LIMPOPO
PROVINCIAL GOVERNMENT
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF
ECONOMIC DEVELOPMENT, ENVIRONMENT & TOURISM

BASIC ASSESSMENT REPORT - EIA REGULATIONS, 2014

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.

File Reference Number:	
	(For official use only)
NEAS Reference Number:	
Date Received:	
Due date for acknowledgement:	
Due date for acceptance:	
Due date for decision	

Kindly note that:

1. The report must be compiled by an independent Environmental Assessment Practitioner.

2. 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.

3. Where applicable **tick** the boxes that are applicable in the report.

4. 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 Department of Economic Development, Environment and Tourism as the competent authority (Department) for assessing the application, it may result in the rejection of the application as provided for in the regulations.

5. An incomplete report may be returned to the applicant for revision.

6. Unless protected by law, all information in the report will become public information on receipt by the department. Any interested and affected party should be provided with the information contained in this report on request, during any stage of the application process.

7. The Act means the National Environmental Management Act (No. 107 of 1998) as amended.

8. Regulations refer to Environmental Impact Assessment (EIA) Regulations of 2014.

9. The Department may require that for specified types of activities in defined situations only parts of this report need to be completed. No faxed or e-mailed reports will be accepted.

10. This application form must be handed in at the offices of the Department of Economic Development, Environment and Tourism:-

Postal Address:	**Physical Address**:
Central Administration Office Environmental Impact Management P. O. Box 55464 **POLOKWANE** 0700	Central Administration Office Environmental Affairs Building 20 Hans Van Rensburg Street / 19 Biccard Street **POLOKWANE** 0699
Queries should be directed to the Central Administration Office: Environmental Impact Management:- **For attention:** Mr E. V. Maluleke **Mobile:** 082 947 7755 **Email:** malulekeev@ledet.gov.za	

View the Department's website at http://www.ledet.gov.za/ for the latest version of the documents.

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" or appointment of a specialist for each specialist thus appointed:

Any specialist reports must be contained in Appendix D.

1. ACTIVITY DESCRIPTION

Describe the activity, which is being applied for, in detail[1]:

Kaingo Reserve (Pty) Ltd, Landowner and Management Authority of Kaingo Game Reserve (a declared Private Nature Reserve in terms of the NEMPAA, 2003 (Act No. 57 of 2003)) has acquired a neighbouring property on the opposite bank of the Mokolo River, called Mokolo River Private Nature Reserve. LEDET is in the process of merging Mokolo River Private Nature Reserve with Kaingo Game Reserve as it will function as a single declared Private Nature Reserve. Access to the enlarged property is required for eco-tourism activity and by the Management Authority to fulfil its conservation mandate during the day-to-day operations or management of the declared Nature Reserve. There is currently one existing sand bed crossing that is only accessible during the dry winter months of the year. For the remainder of the year, access to the neighbouring property entails an extended round trip that requires any driver to exit Kaingo Game Reserve and then enter the newly acquired Mokolo River Private Nature Reserve section via a district gravel road. The proposal therefore is to construct a low-level crossing further downstream (on a site selected for its favourable geotechnical aspects without compromising environmental integrity) to ensure year-round connectivity between two properties that form part of the Kaingo Game Reserve, specifically the Farm Mokolo River Private Nature Reserve 660 KQ and the Farm Laurel 159 KQ. The proposed activity (the development of a low-level crossing) will negate the unnecessary and wasteful expenditure of time and money to access the neighbouring property by exiting Kaingo Game Reserve, as well as avoid negative impacts on eco-tourism activities, such as game drives. The low-level crossing will be confined to a single, consolidated game reserve for the benefit of the Management Authority during its day-to-day operations or management of the Nature Reserve. As such the activity does not affect or impact any broader societal needs, communities, or economies.

The proposed low-level crossing will consist of a rubble masonry concrete (RMC) structure with integrated concrete storm water pipes and a precast portal culvert at the critical river flow section. The bridge deck will be at CL 940.362 masl which is approximately 0.58 m lower than the 1:20-year expected flood level.
The main features of the proposed low-level crossing are:

- Length of bridge deck section - 134.4 m
- Length of entire crossing (including approaches) - 183.0 m
- Crest level of bridge deck - CL 940.362 masl

[1] Please note that this description should not be a verbatim repetition of the listed activity as contained in the relevant Government Notice, but should be a brief description of activities to be undertaken as per the project description.

- Lowest riverbed level - CL 938.021 masl
- Average bridge height to deck level - 1.40 m
- Bridge deck width - 3.66 m

Construction of the proposed low-level crossing shall be as follows:
A 3000mm x 1200mm precast concrete portal culvert is proposed for the crossing at the river's low flow section. This will assist in an unobscured flow regime at the low flow critical section in the river, thus not allowing any damming / containment of water at the crossing structure. In addition to the precast culvert, a set of 30 precast stormwater pipe barrels are proposed to cater for the required design flood.
Most of the structure, including sidewalls and infill between the stormwater pipes and sidewalls, is proposed to be constructed with rubble masonry concrete (RMC) which will act as a gravity structure for stability purposes. The sidewalls of the structure will be built up and anchored to the bedrock with Y20 rebar anchors. The rebar will be drilled into the bedrock and chemically anchored.
After construction of the RMC structure, a bridge deck with flooding indicator blocks will be constructed consisting of a concrete slab with mesh for crack prevention. Finally, the causeway approaches (existing roads) will be excavated and constructed with concrete slabs and associated side drains to link up with the bridge deck. (*Concept Design Report for the proposed low-level crossing at Kaingo Reserve across the Mokolo River prepared by PG Consulting Engineers dated October 2021, Final Report*).

*Following the outcome of the environmental and water use authorisation processes, there may be some refinements to the specifications of the crossing that will be captured in the final design report.

Activity 19 of Listing Notice 1 R327, 07 April 2017:
The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from a watercourse.
Development of the low-level crossing will result in the infilling or depositing of a rubble masonry concrete (RMC) structure and access road slab of an estimated 450m3 (excluding portal and pipe culverts), as well as the clearing and stripping of an estimated area of 790m2 and the removal of an estimated 70m3 of sand from the Mokolo River for use in concrete (excluding excavation of the causeway approaches).

Activity 12 of Listing Notice 3 R324, 07 April 2017:
The clearance of an area of 300 square metres or more of indigenous vegetation within a critical biodiversity areas identified in a bioregional plan.
An estimated 790m2 of area to be covered by the foundation of the low-level crossing in the Mokolo River will be cleared and stripped (excavation for the causeway approaches will take place in existing roads). An additional distance of 3m on both sides of the 183m alignment will be used as a working servitude during construction. Topsoil is likely to be removed from the construction camp and laydown areas (and stockpiled separately for rehabilitation). The construction camp is estimated to cover an area of roughly 2500 to 3500 m2 for machinery and site offices. Laydown areas for the cement, aggregates and culverts will probably impact an additional 1000 m2. Therefore, the maximum cumulative area that is estimated to be cleared is <1ha. The activity is taking place within a CBA1 area in terms of the Waterberg Bioregional

Plan.

Activity 14 of Listing Notice 3 R324, 07 April 2017:
The development of infrastructure or structures with a physical footprint of 10 square metres or more where such development occurs within a watercourse or within 32m of a watercourse.
Development of a low-level crossing in the Mokolo River with an estimated physical footprint (including concrete causeway approaches) of 669.78m2 (183m/length of entire crossing by 3.66m/width of bridge deck). Development will take place in a NEMPAA protected area, specifically Kaingo Private Nature Reserve and Mokolo River Private Nature Reserve. The application site also falls within Zone 1 (a sensitive area) of the adopted Waterberg Environmental Management Framework (EMF), a CBA1 area in terms of the Waterberg bioregional plan, and a core area within the Waterberg Biosphere Reserve.

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. Alternatives should include a consideration of all possible means by which the purpose and need of the proposed activity 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 Department 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.

All environmental impact assessments, which are to be utilised in informing an application for environmental authorisation, must identify and investigate the alternatives to the activity on the environment (Sections 24(4)(b)(i) and 24(4A) of NEMA, 1998) and include a description and comparative assessment of the advantages and disadvantages that the proposed activity and feasible and reasonable alternatives will have on the environment and on the community that may be affected by the activity. If, however, after having identified and investigated alternatives, no feasible and reasonable alternatives exist, no comparative assessment of alternatives, beyond the comparative assessment of the preferred alternative and the option of not implementing the activity (Sections 24(4)(b)(i) and 24(4A) of NEMA), is required during the assessment phase. In this instance, the EAP managing the

application must provide the competent authority with detailed, written proof of the investigation(s) undertaken and motivation indicating that no reasonable or feasible alternatives, other than the preferred alternative and the no-go option, exist.

Details of all the alternatives considered

Types of Alternatives

In terms of the EIA Regulations, 2014 as amended, "alternatives" are generally considered to be different locations, activities and/or technologies that can meet the general purpose and requirements of a proposed activity:

(1) The property on which or location where it is proposed to undertake the activity. This refers to both alternative properties as well as alternative sites on the same property, or in the case of linear developments, then alternative routes.

"A distinction should also be drawn between alternative locations that are geographically quite separate, and alternative locations that are in close proximity. In the case of the latter, alternative locations in the same geographic area are often referred to as alternative sites. This tends to be the more common application. In some cases it may not be possible to consider alternative locations as there may be constraints to the activity location" (DEAT, 2004).

