensure the establishment of re-vegetated areas. • Remove and control all alien woody plant species that may appear during construction. • No removal of protected trees without permit from Department of Agriculture, Forestry and Fisheries (DAFF). • Woody plants should only be cut shorter if absolutely necessary.

Description	Without Mitigation	With Mitigation
Probability	Probable (3)	Probable (2)
Duration	Short-term (2)	Short-term (2)
Extent	Local (1)	Local (1)
Magnitude	Minor (2)	Moderate (1)
Significance	**15 (Low)**	**8 (low)**

Status (positive or negative) Negative / Negative			
Indirect impacts: • Vegetation fragmentation • No irreplaceable loss of resources is anticipated.	**Low**	**Low**	
Cumulative impacts: • Expected that very little accumulative effects will occur.	**Low**	**Low**	
FAUNA AND AVIFAUNA			
Direct impacts: • The modest compounds for the light-footprint at Reception facility will spatially be insignificant relative to the overall extent of the park, and their impact will be fractional. • Areas used by birds for foraging and breeding will be destroyed. • The presence of vehicles and construction workers will cause disturbance to avifauna, with the movement and activities of personnel on site and the associated noise, pollution and litter all having a negative effect on terrestrial fauna.	**Moderate**	**Moderate**	• The spatial extent of construction activities must be minimized, and as far as possible must be restricted to the areas on which buildings, roads etc will actually be located. • The boundaries of the development footprint areas are to be clearly demarcated and it must be ensured that all activities remain within the demarcated footprint area. • Provide adequate briefing for site personnel and residents. • Any bird nests that are found during the construction period must be reported to the Environmental Control Officer (ECO).

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The increase in traffic along the road will result in an increased risk of mortality for mammals, birds, reptiles and amphibians.

<table>
<tr><th>Description</th><th>Without Mitigation</th><th>With Mitigation</th></tr>
<tr><td>Probability</td><td>Probable (3)</td><td>Probable (3)</td></tr>
<tr><td>Duration</td><td>Short-term (3)</td><td>Short-term (3)</td></tr>
<tr><td>Extent</td><td>Site (1)</td><td>Site (1)</td></tr>
<tr><td>Magnitude</td><td>Minor (2)</td><td>Minor (2)</td></tr>
<tr><td>Significance</td><td>18 (Moderate)</td><td>18 (Moderate)</td></tr>
<tr><td>Status (positive or negative)</td><td>Negative</td><td>Negative</td></tr>
</table>
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<td rowspan="2">

Movement of construction vehicles and workers beyond the boundary of the site must be minimized. In addition, workers must be instructed to minimize disturbance of birds at all times, and steps must be taken to ensure that no illegal hunting occurs.
No hunting, snaring or trapping animals is allowed.
Disturbance by residents of birds breeding and foraging in the area should be minimized.
The normal rules applicable to visitors to KNP must be strictly enforced.
Driving at night within the site area SANParks staff must be kept to a minimum.
Speed limits must be strictly enforced. It is the opinion of the fauna specialist that the usual speed limit of 65 km/h applicable to SANParks staff is too high to avoid road kills of nocturnal birds, as these birds are often dazzled by oncoming lights. It is thus recommended that a speed limit of 40 km/h be applied to anyone using the new road at night.

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Indirect impacts:

The construction phase of the Reception facility will result in the negligible loss of mammal, reptile and amphibian habitats. Within the context of the park, this impact relates to the limited destruction/disturbance of existing vegetation by machinery and workers, impacting directly on the ecological condition of natural vegetation and habitat availability. These activities will have negligible impact on foraging and breeding

</td>
<td>Low</td>
<td>Low</td>
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</table>

	ecology. • Loss of vegetation generally affects nutrient cycles, removes the organic litter layer and results in habitat fragmentation and destruction of wildlife corridors; these will be limited the footprint of the entrance gate facility and where loss will in any case exclude mature trees.			
	Cumulative impacts: • Submitted to be initially minimal and thereafter stabilized, as the development will be relatively very small and most fauna species have relatively high mobility or adaptivity. • Impact to connectivity and ecological services will be insignificant, especially since mammals adapt fast to low-key and consistent disturbances.	**Negligible**	**Negligible**	
	GROUND AND SURFACE WATER (WATERCOURSES)			
	Direct impacts: • The removal of vegetation and surface water redirection of water during construction activities. • Disturbance of slopes through creation of roads and tracks adjacent to the watercourse. • Changes in water quality due to foreign	**Low**	**Low**	• Consider the various methods and equipment available and select whichever method(s) that will have the least impact on watercourses. • Construction in and around watercourses must be restricted to the dryer winter months where possible. • Retain vegetation and soil in position for as long as possible, removing it immediately ahead of construction / earthworks in that area (DWAF, 2005).

<table>
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<td>materials and increased nutrients impact ratings.
• Introduction and spread of alien vegetation.
• Pollution and contamination of surface water of the Shingwedzi.
• Changes in sediment entering and exiting the system.
• Changing the quantity and fluctuation properties of the watercourse by for example restricting water flow.

<table>
<tr><th>Description</th><th>Without Mitigation</th><th>With Mitigation</th></tr>
<tr><td>Probability</td><td>Definite (4)</td><td>Probable (3)</td></tr>
<tr><td>Duration</td><td>Medium-term (4)</td><td>Medium-term (2)</td></tr>
<tr><td>Extent</td><td>Limited to Local Area (4)</td><td>Limited to Local Area (4)</td></tr>
<tr><td>Magnitude</td><td>High (8)</td><td>Low (4)</td></tr>
<tr><td>Significance</td><td>64 (High)</td><td>30 (Low)</td></tr>
<tr><td>Status (positive or negative)</td><td>Negative</td><td>Negative</td></tr>
</table>
</td>
<td></td>
<td></td>
<td rowspan="2">• Rehabilitation plans must be submitted and approved for rehabilitation of damage during construction and that plan must be implemented immediately upon completion of construction.
• Cordon off areas that are under rehabilitation as no-go areas using danger tape and steel droppers. If necessary, these areas should be fenced off to prevent vehicular, pedestrian and livestock access.
• During the construction phase measures must be put in place to control the flow of excess water
• Protect all areas susceptible to erosion and ensure that there is no undue soil erosion resultant from activities within and adjacent to the construction camp and work areas.
• Runoff from the construction area must be managed to avoid erosion and pollution problems.
• Implementation of best management practices
• Source-directed controls
• Buffer zones to trap sediments
• Monitoring should be done to ensure that sediment pollution is timeously addressed.
• Water-wise education and information programmes must be incorporated into construction plans.
• Water saving procedures must be introduced during construction period.
• Surface water shall not be abstracted from the river to meet development needs.</td>
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<td>Indirect impacts:
• Loss and disturbance of watercourse habitat and fringe vegetation impact ratings.</td>
<td>Low</td>
<td>Low</td>
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- Illness to other water users in the area due to polluted watercourse.
- Sedimentation of the watercourse may result in animals changing their waterholes and hence putting a stress on the animals.

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Cumulative impacts:

- Disturbance and loss of hydrological function (quality and fluctuation properties) along the Shingwedzi River.

</td><td>**Low**</td><td>**Low**</td></tr>
<tr><td colspan="5">**POTENTIAL INCREASE IN ALIENS**</td></tr>
<tr><td></td><td>

Direct impacts:

- Disturbance of indigenous vegetation during construction results in disturbed areas, making suitable habitats for invasive plants, these proliferate in disturbed areas. The reception facility area and construction workers moving around the site area can cause a transport system for seeds and other propagates of plants, particularly of alien invasive plant species.

<table>
<tr><th>Description</th><th>Without Mitigation</th><th>With Mitigation</th></tr>
<tr><td>**Probability**</td><td>Probable (3)</td><td>Improbable (2)</td></tr>
<tr><td>**Duration**</td><td>Short term (2)</td><td>Short-term (2)</td></tr>
</table>

</td><td>**Low**</td><td>**Low**</td><td>

- Ongoing alien plant control must be undertaken during construction.
- Areas which have been disturbed will be quickly colonised by invasive alien species. An ongoing management plan must be implemented for the clearing/eradication of alien species during the operational phase.
- Monitor all sites disturbed by construction activities for colonisation by exotics or invasive plants and control these as they emerge.

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</table>

	Extent	Local (1)	Local (1)	
	Magnitude	Low (3)	Low (2)	
	Significance	**18 (Low)**	**10 (Low)**	
	Status (positive or negative)	Negative	Negative	
	Indirect impacts: • Alien invader plant species pose an ecological threat as they alter habitat structure; lower biodiversity, change ecosystem services and processes e.g. change nutrient cycling and productivity, and modify food webs. Allowing invasive plant species to establish and expand their distribution range without control may have vast accumulative effects. • Fragmentation of local vegetation; increased bush fires as these plants are highly prone to fire.		**Low**	**Low**
	Cumulative impacts: • Increase of woody alien species pose an ecological threat.		**Low**	**Low**
	VISUAL IMPACTS			

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Direct impacts:

Construction activities and the presence of construction equipment will cause a disturbance to the existing landscape character

<table>
<tr><th>Description</th><th>Without Mitigation</th><th>With Mitigation</th></tr>
<tr><td>Probability</td><td>Highly Probable (4)</td><td>Probable (3)</td></tr>
<tr><td>Duration</td><td>Short term (2)</td><td>Short-term (2)</td></tr>
<tr><td>Extent</td><td>Site (1)</td><td>Site (1)</td></tr>
<tr><td>Magnitude</td><td>Low (4)</td><td>Minor (2)</td></tr>
<tr><td>Significance</td><td>28 (Low)</td><td>15 (Low)</td></tr>
<tr><td>Status (positive or negative)</td><td>Negative</td><td>Negative</td></tr>
</table>
</td>
<td>Low</td>
<td>Low</td>
<td rowspan="2">

Buildings are to be simple in form and deliberately separated to lessen impact on the environment and allow for placement adjustments during construction to preserve large trees and protected specimens.
Subtle walkways between buildings to connect without overpowering.
Locate construction camps outside the borders of the KNP in areas that is already disturbed to avoid additional disturbance inside the park.
In the event that construction camps are located in the KNP, put stringent restrictions in place to contain the footprint of the camp by temporarily fencing it and clearly demarcating the entire construction area to minimise disturbance of areas outside the construction site.
Keep the construction camp and construction area neat and tidy at all times. Remove any waste products from the site or contain it in an enclosed area to avoid wind blowing waste into the bush.
Implement dust suppression measures during earthworks to minimise the impact of dust clouds.
Appoint a suitable architect and landscape architect to design the infrastructure and the adjoining surroundings with sensitivity towards the environment and its current character.
No structure may exceed the height of the surrounding vegetation.
Additional trees and shrubs can be planted around the structures as an offset measure to the loss in vegetation in the footprint of the infrastructure.
All signage should be non-intrusive but clear. No sign boards will be placed on separate frameworks higher than 2 m above the ground level to avoid it exceeding the height of

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Indirect impacts:

The impact will only affect the natural character of the visual resource.

</td>
<td>Negligible</td>
<td>Negligible</td>
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<table>
<tr><td></td><td></td><td></td><td></td><td>the vegetation.</td></tr>
<tr><td></td><td>Cumulative impacts:

None</td><td>None</td><td>None</td><td>N/A</td></tr>
<tr><td colspan="5">HERITAGE IMPACTS</td></tr>
<tr><td></td><td>Direct impacts:
Construction of the Reception facility could result in the discovery of significant heritage artefacts.

<table>
<tr><th>Description</th><th>Without Mitigation</th><th>With Mitigation</th></tr>
<tr><td>Probability</td><td>2</td><td>2</td></tr>
<tr><td>Duration</td><td>2</td><td>2</td></tr>
<tr><td>Extent</td><td>2</td><td>2</td></tr>
<tr><td>Magnitude</td><td>4</td><td>4</td></tr>
<tr><td>Significance</td><td>13 (Low)</td><td>13 (Low)</td></tr>
<tr><td>Status (positive or negative)</td><td>Negative</td><td>Negative</td></tr>
</table></td><td>Low</td><td>Low</td><td>• Should any heritage artefacts be exposed during operation of the area where the artefacts were discovered, SANParks Officials shall be notified as soon as possible.
• No artefacts may be removed off site unless authorized by the appropriate authority.</td></tr>
<tr><td></td><td>Indirect impacts:
None</td><td>None</td><td>None</td><td>N/A</td></tr>
<tr><td></td><td>Cumulative impacts:</td><td>None</td><td>None</td><td></td></tr>
</table>

<table>
<tr><td></td><td>None</td><td></td><td></td><td></td></tr>
<tr><td colspan="5">NOISE IMPACTS</td></tr>
<tr><td></td><td>Direct impacts:
Noise emissions from construction activities resulting in fauna migrating from noise emission areas.
Some fauna aborting foetuses due to excessive noise.
Flight patterns of avifauna changing.
<table>
<tr><th>Description</th><th>Without Mitigation</th><th>With Mitigation</th></tr>
<tr><td>Probability</td><td>Probable (3)</td><td>Improbable (2)</td></tr>
<tr><td>Duration</td><td>Short-term (2)</td><td>Short-term (2)</td></tr>
<tr><td>Extent</td><td>Limited to Local Area (2)</td><td>Limited to Local Area (2)</td></tr>
<tr><td>Magnitude</td><td>Moderate (6)</td><td>Moderate (5)</td></tr>
<tr><td>Significance</td><td>30 (medium)</td><td>18 (low)</td></tr>
<tr><td>Status (positive or negative)</td><td>Negative</td><td>Negative</td></tr>
</table></td><td>Low</td><td>Low</td><td>Put up general noise reduction signs
The usage of low noise generators is encouraged
Establish noise attenuation structures around high noise activities eg. metal fabricating activities
Establish noise level threshold consistent with SANParks policies.
Works should be conducted during SANParks mandated day hours.
Speed limits must be strictly enforced. It is the opinion of the fauna specialist that the usual speed limit of 65 km/h applicable to SANParks staff is too high to avoid road kills of nocturnal birds, as these birds are often dazzled by oncoming lights. It is thus recommended that a speed limit of 40 km/h be applied to anyone using the new road at night.</td></tr>
</table>

<table>
<tr><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td>Indirect impacts:
• A potential change in the ecological cycle of the immediate study area.</td><td>Negligible</td><td>Negligible</td><td></td></tr>
<tr><td></td><td>Cumulative impacts:

No significant cumulative impact expected.</td><td>None</td><td>None</td><td>N/A</td></tr>
<tr><td colspan="5">TRAFFIC IMPACTS</td></tr>
<tr><td></td><td>Direct impacts:
• Increase in construction vehicle traffic on the ranger road to upgraded, S54 & H1-6 tourist roads and other internal KNP roads.
<table>
<tr><th>Description</th><th>Without Mitigation</th><th>With Mitigation</th></tr>
<tr><td>Probability</td><td>Improbable (2)</td><td>Improbable (2)</td></tr>
<tr><td>Duration</td><td>Short-term (2)</td><td>Very short-term (1)</td></tr>
<tr><td>Extent</td><td>Limited to Local Area (2)</td><td>Limited to Local Area (1)</td></tr>
<tr><td>Magnitude</td><td>Moderate (5)</td><td>Minor (2)</td></tr>
<tr><td>Significanc</td><td>18 (Low)</td><td>8 (Low)</td></tr>
</table></td><td>Low</td><td>Low</td><td>• Traffic speed signs must be established at sufficient intervals along the construction footprint.
• Establish a speed reduction awareness campaign for the contractors
• No construction vehicles allowed on the roads after between 06:00-18h00
• Implement penalty fines to speed violators.</td></tr>
</table>

	e			
	Status (positive or negative)	Negative	Negative	
	Indirect impacts: • Increased chance of road kills	**Negligible**	**Negligible**	
	Cumulative impacts: • No significant cumulative impact expected.	**None**	**None**	
	AIR QUALITY IMPACTS			
	Direct impacts: • General construction vehicle emissions. These emissions can be considered as insignificant. • Dust fallout from speeding construction vehicles and construction activities.	**Low**	**Low**	• Staff vehicles must be sufficiently maintained and serviced. • A daily vehicle maintenance checklist must be conducted on all construction vehicles. • Water spraying dust suppression must be conducted on areas prone to excessive dust fallout at required intervals.

Description	Without Mitigation	With Mitigation
Probability	Local (1)	Local (1)
Duration	Long-term (4)	Long-term (4)
Extent	Minor (2)	Small (1)

	<table><tr><td>**Magnitude**</td><td>Highly probable (4)</td><td>Improbable (2)</td></tr><tr><td>**Significance**</td><td>**Low (28)**</td><td>**Low (12)**</td></tr><tr><td>**Status (positive or negative)**</td><td>Negative</td><td>Negative</td></tr></table>			
	Indirect impacts: • None anticipated	**None**	**None**	N/A
	Cumulative impacts: • None anticipated	**None**	**None**	

SOCIO-ECONOMIC POSITIVE IMPACTS			
Direct impacts: • Job opportunities created during the construction phase • Local suppliers & contractors to be contracted. <table><tr><th>Description</th><th>Without Mitigation</th><th>With Mitigation</th></tr><tr><td>**Probability**</td><td>Local-Regional (2)</td><td>Local-Regional (2)</td></tr></table>	**Low Positive impact**	**Low Positive impact**	**Enhancement:** • Local employment should as far possible be used for construction. • Contract local suppliers and contractors for construction work to be commissioned. • The developer should implement a training and skills development enhancement programme for locals during the construction phase.

Duration	Short-term (1)	Short-term (1)		
Extent	Small (1)	Low (4)		
Magnitude	Probable (3)	Probable (3)		
Significance	**Low (12)**	**Low (21)**		
Status (positive or negative)	Positive	Positive		
Indirect impacts: • Stimulation of the region's economic activities. • Local employed people during the construction phase may learn new skills thereby making them more employable in the future. • Improvement of family and community quality of life.			**Positive Impact**	**Positive Impact**	
Cumulative impacts: • General acceptance of the development and community cooperation			**Positive Impact**	**Positive Impact**	**Enhancement:** • Continued involvement of the local neighbouring communities must take place by way of beneficiation initiatives.
SOCIO-ECONOMIC NEGATIVE IMPACTS				

<table>
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Direct impacts:

Squatting might increase near the KNP fence due to the perception of work.
Increased risk of stock theft, poaching and damage to park infrastructure associated with construction workers.
Construction workers using nearby bushes and rivers for ablution.
Improper conduct by construction workers.

<table>
<tr><th>Description</th><th>Without Mitigation</th><th>With Mitigation</th></tr>
<tr><td>Probability</td><td>Probable (3)</td><td>Probable (3)</td></tr>
<tr><td>Duration</td><td>Short-term (2)</td><td>Very short-term (1)</td></tr>
<tr><td>Extent</td><td>Limited to Local Area (2)</td><td>Limited to Local Area (1)</td></tr>
<tr><td>Magnitude</td><td>Moderate (6)</td><td>Small (0)</td></tr>
<tr><td>Significance</td><td>30 (medium)</td><td>6(Low)</td></tr>
<tr><td>Status (positive or negative)</td><td>Negative</td><td>Negative</td></tr>
</table>
</td>
<td>Low Negative impact</td>
<td>Low Negative impact</td>
<td>
Negative impacts mitigation

Implement mitigation measures to monitor and control the activities of construction workers and for the control of nuisance impacts.
Access to the construction site must be strictly controlled and monitored by 24 hour security.
Mechanisms should be implemented to deal with people seeking employment in order to minimise any issues related to the influx of people.
Adequate sanitary and ablutions facilities must be provided for construction workers as standard construction practice.
The Contractor shall provide sanitation and ablution facilities in the form of chemical toilets, at all camps, offices, workshops and construction sites for staff and visitors. A minimum of one toilet per 15 people or within 100 meters of the work site in order to encourage the use of these toilets.
All staff is to use the toilets at all times rather than informal defecation in the environment.
Toilets are not to be located within sensitive areas such as drainage lines and 1:100 year flood lines.
Burning of vegetation including tree trunks and stumps cut during site clearing and establishment shall not be permitted.
Smoking is only allowed in designated safe smoking areas.
No fires for warming or cooking are allowed outside of secured areas in the construction camp.

</td>
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</table>

	Indirect impacts: • Potential protests to the development by the local surrounding communities due to not the development not providing employment. • Migrant and local construction workers engaging in unsafe sexual activities with local women.	**Negative impact**	**Negative impact**	**Negative impacts mitigation:** • Local employment should as far possible be used for construction. • Contract local suppliers and contractors for construction work to be commissioned. • Attention should be given to the awareness of HIV/Aids and STDs in the form of toolbox talks.
	Cumulative impacts: • Local community instability and resistance to the development. • In cases where unplanned / unwanted pregnancies occur or members of the community are infected by an STD, specifically HIV and/or AIDS, the impacts may be permanent and have long term to permanent cumulative impacts on the affected individuals and/or their families and the community.	**Negative impact**	**Negative impact**	**Negative impacts mitigation:** • Local employment should as far possible be used for construction. • Contract local suppliers and contractors for construction work to be commissioned. • Attention should be given to the awareness of HIV/Aids and STDs in the form of toolbox talks.

