

**Technical Report:** KRANSKLOOF SCOPING/0916

**FINAL SCOPING REPORT FOR THE PROPOSED  
CONSTRUCTION OF AN AGRICULTURAL IRRIGATION DAM  
AND THE PREPARATION OF LAND FOR CULTIVATION ON  
PORTION 1 OF THE FARM KRANSKLOOF 218 KR,  
MOKOPANE, LIMPOPO PROVINCE.**

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November 2016

***Prepared by:***

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**PROJECT DETAIL**

<b>LDEDET Reference No.</b>	:	To be obtained
<b>Project Title</b>	:	The proposed construction of an agricultural irrigation dam and the preparation of land for cultivation on Portion 1 of the farm Kranskloof 218 KR, Mokopane, Limpopo Province.
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<b>Client</b>	:	Slijpsteen Meel (Pty) Ltd.
<b>Report Status</b>	:	Final Scoping Report
<b>Submission date</b>	:	November 2016

**When used as a reference this report should be cited as:** EcoLead (2016) The proposed construction of an agricultural irrigation dam and the preparation of land for cultivation on Portion 1 of the farm Kranskloof 218 KR, Mokopane, Limpopo Province.

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## GLOSSARY OF TERMS AND ACRONYMS

AMSL	Above Mean Sea Level
BA	Basic Assessment
BAR	Basic Assessment Report
DM	District Municipality
DWS	Department of Water and Sanitation
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
EIA	Environmental Impact Assessment
EMPr	Environmental Management Programme
Environmental impact	Any change to the environment, whether adverse or beneficial, wholly or partially resulting from an organization's environmental aspects.
GNR	Government Notice Regulation
I&AP	Interested and affected party
IDP	Integrated Development Plan
LDEDET	Limpopo Department of Economic Development, Environment and Tourism
LSU	Large Stock Unit
MLM	Mogalakwena Local Municipality
Mitigate	Activities designed to compensate for unavoidable environmental damage.
NEMA	National Environmental Management Act No. 107 of 1998
NWA	National Water Act No. 36 of 1998
PPP	Public Participation Process
SAHRA	South African Heritage Resources Agency
SDF	Spatial Development Framework
SR	Scoping Report
WULA	Water Use Licence Application



## CONTEXT FOR THE DEVELOPMENT

South Africa is situated in a semi-arid region. The average rainfall for the country is approximately 450 mm per year, which is well below the world average of approximately 860 mm per annum, and is characterised by a large in-season as well as annual variation. As a result, South Africa's water resources are scarce and extremely limited in extent. In global terms, South Africa is classified as "water short" and moving towards "water stressed". No truly large perennial river such as the Congo, Ganges or Nile which can serve a reliable source of water, occur in South Africa. The highly variable rainfall together with the steep topography and shallow soils, contribute to the flashy character of our rivers. Groundwater is also limited to the geology of the country, much of which is hard rock with little water bearing capacity.

Population growth, irrigation development and other economic activity in South Africa have long surpassed the stage where the requirements for water can be met from the natural availability thereof. The groundwater resources of the country, although very important for small towns and rural communities, are insufficient to sustain even a significant proportion of the water requirements of South Africa. Therefore, surface water is the main supply source. Due to the high variability in river flow within a year and between years, storage needs to be provided to bridge low flow periods with a degree of assurance as required by the different water use sectors (FAO, 2016).

Nationally, the total storage capacity of the major reservoirs in the country currently amounts to about 33 900 million m<sup>3</sup>, which is equal to approximately 70% of the mean annual runoff from the land surface of the country. This storage has been created by the construction of 252 large dams. In addition, some 3 500 dams with a height of greater than 5 m have been registered with the Department's Dam Safety Office.

Although water is essential to irrigation, the availability of water does not necessarily lead to irrigation development. Many cases in the country can be cited where dams had been built for irrigation, where little or no development realised, because of the lack of other primary success factors. Currently there are almost 300 irrigation schemes in the country in varying states of disrepair. The main reasons for the situation being institutional, social and political rather than insufficient water. Influencing factors include: inappropriate design and management systems, lack of capacity, land tenure, ownership, access to finance, training, entrepreneurship, lack of interest and others.

Currently close to 60% of all water used in the country, is utilised for irrigation. Most of this water is used by commercial farmers. Irrigated agriculture contributes of the order of 1,5% of the GDP of the country. The most beneficial irrigation uses of water are mainly for the production of export crops, which is a pure commercial revenue earning use.

In response to the above, Slijpsteen Meel (Pty) Ltd. is proposing the construction of an irrigation dam within the Mokamole river near Mokopane in the Limpopo Province (refer to Figure 1 for the locality map).

## EXECUTIVE SUMMARY

Like many other small and developing municipalities in the country, the Mogalakwena Municipality faces a number of challenges in addressing the needs and improving the lives of the community (IDP, 2014-15). The Mogalakwena Local Municipality's (MLM) Integrated Development Plan (IDP, 2014-15) identifies the mission of the municipality as: providing affordable and quality basic services; creating a conducive and sustainable environment for social and economic development; and being consultative, responsive and accountable. Mogalakwena Municipality is an area which mainly consists of rural land, agricultural land and some land dominated by urban and mining/industrial activities. Agricultural land within the municipal boundaries is categorized by the following farming activities: game; crops; livestock; poultry and horticulture. Products such as maize, game, cattle, vegetables, tobacco and citrus products are farmed. Agriculture is the second largest sector contributing towards the municipality's economy.

Slijpsteen Meel (Pty) Ltd. intends to develop an irrigation dam within the Makomole river covering a surface area of approximately 9 hectare and the preparation of land for cultivation on Portion 1 of the farm Kranskloof No. 218, Registration Division K.R., Limpopo Province situated within the Mogalakwena Local Municipality area of jurisdiction. The town of Mokopane is located approximately 40km south east of the proposed development and the town of Lyden approximately 14km north east (refer to Figure 1 and 2 for the locality and regional map). The total footprint of the area to be transformed will be approximately 349 hectare.

The Environmental Impact Assessment (EIA) Regulations, 2014 (Regulation 982) determine that an environmental authorisation is required for certain listed activities, which might have detrimental effects on the environment. The following activities have been identified with special reference to the proposed development and are listed in the EIA Regulations:

- Activity 19(i) (GN.R. 983): *"The infilling or depositing of any material of more than 5 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 5 cubic metres from (i) a watercourse."*
- Activity 13 (GN.R. 984): *"The physical alteration of virgin soil to agriculture, or afforestation for the purposes of commercial tree, timber or wood production of 100 hectares or more."*
- Activity 15 (GN.R. 984): *"The clearance of an area of 20 hectare or more of indigenous vegetation..."*
- Activity 16 (GN.R. 984): *"The development of a dam where the highest part of the dam wall, as measured from the outside toe of the wall to the highest part of the wall, is 5 metres or higher or where the high water mark of the dam covers an area of 10 hectares or more."*

- Activity 4 (a)(ii)(ee)(GN.R. 985): *“The development road wider than 4 metres within reserve less than 13.5 metres (a) in Limpopo (ii) outside urban areas, in (ee) critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority in bioregional plans.”*
- Activity 12 (a)(ii) (GN.R. 985): *“The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan (a) in Limpopo (ii) within critical biodiversity areas identified in bioregional plans.”*
- Activity 14 (iv)(xii)(a)(a)(ii)(ff) (GN.R. 984): *“The development (iv) dams, where the dam, including infrastructure and water surface area exceeds 10 square metres in size and (xii) infrastructure or structures with a physical footprint of 10 square metres or more Where such development occurs – (a) within a watercourse (a) in Limpopo (ii) outside urban areas, in (ff) critical biodiversity areas or ecosystem service areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans”.*

Being listed under Listing Notice 1, 2 and 3 (Regulation 983, 984 & 985) implies that the development is considered as potentially having a significant impact on the environment. Subsequently a ‘thorough assessment process’ is required as described in Regulations 21-24. Ecolead Pty Ltd. in strategic partnership with Environamics CC has been appointed as the independent consultant to undertake the EIA on Slijpsteen Meel (Pty) Ltd.’s behalf.

Regulation 21 of the EIA Regulations requires that a scoping report must contain all the information that is necessary for a proper understanding of the nature of issues identified during scoping. The potential positive and negative impacts associated with the proposed activity have been identified. The potentially most significant environmental impacts associated with the development are briefly summarized below:

#### Impacts during the construction phase:

During the construction phase minor negative impacts are foreseen over the short term. The latter refers to a period of months. The potentially most significant impacts relate to the impacts on the fauna and flora, aquatic ecology, water flow and drainage and impacts on heritage resources.

#### Impacts during the operational phase:

During the operational phase the study area will serve as an irrigation dam to irrigate 340 hectares of croplands. The negative impacts are generally associated with impacts on the fauna and flora and river flow and drainage. The operational phase will have a direct positive impact

by contributing to food security, providing permanent job opportunities and providing a breeding area for aquatic species.

Impacts during the decommissioning phase:

Over the long term the physical environment will benefit from the decommissioning of the dam wall and cropland since the site will be restored to its natural state. The decommissioning phase will potentially result in impact on the riparian area and the loss of permanent employment

Cumulative impacts:

The intensification of agriculture can lead to groundwater pollution related to the increased use of pesticides and fertilizers. Improved efficiency may significantly reduce return flows which are often utilized downstream by other irrigation schemes or wildlife habitats. Similarly, upstream developments are likely to impact on the irrigation scheme either in the form of reduced water availability (surface or groundwater) or reduced water quality. These impacts are identified as being potentially significant for the proposed development, if unmitigated.

Regulation 23 of the EIA Regulations determine that an EIA report be prepared and submitted for the proposed activity after the competent authority approves the final scoping report. The EIA report will evaluate and rate each identified impact, and identify mitigation measures that may be required. The EIA report will contain information that is necessary for the competent authority to consider the application and to reach a decision contemplated in Regulation Appendix 3 of the EIA Regulations.

# 1 INTRODUCTION

This section aims to introduce the Scoping Report and specifically to address the following requirements of the regulations:

**Appendix 2.** (2) A scoping report (...) must include- (a) details of:

- (i) the EAP who prepared the report; and
- (ii) the expertise of the EAP, including a curriculum vitae.

## 1.1 LEGAL MANDATE AND PURPOSE OF THE REPORT

Regulations No. 982, 983, 984 and 985 (of 4 December 2014) promulgated in terms of Section 24(5) and 44 of the National Environmental Management Act, (107 of 1998) determine that an EIA process should be followed for certain listed activities, which might have a detrimental impact on the environment. According to Regulation No. 982 the purpose of the Regulations is: *"...to regulate the procedure and criteria as contemplated in Chapter 5 of the Act relating to the preparation, evaluation, submission, processing and consideration of, and decision on, applications for environmental authorisations for the commencement of activities, subjected to environmental impact assessment, in order to avoid or mitigate detrimental impacts on the environment, and to optimise positive environmental impacts, and for matters pertaining thereto"*.

The EIA Regulations No. 983, 984 and 985 outline the activities for which EIA should apply. The following activities with special reference to the proposed activity are listed in the EIA Regulations:

**Table 1.1:** Listed activities <sup>1</sup>

Relevant notice:	Activity No (s)	Description of each listed activity as per project description:
GNR. 983, 4 December 2014	Activity 19(i)	<ul style="list-style-type: none"> <li>• <i>"The infilling or depositing of any material of more than 5 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 5 cubic metres from (i) a watercourse."</i></li> <li>• Construction of the proposed dam and associated infrastructure within the Mokamole river will result</li> </ul>

<sup>1</sup> Please refer to Table 5.2 for a detailed description of the relevant aspects of the development that will apply to each specific listed activity.

		in the excavation and removal of soil and/or rock of more than 5 cubic meters from a watercourse.
GNR. 984, 4 December 2014	Activity 13	<ul style="list-style-type: none"> <li>• <i>“The physical alteration of virgin soil to agriculture, or afforestation for the purposes of commercial tree, timber or wood production of 100 hectares or more.”</i></li> <li>• Approximately 340Ha consisting of 17x 20Ha pivots will be used for cultivation of various crops. The area earmarked for cultivation consists mainly of historic disturbed and cultivated land, but also includes natural vegetated areas.</li> </ul>
GNR. 984, 4 December 2014	Activity 15	<ul style="list-style-type: none"> <li>• <i>“The clearance of an area of 20 hectares or more of indigenous vegetation.”</i></li> <li>• In terms of vegetation type the site falls within the Central Sandy Bushveld vegetation type, which is described by Mucina and Rutherford (2006) as ‘Vulnerable’. Activity 15 is triggered since the areas to be cleared of indigenous vegetation for construction of the proposed dam, as well as preparation of cultivation lands, will exceed 20Ha.</li> </ul>
GNR. 984, 4 December 2014	Activity 16	<ul style="list-style-type: none"> <li>• <i>“The development of a dam where the highest part of the dam wall, as measured from the outside toe of the wall to the highest part of the wall, is 5 metres or higher or where the high water mark of the dam covers an area of 10 hectares or more.”</i></li> <li>• Activity 16 is triggered since the proposed dam wall will have a height of approximately 12m and a width of approximately 391m and the high water mark of the dam will cover an area of approximately 9Ha.</li> </ul>
GNR. 985, 4 December 2014	Activity 4 (a)(ii)(ee)	<ul style="list-style-type: none"> <li>• <i>“The development road wider than 4 metres within reserve less than 13.5 metres (a) in Limpopo (ii) outside urban areas, in (ee) critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority in bioregional plans.”</i></li> <li>• Activity 4 is triggered since a road with a width of 4-5m will be constructed and the site is located within a Critical Biodiversity Area (CBA).</li> </ul>
GNR. 985, 4 December 2014	Activity 12 (a)(ii)	<ul style="list-style-type: none"> <li>• <i>“The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance</i></li> </ul>

		<p><i>with a maintenance management plan (a) in Limpopo (ii) within critical biodiversity areas identified in bioregional plans.”</i></p> <ul style="list-style-type: none"> <li>• Activity 12 is triggered since more than 300m<sup>2</sup> of indigenous vegetation will be removed within a critical biodiversity area.</li> </ul>
GNR. 985, 4 December 2014	Activity 14 (iv)(xii)(a)(a)(ii)(ff)	<ul style="list-style-type: none"> <li>• <i>“The development (iv) dams, where the dam, including infrastructure and water surface area exceeds 10 square metres in size and (xii) infrastructure or structures with a physical footprint of 10 square metres or more, where such development occurs – (a) within a watercourse (a) in Limpopo (ii) outside urban areas, in (ff) critical biodiversity areas or ecosystem service areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans”.</i></li> <li>• Activity 14 is triggered since the dam will cover an area of more than 10m<sup>2</sup> within a critical biodiversity area.</li> </ul>

Being listed under Listing Notices 1, 2 and 3 (Regulation 983, 984 & 985) implies that the proposed activity is considered as potentially having a significant impact on the environment. Subsequently a ‘thorough assessment process’ is required as described in Regulations 21-24. According to Appendix 2 of Regulation 982 the objective of the scoping process is to, through a consultative process:

- Identify the relevant policies and legislation relevant to the activity;
- Motivate the need and desirability of the proposed activity, including the need and desirability of the activity in the context of the preferred location;
- Identify and confirm the preferred activity and technology alternative through an impact and risk assessment and ranking process;
- Identify and confirm the preferred site, through a detailed site selection process, which includes an impact and risk assessment process inclusive of cumulative impacts and a ranking process of all the identified alternatives focusing on the geographical, physical, biological, social, economic, and cultural aspects of the environment;
- Identify the key issues to be addressed in the assessment phase;
- Agree on the level of assessment to be undertaken, including the methodology to be applied, the expertise required as well as the extent of further consultation to be

undertaken to determine the impacts and risks the activity will impose on the preferred site through the life of the activity, including the nature, significance, consequence, extent, duration and probability of the impacts to inform the location of the development footprint within the preferred site; and

- Identify suitable measures to avoid, manage or mitigate identified impacts and to determine the extent of the residual risks that need to be managed and monitored.

This report is the Final Scoping Report to be submitted to the Limpopo Department of Economic Development and Tourism (LDEDET). According to Regulation 982 all registered I&APs and relevant State Departments must be allowed the opportunity to review the scoping report. The Draft Scoping Report was made available to I&APs and all relevant State Departments. They will be requested to provide written comments on the report within 30 days of receiving it. All issues identified during the review period will be documented and compiled into a Comments and Response Report to be included as part of the Final Scoping Report.

The National Water Act, Act no 36 of 1998 requires that, in general a water use must be licensed unless it is listed in Schedule I, is an existing lawful use, is permissible under a general authorisation, or if a responsible authority waives the need for a licence. The National Water Act identifies eleven different water uses for which a water use licence is required. A water use licence application will be submitted to the Department of Water and Sanitation for the section 21 water uses triggered by the proposed activity and will form an integral part of the process.

## **1.2 DETAILS OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER (EAP)**

Ecolead in strategic partnership with Environamics was appointed by the applicant as the independent EAP to conduct the EIA and prepare all required reports. All correspondence may be directed to the lead EAP:

Contact person: Ruan Mostert  
Postal Address: Postnet Suite 594, Private Bag X37, Lynnwood Ridge, 0040  
Telephone: 072 7747 831 (w) 086 7641 433 (f) 072 774 7831 (Cell)  
Electronic Mail: ruan@ecolead.co.za

Regulation 13(1)(a) and (b) determines that an independent and suitably qualified and experienced EAP should conduct the EIA. In terms of the independent status of the EAP a declaration is attached as Appendix A to this report. The expertise of the EAP responsible for conducting the EIA is also summarized in a curriculum vitae included as part of Appendix A.

## **1.3 DETAILS OF SPECIALISTS**

Table 1.2 provides information on the specialists that have been appointed as part of the EIA process. Regulation 13(1)(a) and (b) determines that an independent and suitably qualified, experienced and independent specialist should conduct the specialist study, in the event where



the specialist is not independent, a specialist should be appointed to externally review the work of the specialist as contemplated in sub regulation (2), must comply with sub regulation 1.