(2) The design or layout of the activity. Design refers to different architectural and or engineering designs, whereas site layout involves the consideration of different spatial configurations of an activity on a particular site.

"Consideration of different designs for aesthetic purposes or different construction materials in an attempt to optimise local benefits and sustainability would constitute design alternatives. Generally, the design alternatives could be incorporated into the project proposal and so be part of the project description, and need not be evaluated as separate alternatives" (DEAT, 2004).

(3) The type of activity to be undertaken.

"*These are sometimes referred to as project alternatives. Consideration of such alternatives requires a change in the nature of the proposed activity. An example is incineration of waste rather than disposal in a landfill, or the provision of public transport rather than increasing the capacity of roads. In view of the substantive differences in the nature of the proposed activities, it is likely that this category is most appropriate at a strategic decision-making level, such as in a Strategic Environmental Assessment (SEA)"* (DEAT, 2004).

(4) The technology to be used. Technologies include different methods or processes that achieve the same goal, e.g., coal-fired power stations versus solar power plants.

(5) The no-go option, or option of not implementing the activity, is taken to be the existing rights on the property and this includes all the duty of care and other legal responsibilities that apply to the owner of the property (all the applicable permits must be in place for a land use to be an existing right).

Other types of alternatives, such as alternative operational aspects, other means for meeting a demand, alternative inputs, scheduling and timing, and scale and magnitude, are considered throughout the assessment process to address site-specific impacts when the need for mitigation is identified by, for example, the relevant specialist studies.

The key criteria when identifying and investigating alternatives are that they should be "feasible" and "reasonable".

The "feasibility" and "reasonability" of and the need for alternatives must be determined by considering, *inter alia*, the general purpose and requirements of the activity.

Identification of Alternatives

Potentially 'feasible' and 'reasonable' alternatives were identified by considering whether the different types of alternatives could meet the general purpose and requirements of the proposed low-level crossing on the Mokolo River in a Private Nature Reserve (**Table 1**),

Table 1: Purpose and Requirements of the proposed activity, specifically a low-level crossing.

Purpose	Requirements
Access to the full extent of the game reserve (on both sides of the Mokolo River) for eco-tourism activity, e.g., game drives, and by the Management Authority to fulfil its conservation mandate during the day-to-day operations or management of both declared Nature Reserves.	Uninterrupted (year-round) access
	Economical - avoid the unnecessary and wasteful expenditure of time and money.
	Avoid negative impacts on eco-tourism activities.
	Contribute to the ''sense of place.''
	Cause the least potential damage to the Mokolo River and its wetlands.
	Structural integrity

Alternative No. 1: Property and Location

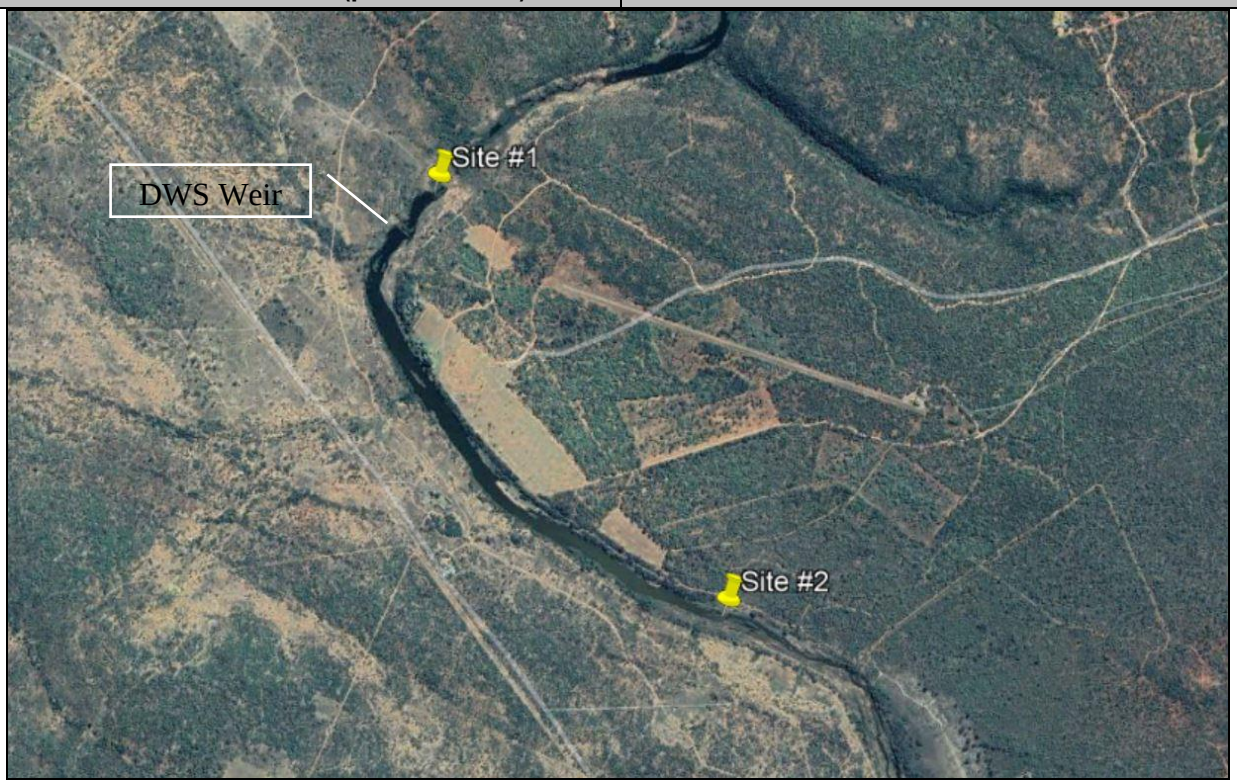
- Purpose and Requirements

There is currently one existing sand bed crossing that is only accessible during the dry winter months of the year. For the remainder of the year, access to the neighbouring property entails an extended round trip that requires any driver to exit Kaingo Game Reserve and then enter the Mokolo River Private Nature Reserve via a district gravel road. The proponent has proposed another site approximately 120m below an existing concrete measuring weir. Both the existing sand bed crossing and the proposed site further downstream can meet the general purpose and requirements of a low-level crossing, and therefore constitute potentially feasible and reasonable alternatives that will need to undergo a comparative assessment to determine the Best Practicable Environmental Option.

- Methodology

PG Consulting Engineers investigated two potential sites (**Table 2**) for the low-level crossing (Concept Design Report for the proposed low-level crossing at Kaingo Reserve across the Mokolo River prepared by PG Consulting Engineers dated October 2021, Final Report).

Table 2: Details of the site alternatives.

Alternative Site No. 1 (preferred site)	Alternative Site No. 2
	
	
Centre of river: 24º 04' 46.65"**S** & 27º 46' 26.79"**E**	Centre of river: 24º 05' 34.7"**S** & 27º 47' 02.9"**E**
Preferred crossing on exposed bedrock located approximately 120m downstream of the DWS concrete measuring weir.	Existing sand bed crossing located upstream of the DWS concrete measuring weir.

- Criteria used to investigate alternatives

The alternative sites were investigated by taking such criteria into account as geotechnical aspects, design requirements, footprint, construction costs, accessibility, and safety.

- Requirements (criteria) used to identify comparable sites

The sites had to be on the banks of the Mokolo River within the fenced borders of Kaingo Game Reserve, and where there is an existing road network that can tie into the concrete causeway approaches.

Alternative No. 2: Design and Layout

- Purpose and Requirements

There is no reason to believe that alternative designs cannot meet the general purpose and requirements of a low-level crossing. Consequently, alternative designs constitute potentially feasible and reasonable alternatives that will need to undergo a comparative assessment to determine the Best Practicable Environmental Option. Given the linear nature of the activity, there is no need for the consideration of different spatial configurations of the development on the site alternatives. Besides, the alignment of the crossing will be refined to accommodate any site-specific sensitivities identified by the specialist studies at the preferred site.

- Methodology

PG Consulting Engineers investigated three different design options (**Table 3**) for the low-level crossing (Concept Design Report for the proposed low-level crossing at Kaingo Reserve across the Mokolo River prepared by PG Consulting Engineers dated October 2021, Final Report).

Table 3: Details of the design alternatives.

Alternative No. 1 (preferred design)	Alternative No. 2	Alternative No. 3
Rubble Masonry Concrete (RMC) Culvert Structure	Gabion Basket Structure	Conventional Reinforced Concrete Deck Bridge with Piers

- \Criteria used to investigate and assess alternatives

The alternative designs were investigated by taking such criteria into account as stability and structural integrity, construction costs and visual aesthetics.

- Requirements (criteria) used to identify comparable designs

All the designs had to be for a low-level crossing that does not impound water and will provide access for vehicles, while accommodating low flows (1:2-year flood peak). High flows will inundate the crossing structure and render the crossing inaccessible during major flood events, but usually over a short period of time.

Alternative No. 3: Type of Activity

- Reasoned explanation why an alternative was not found to be reasonable or feasible

No alternative activities exist.

