

ESKOM HOLDINGS SOC LTD: DUVHA POWER STATION

Draft Basic Assessment Report for the proposed
Reinstatement of the low-level dam spillway at Duvha
Power Station in Emalahleni Local Municipality,
Nkangala District in Mpumalanga Province.

Date: 22 January 2026

Reference number: 14/12/16/3/3/1/3206



Stewards



Problem Solvers



Team Players

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mitigation of environmental, safety, health and compliance risks*

Executive Summary

Duvha Power Station is located 15 km east of Witbank town under the Jurisdiction of Emalahleni Local Municipality and the Nkangala District Municipality. The site area associated with the proposed development is situated on DUVHA KRAGSTASIE No. 337 JS Transvaal. The approximate area that will be impacted is a total of 0.25 ha = 2500 m².

Duvha Power Station proposes to reinstate the low-level dam spillway. The Low-Level Dam (“LLD”) spillway currently has a width of 10 m as opposed to the design width of 110 m, this is due to a berm constructed along the spillway in the past. The design of the spillway has been optimized and upgraded and will now have a width of 62 m.

Due to the extent and nature of the activities associated with the proposed project, the Environmental Assessment Practitioner (“EAP”) has identified that a Basic Assessment (“BA”) process is required in terms of the National Environmental Management Act (“NEMA”) Environmental Impact Assessment Regulations (“EIA”) Regulations, General Notice (“GN”) R.982 dated 2014, as amended.

This Basic Assessment Report (“BAR”) has investigated and assessed the significance of the predicted, potential positive and negative direct, indirect, and cumulative impacts associated with the proposed project, with mitigation and management actions included in the Environmental Management Programme report (“EMPr”) attached as Appendix F.

The following listed activities are applied for:

Listed activity	Activity description
Listing Notice 1 (GNR 983 of 4 December 2014, as amended)	
Activity 12	The development of— (ii) infrastructure or structures with a physical footprint of 100 square metres or more; where such development occurs— (a) within a watercourse. (c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse.
Activity 19	The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from a watercourse.



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REFERENCES

Baseline Characterisation of the Ambient Air Quality and Emission Inventory of the HPA. Report compiled for the Department of Environmental Affairs, dated, 2016.

Duvha Power Station Ash dam, raw and ash water dams seepage interception drains in Mpumalanga province Basic Assessment Report, compiled by Nema Consulting, dated 2019.

Emalahleni Local Municipality Integrated Development Plan, 2022/2023 – 2026/2027.

Eskom Duvha Power Station Wetland Delineation Report, dated 2020 by Kimpopax (Pty) Ltd.

Eskom: Wetland Risk Assessment for Duvha Power Station Village Road, Compiled by Thero Services, and dated September 2023.

Groundwater Resource Assessment Phase II. Hydrogeological Map Series, compiled by Department of Water and Sanitation (DWS), dated 2010.

Highveld Priority Area Air Quality Management Plan (HPA AQMP), compiled by Department of Environmental Affairs (DEA), dated 2011.

Screening Report for an Environmental Authorization as required by the 2014 EIA Regulations – Reinstatement of the low-level dam spillway at Duvha Power Station, dated 18 July 2025

Terrestrial Ecological Assessment Report for the Proposed Duvha Ash Dam Seepage Interception Drains, compiled by Nema Consulting and dated July 2017.

Wetland Biodiversity Assessment and Aquatic Site Sensitivity Verification Report for Reinstating the Low-Level Dam Spillway, Compiled by Limosella Consulting, dated June 2025.



PART A:

SCOPE OF ASSESSMENT AND BASIC ASSESSMENT REPORT

1 Details of project applicant and environmental assessment practitioner

1.1 Details of project applicant

Name of operation	Eskom Holdings SOC Ltd: Duvha Power Station
Applicant	Eskom Holdings SOC Ltd: Duvha Power Station
Postal address	Eskom Holdings SOC Ltd: Duvha Power station PO Box 2199 Witbank 1035
Responsible person	Lourence Chauke
Telephone no.	(013) 691 6300
e-mail address	ChaukeTL@eskom.co.za
Company registration no.	2002/015527/30

1.2 Details of the environmental assessment practitioner

EAP	Shangoni Management Services (Pty) Ltd.: Lee-Anne Fellowes
Tel No	(012) 807 7036
Fax No	(012) 807 1014
e-mail Address	leeanne@shangoni.co.za

1.3 Expertise of the environmental assessment practitioner

Name and Surname	Qualifications and summary of experience
Lee-Anne Fellowes	Lee-Anne is a Principal Consultant who has a B-tech degree in Nature Conservation from the Tshwane University of Technology and holds a National Diploma in Nature Conservation. She gained valuable experience in the conservation and the environmental field through her employment at Gauteng's Department of Agriculture, Conservation and Environment for a period of 5 years. Her areas of expertise include alien invasive surveys, biodiversity action & conservation plans,