**Table 1.2:** Details of specialists

Specialist Study	Prepared by	Contact Person	Postal Address	Tel	e-mail
Archaeological Impact Assessment	Exigo Sustainability	Mr. Nelius Kruger	PostNet Suite 74 Private Bag X07 Arcadia, 0007	Tel: (012) 751 2160 Fax: 086 607 2406	info@exigo3.com
Palaeontological Desktop Assessment	Skarab Palaeontological Consultants	Dr. J. F. Durand	PO Box 31517 Totiusdal, 0134	Cell: 083 235 7855	francois.karst@yahoo.com
Ecological Report	Exigo Sustainability	Dr. B. J. Henning	PostNet Suite 74 Private Bag X07 Arcadia, 0007	Tel: (012) 751 2160 Fax: 086 607 2406	info@exigo3.com
Wetland Delineation Report	Exigo Sustainability	Dr. B. J. Henning	PostNet Suite 74 Private Bag X07 Arcadia, 0007	Tel: (012) 751 2160 Fax: 086 607 2406	info@exigo3.com
Aquatic Assessment & Ecological Flow Assessment	The Biodiversity Company	Mr. Andrew Husted	-	Cell: 084 319 1225	andrew@thebiodiversitycompany.com

## 1.4 STATUS OF THE EIA PROCESS

The EIA process is conducted strictly in accordance with the stipulations set out in Regulations 21-24 of Regulation No. 982. Table 1.2 provides a summary of the EIA process and future steps to be taken. It can be confirmed that to date:

- A site visit was conducted on the 18<sup>th</sup> of August 2016 in order to discuss the proposed development and assess the site.
- The public participation process was initiated on 17 and 19 August and all I&APs were requested to submit their comments by 16 September 2016.

It is envisaged that the Draft Scoping Report will be submitted to the LDEDET in September 2016 and that the Final Scoping Report will be accepted by the Department by December 2016. The EIA process should be completed within approximately nine months of submission of the Draft Scoping Report, i.e. by July 2017– see Table 1.3.

**Table 1.3:** Project schedule

Activity	Prescribed timeframe	Timeframe
Site visit		19 August 2016
Public participation (BID)	30 Days	19 August 2016
Conduct specialist studies	-	August – November 2016
Submit application form and DSR	-	September 2016
Public participation (DSR)	30 Days	September – October 2016
Submit FSR	-	November 2016
Department acknowledges receipt	10 Days	November 2016
Department approves/reject	43 Days	December 2016/January 2017
Public participation (DEIR)	30 Days	February 2017
Submission of FEIR & EMPr	-	April 2017
Department acknowledges receipt	10 Days	April 2017
Decision	107 Days	July 2017
Department notifies of decision	5 Days	July 2017
Registered I&APs notified of decision	14 Days	July 2017
Appeal	20 Days	August 2017

## 1.5 STRUCTURE OF THE REPORT

This report is structured in accordance with the prescribed contents stipulated in Appendix 2 of Regulation No.982. It consists of seven sections demonstrating compliance to the specifications of the regulations as illustrated in Table 1.4.

**Table 1.4:** Structure of the report

Requirements for the contents of a scoping report as specified in the Regulations		Section in report	Pages
<b>Appendix 2. (2) - A scoping report must contain all the information that is necessary for a proper understanding of the process, informing all preferred alternatives, including location alternatives, the scope of the assessment, and the consultation process to be undertaken through the environmental impact assessment process, and must include-</b>			
(a)	details of -	1	12-20
	(i) the EAP who prepared the report; and ii) the expertise of the EAP, including a curriculum vitae.		
(b)	the location of the activity, including-	2	21-35
	(i) the 21-digit Surveyor General code of each cadastral land parcel;		
	(ii) where available, the physical address and farm name; (iii) where the required information in items (i) and (ii) is not available, the coordinates of the boundary of the property or properties;		
(c)	a plan which locates the proposed activity or activities applied for at an appropriate scale, or, if it is-	2	21-35
	(i) a linear activity, a description and coordinates of the corridor in which the proposed activity or activities is to be undertaken; or		
	(ii) on land where the property has not been defined, the coordinates within which the activity is to be undertaken;		
(d)	a description of the scope of the proposed activity, including-	3	36-46
	(i) all listed and specified activities triggered;		
	(ii) a description of the activities to be undertaken, including associated structures and infrastructure.		
(e)	A description of the policy and legislative context within which the development is proposed including an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are applicable to this activity and are to be considered in the assessment process;	3	36-46
(f)	a motivation for the need and desirability for the proposed development including the need and desirability of the activity in the context of the preferred location;	4	47-48
(g)	a full description of the process followed to reach the proposed preferred activity, site and location within the site, including -	5	49-63
	(i) details of all the alternatives considered;		

	<p>(ii) details of the public participation process undertaken in terms of regulation 41 of the Regulations, including copies of the supporting documents and inputs;</p> <p>(iii) a summary of the issues raised by interested and affected parties, and an indication of the manner in which the issues were incorporated, or the reasons for not including them.</p> <p>(iv) the environmental attributes associated with the alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;</p> <p>(ix) the outcome of the site selection matrix;</p> <p>(x) if no alternatives, including alternative locations for the activity were investigated, the motivation for not considering such and</p> <p>(xi) a concluding statement indicating the preferred alternatives, including preferred location of the activity;</p>		
(h)	<p>(v) the impacts and risks identified for each alternative, including the nature, significance, consequence, extent, duration and probability of the impacts, including the degree to which these impacts- (aa) can be reversed; (bb) may cause irreplaceable loss of resources; and (cc) can be avoided, managed or mitigated;</p> <p>(vi) the methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks associated with the alternatives;</p> <p>(vii) positive and negative impacts that the proposed activity and alternatives will have on the environment and on the community that may be affected focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;</p> <p>(viii) the possible mitigation measures that could be applied and level of residual risk; (ix) the outcome of the site selection matrix; (x) if no alternatives, including alternative locations for the activity were investigated, the motivation for not considering such and (xi) a concluding statement indicating the preferred alternatives, including preferred location of the activity;</p>	6	64-81
(i)	<p>a plan of study for undertaking the environmental impact assessment process to be undertaken, including-</p> <p>(i) a description of the alternatives to be considered and assessed within the preferred site, including the option of not proceeding with the activity;</p>	7	82-95

	(ii) a description of the aspects to be assessed as part of the EIA process;		
	(iii) aspects to be assessed by specialists;		
	(iv) a description of the proposed method of assessing the environmental aspects, including a description of the proposed method of assessing the environmental aspects including aspects to be assessed by specialists;		
	(v) a description of the proposed method of assessing duration and significance;		
	(vi) an indication of the stages at which the competent authority will be consulted;		
	(vii) particulars of the public participation process that will be conducted during the EIA process; and		
	(viii) a description of the tasks that will be undertaken as part of the EIA process;		
	(ix) identify suitable measures to avoid, reverse, mitigate or manage identified impacts and to determine the extent of the residual risks that need to be managed and monitored.		
(j)	an undertaking under oath or affirmation by the EAP in relation to-		
	(i) the correctness of the information provided in the report;		
	(ii) the inclusion of comments and inputs from stakeholders and interested and affected parties; and		
	(iii) any information provided by the EAP to I&APs and any responses by the EAP to comments or inputs made by I&APs;		
(k)	an undertaking under oath or affirmation by the EAP in relation to the level of agreement between the EAP and I&APs on the plan of study for undertaking the EIA;		
(l)	where applicable, any specific information required by the CA; and	N/A	-
(m)	any other matter required in terms of section 24(4)(a) and (b) of the Act.	N/A	-

## 2 ACTIVITY DESCRIPTION

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This section aims to address the following requirements of the regulations:

**Appendix 2.** (2) A scoping report (...) must include-

(b) the location of the activity, including-

- (i) the 21-digit Surveyor General code of each cadastral land parcel;
- (ii) where available, the physical address and farm name;
- (iii) where the required information in items (i) and (ii) is not available, the coordinates of the boundary of the property or properties;

(c) a plan which locates the proposed activity applied for at an appropriate scale, or, if it is-

- (i) a linear activity, a description and coordinates of the corridor in which the proposed activity or activities is to be undertaken; or
- (ii) on land where the property has not been defined, the coordinates within which the activity is to be undertaken;

(d) a description of the scope of the proposed activity, including-

- (i) all listed and specified activities triggered;
- (ii) a description of the activities to be undertaken, including associated structures and infrastructure.

### 2.1 THE LOCATION OF THE ACTIVITY AND PROPERTY DESCRIPTION

The activity entails the construction of an agricultural irrigation dam and the preparation of land for agricultural use on Portion 1 of the farm Kranskloof No. 218, Registration Division K. R., Limpopo Province situated within the Mogalakwena Local Municipality area of jurisdiction. The town of Mokopane is located approximately 40km south east of the proposed development and the town of Lyden approximately 14km north east (refer to Figure 1 for the locality map).

Please note that the client is in process of amending the current property details with a surveying process. As soon as this process has been completed the farm will be sub-divided into the following portions:

- The remainder of portion 2 of the farm Kranskloof 218 KR
- Portion 3 of the farm Kranskloof 218 KR

- Portion 4 of the farm Kranskloof 218 KR
- Portion 5 of the farm Kranskloof 218 KR.

This will also be discussed in more detail within the EIA Report, as the subdivision has not yet been finalised.

The project entails the construction of an irrigation dam with a development footprint of 9 hectares, dam wall height of approximately 12 meters. The dam is being constructed in order to supply the proposed agricultural uses with a sustainable supply of water. The total area of land to be prepared for cultivation is approximately 340 – refer to table 2.1 for general site information.



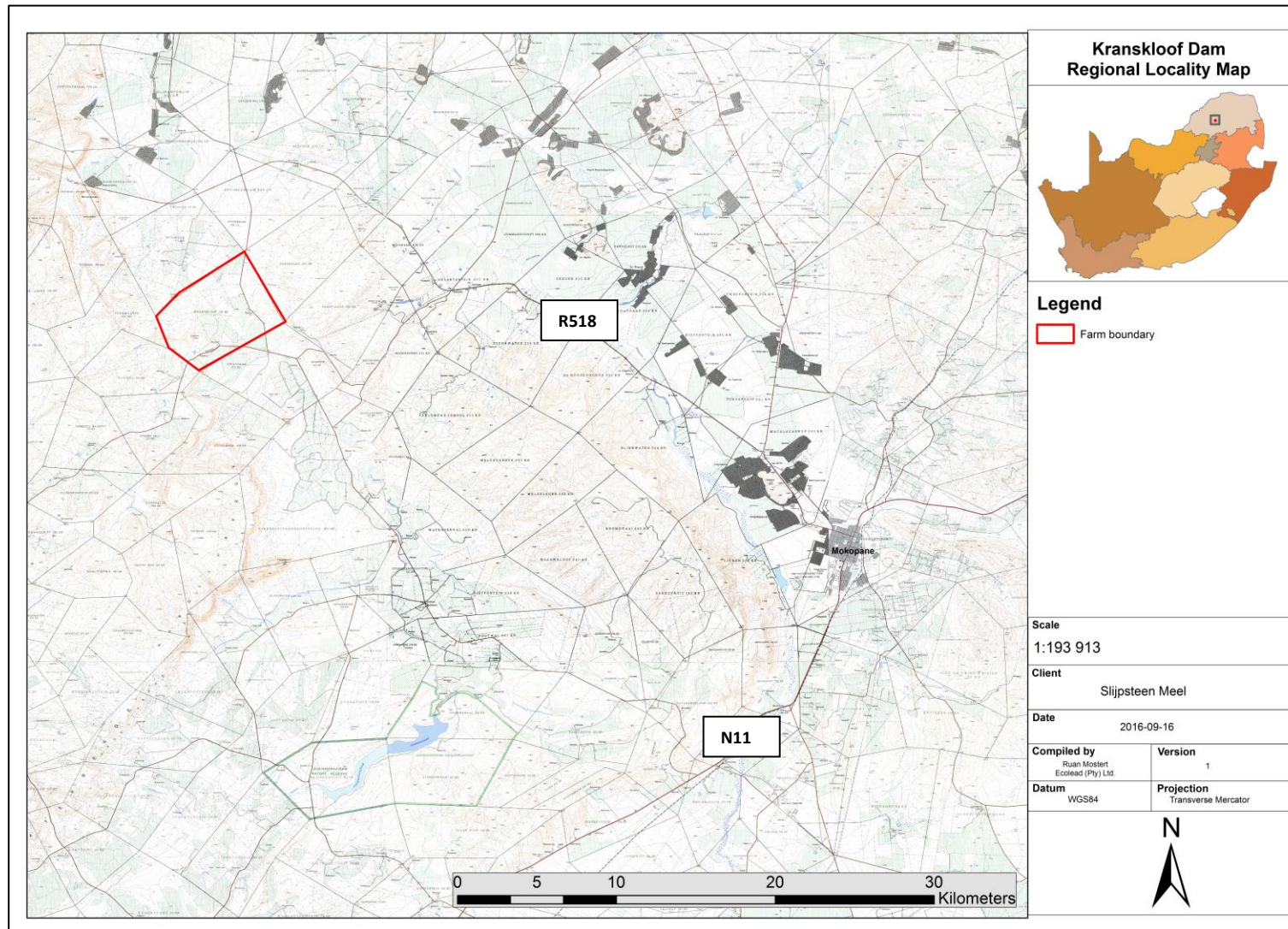


Figure 1 Regional Locality Map

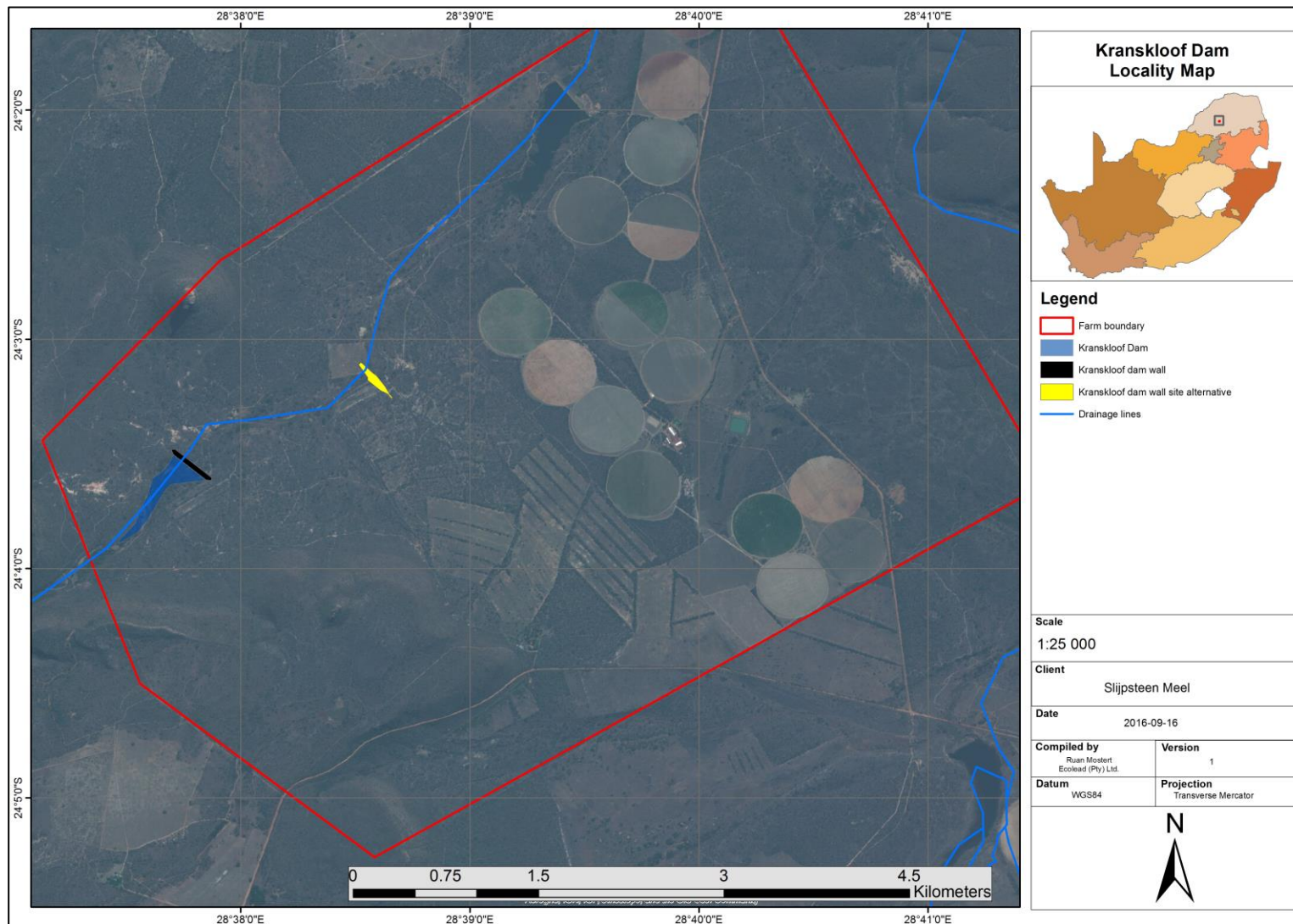


Figure 2 Locality Map

**Table 2.1:** General site information

Description of affected farm portion	Portion 1 of the farm Kranskloof No. 218, Registration Division K. R., Limpopo Province (Please note that the client is in process of amending the current property details with a surveying process. As soon as this process has been completed the farm will be sub-divided into the following portions): <ul style="list-style-type: none"> <li>• The remainder of portion 2 of the farm Kranskloof 218 KR</li> <li>• Portion 3 of the farm Kranskloof 218 KR</li> <li>• Portion 4 of the farm Kranskloof 218 KR</li> <li>• Portion 5 of the farm Kranskloof 218 KR.</li> </ul>
21 Digit Surveyor General codes	TOKR000000002180001
Title Deed	T83492/2001
Photographs of the site	Refer to the Plates
Height of the dam wall	Height of approximately 12 meters
Area of dam wall	17 508m <sup>2</sup>
Water area on 1108 amsl	Approximately 9ha
Water volume on 1108 amsl	To be confirmed as the applicant is still busy with the dam design report
Volume of Dam wall before stripping	97 239m <sup>3</sup>
Volume of Dam wall after stripping	130 162m <sup>3</sup>
Stripping area over 2m	156 67m <sup>2</sup>
Dimensions of the dam	Dam wall will be 391m in length and 66m on widest toe with a cut slope 1:2 and fill slope 1:3
Area to be transformed for the dam	Approximately 9 hectares when full capacity s reached

Area to be transformed for cultivation	Approximately 340 hectares
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The current land-use of the proposed development site is characterised by crop cultivation. The farm owner also has some game on the farm. Neighbouring farms are being used for crop cultivation, livestock grazing and game farming. The croplands to be prepared for cultivation are largely located on previously cultivated fields. The storage dam will provide water for cropland irrigation – refer to plates 1-8 for photographs of the area. The property on which the development is to be established is owned by Slijpsteen Meel (Pty) Ltd.