Alternative No. 4: Technology

- Reasoned explanation why an alternative was not found to be reasonable or feasible

Examples of alternative technologies used to carry passengers and vehicles across a permanent (or perennial) river or ocean include a pontoon ferry or tunnel, neither of which were regarded appropriate to the project, and particularly given the variability and range in the annual peak flows of the Mokolo River (see Appendix A of the Concept Design Report for the proposed low-level crossing at Kaingo Reserve across the Mokolo River prepared by PG Consulting Engineers dated October 2021, Final Report). A ferry could not be used during times of low or strong flow. A ferry was lost in 2014 when it was taken downstream by strong flows (pers. comm. Jurie Willemse). Consequently, a ferry would need to be removed from the river during floods, which presents its own challenges. Furthermore, a ferry is more costly to operate in the long term and is a slow process (not productive).

Alternative No. 5: No-go Option

The option of not implementing the activity is used as the benchmark against which all impacts associated with the proposed development were assessed. In this case, the no-go option would be to use the existing sand bed crossing further upstream of the proposed site during the winter months, and then access the land on the other side of the river during summer by undertaking an extended round trip that requires any driver to exit Kaingo Game Reserve and then enter the reserve via a district gravel road.

Conclusion

Two alternative sites, three alternative designs and the no-go option were identified for further assessment.

Other criteria that will be considered during the comparative assessment to determine which potentially reasonable and feasible alternative is the Best Practicable Environmental Option, include need and desirability, opportunity costs, the need to avoid negative impact altogether, the need to minimise unavoidable negative impacts, the need to maximise benefits, and the need for equitable distributional consequences. The (development) alternatives must be socially, environmentally, and economically sustainable. They must also aim to address the key significant impacts of the proposed development by maximizing benefits and avoiding or minimising the negative impacts.

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

3. ACTIVITY POSITION

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, minutes, and seconds. The projection that must be used in all cases is the Hartebeeshoek 94 WGS84 spheroid in a national or local projection.

List alternative sites, if applicable.

Alternative:	**Latitude (S):**			**Longitude (E):**		
Alternative S1[2] (preferred or only site alternative)	°	'	"	°	'	"
Alternative S2 (if any)	°	'	"	°	'	"
Alternative S3 (if any)	°	'	"	°	'	"

In the case of linear activities:

Alternative:	**Latitude (S):**			**Longitude (E):**		
Alternative S1 (preferred or only route alternative)						
• Starting point of the activity	24˚	04'	44.43"	27˚	46'	25.52"
• Middle/Additional point of the activity	24˚	04'	46.65"	27˚	46'	26.79"
• End point of the activity	24˚	04'	49.12"	27˚	46'	29.40"
Alternative S2 (if any)						

[2] "Alternative S.." refer to site alternatives.

• Starting point of the activity	24˚	05'	33.6"	27˚	47'	02.7"
• Middle/Additional point of the activity	24˚	05'	34.7"	27˚	47'	02.9"
• End point of the activity	24˚	05'	35.8"	27˚	47'	02.0"

Alternative S3 (if any)

• Starting point of the activity	°	'	"	°	'	"
• Middle/Additional point of the activity	°	'	"	°	'	"
• End point of the activity	°	'	"	°	'	"

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.

4. PHYSICAL SIZE OF THE ACTIVITY

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

Alternative:	**Size of the activity:**
Alternative A1[3] (preferred activity alternative)	m^2
Alternative A2 (if any)	m^2
Alternative A3 (if any)	m^2

or,

<u>for linear activities:</u>

Alternative:	**Length of the activity:**
Alternative A1 (preferred activity alternative)	183m
Alternative A2 (if any)	273m
Alternative A3 (if any)	m

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

Alternative:	**Size of the site/servitude:**
Alternative A1 (preferred activity alternative)	Approximately 790m^2
Alternative A2 (if any)	Approximately 1000m^2
Alternative A3 (if any)	m^2

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

5. 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 access roads (dirt roads) will be used during construction (and operation).

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.

6. SITE OR 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:

6.1 the scale of the plan which must be at least a scale of 1:500;
6.2 the property boundaries and numbers of all the properties within 50 metres of the site;
6.3 the current land use as well as the land use zoning of each of the properties adjoining the site or sites;
6.4 the exact position of each element of the application as well as any other structures on the site;
6.5 the position of services, including electricity supply cables (indicate above or underground), water supply pipelines, boreholes, street lights, sewage pipelines, storm water infrastructure and telecommunication infrastructure;
6.6 all trees and shrubs taller than 1.8 metres;
6.7 walls and fencing including details of the height and construction material;
6.8 servitudes indicating the purpose of the servitude;
6.9 sensitive environmental elements within 100 metres of the site or sites including (but not limited thereto):
- rivers;
- the 1:100 year flood line (where available or where it is required by Department of Water Affairs);
- ridges;
- cultural and historical features;
- areas with indigenous vegetation (even if it is degraded or invested with alien species);

6.10 for gentle slopes the 1 metre contour intervals must be indicated on the plan and whenever the slope of the site exceeds 1:10, the 500mm contours must be indicated on the plan; and
6.11 the positions from where photographs of the site were taken.

7. 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 form. It must be supplemented with additional photographs of relevant features on the site, if applicable.

8. FACILITY ILLUSTRATION

A detailed illustration of the activity must be provided at a scale of 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.

11. ACTIVITY MOTIVATION

9(a) Socio-economic value of the activity

What is the expected capital value of the activity on completion?	R857 000 (incl. VAT (15%) excl. Engineers fees and disbursements)	
What is the expected yearly income that will be generated by or as a result of the activity?	R N/A	
Will the activity contribute to service infrastructure?	YES (X)	NO
Is the activity a public amenity?	YES	NO (X)
How many new employment opportunities will be created in the development phase of the activity?	Approx. 20	
What is the expected value of the employment opportunities during the development phase?	R213 000.00	
What percentage of this will accrue to previously disadvantaged individuals?	100%	
How many permanent new employment opportunities will be created during the operational phase of the activity?	N/A	
What is the expected current value of the employment opportunities during the first 10 years?	R N/A	
What percentage of this will accrue to previously disadvantaged individuals?	% N/A	

9(b) Need and desirability of the activity

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

NEED:			
i.	Was the relevant municipality involved in the application?	YES	NO
ii.	Does the proposed land use fall within the municipal Integrated Development Plan?	YES	NO
iii.	If the answer to questions 1 and / or 2 was NO, please provide further motivation / explanation:		
	The proposed project is located on private land and is funded by the applicant. The Lephalale IDP states: "One of the core values is "Environmental Care With all the development in Lephalale, the municipality will focus on taking care of the environment." Lephalale Municipality has an environmental function to execute and ensure that the fundamental environmental rights of the community as enshrined in the constitution are realized. The fundamental rights as stated in the constitution are:- • To prevent pollution and ecological degradation. • To promote conservation. • To secure ecologically sustainable development and use of the natural resources while promoting justifiable economic and social development." The proposed project is in line with the vision and mission of the IDP.		

DESIRABILITY:			
i.	Does the proposed land use / development fit the surrounding area?	YES	NO
ii.	Does the proposed land use / development conform to the relevant structure plans, Spatial development Framework, Land Use Management Scheme, and planning visions for the area?	YES	NO
iii.	Will the benefits of the proposed land use / development outweigh the negative impacts of it?	YES	NO
iv.	If the answer to any of the questions 1-3 was NO, please provide further motivation / explanation:		
	N/A		
v.	Will the proposed land use / development impact on the sense of place?	YES	NO
vi.	Will the proposed land use / development set a precedent?	YES	NO
vii.	Will any person's rights be affected by the proposed land use / development?	YES	NO
viii.	Will the proposed land use / development compromise the "urban edge"?	YES	NO
ix.	If the answer to any of the question 5-8 was YES, please provide further motivation / explanation.		

	N/A

BENEFITS:			
i.	Will the land use / development have any benefits for society in general?	YES	NO
ii.	Explain: Without a low-level crossing to access the full extent of the nature reserve during the rainy season when the river is flowing strongly, game drive vehicles would have to exit the reserve and use the existing crossing on a badly corrugated agricultural dirt road. As mentioned, Kaingo Private Nature Reserve is a privately owned tourism facility, guest experience and ratings would be improved by guests visiting the tourism facility which in turn would provide much needed revenue to finance the maintenance and management of the reserve's resources and infrastructure.		
iii.	Will the land use / development have any benefits for the local communities where it will be located?	YES	NO
iv.	Explain: Job creation - The exact number of temporary and permanent jobs to be created cannot be determined at this stage in time but is estimated to be 18 unskilled and 2 skilled jobs. However, these jobs are anticipated to be primarily temporary in nature as they will only last for the duration of the construction phase of the development.		