CONSTRUCTION PHASE:

New tarred Access Road and its associated bridge (gravel road to be upgraded) along with the loop road.

The existing ranger road transect will be upgraded to tar, implying widening of the existing road. The shoulder(s) of the existing roads will be cleared of vegetation. The transect of the new roads and loop road will be cleared of vegetation. This is limited to a relatively short distance in the western part of the site, from the Shangoni Gate to the Shingwedzi River, and a short distance across Mopane vegetation just after the Reception Area and along the Shingwedzi River loop in the east. The road upgrade also entails he construction of three high level bridges to cross over the Shingwedzi River and Tshanga Tributary which will cause some clearing of riparian vegetation.

Please note that the gravel road to be upgraded and the loop road are interlinked and should not be considered as alternatives of each other.

A summary and anticipated significance of the potential direct, indirect and cumulative impacts that are likely to occur as a result of the Construction Phase of the proposed Shangoni Development.

<table>
<tr><th>Activity</th><th>Impact summary</th><th>Significance (after mitigation)</th><th>Proposed mitigation</th></tr>
<tr><td colspan="2"></td><td>New tarred Access Road and Loop road</td><td></td></tr>
<tr><td colspan="4">VEGETATION</td></tr>
<tr><td></td><td colspan="2">Direct impacts:
• This will result in the loss of indigenous species, disturbance of plant species and the fragmentation of plant communities.
• Although limited, some large trees, including some protected tree species may be in the way of the road, especially on the sections where clearing will be conducted.

<table><tr><th>Description</th><th>Without Mitigation</th><th>With Mitigation</th></tr><tr><td>Probability</td><td>Definite</td><td>Definite</td></tr><tr><td>Duration</td><td>Short-term</td><td>Short-term</td></tr><tr><td>Extent</td><td>Limited to transect of the new road</td><td>Limited to the transect of the new road</td></tr></table></td><td>Low</td><td>• The clearing of vegetation must be kept to a minimum and remain within the footprint alignment of the road.
• Disturbed areas on the road shoulder must be rehabilitated immediately after construction has been completed in that area (e.g.by sowing appropriate indigenous grass species).
• During the construction phase workers must be limited to areas under construction and access to the undeveloped areas must be strictly controlled.
• Ongoing alien plant control must be undertaken
• Rehabilitated areas must be monitored to ensure the establishment of re-vegetated areas.
• No large trees, particularly protected trees, may be removed, woody plants should only be cut shorter if absolutely necessary
• The clearing of vegetation must be kept to a minimum and remain within the footprint of the bridge – erosion of the river banks must be avoided at all times.</td></tr>
</table>

	<table><tr><td>**Magnitude**</td><td>Low</td><td>Low</td></tr><tr><td>**Significance**</td><td>**35 (medium)**</td><td>**30(Low)**</td></tr><tr><td>**Status (positive or negative)**</td><td>Negative</td><td>Negative</td></tr></table>		• During the construction phase workers must be limited to areas under construction and access to the undeveloped riparian areas must be strictly controlled.
	Indirect impacts: • The removal of vegetation will also expose soil increasing the risk of erosion. • Expected to reduce the natural mopane savanna along the transect of the existing gravel road. In context with the Mopaneveld in general this impact is considered to be minimal.	**Low**	
	Cumulative impacts: • None anticipated provided that the mitigation measures are implemented.	**None**	N/A
FAUNA AND AVIFAUNA			
	Direct impacts: • The modest compounds for the light-footprint proposed road upgrade will spatially be insignificant relative to the overall extent of the park, and their impact	**Moderate**	• Impacts can be offset by providing extraordinary sufficiently-sized drainage pipes supporting bridges to coincidentally serve as daytime roosts for cave-dwelling bats, nooks.

<table>
<tr>
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<td>will be fractional.
• Some areas used by birds for foraging and breeding will be destroyed.
• The presence of vehicles and construction workers will cause disturbance to avifauna, with the movement and activities of personnel on site and the associated noise, pollution and litter all having a negative effect on birds.
• The increase in traffic along the road will result in an increased risk of mortality for mammals, birds, reptiles and amphibians.

<table>
<tr><th>Description</th><th>Without Mitigation</th><th>With Mitigation</th></tr>
<tr><td>Probability</td><td>Probable (3)</td><td>Probable (3)</td></tr>
<tr><td>Duration</td><td>Short-term (3)</td><td>Short-term (3)</td></tr>
<tr><td>Extent</td><td>Site (1)</td><td>Site (1)</td></tr>
<tr><td>Magnitude</td><td>Minor (2)</td><td>Minor (2)</td></tr>
<tr><td>Significance</td><td>18 (Moderate)</td><td>18 (Moderate)</td></tr>
<tr><td>Status (positive or negative)</td><td>Negative</td><td>Negative</td></tr>
</table>
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<td></td>
<td rowspan="2">• All staff and contractors must undergo an environmental induction course held by the ECO as well as faunal education and awareness programmes.
• The spatial extent of construction activities must be minimized, and as far as possible must be restricted to the areas on which buildings, roads etc will actually be located.
• The boundaries of the development footprint areas are to be clearly demarcated and it must be ensured that all activities remain within the demarcated footprint area.
• Provide adequate briefing for site personnel and residents.
• Any bird nests that are found during the construction period must be reported to the Environmental Control Officer (ECO).
• Movement of construction vehicles and workers beyond the boundary of the site must be minimized. In addition, workers must be instructed to minimize disturbance of birds at all times, and steps must be taken to ensure that no illegal hunting occurs.
• Disturbance by residents of birds breeding and foraging in the area should be minimized.
• The normal rules applicable to visitors to Kruger NP must be strictly enforced at the campsite, tented camp, picnic area, etc.
• Driving at night on the new road by SANParks staff must be kept to a minimum.
• Speed limits must be strictly enforced. It is the opinion of the fauna specialist that the usual speed limit of 65 km/h applicable to SANParks staff is too high to avoid road kills of nocturnal birds, as these birds are often</td>
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<td>Indirect impacts:
• The construction phase of the road upgrade will result in the negligible loss of mammal, reptile and amphibian habitats. Within the context of the park, this impact</td>
<td>Low</td>
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</table>

	relates to the limited destruction/disturbance of existing vegetation by machinery and workers, impacting directly on the ecological condition of natural vegetation and habitat availability. These activities will have negligible impact on foraging and breeding ecology. • Loss of vegetation generally affects nutrient cycles, removes the organic litter layer and results in habitat fragmentation and destruction of wildlife corridors; these will be limited the footprint of the road upgrade and where loss will in any case exclude mature trees.		dazzled by oncoming lights. It is thus recommended that a speed limit of 40 km/h be applied to anyone using the new road at night. • All staff and contractors must undergo an environmental induction course held by the ECO as well as faunal education and awareness programmes.
	Cumulative impacts: None anticipated provided that the mitigation measures are implemented.	**None**	N/A
GROUND AND SURFACE WATER (WATERCOURSES)			
	Direct impacts: • Loss and disturbance of watercourse habitat and fringe vegetation due to direct development on the watercourse as well as changes in management, fire regime and habitat fragmentation. • The compaction of soil. • The removal of vegetation and surface	**Moderate**	• Where construction occurs in the demarcated watercourse and buffer, extra precautions should be implemented to so as to minimise watercourse loss. • Other than approved and authorized structure, no other development or maintenance infrastructure is allowed within the delineated watercourse or associated buffer zones. • Demarcate the watercourse areas and buffer zones to

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<td>water redirection of water during construction activities.
• Disturbance of slopes through creation of roads and tracks adjacent to the watercourse.

<table>
<tr><th>Description</th><th>Without Mitigation</th><th>With Mitigation</th></tr>
<tr><td>Probability</td><td>Highly probable (4)</td><td>Probable (3)</td></tr>
<tr><td>Duration</td><td>Long term (4)</td><td>Short term (3)</td></tr>
<tr><td>Extent</td><td>Regional (4)</td><td>Limited to Local Area (2)</td></tr>
<tr><td>Magnitude</td><td>High (8)</td><td>Moderate (6)</td></tr>
<tr><td>Significance</td><td>64 (high)</td><td>33 (Moderate)</td></tr>
<tr><td>Status (positive or negative)</td><td>Negative</td><td>Negative</td></tr>
</table>
</td>
<td></td>
<td rowspan="2">limit disturbance, clearly mark these areas as no-go areas
• Disturbed areas must be rehabilitated immediately after construction has been completed in that area by sowing appropriate indigenous grass species, this is to avoid erosion of the river banks.
• Weed control in buffer zone
• Monitor rehabilitation and the occurrence of erosion twice during the rainy season for at least two years and take immediate corrective action where needed.
• Monitor the establishment of alien invasive species within the areas affected by the construction.
• Consider the various methods and equipment available and select whichever method(s) that will have the least impact on watercourses.
• Water may seep into trenching and earthworks. It is likely that water will be contaminated within these earthworks and should thus be cleaned or dissipated into a structure that allows for additional sediment input and slows down the velocity of the water thus reducing the risk of erosion. Effective sediment traps should be installed.
• Construction in and around watercourses must be restricted to the dryer winter months where possible.
• Retain vegetation and soil in position for as long as possible, removing it immediately ahead of construction / earthworks in that area (DWAF, 2005).
• Remove only the vegetation where essential for construction and do not allow any disturbance to the adjoining natural vegetation cover.
• Rehabilitation plans must be submitted and approved</td>
</tr>
<tr>
<td></td>
<td>Indirect impacts:
• Changing the quantity and fluctuation properties of the watercourse by for example restricting water flow.
• Changes in sediment entering and exiting the system.
• Introduction and spread of alien vegetation.
• Loss and disturbance of watercourse habitat and fringe vegetation impact ratings.</td>
<td>Moderate</td>
</tr>
</table>

	• Changes in water quality due to foreign materials and increased nutrients impact ratings.		for rehabilitation of damage during construction and that plan must be implemented immediately upon completion of construction. • Cordon off areas that are under rehabilitation as no-go areas using danger tape and steel droppers. If necessary, these areas should be fenced off to prevent vehicular, pedestrian and livestock access. • During the construction phase measures must be put in place to control the flow of excess water so that it does not impact on the surface vegetation. • Protect all areas susceptible to erosion and ensure that there is no undue soil erosion resultant from activities within and adjacent to the construction camp and work areas. • Runoff from the construction area must be managed to avoid erosion and pollution problems. • Implementation of best management practices • Source-directed controls • Buffer zones to trap sediments Monitoring should be done to ensure that sediment pollution is timeously dressed. • Water-wise education and information programmes must be incorporated into construction plans. • Water saving procedures must be introduced during construction period. • Surface water shall not be abstracted from the river to meet development needs. • For energy dissipation and erosion protection at the inlets and outlets of drains, culverts and mitre drains the following protective measures could be considered:
	Cumulative impacts: • Construction activities may result in cumulative impact to the water courses within the local catchments and beyond. • Changes made to the bed or banks of watercourses unstable channel conditions may result causing erosion, meandering, increased potential for flooding and movement of bed material, which will result in property damage adjacent to and downstream of the site.	**Low**	

<table>
<tr><td></td><td></td><td></td><td>
» grass cover
» different levels of stone pitching
» a stilling basin with baffles (in the case of culverts)
» concrete
» gabions
» rip-rap
• Where grass covers are used the outlets should be above ground level, to prevent deposits of sediment from blocking the outlets.
</td></tr>
<tr><td colspan="4">POTENTIAL INCREASE IN ALIENS</td></tr>
<tr><td></td><td colspan="2">Direct impacts:
• Disturbance of indigenous vegetation during construction results in disturbed areas, making suitable habitats for invasive plants, these proliferate in disturbed areas. The reception facility area and construction workers moving around the site area can cause a transport system for seeds and other propagates of plants, particularly of alien invasive plant species.

<table>
<tr><th>Description</th><th>Without Mitigation</th><th>With Mitigation</th></tr>
<tr><td>Probability</td><td>Definite (4)</td><td>Probable (3)</td></tr>
<tr><td>Duration</td><td>Medium-term (4)</td><td>Medium-term (2)</td></tr>
</table>
</td><td>Low</td><td>
• Ongoing alien plant control must be undertaken during construction.
• Areas which have been disturbed will be quickly colonised by invasive alien species. An ongoing management plan must be implemented for the clearing/eradication of alien species during the operational phase.
• Monitor all sites disturbed by construction activities for colonisation by exotics or invasive plants and control these as they emerge.
</td></tr>
</table>

	<table><tr><td>**Extent**</td><td>Limited to Local Area (4)</td><td>Limited to Local Area (4)</td></tr><tr><td>**Magnitude**</td><td>High (8)</td><td>Low (4)</td></tr><tr><td>**Significance**</td><td>**64 (high)**</td><td>**30 (low)**</td></tr><tr><td>**Status (positive or negative)**</td><td>Negative</td><td>Negative</td></tr></table>			
	Indirect impacts: • Alien invader plant species pose an ecological threat as they alter habitat structure; lower biodiversity, change ecosystem services and processes e.g. change nutrient cycling and productivity, and modify food webs. Allowing invasive plant species to establish and expand their distribution range without control may have vast accumulative effects. • Fragmentation of local vegetation; increased bush fires as these plants are highly prone to fire.	**Low**		
	Cumulative impacts: • Increase of woody alien species pose an ecological threat.	**Low**		
VISUAL IMPACTS				

<table>
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Direct impacts:

Some vegetation will be removed to get to the required servitude width.
Construction activities and the presence of construction equipment will cause a disturbance to the existing landscape character.
The road upgrade will disturb the remote and tranquil sense of place during its construction phase.
Observers and KNP staff travelling on the H1-6 and S52 may be exposed to the construction activity for a brief moment.

<table>
<tr><th>Description</th><th>Without Mitigation</th><th>With Mitigation</th></tr>
<tr><td>Probability</td><td>Highly Probable (4)</td><td>Probable (3)</td></tr>
<tr><td>Duration</td><td>Short term (2)</td><td>Short-term (2)</td></tr>
<tr><td>Extent</td><td>Contained on Site (1)</td><td>Contained on Site (1)</td></tr>
<tr><td>Magnitude</td><td>Low (4)</td><td>Minor (2)</td></tr>
<tr><td>Significance</td><td>28 (Low)</td><td>15 (Low)</td></tr>
<tr><td>Status (positive or negative)</td><td>Negative</td><td>Negative</td></tr>
</table>
</td>
<td>Low</td>
<td rowspan="2">

Locate construction camps outside the borders of the KNP in areas that is already disturbed to avoid additional disturbance inside the park.
In the event that construction camps are located in the KNP, put stringent restrictions in place to contain the footprint of the camp by temporarily fencing it and clearly demarcating the entire construction area to minimise disturbance of areas outside the construction site.
Keep the construction camp and construction area neat and tidy at all times. Remove any waste products from the site or contain it in an enclosed area to avoid wind blowing waste into the bush.
Implement dust suppression measures during earthworks to minimise the impact of dust clouds.
Appoint a suitable architect and landscape architect to design the infrastructure and the adjoining surroundings with sensitivity towards the environment and its current character.
No structure may exceed the height of the surrounding vegetation.
Additional trees and shrubs can be planted around the structures as an offset measure to the loss in vegetation in the footprint of the infrastructure.
All signage should be non-intrusive but clear. No sign boards will be placed on separate frameworks higher than 2 m above the ground level to avoid it exceeding the height of the vegetation.

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Indirect impacts:

The impact will only affect the natural

</td>
<td>Negligible</td>
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</table>

<table>
<tr><td></td><td>character of the visual resource.</td><td></td><td></td></tr>
<tr><td></td><td>Cumulative impacts:

None</td><td>None</td><td>N/A</td></tr>
<tr><td colspan="4">HERITAGE IMPACTS</td></tr>
<tr><td></td><td>Direct impacts:
Construction of the Road upgrade could result in the discovery of significant heritage artefacts.

<table>
<tr><th>Description</th><th>Without Mitigation</th><th>With Mitigation</th></tr>
<tr><td>Probability</td><td>2</td><td>2</td></tr>
<tr><td>Duration</td><td>2</td><td>2</td></tr>
<tr><td>Extent</td><td>2</td><td>2</td></tr>
<tr><td>Magnitude</td><td>4</td><td>4</td></tr>
<tr><td>Significance</td><td>13 (Low)</td><td>13 (Low)</td></tr>
<tr><td>Status (positive or negative)</td><td>Negative</td><td>Negative</td></tr>
</table></td><td>Low</td><td>• Should any heritage artefacts be exposed during operation of the area where the artefacts were discovered, SANParks Officials shall be notified as soon as possible.
• No artefacts may be removed off site unless authorized by the appropriate authority.</td></tr>
<tr><td></td><td>Indirect impacts:
None</td><td>None</td><td rowspan="2">N/A</td></tr>
<tr><td></td><td>Cumulative impacts:</td><td>None</td></tr>
</table>

<table>
<tr><td></td><td>None</td><td></td><td></td></tr>
<tr><td colspan="4">NOISE IMPACTS</td></tr>
<tr><td></td><td>Direct impacts:
Noise emissions from construction activities resulting in fauna migrating from noise emission areas.
Some fauna aborting foetuses due to excessive noise.
Flight patterns of avifauna changing.
<table>
<tr><th>Description</th><th>Without Mitigation</th><th>With Mitigation</th></tr>
<tr><td>Probability</td><td>Probable (3)</td><td>Improbable (2)</td></tr>
<tr><td>Duration</td><td>Short-term (2)</td><td>Short-term (2)</td></tr>
<tr><td>Extent</td><td>Limited to Local Area (2)</td><td>Limited to Local Area (2)</td></tr>
<tr><td>Magnitude</td><td>Moderate (6)</td><td>Moderate (5)</td></tr>
<tr><td>Significance</td><td>30 (medium)</td><td>18 (low)</td></tr>
<tr><td>Status (positive or negative)</td><td>Negative</td><td>Negative</td></tr>
</table></td><td>Low</td><td rowspan="2">Put up general noise reduction signs
The usage of low noise generators is encouraged
Establish noise attenuation structures around high noise activities eg. metal fabricating activities
Establish noise level threshold consistent with SANParks policies.
Works should be conducted during SANParks mandated day hours.
Speed limits must be strictly enforced. It is the opinion of the fauna specialist that the usual speed limit of 65 km/h applicable to SANParks staff is too high to avoid road kills of nocturnal birds, as these birds are often dazzled by oncoming lights. It is thus recommended that a speed limit of 40 km/h be applied to anyone using the new road at night.</td></tr>
<tr><td></td><td>Indirect impacts:</td><td>Negligible</td></tr>
</table>

<table>
<tr><td></td><td>• A potential change in the ecological cycle of the immediate study area.</td><td></td><td></td></tr>
<tr><td></td><td>Cumulative impacts:

No significant cumulative impact expected.</td><td>None</td><td>N/A</td></tr>
<tr><td colspan="4">TRAFFIC IMPACTS</td></tr>
<tr><td></td><td>Direct impacts:
• Increase in construction vehicle traffic on the ranger road to upgraded, S54 & H1-6 tourist roads and other internal KNP roads.
<table>
<tr><th>Description</th><th>Without Mitigation</th><th>With Mitigation</th></tr>
<tr><td>Probability</td><td>Improbable (2)</td><td>Improbable (2)</td></tr>
<tr><td>Duration</td><td>Short-term (2)</td><td>Very short-term (1)</td></tr>
<tr><td>Extent</td><td>Limited to Local Area (2)</td><td>Limited to Local Area (1)</td></tr>
<tr><td>Magnitude</td><td>Moderate (5)</td><td>Minor (2)</td></tr>
<tr><td>Significance</td><td>18 (Low)</td><td>8 (Low)</td></tr>
<tr><td>Status (positive or negative)</td><td>Negative</td><td>Negative</td></tr>
</table></td><td>Low</td><td>• Traffic speed signs must be established at sufficient intervals along the construction footprint.
• Establish a speed reduction awareness campaign for the contractors
• No construction vehicles allowed on the roads after between 06:00-18h00
• Implement penalty fines to speed violators.</td></tr>
</table>

<table>
<tr><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td>Indirect impacts:
• Increased chance of road kills</td><td>Negligible</td><td></td></tr>
<tr><td></td><td>Cumulative impacts:
• No significant cumulative impact expected.</td><td>None</td><td></td></tr>
<tr><td colspan="4">AIR QUALITY IMPACTS</td></tr>
<tr><td></td><td>Direct impacts:
• General construction vehicle emissions. These emissions can be considered as insignificant.
• Dust fallout from speeding construction vehicles and construction activities.