**Plate 1 Site photo taken in a Northern direction**



**Plate 2 Site photo taken in a North Eastern direction**



**Plate 3 Site photo taken in an Eastern direction**



**Plate 4 Site photo taken in a South Eastern direction**



**Plate 5 Site photo taken in a Southern direction**



**Plate 6 Site photo taken in a South Western direction**



**Plate 7 Site photo taken in a Western direction**



**Plate 8 Site photo taken in a North Western direction**

## 2.2 ACTIVITY DESCRIPTION

The proposed development will trigger the following activities:

**Table 2.2:** Listed activities <sup>2</sup>

<b>Relevant notice:</b>	<b>Activity No (s)</b>	<b>Description of each listed activity as per project description:</b>
GNR. 983, 4 December 2014	Activity 19(i)	<ul style="list-style-type: none"> <li>• <i>“The infilling or depositing of any material of more than 5 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 5 cubic metres from (i) a watercourse.”</i></li> <li>• Construction of the proposed dam and associated infrastructure within the Mokamole river will result in the excavation and removal of soil and/or rock of more than 5 cubic meters from a watercourse.</li> </ul>
GNR. 984, 4 December 2014	Activity 13	<ul style="list-style-type: none"> <li>• <i>“The physical alteration of virgin soil to agriculture, or afforestation for the purposes of commercial tree, timber or wood production of 100 hectares or more.”</i></li> <li>• Approximately 340Ha consisting of 17x 20Ha pivots will be used for cultivation of various crops. The area earmarked for cultivation consists mainly of historic disturbed and cultivated land, but also includes natural vegetated areas.</li> </ul>
GNR. 984, 4 December 2014	Activity 15	<ul style="list-style-type: none"> <li>• <i>“The clearance of an area of 20 hectares or more of indigenous vegetation.”</i></li> <li>• In terms of vegetation type the site falls within the Central Sandy Bushveld vegetation type, which is described by Mucina and Rutherford (2006) as ‘Vulnerable’. Activity 15 is triggered since the areas to be cleared of indigenous vegetation for construction of the proposed dam, as well as preparation of cultivation lands, will exceed 20Ha.</li> </ul>
GNR. 984, 4 December 2014	Activity 16	<ul style="list-style-type: none"> <li>• <i>“The development of a dam where the highest part of the dam wall, as measured from the outside toe of the wall to the highest part of the wall, is 5 metres</i></li> </ul>

<sup>2</sup> Please refer to Table 5.2 for a detailed description of the relevant aspects of the development that will apply to each specific listed activity.

		<p><i>or higher or where the high water mark of the dam covers an area of 10 hectares or more.”</i></p> <ul style="list-style-type: none"> <li>• Activity 16 is triggered since the proposed dam wall will have a height of approximately 12m and a width of approximately 391m and the high water mark of the dam will cover an area of approximately 9Ha.</li> </ul>
GNR. 985, 4 December 2014	Activity 4 (a)(ii)(ee)	<ul style="list-style-type: none"> <li>• <i>“The development road wider than 4 metres within reserve less than 13.5 metres (a) in Limpopo (ii) outside urban areas, in (ee) critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority in bioregional plans.”</i></li> <li>• Activity 4 is triggered since a road with a width of 4-5m will be constructed within a critical biodiversity area (CBA).</li> </ul>
GNR. 985, 4 December 2014	Activity 12 (a)(ii)	<ul style="list-style-type: none"> <li>• <i>“The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan (a) in Limpopo (ii) within critical biodiversity areas identified in bioregional plans.”</i></li> <li>• Activity 12 is triggered since more than 300m<sup>2</sup> of indigenous vegetation will be removed within a critical biodiversity area.</li> </ul>
GNR. 985, 4 December 2014	Activity 14 (iv)(xii)(a)(a)(ii)(ff)	<ul style="list-style-type: none"> <li>• <i>“The development (iv) dams, where the dam, including infrastructure and water surface area exceeds 10 square metres in size and (xii) infrastructure or structures with a physical footprint of 10 square metres or more Where such development occurs – (a) within a watercourse (a) in Limpopo (ii) outside urban areas, in (ff) critical biodiversity areas or ecosystem service areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans”.</i></li> <li>• Activity 14 is triggered since the dam will cover an area of more than 10m<sup>2</sup> within a critical biodiversity area.</li> </ul>



The potentially most significant impacts will occur during the construction phase of the dam and preparation of land for cultivation, which will include the following activities:

- Site clearing and preparation: Certain areas of the site will need to be cleared of vegetation.
- Civil works to be conducted:
  - Excavation, layering, levelling and compaction of area.
  - Construction of the dam wall.
  - Construction of road network and pump station.

### 2.3 IRRIGATION DAM AND CULTIVATION

In Southern Africa, dry season agriculture and the pre-rainy season establishment of food and cash crops cannot be undertaken without large quantities of water. To rely upon streamflow at a time when temperatures and evaporation are often at a peak can be unrealistic and risky. It may become essential for a dam to be constructed on a river or stream to allow for off-season storage of vital water supplies. Although primarily for irrigation, such structures can be used, either separately or combined, for stock and domestic water purposes, drainage sumps, groundwater recharge, flood amelioration and conservation storage. The key components of the proposed project are described below:

- Irrigation Dam - The proposed dam will be constructed in order to capture run-off water during the rainy season, which will be used to complement existing irrigation activities on the farm and to increase capacity for future planned cultivation. The dam wall will have a length of approximately 380m and a width of approximately 41m, with a surface water cover of approximately 9 hectares.
- Dam wall – The dam wall will be constructed from material sourced from the area (cement, rock and gravel) and will have a height of approximately 12m and a width of approximately 391m.
- Pumping station – Distribution of water to the farming units will make use of a 5m x 5m pumping station.
- Cultivation area – Approximately 340Ha consisting of 17x 20Ha pivots will be used for cultivation of various crops and vegetables. The area earmarked for cultivation consists mainly of historic disturbed and cultivated land, but also includes natural vegetated areas.
- Roads – An internal site road network will also be required to provide access to the proposed dam and cultivated land.

## **2.4 LAYOUT DESCRIPTION**

The layout plan will follow the limitations of the site and aspects such as environmentally sensitive areas, roads, fencing and servitudes on site will be considered – refer to figure 3 below. The total surface area proposed for irrigation dam is 9 hectares and approximately 340 hectares for the proposed croplands. The croplands are largely located on previously cultivated fields. A draft layout plan will be included as part of the Draft EIR.

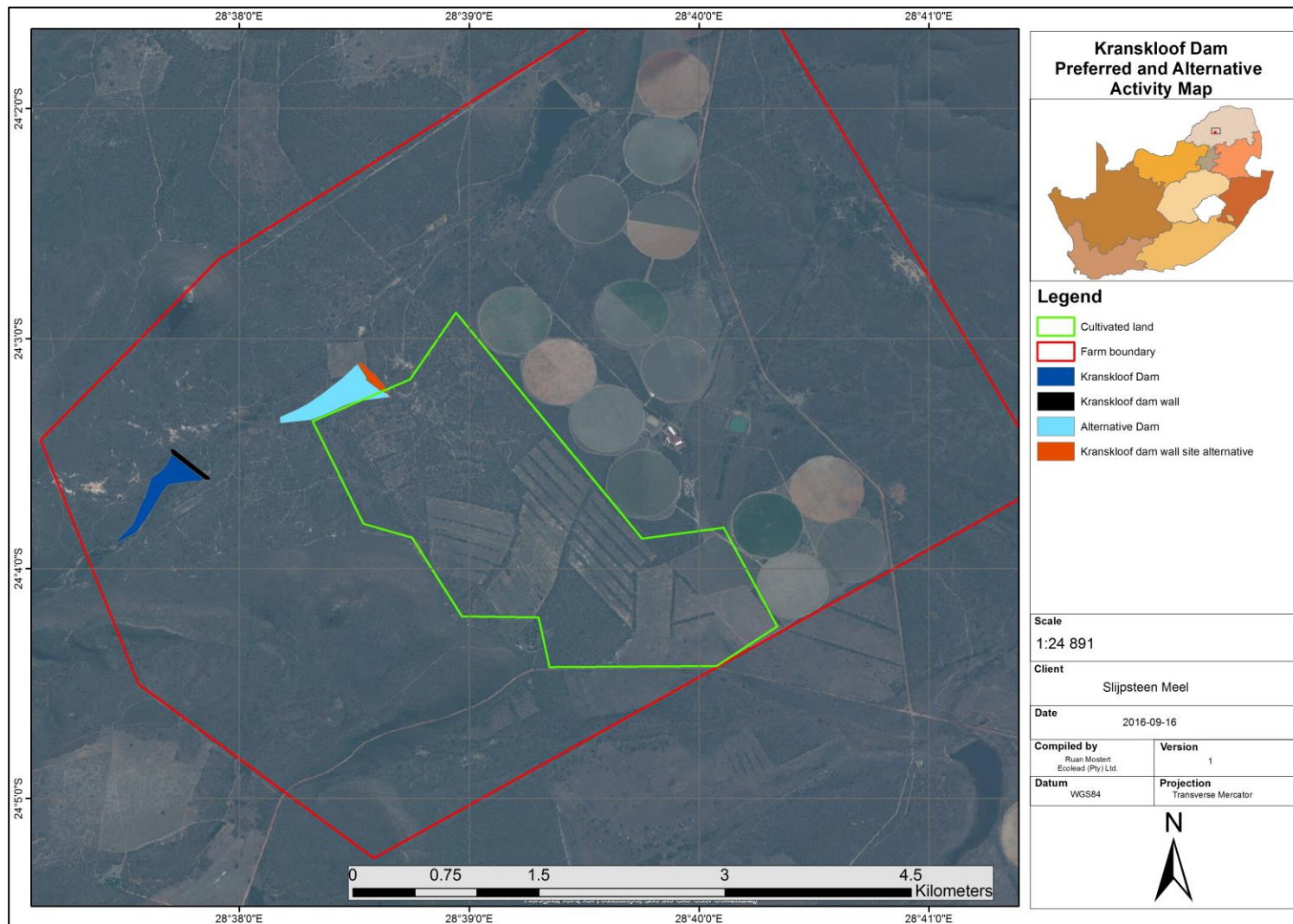


Figure 3 The proposed laydown of the preferred and alternative dam

## **2.5 SERVICES PROVISION**

During the construction phase of the dam wall, water may be abstracted from ground water resources. The site falls within the A62A quaternary drainage region, this drainage region falls under Zone B, which refers to the amount of water that may be taken from the ground water resource per hectare, per annum. According to the Revision of General Authorisations in terms of Section 39 of the National Water Act of 1998 (Act No. 36 of 1998), Zone B indicates that 45m<sup>3</sup> water may be abstracted from the ground water resource without applying for a Water Use License. A full assessment of the application for a water use authorization will be undertaken for the in-stream dam and irrigation.

### 3 LEGISLATIVE AND POLICY CONTEXT

This section aims to address the following requirements of the regulations:

**Appendix 2.** (2) A scoping report (...) must include-

(e) a description of the policy and legislative context within which the development is proposed including an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are applicable to this activity and are to be considered in the assessment process;

#### 3.1 INTRODUCTION

Environmental decision making with regards to the construction of dams and cultivation is based on numerous policy and legislative documents. These documents inform decisions on project level environmental authorisations issued by the Limpopo Department of Economic Development, Environment and Tourism (LDEDET) as well as comments from local and district authorities. Moreover, it is significant to note that they also inform strategic decision making reflected in IDPs and SDFs. Therefore, to ensure streamlining of environmental authorisations it is imperative for the proposed activity to align with the principles and objectives of key national, provincial and local development policies and legislation. The following acts and policies and their applicability to the proposed development are briefly summarised:

- The Constitution of the Republic of South Africa, 1996 (Act No. 108 of 1996)
- National Environmental Management Act, 1998 (Act No. 107 of 1998) [NEMA]
- National Environmental Management Biodiversity Act (NEMBA: Act 10 Of 2004)
- National Water Act, 1998 (Act No. 36 of 1998)
- National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008)
- The National Heritage Resources Act, 1999 (Act No. 25 of 1999)
- The National Forest Act (Act No. 84 of 1998)
- Conservation of Agricultural Resources Act, 1983 (Act No. 85 of 1983)
- Limpopo Environmental Management Act (2004)
- Limpopo Conservation Plan V2 (2013)
- Limpopo Growth and Development Strategy (2015)
- Waterberg District Municipality Integrated Development Plan for 2012 – 2016
- Mogalakwena Local Municipality Integrated Development Plan for 2015/2016.

The key principles and objectives of each of the legislative and policy documents are briefly summarised in Tables 3.1 and 3.2 to provide a reference framework for the implications for the proposed activity.

### 3.2 LEGISLATIVE CONTEXT

**Table 3.1:** Legislative context for the construction of photovoltaic solar plants

LEGISLATION	ADMINISTERING AUTHORITY	DATE	SUMMARY / IMPLICATIONS FOR PROPOSED DEVELOPMENT
<b>The Constitution of South Africa (Act No. 108 of 1996)</b>	National Government	1996	The Constitution is the supreme law of the Republic and all law and conduct must be consistent with the Constitution. The Chapter on the Bill of Rights contains a number of provisions, which are relevant to securing the protection of the environment. Section 24 states that “everyone has the right to (a) an environment that is not harmful to their health or well-being and (b) to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that – (i) prevent pollution and ecological degradation; (ii) promote conservation; and (iii) secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development. The Constitution therefore, compels government to give effect to the people’s environmental right and places government under a legal duty to act as a responsible custodian of the country’s environment. It compels government to pass legislation and use other measures to protect the environment, to prevent pollution and ecological degradation, promote conservation and secure sustainable development.
<b>The National Environmental Management Act (Act No. 107 of 1998)</b>	National and Provincial Department of Environmental Affairs	1998	NEMA provides for co-operative governance by establishing principles and procedures for decision-makers on matters affecting the environment. An important function of the Act is to serve as an enabling Act for the promulgation of legislation to effectively address integrated environmental management. Some of the principles in the Act are accountability; affordability; cradle to grave management; equity; integration; open information; polluter pays; subsidiary; waste avoidance and minimisation; co-operative governance; sustainable development; and environmental protection and justice.

The mandate for EIA lays with the National Environmental Management Act (107 of 1998) and the EIA Regulations No. 982, 983, 984, and 985 promulgated in terms of Section 24 of NEMA. The EIA Regulations determine that an Environmental Authorisation is required for certain listed activities,

			which might have a detrimental effect on the environment. This EIA was triggered by activity 19(i) listed in Regulation R983, activities 13, 15, 16 listed in Regulation R984 and activities 4(a)(ii)(ee), 12(a)(ii) and 14 (iv)(xii)(a)(a)(ii)(ff) which requires a 'scoping and environmental impact assessment process.'
<b>National Environmental Management Biodiversity Act (NEMBA: Act 10 Of 2004)</b>	National Department of Environmental Affairs – Biodiversity Section	2004	The following aspects of the NEMBA (2004) are important to consider in the compilation of an ecological report. It: <ul style="list-style-type: none"> <li>• Lists ecosystems that are threatened or in need of national protection;</li> <li>• Links to Integrated Environmental Management processes;</li> <li>• Must be taken into account in EMP and IDPs;</li> <li>• The Minister may make regulations to reduce the threats to listed ecosystems.</li> </ul>
<b>The National Forest Act (Act 84 of 1998)</b>		1998	The National Forest Act: <ul style="list-style-type: none"> <li>• Promotes the sustainable management and development of forests for the benefit of all;</li> <li>• Creates the conditions necessary to restructure forestry in State Forests;</li> <li>• Provide special measures for the protection of certain forests and protected trees;</li> <li>• Promotes the sustainable use of forests for environmental, economic, educational, recreational, cultural, health and spiritual purposes.</li> <li>• Promotes community forestry.</li> </ul>
<b>The National Water Act (Act No. 36 of 1998)</b>	Department of Water Affairs (DWA)	1998	Sustainability and equity are identified as central guiding principles in the protection, use, development, conservation, management and control of water resources. The intention of the Act is to promote the equitable access to water and the sustainable use of water, redress past racial and gender discrimination, and facilitate economic and social development. The Act provides the rights of access to basic water supply and sanitation. It provides for the protection of aquatic and associated ecosystems, the reduction and prevention of pollution and degradation of water resources. <p>As this Act is founded on the principle that National Government has overall responsibility for and</p>

			<p>authority over water resource management, including the equitable allocation and beneficial use of water in the public interest, a person can only be entitled to use water if the use is permissible under the Act. Chapter 4 of the Act lays the basis for regulating water use.</p> <p>A Water Use License will be applied for, for impeding and diverting the flow of a water course (Section 21 (c)) and altering the bed, banks, course and characteristics of a watercourse (Section 21(i) for the building of an instream dam (Section 21 (b) and taking water from a water resource (Section 21(a)).</p>
<b>National Environmental Management Waste Act (Act No. 59 of 2008)</b>	Department of Environmental Affairs (DEA)	2008	<p>NEMWA has been developed as part of the law reform process enacted through the White Paper on Integrated Pollution and Waste Management and the National Waste Management Strategy (NWMS). The objectives of the Act relate to the provision of measures to protect health, well-being and the environment, to ensure that people are aware of the impact of waste on their health, well-being and the environment, to provide for compliance with the measures, and to give effect to section 24 of the Constitution in order to secure an environment that is not harmful to health and well-being.</p> <p>Regulations No. R921 (of 2013) promulgated in terms of Section 19(1) of the National Environmental Management: Waste Act (59 of 2008) determine that no person may commence, undertake or conduct a waste management activity listed in this schedule unless a license is issued in respect of that activity. It is not envisaged that a waste permit will be required for the proposed development.</p>
<b>The National Heritage Resources Act (Act No. 25 of 1999)</b>	South African Heritage Resources Agency (SAHRA)	1999	<p>The Act aims to introduce an integrated and interactive system for the management of the heritage resources, to promote good government at all levels, and empower civil society to nurture and conserve heritage resources so that they may be bequeathed to future generations and to lay down principles for governing heritage resources management throughout the Republic. It also aims to establish the South African Heritage Resources Agency together with its Council to co-ordinate and promote the management of heritage resources, to set norms and maintain essential national standards and to protect heritage resources, to provide for the protection and management of</p>



conservation-worthy places and areas by local authorities, and to provide for matters connected therewith.

The Act protects and manages certain categories of heritage resources in South Africa. For the purposes of the Heritage Resources Act, a “heritage resource” includes any place or object of cultural significance. In this regard the Act makes provision for a person undertaking an activity listed in Section 28 of the Act to notify the resources authority. The resources authority may request that a heritage impact assessment be conducted if there is reason to believe that heritage resources will be affected.

A case file will be opened on SAHRIS and all relevant documents will be submitted for their comments and approval.