Name and Surname	Qualifications and summary of experience
	Environmental Impact Assessments (“EIA”), Environmental Management Programmes (“EMP”), Section 24G Rectification Applications, Basic Assessments, Water Use Licenses and Project Management. Lee-Anne has 19 years’ experience at Shangoni. Lee-Anne has been registered as a Professional Natural Scientist in the field of Conservation Science Registration number: 115574 and is registered as an environmental impact assessment practitioner Registration number: 2019/850. Lee-Anne served on the Gauteng’s Department of Agriculture and Rural Development Appeals Panel Committee for a period of 36 months (2020 – 2023) and gained valuable experience with the appeals procedure.

2 Description of the property

Farm name	DUVHA KRAGSTASIE No. 337 JS Transvaal, Portion No. 0
Application area (ha)	Approximately 0.25 ha
Magisterial district	Nkangala District Municipality
Distance and direction from nearest town	Approximately 15 km South East of Witbank
21-digit Surveyor General code for each farm portion	T0JS00000000033700000

3 Locality of the proposed project

Province	Mpumalanga
District municipality	Nkangala District Municipality
Local municipality	Emalahleni Local Municipality
Department of Forestry Fisheries and Environment (“DFFE”), Competent Authority (“CA”)	Department of Forestry Fisheries and Environment
Department of Water and Sanitation (“DWS”) Regional Office	Nelspruit Regional Office
Catchment zone	Primary Catchment B
Water Management Area (“WMA”)	Olifants Water Management Area
Quaternary catchment	B11G



4 Description of the scope of the proposed overall activity

4.1 Background

Shangoni Management Services (“Shangoni”) has been appointed by Eskom Holdings SOC Ltd: Duvha Power station (“Duvha power station”) to conduct Basic Assessment (“BA”) and General Authorisation (“GA”) Processes as part of the application for the reinstatement of the low-level dam spillway at Duvha power station.

Duvha power station is located east of Witbank Dam at approximately 15 km east of Witbank town under the Jurisdiction of Emalahleni Local Municipality (“ELM”) and the Nkangala District Municipality (“NDM”) within the Mpumalanga Province as shown in Figure 1. The power station has been operational for over 40 years and consists of six 600 MW units with a total installed capacity of 3,600 MW operating with a turbine Maximum Continuous Rating of 37.6%. Duvha Power Station produces wet ash which is pumped into an Ash Dam. The settled water is then decanted into the Low-Level Dam (“LLD”) before it is pumped back to the station for reuse. The LLD is an off-channel storage dam used to store ash water. Additionally, the LLD is also used to collect all contaminated storm water from the ash dam, station and the surrounding area with a capacity of 811 240 m³ at the spillway level of 7.2 m.

The LLD spillway currently has a width of 10 m as opposed to the design width of 110 m, this is due to a berm constructed along the spillway in the past. The spillway size needs to be reinstated to its original capacity which was based on the Safety Evaluation Discharge (“SED”) for a Category II dam.