<table><tr><th>Description</th><th>Without Mitigation</th><th>With Mitigation</th></tr><tr><td>Probability</td><td>Local (1)</td><td>Local (1)</td></tr><tr><td>Duration</td><td>Long-term (4)</td><td>Long-term (4)</td></tr><tr><td>Extent</td><td>Minor (2)</td><td>Small (1)</td></tr><tr><td>Magnitude</td><td>Highly probable (4)</td><td>Improbable (2)</td></tr><tr><td>Significance</td><td>Low (28)</td><td>Low (12)</td></tr></table></td><td>Low</td><td>• Staff vehicles must be sufficiently maintained and serviced.
• A daily vehicle maintenance checklist must be conducted on all construction vehicles.
• Water spraying dust suppression must be conducted on areas prone to excessive dust fallout at required intervals.</td></tr>
</table>

	Status (positive or negative) | Negative | Negative		
	Indirect impacts: • None anticipated	**None**	N/A
	Cumulative impacts: • None anticipated	**None**	

SOCIO-ECONOMIC POSITIVE IMPACTS			
	Direct impacts: • Job opportunities created during the construction phase • Local suppliers & contractors to be contracted. **Description** | **Without Mitigation** | **With Mitigation** **Probability** | Local-Regional (2) | Local-Regional (2) **Duration** | Short-term (1) | Short-term (1) **Extent** | Small (1) | Low (4) **Magnitude** | Probable (3) | Probable (3)	**Low Positive impact**	**Enhancement:** • Local employment should as far possible be used for construction. • Contract local suppliers and contractors for construction work to be commissioned. • The developer should implement a training and skills development enhancement programme for locals during the construction phase.

	<table><tr><td>**Significance**</td><td>**Low (12)**</td><td>**Low (21)**</td></tr><tr><td>**Status (positive or negative)**</td><td>Positive</td><td>Positive</td></tr></table>		
	Indirect impacts: • Stimulation of the region's economic activities. • Local employed people during the construction phase may learn new skills thereby making them more employable in the future. • Improvement of family and community quality of life.	**Low Positive impact**	
	Cumulative impacts: • General acceptance of the development and community cooperation	**Low Positive impact**	**Enhancement:** • Continued involvement of the local neighbouring communities must take place by way of beneficiation initiatives.
	SOCIO-ECONOMIC NEGATIVE IMPACTS		
	Direct impacts: • Squatting might increase near the	**Negative impact**	**Negative impacts mitigation**

<table>
<tr>
<td></td>
<td>KNP fence due to the perception of work.
• Increased risk of stock theft, poaching and damage to park infrastructure associated with construction workers.
• Construction workers using nearby bushes for ablution.
• Improper conduct by construction workers

<table>
<tr><th>Description</th><th>Without Mitigation</th><th>With Mitigation</th></tr>
<tr><td>Probability</td><td>Probable (3)</td><td>Probable (3)</td></tr>
<tr><td>Duration</td><td>Short-term (2)</td><td>Very short-term (1)</td></tr>
<tr><td>Extent</td><td>Limited to Local Area (2)</td><td>Limited to Local Area (1)</td></tr>
<tr><td>Magnitude</td><td>Moderate (6)</td><td>Small (0)</td></tr>
<tr><td>Significance</td><td>30 (medium)</td><td>6(Low)</td></tr>
<tr><td>Status (positive or negative)</td><td>Negative</td><td>Negative</td></tr>
</table>
</td>
<td></td>
<td>• Implement mitigation measures to monitor and control the activities of construction workers and for the control of nuisance impacts.
• Access to the construction site must be strictly controlled and monitored by 24 hour security.
• Mechanisms should be implemented to deal with people seeking employment in order to minimise any issues related to the influx of people.
• Adequate sanitary and ablutions facilities must be provided for construction workers as standard construction practice.
• The Contractor shall provide sanitation and ablution facilities in the form of chemical toilets, at all camps, offices, workshops and construction sites for staff and visitors. A minimum of one toilet per 15 people or within 100 meters of the work site in order to encourage the use of these toilets.
• All staff is to use the toilets at all times rather than informal defecation in the environment.
• Toilets are not to be located within sensitive areas such as drainage lines and 1:100 year flood lines.
• Burning of vegetation including tree trunks and stumps cut during site clearing and establishment shall not be permitted.
• Smoking is only allowed in designated safe smoking areas.
• No fires for warming or cooking are allowed outside of secured areas in the construction camp.</td>
</tr>
<tr>
<td></td>
<td>Indirect impacts:
• Potential protests to the development by the local surrounding communities</td>
<td>Low Negative impact</td>
<td>Negative impacts mitigation:
• Local employment should as far possible be used for construction.</td>
</tr>
</table>

	due to not the development not providing employment. • Migrant and local construction workers engaging in unsafe sexual activities with local women.		• Contract local suppliers and contractors for construction work to be commissioned. • Attention should be given to the awareness of HIV/Aids and STDs in the form of toolbox talks.
	Cumulative impacts: • Local community instability and resistance to the development. • In cases where unplanned / unwanted pregnancies occur or members of the community are infected by an STD, specifically HIV and/or AIDS, the impacts may be permanent and have long term to permanent cumulative impacts on the affected individuals and/or their families and the community.	**Low Negative impact**	**Negative impacts mitigation:** • Local employment should as far possible be used for construction. • Contract local suppliers and contractors for construction work to be commissioned. • Attention should be given to the awareness of HIV/Aids and STDs in the form of toolbox talks.

CONSTRUCTION PHASE: Picnic Site

This site is located within the prominent loop in the Shingwedzi River in the western part of the site entire study site. Furthermore, all these sites are located within the flood plains along the Shingwedzi River. The soil, vegetation and plant species composition of all these sites are similar. Although this ecosystem is regarded as ecologically sensitive, the proposed development is low-profile and low impact developments that do not include permanent structures. The soil of these flood plain areas is almost bare, with a very scanty herbaceous layer. Large trees occur scattered over these areas, and some are protected tree species. The trees are needed for shading of the picnic site, camp site and tented camp site, and will not be removed.

Please note: that all three alternatives for the picnic sites are assessed together due to them occurring in highly similar environments and having similar impacts.

A summary and anticipated significance of the potential direct, indirect and cumulative impacts that are likely to occur as a result of the Construction Phase of the proposed Shangoni Development:

Activity	Impact summary	Significance (after mitigation)			Proposed mitigation
		Preferred,	Alternative 1,	Alternative 2	
VEGETATION					
	Direct impacts: • Loss of indigenous vegetation or indigenous plant species due to clearing for construction of the Picnic site. Some, though limited, indigenous vegetation will have to be cleared at the location of the picnic site.	**Low**	**Low**	**Low**	• Limit disturbance of natural vegetation to a minimum. • Avoid removal of large trees. • Rehabilitate disturbances immediately after construction. • Do not plant any non-indigenous trees or shrubs or any garden ornamentals at the gate, use KNP indigenous plant species only. • Ongoing alien plant control must be undertaken • Rehabilitated areas must be monitored to ensure the establishment of re-vegetated areas. • Remove and control all alien woody plant species that may appear during construction. • No removal of protected trees without permit from Department of Agriculture, Forestry and Fisheries (DAFF).

Description	Without Mitigation	With Mitigation
Probability	Definite (5)	Definite (5)
Duration	Short-term (2)	Short-term (2)
Extent	Limited to site (1)	Limited to site (1)
Magnitude	Low (2)	Low (1)
Significance	**Medium (25)**	**Low (20)**
Status (positive or negative)	Negative	Negative

	Indirect impacts: • Vegetation fragmentation • No irreplaceable loss of resources is anticipated.	**Low**	**Low**	**Low**	
	Cumulative impacts: • Expected that very little accumulative effects will occur.	**Low**	**Low**	**Low**	
	FAUNA AND AVIFAUNA				
	Direct impacts: • The modest compounds for the light-footprint of the Picnic site will spatially be insignificant relative to the overall extent of the park, and their impact will be fractional. • Areas used by birds for foraging and breeding will be destroyed. • The presence of vehicles and construction workers will cause disturbance to avifauna, with the movement and activities of personnel on site and the associated noise, pollution and litter all having a negative effect on terrestrial fauna. • The increase in traffic along the road will result in an increased risk of mortality for mammals, birds, reptiles and amphibians.	**Moderate**	**Moderate**	**Moderate**	• The spatial extent of construction activities must be minimized, and as far as possible must be restricted to the areas on which buildings, roads etc will actually be located. • The boundaries of the development footprint areas are to be clearly demarcated and it must be ensured that all activities remain within the demarcated footprint area. • Provide adequate briefing for site personnel and residents. • Any bird nests that are found during the construction period must be reported to the Environmental Control Officer (ECO). • Movement of construction vehicles and workers beyond the boundary of the site

	<table><tr><th>Description</th><th>Without Mitigation</th><th>With Mitigation</th></tr><tr><td>Probability</td><td>Probable (3)</td><td>Probable (3)</td></tr><tr><td>Duration</td><td>Short-term (3)</td><td>Short-term (3)</td></tr><tr><td>Extent</td><td>Site (1)</td><td>Site (1)</td></tr><tr><td>Magnitude</td><td>Minor (2)</td><td>Minor (2)</td></tr><tr><td>Significance</td><td>18 (Moderate)</td><td>18 (Moderate)</td></tr><tr><td>Status (positive or negative)</td><td>Negative</td><td>Negative</td></tr></table>				must be minimized. In addition, workers must be instructed to minimize disturbance of birds at all times, and steps must be taken to ensure that no illegal hunting occurs. • No hunting, snaring or trapping animals is allowed. • Disturbance by residents of birds breeding and foraging in the area should be minimized. • The normal rules applicable to visitors to KNP must be strictly enforced. • Driving at night within the site area SANParks staff must be kept to a minimum. • Speed limits must be strictly enforced. It is the opinion of the fauna specialist that the usual speed limit of 65 km/h applicable to SANParks staff is too high to avoid road kills of nocturnal birds, as these birds are often dazzled by oncoming lights. It is thus recommended that a speed limit of 40 km/h be applied to anyone using the new road at night.
	Indirect impacts: • The construction phase of the picnic site will result in the negligible loss of mammal, reptile and amphibian habitats. Within the context of the park, this impact relates to the limited destruction/disturbance of existing vegetation by machinery and workers, impacting directly on the ecological condition of natural vegetation and habitat availability. These activities will have negligible impact on foraging and breeding ecology. • Loss of vegetation generally affects nutrient cycles, removes the organic litter layer and results in habitat fragmentation and destruction of wildlife corridors; these will be limited the footprint of the entrance gate facility and where loss will in any case exclude mature trees.	**Low**	**Low**	**Low**	

<table>
<tr><td></td><td>Cumulative impacts:

• Submitted to be initially minimal and thereafter stabilized, as the development will be relatively very small and most fauna species have relatively high mobility or adaptivity.
• Impact to connectivity and ecological services will be insignificant, especially since mammals adapt fast to low-key and consistent disturbances.</td><td>Negligible</td><td>Negligible</td><td>Negligible</td><td></td></tr>
<tr><td colspan="6">GROUND AND SURFACE WATER (WATERCOURSES)</td></tr>
<tr><td></td><td>Direct impacts:
• The removal of vegetation and surface water redirection of water during construction activities.
• Disturbance of slopes through creation of roads and tracks adjacent to the watercourse.

<table><tr><th>Description</th><th>Without Mitigation</th><th>With Mitigation</th></tr><tr><td>Probability</td><td>Definite (5)</td><td>Probable (3)</td></tr><tr><td>Duration</td><td>Medium-term (3)</td><td>Medium-term (3)</td></tr><tr><td>Extent</td><td>Regional (4)</td><td>Regional (4)</td></tr><tr><td>Magnitude</td><td>High (8)</td><td>Low (4)</td></tr><tr><td>Significance</td><td>75 (high)</td><td>33 (moderate)</td></tr></table></td><td>Moderate</td><td>Moderate</td><td>Moderate</td><td>• Consider the various methods and equipment available and select whichever method(s) that will have the least impact on watercourses.
• Construction in and around watercourses must be restricted to the dryer winter months where possible.
• Retain vegetation and soil in position for as long as possible, removing it immediately ahead of construction / earthworks in that area (DWAF, 2005).
• Remove only the vegetation where essential for construction and do not allow any disturbance to the adjoining natural vegetation cover.
• Rehabilitation plans must be submitted and</td></tr>
</table>

	Status (positive or negative) Negative | Negative				approved for rehabilitation of damage during construction and that plan must be implemented immediately upon completion of construction. • Cordon off areas that are under rehabilitation as no-go areas using danger tape and steel droppers. If necessary, these areas should be fenced off to prevent vehicular, pedestrian and livestock access. • During the construction phase measures must be put in place to control the flow of excess water • Protect all areas susceptible to erosion and ensure that there is no undue soil erosion resultant from activities within and adjacent to the construction camp and work areas. • Runoff from the construction area must be managed to avoid erosion and pollution problems. • Implementation of best management practices • Source-directed controls • Buffer zones to trap sediments • Monitoring should be done to ensure that sediment pollution is timeously addressed.
	Indirect impacts: • Changing the quantity and fluctuation properties of the watercourse by for example restricting water flow. • Changes in sediment entering and exiting the system. • Introduction and spread of alien vegetation. • Loss and disturbance of watercourse habitat and fringe vegetation impact ratings. • Changes in water quality due to foreign materials and increased nutrients impact ratings.	**Moderate**	**Moderate**	**Moderate**	
	Cumulative impacts: • Construction activities may result in cumulative impact to the water courses within the local catchments and beyond.	**Low**	**Low**	**Low**	
	POTENTIAL INCREASE IN ALIENS				
	Direct impacts: • Disturbance of indigenous vegetation during construction results in disturbed	**Low**	**Low**	**Low**	• Ongoing alien plant control must be undertaken during construction.

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<td>areas, making suitable habitats for invasive plants, these proliferate in disturbed areas. the reception facility area and construction workers moving around the site area can cause a transport system for seeds and other propagates of plants, particularly of alien invasive plant species.
<table>
<tr><th>Description</th><th>Without Mitigation</th><th>With Mitigation</th></tr>
<tr><td>Probability</td><td>Definite (4)</td><td>Probable (3)</td></tr>
<tr><td>Duration</td><td>Medium-term (4)</td><td>Medium-term (2)</td></tr>
<tr><td>Extent</td><td>Limited to Local Area (4)</td><td>Limited to Local Area (4)</td></tr>
<tr><td>Magnitude</td><td>High (8)</td><td>Low (4)</td></tr>
<tr><td>Significance</td><td>64 (high)</td><td>30 (low)</td></tr>
<tr><td>Status (positive or negative)</td><td>Negative</td><td>Negative</td></tr>
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<td></td>
<td></td>
<td></td>
<td rowspan="2">• Areas which have been disturbed will be quickly colonised by invasive alien species. An ongoing management plan must be implemented for the clearing/eradication of alien species during the operational phase.
• Monitor all sites disturbed by construction activities for colonisation by exotics or invasive plants and control these as they emerge.</td>
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<td>Indirect impacts:
• Alien invader plant species pose an ecological threat as they alter habitat structure; lower biodiversity, change ecosystem services and processes e.g. change nutrient cycling and productivity, and modify food webs. Allowing invasive plant species to establish and expand their distribution range without control may have vast accumulative effects.</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
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- Fragmentation of local vegetation; increased bush fires as these plants are highly prone to fire.

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Cumulative impacts:

- Increase of woody alien species pose an ecological threat.

</td><td>Low</td><td>Low</td><td>Low</td><td></td></tr>
<tr><td colspan="6">VISUAL IMPACTS</td></tr>
<tr><td></td><td>

Direct impacts:

- Construction activities and the presence of construction equipment will cause a disturbance to the existing landscape character

<table>
<tr><th>Description</th><th>Without Mitigation</th><th>With Mitigation</th></tr>
<tr><td>Probability</td><td>Highly Probable (4)</td><td>Probable (3)</td></tr>
<tr><td>Duration</td><td>Short term (2)</td><td>Short-term (2)</td></tr>
<tr><td>Extent</td><td>Contained on Site (1)</td><td>Contained on Site (1)</td></tr>
<tr><td>Magnitude</td><td>Low (4)</td><td>Minor (2)</td></tr>
<tr><td>Significance</td><td>28 (Low)</td><td>15 (Low)</td></tr>
<tr><td>Status (positive or negative)</td><td>Negative</td><td>Negative</td></tr>
</table>

</td><td>Low</td><td>Low</td><td>Low</td><td>

- Additional trees and shrubs can be planted as an offset measure to the loss in vegetation where access roads and other infrastructure is placed.
- Locate construction camps outside the borders of the KNP in areas that is already disturbed to avoid additional disturbance inside the park.
- In the event that construction camps are located in the KNP, put stringent restrictions in place to contain the footprint of the camp by temporarily fencing it and clearly demarcating the entire construction area to minimise disturbance of areas outside the construction site.
- Keep the construction camp and construction area neat and tidy at all times. Remove any waste products from the site or contain it in an enclosed area to avoid wind blowing waste into the bush.

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	Indirect impacts: • The impact will only affect the natural character of the visual resource.	**Negligible**	**Negligible**	**Negligible**	• Implement dust suppression measures during earthworks to minimise the impact of dust clouds. • Appoint a suitable architect and landscape architect to design the infrastructure and the adjoining surroundings with sensitivity towards the environment and its current character. • No structure may exceed the height of the surrounding vegetation. • Additional trees and shrubs can be planted around the structures as an offset measure to the loss in vegetation in the footprint of the infrastructure. • All signage should be non-intrusive but clear. No sign boards will be placed on separate frameworks higher than 2 m above the ground level to avoid it exceeding the height of the vegetation.
	Cumulative impacts: None	**None**	**None**	**None**	N/A
HERITAGE IMPACTS					
	Direct impacts: Construction of the Road upgrade could result in the discovery of significant heritage artefacts. **Description** / **Without Mitigation** / **With Mitigation**	**Low**	**Low**	**Low**	• Should any heritage artefacts be exposed during operation of the area where the artefacts were discovered, SANParks Officials shall be notified as soon as possible.

	Probability | 2 | 2 **Duration** | 2 | 2 **Extent** | 2 | 2 **Magnitude** | 4 | 4 **Significance** | **13 (Low)** | **13 (Low)** **Status (positive or negative)** | Negative | Negative				• No artefacts may be removed off site unless authorized by the appropriate authority.
	Indirect impacts: None	**None**	**None**	**None**	N/A
	Cumulative impacts: None	**None**	**None**	**None**	
NOISE IMPACTS					
	Direct impacts: • Noise emissions from construction activities resulting in fauna migrating from noise emission areas. • Some fauna aborting foetuses due to excessive noise. • Flight patterns of avifauna changing. **Description** | **Without Mitigation** | **With Mitigation** **Probability** | Probable (3) | Improbable (2) **Duration** | Short- | Short-term	**Low**	**Low**	**Low**	• Put up general noise reduction signs • The usage of low noise generators is encouraged • Establish noise attenuation structures around high noise activities eg. metal fabricating activities • Establish noise level threshold consistent with SANParks policies. • Works should be conducted during SANParks mandated day hours. • Speed limits must be strictly enforced. It is the opinion of the fauna specialist that the usual speed limit of 65 km/h applicable to

			term (2)	(2)			SANParks staff is too high to avoid road kills of nocturnal birds, as these birds are often dazzled by oncoming lights. It is thus recommended that a speed limit of 40 km/h be applied to anyone using the new road at night.
		Extent	Limited to Local Area (2)	Limited to Local Area (2)			
		Magnitude	Moderate (6)	Moderate (5)			
		Significance	**30 (medium)**	**18 (low)**			
		Status (positive or negative)	Negative	Negative			
	Indirect impacts: • A potential change in the ecological cycle of the immediate study area.				**Negligible**	**Negligible**	**Negligible**
	Cumulative impacts: No significant cumulative impact expected.				**None**	**None**	**None**	N/A
TRAFFIC IMPACTS							
	Direct impacts: • Increase in construction vehicle traffic on the ranger road to upgraded, S54 & H1-6 tourist roads and other internal KNP roads.				**Low**	**Low**	**Low**	• Traffic speed signs must be established at sufficient intervals along the construction footprint. • Establish a speed reduction awareness campaign for the contractors • No construction vehicles allowed on the roads after between 06:00-18h00 • Implement penalty fines to speed violators.
		Description	**Without Mitigation**	**With Mitigation**			
		Probability	Improbable (2)	Improbable (2)			

	<table><tr><td>**Duration**</td><td>Short-term (2)</td><td>Very short-term (1)</td></tr><tr><td>**Extent**</td><td>Limited to Local Area (2)</td><td>Limited to Local Area (1)</td></tr><tr><td>**Magnitude**</td><td>Moderate (5)</td><td>Minor (2)</td></tr><tr><td>**Significance**</td><td>**18 (Low)**</td><td>**8 (Low)**</td></tr><tr><td>**Status (positive or negative)**</td><td>Negative</td><td>Negative</td></tr></table>				
	Indirect impacts: • Increased chance of road kills	**Negligible**	**Negligible**	**Negligible**	
	Cumulative impacts: • No significant cumulative impact expected.	**Negligible**	**Negligible**	**Negligible**	
	AIR QUALITY IMPACTS				
	Direct impacts: • General construction vehicle emissions. These emissions can be considered as insignificant. • Dust fallout from speeding construction vehicles and construction activities.	**Low**	**Low**	**Low**	• Staff vehicles must be sufficiently maintained and serviced. • A daily vehicle maintenance checklist must be conducted on all construction vehicles. • Water spraying dust suppression must be conducted on areas prone to excessive dust fallout at required intervals.