<b>Conservation of Agricultural Resources Act (Act No. 85 of 1983)</b>	National and Provincial Government	1983	The objective of the Act is to provide for control over the utilization of the natural agricultural resources of the Republic in order to promote the conservation of the soil, the water sources and the vegetation and the combating of weeds and invader plants; and for matters connected therewith.
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### 3.3 POLICY CONTEXT

**Table 3.2:** Policy context for the proposed development

<b>POLICY</b>	<b>ADMINISTERING AUTHORITY</b>	<b>DATE</b>	<b>SUMMARY / IMPLICATIONS FOR PROPOSED DEVELOPMENT</b>
<b>Limpopo Environmental Management</b>	Limpopo Provincial Government	2004	The Limpopo Environmental Management Act (2004) deals with the conservation of wild animals, fresh water fish and the conservation and protection of flora in the Limpopo Province. Animals and plants are both listed in the schedules with different degrees of protection afforded to each.

<b>Act (2004)</b>			
<b>Limpopo Conservation Plan V2</b>	Limpopo Provincial Government	2013	<p>The purpose of the Limpopo Conservation Plan version 2 (LCPv2) is to develop the spatial component of a bioregional plan (i.e. map of Critical Biodiversity Areas (CBA) and associated land-use guidelines). The Limpopo Conservation Plan categories for the proposed dam and croplands are presented in Figure 5. The following can be concluded regarding developments:</p> <ul style="list-style-type: none"> <li>• The dam is located in an ESA1 area which can be considered a compatible land-use. The management objective for this area is to maintain ecosystem functionality and connectivity allowing for limited loss of biodiversity pattern;</li> <li>• The croplands are located in the following areas: <ul style="list-style-type: none"> <li>○ The majority of the area is classified as “Not Natural Areas (NNA)” or “Other Natural Areas (ONA)”. No management objectives, land management recommendations or land-use guidelines are prescribed. These areas are nevertheless subject to all applicable town and regional planning guidelines and policy. Where possible existing Not Natural areas should be favoured for development before "Other natural areas" as "Other natural areas" may later be required either due to the identification of previously unknown important biodiversity features on these sites, or alternatively where the loss of CBA has resulted in the need to identify alternative sites.</li> <li>○ Small pockets of CBA1 areas exist. After the area was thoroughly surveyed it was found that this specific area is largely encroached sandveld and should rather be classified as some ESA areas.</li> </ul> </li> <li>• ESA1 and ESA2 areas exist on isolated areas of the proposed cropland areas. The ESA areas should be managed for sustainable development and therefore the croplands are suitable from the LCPv2 guidelines.</li> </ul>
<b>Limpopo Growth and Development</b>	Limpopo Provincial Government	2015	The Limpopo Growth and Development Strategy (further referred to as the LGDS) of 2015 in is a culmination of various discussions with stakeholders from all sectors towards realising the dream of sustainable and integrated development that seeks to promote economic growth and development,

**Strategy**

improve the quality of life of its citizen, raise the institutional efficiency of government, attain regional integration and enhance innovation.

One of the pillars towards the realisation of this vision and mission statement of the provincial government is economic development. The LGDS is therefore a key towards the realisation of the stated vision and mission. To achieve its objective, the provincial government has made a range of commitments to accelerate the delivery of priority services including infrastructure, the development of human resources, the establishment of strong inter-governmental relations and co-operative governance and to reduce the impact of HIV/AIDS. Following the outcome of various international, national and provincial programmes and initiatives such as the World Summit on Sustainable Development, NEPAD, the National Spatial Development Program, the National Growth Summit, the Integrated Sustainable Rural Development Strategy, Land Reform and Land Restitution Programme, the National Skills Development Strategy, the National Housing Policy and the policy on free basic services and the National Crime Prevention Strategy, the province adopted five development objectives for itself whose performance indicators correspond to those of the Millennium Development Goals. These objectives (discussed in detail below) are:

- The need to improve the quality of life of the population of Limpopo,
- Growing the economy in the province,
- Attain regional integration,
- Enhance innovation and competitiveness, and
- Improve the institutional efficiency and effectiveness of government.

These objectives are aimed towards facilitating economic growth and capital investment that will address the low absorption rate of the labour force into the economy as a matter of priority. This aim is founded within the president's State of the Nation Address of 2004 in which he stressed the need to bridge the divide between the First and Second Economies.

<b>Waterberg District Municipality Integrated Development Plan (IDP)</b>	Waterberg District Municipality	2016 - 2017	<p>The Waterberg District Municipality's Integrated Development Plan for 2016-2017 indicates that the Waterberg District contributes almost 30% of the Limpopo Province agricultural activity, agriculture contributes over 4% of the District GGP and it employs around 21% of the labour force of the District.</p> <p>Although named the Waterberg the district is actually classified as a semi-arid area with poor water resources. For crop farmers there have been dramatic changes in many commodity prices leading to changes in cropping patterns. Crops such as cotton, tobacco, maize and sorghum have been badly affected by low international prices and over production and plantings have been reduced significantly, often with negative financial and employment implications. Alternative crops like sunflower, wheat, soya beans, groundnuts and paprika are all internationally traded commodities and thus sensitive to the rand/dollar exchange rate. The cattle and game industry is undergoing significant transformation. Lead by water constraints, areas previously under dry land and irrigation are being consolidated and converted for extensive livestock production.</p> <p>Similarly, other former cultivated land and livestock grazing is being converted to game ranching and eco-tourism. Even within the game ranching industry owners are diversifying into lodges and eco-tourism. This general trend has been encouraged by the establishment and development of the Waterberg Biosphere. This trend is expected to continue. Furthermore, the plan describes the local economic development strategy of the district.</p>
<b>Mogalakwena Municipality Integrated Development Plan (IDP)</b>	Mogalakwena Local Municipality	2014- 2015	<p>The vision of the Mogalakwena Local Municipality according to the Integrated Development Plan for 2014/2015 (further referred to as the Plan) is to be the leading, sustainable and diversified economic hub focused on community needs. The Plan also identifies the mission of the municipality as: Mogalakwena municipality is committed to develop communities and promote economic growth by: providing affordable and quality basic services; creating a conducive and sustainable environment for social and economic development; and being consultative, responsive and accountable.</p> <p>Key constraints facing the economy of Mogalakwena are:</p>

- N1 bypasses the Mokopane
- Water scarcity
- Large area affected by land claims with poor facilitation and management of land restitution initiatives
- High level of unemployment/poverty
- Lack of skilled labour mainly amongst the youth, women, and people with disabilities
- Limited local beneficiation
- Limited sector/business linkages
- Lack of business support, investment opportunities and investment incentives
- Untapped tourism potential and undeveloped tourist attractions
- Signage/ facade of town
- Lack of institutional capacity (linked to service delivery)
- Market entry barriers for emerging entrepreneurs
- No investment and retention strategy
- LED projects often collapse
- No co-ordination and alignment of activities amongst institutions
- Lack of planning to accommodate mining developments

### **3.4 OTHER LEGISLATION**

Other legislation mainly refers to the following:

- Planning legislation governing the subdivision of properties or the building of dams.

### **3.5 RELEVANT GUIDANCE**

The following guidance was considered in conducting the EIA:

- DEA, (2012), Guideline 7 – Public participation in the Environmental Impact Assessment process
- DEA, (2012), Guideline 9 – Need and desirability
- DEAT, (2006), Guideline 3 – General guide to the Environmental Impact Assessment Regulations
- DEAT, (2006), Guideline 4 – Public participation in support of the Environmental Impact Assessment Regulations
- DEAT, (2006), Guideline 5 – Assessment of alternatives and impacts in support of the Environmental Impact Assessment Regulations

### **3.6 CONCLUSION**

The Environmental Impact Assessment was undertaken in accordance with the Environmental Impact Assessment Regulations (2014) published in GNR 982, in terms of Section 24(5) and 44 of the National Environmental Management Act, 1998 (Act No 107 of 1998) as amended as well as all relevant National legislation, policy documents, national guidelines.

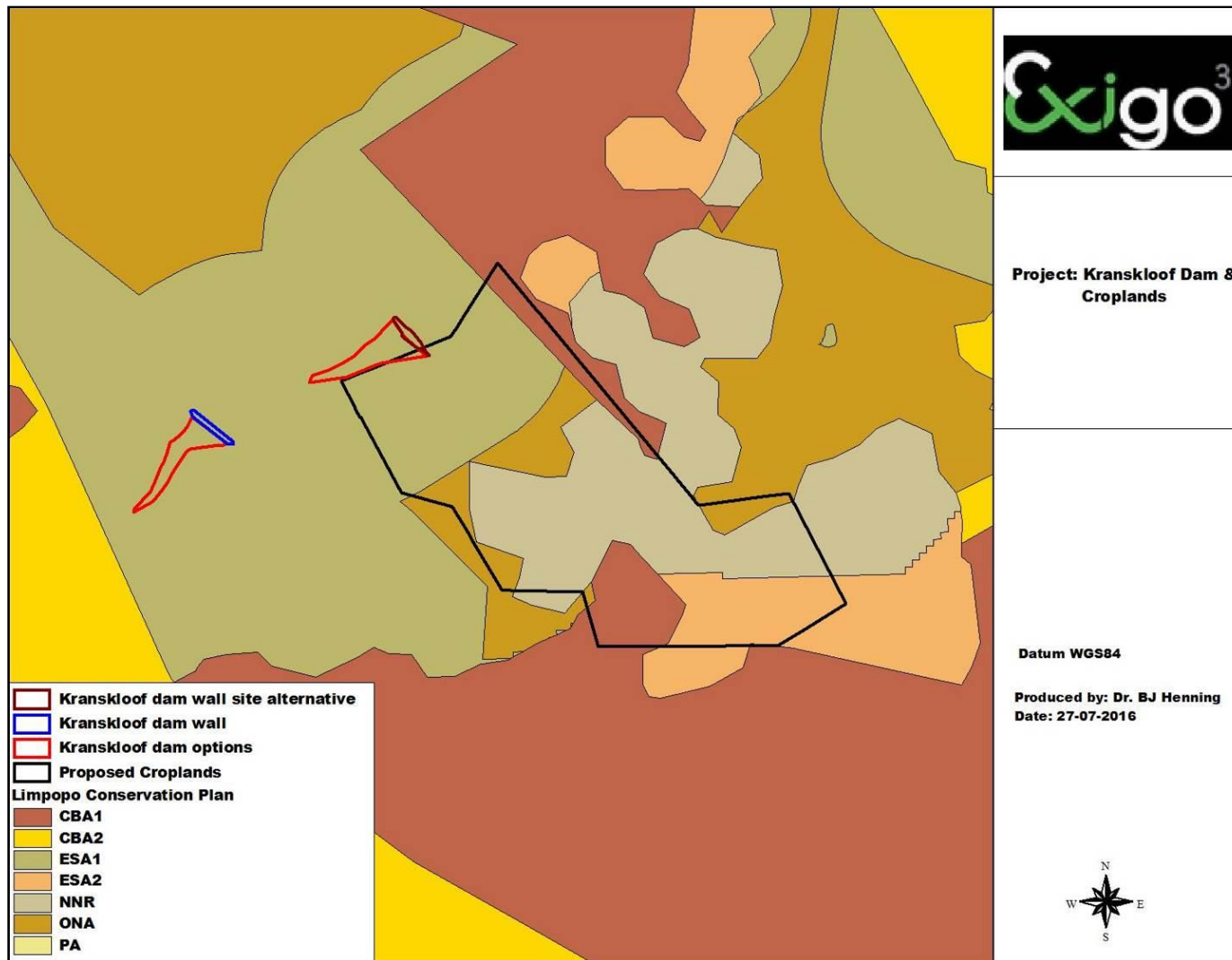


Figure 4 ESA and CBA Map

## 4 THE NEED AND DESIRABILITY

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This section aims to address the following requirements of the regulations:

**28. (1)** A scoping report (...) must include – (i) a description of the need and desirability of the proposed activity.

### 4.1 THE NEED FOR THE PROPOSED ACTIVITY

South Africa is situated in a semi-arid region. The average rainfall for the country is approximately 450 mm per year, which is well below the world average of approximately 860 mm per annum, and is characterised by a large in-season as well as annual variation. As a result, South Africa's water resources are scarce and extremely limited in extent. In global terms, South Africa is classified as "water short" and moving towards "water stressed".

Due to the high variability in river flow within a year and between years, storage needs to be provided to bridge low flow periods with a degree of assurance as required by agricultural sector for the purpose of irrigation or stock. Agriculture is key to food security in many parts of the world. Making agriculture work must be central component of policy approaches to food insecurity reduction and increasing economic growth. Increased investment in agriculture will help redress the current inequalities.

Not only will the establishment of an irrigation dam and croplands will significantly contribute to achieving food security in the country and economic growth in the region and creating long term employment, but will also assist the farmer to produce sustainable yields from his crops.

### 4.2 THE DESIRABILITY OF THE PROPOSED ACTIVITY

The facility's contribution towards food security and the associated benefits to society in general is discussed below:

- Food security - In the 2010/2011 financial year food security was reprioritised as one of the top priorities for South African government. This is in line with South Africa's millennium development goals which aim to reduce the proportion of people who go hungry and to reduce poverty and unemployment. Making agriculture work must be central component of policy approaches to food insecurity reduction and increasing economic growth. Increased investment in agriculture will help redress the current inequalities.
- Local economic growth - The proposed project will contribute to local economic growth by supporting agricultural development in line with provincial and regional goals. Building material for the dam wall will also be procured from local producers.



- Provision of job opportunities - Approximately 40 000 small-scale farmers, 15 000 medium to large scale commercial farmers, 120 000 permanent workers and an unknown number of seasonal workers are involved in irrigation farming in South Africa. The proposed development will provide a number of temporary job opportunities during construction, while a number of permanent job opportunities will be provided during the operational phase.
- Improving farm income – Agriculture contributes to poverty alleviation by reducing food prices, creating employment, improving farm income and increasing wages (FAO, 2016).
- Topographic conditions and ground formations: The contours and ground formations of the area proposed for the dam, are ideal when taking storage and catchment yield and solubility of the soil into consideration.
- Land capability: The agricultural potential in terms of crop production of the site is moderate, but under irrigation the expected yield of the area will dramatically increase.
- Proximity to a river: The Mokamole River runs through Portion 1 of the farm Kranskloof and is adjacent to the proposed croplands, which makes this the ideal position for the proposed irrigation dam.

## 5 DESCRIPTION OF ENVIRONMENTAL ISSUES

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This section aims to address the following requirements of the regulations:

**Appendix 2.** (2) A scoping report (...) must include-

- (h) a full description of the process followed to reach the proposed preferred activity, site and location within the site, including –
- (i) details of all the alternatives considered;
- (ii) details of the public participation process undertaken in terms of regulation 41 of the Regulations, including copies of the supporting documents and inputs;
- (iii) a summary of the issues raised by interested and affected parties, and an indication of the manner in which the issues were incorporated, or the reasons for not including them.
- (iv) the environmental attributes associated with the alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;
- (ix) the outcome of the site selection matrix;
- (x) if no alternatives, including alternative locations for the activity were investigated, the motivation for not considering such and
- (xi) a concluding statement indicating the preferred alternatives, including preferred location of the activity;

### 5.1 CONSIDERATION OF ALTERNATIVES

The DEAT 2006 guidelines on 'assessment of alternatives and impacts' proposes the consideration of four types of alternatives namely, the no-go, location, activity, and design alternatives. It is however, important to note that the regulation and guidelines specifically state that only 'feasible' and 'reasonable' alternatives should be explored. It also recognizes that the consideration of alternatives is an iterative process of feedback between the developer and EAP, which in some instances culminates in a single preferred project proposal.

An initial site assessment on Portion 1 of the farm Kranskloof No. 218 revealed two possible alternatives for an irrigation dam within Makomole river. The site selection took into consideration the topography, contours, catchment yield, storage capacity and ground formations, and ecological sensitivity. The following sections explore different types of alternatives in relation to the proposed activity in more detail.

### **5.1.1 No-go alternative**

This alternative considers the option of 'do nothing' and maintaining the status quo. The description provided in section 5.3 of this report could be considered the baseline conditions (status quo) to persist should the no-go alternative be preferred. Should the proposed activity not proceed, the site will remain unchanged and will continue to be used for cattle grazing (refer to the photographs of the site). However, the potential opportunity costs in terms alternative land use income through irrigation of croplands, food security and economic growth in the region would be lost.

### **5.1.2 Location alternatives**

This alternative asks the question, if there is not, from an environmental perspective, a more suitable location for the proposed activity. No other properties have at this stage been secured by Slijpsteen Meel (Pty) Ltd. in the Mokopane area to potentially establish irrigation croplands. From a local perspective, Portion 1 of the farm Kranskloof No. 218 is preferred due to its proximity to a river and the agricultural potential of the farm. The area proposed for the croplands are also located on historic croplands therefore, the area has been disturbed previously. The applicant is also currently busy with irrigation activities adjacent to the proposed site.

The National Department of Agriculture (2006) classified land capability into two broad categories for the intensity of use for rain-fed agriculture, namely land suited to cultivation (Classes I – IV) and land with limited use, generally not suited to cultivation (Classes V – VIII). The site falls within Class 3 and therefore the agricultural potential in terms of crop production of the site is moderate, but can be enhanced with irrigation (refer to figure 5 and 6 below).