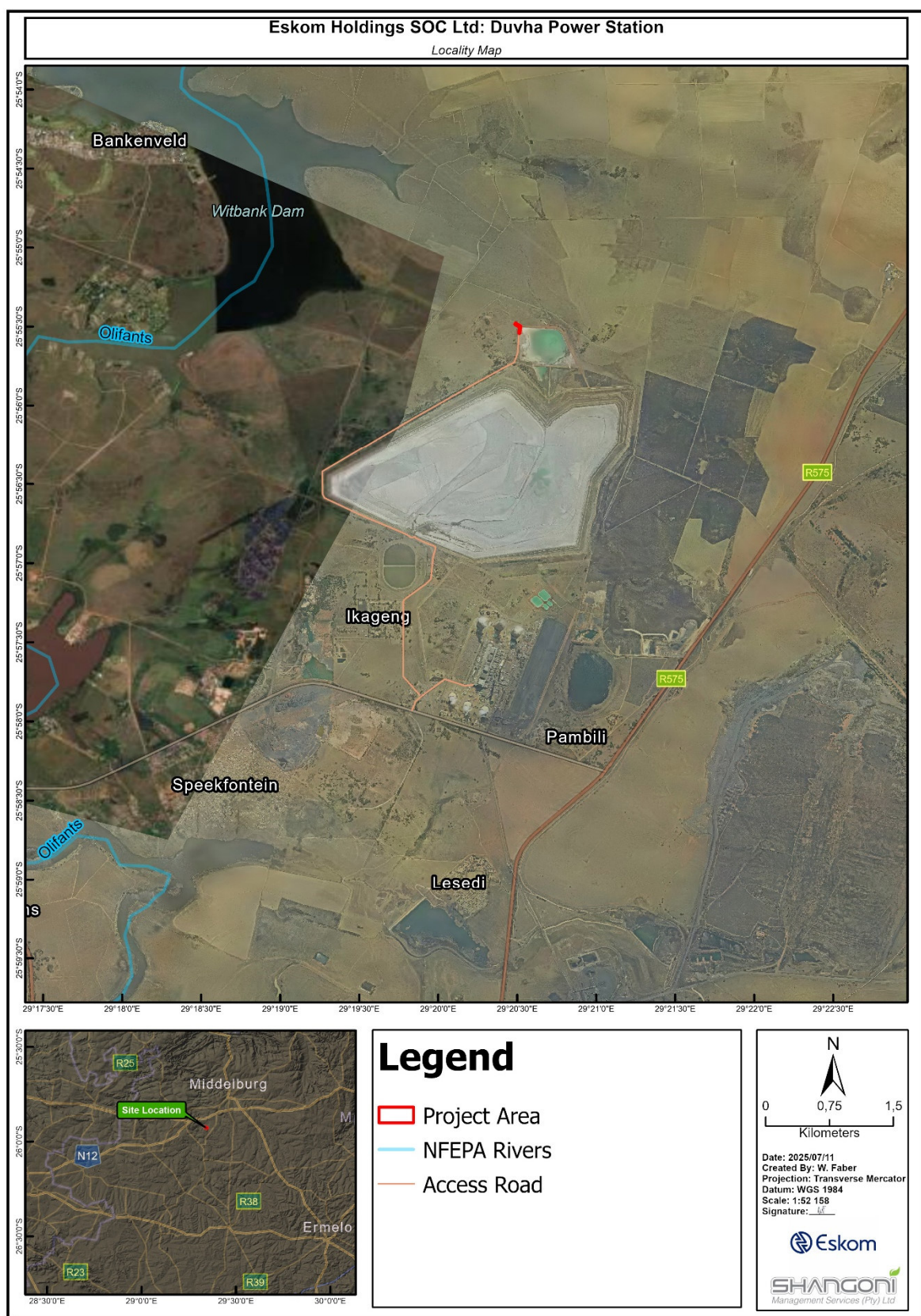


Figure 1: Locality Map

4.2 Scope of works

The following activities will be undertaken as part of the reinstatement of the LLD spillway:

4.2.1 Spillway re-instatement

The original spillway width was 110 m, however an earth berm was constructed which reduced the size of the spillway to current width of 10 m. The design of the spillway has been optimized and upgraded and will now have a width of 62 m to accommodate a maximum capacity of approximately 130 m³/s which is equivalent to the SED:

- Excavate the berm up to invert level 1562.61 over a length of 62 m toward the southern direction referencing from the existing spillway headwall. The excavated material will be used as backfill for area on section 3.1.2 of the scope.
- Rip and compact the in-situ material to at least 95% Mod AASHTO to a depth of 150 mm.
- Cast in reinforced concrete sill up to a finish floor level (FFL) of 1562.61, The concrete sill should be 500 mm x 600 mm x 62 m.
- Raise the spillway headwall with brick masonry to contour level 1563.86. A double brick masonry (230 mm) wall – 3 layers of bricks built on top of existing headwall.

4.2.2 Construction of concrete weir structure

A man-made breach section has been created at the diving berm (between dirty and clean water areas) to allow water to flow downstream in an event of a high storm. A concrete weir structure must be constructed at the position of man-made breach for proper management of flow when the dam spill in the event of floods >1:50-years and to prevent soil erosion by engaging in the following activities:

- Excavate the existing diving berm for a width of 34 m up to counter level 1561.86.
- Rip and compact the in-situ material to at least 95% Mod AASHTO to a depth of 150 mm.
- Construction of a new concrete weir structure.
- Construction of a new retaining walls for embankment protection using terra block or similar.
- Backfill all low sections of the dividing berm as indicated on long section using material excavated from the LLD spillway section.
- Install Reno mattress protection downstream of the weir structure for a width of 2 m.
- Shape the downstream channel of the weir structure by installing (laying) the Armoflex protection.

4.2.2 LLD Dam Crest

The LLD crest was surveyed and settlement of about 3% has occurred which is currently resulting in an uneven surface profile, reducing the dam's freeboard. In order to rectify the settlement and to reinstate adequate freeboard a new wearing course of approximately 300 mm gravel topping must be applied. The layer must be compacted to at least 92% Mod AASHTO with a 2% cross fall towards the upstream (water) side, to prevent standing and ponding water on the crest, after rainfall. The lay out



map below as indicated in Figure 2 below illustrate the proposed spillway, associated infrastructure and environmental sensitivities.