	<table><tr><th>Description</th><th>Without Mitigation</th><th>With Mitigation</th></tr><tr><td>Probability</td><td>Local (1)</td><td>Local (1)</td></tr><tr><td>Duration</td><td>Long-term (4)</td><td>Long-term (4)</td></tr><tr><td>Extent</td><td>Minor (2)</td><td>Small (1)</td></tr><tr><td>Magnitude</td><td>Highly probable (4)</td><td>Improbable (2)</td></tr><tr><td>Significance</td><td>Low (28)</td><td>Low (12)</td></tr><tr><td>Status (positive or negative)</td><td>Negative</td><td>Negative</td></tr></table>				
	Indirect impacts: • None anticipated	**None**	**None**	**None**	N/A
	Cumulative impacts: • None anticipated	**None**	**None**	**None**	

SOCIO-ECONOMIC POSITIVE IMPACTS					
	Direct impacts: • Job opportunities created during the construction phase • Local suppliers & contractors to be contracted.	**Low Positive impact**	**Low Positive impact**	**Low Positive impact**	**Enhancement:** • Local employment should as far possible be used for construction. • Contract local suppliers and contractors for construction work to be commissioned.

	<table><tr><th>Description</th><th>Without Mitigation</th><th>With Mitigation</th></tr><tr><td>**Probability**</td><td>Local-Regional (2)</td><td>Local-Regional (2)</td></tr><tr><td>**Duration**</td><td>Short-term (1)</td><td>Short-term (1)</td></tr><tr><td>**Extent**</td><td>Small (1)</td><td>Low (4)</td></tr><tr><td>**Magnitude**</td><td>Probable (3)</td><td>Probable (3)</td></tr><tr><td>**Significance**</td><td>**Low (12)**</td><td>**Low (21)**</td></tr><tr><td>**Status (positive or negative)**</td><td>Positive</td><td>Positive</td></tr></table>				• The developer should implement a training and skills development enhancement programme for locals during the construction phase.
	Indirect impacts: • Stimulation of the region's economic activities. • Local employed people during the construction phase may learn new skills thereby making them more employable in the future. • Improvement of family and community quality of life.	**Positive Impact**	**Positive Impact**	**Positive Impact**	

<table>
<tr><td>Cumulative impacts:
• General acceptance of the development and community cooperation</td><td>Positive Impact</td><td>Positive Impact</td><td>Positive Impact</td><td>Enhancement:
• Continued involvement of the local neighbouring communities must take place by way of beneficiation initiatives.</td></tr>
<tr><td colspan="5">SOCIO-ECONOMIC NEGATIVE IMPACTS</td></tr>
<tr><td>Direct impacts:
• Squatting might increase near the KNP fence due to the perception of work.
• Increased risk of stock theft, poaching and damage to park infrastructure associated with construction workers.
• Construction workers using nearby bushes for ablution.
• Improper conduct by construction workers
<table><tr><th>Description</th><th>Without Mitigation</th><th>With Mitigation</th></tr><tr><td>Probability</td><td>Probable (3)</td><td>Probable (3)</td></tr><tr><td>Duration</td><td>Short-term (2)</td><td>Very short-term (1)</td></tr><tr><td>Extent</td><td>Limited to Local Area (2)</td><td>Limited to Local Area (1)</td></tr><tr><td>Magnitude</td><td>Moderate (6)</td><td>Small (0)</td></tr></table></td><td>Low Negative impact</td><td>Low Negative impact</td><td>Low Negative impact</td><td>Negative impacts mitigation
• Implement mitigation measures to monitor and control the activities of construction workers and for the control of nuisance impacts.
• Access to the construction site must be strictly controlled and monitored by 24 hour security.
• Mechanisms should be implemented to deal with people seeking employment in order to minimise any issues related to the influx of people.
• Adequate sanitary and ablutions facilities must be provided for construction workers as standard construction practice.
• The Contractor shall provide sanitation and ablution facilities in the form of chemical toilets, at all camps, offices, workshops and construction sites for staff and visitors. A minimum of one toilet per 15 people or within 100 meters of the work site in order to encourage the use of these toilets.
• All staff is to use the toilets at all times rather than informal defecation in the environment.</td></tr>
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	<table><tr><td>**Significance**</td><td>**30 (medium)**</td><td>**6(Low)**</td></tr><tr><td>**Status (positive or negative)**</td><td>Negative</td><td>Negative</td></tr></table>				• Toilets are not to be located within sensitive areas such as drainage lines and 1:100 year flood lines. • Burning of vegetation including tree trunks and stumps cut during site clearing and establishment shall not be permitted. • Smoking is only allowed in designated safe smoking areas. • No fires for warming or cooking are allowed outside of secured areas in the construction camp.
	Indirect impacts: • Potential protests to the development by the local surrounding communities due to not the development not providing employment. • Migrant and local construction workers engaging in unsafe sexual activities with local women.	**Negative impact**	**Negative impact**	**Negative impact**	**Negative impacts mitigation:** • Local employment should as far possible be used for construction. • Contract local suppliers and contractors for construction work to be commissioned. • Attention should be given to the awareness of HIV/Aids and STDs in the form of toolbox talks.
	Cumulative impacts: • Local community instability and resistance to the development. • In cases where unplanned / unwanted pregnancies occur or members of the community are infected by an STD, specifically HIV and/or AIDS, the impacts may be permanent and have long term to permanent cumulative impacts on the affected individuals	**Negative impact**	**Negative impact**	**Negative impact**	**Negative impacts mitigation:** • Local employment should as far possible be used for construction. • Contract local suppliers and contractors for construction work to be commissioned. • Attention should be given to the awareness of HIV/Aids and STDs in the form of toolbox talks.

	and/or their families and the community.				

CONSTRUCTION PHASE: Camping site

This site is located within the prominent loop in the Shingwedzi River in the western part of the site entire study site. Furthermore, all these sites are located within the flood plains along the Shingwedzi River. The soil, vegetation and plant species composition of all these sites are similar. Although this ecosystem is regarded as ecologically sensitive, the proposed development is low-profile and low impact developments that do not include permanent structures. The soil of these flood plain areas is almost bare, with a very scanty herbaceous layer. Large trees occur scattered over these areas, and some are protected tree species. The trees are needed for shading of the picnic site, camp site and tented camp site, and will not be removed.

A summary and anticipated significance of the potential direct, indirect and cumulative impacts that are likely to occur as a result of the Construction Phase of the proposed Shangoni Development.

Activity	**Impact summary**	**Significance (after mitigation)**		**Proposed mitigation**
		Preferred	**Alternative 1**	
VEGETATION				
	Direct impacts: • Loss of indigenous vegetation or indigenous plant species due to clearing for construction of the Camping site. Some, though limited, indigenous vegetation will have to be cleared at the location of the camping site.	**Low**	**Low**	• Limit disturbance of natural vegetation to a minimum. • Avoid removal of large trees. • Rehabilitate disturbances immediately after construction. • Do not plant any non-indigenous trees or shrubs or any garden ornamentals at the gate, use KNP indigenous plant species only.

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<tr><th>Description</th><th>Without Mitigation</th><th>With Mitigation</th></tr>
<tr><td>Probability</td><td>Definite (5)</td><td>Definite (5)</td></tr>
<tr><td>Duration</td><td>Short-term (2)</td><td>Short-term (2)</td></tr>
<tr><td>Extent</td><td>Limited to site (1)</td><td>Limited to site (1)</td></tr>
<tr><td>Magnitude</td><td>Low (2)</td><td>Low (1)</td></tr>
<tr><td>Significance</td><td>Medium (25)</td><td>Low (20)</td></tr>
<tr><td>Status (positive or negative)</td><td>Negative</td><td>Negative</td></tr>
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Ongoing alien plant control must be undertaken
Rehabilitated areas must be monitored to ensure the establishment of re-vegetated areas.
Remove and control all alien woody plant species that may appear during construction.
No removal of protected trees without permit from Department of Agriculture, Forestry and Fisheries (DAFF).
Woody plants should only be cut shorter if absolutely necessary.

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<td>Indirect impacts:
Vegetation fragmentation
No irreplaceable loss of resources is anticipated.</td>
<td>Low</td>
<td>Low</td>
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<td></td>
<td>Cumulative impacts:
Expected that very little accumulative effects will occur.</td>
<td>Low</td>
<td>Low</td>
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<tr>
<td colspan="5">FAUNA AND AVIFAUNA</td>
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<td>Direct impacts:
The modest compounds for the light-</td>
<td>Moderate</td>
<td>Moderate</td>
<td>It is recommended that a 500-m radius buffer zone be strictly observed from the Critically Endangered</td>
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footprint at Camp site will spatially be insignificant relative to the overall extent of the park, and their impact will be fractional.
• Areas used by birds for foraging and breeding will be destroyed.
• Visual and noise disturbances to the breeding Critically Endangered White-backed Vultures near the vicinity of the Preferred Camping site during construction.
• The presence of vehicles and construction workers will cause disturbance to other avifauna, with the movement and activities of personnel on site and the associated noise, pollution and litter all having a negative effect on terrestrial fauna.
<table>
<tr><th>Description</th><th>Without Mitigation</th><th>With Mitigation</th></tr>
<tr><td>Probability</td><td>Probable (3)</td><td>Probable (3)</td></tr>
<tr><td>Duration</td><td>Short-term (3)</td><td>Short-term (3)</td></tr>
<tr><td>Extent</td><td>Site (1)</td><td>Site (1)</td></tr>
<tr><td>Magnitude</td><td>Minor (2)</td><td>Minor (2)</td></tr>
<tr><td>Significance</td><td>18 (Moderate)</td><td>18 (Moderate)</td></tr>
<tr><td>Status (positive or negative)</td><td>Negative</td><td>Negative</td></tr>
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<td></td>
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<td rowspan="2">
White-backed Vultures nests, and no activities take place within these.
• The spatial extent of construction activities must be minimized, and as far as possible must be restricted to the areas on which buildings, roads etc will actually be located.
• The boundaries of the development footprint areas are to be clearly demarcated and it must be ensured that all activities remain within the demarcated footprint area.
• Provide adequate briefing for site personnel and residents.
• Any bird nests that are found during the construction period must be reported to the Environmental Control Officer (ECO).
• Movement of construction vehicles and workers beyond the boundary of the site must be minimized. In addition, workers must be instructed to minimize disturbance of birds at all times, and steps must be taken to ensure that no illegal hunting occurs.
• No hunting, snaring or trapping animals is allowed.
• Disturbance by residents of birds breeding and foraging in the area should be minimized.
• The normal rules applicable to visitors to KNP must be strictly enforced.
• Driving at night within the site area SANParks staff must be kept to a minimum.
• Speed limits must be strictly enforced. It is the opinion of the fauna specialist that the usual speed limit of 65 km/h applicable to SANParks staff is too high to avoid road kills of nocturnal birds, as these birds are often dazzled by oncoming lights. It is thus
</td>
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<td>
Indirect impacts:
• The construction phase of the Reception facility will result in the negligible loss of mammal, reptile and amphibian habitats.
</td>
<td>Low</td>
<td>Low</td>
</tr>
</table>

	Within the context of the park, this impact relates to the limited destruction/disturbance of existing vegetation by machinery and workers, impacting directly on the ecological condition of natural vegetation and habitat availability. These activities will have negligible impact on foraging and breeding ecology. • Migration of the Critically Endangered White-backed Vultures from the vicinity of the Preferred Camping site to other areas of the park. • Loss of vegetation generally affects nutrient cycles, removes the organic litter layer and results in habitat fragmentation and destruction of wildlife corridors; these will be limited the footprint of the entrance gate facility and where loss will in any case exclude mature trees.			recommended that a speed limit of 40 km/h be applied to anyone using the new road at night.
	Cumulative impacts: • Submitted to be initially minimal and thereafter stabilized, as the development will be relatively very small and most fauna species have relatively high mobility or adaptivity. • Impact to connectivity and ecological services will be insignificant, especially since mammals adapt fast to low-key and consistent disturbances.	**Negligible**	**Negligible**	

<table>
<tr><th colspan="5">GROUND AND SURFACE WATER (WATERCOURSES)</th></tr>
<tr><td></td><td>Direct impacts:
The removal of vegetation and surface water redirection of water during construction activities.
Disturbance of slopes through creation of roads and tracks adjacent to the watercourse.
<table>
<tr><th>Description</th><th>Without Mitigation</th><th>With Mitigation</th></tr>
<tr><td>Probability</td><td>Definite (5)</td><td>Probable (3)</td></tr>
<tr><td>Duration</td><td>Medium-term (3)</td><td>Medium-term (3)</td></tr>
<tr><td>Extent</td><td>Regional (4)</td><td>Regional (4)</td></tr>
<tr><td>Magnitude</td><td>High (8)</td><td>Low (4)</td></tr>
<tr><td>Significance</td><td>75 (high)</td><td>33 (moderate)</td></tr>
<tr><td>Status (positive or negative)</td><td>Negative</td><td>Negative</td></tr>
</table></td><td>Moderate</td><td>Moderate</td><td rowspan="2">Consider the various methods and equipment available and select whichever method(s) that will have the least impact on watercourses.
Construction in and around watercourses must be restricted to the dryer winter months where possible.
Retain vegetation and soil in position for as long as possible, removing it immediately ahead of construction / earthworks in that area (DWAF, 2005).
Remove only the vegetation where essential for construction and do not allow any disturbance to the adjoining natural vegetation cover.
Rehabilitation plans must be submitted and approved for rehabilitation of damage during construction and that plan must be implemented immediately upon completion of construction.
Cordon off areas that are under rehabilitation as no-go areas using danger tape and steel droppers. If necessary, these areas should be fenced off to prevent vehicular, pedestrian and livestock access.
During the construction phase measures must be put in place to control the flow of excess water
Protect all areas susceptible to erosion and ensure that there is no undue soil erosion resultant from activities within and adjacent to the construction camp and work areas.
Runoff from the construction area must be managed to avoid erosion and pollution problems.
Implementation of best management practices</td></tr>
<tr><td></td><td>Indirect impacts:
Changing the quantity and fluctuation properties of the watercourse by for example restricting water flow.
Changes in sediment entering and exiting the system.
Introduction and spread of alien vegetation.
Loss and disturbance of watercourse</td><td>Moderate</td><td>Moderate</td></tr>
</table>

<table>
<tr><td></td><td>habitat and fringe vegetation impact ratings.
• Changes in water quality due to foreign materials and increased nutrients impact ratings.</td><td></td><td></td><td rowspan="2">• Source-directed controls
• Buffer zones to trap sediments
• Monitoring should be done to ensure that sediment pollution is timeously addressed.</td></tr>
<tr><td></td><td>Cumulative impacts:

• Construction activities may result in cumulative impact to the water courses within the local catchments and beyond.</td><td>Low</td><td>Low</td></tr>
<tr><td colspan="5">POTENTIAL INCREASE IN ALIENS</td></tr>
<tr><td></td><td>Direct impacts:
• Disturbance of indigenous vegetation during construction results in disturbed areas, making suitable habitats for invasive plants, these proliferate in disturbed areas. The reception facility area and construction workers moving around the site area can cause a transport system for seeds and other propagates of plants, particularly of alien invasive plant species.

<table><tr><th>Description</th><th>Without Mitigation</th><th>With Mitigation</th></tr><tr><td>Probability</td><td>Definite (4)</td><td>Probable (3)</td></tr></table></td><td>Low</td><td>Low</td><td>• Ongoing alien plant control must be undertaken during construction.
• Areas which have been disturbed will be quickly colonised by invasive alien species. An ongoing management plan must be implemented for the clearing/eradication of alien species during the operational phase.
• Monitor all sites disturbed by construction activities for colonisation by exotics or invasive plants and control these as they emerge.</td></tr>
</table>

	<table><tr><td>**Duration**</td><td>Medium-term (4)</td><td>Medium-term (2)</td></tr><tr><td>**Extent**</td><td>Limited to Local Area (4)</td><td>Limited to Local Area (4)</td></tr><tr><td>**Magnitude**</td><td>High (8)</td><td>Low (4)</td></tr><tr><td>**Significance**</td><td>**64 (high)**</td><td>**30 (low)**</td></tr><tr><td>**Status (positive or negative)**</td><td>Negative</td><td>Negative</td></tr></table>			
	Indirect impacts: • Alien invader plant species pose an ecological threat as they alter habitat structure; lower biodiversity, change ecosystem services and processes e.g. change nutrient cycling and productivity, and modify food webs. Allowing invasive plant species to establish and expand their distribution range without control may have vast accumulative effects. • Fragmentation of local vegetation; increased bush fires as these plants are highly prone to fire.	**Low**	**Low**	
	Cumulative impacts: • Increase of woody alien species pose an ecological threat.	**Low**	**Low**	
VISUAL IMPACTS					

<table>
<tr>
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Direct impacts:

Construction activities and the presence of construction equipment will cause a disturbance to the existing landscape character

<table>
<tr><th>Description</th><th>Without Mitigation</th><th>With Mitigation</th></tr>
<tr><td>Probability</td><td>Highly Probable (4)</td><td>Probable (3)</td></tr>
<tr><td>Duration</td><td>Short term (2)</td><td>Short-term (2)</td></tr>
<tr><td>Extent</td><td>Contained on Site (1)</td><td>Contained on Site (1)</td></tr>
<tr><td>Magnitude</td><td>Low (4)</td><td>Minor (2)</td></tr>
<tr><td>Significance</td><td>28 (Low)</td><td>15 (Low)</td></tr>
<tr><td>Status (positive or negative)</td><td>Negative</td><td>Negative</td></tr>
</table>
</td>
<td>Low</td>
<td>Low</td>
<td rowspan="2">

Buildings are to be simple in form and deliberately separated to lessen impact on the environment and allow for placement adjustments during construction to preserve large trees and protected specimens.
Subtle walkways between buildings to connect without overpowering.
Locate construction camps outside the borders of the KNP in areas that is already disturbed to avoid additional disturbance inside the park.
In the event that construction camps are located in the KNP, put stringent restrictions in place to contain the footprint of the camp by temporarily fencing it and clearly demarcating the entire construction area to minimise disturbance of areas outside the construction site.
Keep the construction camp and construction area neat and tidy at all times. Remove any waste products from the site or contain it in an enclosed area to avoid wind blowing waste into the bush.
Implement dust suppression measures during earthworks to minimise the impact of dust clouds.
Appoint a suitable architect and landscape architect to design the infrastructure and the adjoining surroundings with sensitivity towards the environment and its current character.
No structure may exceed the height of the surrounding vegetation.
Additional trees and shrubs can be planted around the structures as an offset measure to the loss in vegetation in the footprint of the infrastructure.
All signage should be non-intrusive but clear. No sign boards will be placed on separate frameworks higher

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Indirect impacts:

The impact will only affect the natural character of the visual resource.

</td>
<td>Negligible</td>
<td>Negligible</td>
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</table>

<table>
<tr><td></td><td></td><td></td><td></td><td>than 2 m above the ground level to avoid it exceeding the height of the vegetation.</td></tr>
<tr><td></td><td>Cumulative impacts:

None</td><td>None</td><td>None</td><td>N/A</td></tr>
<tr><td colspan="5">HERITAGE IMPACTS</td></tr>
<tr><td></td><td>Direct impacts:
Construction of the Reception facility could result in the discovery of significant heritage artefacts.

<table><tr><th>Description</th><th>Without Mitigation</th><th>With Mitigation</th></tr><tr><td>Probability</td><td>2</td><td>2</td></tr><tr><td>Duration</td><td>2</td><td>2</td></tr><tr><td>Extent</td><td>2</td><td>2</td></tr><tr><td>Magnitude</td><td>4</td><td>4</td></tr><tr><td>Significance</td><td>13 (Low)</td><td>13 (Low)</td></tr><tr><td>Status (positive or negative)</td><td>Negative</td><td>Negative</td></tr></table></td><td>Low</td><td>Low</td><td>• Should any heritage artefacts be exposed during operation of the area where the artefacts were discovered, SANParks Officials shall be notified as soon as possible.
• No artefacts may be removed off site unless authorized by the appropriate authority.</td></tr>
<tr><td></td><td>Indirect impacts:
None</td><td>None</td><td>None</td><td>N/A</td></tr>
<tr><td></td><td>Cumulative impacts:

None</td><td>None</td><td>None</td><td></td></tr>
<tr><td colspan="5"></td></tr>
</table>

<table>
<tr><th colspan="5">NOISE IMPACTS</th></tr>
<tr><td></td><td>

Direct impacts:

- Noise emissions from construction activities resulting in fauna migrating from noise emission areas.
- Some fauna aborting foetuses due to excessive noise.
- Flight patterns of avifauna changing.