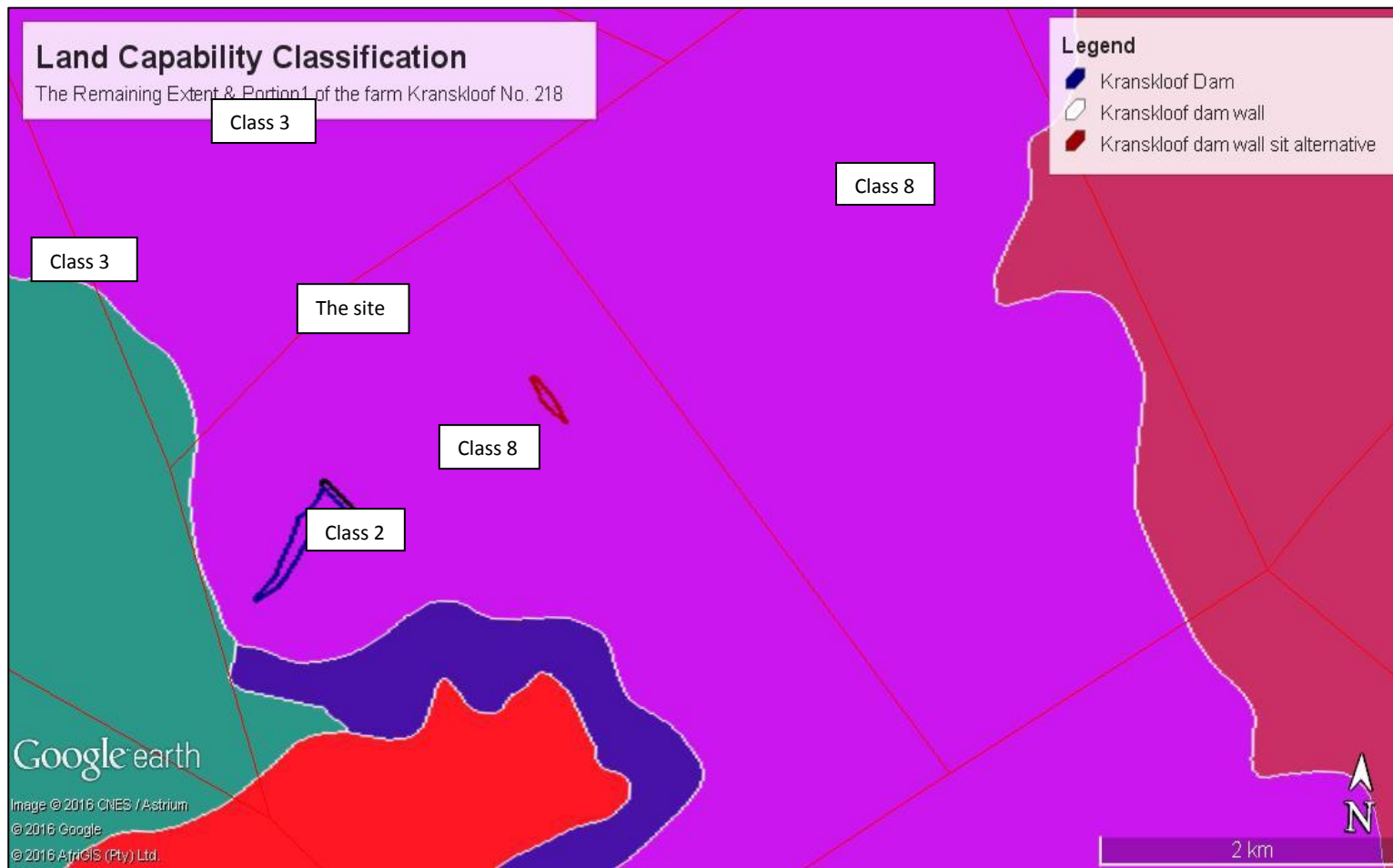


Figure 5 Land capability classification of Portion 1 of the farm Kranskloof No. 218

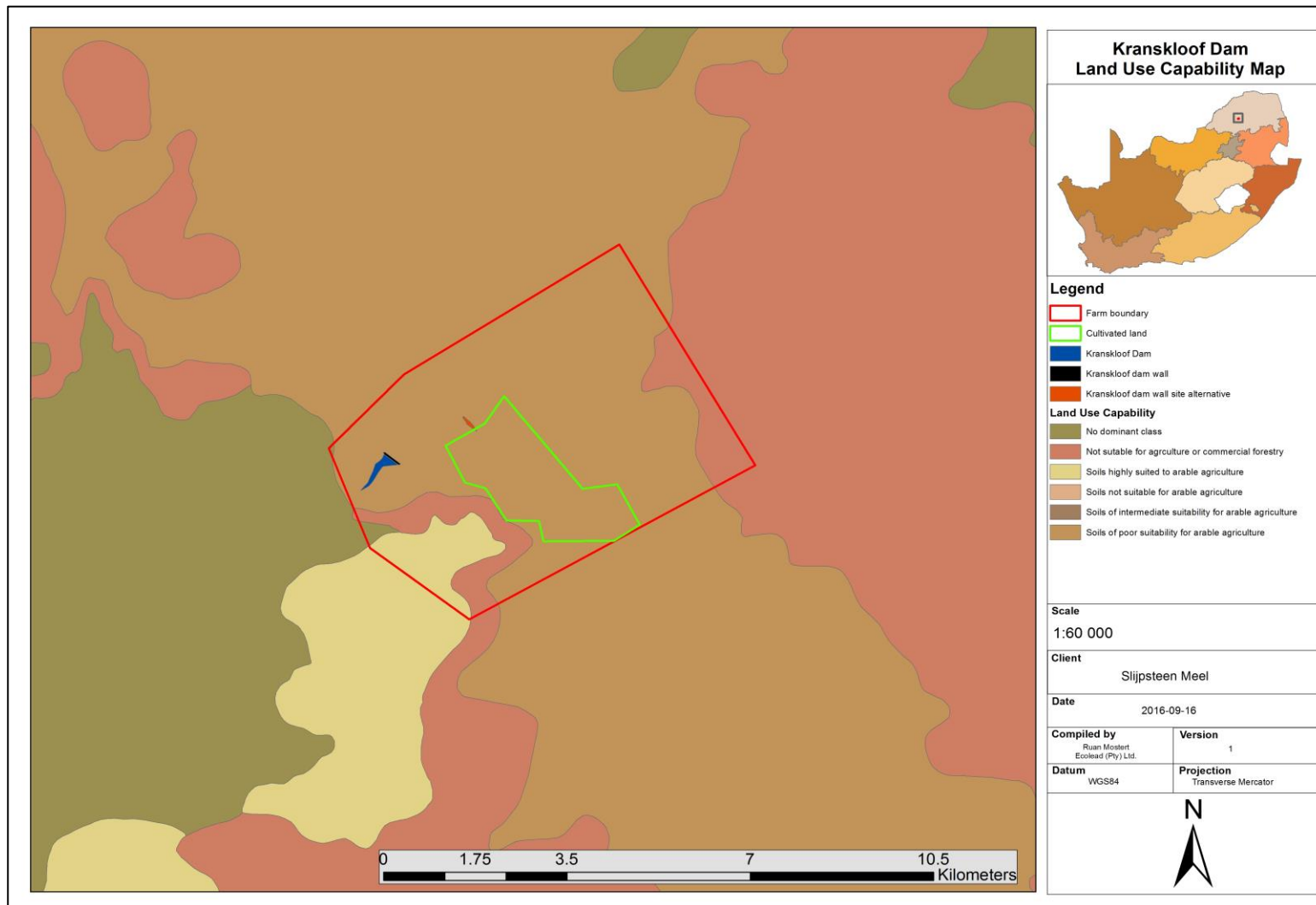
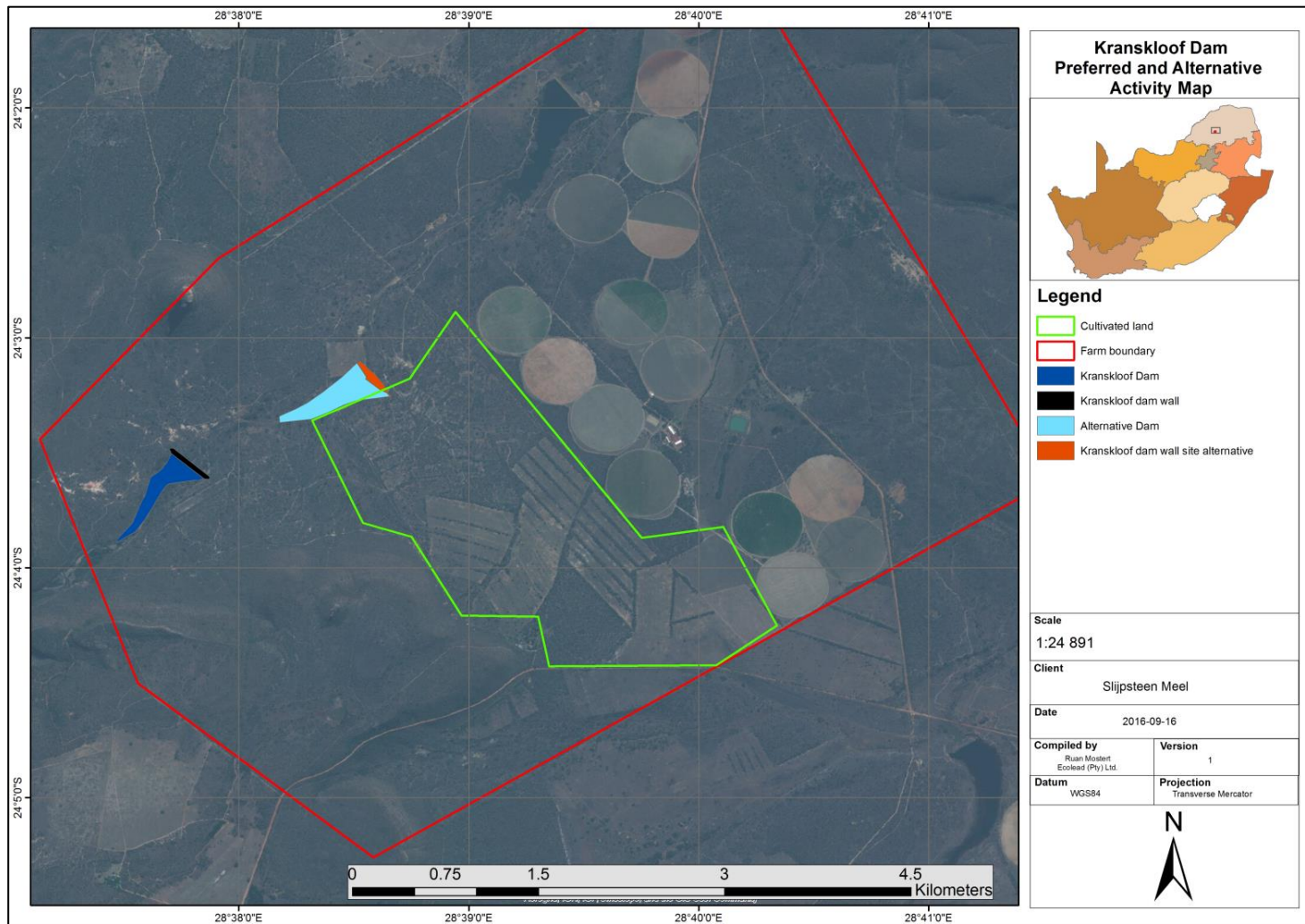


Figure 6 Land use capability map

Two possible areas were identified on Portion 1 of the farm Kranskloof No. 218 for a proposed irrigation dam. The areas identified are as follows:

**Preferred site:** This is the preferred option since the area is better suited for the construction of a dam. The contours and ground formations are deemed favourable and this option also has a larger catchment yield than the alternative site. A detailed survey was conducted of the preferred and the alternative sites, and the results indicated that the preferred site is the most suitable site for construction of a dam in terms of topography, current river drainage patterns, storage capacity etc.

**Alternative site:** This site is deemed less ecologically sensitive than the preferred site, but is not deemed feasible in terms of ground formation, which is essential for water retention. A detailed survey conducted indicated that the alternative site is not suitable for construction of dam in terms of the topography, storage capacity, drainage patterns etc.



### 5.1.3 Activity alternatives

The scoping process also needs to consider if irrigated croplands would be the most appropriate land use for the particular site.

Irrigated croplands – Slijpsteen Meel (Pty) Ltd. intends to build an irrigation dam in the Makomole river to irrigate approximately 340 hectares of croplands. Crops under irrigation deliver a higher yield than dry croplands and ensures a harvest year after year. Irrigated croplands are also one of the most profitable forms of agriculture.

Rain-fed croplands - Due to the local climatic conditions rain-fed croplands is not considered suitable. Furthermore, rain-fed croplands produce a lower yield than irrigated croplands and with current rain shortages across the country, failed harvests are imminent.

Cattle grazing – The grazing capacity of the of the 340 hectares, if calculated at an above average 15 hectares per Large Stock Unit (LSU), will only be able to accommodate approximately 22 cattle which is not financially feasible to sustain the farm.

### 5.1.4 Design and layout alternatives

Design alternatives were considered throughout the planning and design phase (i.e. what would be the best design option for the development?). In this regard discussions on the design of the dam wall were held between the owner and the engineer. The layout plan will be submitted as part of the EIA Report, indicating the preferred location of the dam wall and croplands. Two alternative sites on the same farm were identified for the dam wall but after the initial site assessment the alternative site was ruled out and the EIR will therefore only focus on the single preferred site.

## 5.2 PUBLIC PARTICIPATION PROCESS

The following sections provide detailed information on the public participation process conducted in terms of Regulations 39 to 44.

### 5.2.1 General

The public participation process was conducted strictly in accordance with Regulations 39 to 44. The following three categories of variables were taken into account when deciding the required level of public participation:

- The scale of anticipated impacts
- The sensitivity of the affected environment and the degree of controversy of the project
- The characteristics of the potentially affected parties

Since the scale of anticipated impacts is low, the low environmental sensitivity of the site and the fact that no conflict was foreseen between potentially affected parties, no



additional public participation mechanisms were considered at this stage of the process. The following actions have already been taken:

➤ Newspaper advertisement

Since the proposed development is unlikely to result in any impacts that extend beyond the municipal area where it is located, it was deemed sufficient to advertise in a local newspaper. An advertisement was placed in English and Afrikaans in the local newspaper (Northern News/Noord Nuus) on the 19<sup>th</sup> of August 2016 (see Appendix B) notifying the public of the EIA process and requesting Interested and Affected Parties (I&APs) to register with, and submit their comments to EcoLead Environmental Consultants. I&APs were given the opportunity to raise comments and send them through to the EAP.

➤ Site notices

Site notices were placed on site and at the Local Municipal Offices, in English and Afrikaans, on 18 August 2016 to inform surrounding communities and immediately adjacent landowners of the proposed development. I&APs were given the opportunity to raise comments by 16 September 2016. Photographic evidence of the site notices is included in Appendix C.

➤ Direct notification of identified I&APs

Identified I&APs, including key stakeholders representing various sectors, were directly informed of the proposed development via registered post and emails on 19 August 2016 and were requested to submit comments by 19 September 2016. For a complete list of stakeholder details see Appendix D and for proof of registered post see Appendix E. The consultees included:

- Limpopo Department of Economic Development, Environment and Tourism (LDEDET)
- Limpopo Department of Water and Sanitation
- The Department of Water and Sanitation (DWS)
- Limpopo Department of Agricultural and Rural Development
- Limpopo Department of Rural Development and Land Reform
- Department of Agriculture, Forestry and Fisheries, Water and Irrigation Development
- Department of Public Works, Roads and Infrastructure
- The South African Heritage Resources Agency (SAHRA)
- The Municipal Manager at the Waterberg District Municipality
- The Municipal Manager at the Mogalakwena Local Municipality
- The Local Councilor at the Mogalakwena Local Municipality (Ward 7)
- Waterberg Biosphere Reserve – Dr. Rupert Barber

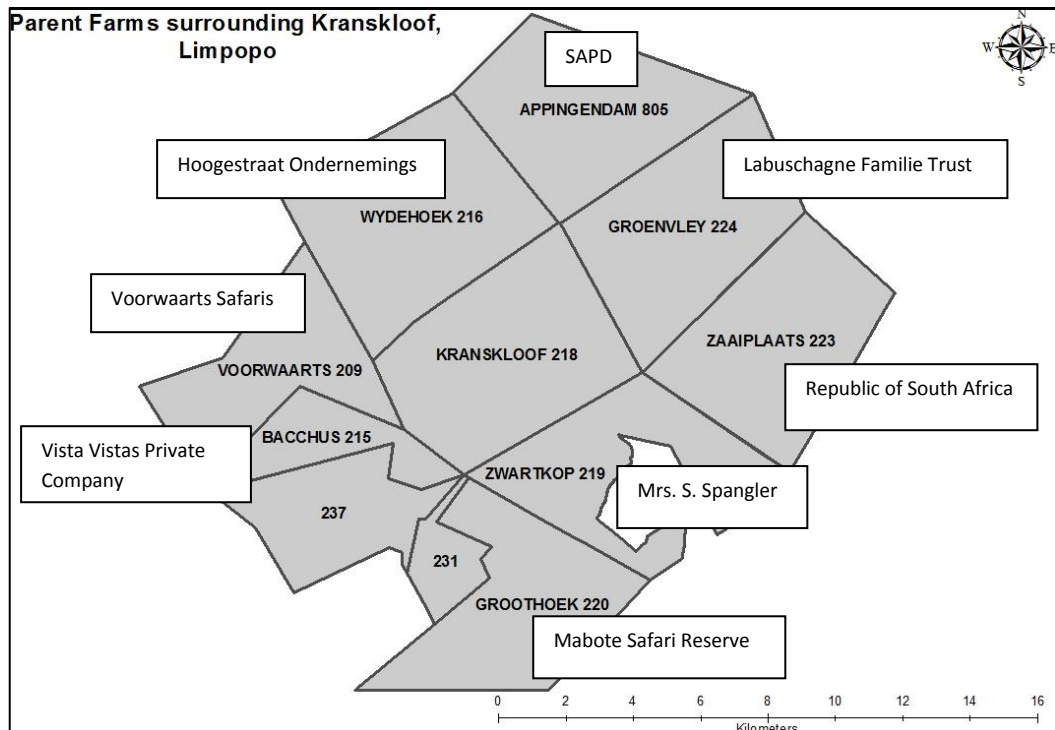
It was expected from I&APs to provide their inputs and comments by 19 September 2016. To date only comments have been received from adjacent land owners.

➤ Direct notification of surrounding land owners and occupiers

Written notices were provided to all surrounding land owners and occupiers on 19 August 2016. The Mogalakwena Local Municipality and other local property owners were contacted to obtain the contact details of the surrounding land owners; nine farmer's contact details could be obtained (refer to figure 8):

- Farm Wydehoek No. 216 – Hoogestraat Ondernemings
- Farm Appingendam No. 805 – South African Police Services
- Farm Groenvley No. 224 – Labuschagne Familie Trust
- Farm Groothoek No. 220 Mabote Safari Reserve
- Farm Zaaipplaats No. 223 – South African National Government
- Farm Zwartkop No. 219 – Mrs. Sandra Spangler
- A portion of the farm Zwartkop No. 219 – Mr. L. P. Du Plessis
- Farm Bacchus No. 215 – Vista Vitas Private Company
- Farm Voorwaarts No. 209 – Voorwaarts Safaris

The surrounding land owners were given the opportunity to raise comments by 16 September 2016. See Appendix F for written comments. For a list of surrounding land owners see Appendix D.



**Figure 8 Surrounding Land Owners**

➤ Direct notification of surrounding land owners and occupiers

All registered interested and affected parties were provided to comment on the draft scoping report. The comment period ran from the 30<sup>th</sup> of September to the 31<sup>st</sup> of October 2016. Refer to the Issued and Response Report, as well as written comments for a full description of comments received during the consultation process.

### 5.2.2 Consultation process

Regulation 41 requires that the municipality, relevant ward councillor and any organ of state having jurisdiction in respect of any aspect of the activity should be given written notice of the activity. A complete list of all the consultees who received written notice as well as proof of correspondence is attached as Appendices D and E.