10. 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:	**Administering authority:**	**(Promulgation) Date:**
Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983) published in GN No. 883 of GG No. 8673 on 27 April 1983	Department of Agriculture	27 April 1983
Conservation of Agricultural Resources Act Regulations published in GN No. R1048 of GG No. 9238 on 25 May 1984, as amended (including lists of Declared Weeds, Invader Plants, and Indicators of Bush Encroachment)	Department of Agriculture	25 May 1984
Constitution of the Republic of South Africa, 1996 (No. 108 of 1996), including section 24 Environment.	Department of Justice and Constitutional Development	18 December 1996
Convention on Biological Diversity	Department of Forestry, Fisheries, and the Environment (DFFE)	29 December 1993
Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention, 1979)	Department of Forestry, Fisheries, and the Environment (DFFE)	1 November 1983
Convention on Wetlands of International Importance (RAMSAR Convention)	Department of Forestry, Fisheries, and the	2 February 1971

	Environment (DFFE)	
(Convention) United Nations Framework Convention on Climate Change	Department of Forestry, Fisheries, and the Environment (DFFE)	21 March 1994
EIA Regulations, 2014 published in GN No. R. 982, 983, 984, and 985 of GG No. 382824 on 4 December 2014, as amended by GN No. R. 324, R. 325, R. 326, R. 327, and R. 328 of GG No. 40772 on 07 April 2017, GN No. 706 of GG No. 41766 on 13 July 2018 and GN No. 599 of GG No. 43358 on 29 May 2020.	Department of Forestry, Fisheries, and the Environment (DFFE). Limpopo Department of Economic Development, Environment and Tourism (LEDET)	4 December 2014
Environment Conservation Act, 1989 (No 73 of 1989), including Schedules 4 and 5 of the National Regulations regarding Noise Control made under Section 25 of the Act published in GN No. R 154 of GG No. 13717 on 10 January 1992. (Note: that this section of the Environment Conservation Act is not repealed by NEMA, 1998).	DFFE and LEDET	9 June 1989
General Authorisation in GN No. 665 published in Government Gazette No. 36820	Department of Water and Sanitation (DWS)	06 September 2013
General Authorisation in GN No. 509 published in Government Gazette No. 40229	Department of Water and Sanitation (DWS)	26 August 2016
General Authorisation in GN No. 538 published in Government Gazette No. 40243	Department of Water and Sanitation (DWS)	2 September 2016
(Guideline) Integrated Environmental Management, Information Series 5: Impact Significance	Department of Environmental Affairs and Tourism (DFFE)	2002
(Guideline on Alternatives) Integrated Environmental Management, Information Series 11: Criteria for determining Alternatives in EIA	Department of Environmental Affairs and Tourism (DFFE)	2004
Guideline on Alternatives, EIA Guideline and Information Document Series.	Western Cape Department of Environmental Affairs & Development Planning	18 June 2010
Guideline for Developments within a Floodline (Edition 1)	Department of Water Affairs and Forestry (DWS)	March 2007
(Guideline) Environmental Authorisation Validity Period Explanatory Document.	Department of Forestry, Fisheries, and the Environment (DFFE)	2018
Guideline on Need and Desirability	Department of Environmental Affairs (DFFE)	2017
(Guideline) Public Participation 2017 Guideline Document	Department of Environmental Affairs (DFFE)	2017
(Guideline) Sand Mine Guideline for South Africa for Water Use Authorisation of Sand Mining / Gravel	Department of Water and Sanitation (DWS)	September 2014

Extraction, in terms of Impacts on Characteristics of Watercourses		
(Guideline) South African Water Quality Guidelines (second edition). Volume 1: Domestic Use.	Department of Water Affairs and Forestry (DWS)	1996
(Guideline) South African Water Quality Guidelines (second edition). Volume 4: Agricultural Use: Irrigation.	Department of Water Affairs and Forestry (DWS)	1996
(Guideline) South African Water Quality Guidelines. Volume 7: Aquatic Ecosystems	Department of Water Affairs and Forestry (DWS)	1996
Limpopo Environmental Management Act, 2003 (Act No. 7 of 2003)	Limpopo Department of Economic Development, Environment and Tourism (LEDET)	25 March 2004 (Assented to)
Minerals and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002) published in GN No. 1273 of GG No. 23922 on 10 October 2002 as amended	Department of Minerals and Energy	10 October 2002
National Biodiversity Assessment	Department of Forestry, Fisheries, and the Environment (DFFE)	2018
National Biodiversity Framework published in GN No. 813 of GG No. 32474 on 3 August 2009	Department of Forestry, Fisheries, and the Environment (DFFE)	3 August 2009
National Building Regulations and Building Standards, 1977 (Act No. 103 of 1977)	Lephalale Local Municipality	22 June 1977 (Assented to)
National Dust Control Regulations published in GN No. R 827 of GG No. 36974 on 1 November 2013	Department of Forestry, Fisheries, and the Environment (DFFE)	1 November 2013
(Draft) National Dust Control Regulations published in GN No. 517 of GG No. 41650 on 25 May 2018	Department of Forestry, Fisheries, and the Environment (DFFE)	25 May 2018
National Environmental Management Act, 1998 (Act No. 107 of 1998) as amended	Department of Forestry, Fisheries, and the Environment (DFFE)	27 November 1998
National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004) published in GN No. 163 of GG No. 27318 on 24 February 2005, as amended;	Department of Forestry, Fisheries, and the Environment (DFFE)	24 February 2005
(NEM: AQA) List of activities which result in atmospheric emissions which have or may have a significant detrimental effect on the environment, including health, social conditions, economic conditions, ecological conditions, or cultural heritage published in GN No. 893 of GG No. 37054 on 22 November 2013, as amended	Department of Environmental Affairs and Tourism (DFFE)	22 November 2013
National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004) published in GN No. 700 of GG No. 26436 on 7 June 2004, as amended	Department of Forestry, Fisheries, and the Environment (DFFE)	07 June 2004

(NEM: BA) National list of ecosystems that are threatened and in need of protection published in GN No. 1002 of GG No. 34809 on 9 December 2011.	Department of Environmental Affairs (DFFE)	9 December 2011
(NEM: BA) Alien and Invasive Species Regulations published in GN No. R 1020 in GG 43735 on 25 September 2020	Department of Environment, Forestry and Fisheries (DFFE)	25 September 2020
(NEM: BA) Alien and Invasive Species Lists published in GN No.599, amended in GN No. 1003 of GG No. 43726 on 18 September 2020.	Department of Environment, Forestry and Fisheries (DFFE)	18 September 2020
The National Environmental Management Protected Areas Act (Act No. 57 of 2003)	Department of Forestry, Fisheries, and the Environment (DFFE)	18 February 2004
National Environmental Management: Waste Act, 2009 (Act No. 59 of 2009) published in GN No. 278 of GG No. 32000 on 10 March 2009, ss amended	Department of Forestry, Fisheries, and the Environment (DFFE)	10 March 2009
National Forest Act, 1998 (Act No. 84 of 1998) published in GN No. 1388 of GG No. 19408 on 30 October 1998, as amended	Department of Forestry, Fisheries, and the Environment (DFFE)	30 October 1998
National Heritage Resources Act, 1999 (No 25 of 1999)	South African Heritage Resources Agency (SAHRA)	28 April 1999
National Protected Areas Expansion Strategy (NPAES)	Department of Forestry, Fisheries, and the Environment (DFFE)	2016
National Veld and Forest Fire Act, 1998 (Act No. 101 of 1998) published in GG No. 19515 on 27 November 1998.	Department of Forestry, Fisheries, and the Environment (DFFE)	27 November 1998
National Water Act, 1998 (Act No. 36 of 1998) published in GN No. 1091 of GG No. 19182 on 26 August 1998 (including Sections 27, 28,29,30,31 and 39 dealing with General Authorisations and Water Use Licenses), as amended	Department of Water and Sanitation (DWS)	26 August 1998
Natural Scientific Professions Act, 2003 (Act No. 27 of 2003)	South African Council for Natural Scientific Professions	28 November 2003
Occupational Health and Safety Act, 1993 (Act. No. 85 of 1993)	Department of Labour	02 July 1993
Protection of Personal Information Act, 2013 (Act No. 4 of 2013)	Information Regulator in terms of Section 41(1)	01 July 2020
(Plan) IDP	Lephalale Local Municipality	March 2021
(Plan) Lephalale Municipal SDF	Lephalale Local Municipality	July 2021
(Plan) Limpopo C-Plan v2 (updated to the 2018 Limpopo Province Map of Critical Biodiversity Areas and Ecological Support Areas)	Limpopo Department of Economic Development, Environment and Tourism (LEDET)	2013 and 2018
(Plan) Waterberg Bioregional Plan	Limpopo Department of	January 2016

	Economic Development, Environment and Tourism (LEDET)	
(Plan) Waterberg District EMF	Limpopo Department of Economic Development, Environment and Tourism (LEDET)	October 2011
(Plan) South Africa's National Biodiversity Strategy and Action Plan	Department of Environmental Affairs and Tourism (DFFE)	May 2005
White Paper on the Conservation and Sustainable Use of South Africa's Biological Diversity published in GN No. 1095 of GG No. 18163 on 28 July 1997	Department of Environmental Affairs and Tourism (DFFE)	28 July 1997
World Heritage Convention Act (Act No. 49 of 1999) in GG No. 1485 on 9 December 1999	Department of Forestry, Fisheries, and the Environment (DFFE)	9 December 1999

11. WASTE, EFFLUENT, EMISSION AND NOISE MANAGEMENT

11(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?

<20m^3

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

Construction waste will comprise mainly of spoil from clearing 790m^2 for the low-level crossing foundation and causeway excavations, effluent from chemical toilets, epoxy packaging (for 2-part epoxy for chemically binding rebar), used-oil from vehicle maintenance, concrete rubble, cement bags, cement slurry and general waste (e.g., food packaging) from site personnel.