<table>
<tr><th>Description</th><th>Without Mitigation</th><th>With Mitigation</th></tr>
<tr><td>Probability</td><td>Probable (3)</td><td>Improbable (2)</td></tr>
<tr><td>Duration</td><td>Short-term (2)</td><td>Short-term (2)</td></tr>
<tr><td>Extent</td><td>Limited to Local Area (2)</td><td>Limited to Local Area (2)</td></tr>
<tr><td>Magnitude</td><td>Moderate (6)</td><td>Moderate (5)</td></tr>
<tr><td>Significance</td><td>30 (medium)</td><td>18 (low)</td></tr>
<tr><td>Status (positive or negative)</td><td>Negative</td><td>Negative</td></tr>
</table>

</td><td>Low</td><td>Low</td><td rowspan="2">

- Put up general noise reduction signs
- The usage of low noise generators is encouraged
- Establish noise attenuation structures around high noise activities eg. metal fabricating activities
- Establish noise level threshold consistent with SANParks policies.
- Works should be conducted during SANParks mandated day hours.
- Speed limits must be strictly enforced. It is the opinion of the fauna specialist that the usual speed limit of 65 km/h applicable to SANParks staff is too high to avoid road kills of nocturnal birds, as these birds are often dazzled by oncoming lights. It is thus recommended that a speed limit of 40 km/h be applied to anyone using the new road at night.

</td></tr>
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Indirect impacts:

- A potential change in the ecological

</td><td>Negligible</td><td>Negligible</td></tr>
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<tr><td></td><td>cycle of the immediate study area.</td><td></td><td></td><td></td></tr>
<tr><td></td><td>Cumulative impacts:

No significant cumulative impact expected.</td><td>None</td><td></td><td>N/A</td></tr>
<tr><td colspan="5">TRAFFIC IMPACTS</td></tr>
<tr><td></td><td>Direct impacts:
• Increase in construction vehicle traffic on the ranger road to upgraded, S54 & H1-6 tourist roads and other internal KNP roads.

<table>
<tr><th>Description</th><th>Without Mitigation</th><th>With Mitigation</th></tr>
<tr><td>Probability</td><td>Improbable (2)</td><td>Improbable (2)</td></tr>
<tr><td>Duration</td><td>Short-term (2)</td><td>Very short-term (1)</td></tr>
<tr><td>Extent</td><td>Limited to Local Area (2)</td><td>Limited to Local Area (1)</td></tr>
<tr><td>Magnitude</td><td>Moderate (5)</td><td>Minor (2)</td></tr>
<tr><td>Significance</td><td>18 (Low)</td><td>8 (Low)</td></tr>
<tr><td>Status (positive or negative)</td><td>Negative</td><td>Negative</td></tr>
</table></td><td>Low</td><td>Low</td><td>• Traffic speed signs must be established at sufficient intervals along the construction footprint.
• Establish a speed reduction awareness campaign for the contractors
• No construction vehicles allowed on the roads after between 06:00-18h00
• Implement penalty fines to speed violators.</td></tr>
<tr><td></td><td>Indirect impacts:</td><td>Very Low</td><td>Very Low</td><td></td></tr>
</table>

<table>
<tr><td></td><td>• Increased chance of road kills</td><td></td><td></td><td></td></tr>
<tr><td></td><td>Cumulative impacts:

• No significant cumulative impact expected.</td><td>Negligible</td><td>Negligible</td><td></td></tr>
<tr><td colspan="5">AIR QUALITY IMPACTS</td></tr>
<tr><td></td><td>Direct impacts:
• General construction vehicle emissions. These emissions can be considered as insignificant.
• Dust fallout from speeding construction vehicles and construction activities.

<table>
<tr><th>Description</th><th>Without Mitigation</th><th>With Mitigation</th></tr>
<tr><td>Probability</td><td>Local (1)</td><td>Local (1)</td></tr>
<tr><td>Duration</td><td>Long-term (4)</td><td>Long-term (4)</td></tr>
<tr><td>Extent</td><td>Minor (2)</td><td>Small (1)</td></tr>
<tr><td>Magnitude</td><td>Highly probable (4)</td><td>Improbable (2)</td></tr>
<tr><td>Significance</td><td>Low (28)</td><td>Low (12)</td></tr>
<tr><td>Status (positive or negative)</td><td>Negative</td><td>Negative</td></tr>
</table></td><td>Low</td><td>Low</td><td>• Staff vehicles must be sufficiently maintained and serviced.
• A daily vehicle maintenance checklist must be conducted on all construction vehicles.
• Water spraying dust suppression must be conducted on areas prone to excessive dust fallout at required intervals.</td></tr>
</table>

	Indirect impacts: • None anticipated	**None**	**None**	N/A
	Cumulative impacts: • None anticipated	**None**	**None**	

SOCIO-ECONOMIC POSITIVE IMPACTS				
	Direct impacts: • Job opportunities created during the construction phase • Local suppliers & contractors to be contracted.	**Low Positive impact**	**Low Positive impact**	**Enhancement:** • Local employment should as far possible be used for construction. • Contract local suppliers and contractors for construction work to be commissioned. • The developer should implement a training and skills development enhancement programme for locals during the construction phase.

Description	Without Mitigation	With Mitigation
Probability	Local-Regional (2)	Local-Regional (2)
Duration	Short-term (1)	Short-term (1)
Extent	Small (1)	Low (4)
Magnitude	Probable (3)	Probable (3)
Significance	**Low (12)**	**Low (21)**
Status (positive or	Positive	Positive

	negative)			
	Indirect impacts: • Stimulation of the region's economic activities. • Local employed people during the construction phase may learn new skills thereby making them more employable in the future. • Improvement of family and community quality of life.	**Positive Impact**	**Positive Impact**	
	Cumulative impacts: • General acceptance of the development and community cooperation	**Positive Impact**	**Positive Impact**	**Enhancement:** • Continued involvement of the local neighbouring communities must take place by way of beneficiation initiatives.
	SOCIO-ECONOMIC NEGATIVE IMPACTS			
	Direct impacts: • Squatting might increase near the KNP fence due to the perception of work. • Increased risk of stock theft, poaching and damage to park	**Low Negative impact**	**Low Negative impact**	**Negative impacts mitigation** • Implement mitigation measures to monitor and control the activities of construction workers and for the control of nuisance impacts. • Access to the construction site must be strictly

<table>
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<td>infrastructure associated with construction workers.
• Construction workers using nearby bushes for ablution.
• Improper conduct by construction workers
<table>
<tr><th>Description</th><th>Without Mitigation</th><th>With Mitigation</th></tr>
<tr><td>Probability</td><td>Probable (3)</td><td>Probable (3)</td></tr>
<tr><td>Duration</td><td>Short-term (2)</td><td>Very short-term (1)</td></tr>
<tr><td>Extent</td><td>Limited to Local Area (2)</td><td>Limited to Local Area (1)</td></tr>
<tr><td>Magnitude</td><td>Moderate (6)</td><td>Small (0)</td></tr>
<tr><td>Significance</td><td>30 (medium)</td><td>6(Low)</td></tr>
<tr><td>Status (positive or negative)</td><td>Negative</td><td>Negative</td></tr>
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<td></td>
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<td>controlled and monitored by 24 hour security.
• Mechanisms should be implemented to deal with people seeking employment in order to minimise any issues related to the influx of people.
• Adequate sanitary and ablutions facilities must be provided for construction workers as standard construction practice.
• The Contractor shall provide sanitation and ablution facilities in the form of chemical toilets, at all camps, offices, workshops and construction sites for staff and visitors. A minimum of one toilet per 15 people or within 100 meters of the work site in order to encourage the use of these toilets.
• All staff is to use the toilets at all times rather than informal defecation in the environment.
• Toilets are not to be located within sensitive areas such as drainage lines and 1:100 year flood lines.
• Burning of vegetation including tree trunks and stumps cut during site clearing and establishment shall not be permitted.
• Smoking is only allowed in designated safe smoking areas.
• No fires for warming or cooking are allowed outside of secured areas in the construction camp.</td>
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<td></td>
<td>Indirect impacts:
• Potential protests to the development by the local surrounding communities due to not the development not providing employment.
• Migrant and local construction</td>
<td>Negative impact</td>
<td>Negative impact</td>
<td>Negative impacts mitigation:
• Local employment should as far possible be used for construction.
• Contract local suppliers and contractors for construction work to be commissioned.
• Attention should be given to the awareness of HIV/Aids and STDs in the form of toolbox talks.</td>
</tr>
</table>

	workers engaging in unsafe sexual activities with local women.			
	Cumulative impacts: • Local community instability and resistance to the development. • In cases where unplanned / unwanted pregnancies occur or members of the community are infected by an STD, specifically HIV and/or AIDS, the impacts may be permanent and have long term to permanent cumulative impacts on the affected individuals and/or their families and the community.	**Negative impact**	**Negative impact**	**Negative impacts mitigation:** • Local employment should as far possible be used for construction. • Contract local suppliers and contractors for construction work to be commissioned. • Attention should be given to the awareness of HIV/Aids and STDs in the form of toolbox talks.

CONSTRUCTION PHASE: Tented Camp site

This site is located within the prominent loop in the Shingwedzi River in the western part of the site entire study site. Furthermore it is located within the flood plains along the Shingwedzi River. The soil, vegetation and plant species composition of all these sites are similar. Although this ecosystem is regarded as ecologically sensitive, the proposed development is low-profile and low impact developments that do not include permanent structures. The soil of these flood plain areas is almost bare, with a very scanty herbaceous layer. Large trees occur scattered over these areas, and some are protected tree species. The trees are needed for shading of the picnic site, camp site and tented camp site, and will not be removed.

A summary and anticipated significance of the potential direct, indirect and cumulative impacts that are likely to occur as a result of the Construction Phase of the proposed Shangoni Development.

<table>
<tr><th>Activity</th><th>Impact summary</th><th colspan="2">Significance (after mitigation)</th><th>Proposed mitigation</th></tr>
<tr><td></td><td></td><td>Preferred</td><td>Alternative 1</td><td></td></tr>
<tr><td colspan="5">VEGETATION</td></tr>
<tr><td rowspan="2"></td><td>Direct impacts:
• Loss of indigenous vegetation or indigenous plant species due to clearing for construction of the Tented Camp site. Some, though limited, indigenous vegetation will have to be cleared at the location of the tented camp.

<table>
<tr><th>Description</th><th>Without Mitigation</th><th>With Mitigation</th></tr>
<tr><td>Probability</td><td>Definite (5)</td><td>Definite (5)</td></tr>
<tr><td>Duration</td><td>Short-term (2)</td><td>Short-term (2)</td></tr>
<tr><td>Extent</td><td>Limited to site (1)</td><td>Limited to site (1)</td></tr>
<tr><td>Magnitude</td><td>Low (2)</td><td>Low (1)</td></tr>
<tr><td>Significance</td><td>Medium (25)</td><td>Low (20)</td></tr>
<tr><td>Status (positive or negative)</td><td>Negative</td><td>Negative</td></tr>
</table></td><td>Low</td><td>Low</td><td rowspan="2">• Limit disturbance of natural vegetation to a minimum.
• Avoid removal of large trees.
• Rehabilitate disturbances immediately after construction.
• Do not plant any non-indigenous trees or shrubs or any garden ornamentals at the gate, use KNP indigenous plant species only.
• Ongoing alien plant control must be undertaken
• Rehabilitated areas must be monitored to ensure the establishment of re-vegetated areas.
• Remove and control all alien woody plant species that may appear during construction.
• No removal of protected trees without permit from Department of Agriculture, Forestry and Fisheries (DAFF).
• Woody plants should only be cut shorter if absolutely necessary.</td></tr>
<tr><td>Indirect impacts:
• Vegetation fragmentation</td><td>Low</td><td>Low</td></tr>
</table>

	• No irreplaceable loss of resources is anticipated.			
	Cumulative impacts: • Expected that very little accumulative effects will occur.	**Low**	**Low**	
	FAUNA AND AVIFAUNA			
	Direct impacts: • The modest compounds for the light-footprint at Tented Camp site will spatially be insignificant relative to the overall extent of the park, and their impact will be fractional. • Areas used by birds for foraging and breeding will be destroyed. • Visual and noise disturbances to the breeding Critically Endangered White-backed Vultures near the vicinity of the Preferred Tented Camp site during construction. • The presence of vehicles and construction workers will cause disturbance to other avifauna, with the movement and activities of personnel on site and the associated noise, pollution and litter all having a negative effect on terrestrial fauna.	(Disturbances associated with increased human presence in the area) **Low (21)** (Avian habitat loss) **Low (21)** (Impact on faunal communities) **Moderate (18)**	(Disturbances associated with increased human presence in the area) **Low (18)** (Avian habitat loss) **Low (18)** (Impact on faunal communities) **Moderate (18)**	• It is recommended that a 500-m radius buffer zone be strictly observed from the Critically Endangered White-backed Vultures nests, and no activities take place within these. • The spatial extent of construction activities must be minimized, and as far as possible must be restricted to the areas on which buildings, roads etc will actually be located. • The boundaries of the development footprint areas are to be clearly demarcated and it must be ensured that all activities remain within the demarcated footprint area. • Provide adequate briefing for site personnel and residents. • Any bird nests that are found during the construction period must be reported to the Environmental Control Officer (ECO). • Movement of construction vehicles and workers beyond the boundary of the site must be minimized. In addition, workers must be instructed

(Disturbances associated with increased human presence in the area)

Description	Without Mitigation	With Mitigation
Probability	Very probable (4)	Probable (3)
Duration	Short term (2)	Short term (2)
Extent	Limited to Site (1)	Limited to Site (1)
Magnitude	Medium (5)	Low (3)
Significance	**32 (Moderate)**	**18 (Low)**
Status (positive or negative)	Negative	Negative

(Avian habitat loss)

Description	Without Mitigation	With Mitigation
Probability	Very probable (4)	Probable (3)
Duration	Short term (2)	Short term (2)
Extent	Limited to Site (1)	Limited to Site (1)
Magnitude	Medium (6)	Medium (4)
Significance	**36 (Moderate)**	**21 (Low)**
Status (positive or negative)	Negative	Negative

to minimize disturbance of birds at all times, and steps must be taken to ensure that no illegal hunting occurs.

- No hunting, snaring or trapping animals is allowed.
- Disturbance by residents of birds breeding and foraging in the area should be minimized.
- The normal rules applicable to visitors to KNP must be strictly enforced.
- Driving at night within the site area SANParks staff must be kept to a minimum.
- Speed limits must be strictly enforced. It is the opinion of the fauna specialist that the usual speed limit of 65 km/h applicable to SANParks staff is too high to avoid road kills of nocturnal birds, as these birds are often dazzled by oncoming lights. It is thus recommended that a speed limit of 40 km/h be applied to anyone using the new road at night.

(Impact on faunal communities)

Description	Without Mitigation	With Mitigation
Probability	Probable (3)	Probable (3)
Duration	Short-term (3)	Short-term (3)
Extent	Site (1)	Site (1)
Magnitude	Minor (2)	Minor (2)
Significance	**18 (Moderate)**	**18 (Moderate)**
Status (positive or negative)	Negative	Negative

	Indirect impacts: • The construction phase of the Reception facility will result in the negligible loss of mammal, reptile and amphibian habitats. Within the context of the park, this impact relates to the limited destruction/disturbance of existing vegetation by machinery and workers, impacting directly on the ecological condition of natural vegetation and habitat availability. These activities will have negligible impact on foraging and breeding ecology. • Migration of the Critically Endangered White-backed Vultures from the vicinity of the Preferred Tented Camp site to other	**Low**	**Low**	

	areas of the park. • Loss of vegetation generally affects nutrient cycles, removes the organic litter layer and results in habitat fragmentation and destruction of wildlife corridors; these will be limited the footprint of the entrance gate facility and where loss will in any case exclude mature trees.			
	Cumulative impacts: • Submitted to be initially minimal and thereafter stabilized, as the development will be relatively very small and most fauna species have relatively high mobility or adaptivity. • Impact to connectivity and ecological services will be insignificant, especially since mammals adapt fast to low-key and consistent disturbances.	**Negligible**	**Negligible**	
GROUND AND SURFACE WATER (WATERCOURSES)				
	Direct impacts: • The removal of vegetation and surface water redirection of water during construction activities. • Disturbance of slopes through creation of roads and tracks adjacent to the watercourse.	**Moderate**	**Moderate**	• Consider the various methods and equipment available and select whichever method(s) that will have the least impact on watercourses. • Construction in and around watercourses must be restricted to the dryer winter months where possible. • Retain vegetation and soil in position for as long as possible, removing it immediately ahead of

<table>
<tr>
<td></td>
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<table>
<tr><th>Description</th><th>Without Mitigation</th><th>With Mitigation</th></tr>
<tr><td>Probability</td><td>Definite (5)</td><td>Probable (3)</td></tr>
<tr><td>Duration</td><td>Medium-term (3)</td><td>Medium-term (3)</td></tr>
<tr><td>Extent</td><td>Regional (4)</td><td>Regional (4)</td></tr>
<tr><td>Magnitude</td><td>High (8)</td><td>Low (4)</td></tr>
<tr><td>Significance</td><td>75 (high)</td><td>33 (moderate)</td></tr>
<tr><td>Status (positive or negative)</td><td>Negative</td><td>Negative</td></tr>
</table>
</td>
<td></td>
<td></td>
<td rowspan="3">construction / earthworks in that area (DWAF, 2005).
• Remove only the vegetation where essential for construction and do not allow any disturbance to the adjoining natural vegetation cover.
• Rehabilitation plans must be submitted and approved for rehabilitation of damage during construction and that plan must be implemented immediately upon completion of construction.
• Cordon off areas that are under rehabilitation as no-go areas using danger tape and steel droppers. If necessary, these areas should be fenced off to prevent vehicular, pedestrian and livestock access.
• During the construction phase measures must be put in place to control the flow of excess water
• Protect all areas susceptible to erosion and ensure that there is no undue soil erosion resultant from activities within and adjacent to the construction camp and work areas.
• Runoff from the construction area must be managed to avoid erosion and pollution problems.
• Implementation of best management practices
• Source-directed controls
• Buffer zones to trap sediments
• Monitoring should be done to ensure that sediment pollution is timeously addressed.</td>
</tr>
<tr>
<td></td>
<td>Indirect impacts:
• Changing the quantity and fluctuation properties of the watercourse by for example restricting water flow.
• Changes in sediment entering and exiting the system.
• Introduction and spread of alien vegetation.
• Loss and disturbance of watercourse habitat and fringe vegetation impact ratings.
• Changes in water quality due to foreign materials and increased nutrients impact ratings.</td>
<td>Moderate</td>
<td>Moderate</td>
</tr>
<tr>
<td></td>
<td>Cumulative impacts:
• Construction activities may result in cumulative impact to the water</td>
<td>Low</td>
<td>Low</td>
</tr>
</table>

<table>
<tr><td></td><td>courses within the local catchments and beyond.</td><td></td><td></td><td></td></tr>
<tr><td colspan="5">POTENTIAL INCREASE IN ALIENS</td></tr>
<tr><td></td><td>Direct impacts:
• Disturbance of indigenous vegetation during construction results in disturbed areas, making suitable habitats for invasive plants, these proliferate in disturbed areas. The reception facility area and construction workers moving around the site area can cause a transport system for seeds and other propagates of plants, particularly of alien invasive plant species.