### 5.2.3 Registered I&APs

I&APs include all stakeholders who deem themselves affected by the proposed activity. According to Regulation 43(1) *"A registered interested and affected party is entitled to comment, in writing, on all reports or plans submitted to such party during the public participation process contemplated in these Regulations and to bring to the attention of the proponent or applicant any issues which that party believes may be of significance to the consideration of the application, provided that the interested and affected party discloses any direct business, financial, personal or other interest which that party may have in the approval or refusal of the application."* This report is the Final Scoping Report and was made available to the following registered I&APs and State Departments:

- LDEDET
- Limpopo Department of Water and Sanitation
- Limpopo Department of Agricultural and Rural Development
- Limpopo Department of Rural Development and Land Reform
- Department of Agriculture, Forestry and Fisheries, Water and Irrigation Development
- Department of Public Works, Roads and Infrastructure
- The South African Heritage Resources Agency (SAHRA)
- Limpopo Heritage Resources Agency (LIHRA)
- The Waterberg District Municipality
- The Environmental Officer at the Mogalakwena Local Municipality
- The Local Councilor at the Mogalakwena Local Municipality (Ward 7)
- Farm Wydehoek No. 216 – Hoogestraat Ondernemings
- Farm Groenvley No. 224 – Labuschagne Familie Trust
- Farm Groothoek No. 220 Mabote Safari Reserve
- A portion of the farm Zwartkop No. 219 – Mr. L. P. Du Plessis
- Farm Voorwaarts No. 209 – Voorwaarts Safaris
- Waterberg Biosphere Reserve – Dr. Rupert Barber

### 5.2.4 Issues raised by IAPs and consultation bodies

Table 5.1 summarises the comments received from consultation bodies to date. The full wording and original correspondence is included in Appendix F.

**Table 5.1:** Issues raised by key consultation bodies

Organisation	Person	Written comment (see Appendix F)
Limpopo Department of Rural Development & Land Reform	Molatelo Makhuvha	The Department informed the EAP that the proposed property is privately owned and that the department does not have any jurisdiction over the property. However they noted that it should be verified whether there are land claims registered over the property.
Waterberg District Municipality	Ben Greeff	Mr Greeff from the agricultural department of the Waterberg District Municipality requested a site visit. It was indicated that a site visit can be scheduled for early 2017 when more detailed information is available.
Department of Agriculture, Forestry and Fisheries Water and Irrigation Development	Nomvuzo Mjadu	DAFF provided several comments with regards to the proposed project. These varied from <ul style="list-style-type: none"> <li>- Land ownership – steps to address the needs of historical disadvantaged individuals.</li> <li>- Pump station – design</li> <li>- Freeboard – provision to be made for free board in final designs</li> <li>- Water Quality Concerns</li> <li>- Soil types and choice of irrigation system</li> <li>- Dam design</li> <li>- Impact of the dam on existing water levels</li> <li>- Additional authorisations</li> <li>- Key issues to be addressed in the EIA</li> <li>- Reserve determination</li> <li>- Water Quality</li> </ul>

		<ul style="list-style-type: none"> <li>- Positive impacts</li> <li>- Pipeline routes</li> <li>- Specialist studies</li> <li>- General – site notices</li> </ul> <p>Please refer to Appendix F for a full description of the comments and responses.</p>
Adjacent land owner of the farm Wydehoek	Mr JJ Swanepoel	<p>Mr Swanepoel requested to be registered as an interested and affected party. He opposes the proposed activity as he is of the opinion that it will have a significant impact on his water availability.</p> <p>Subsequently a meeting was held with Mr Swanepoel on the 13<sup>th</sup> of October 2016 in order to discuss his concerns in more detail. The meeting minutes and full description of comments and response is included in Appendix F.</p>
Adjacent land owner of the farm Groenvley	Mr Ernst Labuschagne	Mr Labuschagne informed the EAP that he has no objection against the proposed activity.
Adjacent land owner of the farm Voorwaarts	Mr Jan Fourie	Mr Fourie supports the proposed activity.
Adjacent land owner of the farm Groothoek	Mr Arno van Niekerk	Mr van Niekerk supports the proposed activity.

### 5.3 THE ENVIRONMENTAL ATTRIBUTES ASSOCIATED WITH THE PREFERRED ALTERNATIVE

The following sections provide general information on the biophysical and socio-economic attributed associated with the preferred alternative.

#### 5.3.1 Biophysical environment

The biophysical environment is described with specific reference to geology, soils, agricultural potential, vegetation and landscape features, hydrology and drainage, and climate and biodiversity. The area proposed for development exclusively consists of land used for grazing but from an ecological and conservation point of view threatened and protected plant species, were identified on site.

### **5.3.1.1 Geology, soils and agricultural potential**

According to Mucina and Rutherford (2006) the large southern and eastern parts of the area are underlain by granite of the Lebowa Suite and some granophyre of the Rashedoop Granophyre Suite (both Bushveld Complex, Vaalian). In the north, the sedimentary rocks of the Waterberg Group (Makolien Erathem) are most important. Specifically, sandstone, conglomerate and siltstone of the Alma formations and sandstone, siltstone and shale of the Vaalwater Formation. Well-drained, deep Hutton or Clovelly soils often with a catenary sequence from Hutton at the top Clovelly on the lower slopes and shallow, skeletal Glenrosa soils also occur.

### **5.3.1.2 Vegetation and landscape features**

According to Mucina & Rutherford (2006) the farm portions are classified as part of the Central Sandy Bushveld (Plains) and Waterberg Mountain Bushveld vegetation types:

The Central Sandy Bushveld had a vulnerable conservation status in 2006 which has since been changed to least threatened, with less than 3% statutorily conserved and about 24% that has been transformed. The landscape and vegetation features of this vegetation type include low undulating areas, sometimes between mountains, and sandy plains and catenas supporting tall, deciduous *Terminalia sericea* and *Burkea africana* woodland on deep sandy soils and low, broadleaved *Combretum* woodland on shallow rocky or gravelly soils. Species of *Acacia*, *Ziziphus* and *Euclea* are found on flats and lower slopes on eutrophic sands and some less sandy soils, while the grass-dominated herbaceous layer have a relatively low basal cover on dystrophic sands.

The conservation status of the Waterberg Mountain Bushveld is least threatened with about 9% conserved and 3% transformed. The vegetation structure varies from rugged mountains with vegetation grading from *Faurea saligna* – *Protea caffra* bushveld on higher slopes through broad-leaved deciduous bushveld on rocky mid and footslopes to a deeper sandveld in the valleys.

### **5.3.1.3 Hydrology and drainage**

The study area is located within Limpopo Water Management Area (WMA), and is located in the Quaternary Catchment Areas (QCA) A62A and A62J. The area exhibits a weakly dendritic drainage pattern, mostly due to the very gentle slope. Storm water generally collects in areas where the natural topography has been disturbed, such as foot paths or dirt tracks, with surface water eventually draining into roads further downstream within Lebowakgomo and other townships. The main drainage channel includes the Mokamole River and its tributaries draining the proposed development area. These drainage channels form tributaries of the regionally important perennial Mogalakwena River that lies to the north of the site. It must be noted that stream flow along the drainage channels occurs only during and directly after heavy precipitation events, and may continue for a short period directly after a particularly good rainy season. Small dams are located along the stream channels. Another feature of the southern section of the project area, as well as the certain sections of

the area earmarked for construction of the dam, is the presence of wetlands or pans, they are however located more than a kilometre from the proposed site for croplands.

#### **5.3.1.4 Climate**

Climate in the broad sense is a major determinant of the geographical distribution of species and vegetation types. However, on a smaller scale, the microclimate, which is greatly influenced by local topography, is also important. Within areas, the local conditions of temperature, light, humidity and moisture vary greatly and it is these factors which play an important role in the production and survival of plants (Tainton, 1981). In terrestrial environments, limitations related to water availability are always important to plants and plant communities. The spatial and temporal distribution of rainfall is very complex and has great effects on the productivity, distribution and life forms of the major terrestrial biomes (Barbour et al. 1987). Furthermore, aspects like topography, slope and altitude may further result in differences in precipitation and water availability to plants within the study area. The site falls within the summer rainfall region with very dry winters and frost that occurs fairly infrequent during winter (4 mean frost days per annum). The study area has a mean annual precipitation of 518mm. The rainy season extends over the summer months from October through to April, with the highest rainfall occurring during December and January. Precipitation is usually associated with thunderstorms. These sudden downpours pose some risk of flooding in low-lying areas, but most South African mines are exposed to this type of weather and precautionary measures are routine on these operations. Mean monthly temperatures for the area is 37.3°C and -0.9°C for January and June respectively. The temperatures are very mild and stable with a minimum variance between maximum and minimum making the area an ideal living place with regard to temperature.

#### **5.3.1.5 Biodiversity**

The primary cause of loss of biological diversity is habitat degradation and loss (IUCN, 2004; Primack, 2006). In the case of this study special attention was given to the identification of sensitive species or animal life and birds on site. The following section will discuss the state of biodiversity on the site in more detail.

##### **5.3.1.5.1 Ecological**

According to the Ecological Study conducted for the site (to be included as part of the EIR), large and medium sized mammals that occurred historically in the larger study area, are absent from the area, owing to anthropogenic impacts in recent centuries. Most of these larger antelope and predator species are today confined to game reserves and national parks in South Africa and therefore will not occur naturally in the study area. This loss of large species means that the mammal diversity at the site is far from its original natural state not only in terms of species richness but also with regards to functional roles in the ecosystem.

The region is known to have protected tree species, on the initial site investigation the Leadwood, Marula and Violet tree was found on site – refer to figure 10 below. In terms of the National Forest Act of 1998, these tree species may not be cut, disturbed, damaged, destroyed and their products may not be possessed, collected, removed, transported, exported, donated, purchased or sold – except under license granted by DWAF (or a delegated authority). Obtaining relevant permits are therefore required prior to any impact on these individuals.



**Figure 9 Marula, Violet and Leadwood trees**

### **5.3.2 Description of the socio-economic environment**

The socio-economic environment is described with specific reference to social, economic, heritage and cultural aspects.

#### **5.3.2.1 Socio-economic conditions**

The Mogalakwena Local Municipality is located in the John Waterberg District Municipality of the Northern Cape Province. According to Census 2011, Mogalakwena Municipality contains over 45% of the Waterberg district 's population with a total population of 307 682 and 79 396 households. The Africans are in majority (295 796) and constitute approximately 96% of the total Mogalakwena municipality population. The white population is 9274, coloured population is 403 and the Indian/Asian population is 1646. Just over 53% of the population is female. The population growth rate was estimated at 0.31% in 2011.

Of the population aged 20 years and older, 18,2% completed/have some primary education, 35,6% have secondary education, 21,7% have completed matric, 8,5% have some form of higher education, and 16% have no form of schooling. According to Census 2011, there are 17 525 households of which 42,3% have access to piped water in the yard, while only 20,2% of households have access to piped water in their dwelling which is the lowest figure in the Waterberg District Municipality. Of the 78 647 economically active (employed or unemployed but looking for work) people in the district, 40,2% are unemployed. The unemployment rate of Mogalakwena is almost double that of the other municipalities in the district. This could be attributed to a reduction in mining activities in recent years. Of the 39 515 economically active youth (15–35 years) in the area, 51,7% are unemployed, which is also the highest in the district.

Agricultural activities include farming of cattle, poultry, game and citrus. Mining activities include platinum, clay (for bricks), granite, limestone, fluorspar, and coal.



### 5.3.2.2 Cultural and heritage aspects

Special attention was given to the identification of possible cultural or heritage resources on site. The initial site investigation concluded that there are no obvious heritage resources located on the site earmarked for development. However, a Heritage Impact Assessment (HIA) and a Paleontological Desktop Assessment will be conducted to ensure that there would be no impact on cultural or historical features as a result of the proposed activity.

From a heritage point of view, the following condition will apply:

- To address any subsurface cultural or heritage resources it needs to be clearly stated in the construction environmental management plan, submitted with the EIA report, that SAHRA will be informed immediately should any artefacts be exposed during construction. Training of contractors on heritage issues will also form part of the contractor's brief.

## 5.4 SITE SELECTION MATRIX

Due to the nature of the proposed development, the location of the dam and croplands are largely dependent on technical and environmental factors such as proximity to a river, topography of the site, drainage patterns, storage capacity, ground formations and land capability. Portion 1 of the Farm Kranskloof No. 218 where the project is proposed to be located is considered favorable and suitable from a technical perspective due to the following characteristics:

- Proximity to a river: The Mokamole River runs through the Remaining Extent and Portion 1 of the farm Kranskloof and is adjacent to the proposed croplands, which makes this the ideal position for the proposed irrigation dam.
- Topographic conditions and ground formations: A detailed survey was conducted which indicated that the contours, flow pattern, storage capacity and ground formations of the area proposed for the dam, are ideal when taking storage and catchment yield and solubility of the soil into consideration.
- Land capability: The agricultural potential in terms of crop production of the site is moderate, but under irrigation the expected yield of the area will dramatically increase.

It is evident from the discussion above that Portion 1 of the Kranskloof No. 218 may be considered favourable and suitable in terms of these site characteristics.

## 5.5 CONCLUDING STATEMENT ON ALTERNATIVES

In conclusion the preferred alternative entails the following:

- The development of the irrigation dam and croplands on Portion 1 of the farm Kranskloof No. 218, Limpopo Province - refer to Section 2 of this report.

The preferred layout of the dam and croplands on Portion 1 of the farm Kranskloof No. 218 will be included as part of the Environmental Impact Report (EIR). It may be concluded that this is the only location that will be assessed in further detail.

## 6 DESCRIPTION OF THE IMPACTS AND RISKS

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This section aims to address the following requirements of the regulations:

**Appendix 2.** (2) A scoping report (...) must include-

(v) the impacts and risks identified for each alternative, including the nature, significance, consequence, extent, duration and probability of the impacts, including the degree to which these impacts-

(aa) can be reversed;

(bb) may cause irreplaceable loss of resources; and

(cc) can be avoided, managed or mitigated;

(vi) the methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks associated with the alternatives;

(vii) positive and negative impacts that the proposed activity and alternatives will have on the environment and on the community that may be affected focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;

(viii) the possible mitigation measures that could be applied and level of residual risk;

### 6.1 SCOPING METHODOLOGY

The contents and methodology of the scoping report aims to provide, as far as possible, a user-friendly analysis of information to allow for easy interpretation.

- Checklist (see section 6.1.1): The checklist consists of a list of structured questions related to the environmental parameters and specific human actions. They assist in ordering thinking, data collection, presentation and alert against the omission of possible impacts.
- Matrix (see section 6.1.2): The matrix analysis provides a holistic indication of the relationship and interaction between the various activities, development phases and the impact thereof on the environment. The method aims at providing a first order cause and effect relationship between the environment and the proposed activity. The matrix is designed to indicate the relationship between the different stressors and receptors which leads to specific impacts. The matrix also indicates the specialist studies that have been conducted to address the potentially most significant impacts.

### 6.1.1 Checklist analysis

The independent consultant conducted a site visit on the 18<sup>th</sup> of August 2016. The site visit was conducted to ensure a proper analysis of the site specific characteristics of the study area. Table 6.1 provides a checklist, which is designed to stimulate thought regarding possible consequences of specific actions and so assist scoping of key issues. It consists of a list of structured questions related to the environmental parameters and specific human actions. They assist in ordering thinking, data collection, presentation and alert against the omission of possible impacts. The table highlights certain issues, which are further analysed in matrix format in section 6.2.

**Table 6.1:** Environmental checklist

QUESTION	YES	NO	Un-sure	Description
<b>1. Are any of the following located on the site earmarked for the development?</b>				
I. A river, stream, dam or wetland	X			A dam wall will be built in the Makomole River located on Portion 1 of the farm Kranskloof No. 218.
II. A conservation or open space area	X	X		The site is located in a CBA and EPA.
III. An area that is of cultural importance		X		None.
IV. Site of geological significance		X		None.
V. Areas of outstanding natural beauty		X		None.
VI. Highly productive agricultural land		X		None.
VII. Floodplain	X			The dam wall will be built in the floodplain.
VIII. Indigenous forest		X		None.
IX. Grass land		X		None.
X. Bird nesting sites		X		None.
XI. Red data species		X		None.
XII. Tourist resort	X			Tourist activities taking place on the farm Wydehoek adjacent to the proposed site.
<b>2. Will the project potentially result in potential?</b>				
I. Removal of people		X		None.
II. Visual Impacts		X		None.
III. Noise pollution		X		Construction activities will result in the generation of noise over a period of months. The noise impact is unlikely to be significant.
IV. Construction of an access road		X		Ready access to the farm exists.

V. Risk to human or valuable ecosystems due to explosion/fire/ discharge of waste into water or air.		×		None.
VI. Accumulation of large workforce (>50 manual workers) into the site.		×		None.
VII. Utilisation of significant volumes of local raw materials such as water, wood etc.		×		None.
VIII. Job creation	×			Approximately 140 employment opportunities will be created during the construction and operational phases.
IX. Traffic generation		×		None.
X. Soil erosion		×		None.
XI. Installation of additional bulk telecommunication transmission lines or facilities		×		None.
<b>3. Is the proposed project located near the following?</b>				
I. A river, stream, dam or wetland	×			The dam wall will be located in the Makomole River and the croplands within close proximity to the river. Wetlands are located on certain sections of the proposed site.
II. A conservation or open space area		×		None.
III. An area that is of cultural importance		×		None.
IV. A site of geological significance		×		None.
V. An area of outstanding natural beauty		×		None.
VI. Highly productive agricultural land		×		None.
VII. A tourist resort		×		None.
VIII. A formal or informal settlement		×		None.

### 6.1.2 Matrix analysis

The matrix describes the relevant listed activities, the aspects of the development that will apply to the specific listed activity, a description of the environmental issues and potential impacts, the significance and magnitude of the potential impacts and possible mitigation measures. The matrix also highlights areas of particular concern (see Table 6.2) for more in depth assessment during the EIA process. An indication is provided of the specialist studies which is being conducted and that informed the initial assessment. Each cell is evaluated individually in terms of the nature of the impact, duration and its significance – should no mitigation measures be applied. This is important since many impacts would not be considered insignificant if proper mitigation measures were implemented.

In order to conceptualise the different impacts, the matrix specify the following:

- **Stressor:** Indicates the aspect of the proposed activity, which initiates and cause impacts on elements of the environment.
- **Receptor:** Highlights the recipient and most important components of the environment affected by the stressor.
- **Impacts:** Indicates the net result of the cause-effect between the stressor and receptor.
- **Mitigation:** Impacts need to be mitigated to minimise the effect on the environment.