- Spoil material will be re-used where possible (as backfill or erosion mitigation works and rehabilitation).
- The chemical toilets will be emptied for appropriate disposal by the service provider.
- Any vehicle maintenance shall be undertaken at Kaingo's main workshop, which can cater for all vehicle and equipment maintenance as it is complete with full automotive, mechanical, joinery and electrical workshops, related service areas and refueling station (pers. comm. Jurie Willemse, Applicant). As such, any waste oil shall be collected by a registered collector for recycling and reuse or disposal.
- A designated concrete mixing site shall be established in the construction camp which will be located outside of sensitive areas e.g., outside the 1:100-year flood line etc. Alternatively, if ready mix concrete is trucked in, then the drums will be cleaned into a bunded reservoir at Kaingo's main workshop. Either way the slurry will be reused as is in a mortar mix for other projects or hardened so that it can be reused as a building material or disposed at a licensed landfill with other concrete rubble.
- General waste will be kept in scavenger proof bins within the construction site, and this will be disposed of daily into a covered skip at the construction camp and transported to the nearest licensed landfill site.
- Empty epoxy packaging and cement bags will be treated as general waste for disposal into the same skip and transported to the nearest licensed landfill site.

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

Nearest licensed general waste or municipal landfill.

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)?

N/A

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

N/A

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 department 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 relevant legislation?	YES	NO ⊗

If yes, inform the department and request a change to an application for scoping and EIA.

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 Department to determine whether it is necessary to change to an application for scoping and EIA.

11(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?		m^3
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 Department 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:	N/A		
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 wastewater, if any:

N/A

11(c) Emissions into the atmosphere

Will the activity release emissions into the atmosphere?	YES	NO
If yes, is it controlled by any legislation of any sphere of government?	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.
If no, describe the emissions in terms of type and concentration:

During construction, there will be a localized release of dust due to sand mining operations, excavations, and transport on dirt roads. Above normal concentrations of hydrocarbons, nitrogen oxides and carbon monoxide are not anticipated from exhaust emissions.

11(d) 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

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.
If no, describe the noise in terms of type and level:

During construction, there will be a localized increase in noise levels because of hand-held drilling equipment and a portable generator, construction vehicles and personnel. A noise nuisance is not anticipated due to the remoteness of the activity.

12. WATER USE

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

municipal	water board	groundwater	river, stream, dam or lake	other	the activity will not use water
		X	X		

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: 22 m3

Does the activity require a water use permit from the Department of Water Affairs?	YES	NO

If yes, please submit the necessary application to the Department of Water Affairs and attach proof thereof to this application if it has been submitted.

13. ENERGY EFFICIENCY

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

N/A – the activity involves the remote development of a low-level crossing. No energy is required for its operation or maintenance.

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

N/A - the activity involves the remote development of a low-level crossing. No energy is required for its operation or maintenance.

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 C and indicate the area, which is covered by each copy No. on the Site Plan.

Section C Copy No. (e.g. A): NA

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:

All specialist reports must be contained in Appendix D.

Property description/physical address:

Farm Laurel 159 KQ and Farm Mokolo River Private Nature Reserve 660 KQ

Kaingo Game Reserve
Witfontein Road
Bulge Rivier
Limpopo Province
South Africa

(Farm name, portion etc.) Where a large number of properties are involved (e.g. linear activities), please attach a full list to this application.

N/A

In instances where there is more than one town or district involved, please attach a list of towns or districts to this application.

Current land-use zoning:

Agriculture

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 ⊗
Must a building plan be submitted to the local authority?	YES ⊗	NO

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 indication of the project site position as well as the positions of the alternative sites, if any;
- 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, minutes and seconds. The projection that must be used in all cases is the WGS84 spheroid in a national or local projection)

Also see Site Sensitivity Maps **(Appendix A)**

1. GRADIENT OF THE SITE

Indicate the general gradient of the site.

Alternative S1:

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

2. LOCATION IN LANDSCAPE

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

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

3. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

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

	Alternative S1:		**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

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).

APPLICABLE TO ALTERNATIVES S1 AND S2

Natural veld - good condition[E]	Natural veld with scattered aliens[E]	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. LAND USE CHARACTER OF SURROUNDING AREA:

Indicate land uses and/or prominent features that does 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:

APPLICABLE TO ALTERNATIVES S1 AND S2

5.1 Natural area	⊗	5.22 School	
5.2 Low density residential		5.23 Tertiary education facility	
5.3 Medium density residential		5.24 Church	
5.4 High density residential		5.25 Old age home	
5.5 Medium industrial [AN]		5.26 Museum	
5.6 Office/consulting room		5.27 Historical building	
5.7 Military or police base/station/compound		5.28 Protected Area	⊗
5.8 Spoil heap or slimes dam [A]		5.29 Sewage treatment plant [A]	
5.9 Light industrial		5.30 Train station or shunting yard [N]	
5.10 Heavy industrial [AN]		5.31 Railway line [N]	
5.11 Power station		5.32 Major road (4 lanes or more)	
5.12 Sport facilities		5.33 Airport [N]	
5.13 Golf course		5.34 Harbour	
5.14 Polo fields		5.35 Quarry, sand or borrow pit	
5.15 Filling station [H]		5.36 Hospital/medical centre	
5.16 Landfill or waste treatment site		5.37 River, stream or wetland	⊗
5.17 Plantation		5.38 Nature conservation area	
5.18 Agriculture		5.39 Mountain, koppie or ridge	
5.19 Archaeological site		5.40 Graveyard	
5.20 Quarry, sand or borrow pit		5.41 River, stream or wetland	⊗
5.21 Dam or Reservoir		5.42 Other land uses (describe)	

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

N/A

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

If YES, specify and explain:	N/A
If NO, specify:	N/A

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

If YES, specify and explain:	N/A
If NO, specify:	N/A

6. CULTURAL/HISTORICAL FEATURES

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	YES	NO
Archaeological or palaeontological sites, on or close (within 20m) to the site?	~~Uncertain~~	
If YES, explain:	N/A	
If uncertain, conduct a specialist investigation by a recognised specialist in the field to establish whether there is such a feature(s) present on or close to the site.		
Briefly explain the findings of the specialist:	Due to the nature of the structure, a small footprint and the location of the proposed crossing as well as the result of a physical inspection by an archaeologist, the proposed activities will not have an impact on any heritage resources and no remedial action or mitigation is needed (see **Appendix D**).	
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 submit or, make sure that the applicant or a specialist submits the necessary application to SAHRA or the relevant provincial heritage agency and attach proof thereof to this application if such application has been made.		

SECTION C: PUBLIC PARTICIPATION

1. ADVERTISEMENT

The person conducting a public participation process must take into account any guidelines applicable to public participation as contemplated in section 24J of the Act and must give notice to all potential interested and affected parties of the application which is subjected to public participation by—

(a) fixing a notice board (of a size at least 60cm by 42cm; and must display the required information in lettering and in a format as may be determined by the department) at a place conspicuous to the public at the boundary or on the fence of—

  (i) the site where the activity to which the application relates is or is to be undertaken; and

  (ii) any alternative site mentioned in the application;

(b) giving written notice to—

(i) the owner or person in control of that land if the applicant is not the owner or person in control of the land;

(ii) the occupiers of the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;

(iii) owners and occupiers of land adjacent to the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;

(iv) the municipal councillor of the ward in which the site or alternative site is situated and any organisation of ratepayers that represent the community in the area;

(v) the municipality which has jurisdiction in the area;

(vi) any organ of state having jurisdiction in respect of any aspect of the activity; and

(vii) any other party as required by the department;

(c) placing an advertisement in—

(i) one local newspaper; or

(ii) any official *Gazette* that is published specifically for the purpose of providing public notice of applications or other submissions made in terms of these Regulations;

(d) placing an advertisement in at least one provincial newspaper or national newspaper, if the activity has or may have an impact that extends beyond the boundaries of the local municipality in which it is or will be undertaken: Provided that this paragraph need not be complied with if an advertisement has been placed in an official *Gazette* referred to in subregulation 54(c)(ii); and

(e) using reasonable alternative methods, as agreed to by the department, in those instances where a person is desiring of but unable to participate in the process due to—

(i) illiteracy;

(ii) disability; or

(iii) any other disadvantage.

2. CONTENT OF ADVERTISEMENTS AND NOTICES

A notice board, advertisement or notices must:

(a) indicate the details of the application which is subjected to public participation; and

(b) state—

(i) that the application has been submitted to the department in terms of these Regulations, as the case may be;

(ii) whether basic assessment or scoping procedures are being applied to the application, in the case of an application for environmental authorisation;

(iii) the nature and location of the activity to which the application relates;

(iv) where further information on the application or activity can be obtained; and

(v) the manner in which and the person to whom representations in respect of the application may be made.

3. PLACEMENT OF ADVERTISEMENTS AND NOTICES

Where the proposed activity may have impacts that extend beyond the municipal area where it is located, a notice must be placed in at least one provincial newspaper or national newspaper, indicating that an application will be submitted to the department in terms of these regulations, the nature and location of the activity, where further information on the proposed activity can be obtained and the manner in which representations in respect of the application can be made, unless a notice has been placed in any *Gazette* that is published specifically for the purpose of providing notice to the public of applications made in terms of these Regulations.