<table>
<tr><th>Description</th><th>Without Mitigation</th><th>With Mitigation</th></tr>
<tr><td>Probability</td><td>Definite (4)</td><td>Probable (3)</td></tr>
<tr><td>Duration</td><td>Medium-term (4)</td><td>Medium-term (2)</td></tr>
<tr><td>Extent</td><td>Limited to Local Area (4)</td><td>Limited to Local Area (4)</td></tr>
<tr><td>Magnitude</td><td>High (8)</td><td>Low (4)</td></tr>
<tr><td>Significance</td><td>64 (high)</td><td>30 (low)</td></tr>
<tr><td>Status (positive or negative)</td><td>Negative</td><td>Negative</td></tr>
</table>
Indirect impacts:</td><td>Low</td><td>Low</td><td>• Ongoing alien plant control must be undertaken during construction.
• Areas which have been disturbed will be quickly colonised by invasive alien species. An ongoing management plan must be implemented for the clearing/eradication of alien species during the operational phase.
• Monitor all sites disturbed by construction activities for colonisation by exotics or invasive plants and control these as they emerge.</td></tr>
</table>

<table>
<tr><td></td><td>Alien invader plant species pose an ecological threat as they alter habitat structure; lower biodiversity, change ecosystem services and processes e.g. change nutrient cycling and productivity, and modify food webs. Allowing invasive plant species to establish and expand their distribution range without control may have vast accumulative effects.
Fragmentation of local vegetation; increased bush fires as these plants are highly prone to fire.</td><td></td><td></td><td rowspan="2"></td></tr>
<tr><td></td><td>Cumulative impacts:
Increase of woody alien species pose an ecological threat.</td><td>Low</td><td>Low</td></tr>
<tr><td colspan="5">VISUAL IMPACTS</td></tr>
<tr><td></td><td>Direct impacts:
Construction activities and the presence of construction equipment will cause a disturbance to the existing landscape character
<table><tr><th>Description</th><th>Without Mitigation</th><th>With Mitigation</th></tr><tr><td>Probability</td><td>Highly Probable</td><td>Probable (3)</td></tr></table></td><td>Low</td><td>Low</td><td>Buildings are to be simple in form and deliberately separated to lessen impact on the environment and allow for placement adjustments during construction to preserve large trees and protected specimens.
Subtle walkways between buildings to connect without overpowering.
Locate construction camps outside the borders of the KNP in areas that is already disturbed to avoid additional disturbance inside the park.</td></tr>
</table>

		(4)			
	Duration	Short term (2)	Short-term (2)		
	Extent	Contained on Site (1)	Contained on Site (1)		
	Magnitude	Low (4)	Minor (2)		
	Significance	**28 (Low)**	**15 (Low)**		
	Status (positive or negative)	Negative	Negative		
	Indirect impacts: • The impact will only affect the natural character of the visual resource.			**Negligible**	**Negligible**
	Cumulative impacts: None			**None**	**None**

- In the event that construction camps are located in the KNP, put stringent restrictions in place to contain the footprint of the camp by temporarily fencing it and clearly demarcating the entire construction area to minimise disturbance of areas outside the construction site.
- Keep the construction camp and construction area neat and tidy at all times. Remove any waste products from the site or contain it in an enclosed area to avoid wind blowing waste into the bush.
- Implement dust suppression measures during earthworks to minimise the impact of dust clouds.
- Appoint a suitable architect and landscape architect to design the infrastructure and the adjoining surroundings with sensitivity towards the environment and its current character.
- No structure may exceed the height of the surrounding vegetation.
- Additional trees and shrubs can be planted around the structures as an offset measure to the loss in vegetation in the footprint of the infrastructure.
- All signage should be non-intrusive but clear. No sign boards will be placed on separate frameworks higher than 2 m above the ground level to avoid it exceeding the height of the vegetation.

N/A

HERITAGE IMPACTS

<table>
<tr><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td>Direct impacts:
• Construction of the Reception facility could result in the discovery of significant heritage artefacts.

<table><tr><th>Description</th><th>Without Mitigation</th><th>With Mitigation</th></tr><tr><td>Probability</td><td>2</td><td>2</td></tr><tr><td>Duration</td><td>2</td><td>2</td></tr><tr><td>Extent</td><td>2</td><td>2</td></tr><tr><td>Magnitude</td><td>4</td><td>4</td></tr><tr><td>Significance</td><td>13 (Low)</td><td>13 (Low)</td></tr><tr><td>Status (positive or negative)</td><td>Negative</td><td>Negative</td></tr></table></td><td>Low</td><td>Low</td><td>• Should any heritage artefacts be exposed during operation of the area where the artefacts were discovered, SANParks Officials shall be notified as soon as possible.
• No artefacts may be removed off site unless authorized by the appropriate authority.</td></tr>
<tr><td></td><td>Indirect impacts:
None</td><td>None</td><td>None</td><td>N/A</td></tr>
<tr><td></td><td>Cumulative impacts:

None</td><td>None</td><td>None</td><td></td></tr>
<tr><td colspan="5">NOISE IMPACTS</td></tr>
<tr><td></td><td>Direct impacts:
• Noise emissions from construction activities resulting in fauna migrating from noise emission areas.
• Some fauna aborting foetuses due to</td><td>Low</td><td>Low</td><td>• Put up general noise reduction signs
• The usage of low noise generators is encouraged
• Establish noise attenuation structures around high noise activities eg. metal fabricating activities</td></tr>
</table>

<table>
<tr>
<td></td>
<td>excessive noise.
• Flight patterns of avifauna changing.

<table><tr><th>Description</th><th>Without Mitigation</th><th>With Mitigation</th></tr><tr><td>Probability</td><td>Probable (3)</td><td>Improbable (2)</td></tr><tr><td>Duration</td><td>Short-term (2)</td><td>Short-term (2)</td></tr><tr><td>Extent</td><td>Limited to Local Area (2)</td><td>Limited to Local Area (2)</td></tr><tr><td>Magnitude</td><td>Moderate (6)</td><td>Moderate (5)</td></tr><tr><td>Significance</td><td>30 (medium)</td><td>18 (low)</td></tr><tr><td>Status (positive or negative)</td><td>Negative</td><td>Negative</td></tr></table></td>
<td></td>
<td></td>
<td rowspan="3">• Establish noise level threshold consistent with SANParks policies.
• Works should be conducted during SANParks mandated day hours.
• Speed limits must be strictly enforced. It is the opinion of the fauna specialist that the usual speed limit of 65 km/h applicable to SANParks staff is too high to avoid road kills of nocturnal birds, as these birds are often dazzled by oncoming lights. It is thus recommended that a speed limit of 40 km/h be applied to anyone using the new road at night.</td>
</tr>
<tr>
<td></td>
<td>Indirect impacts:
• A potential change in the ecological cycle of the immediate study area.</td>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td></td>
<td>Cumulative impacts:

No significant cumulative impact expected.</td>
<td>None</td>
<td>None</td>
<td>N/A</td>
</tr>
<tr>
<td colspan="5">TRAFFIC IMPACTS</td>
</tr>
</table>

<table>
<tr><td></td><td>
Direct impacts:
Increase in construction vehicle traffic on the ranger road to upgraded, S54 & H1-6 tourist roads and other internal KNP roads.
<table>
<tr><th>Description</th><th>Without Mitigation</th><th>With Mitigation</th></tr>
<tr><td>Probability</td><td>Improbable (2)</td><td>Improbable (2)</td></tr>
<tr><td>Duration</td><td>Short-term (2)</td><td>Very short-term (1)</td></tr>
<tr><td>Extent</td><td>Limited to Local Area (2)</td><td>Limited to Local Area (1)</td></tr>
<tr><td>Magnitude</td><td>Moderate (5)</td><td>Minor (2)</td></tr>
<tr><td>Significance</td><td>18 (Low)</td><td>8 (Low)</td></tr>
<tr><td>Status (positive or negative)</td><td>Negative</td><td>Negative</td></tr>
</table>
</td><td>Low</td><td>Low</td><td rowspan="3">

Traffic speed signs must be established at sufficient intervals along the construction footprint.
Establish a speed reduction awareness campaign for the contractors
No construction vehicles allowed on the roads after between 06:00-18h00
Implement penalty fines to speed violators.

</td></tr>
<tr><td></td><td>Indirect impacts:
Increased chance of road kills</td><td>Low</td><td>Low</td></tr>
<tr><td></td><td>Cumulative impacts:
No significant cumulative impact expected.</td><td>Low</td><td>Low</td></tr>
</table>

<table>
<tr><th colspan="5">AIR QUALITY IMPACTS</th></tr>
<tr><td></td><td>Direct impacts:
General construction vehicle emissions. These emissions can be considered as insignificant.
Dust fallout from speeding construction vehicles and construction activities.
<table>
<tr><th>Description</th><th>Without Mitigation</th><th>With Mitigation</th></tr>
<tr><td>Probability</td><td>Local (1)</td><td>Local (1)</td></tr>
<tr><td>Duration</td><td>Long-term (4)</td><td>Long-term (4)</td></tr>
<tr><td>Extent</td><td>Minor (2)</td><td>Small (1)</td></tr>
<tr><td>Magnitude</td><td>Highly probable (4)</td><td>Improbable (2)</td></tr>
<tr><td>Significance</td><td>Low (28)</td><td>Low (12)</td></tr>
<tr><td>Status (positive or negative)</td><td>Negative</td><td>Negative</td></tr>
</table></td><td>Low</td><td>Low</td><td>Staff vehicles must be sufficiently maintained and serviced.
A daily vehicle maintenance checklist must be conducted on all construction vehicles.
Water spraying dust suppression must be conducted on areas prone to excessive dust fallout at required intervals.</td></tr>
<tr><td></td><td>Indirect impacts:
None anticipated</td><td>None</td><td>None</td><td>N/A</td></tr>
<tr><td></td><td>Cumulative impacts:
None anticipated</td><td>None</td><td>None</td><td></td></tr>
</table>

SOCIO-ECONOMIC POSITIVE IMPACTS

	Direct impacts: • Job opportunities created during the construction phase • Local suppliers & contractors to be contracted. **Description / Without Mitigation / With Mitigation** **Probability**: Local-Regional (2) / Local-Regional (2) **Duration**: Short-term (1) / Short-term (1) **Extent**: Small (1) / Low (4) **Magnitude**: Probable (3) / Probable (3) **Significance**: **Low (12)** / **Low (21)** **Status (positive or negative)**: Positive / Positive	**Low Positive impact**	**Low Positive impact**	**Enhancement:** • Local employment should as far possible be used for construction. • Contract local suppliers and contractors for construction work to be commissioned. • The developer should implement a training and skills development enhancement programme for locals during the construction phase.
	Indirect impacts:	**Positive**	**Positive**	

	• Stimulation of the region's economic activities. • Local employed people during the construction phase may learn new skills thereby making them more employable in the future. • Improvement of family and community quality of life.	**Impact**	**Impact**	
	Cumulative impacts: • General acceptance of the development and community cooperation	**Positive Impact**	**Positive Impact**	**Enhancement:** • Continued involvement of the local neighbouring communities must take place by way of beneficiation initiatives.
	SOCIO-ECONOMIC NEGATIVE IMPACTS			
	Direct impacts: • Squatting might increase near the KNP fence due to the perception of work. • Increased risk of stock theft, poaching and damage to park infrastructure associated with construction workers. • Construction workers using nearby bushes for ablution. • Improper conduct by construction workers	**Low Negative impact**	**Low Negative impact**	**Negative impacts mitigation** • Implement mitigation measures to monitor and control the activities of construction workers and for the control of nuisance impacts. • Access to the construction site must be strictly controlled and monitored by 24 hour security. • Mechanisms should be implemented to deal with people seeking employment in order to minimise any issues related to the influx of people. • Adequate sanitary and ablutions facilities must be provided for construction workers as standard construction practice.

	<table><tr><th>Description</th><th>Without Mitigation</th><th>With Mitigation</th></tr><tr><td>**Probability**</td><td>Probable (3)</td><td>Probable (3)</td></tr><tr><td>**Duration**</td><td>Short-term (2)</td><td>Very short-term (1)</td></tr><tr><td>**Extent**</td><td>Limited to Local Area (2)</td><td>Limited to Local Area (1)</td></tr><tr><td>**Magnitude**</td><td>Moderate (6)</td><td>Small (0)</td></tr><tr><td>**Significance**</td><td>**30 (Moderate)**</td><td>**6(Low)**</td></tr><tr><td>**Status (positive or negative)**</td><td>Negative</td><td>Negative</td></tr></table>			• The Contractor shall provide sanitation and ablution facilities in the form of chemical toilets, at all camps, offices, workshops and construction sites for staff and visitors. A minimum of one toilet per 15 people or within 100 meters of the work site in order to encourage the use of these toilets. • All staff is to use the toilets at all times rather than informal defecation in the environment. • Toilets are not to be located within sensitive areas such as drainage lines and 1:100 year flood lines. • Burning of vegetation including tree trunks and stumps cut during site clearing and establishment shall not be permitted. • Smoking is only allowed in designated safe smoking areas. • No fires for warming or cooking are allowed outside of secured areas in the construction camp.
	Indirect impacts: • Potential protests to the development by the local surrounding communities due to not the development not providing employment. • Migrant and local construction workers engaging in unsafe sexual activities with local women.	**Negative impact**	**Negative impact**	**Negative impacts mitigation:** • Local employment should as far possible be used for construction. • Contract local suppliers and contractors for construction work to be commissioned. • Attention should be given to the awareness of HIV/Aids and STDs in the form of toolbox talks.
	Cumulative impacts: • Local community instability and resistance to the	**Negative impact**	**Negative impact**	**Negative impacts mitigation:** • Local employment should as far possible be used for construction.

	development. • In cases where unplanned / unwanted pregnancies occur or members of the community are infected by an STD, specifically HIV and/or AIDS, the impacts may be permanent and have long term to permanent cumulative impacts on the affected individuals and/or their families and the community.			• Contract local suppliers and contractors for construction work to be commissioned. • Attention should be given to the awareness of HIV/Aids and STDs in the form of toolbox talks.

Table 3: Operational Phase Impacts

OPERATIONAL PHASE: ENTIRE SHANGONI GATE DEVELEOPMENT A summary and anticipated significance of the potential direct, indirect and cumulative impacts that are likely to occur as a result of the Operation Phase of the proposed Shangoni Development.			
Activity	**Impact summary**	**Significance (after mitigation)**	**Proposed mitigation**
VEGETATION			

<table>
<tr><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td>Direct impacts:
People moving through the gate will cause a transports system for seeds and other propagates of plants, particularly of alien invasive plant species.
Should further disturbance occur, an increase in alien species can be expected within the disturbed areas.
<table>
<tr><th>Description</th><th>Without Mitigation</th><th>With Mitigation</th></tr>
<tr><td>Probability</td><td>Definite (5)</td><td>Probable (3)</td></tr>
<tr><td>Duration</td><td>Permanent (5)</td><td>Very short-term (1)</td></tr>
<tr><td>Extent</td><td>Limited to site (1)</td><td>Limited to Local Area (1)</td></tr>
<tr><td>Magnitude</td><td>Moderate (3)</td><td>Small (0)</td></tr>
<tr><td>Significance</td><td>45 (High)</td><td>40(Moderate)</td></tr>
<tr><td>Status (positive or negative)</td><td>Negative</td><td>Negative</td></tr>
</table></td><td>Moderate</td><td rowspan="2">Do not plant any non-indigenous trees or shrubs or any garden ornamentals within the entire development, use KNP indigenous plant species only.
Rehabilitated areas must be monitored to ensure the establishment of re-vegetated areas.
Remove and control all alien woody plant species that may appear during operation.
Ongoing alien plant control must be undertaken during operational phase.</td></tr>
<tr><td></td><td>Indirect impacts:
Propagation of alien species.</td><td>Low</td></tr>
</table>

<table>
<tr><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td>Cumulative impacts:

• Alien invader plant species pose an ecological threat as they alter habitat structure, lower biodiversity, change ecosystem services and processes. Allowing invasive plant species to establish and expand their distribution range without control may have vast accumulative effects.</td><td>Low</td><td></td></tr>
<tr><td colspan="4">FAUNA AND AVIFAUNA</td></tr>
<tr><td></td><td>Direct impacts:
• Spatially insignificant relative to the overall extent of the park, the impact will be fractional; the development will not impact more on connectivity or significant habitat loss. The immediate surrounds will still allow access for garden-variety birds, small mammals and reptiles.

<table>
<tr><th>Description</th><th>Without Mitigation</th><th>With Mitigation</th></tr>
<tr><td>Probability</td><td>Probable (3)</td><td>Probable (3)</td></tr>
<tr><td>Duration</td><td>Long term (4)</td><td>Long term (4)</td></tr>
<tr><td>Extent</td><td>Limited to</td><td>Limited to</td></tr>
</table>
</td><td>Moderate</td><td>• The standard 50km/h SANParks speed restriction is deemed adequate if it is enforced.
• Visitors are only allowed on the road between sunrise and sunset to avoid night-time fatalities.
• Normal precautionary measures included in the SANParks operational modus operandus would suffice viz. unwarranted use of natural resources (viz. poaching, trapping, harvesting plant materials).
• Residents must be made aware of the value of fauna.
• Education and awareness campaigns on faunal species and their habitat are recommended to help increase awareness, respect and responsibility towards the environment for all staff and contractors.
• No feeding of wild animals found on site.
• No activities allowed near White Backed Vulture nests.</td></tr>
</table>

		site (1)	Site (1)	
	Magnitude	Minor (2)	Minor (2)	
	Significance	**Moderate (21)**	**Moderate (21)**	
	Status (positive or negative)	Negative	Negative	
	Indirect impacts: • Potential for road kills will increase		**Low**	• The standard 50km/h SANParks speed restriction is deemed adequate if it is enforced. • Visitors are only allowed on the road between sunrise and sunset to avoid night-time fatalities.
	Cumulative impacts: Very minimal, provided that the mitigation measures are implemented correctly and rehabilitation of the site is undertaken.		N/A	N/A
GROUND AND SURFACE WATER (WATERCOURSES)				
	Direct impacts: • Encroachment of alien invasive species. • Uncontrolled vegetation clearing and access by staff and guests. • Unmanaged storm water runoff. • Litter and uncontrolled waste. • Sewage leaks and spills • Discharge and spill of solvents, paints,		**Low**	• Do not allow surface water or storm water to canalize or be concentrated. • Runoff from roads must be managed to avoid erosion and pollution problems. • Place and maintain erosion control barriers as appropriate to prevent sedimentation. • Control of waste discharges and do not allow dirty water from operational activities to enter the watercourse. • Ensure that no operational activities impact on the

<table>
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<td>chemicals and cleaning products
• Potential sedimentation and siltation from erosion.

<table>
<tr><th>Description</th><th>Without Mitigation</th><th>With Mitigation</th></tr>
<tr><td>Probability</td><td>Probable (3)</td><td>Probable (3)</td></tr>
<tr><td>Duration</td><td>Long term (5)</td><td>Medium term (3)</td></tr>
<tr><td>Extent</td><td>Regional (4)</td><td>Limited to the site (2)</td></tr>
<tr><td>Magnitude</td><td>Moderate (6)</td><td>Low (4)</td></tr>
<tr><td>Significance</td><td>45 (moderate)</td><td>27 (low)</td></tr>
<tr><td>Status (positive or negative)</td><td>Negative</td><td>Negative</td></tr>
</table>
</td>
<td></td>
<td rowspan="3">watercourse or buffer area. This includes edge effects.
• Regular independent water quality monitoring should form part of operational procedures in order to identify pollution.
• Treatment of pollution identified should be prioritized accordingly.
• Operational activities should not impact on rehabilitated or naturally vegetated areas.
• Effective storm water management should be a priority during both construction and operational phase. This should be monitored as part of the EMP. High energy storm water input into the watercourses should be prevented at all cost. Changes to natural flow of water (surface water as well as water flowing within the soil profile) should be taken into account.
• Rehabilitation procedures must be as per the Wetland Specialists' Wetland Rehabilitation and Monitoring Plan.</td>
</tr>
<tr>
<td></td>
<td>Indirect impacts:
• Changing the quantity and fluctuation properties of the watercourse by for example restricting water flow.
• Changes in sediment entering and exiting the system.
• Introduction and spread of alien vegetation.
• Loss and disturbance of watercourse habitat and fringe vegetation impact ratings.
• Changes in water quality due to foreign materials and increased nutrients impact ratings.</td>
<td>Low</td>
</tr>
<tr>
<td></td>
<td>Cumulative impacts:</td>
<td>Low</td>
</tr>
</table>

<table>
<tr><td></td><td>

- Construction activities may result in cumulative impact to the water courses within the local catchments and beyond.
- Changes made to the bed or banks of watercourses unstable channel conditions may result causing erosion, meandering, increased potential for flooding and movement of bed material, which will result in property damage adjacent to and downstream of the site.

</td><td></td><td></td></tr>
<tr><td colspan="4">POTENTIAL INCREASE IN ALIENS</td></tr>
<tr><td></td><td>

Direct impacts:

- The unconsidered and haphazard placement and establishment of the proposed developments may result in higher significance impacts in areas indicated as watercourse buffer areas.

<table>
<tr><th>Description</th><th>Without Mitigation</th><th>With Mitigation</th></tr>
<tr><td>Probability</td><td>Improbable (2)</td><td>Very Improbable (1)</td></tr>
<tr><td>Duration</td><td>Permanent (5)</td><td>Permanent (5)</td></tr>
<tr><td>Extent</td><td>Limited to road</td><td>Limited to</td></tr>
</table>

</td><td>Low</td><td>

- An alien invasive management programme must be incorporated into the Environmental Management Programme.
- Ongoing alien plant control must be undertaken during construction and operational phases.
- Areas which have been disturbed will be quickly colonised by invasive alien species. An ongoing management plan must be implemented for the clearing/eradication of alien species during the operational phase.
- Monitor all sites disturbed by construction activities for colonisation by exotics or invasive plants and control these as they emerge.