**Table 6.2:** Matrix analysis

For ease of reference the significance of the impacts is colour-coded as follow:



LISTED ACTIVITY (The Stressor)	ASPECTS OF THE DEVELOPMENT /ACTIVITY	POTENTIAL IMPACTS		SIGNIFICANCE AND MAGNITUDE OF POTENTIAL IMPACTS							MITIGATION OF POTENTIAL IMPACTS		SPECIALIST STUDIES / INFORMATION		
		Receptors	Impact description / consequence	Minor	Major	Extent	Duration	Probability	Reversibility	Irreplaceable loss of resources	Possible Mitigation	Possible mitigation measures		Level of residual risk	
<b>CONSTRUCTION PHASE</b>															
<p><u>Activity 19(i) (Regulation 983):</u>  <i>"The infilling or depositing of any material of more than 5 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 5 cubic metres from (i) a watercourse."</i></p> <p><u>Activity 13 (Regulation 984):</u>  <i>"The physical alteration of virgin soil to agriculture, or afforestation for the purposes of commercial tree, timber or wood production of 100 hectares or more."</i></p> <p><u>Activity 15 (Regulation 984):</u>  <i>"The clearance of an area of 20 hectare or more of indigenous vegetation..."</i></p> <p><u>Activity 16 (Regulation 984):</u></p>	<p><u>Site clearing and preparation</u>                      Certain areas of the site will need to be cleared of vegetation.</p> <p><u>Civil works</u>                      The main civil works are:</p> <ul style="list-style-type: none"> <li>Excavation, layering, levelling and compaction of area.</li> <li>Construction of the dam wall.</li> <li>Construction of road network and pump station.</li> </ul>	BIOPHYSICAL ENVIRONMENT	Fauna & Flora	<ul style="list-style-type: none"> <li>Loss or fragmentation of habitat for faunal and floral species</li> <li>Destruction of habitat for faunal and floral species</li> <li>Loss of faunal and floral species of conservation significance</li> </ul>			L	L	D	RR	ML	Yes	-The removal of the indigenous trees and shrubs should only occur on the footprint area of the dam wall and croplands. No vegetation should be cleared on adjacent areas;  - Conduct flora species search and rescue efforts before ground clearing of land for dam wall construction and croplands in order to reduce negative impacts on species of concern;  - Work in rivers, streams and riparian zones should preferably be done during the low flow season;  - Construction activities must remain within defined construction areas and the road servitudes. No construction / disturbance will occur outside these	L	Ecological Report







													and returned to the supplier.		
													<ul style="list-style-type: none"> <li>- The vegetation associated with the water courses and wetlands up and downstream of the dams has a high sensitivity with a high conservation priority. No major alteration of these important corridor areas is recommended;</li> <li>- Any future work in rivers, streams and wetlands (drainage crossings etc.) should preferably be done during the low flow season;</li> <li>- Perform upstream and downstream surface water quality monitoring.</li> </ul>		
		SOCIAL/ECONOMIC ENVIRONMENT	Local unemployment rate	<ul style="list-style-type: none"> <li>• The creation of local employment and business opportunities, skills development and training;</li> </ul>	+		P	S	D	I	N/A	Yes	<ul style="list-style-type: none"> <li>- Where reasonable and practical, service providers should appoint local contractors and implement a 'locals first' policy, especially for semi and low-skilled job categories.</li> </ul>	L	-
			Visual landscape	<ul style="list-style-type: none"> <li>• Potential visual impact on residents of farmsteads and motorists in close proximity to proposed development due to dust during construction.</li> </ul>	-		L	S	D	CR	NL	Yes	<ul style="list-style-type: none"> <li>- Dust suppression will play an important role to minimise the visibility of dust.</li> <li>- Contractors must avoid using roads not earmarked for the development.</li> <li>- Good housekeeping should be implemented.</li> <li>- Proper rehabilitation of disturbed areas.</li> </ul>	L	-
			Traffic volumes	<ul style="list-style-type: none"> <li>• Increase in construction</li> </ul>	-		P	S	Pr	CR	NL	Yes	The development may	L	-

				vehicles.									commence without influencing the levels-of-service for the local road network.		
			Health & Safety	<ul style="list-style-type: none"> <li>Air/dust pollution due to construction.</li> <li>Road safety due to construction vehicles.</li> <li>Impacts associated with the presence of construction workers on site and in the area.</li> <li>Influx of job seekers to the area.</li> <li>Increased risk of veld fires.</li> </ul>	-	L	S	Pr	PR	ML	Yes	<ul style="list-style-type: none"> <li>Contractor to ensure that construction related activities that pose a potential fire risk, such as welding, are properly managed and are confined to areas where the risk of fires has been reduced.</li> </ul>	M	-	
			Noise levels	<ul style="list-style-type: none"> <li>The generation of noise as a result of construction vehicles, the use of machinery such as drills and people working on the site.</li> </ul>	-	L	S	D	CR	NL	Yes	<ul style="list-style-type: none"> <li>During construction care should be taken to ensure that noise from construction vehicles and plant equipment does not intrude on the surrounding residential areas.</li> <li>Plant equipment such as generators, compressors, concrete mixers as well as vehicles should be kept in good operating order and where appropriate have effective exhaust mufflers.</li> </ul>	L	-	
			Tourism industry	<ul style="list-style-type: none"> <li>The proposed activities might have an impact on tourism in the area, as a result of water depletion for downstream game farmers.</li> </ul>	-	L	S	D	CR	NL	Yes	<ul style="list-style-type: none"> <li>During construction care should be taken to ensure that the volume of water allocated for downstream users are not impacted on or depleted.</li> <li>Conditions contained in the water use licence to be</li> </ul>	L	-	







													policy, when employing farm workers.		
			Food security	<ul style="list-style-type: none"> <li>Contributes to food security of the country.</li> </ul>	+		L	L	D	I	N/A	Yes	No mitigation measures required.	N/A	-
			Health & Safety	<ul style="list-style-type: none"> <li>If the dam wall breaks it could have a negative impact on people, fauna and flora as well as infrastructure located downstream.</li> </ul>	-		L	S	Pr	PR	ML	Yes	- Inspect the dam wall on a regular basis for leaks and cracks.	L	-
			Noise levels	<ul style="list-style-type: none"> <li>The proposed development will not result in any noise pollution during the operational phase.</li> </ul>	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			Tourism industry	<ul style="list-style-type: none"> <li>The proposed activities might have an impact on tourism in the area, as a result of water depletion for downstream game farmers.</li> </ul>	-		L	S	D	CR	NL	Yes	<ul style="list-style-type: none"> <li>During the operational phase care should be taken to ensure that the volume of water allocated for downstream users are not impacted on or depleted.</li> <li>Conditions contained in the water use licence to be adhered to.</li> </ul>	L	-
			Heritage resources	<ul style="list-style-type: none"> <li>It is not foreseen that the proposed activity will impact on heritage resources or vice versa.</li> </ul>	-		S	L	Po	PR	ML	Yes	-	L	-
<b>DECOMMISSIONING PHASE</b>															
-	<p><u>Dismantlement of infrastructure</u></p> <p>During the decommissioning phase the dam wall will be dismantled.</p> <p><u>Rehabilitation of biophysical environment</u></p> <p>The biophysical environment will</p>	BIOPHYSICAL ENVIRONMENT	Fauna & Flora	<ul style="list-style-type: none"> <li>Re-vegetation of exposed soil surfaces to ensure no erosion in these areas.</li> </ul>	+		S	L	Po	N/A	N/A	Yes	- Re-vegetation of affected areas must be made a priority to avoid erosion.	N/A	-
			Soil	<ul style="list-style-type: none"> <li>Soil degradation, including erosion.</li> <li>Disturbance of soils and existing land use (soil compaction).</li> </ul>	-		S	S	Pr	PR	M	Yes	<ul style="list-style-type: none"> <li>Cover disturbed soils as completely as possible, using vegetation or other suitable materials;</li> <li>Minimize the amount of</li> </ul>	M	-

	be rehabilitated.			<ul style="list-style-type: none"> <li>Physical and chemical degradation of the soils by construction vehicles (hydrocarbon spills).</li> </ul>								<p>land disturbance and develop and implement stringent erosion and dust control practices.</p> <ul style="list-style-type: none"> <li>Protect sloping areas and drainage channel banks downstream and upstream of the dam footprint areas that are susceptible to erosion and ensure that there is no undue soil erosion resultant from activities within and adjacent to the construction camp and Work Areas;</li> <li>Repair all erosion damage as soon as possible to allow for sufficient rehabilitation growth;</li> <li>Gravel roads must be well drained in order to limit soil erosion;</li> </ul>			
		Geology	<ul style="list-style-type: none"> <li>It is not foreseen that the decommissioning phase will impact on the geology of the site or vice versa.</li> </ul>	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		Ground water	<ul style="list-style-type: none"> <li>Pollution due to construction vehicles.</li> </ul>	-		S	S	Pr	CR	ML	Yes	<ul style="list-style-type: none"> <li>Inspect construction vehicles for leaks before they go on site.</li> <li>Continue with ground water quality monitoring.</li> </ul>	L	-	
		Surface water	<ul style="list-style-type: none"> <li>Spillages from vehicles, other upstream sources;</li> <li>Destruction of riparian area.</li> </ul>			L	S	Pr	PR	ML	Yes	<ul style="list-style-type: none"> <li>All construction vehicles should be inspected for oil and fuel leaks regularly and frequently.</li> <li>Vehicle maintenance will not be done on site except in emergency situations in</li> </ul>	M	Riparian & Wetland Report	



													<p>which case mobile drip trays will be used to capture any spills. Drip trays should be emptied into a holding tank and returned to the supplier.</p> <ul style="list-style-type: none"> <li>- Sediment trapping, erosion and storm water control should be addressed;</li> <li>- The vegetation associated with the water courses and wetlands up and downstream of the dams has a high sensitivity with a high conservation priority. No major alteration of these important corridor areas is recommended;</li> <li>- Any future work in rivers, streams and wetlands (drainage crossings etc.) should preferably be done during the low flow season;</li> <li>- Continue with surface water quality monitoring.</li> </ul>		
	SOCIAL/ECONOMIC ENVIRONMENT	Local unemployment rate	<ul style="list-style-type: none"> <li>• Loss of employment.</li> </ul>	-		L	L	Po	PR	NL	Yes	<ul style="list-style-type: none"> <li>- The farmer should ensure that retrenchment packages are provided for all staff retrenched when the facility is decommissioned.</li> </ul>	L	-	
		Visual landscape	<ul style="list-style-type: none"> <li>• Potential visual impact on visual receptors in close proximity to proposed facility due to dust generation.</li> </ul>	-		L	S	D	CR	NL	Yes	<ul style="list-style-type: none"> <li>- Dust suppression will play an important role to minimise the visibility of dust.</li> <li>- Contractors must avoid using roads not relevant to the project.</li> <li>- Good housekeeping should be implemented.</li> <li>- Proper rehabilitation of</li> </ul>	L	-	



													impacted on or depleted. - Conditions contained in the water use licence to be adhered to.		
			Heritage resources	<ul style="list-style-type: none"> <li>It is not foreseen that the decommissioning phase will impact on any heritage resources.</li> </ul>	-		S	S	Pr	PR	ML	Yes	-	L	Heritage Impact Assessment

<b>Nature of the impact:</b>	(N/A) No impact	(+) Positive Impact	Negative Impact (-)		
<b>Geographical extent:</b>	(S) Site;	(L) Local/District;	(P) Province/Region;	(I) International and National	
<b>Probability:</b>	(U) Unlikely;	(Po) Possible;	(Pr) Probable;	(D) Definite	
<b>Duration:</b>	(S) Short Term;	(M) Medium Term;	(L) Long Term;	(P) Permanent	
<b>Intensity / Magnitude:</b>	(L) Low;	(M) Medium;	(H) High;	(VH) Very High	
<b>Reversibility:</b>	(CR) Completely Reversible;	(PR) Partly Reversible;	(BR) Barely Reversible;	-	
<b>Irreplaceable loss of resources:</b>	(IR) Irreversible	(NL) No Loss;	(ML) Marginal Loss;	(SL) Significant Loss;	(CL) Complete Loss
<b>Level of residual risk:</b>	(L) Low;	(M) Medium;	(H) High;	(VH) Very High	-

## 6.2 KEY ISSUES IDENTIFIED

From the above it is evident that mitigation measures should be available for potential impacts associated with the proposed activity and development phases. The scoping methodology identified the following key issues which should be addressed in more detail in the EIA report.

### 6.2.1 Impacts during the construction phase

During the construction phase the following activities will have various potential impacts on the biophysical and socio-economic environment:

- Activity 19(i) (GN.R. 983): *“The infilling or depositing of any material of more than 5 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 5 cubic metres from (i) a watercourse.”*
- Activity 13 (GN.R. 984): *“The physical alteration of virgin soil to agriculture, or afforestation for the purposes of commercial tree, timber or wood production of 100 hectares or more.”*
- Activity 15 (GN.R. 984): *“The clearance of an area of 20 hectare or more of indigenous vegetation...”*
- Activity 16 (GN.R. 984): *“The development of a dam where the highest part of the dam wall, as measured from the outside toe of the wall to the highest part of the wall, is 5 metres or higher or where the high water mark of the dam covers an area of 10 hectares or more.”*
- Activity 4 (a)(ii)(ee)(GN.R. 985): *“The development road wider than 4 metres within reserve less than 13.5 metres (a) in Limpopo (ii) outside urban areas, in (ee) critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority in bioregional plans.”*
- Activity 12 (a)(ii) (GN.R. 985): *“The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan (a) in Limpopo (ii) within critical biodiversity areas identified in bioregional plans.”*
- Activity 14 (iv)(xii)(a)(a)(ii)(ff) (GN.R. 984): *“The development (iv) dams, where the dam, including infrastructure and water surface area exceeds 10 square metres in size and (xii) infrastructure or structures with a physical footprint of 10 square metres or more Where such development occurs – (a) within a watercourse (a) in Limpopo (ii) outside urban areas, in (ff) critical biodiversity areas or ecosystem service areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans”.*

During the construction phase minor negative impacts are foreseen over the short term. The latter refers to a period of months. The potentially most significant impacts relate to the impacts on the fauna and flora, aquatic ecology, water flow and drainage, impacts on

downstream water users as a result of water depletion and water quality and impacts on heritage resources.

### **6.2.2 Impacts during the operational phase**

During the operational phase the study area will serve as an irrigation dam to irrigate 340 hectares of croplands. The negative impacts are generally associated with impacts on the fauna and flora, the river flow and drainage and water availability for downstream water users and the impact on water quality. The operational phase will have a direct positive impact by contributing to food security, providing permanent job opportunities and providing a breeding area for aquatic species.

### **6.2.3 Impacts during the decommissioning phase**

Over the long term the physical environment will benefit from the decommissioning of the dam wall and cropland since the site will be restored to its natural state. The decommissioning phase will potentially result in impact on the riparian area and the loss of permanent employment.

## 7 PLAN OF STUDY FOR EIA

This section aims to address the following requirements of the regulations:

**Appendix 2.** (2) A scoping report (...) must include -

- (i) a plan of study for undertaking the EIA process to be undertaken, including-
  - (i) a description of the alternatives to be considered and assessed within the preferred site, including the option of not proceeding with the activity;
  - (ii) a description of the aspects to be assessed as part of the EIA process;
  - (iii) aspects to be assessed by specialists;
  - (iv) a description of the proposed method of assessing the environmental aspects, including a description of the proposed method of assessing the environmental aspects including aspects to be assessed by specialists;
  - (v) a description of the proposed method of assessing duration and significance;
  - (vi) an indication of the stages at which the competent authority will be consulted;
  - (vii) particulars of the public participation process that will be conducted during the EIA process; and
  - (viii) a description of the tasks that will be undertaken as part of the EIA process;
  - (ix) identify suitable measures to avoid, reverse, mitigate or manage identified impacts and to determine the extent of the residual risks that need to be managed and monitored.

### 7.1 INTRODUCTION

This section gives a brief outline of the Plan of Study for EIA (PoSEIA) and the tasks that will be undertaken and the anticipated process to meet the objectives for the EIA phase. The approach to the EIA is to focus on those key issues identified for the preferred alternative. This will ensure that the EIA focus on the most significant impacts and in the process save time and resources.

### 7.2 ANTICIPATED OUTCOMES OF THE IMPACT ASSESSMENT PHASE

The purpose of the EIA phase is to assess issues identified in the scoping phase and will include an environmental management programme (EMPr). The EMPr will provide information on the proposed activity and the manner in which potential impacts will be minimized or mitigated. The EIA report will comply with Appendix 3 and will:

- Determine the policy and legislative context within which the activity is located and document how the proposed activity complies with and responds to the policy and legislative context;
- Describe the need and desirability of the proposed activity, including the need and desirability of the activity in the context of the preferred location;
- Identify the location of the development footprint within the preferred site based on an impact and risk assessment process inclusive of cumulative impacts and a ranking process of all the identified development footprint alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects of the environment;
- Determine the—
  - (i) nature, significance, consequence, extent, duration and probability of the impacts occurring to inform identified preferred alternatives; and
  - (ii) degree to which these impacts-
    - (aa) can be reversed;
    - (bb) may cause irreplaceable loss of resources, and
    - (cc) can be avoided, managed or mitigated;
- Identify the most ideal location for the activity within the preferred site based on the lowest level of environmental sensitivity identified during the assessment;
- Identify, assess, and rank the impacts the activity will impose on the preferred location through the life of the activity;
- Identify suitable measures to avoid, manage or mitigate identified impacts; and
- Identify residual risks that need to be managed and monitored.

### **7.3 TASKS TO BE UNDERTAKEN**

The following sections describe the tasks that will be undertaken as part of the EIA process.

#### **7.3.1 Project Description**

Further technical and supporting information will be gathered to provide a more detailed project description. This will include a detailed site layout plan that will be compiled once the low – medium areas of sensitivity have been indicated by the specialists.

#### **7.3.2 Consideration of alternatives**

The following project alternatives will be investigated in the EIR:

- Design/Layout alternatives: In terms of the actual layout of the croplands and designs of the proposed dam wall which will only be assessed for the preferred site alternative.

### 7.3.3 Compilation of Environmental Impact Report

A Draft EIR will be compiled to meet the content requirements as per Appendix 3 of GNR982 of the EIA Regulations (4 December 2014) and will also include a draft Environmental Management Programme containing the aspects contemplated in Appendix 4 of GNR982.

### 7.3.4 Public participation

All registered I&APs and relevant State Departments were provided with the opportunity to review the Draft Scoping Report in accordance with Regulation R982. A minimum of 30 days commenting period were allowed and all stakeholders and I&APs were given an opportunity to forward their written comments within that period. All issues identified during this public review period were documented and compiled into a Comments and Response Report included as part of the Final Scoping Report to be submitted to the Limpopo Department of Economic Development, Environment and Tourism (LDEDT).

Once the Department accepts the Final Scoping Report, an EIR will be submitted to the Department and all registered I&APs and relevant State Departments will again be given the opportunity to review the EIR in accordance with Regulation R982. A minimum of 30 days commenting period will once again be allowed.