Advertisements and notices must make provision for all alternatives.

4. DETERMINATION OF APPROPRIATE MEASURES

The practitioner must ensure that the public participation is adequate and must determine whether a public meeting or any other additional measure is appropriate or not based on the particular nature of each case. Special attention should be given to the involvement of local community structures such as Ward Committees, ratepayers associations and traditional authorities where appropriate. Please note that public concerns that emerge at a later stage that should have been addressed may cause the department to withdraw any authorisation it may have issued if it becomes apparent that the public participation process was inadequate.

5. COMMENTS AND RESPONSE REPORT

The practitioner must record all comments and respond to each comment of the public before the application is submitted. The comments and responses must be captured in a comments and response report as prescribed in these Regulations and be attached to this application. The comments and response report must be attached under Appendix E.

See **Appendix E** for a complete description of the Public Participation Process, including the COMMENTS AND RESPONSE REPORT (**Annexure H**)

6. AUTHORITY PARTICIPATION

Please note that a complete list of all organs of state and or any other applicable authority with their contact details must be appended to the basic assessment report or scoping report, whichever is applicable.

Authorities are key interested and affected parties in each application and no decision on any application will be made before the relevant local authority is provided with the opportunity to give input.

Name of Authority informed	Comments Received (Yes or No)
Lephalale Local Municipality	Yes – instruction to submit building plans
Waterberg District Municipality	No official comment other than a request for a site inspection (see Comments and Response Report **Appendix E; Annexure H**)
Limpopo Department of Economic Development, Environment and Tourism (LEDET)	Yes, during pre-consultation meeting
Department of Water and Sanitation (DWS) (Polokwane)	No
Department of Minerals and Resources (DMR)	No
South African Heritage Resources Agency	Yes – instruction to register project on the SAHRIS
Waterberg Biosphere Reserve	No
Mokolo River Water Users Association	No

7. CONSULTATION WITH OTHER STAKEHOLDERS

Note that, for linear activities, or 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 department.

Proof of any such agreement must be provided, where applicable.

Has any comment been received from stakeholders?

YES	NO
	⊗

If "YES", briefly describe the feedback below (also attach copies of any correspondence to and from the stakeholders to this application):

NA

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. ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES

List the main issues raised by interested and affected parties.

(1) Building plans for the low-level water crossing must be submitted to the Lephalale Local Municipality for approval (Mr. Mateu Masoga, Executive Manager Infrastructural Services).

Response from the practitioner to the issues raised by the interested and affected parties (A full response must be given in the Comments and Response Report that must be attached to this report as Annexure E):

(1) Telephonically confirmed that a soft copy of the BAR and a covering letter will be provided, and that the applicant will be made aware of the requirement to submit building plans to the Lephalale Local Municipality. Furthermore, the requirement for building plan approval prior to commencement of construction was included as a mitigation into the "Planning and Design" and "Pre-construction" phases of the EMPr.

2. 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

List the potential direct, indirect, and cumulative property/activity/design/technology/operational alternative related impacts (as appropriate) 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.

Alternative (preferred alternative)

Direct impacts:

Indirect impacts:

Cumulative impacts:

See Impact Assessment (**Appendix H**)

3. 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.

Concluding Statement

The preferred site for the low-level crossing is Alternative Site No. 1 (Centre of river: 24º 04' 46.65"**S** & 27º 46' 26.79"**E**), located on exposed bedrock approximately 120m downstream of the DWS concrete measuring weir between the Farm Laurel 159 KQ and the Farm Mokolo River Private Nature Reserve 660 KQ, and the preferred design is Alternative Design No. 1, that is the Rubble Masonry Concrete (RMC) Culvert Structure.

Impact Statement

A summary of the Key Findings

The environmental attributes of both alternative sites are identical. Screening Assessments were performed on both sites, as well as a Site Sensitivity Verification, with the same results. Consequently, and except for the economical aspect, the proposed development of a low-level crossing results in the same significance ratings at both sites (before and after mitigation). As a result, the principal motivation for Alternative Site No. 1 as the preferred site is its more economical development.

The low-level crossing will be confined to a single, consolidated game reserve for the benefit of the Management Authority during its day-to-day operations or management of the Nature Reserve, as well as eco-tourism activities. As such the activity does not affect or impact any broader societal needs, communities, or economies.

The location is not a World Heritage site according to the Protected Areas Register (PAR), and the Archaeological and Cultural Heritage theme was verified as low, based on the nature and context (within the river) of the development, as well as the findings of a physical site inspection by the archaeologist. The Palaeontology theme is also low because the whole area is in the Cleremont Formation sandstones, which are about 2000 million years old. These sandstones with trough crossbedding represent a relatively high energy ancient shoreline. At that age, the only life forms were microscopic or small marine invertebrates and only trace fossils might occur. However, no fossils have been reported from this formation to date and it is extremely unlikely that any fossils would be found or recognised. Besides, construction excludes blasting.

The location is in the Air Quality Waterberg Bojanala Priority Area. Considering that ambient air quality standards are being, or may be, exceeded in the area, developments with potential to cause air pollution must have strict monitoring compliance with emission standards, with directives for atmospheric impact reports or pollution prevention plans, conditions, or requirements for an AEL. The proposed development of a low-level crossing does not pose the potential to cause air pollution more than ambient air quality standards and require an AEL.

The location is not a critically endangered or endangered ecosystem in terms of SANBI's latest NBA (2018). The National vegetation type is Central Sandy Bushveld, which is an area of Least Concern in the National List of Threatened Ecosystems (NBA, 2018). The ecosystem threat status as per the NBA 2018 data provides a holistic

view of the vegetation type, the threatened species associated with the ecosystem and the overall land use currently in the area. National vegetation type is Central Sandy Bushveld, which is an area of Least Concern in the National List of Threatened Ecosystems (NBA, 2018), yet the conservation status of this vegetation community is VU according to Mucina and Rutherford (2006). However, the Ecosystem Protection Level for Central Sandy Bushveld is categorised as Poorly Protected Ecosystem (NBA, 2018). This is confirmed by Mucina and Rurtherford (2006) as the area that is statutorily conserved is less than 3%, compared with the national conservation target of 19%.

High sensitivity habitats were identified in the Terrestrial Assessment, including the riparian, sandy bushveld and rocky ridge habitats. However, construction-related activities will be limited to the working servitude (up to 3m on either side of the development footprint) in the river and prohibited in the adjoining sandy bushveld and rocky ridge habitats. Furthermore, minimum impact is anticipated on the riparian habitat as existing approaches (roads) will be levelled, but not widened.

No threatened plants are expected in the study area. Although two nationally protected trees and seven provincially protected plants are expected, only two nationally protected trees, namely *Boscia albitrunca* and *Vachellia erioloba*, were observed during the Terrestrial Assessment. However, these protected plants were found outside the development footprint and working servitude.

Threatened or protected animal species include, Sensitive Species 1, Mammalia-*Acinonyx jubatus*, Mammalia-*Dasymys robertsii*, Mammalia-*Lycaon pictus*, and Sensitive Species 12. Except for the African Marsh Rat, the other animals are active and not confined to the project area. No signs of the African Mash Rat were observed at both Alternative sites. Consequently, the construction of a low-level crossing will not threaten any of these animal species. Conversely, by increasing eco-tourism opportunities within Kaingo PNR, a low-level crossing will promote the desired management objectives of areas important for threatened species, including *inter alia* sustainable wildlife-based tourism that leverages the unique behaviours and spectacular attributes of these identified species.

Only 19 of the 98 Red Listed mammals are regarded as threatened including *inter alia*, the Cape Clawless Otter (NT), the South African Hedgehog (NT), which is threatened by road collisions, and the Swamp Musk Shrew (NT), which has a distinct preference for marshy ponds, riverine and semi-aquatic vegetation, such as reed beds. However, only 6 mammal SCC were observed during the assessment, including *inter alia* lion, elephant, hippo and hyaena. Four of the 91 reptiles that are expected to occur within the area are regarded as threatened, including the Nile Crocodile (VU), the Waterberg Dwarf Gecho (NT), which inhabits rocky areas of the grassland and savannas, the Northern Craig Lizard (NT) which inhabits rocky habitat and a savanna species, the Lobatse hinged-back tortoise (VU). However, only the Nile Crocodile was observed during the assessment. None of the 31 amphibian species expected to occur within the area are SCC. Only the Common River Frog was observed during the assessment. Six of the expected 257 Avifauna species are threatened, including *inter alia*, the Black Stork (VU), which forage in riverine and wetland areas, a migratory species that generally occurs near water, the Black-winged Pratincole (NT), the African Finfoot (VU), which is found along shoreline vegetation, and the Greater Painted-snipe (NT) which occurs in freshwater habitats. None of the 65 species that were observed during the assessment are regarded as SCC (The Terrestrial Assessment). A knowledge of expected or observed threatened species that are at risk, such as sedentary, burrowing, rock-loving and ground nesting species, enhances the mitigatory potential to avoid or reduce chance incidents.