</td></tr>
</table>

	shoulders (1)	road shoulders (1)	
Magnitude	Low (2)	Low (1)	
Significance	Low (16)	**Low (7)**	
Status (positive or negative)	Negative	Negative	
Indirect impacts: • Propagation of alien vegetation within the surrounds		**Very Low**	
Cumulative impacts: None		**None**	N/A
VISUAL IMPACTS			
Direct impacts: • The road upgrade will improve the current condition of the ranger road and will form a seamless part of the existing road network in the KNP. No negative impact on any observers are expected after the road is completed and taken into use. • The presence of new infrastructure, that allows access to tourists, are unfamiliar to the site, but compatible in appearance to the rest of the KNP. It will affect the secluded sense of place		**Low**	• Consider the placement of each proposed site as per the recommendations of the specialists. • The developments and associated infrastructure should be planned and laid out in such a way that the total footprint areas are minimised. Facilities and infrastructure will be consolidated and centralised wherever possible. • External lighting will be minimized so as to limit the disturbance of the natural nightlife and visual impact from the public park roads and sites across the Shingwedzi River

<table>
<tr>
<td></td>
<td>and pristine natural character of the study area, although limited to the sites where the infrastructure is located. The impact will negatively affect the natural character of the visual resource.

<table>
<tr><th>Description</th><th>Without Mitigation</th><th>With Mitigation</th></tr>
<tr><td>Probability</td><td>Highly Probable (4)</td><td>Probable (3)</td></tr>
<tr><td>Duration</td><td>Short term (2)</td><td>Short term (2)</td></tr>
<tr><td>Extent</td><td>Contained on site (1)</td><td>Contained on site (1)</td></tr>
<tr><td>Magnitude</td><td>Low (4)</td><td>Low (2)</td></tr>
<tr><td>Significance</td><td>Low (28)</td><td>Low (15)</td></tr>
<tr><td>Status (positive or negative)</td><td>Negative</td><td>Negative</td></tr>
</table>
</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Indirect impacts:
• The impact on observers will be neutral as this will be their first exposure to this particular area and all the infrastructure will be familiar and similar to the park’s existing infrastructure.</td>
<td>None</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td>Cumulative impacts:</td>
<td>None</td>
<td></td>
</tr>
</table>

<table>
<tr><td></td><td>None</td><td></td><td></td></tr>
<tr><td colspan="4">HERITAGE IMPACTS</td></tr>
<tr><td></td><td>Direct impacts:
• There is a small likelihood of unearthing heritage artefacts of significant importance.

<table><tr><th>Description</th><th>Without Mitigation</th><th>With Mitigation</th></tr><tr><td>Probability</td><td>2</td><td>2</td></tr><tr><td>Duration</td><td>2</td><td>2</td></tr><tr><td>Extent</td><td>2</td><td>2</td></tr><tr><td>Magnitude</td><td>4</td><td>4</td></tr><tr><td>Significance</td><td>13 (Low)</td><td>13 (Low)</td></tr><tr><td>Status (positive or negative)</td><td>Negative</td><td>Negative</td></tr></table></td><td>Low</td><td>• Should any heritage artefacts be exposed during operation of the area where the artefacts were discovered, SANParks Officials shall be notified as soon as possible.
• No artefacts may be removed off site unless authorized by the appropriate authority.</td></tr>
<tr><td></td><td>Indirect impacts:
None</td><td>None</td><td rowspan="2">N/A</td></tr>
<tr><td></td><td>Cumulative impacts:

None</td><td>None</td></tr>
<tr><td colspan="4">NOISE IMPACTS</td></tr>
<tr><td></td><td>Direct impacts:
• Acceptable general tourism buzz at</td><td>Low</td><td>• Put up general noise reduction signs</td></tr>
</table>

<table>
<tr><td></td><td>each development location

<table><tr><th>Description</th><th>Without Mitigation</th><th>With Mitigation</th></tr><tr><td>Probability</td><td>Probable (3)</td><td>Improbable (2)</td></tr><tr><td>Duration</td><td>Short-term (2)</td><td>Short-term (2)</td></tr><tr><td>Extent</td><td>Limited to Local Area (2)</td><td>Limited to Local Area (2)</td></tr><tr><td>Magnitude</td><td>Moderate (6)</td><td>Moderate (5)</td></tr><tr><td>Significance</td><td>30 (medium)</td><td>18 (low)</td></tr><tr><td>Status (positive or negative)</td><td>Negative</td><td>Negative</td></tr></table></td><td></td><td>• Establish noise attenuation structures near accommodation areas
• Maintenance activities should consider the guests' tranquillity.</td></tr>
<tr><td></td><td>Indirect impacts:
None</td><td>None</td><td>N/A</td></tr>
<tr><td></td><td>Cumulative impacts:

None</td><td>None</td><td></td></tr>
<tr><td colspan="4">TRAFFIC IMPACTS</td></tr>
<tr><td></td><td>Direct impacts:
• Increase in traffic on the ranger road to upgraded, S54 & H1-6 tourist roads and other internal KNP roads due to</td><td>Low</td><td>• Traffic speed signs must be established
• Sufficient maintenance of roads
• Establish a speed reduction awareness campaign</td></tr>
</table>

<table>
<tr>
<td></td>
<td>increased visitor numbers.
• New traffic pressure at the proposed entrance gate.
• Increased chance of road kills

<table>
<tr><th>Description</th><th>Without Mitigation</th><th>With Mitigation</th></tr>
<tr><td>Probability</td><td>Improbable (2)</td><td>Improbable (2)</td></tr>
<tr><td>Duration</td><td>Short-term (2)</td><td>Very short-term (1)</td></tr>
<tr><td>Extent</td><td>Limited to Local Area (2)</td><td>Limited to Local Area (1)</td></tr>
<tr><td>Magnitude</td><td>Moderate (5)</td><td>Minor (2)</td></tr>
<tr><td>Significance</td><td>18 (Low)</td><td>8 (Low)</td></tr>
<tr><td>Status (positive or negative)</td><td>Negative</td><td>Negative</td></tr>
</table>
</td>
<td></td>
<td>• No visitor vehicles allowed on the roads after between 06:00-18h00</td>
</tr>
<tr>
<td></td>
<td>Indirect impacts:
None</td>
<td>None</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td>Cumulative impacts:

• Provided that the proposed mitigation measures above are implemented, the traffic cumulative impact of the proposed activity is regarded to be insignificant.</td>
<td>Low</td>
<td></td>
</tr>
</table>

<table>
<tr><td></td><td></td><td></td><td></td></tr>
<tr><td colspan="4">AIR QUALITY IMPACTS</td></tr>
<tr><td></td><td>Direct impacts:
• General visitor and staff vehicle emissions. These emissions can be considered as insignificant.

<table>
<tr><th>Description</th><th>Without Mitigation</th><th>With Mitigation</th></tr>
<tr><td>Probability</td><td>Local (1)</td><td>Local (1)</td></tr>
<tr><td>Duration</td><td>Long-term (4)</td><td>Long-term (4)</td></tr>
<tr><td>Extent</td><td>Minor (2)</td><td>Small (1)</td></tr>
<tr><td>Magnitude</td><td>Highly probable (4)</td><td>Improbable (2)</td></tr>
<tr><td>Significance</td><td>Low (28)</td><td>Low (12)</td></tr>
<tr><td>Status (positive or negative)</td><td>Negative</td><td>Negative</td></tr>
</table></td><td>Low</td><td>• Staff vehicles must be sufficiently maintained and serviced.
• No visitor vehicles allowed on the roads after between 06:00-18h00</td></tr>
<tr><td></td><td>Indirect impacts:
• None anticipated</td><td>None</td><td rowspan="2">N/A</td></tr>
<tr><td></td><td>Cumulative impacts:

• None anticipated</td><td>None</td></tr>
</table>

SOCIO-ECONOMIC POSITIVE IMPACTS				
	Direct impacts: • A new convenient and less cost associated entrance into the KNP for the Giyani & Malamulele Corridor target market. • Stimulation of the region's tourism industry. • A new "feel good" and explorative feeling to non-first time visitors to the KNP. • Local businesses will have the opportunity to supply produce and services to the proposed tourism infrastructure. • The development will also contribute to an increase in SANParks total employment. The Shangoni Gate development will provide additional jobs to two very poor neighbouring communities. This excludes the workforce needed for the construction, which will provide around 194 temporary jobs.	**Low Positive impact**	**Low Positive impact**	**Enhancement:** • Run a good marketing campaign about the new developments. • Introduce educational activities for all ages at the education centre at the Reception facility. • Establish development platforms for the local employed staff. • Local employment should as far possible be used for operation. • Contract local suppliers and contractors as far as possible for maintenance and operational works to be commissioned. • Promote the local indigenous culture and art.

<table>
<tr><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td>

Indirect impacts:

- A good productive tourism destination that is in sync with the local community and surroundings.
- Local employed people during the construction phase may learn new skills thereby making them more employable in the future.
- Impacts on family and community relations.

<table>
<tr><th>Description</th><th>Without Mitigation</th><th>With Mitigation</th></tr>
<tr><td>Probability</td><td>Local-Regional (2)</td><td>Local-Regional (2)</td></tr>
<tr><td>Duration</td><td>Short-term (1)</td><td>Short-term (1)</td></tr>
<tr><td>Extent</td><td>Small (1)</td><td>Low (4)</td></tr>
<tr><td>Magnitude</td><td>Probable (3)</td><td>Probable (3)</td></tr>
<tr><td>Significance</td><td>Low (12)</td><td>Low (21)</td></tr>
<tr><td>Status (positive or negative)</td><td>Positive</td><td>Positive</td></tr>
</table>

</td><td>Positive Impact</td><td>Positive Impact</td><td>

- Run a good marketing campaign about the new developments
- Introduce educational activities for all ages at the education centre at the Reception facility.
- Establish development platforms for the local employed staff.
- Local employment should as far possible be used for operation phase.
- Contract local suppliers and contractors for maintenance work to be commissioned.
- Promote the local indigenous culture and art.
- The developer should implement a training and skills development enhancement programme for local staff during the operation phase.
- The aim of the programme should be to maximise the number of South African’s and locals employed during the operational phase of the project.

</td></tr>
<tr><td></td><td>***Cumulative impacts:***
• A good productive tourism</td><td>Positive Impact</td><td>Positive Impact</td><td>Enhancement:
• Run a good marketing campaign about the new</td></tr>
</table>

<table>
<tr><td></td><td>destination that is in sync with the local community and surroundings.</td><td></td><td></td><td>developments
• The developer should implement a training and skills development enhancement programme for local staff during the operation phase.
• The aim of the programme should be to maximise the number of South African's and locals employed during the operational phase of the project.</td></tr>
<tr><td></td><td colspan="4">SOCIO-ECONOMIC NEGATIVE IMPACTS</td></tr>
<tr><td></td><td>Direct impacts:
• Due to low personal income and a lack in housing supply, squatting might increase near the proposed gate due to the perception of work. Demand for subsidy and low cost rentals is expected to increase within the local economy.
• Increased risk of stock theft by staff.
• Staff using nearby bushes for ablution.
• Transgressions by staff members
<table>
<tr><th>Description</th><th>Without Mitigation</th><th>With Mitigation</th></tr>
<tr><td>Probability</td><td>Probable (3)</td><td>Probable (3)</td></tr>
</table></td><td>Low Negative impact</td><td>Low Negative impact</td><td>Negative impacts mitigation
• Implement mitigation measures to monitor and control the activities of staff and for the control of nuisance impacts.
• Access to the site must be strictly controlled.
• Entry points and access routes to the sites must be clearly marked and traffic limited to those areas as far as possible.
• Mechanisms should be implemented to deal with people seeking employment in order to minimise any issues related to the influx of people.
• Train some staff as fire marshals.
• Adequate sanitary and ablutions facilities must be provided for staff as standard operation practice.
• All staff is to use the toilets at all times rather than informal defecation in the environment.
• Smoking is only allowed in designated safe smoking areas.</td></tr>
</table>

	Duration	Short-term (2)	Very short-term (1)		
	Extent	Limited to Local Area (2)	Limited to Local Area (1)		
	Magnitude	Moderate (6)	Small (0)		
	Significance	**30 (medium)**	**6(Low)**		
	Status (positive or negative)	Negative	Negative		
	Indirect impacts: • A good productive tourism destination that is in sync with the local community and surroundings. • Local employed people during the construction phase may learn new skills thereby making them more employable in the future. • Impacts on family and community relations.		**Negative impact**	**Negative impact**	**Negative impacts mitigation:** • The developer should implement a training and skills development enhancement programme for locals during the construction phase. The aim of the programme should be to maximise the number of South African's and locals employed during the operational phase of the project. • Access to the construction site must be strictly controlled. • Entry points and access routes to the sites must be clearly marked and traffic limited to those areas as far as possible. • Mechanisms should be implemented to deal with people seeking employment in order to minimise any issues related to the influx of people. • Adequate sanitary and ablutions facilities must be provided for staff as standard operation practice.

	Cumulative impacts: • Resistance to the project and non-cooperation by local communities.	**Negative impact**	**Negative impact**	**Negative impacts mitigation:** • Local employment should as far possible be used for operation. • Contract local suppliers and contractors for maintenance and operational work to be commissioned. • Involve local communities in the project beneficiation initiatives.

DECOMMISSIONING AND CLOSURE PHASE

A summary and anticipated significance of the potential direct, indirect and cumulative impacts that are likely to occur as a result of the Decommissioning and Closure Phase of the entire proposed Shangoni Gate Development.

Activity	**Impact summary**	**Significance (after mitigation)**	**Proposed mitigation**
Decommissioning and closure phases - The decommissioning phase would entail the dismantling of the Shangoni entrance gate, Bridge over Shingwedzi River, Reception Facility, Picnic sites, Camping sites, Tented Sites, associated roads and the transportation of rubble from the site. It is anticipated that the Shangoni Gate development will be dismantled and removed and a rehabilitation plan (removal of all foreign material from park and provision of recycling plans) approved by the relevant authorities will be implemented. Decommissioning and closure phase has not been considered as part of this application as the end use of the development and required decommissioning activities are not known at this time. In addition, the current environmental baseline conditions may change overtime; it is therefore not possible to predict the future potential environmental impacts. In addition, it is unlikely that decommissioning will be contemplated due to the nature of the development. However the closure and decommissioning require a separate EIA process. If decommissioning phase is considered in the future, the developer will undertake the required actions as prescribed by the legislation at the time and comply with all relevant requirements administered by any relevant authority and competent authority at that time.			

NO-GO ALTERNATIVE			
Activity	**Impact summary**	**Significance (after mitigation)**	**Proposed mitigation**
Construction, operation and decommissioning phase of the Shangoni Gate Development.	***Direct impacts:*** • **Ecological impacts**: the no-go option would result in no ecological impact occurring. • **Social impacts**: The no-go option would result in job opportunities not being realised resulting in further unemployment in the adjacent village communities in the area. The loss of tourism potential of the park will be lost • **Surface & Ground water (Watercourses)**: The watercourse character of the site area in the park would remain unchanged. • **Visual impacts:** The visual character of the area would remain unchanged. • **Heritage impacts**: The do-nothing alternative would have no impact on the heritage environment as no development would be undertaken which could potentially impact upon heritage resources.	**Medium**	• The no-go option would result in a negative social cost due to the loss of construction phase employment opportunities and operational phase jobs coupled with the loss of eco-tourism potential. This could be mitigated by implementing the proposed development. • The no go option would result in the Giyani & Malamulele corridors not having an access gate into the KNP thus stunting the potential tourism economic and business opportunities.

	Indirect impacts: • The No-Development option would represent a lost opportunity for SANParks to supplement the existing access points into the park by developing the Shangoni Gate. This would satisfy the current demand statistics that make the development of the Shangoni Gate viable.	**Low**	• Implementation of the proposed project
	Cumulative impacts: • The cultural tourism potential of the adjacent areas outside the park will not be realised and the current lack of employment will continue and thus not help achieve South Africa's objective of positive rural development.	**Low**	• Implementation of the proposed project

A complete impact assessment in terms of Regulation 19(3) of GN 733 must be included as Appendix F.

2. ENVIRONMENTAL IMPACT STATEMENT

Taking the assessment of potential impacts into account, please provide an environmental impact statement that summarises the impact that the proposed activity and its alternatives may have on the environment after the management and mitigation of impacts have been taken into account, with specific reference to types of impact, duration of impacts, likelihood of potential impacts actually occurring and the significance of impacts.

Element/Factor	Observation/Comments

Vegetation impact	Although most plant communities at the proposed gate locations and for the reception offices as well as along the proposed roads were in a good condition, representing natural, close to pristine vegetation, most are widespread, not rare and not threatened. Furthermore, only limited vegetation will have to be removed in order to broaden the roads, and road reserves. Limited numbers of nationally protected trees do occur within this zone. Even though some vegetation will be destroyed, in general the impact of the proposed development on this vegetation in the broad sense, is considered to be low after mitigation. All sites, preferred and alternative, suggested for the picnic sites, tented camps and camping sites occur within floodplain of the Shingwedzi River. These ecosystems and vegetation are regarded to be ecologically sensitive. These areas may also be occasionally flooded, resulting in the specific plant species composition found in the riparian zone and floodplain areas. Several large and valuable trees occur within these areas. However, the suggested low impact development in these areas should not affect any of these trees, if the sites are planned and developed in such a way that these trees are protected. It is also suggested that any more permanent infrastructure, e.g. ablution blocks, community kitchen and wash-up areas, staff accommodation, parking areas etc are located in the Mopaneveld adjacent to but outside the floodplain area. Should these development procedures be followed, the impact on this sensitive area and its vegetation should be fairly low after mitigation. In general, from a vegetation and flora point of view, the proposed development included in the Shangoni Initiative is supported as the proposed development will have a Low vegetation impact on the overall site footprint

	after the necessary mitigation measures are implemented.
Fauna and habitat Impact	The conservation status of the study area to be affected by the development and adjacent land is rated as Medium-High, i.e. Land where sections are disturbed but that is still ecologically sensitive to development/disturbance. The numerical significance (impact) values for the tourist amenities and for the upgraded road fall within the Moderate Environmental Significance class, in the case of public amenities only marginally. In order not to risk disturbances to three breeding vulture pairs by noise and movements in a public amenity, this basic assessment recommends that the [i.e. **Tented Camp (Alt 1)** and **Camping Site (Alt 1)**] in the vicinity of the vulture nests be most preferred for development over the Tented Camp (Preferred Alternative) and Camping Site (Preferred Alternative), in order not to risk disturbances to three breeding White Backed vulture pairs by noise and movements in a public amenity. However, the other alternatives for the rest of the entire proposed Shangoni Gate development can be developed in any combination for any of the stated purposes. The conservation status of vertebrate species will not be jeopardized, given

	allowances for the three vulture nests. As such the proposed development will have a Low vegetation impact on the overall site footprint provided that the necessary that the recommended White Backed Vulture nest buffer is respected.
Surface and ground water (Watercourses) Impact	The main river that is likely to be impacted by the proposed activities is the Shingwedzi River. The Shingwedzi River is a long meandering ephemeral non-perennial river that runs parallel to the proposed road for long sections and is also adjacent to the various proposed new camps. The Shingwedzi River is classified as a fourth order river and numerous lower order rivers are likely to be impacted by the proposed road construction. The Shingwedzi River is classified as a non-perennial river, ephemeral in nature. Non-perennial ephemeral rivers are defined as rivers that have no active water flow for between 3 – 6 months. A large number of smaller non-perennial rivers are also likely to be impacted by the proposed activities. The majority of these smaller rivers are also classified as non-perennial rivers although they are more likely to be episodic in nature. Episodic rivers are defined as rivers without active water flow for 9 months of the year or more. Both Ephemeral Rivers and Episodic Rivers are further characterised by high variability and high unpredictability as is evident in the occasional flooding of the Shingwedzi River. There are an estimated 52 episodic streams and 9 ephemeral rivers that either are directly within the development footprint or within 500 m of the development footprint. In this instance the lower stream orders are usually episodic and only have water flow during rainfall events and the higher stream orders have a higher perennial water flow. Another important feature of the Shingwedzi River are small pools of water which remain in the river bed during dry months. These pools are essential for the numerous wildlife

	species in the park and care should be taken to ensure water from lower stream orders are able to flow freely, without artificial barriers, into the higher order rivers to ensure regular water entering the system during rainfall events. Should these development procedures be followed, the impact on this sensitive area and its vegetation should be fairly moderate after mitigation measures have been implemented in the construction phase.
Heritage and Cultural Impact	The cultural landscape qualities of the study region essentially consist of a single component, being made up of a limited Stone Age and Iron Age occupation. The most probable reason for this low occupation of the region is the fact that the environment, being made up of Mopane Bushveld, was not conducive to settlement by early agro-pastoralists. Other contributing factors are the prevalence of malaria and nagana, the latter a sickness that prevents the keeping of cattle. This absence of human settlement in the area is clearly indicated by the work done by Meyer (1987) who during his survey recorded no archaeological sites on this section of the Shingwedzi River. Similarly, Pienaar (2007) also indicate that, with the exception of one site, Red Rock or Ribye-ra-Khubyane, there are no settlements or other heritage sites along this section of the river. A very limited number of stone tools dating the Early and Later Stone Age were identified as surface material in isolated spots. As all the Stone Age material was identified on the surface in areas where sheet erosion is taking place, the material is viewed to have very little significance, as it is not in its original context any more. A geological site, revered by local Black people, occurs a short distance off the access road. It is known as Ribye-ra-Khubyane, with reference to a god

	named Khubyane. It is also referred to as Red Rock. However, this area is located some distance off from the road that is to be upgraded and would therefore not be impacted on by the proposed development. From a heritage point of view it is recommended that the proposed development be allowed to continue, on condition of acceptance of the proposed mitigation measures.
Visual and/or aesthetic elements	For the most part, the project is located in areas that are secluded and are not visible from any public viewpoints. No negative impacts will be experienced by observers during the construction of the Shangoni gate, Shingwedzi bridge, reception and the rustic tented camp site, camping site and picnic site. The only part of the project that will have any impact on tourists and KNP staff will be the ranger road upgrade that will be visible from the H1-6 and S52. Intrusive views may only be experienced during the construction phase when earthworks and construction equipment are active on the road. The most significant impact will be on the character of the landscape. Currently, the various sites are inaccessible to tourists and are located in a fairly secluded part of the park. A pristine natural character prevails and is unblemished by any human intervention. With the introduction of the various project components, the individual sites will be developed to accommodate tourist activity. This will affect the untouched natural character, but the impacts are only limited to the individual sites.
Social and socio-economic impact	The envisaged total investment in construction costs for the entire Shangoni Development (incl. external related developments) of approximately R43.8

	million, could create an additional R86.1 million in new business sales, R19.4 million in additional GGP, as well as an additional 194 once-off employment opportunities. Total impact includes direct, indirect as well as induced effects. If the proposed Shangoni Gate Development were not to occur, the above benefits in terms of additional business sales, GGP, employment, as well as rates and taxes payable to the local fiscus, would be lost to the local, district and provincial economies.
Possible degradation and long-term effects on the environment.	No long term effect after mitigation on the environment is expected. Mitigation measures should be employed to ensure no significant degradation of the environment takes place.
Pollution released into the environment	The proposed development is not expected to result in long term pollution of the environment. Mitigation measures are proposed to ensure pollution is restricted to short term localised effects.
For detailed assessment of each layout alternative and impacts in terms of duration of impacts, likelihood of potential impacts actually occurring and the significance of impacts, please refer to **Appendix F** attached within this Basic Assessment Report.	