## 7.4 ASPECTS ASSESSED

Table 7.1 below provides a summary of the aspects that have been assessed. The aspects are also linked to specialist information obtained.

**Table 7.1:** Aspects assessed

Aspects	Potential impacts	Specialist studies / technical information
Construction of the irrigation dam and croplands	<ul style="list-style-type: none"> <li>• Impacts on the fauna and flora</li> </ul>	Ecological Report
	<ul style="list-style-type: none"> <li>• Impacts on water flow, water quality and drainage</li> </ul>	Riparian and wetland report Aquatic Assessment
	<ul style="list-style-type: none"> <li>• Impacts on aquatic ecosystem</li> </ul>	Aquatic and Ecological Flow Assessment
	<ul style="list-style-type: none"> <li>• Impacts on heritage resources</li> </ul>	Archeological & Paleontological Assessments
Operation of the irrigation dam	<ul style="list-style-type: none"> <li>• Impacts on the fauna and flora</li> </ul>	Ecological Report



and croplands	<ul style="list-style-type: none"> <li>Impacts on aquatic ecosystem</li> </ul>	Aquatic and Ecological Flow Assessment
	<ul style="list-style-type: none"> <li>Impacts on water flow, drainage, water quality and downstream water users.</li> </ul>	Riparian and wetland report, Water Use License Application
Decommissioning of the Dam	<ul style="list-style-type: none"> <li>Impacts on the riparian area</li> </ul>	Riparian and wetland report

#### 7.4.1 Specialist studies

Based on the initial descriptions of potential environmental impacts or aspects (refer to Table 7.1), specialists have been subcontracted to assess the potential impacts that may be significant. The specialist studies assess impacts on both the social and the biophysical environment and also help in identifying ways that can help to mitigate the envisaged impacts. The following specialist studies will be conducted to address the potentially most significant impact as identified during the scoping phase – refer to Table 6.2:

- Archaeological Impact Assessment: To determine whether the proposed activity will impact on any heritage or archeological artifacts.
- Ecological Report: To determine what the impact of the proposed activity will be on the ecology (fauna and flora) in the area.
- Riparian & Wetland Report: To determine what impacts of the proposed activity will have on the on the wetlands and riparian areas of the site.
- Aquatic and Ecological Flow Assessment: To determine what the impacts of the dam will be on the river flow and associated ecology.
- Paleontological Desktop Assessment: To determine the impacts on paleontological resources.

#### 7.4.2 Terms of reference for specialist studies

Specialists in their field of expertise will consider baseline data and identify and assess impacts according to predefined rating scales. Specialists will also suggest optional or essential ways in which to mitigate negative impacts and enhance positive impacts. Further, specialists will, where possible, take into consideration the cumulative effects associated with this and other projects which are either developed or in the process of being developed in the local area.

The results of these specialist studies will be integrated into the Draft EIR. The Terms of Reference (ToR) or general requirements proposed for the inputs are presented below and stakeholders are encouraged to comment and provide input on these.

### 7.4.2.1 General Requirements

Specialists' reports must comply with Appendix 6 of GNR982 published under sections 24(5), and 44 of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended and whereby the following are to be included:

- The details of-
  - the specialist who prepared the report; and
  - the expertise of that specialist to compile a specialist report including a curriculum vitae;
- A declaration that the specialist is independent in a form as may be specified by the competent authority;
- An indication of the scope of, and the purpose for which, the report was prepared;
- The date and season of the site investigation and the relevance of the season to the outcome of the assessment;
- A description of the methodology adopted in preparing the report or carrying out the specialised process; the specific identified sensitivity of the site related to the activity and its associated structures and infrastructure;
- An identification of any areas to be avoided, including buffers;
- A map superimposing the activity including the associated structures and infrastructure on the environmental sensitivities of the site including areas to be avoided, including buffers;
- A description of any assumptions made and any uncertainties or gaps in knowledge;
- A description of the findings and potential implications of such findings on the impact of the proposed activity, including identified alternatives on the environment;
- Any mitigation measures for inclusion in the EMPr;
- Any conditions for inclusion in the environmental authorisation;
- Any monitoring requirements for inclusion in the EMPr or environmental authorisation;
- A reasoned opinion-
  - as to whether the proposed activity or portions thereof should be authorised; and
  - if the opinion is that the proposed activity or portions thereof should be authorised, any avoidance, management and mitigation measures that should be included in the EMPr, and where applicable, the closure plan;

- A description of any consultation process that was undertaken during the course of preparing the specialist report;
- A summary and copies of any comments received during any consultation process and where applicable all responses thereto; and
- Any other information requested by the competent authority.

In addition to the above, specialists are expected to:

- Review the Scoping Report, with specific reference to the Comments and Response Report to familiarize with all relevant issues or concerns relevant to their field of expertise;
- In addition to the impacts listed in this Scoping Report, identify any issue or aspect that needs to be assessed and provide expert opinion on any issue in their field of expertise that they deem necessary in order to avoid potential detrimental impacts;
- Assess the degree and extent of all identified impacts (including cumulative impacts) that the preferred project activity and its proposed alternatives, including that of the no-go alternative, may have;
- Identify and list all legislation and permit requirements that are relevant to the development proposal in context of the study;
- Reference all sources of information and literature consulted; and
- Include an executive summary to the report.

#### **7.4.2.2 Proposed ToR for the Archaeological impact assessment**

An Archaeological Impact assessment will be undertaken for the site in accordance with the requirements of Section 38(3) of the NHRA. The scope of work for this study will consist of:

- A desk-top investigation of the area, in which all available literature, reports, databases and maps were studied; and
- A visit to the proposed development area.

The objectives will be to:

- Provide detailed updated description of all additional archaeological artefacts, structures (including graves) and settlements which may be affected, if any.
- Assess the nature and degree of significance of such resources within the area.
- Establish heritage informants/constraints to guide the development process through establishing thresholds of impact significance.

- Assess any possible impact on the archaeological and historical remains within the area emanating from the proposed development activities.
- Propose possible heritage management measures provided that such action is necessitated by the development.
- Obtain a comment from the SAHRA and PHRA.

#### **7.4.2.3 Proposed ToR for the ecological assessment**

The proposed ToR for the ecological assessment survey is as follow:

- Detailed flora survey – in each vegetation type/plant community on site:
  - After studying the aerial photograph identify specific areas to be surveyed and confirm location by making use of a Geographical Positioning System (GPS).
  - Conduct a site visit and list the plant species (trees, shrubs, grasses, succulents and other herbaceous species of special interest) present for plant community and ecosystem delimitation.
  - Identify potential red data plant species, possible encroacher species, medicinal plants of value and exotic plant species.
  - Indicate suitable plant species that can be used for the landscaping around the proposed developments.
- Plant community delimitation and description -
  - Process data (vegetation and habitat classification) to determine vegetation types on an ecological basis.
  - Describe the habitat and vegetation.
- Fauna scoping -
  - List the potential fauna (mammal species, red data birds, reptiles, amphibians, invertebrates) present linked to the specific potential habitats that occur as identified in the vegetation survey.
  - Analyse the data and identify potential red data fauna species, as well as other endemic or protected species of importance.
  - Indicate species mitigation measures and management measures to be implemented to prevent any negative impacts on the fauna of the area.

- **General -**
  - Identify and describe ecologically sensitive areas. Create a sensitivity map to indicate specific sensitive areas based on various environmental parameters such as natural vegetation in a good condition, rockiness, slopes, flood lines etc.
  - Identify problem areas in need of special treatment or management, e.g. bush encroachment, erosion, degraded areas, reclamation areas.
  - Make recommendations, impact ratings and risk assessments for each specific impact.

#### **7.4.2.4 Proposed ToR for the riparian & wetland assessment**

The proposed ToR for this riparian & wetland is as follow:

- Conduct a desktop and field investigation to confirm the presence or absence of wetlands and riparian areas within the study area;
- Delineate and map the identified wetland areas on site;
- Classify wetlands according to their hydro-geomorphic characteristics;
- Determine the Present Ecological State (PES) and Ecological Importance and Sensitivity (EIS) of all wetlands and riparian areas on site;
- Determine the impacts associated with the proposed development on the wetlands;
- Specify mitigation measures and management plan for the wetlands on site;
- Compile a report with the findings and maps.

#### **7.4.2.5 Proposed ToR for the aquatic and ecological flow assessment**

The study will consist of a multifaceted approach applying various methodologies to conduct an Environmental Flow Assessment. These include:

- Eco-classification methodologies for Reserve Determination (Kleynhans et al., 2005), including Fluvial Geomorphology and Eco-Hydrology.
- Eco-Status determination
- Macroinvertebrate Response Assessment Index (MIRAI)
- Fish Response Assessment Index (FRAI)
- Riparian Vegetation Response Assessment Index (VEGRAI)

- The Building Block Methodology (King et al., 2008)
- Habitat Flow Stressor Response (HFSR) methodology.
- Obtain water quality samples in order to determine the current water quality of the aquatic system.

#### **7.4.2.6 Proposed ToR for the Paleontological Assessment**

The scope of work for this study will consist of:

- A desktop investigation of the area, in which all geological maps, published scientific literature, previous paleontological impact studies in the same region and the author's field of experience (consultation with professional colleagues as well as examination of institutional fossil collections and data) should be studied and used.
- Based on the outcome of the desktop study and the comments obtained from SAHRA, the need for a field assessment must be determined. The desktop investigation must be supplemented with a field assessment if required.
- Assess the potential impacts, based on a supplied methodology.
- Describe mitigation measures to address impacts during the construction, operation and decommissioning stages.
- Describe cumulative impacts of the project on paleontological resources in both the local study area regional study area and the proponent's plans to manage those effects.
- Supply the client with geo-referenced GIS shape files of any sensitive areas.

#### **7.4.2.7 Expected deliverables**

The specialist is expected to prepare a report that addresses the scope of the work as set out above. The report should be prepared in a suitable font (such as Arial 12) and submitted to EcoLead Pty Ltd. in draft form. If accepted by EcoLead Pty Ltd. and the client an electronic copy should be provided for submission to the Department.

### **7.5 METHOD OF ENVIRONMENTAL ASSESSMENT**

The environmental assessment aims to identify the various possible environmental impacts that could result from the proposed activity. Different impacts need to be evaluated in terms of their significance and in doing so highlight the most critical issues to be addressed.

Significance is determined through a synthesis of impact characteristics which include context and intensity of an impact. Context refers to the geographical scale i.e. site, local, national or global whereas intensity is defined by the severity of the impact e.g. the magnitude of deviation from background conditions, the size of the area affected, the duration of the impact and the overall probability of occurrence. Significance is calculated as shown in Table 7.2.

Significance is an indication of the importance of the impact in terms of both physical extent and time scale, and therefore indicates the level of mitigation required. The total number of points scored for each impact indicates the level of significance of the impact.

### 7.5.1 Impact Rating System

Impact assessment must take account of the nature, scale and duration of impacts on the environment whether such impacts are positive or negative. Each impact is also assessed according to the project phases:

- planning
- construction
- operation
- decommissioning

Where necessary, the proposal for mitigation or optimisation of an impact should be detailed. A brief discussion of the impact and the rationale behind the assessment of its significance should also be included. The rating system is applied to the potential impacts on the receiving environment and includes an objective evaluation of the mitigation of the impact. In assessing the significance of each impact the following criteria is used:

**Table 7.2:** The rating system

<b>NATURE</b>		
Include a brief description of the impact of environmental parameter being assessed in the context of the project. This criterion includes a brief written statement of the environmental aspect being impacted upon by a particular action or activity.		
<b>GEOGRAPHICAL EXTENT</b>		
This is defined as the area over which the impact will be experienced.		
1	Site	The impact will only affect the site.
2	Local/district	Will affect the local area or district.
3	Province/region	Will affect the entire province or region.
4	International and National	Will affect the entire country.
<b>PROBABILITY</b>		
This describes the chance of occurrence of an impact.		

1	Unlikely	The chance of the impact occurring is extremely low (Less than a 25% chance of occurrence).
2	Possible	The impact may occur (Between a 25% to 50% chance of occurrence).
3	Probable	The impact will likely occur (Between a 50% to 75% chance of occurrence).
4	Definite	Impact will certainly occur (Greater than a 75% chance of occurrence).
<b>DURATION</b>		
This describes the duration of the impacts. Duration indicates the lifetime of the impact as a result of the proposed activity.		
1	Short term	The impact will either disappear with mitigation or will be mitigated through natural processes in a span shorter than the construction phase (0 – 1 years), or the impact will last for the period of a relatively short construction period and a limited recovery time after construction, thereafter it will be entirely negated (0 – 2 years).
2	Medium term	The impact will continue or last for some time after the construction phase but will be mitigated by direct human action or by natural processes thereafter (2 – 10 years).
3	Long term	The impact and its effects will continue or last for the entire operational life of the development, but will be mitigated by direct human action or by natural processes thereafter (10 – 30 years).
4	Permanent	The only class of impact that will be non-transitory. Mitigation either by man or natural process will not occur in such a way or such a time span that the impact can be considered indefinite.
<b>INTENSITY/ MAGNITUDE</b>		
Describes the severity of an impact.		



1	Low	Impact affects the quality, use and integrity of the system/component in a way that is barely perceptible.
2	Medium	Impact alters the quality, use and integrity of the system/component but system/component still continues to function in a moderately modified way and maintains general integrity (some impact on integrity).
3	High	Impact affects the continued viability of the system/component and the quality, use, integrity and functionality of the system or component is severely impaired and may temporarily cease. High costs of rehabilitation and remediation.
4	Very high	Impact affects the continued viability of the system/component and the quality, use, integrity and functionality of the system or component permanently ceases and is irreversibly impaired. Rehabilitation and remediation often impossible. If possible rehabilitation and remediation often unfeasible due to extremely high costs of rehabilitation and remediation.

#### **REVERSIBILITY**

This describes the degree to which an impact can be successfully reversed upon completion of the proposed activity.

1	Completely reversible	The impact is reversible with implementation of minor mitigation measures.
2	Partly reversible	The impact is partly reversible but more intense mitigation measures are required.
3	Barely reversible	The impact is unlikely to be reversed even with intense mitigation measures.
4	Irreversible	The impact is irreversible and no mitigation measures exist.

#### **IRREPLACEABLE LOSS OF RESOURCES**

This describes the degree to which resources will be irreplaceably lost as a result of a proposed

activity.		
1	No loss of resource	The impact will not result in the loss of any resources.
2	Marginal loss of resource	The impact will result in marginal loss of resources.
3	Significant loss of resources	The impact will result in significant loss of resources.
4	Complete loss of resources	The impact is result in a complete loss of all resources.
<b>CUMULATIVE EFFECT</b>		
<p>This describes the cumulative effect of the impacts. A cumulative impact is an effect which in itself may not be significant but may become significant if added to other existing or potential impacts emanating from other similar or diverse activities as a result of the project activity in question.</p>		
1	Negligible cumulative impact	The impact would result in negligible to no cumulative effects.
2	Low cumulative impact	The impact would result in insignificant cumulative effects.
3	Medium cumulative impact	The impact would result in minor cumulative effects.
4	High cumulative impact	The impact would result in significant cumulative effects
<b>SIGNIFICANCE</b>		
<p>Significance is determined through a synthesis of impact characteristics. Significance is an indication of the importance of the impact in terms of both physical extent and time scale, and therefore indicates the level of mitigation required. The calculation of the significance of an impact uses the following formula: (Extent + probability + reversibility + irreplaceability + duration + cumulative effect) x magnitude/intensity.</p> <p>The summation of the different criteria will produce a non-weighted value. By multiplying this value with the magnitude/intensity, the resultant value acquires a weighted characteristic which can be measured and assigned a significance rating.</p>		
Points	Impact significance rating	Description
6 to 28	Negative low impact	The anticipated impact will have negligible negative effects and will require little to no mitigation.

6 to 28	Positive low impact	The anticipated impact will have minor positive effects.
29 to 50	Negative medium impact	The anticipated impact will have moderate negative effects and will require moderate mitigation measures.
29 to 50	Positive medium impact	The anticipated impact will have moderate positive effects.
51 to 73	Negative high impact	The anticipated impact will have significant effects and will require significant mitigation measures to achieve an acceptable level of impact.
51 to 73	Positive high impact	The anticipated impact will have significant positive effects.
74 to 96	Negative very high impact	The anticipated impact will have highly significant effects and are unlikely to be able to be mitigated adequately. These impacts could be considered "fatal flaws".
74 to 96	Positive very high impact	The anticipated impact will have highly significant positive effects.

## 7.6 CONSULTATION WITH THE COMPETENT AUTHORITY

Consultation with the competent and commenting authorities will continue throughout the duration of impact assessment phase. The authorities will also comment on whether they deem it necessary to conduct additional specialist studies other than what is proposed already in this PoSEIA. On-going consultation will include:

- Submission of the Final Scoping Report following a 30-day public review period (and consideration of comments received).
- Arrangements will be made to discuss the report with the Environmental Officer responsible for the project during the review period.

## 8 CONCLUSION

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This Final Scoping Report is aimed at identifying the 'scope' of the EIA that will be conducted in respect of the activity for which authorisation is being applied for. It can be concluded that:

- The scoping phase complied with the specifications set out in Regulations 21 and Appendix 2 of GNR982.
- All key consultees have been consulted as required by the Regulations 39 to 44.

Based on the contents of the report the following key environmental issues were identified which need to be addressed in the EIA report:

- Impacts during construction phase:
  - Impacts on the fauna and flora
  - Impacts on aquatic ecology
  - Impacts on river flow, water quality and drainage
  - Impacts on heritage resources
  - Impacts on tourism
- Impacts during the operational phase:
  - Impacts on the fauna and flora
  - Impacts on river flow, drainage, water quality and downstream water users
  - Impact on aquatic ecosystems
  - Impacts on tourism
- Impacts during the decommissioning phase:
  - Impacts on riparian area
- Cumulative biophysical impacts resulting from similar development in close proximity to the proposed activity.

The latter issues will be addressed in more detail in the EIA report. The EAP therefore recommended that:

The scoping report be approved after which the EIA process, as required by Regulations 23 to 24 may commence.

We trust that the department find the report in order and eagerly await your final decision in this regard.

**Mr. Ruan Mostert**  
EcoLead

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## **APPENDIX A: EAP DECLARATION**



## **APPENDIX B: PRESS ADVERTISEMENT**

## **APPENDIX C: ON SITE NOTICE**

## **APPENDIX D: LIST OF I&APS**

## **APPENDIX E: PROOF OF CORRESPONDENCE**

## **APPENDIX F: WRITTEN COMMENTS**

### **APPENDIX F.1 COMMENTS AND RESPONSE REPORT**

## **APPENDIX F.2 WRITTEN COMMENTS**