The location is also in an Important Bird and Biodiversity Area (IBA), called the Waterberg System

(https://www.birdlife.org.za/iba-directory/waterberg-system/; page last updated Monday 16th February 2015), which is a site of global significance for bird conservation and among the most important sites for conserving. No nesting sites were observed at either of the Alternative sites. Activities in IBA should be aligned to conservation outcomes of the protected area and include low-impact eco-tourism, such as the proposed low-level crossing, which is required by reserve management to facilitate its conservation mandate and promote eco-tourism activities within the reserve.

Both alternative sites fall within a sub-catchment associated with the Mokolo River, and which spans over several quaternary catchments (namely A42A, A42B, A42C, A42D, A42E and partially A42F) of the Limpopo Water Management Area. The Mokolo River has its origin in the headwaters of quaternary catchment A42A, whereas the alternative sites are located in A42F. The mean annual precipitation (MAP) is in the order of 530 mm/yr, and the mean annual evaporation (MAE) is > 1700 mm/yr. The estimated runoff volume for quaternary catchment A42F is in the order of 28.23 Mm^3/yr. The average monthly rainfall distribution is lowest in May (16.2mm), June (1.1mm), July (4.1mm), August (7.9mm) and September (8.2mm). Similarly, the average monthly run-off for catchment A42F is lowest in May (0.9mm), June (0.6mm), July (0.6mm), August (0.5mm), September (0.4mm), October (0.6mm) and November (0.8mm) (Hydrology Assessment).

The location is not a RAMSAR site, and the study area is located 23km north of the Waterberg Strategic Water Source Area. However, the Mokolo River and wetland located between both alternative sites are recognised as "unclassified" National Freshwater Ecosystem Priority Areas. In terms of the South African Inventory of Inland Aquatic Ecosystem, the Mokolo River is an Endangered NBA River, and the associated wetland is an "unclassified" NBA wetland. The water quality of the Mokolo River is considered good, and, except for dissolved iron (Fe), which is slightly high, all other analysed constituents fell well within DWAF (1996) ideal target ranges for domestic water use (Hydrology Assessment).

The relative Macro-invertebrate Response Assessment Index (MIRAI) score (77.9%) of the Mokolo River was placed within the limits of a (Macro-invertebrate) Ecological Category C/B, meaning this reach is "Moderately modified", mainly due to upstream impacts, including abstraction and the presence of the DWS Weir. The relative Fish Response Assessment Index (FRAI) score (86.3%) for this stretch of the Mokolo River falls within the limits of a (Fish) Ecological Category B or "Largely natural with few modifications", meaning, a change in community characteristics may have taken place but species richness and presence of intolerant species indicate little modification. The final score (88.5%) of the VEGRAI assessment regarding the riparian and marginal zone integrity puts the project area in the (Riparian Vegetation) Ecological Category A/B or "Largely natural with few modifications", meaning a small change in natural habitats and biota may have taken place but the ecosystem functions are essentially unchanged. Consequently, the overall Ecostatus of the Mokolo River falls within a Category B (84.8%) or "Largely natural with few modifications", meaning a small change in natural habitats and biota may have taken place but the ecosystem functions are essentially unchanged. The Category B Ecostatus can be ascribed to the presence of the weirs in the system. Weirs constitute obstacles for longitudinal exchanges along fluvial systems and so result in discontinuities in the river continuum. However, according to the Intermediate Reserve Determination Study (DWA, 2010), the PES is rated B/C due to largely flow and non-flow related impacts such as abstraction, irrigation weirs, farming and catchment activities, and the Ecological Importance and Sensitivity (EIS) is rated "High" due to the diversity and sensitivity of habitat types, species taxon richness and presence of unique species and the importance of conservation areas through which it flows. Since the EIS at the site is "High", the Recommended Ecological Category (REC) is suggested as a Class B which is an improvement to the PES. In

summary, the Present Ecological State (PES) of this reach of the Mokolo River is in a largely natural state ("B") with a high Ecological Importance and Sensitivity (EIS). However, the design and development, particularly after mitigation, of the proposed low-level crossing will not change the PES, EIS or REC to a lower ecological category or compromise defined Resource Quality Objectives (RQOs) for this river reach in terms of water quality, quantity, habitat and biota since the low-level crossing will be constructed mostly on bedrock, which is not a sensitive or special habitat for the Mokolo River, there is no anticipated disturbance to riparian trees, and the culverts will maintain longitudinal stream connectivity to ensure *inter alia* proper passage for migrating aquatic species (Aquatic Assessment).

The DWS weir is an example of a structure that fragments the riverine system, acting as a barrier for sediment transport and the migration of certain fish and macro-invertebrate species. The dammed area (or wetland) upstream of the weir consists of an unnatural expanse of water inundating the original habitats, while the downstream area is changed by scouring and sediment deposition (Aquatic Assessment). Alternative Site No. 1 (preferred) is located downstream of the weir and wetland, whereas Alternative Site No. 2 is located upstream of the weir and wetland. Both NFEPA rivers and wetlands are required to achieve biodiversity targets, and as such should remain in a good ecological condition to contribute to national biodiversity goals and support sustainable use of water resources. The need to remove more in-situ material from the riverbed to reach the bedrock at Alternative Site No. 2 does increase the risk of turbidity, and Total Suspended Solids (TSS), potentially impacting downstream water users, as well as altering the aquatic ecosystem structure and function of not just the river, but also the NFEPA wetland, which is located downstream of the site. None the less, these impacts can be realistically mitigated to generate the same insignificant outcomes that construction at Alternative Site No. 1 (preferred) will have on the Mokolo River system.

Both alternative sites are in a CBA1, according to the Waterberg Bioregional Plan (January 2016) and the Limpopo C-Plan v2 (2018). As such they are irreplaceable and essential for meeting biodiversity targets. Consequently, they shall be maintained in an unfragmented and natural or near-natural state that maximises the retention of biodiversity pattern and ecological process.

Both alternative sites are also in Environmental Management Zone 1 of the Waterberg District EMF (adopted in 2010 and reviewed in May 2021) because they are in the Core area of the Waterberg Biosphere Reserve, which is the result of being in a Protected Area, specifically the Kaingo Private Nature Reserve, with a management plan (Kaingo PNR Management Plan 2018 – 2023) focused on maintaining or improving the state of biodiversity. Given that the location is a formally declared PA that will contribute to meeting biodiversity thresholds for terrestrial or freshwater ecosystems, maintaining ecological processes or climate change resilience, it is considered important for the expansion of the land based protected area network and is further identified as the "Limpopo Central Bushveld" Focus Area in the National Protected Area Expansion Strategy (2016).

Environmental Management Zone 1 (of the Waterberg District EMF) represents areas with a generally high natural, visual, and cultural quality that provides the core natural and cultural resource base for the establishment of the Waterberg as a conservation (even wilderness) destination. Conservation is the priority land-use in this zone with limited, low impact tourism facilities. No additional damming of rivers or stream should be allowed in this zone.

Accordingly, Alternative Design No. 1, specifically the Rubble Masonry Concrete (RMC) Culvert Structure, is the preferred design because it is not only the least expensive of all three designs, but it is also the most structurally stable, increasing its reliability and safety during strong flows, and will retain, if not enhance, the 'sense of place' through its inobtrusive and visually aesthetic architectural design, using local rock 'farmed' from the reserve. The

structure will not impound the flow of the Mokolo River, and the identified impacts during its development can be adequately mitigated to avoid significant outcomes that would otherwise undermine the aforesaid management objectives of the abovementioned Biodiversity Priority Areas, and probably most importantly, ensure the retention of good ecological condition in the NFEPA river and wetland. Once developed, the low-level crossing will assist reserve management and increase eco-tourism opportunities in furtherance of the stated management objectives of Environmental Management Zone 1 (Waterberg District EMF), the Kaingo PNR Management Plan (2018 – 2023), a CBA1 (Waterberg Bioregional Plan, January 2016) and IBAs.

The greatest risks posed by the construction of a low-level crossing in the Mokolo River are increased turbidity and Total Suspended Solids during the construction phase because of its potential to alter aquatic ecosystem structure and function and reduce the fitness of water for domestic and agricultural use by downstream water users, as well as changing the river channel hydrology which could lead to a degraded river system. Fortunately, given the limited scale (intensity, extent, and duration) of the project, these main concerns have a high mitigatory potential, and appropriate mitigations have been incorporated into the EMPr.

Alternative A (preferred alternative)

Alternative Site No. 1 (preferred)

Alternative Site No. 1 (preferred) is the preferred site because the geotechnical and topographical aspects of the site, including *inter alia* the presence of exposed bedrock suitable for founding conditions, reduces the cost of construction, making more capital available for other maintenance or conservation projects undertaken by reserve management.

This section of riverbed consists mainly of bedrock flanked by alluvial riverbeds covered with couch grass or being bare sand, making it the site with the least aquatic biodiversity sensitivity (compared with Alternative Site No. 2).

Apart from the exposed bedrock a shallow sand shoal towards the right bank will require the removal of less sand from the riverbed to reach the bedrock reducing the risk of increased turbidity and Total Suspended Solids on the aquatic ecosystem and downstream water users.

Although these risks apply to the Mokolo River, they are not applicable to the nearby NFEPA wetland because it is located upstream of this site. The wetland is likely to be an anthropogenic consequence of and retained by the DWS weir located upstream of this site. The same weir will have a regulating effect on the river channel hydrology by serving to attenuate brief flood events (or flash floods) and reduce turbulence, making a low-level crossing at this site a safer and more useable option compared with a crossing located upstream of the weir.