Table 1: Summary of comparison of specialist findings for each of the respective Layout Alternatives (✔ depicting suitability of the site for the respective development and O depicting non suitability of the site).

Shangoni Entrance Gate						
Specialists	**Preferred Alternative**	**Alternative 1**	**Alternative 2**	**Preference of Alternatives**		**EAP's comment**
				Preferred	**Least Preferred**	

Vegetation impact	✔	✔	✔	Equally suitable provided that mitigation measures are implemented.		No fatal environmental flaws identified, therefore the development is recommended to proceed with prescribed mitigation measures outlined by this Basic Assessment Report, Environmental Management Programme and Specialist mitigations.
Fauna & Habitat impact	✔	✔	✔	Equally suitable provided that mitigation measures are implemented.		
Watercourse Impact	✔	✔	✔	Equally suitable provided that mitigation measures are implemented.		
Heritage Impact	✔	✔	✔	Equally suitable provided that mitigation measures are implemented.		
Visual Impact	✔	✔	✔	Equally suitable provided that mitigation measures are implemented.		
Socio-economic	✔	✔	✔	Equally suitable provided that mitigation and enhancement measures are implemented.		
Outside park considerations linked to the Entrance Gate position.	**Engineering and technical perspective related to the outside tourism corridor road developments**					
	Preferred Alternative	**Alternative 1**	**Alternative 2**	**Preference of Alternatives**		**EAP's comment**
				Preferred	**Least Preferred**	

Suitability with outside tourism corridor road development (Technical suitability).	✔	O	O	Preferred Alternative	Alternative 1 & Alternative 2	The Entrance Gate (Preferred Alternative) ideally placed as it is linked to the planned road developments commissioned by Road Agency Limpopo (RAL) in which entails the creation of the Malamulele and Giyani tourism corridors. Also, from a technical and engineering perspective of the pre-feasibility studies that have taken place, this position is ideal. This alternative is ideal for the positioning of the gate to reach the desired objective. Some sections of the RAL commissioned road developments have already commenced and are in line with this preferred alternative gate position. It is important to note that the position of the Preferred Gate position alternative is profoundly reliant on the current outside road developments as the current planning RAL has conducted has taken into consideration this Entrance Gate (Preferred Alternative).
Engineering services Pre-feasibility study suitability.	✔	O	O	Preferred Alternative	Alternative 1 & Alternative 2	From a technical and engineering perspective, the planned road leading to the Entrance Gate (Preferred Alternative) will start from the junction where the two road corridors meet to up until the gate position (Last stop to Shangoni).
Suitability with RAL's tourism corridor road	✔	O	O	Preferred Alternative	Alternative 1 & Alternative 2	The position of the Entrance Gate (Preferred Alternative) is profoundly reliant on the current outside road developments

development plans and financial budget.						as the current planning and budget allocation RAL has conducted has taken into consideration this Entrance Gate (Preferred Alternative).
Outside park considerations linked to the Entrance Gate position.	**Socio-economic considerations dependent on the outside tourism corridor road developments**					
	Preferred Alternative	**Alternative 1**	**Alternative 2**	**Preference of Alternatives**		**EAP's comment**
				Preferred		
In line with Shangoni Gate Development Forum (Key Stakeholder) gate position decision.	✔	O	O	Preferred Alternative	Alternative 1 & Alternative 2	Entrance Gate (Preferred Alternative) position is in line with the decision taken by the members of the Shangoni Gate Development Forum (Key Stakeholder) regarding the final agreed Shangoni gate position (see **Appendix EJ**) on 05 June 2013.
Employment opportunities to the local communities. .	✔	O	O	Preferred Alternative	Alternative 1 & Alternative 2	If the Entrance Gate (Preferred Alternative) position is not authorised it will mean the opportunity to have the tourism corridor road developments commissioned by RAL will cease due to the fact that any other position is not in line with RAL's current planning and budget and will therefore result in the high likelihood of not being included in the short to medium term

						budget and plans of RAL as they have other regions to develop in the province. As a result, it would mean employment opportunities would be lost to the local communities.
Business opportunities for local enterprises	✔	O	O	Preferred Alternative	Alternative 1 & Alternative 2	If the Entrance Gate (Preferred Alternative) position is not authorised it will mean the opportunity to have the tourism corridor road developments commissioned by RAL will cease due to the fact that any other position is not in line with RAL's current planning and budget and will therefore result in the high likelihood of not being included in the short to medium term budget and plans of RAL as they have other regions to develop in the province. As a result, it would mean business opportunities would be lost to the local enterprises.
Much needed economic stimulation in the region.	✔	O	O	Preferred Alternative	Alternative 1 & Alternative 2	If the Entrance Gate (Preferred Alternative) position is not authorised it will mean the opportunity to have the tourism corridor road developments commissioned by RAL will cease due to the fact that any other position is not in line with RAL's current planning and budget and will therefore result in the high likelihood of not being included in the short to medium term budget and plans of RAL as they have other regions to develop in the province.

						As a result, it would mean the much needed economic stimulation in the region will not take place.

It must further be noted that the **Preferred gate alternative** is more feasible in regards to its development as compared to the other gate alternatives by virtue of being linked to the planned outside road developments commissioned by Road Agency Limpopo (RAL) (see **Appendix J10**), these developments are as follows:

- Development of Road D3745 from Malamulele to the Tourist Hub intersection/crossing;
- Development of Road D3641 that links Road D3745 and existing Road D3799;
- The Re-alignment of Road D3799 to link with the Tourism Hub intersection/crossing.

Please note that the Tourism Hub intersection/crossing themed "the last stop before Shangoni" is a strategic tourism location as it will be the junction where tourist inflows (Giyani and Malamulele corridors) to the Shangoni gate will merge and lead to the proposed gate.

Some of these roads have commenced with construction; Road D3745 from Malamulele to the Tourist Hub intersection/crossing and Road D3641 are 90% complete (see **Appendix E6h** Minutes of the Shangoni Gate Technical Committee meeting held on 18 0ctober 2016).

One must also take note that RAL has already put forward a budget and planning for the current and next financial year based on the **Entrance Gate (Preferred Alternative)** position**.** If the **Entrance Gate (Preferred Alternative)** position is not selected by SANParks then opportunity to have the tourism corridor road developments commissioned by RAL will cease due to the fact that any other position is not in line with RAL's current planning and budget and will therefore result in the high likelihood of not being included in the short to medium term budget and plans of RAL as they have other regions to develop in the province.

However, with regard to the entrance gate position, this basic assessment recommends that both the **Entrance Gate (Preferred Alternative)** be authorised for development as this alternative presents no fatal environmental flaw and will be beneficial from a socio-economic perspective. Also, from engineering and technical evaluations that have taken place during the pre-feasibility stage, the **Entrance Gate (Preferred Alternative)** is supported over the other two entrance gate alternatives.

Reception facility				**EAP's comment**
Specialists	**Preferred**	**Alternative 1**	**Preference of Alternatives**	

	Alternative		Preferred	Least Preferred	
Vegetation impact	✔	✔	Equally suitable provided that mitigation measures are implemented.		No fatal environmental flaws identified, therefore the development is recommended to proceed with prescribed mitigation measures outlined by this Basic Assessment Report, Environmental Management Programme and Specialist mitigations.
Fauna & Habitat impact	✔	✔	Equally suitable provided that mitigation measures are implemented.		
Watercourse Impact	✔	✔	Equally suitable provided that mitigation measures are implemented.		
Heritage Impact	✔	✔	Equally suitable provided that mitigation measures are implemented.		
Visual Impact	✔	✔	Equally suitable provided that mitigation measures are implemented.		
Socio-economic	✔	✔	Equally suitable provided that mitigation and enhancement measures are implemented.		

Picnic Sites	

Specialists	**Preferred Alternative**	**Alternative 1**	**Alternative 2**	**Preference of Alternatives**		**EAP's comment**
				Preferred	**Least Preferred**	
Vegetation impact	✔	✔	✔	Equally suitable provided that mitigation measures are implemented.		No fatal environmental flaws identified, therefore the development is recommended to proceed with prescribed mitigation measures outlined by this Basic Assessment Report, Environmental Management Programme and Specialist mitigations.
Fauna & Habitat impact	✔	✔	✔	Equally suitable provided that mitigation measures are implemented.		
Watercourse Impact	✔	✔	✔	Equally suitable provided that mitigation measures are implemented.		
Heritage Impact	✔	✔	✔	Equally suitable provided that mitigation measures are implemented.		
Visual Impact	✔	✔	✔	Equally suitable provided that mitigation measures are implemented.		
Socio-economic	✔	✔	✔	Equally suitable provided that mitigation and enhancement measures are implemented.		

Tented Camp sites					**EAP's comment**
Specialists	**Preferred Alternative**	**Alternative 1**	**Preference of Alternatives**		

			Preferred	Least Preferred	
Vegetation impact	✔	✔	Equally suitable provided that mitigation measures are implemented.		No fatal environmental flaws identified, therefore the development is recommended to proceed with prescribed mitigation measures outlined by this Basic Assessment Report, Environmental Management Programme and Specialist mitigations.
Fauna & Habitat impact	O	✔	Alternative 1	Preferred Alternative	Alternative 1 is the most preferred alternative for development in order not to risk disturbances to three breeding White Backed vulture pairs by noise and movements in a public amenity.
Watercourse Impact	✔	✔	Equally suitable provided that mitigation measures are implemented.		No fatal environmental flaws identified, therefore the development is recommended to proceed with prescribed mitigation measures outlined by this Basic Assessment Report, Environmental Management Programme and Specialist mitigations.
Heritage Impact	✔	✔	Equally suitable provided that mitigation measures are implemented.		
Visual Impact	✔	✔	Equally suitable provided that mitigation measures are implemented.		
Socio-economic	✔	✔	Equally suitable provided that mitigation and enhancement measures are implemented.		

Camping Sites					EAP's comment
Specialists	**Preferred Alternative**	**Alternative 1**	**Preference of Alternatives**		
			Preferred	**Least Preferred**	
Vegetation impact	✔	✔	Equally suitable provided that mitigation measures are implemented.		No fatal environmental flaws identified, therefore the development is recommended to proceed with prescribed mitigation measures outlined by this Basic Assessment Report, Environmental Management Programme and Specialist mitigations.
Fauna & Habitat impact	O	✔	Alternative 1	Preferred Alternative	Alternative 1 is the most preferred alternative for development in order not to risk disturbances to three breeding White Backed vulture pairs by noise and movements in a public amenity.
Watercourse Impact	✔	✔	Equally suitable provided that mitigation measures are implemented.		No fatal environmental flaws identified, therefore the development is recommended to proceed with prescribed mitigation measures outlined by this Basic Assessment Report, Environmental Management
Heritage Impact	✔	✔	Equally suitable provided that mitigation measures are		

			implemented.	Programme and Specialist mitigations.
Visual Impact	✔	✔	Equally suitable provided that mitigation measures are implemented.	
Socio-economic	✔	✔	Equally suitable provided that mitigation and enhancement measures are implemented.	

Gravel road to be upgraded and loop road		**EAP's comment**
Specialists	**New tarred Access Road and its associated bridges (Only one Alternative)**	
Vegetation impact	✔	No fatal environmental flaws identified, therefore the development is recommended to proceed with prescribed mitigation measures outlined by this Basic Assessment Report, Environmental Management Programme and Specialist mitigations.
Fauna & Habitat impact	✔	
Watercourse Impact	✔	
Heritage Impact	✔	
Visual Impact	✔	

Socio-economic	✔	

Please note: No Alternatives have been considered for the road alignment upgrade due to the fact that 90% of the gravel ranger road already exists. Please note that the bridge construction is associated with the gravel road to be upgraded.

Alternative A (preferred alternative)

Alternative B

Alternative C

No-go alternative (compulsory)

The No-go option implies that the proposed Shangoni Development does not proceed, and will thus comprise of SANParks not going ahead with the proposed Shangoni development. Ideally, this would be the preferred alternative as the status quo of the environment remains unchanged; however, it would imply that the surrounding nearby outside communities will not benefit from the socio-economic benefits associated with the proposed development.

The no-development option also represents a lost opportunity in terms of the employment and business opportunities (construction and operational phase) associated with the proposed Shangoni Development.

The 'Do nothing' alternative is, therefore, not a preferred alternative.

SECTION E. RECOMMENDATION OF PRACTITIONER

Is the information contained in this report and the documentation attached hereto sufficient to make a decision in respect of the activity applied for (in the view of the environmental assessment practitioner)?	YES ✔	NO

If "NO", indicate the aspects that should be assessed further as part of a Scoping and EIA process before a decision can be made (list the aspects that require further assessment).

N/A

If "YES", please list any recommended conditions, including mitigation measures that should be considered for inclusion in any authorisation that may be granted by the competent authority in respect of the application.

This Basic Assessment Report has provided a comprehensive assessment of the potential environmental impacts associated with the proposed development of the Shangoni Gate and associated infrastructure within the Kruger National Park. The construction of the proposed development should be implemented in conjunction with the EMPr mitigation measures, recommended mitigations of this BAR and Specialist mitigations to adequately mitigate and manage potential impacts associated with construction and operational activities. The construction activities and relevant rehabilitation of disturbed areas should be monitored against the approved EMPr, Specialist studies, the Environmental Authorisation and all other relevant environmental legislation.

It is concluded that the impact of the development will be generally low if the recommended mitigation measures are implemented. The footprint of the entrance gate and reception facility will be one hectare. The fenced sites for the picnic site, tented rest camp and camping will be one hectare respectively. Collectively these will spatially be insignificant when measured against the total landmass of the entire Kruger National Park, apart from the fact that environmental damage will be limited to land-clearing of bush and undergrowth. The upgrade of the existing ranger's gravel road (including bridges) will slightly increase its impact. The existing road (and by implication the upgraded road under contention) does not impinge on the riparian zone except at the bridge crossings construction extent.

The findings of the specialists assessments also as summarised in Section D (2) (Environmental Impact Statement) of this report indicate that there are no significant environmental fatal flaws associated with the proposed development and thus, with the application of effective mitigation measures, the proposed project is regarded to be feasible and sustainable. There are no negative environmental, economic or social impacts of substantive significance that would prevent this proposed development.

As mentioned before, it must be noted that the **Gate Entrance/position (Preferred Alternative)** is more feasible in regards to its development as compared to the other gate alternatives by virtue of being linked to the planned outside road developments commissioned by Road Agency Limpopo (RAL) these developments are as follows:

- Development of Road D3745 from Malamulele to the Tourist Hub intersection/crossing;
- Development of Road D3641 that links Road D3745 and existing Road D3799;

- The Re-alignment of Road D3799 to link with the Tourism Hub intersection/crossing.

The Tourism Hub intersection/crossing themed "the last stop before Shangoni" is a strategic tourism location as it will be the junction where tourist inflows (Giyani and Malamulele corridors) to the Shangoni gate will merge and lead to the proposed gate location/position. Some of these roads have commenced with construction; Road D3745 from Malamulele to the Tourist Hub intersection/crossing and Road D3641 are 90% complete.

This basic assessment would like to bring to your attention that RAL has already put forward a budget and planning for the current and next financial year based on the Gate Entrance/position (Preferred Alternative) position and in some sections has already commenced with construction. If Gate Entrance/position (Preferred Alternative) is not selected by the Department then opportunity to have the tourism corridor road developments commissioned by RAL will cease due to the fact that any other positions are not in line with RAL's current planning and budget and will therefore result in high likelihood of not being included in the short to medium term budget and plans of RAL as RAL has other regions to develop in the province.

With regard to the entrance gate position, this basic assessment recommends that **Gate Entrance/position (Preferred Alternative)** be authorised for development as this alternative presents no fatal environmental flaw and will be beneficial from a socio-economic perspective. Also, from engineering and technical evaluations that have taken place during the pre-feasibility stage, the **Gate Entrance/position (Preferred Alternative)** is supported over the other two entrance gate position alternatives.

As such, it is the recommendation of this basic assessment that the proposed development of the Shangoni Gate and associated infrastructure be authorised on conditions set out by the Department of Environmental Affairs. However, with regard to the entrance gate position, this basic assessment recommends that both the **Gate Entrance/position (Preferred Alternative)** be authorised for development as this alternative presents no fatal environmental flaw and will be in line with the related outside tourism corridor road developments.

This basic assessment also recommends that the **gravel road to be upgraded (including the loop road and associated bridge (high level and low level crossings**) and **Reception facility (Preferred Alternative)** and **Picnic site (Preferred Alternative)** be authorised as they do not present any fatal flaws. This basic assessment also recommends that **Tented Camp site (Alternative 1)** and **Camping site (Alternative 1)** be authorised as they fall outside of the avifauna specialist recommended 500 m buffer of the *Critically Endangered* White Backed Vulture nests.

<u>In summary the recommended alternatives proposed to be authorised by DEA are as follows:</u>

1. <u>Gate Entrance/position</u>

- **Preferred Alternative**

2. Reception Facility
- **Preferred Alternative**

3. Picnic Site
- **Preferred Alternative**

4. Tented Camp
- **Alternative 1**

5. Camping Site
- **Alternative 1**

6. New tarred Access Road and its associated high level and low level bridge crossings (gravel road to be upgraded including loop road).

Is an EMPr attached?	YES✔	NO

The EMPr must be attached as Appendix G.

The details of the EAP who compiled the BAR and the expertise of the EAP to perform the Basic Assessment process must be included as Appendix H.

If any specialist reports were used during the compilation of this BAR, please attach the declaration of interest for each specialist in Appendix I.

Any other information relevant to this application and not previously included must be attached in Appendix J.

_____
NAME OF EAP

_____ _____
SIGNATURE OF EAP DATE

SECTION F: APPENDIXES

The following appendixes must be attached:

Appendix A: Maps

Appendix B: Photographs

Appendix C: Facility illustration(s)

Appendix D: Specialist reports (including terms of reference)

Appendix E: Public Participation

Appendix F: Impact Assessment

Appendix G: Environmental Management Programme (EMPr)

Appendix H: Details of EAP and expertise

Appendix I: Specialist's declaration of interest

Appendix J: Additional Information