The benefits of a low-level crossing include several significantly positive socio-economic outcomes, including time savings and increased productivity, as well as lower operational costs associated with the day-to day management of the reserve, increased safety for staff and tourists when crossing the river during strong flows, and improved social well-being linked to improved eco-tourism activities.

No-go alternative (compulsory)

No-Go option

Unlike both alternative sites, the No-go option poses no ecological threat before mitigation. However, a high mitigatory potential of the identified impacts at both sites means that the low-level crossing can be constructed without any significant negative impacts on the natural and socio-economical environments. In fact, after mitigation, and with ecological impacts being equally insignificant for all alternatives (including the No-go option), both alternative sites result in significantly positive socio-economic impacts when compared to the negative impacts on the same socio-economic aspects if a low-level crossing would not be developed. Negative socio-economic outcomes from not developing a low-level crossing, include a greater time investment to reach the reserve on the other side of the Mokolo River because drivers must exit the reserve and use an existing crossing on the district road before driving back into the reserve at another entrance gate, reducing productivity, and increasing operational costs associated with the day-to day management of the reserve. All this translates into a wasteful expenditure of capital that could be invested into maintenance or conservation projects. Furthermore, continued usage of an existing sand bed crossing will increase the risk to staff and tourists when crossing the river during strong flows. Finally, eco-tourism activities will be negatively impacted by either reducing opportunities for eco-tourism activities or negatively impact on social well-being. Well-being specifically relates to the guest experience. Without a low-level crossing to access the full extent of the nature reserve during the rainy season when the river is flowing strongly, game drive vehicles will have to exit the reserve and use the existing crossing on a badly corrugated agricultural dirt road. Guest experience and ratings indirectly, but unequivocally translate into much needed revenue "to finance the maintenance and management of the (reserve's) resources and infrastructure" (Kaingo PNR EMP 2018 – 2023).

Alternative B

Alternative Site No. 2

Alternative Site No. 2 is not supported because the geotechnical and topographical aspects of the site, including, (1) the topography on the left bank, which forms a relatively large floodplain causing the length of the crossing structure to be undesirably long (273m), compared with 183m at Alternative Site No.1 (preferred), (2) the approach on the right bank is relatively steep, making the approach design more complex in terms of additional slope stability requirements, and (3) sparse, and scattered bedrock, which is not suitable for founding conditions. An increased cost of construction means less capital available for other maintenance or conservation projects undertaken by reserve management.

This site (upstream from the DWS weir) is dominated by reed beds (resembling floodplains) and inter-connecting pools and backwater Adequate water levels in these pools support recharge towards the floodplains and thus the sustained marshy habitat, making it the site with the most aquatic biodiversity sensitivity (compared with Alternative Site No. 1) (Aquatic Assessment).

The need to remove more in-situ material from the riverbed to reach the bedrock also increases the risk of turbidity, and Total Suspended Solids (TSS), impacting downstream water users, as well as altering the aquatic ecosystem structure and function of not just the river, but also the NFEPA wetland, which is located downstream

of the site. None the less, these impacts can be realistically mitigated to generate the same insignificant outcomes that construction at Alternative Site No. 1 (preferred) will have on the Mokolo River system.

This alternative site will not benefit from the regulating effect of the DWS measuring weir on the river channel hydrology by serving to attenuate brief flood events (or flash floods) and reduce turbulence at this site, making it a less safe and useable option compared with the preferred site, which is located downstream of the weir.

The benefits of a low-level crossing include several significantly positive socio-economic outcomes, including time savings and increased productivity, as well as lower operational costs associated with the day-to day management of the reserve, increased safety for staff and tourists when crossing the river during strong flows, and improved social well-being linked to improved eco-tourism activities.

Alternative C

Alternative Designs

Alternative Design No. 1 (Rubble Masonry Concrete (RMC) Culvert Structure) is the preferred alternative because it is not only the least expensive of all three structures, but it is also the most structurally stable, increasing its reliability and safety during strong flows, and will retain the 'sense of place' by creating a visually aesthetic crossing using local rock 'farmed' from the reserve.

Alternative Designs No. 2 (Gabion Basket Structure) and No. 3 (Conventional Reinforced Concrete Deck Bridge with Piers) are not supported because they will incur a greater construction cost, will not blend in with the natural environment, detracting from the 'sense of place' and are less structurally stable compared with the preferred alternative, increasing the risk of structural failure during strong flows, potentially increasing maintenance costs and risk to life.

For more alternatives please continue as alternative D, E, etc.

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):

NA

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 department in respect of the application:

- An ECO must be appointed/ designated to ensure that regular inspections are performed during the construction phase and to ensure the implementation of mitigation measures.
- Development may only take place during the low flow period of the Mokolo River, preferably from May to September, but as late as November if needed.
- Construction may not commence without a water use license from the regional office of the Department of Water and Sanitation.
- The construction camp shall be established in the "Modified" habitat type, outside the 10m ecological buffer zone (including the 1:100-year flood line and delineated riparian habitat) and 100m from the Mokolo River.
- Two protected trees: the Camel Thorn (*Vachellia erioloba*) and the Shepherds trees (*Boscia albitrunca*) were found just outside the direct footprint; it is imperative that these trees not be disturbed during the construction process.
- The following areas should be avoided during construction:
    - Riverbed and banks outside the working servitude (up to 3m on either side of the development footprint) and designated sand mining area,
    - Riparian area inside the 10m ecological buffer on both sides of the Mokolo river (except for the working servitude).

Is an EMPr attached? The EMPr must be attached as Appendix F.	YES ⊗	NO

Required Validity Period

- The proposed activities do not include operational aspects. Consequently, the environmental authorization is required for development only, including the following phases: planning and design, pre-construction, construction, and post-construction (rehabilitation and monitoring).
- The authorization shall be required for a period of two years (as of 31st December 2022).
- The date on which the activity should be concluded: **31st December 2023**

- The post-construction monitoring requirements should be finalized by: **31st December 2024**

Motivation

The required validity period is based on the estimated time to acquire an environmental authorisation and a water use license, as well as the proposed development timeframes as planned for by the applicant.

It is estimated that the applicant will only be able to commence with construction after 26th August 2022 in terms of the legislated timeframe for granting an environmental authorisation. However, the timeline for granting a water use license is less predictable and uncertain.

Assuming a typical 3-month project period, there may not be enough time remaining in the 2022 dry season. Commencement may be further delayed if the Water Use License is not issued at the same time. Given the risks of late authorisation(s) and early rains, it may not be possible to start in late 2022. Considering the Mokolo River only starts flowing strongly as late as December in most years (pers. comm. Jurie Willemse), it should be possible to complete construction by the end of December 2023.

Reference

Environmental Authorisation Validity Period Explanatory Document (2018), 5pg.

SECTION F: APPENDIXES

The following appendixes must be attached as appropriate:

Appendix A: Site plan(s), Locality and Site Sensitivity Maps

Appendix B: Photographs

Appendix C: Facility illustration(s)

Appendix D: Specialist reports

Appendix D2: Site Sensitivity Verification Report

Appendix E: Public Participation Report (including Comments and Response Report in Annexure H)

Appendix F: Environmental Management Programme (EMPr)

Appendix G: Need and Desirability

Appendix H: Impact Assessment

SECTION G: DECLARATION BY THE ENVIRONMENTAL ASSESSMENT PRACTITIONER

I, Shannon Farnsworth declare that I –

(a) act as the independent environmental practitioner in this application;

(b) do not have and will not have any financial interest in the undertaking of the activity, other than remuneration for work performed in terms of the Environmental Impact Assessment Regulations, 2014;

(c) do not have and will not have a vested interest in the proposed activity proceeding;

(d) have no, and will not engage in, conflicting interests in the undertaking of the activity;

(e) undertake to disclose, to the competent authority, any material information that has or may have the potential to influence the decision of the competent authority or the objectivity of any report, plan or document required in terms of the Environmental Impact Assessment Regulations, 2006;

(f) will ensure that information containing all relevant facts in respect of the application is distributed or made available to interested and affected parties and the public and that participation by interested and affected parties is facilitated in such a manner that all interested and affected parties will be provided with a reasonable opportunity to participate and to provide comments on documents that are produced to support the application;

(g) will ensure that the comments of all interested and affected parties are considered and recorded in reports that are submitted to the Department in respect of the application, provided that comments that are made by interested and affected parties in respect of a final report that will be submitted to the Department may be attached to the report without further amendment to the report;

(h) will keep a register of all interested and affected parties that participated in a public participation process; and

(i) will provide the Department with access to all information at my disposal regarding the application, whether such information is favourable to the applicant or not.

Signature of the Environmental Assessment Practitioner:

ecoleges Environmental Consultants

Name of company:

12th January 2022

Date:

Appendix A: Site plan(s), Locality and Site Sensitivity Maps

Appendix B: Photographs

Appendix C: Facility illustration(s)

Appendix D: Specialist reports

Appendix D2: Site Sensitivity Verification Report

Appendix E: Public Participation Report (including Comments and Response Report in Annexure H)

Appendix F: Environmental Management Programme (EMPr)

Appendix G: Need and Desirability

Appendix H: Impact Assessment