4.2.3 Temporary laydown area

A Temporary laydown area of 217 m² is required to store material for the re-instatement of the LLD Spillway. The temporary laydown area will be located west of the existing infrastructure and adjacent to an access road. The temporary laydown area is not located close to any natural wetland and is thus unlikely to have an impact on any watercourse.



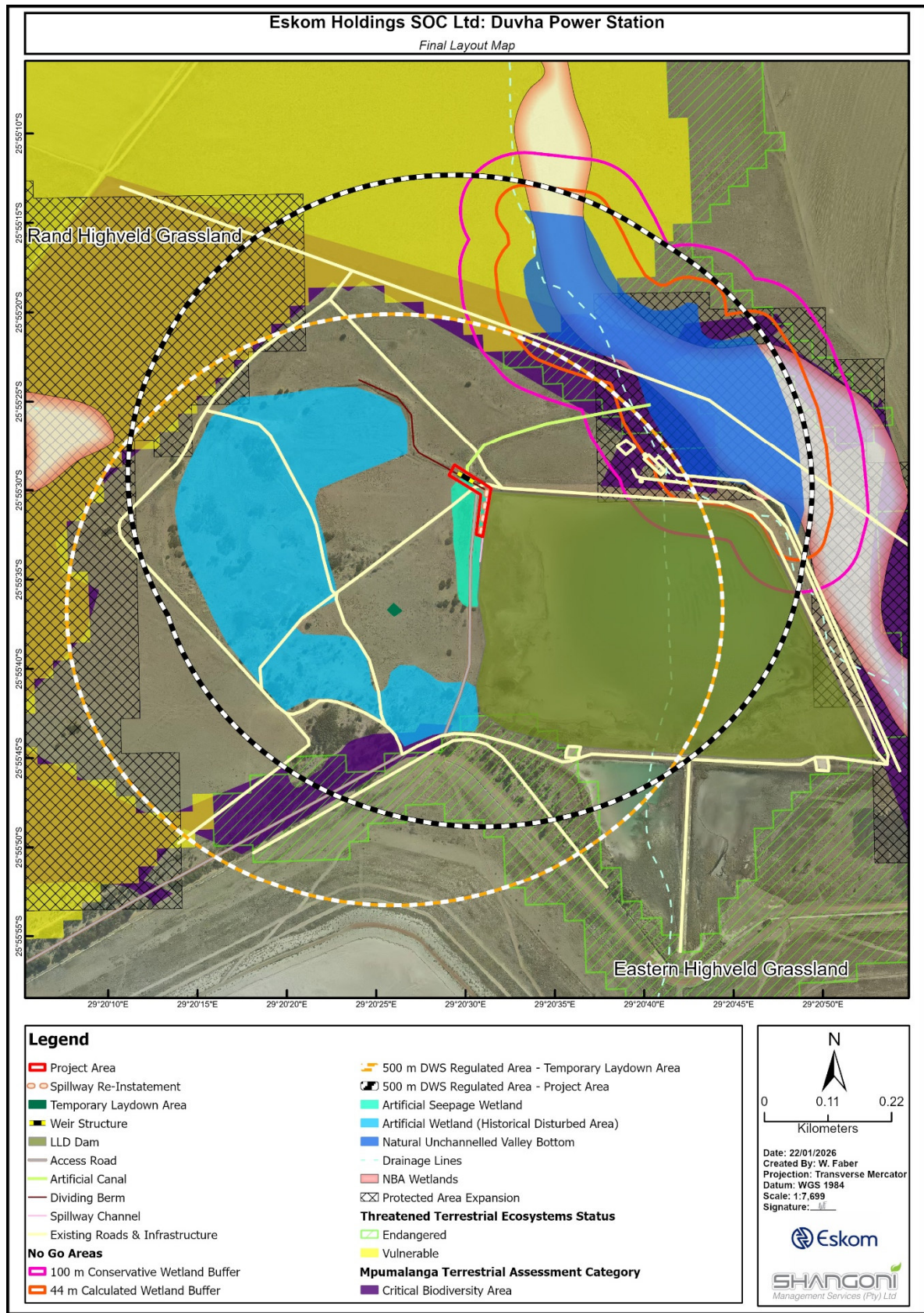


Figure 2: Layout map of the proposed LLD spillway reinstatement

4.3 Design Drawings

Figure 3, Figure 4, Figure 5, Figure 6, Figure 7 and Figure 8 below presents the technical design drawings of the proposed project. Also refer to Appendix E2 for the Technical Design Report.

Refer to technical detail table below for the proposed development with the associated infrastructures.

Table 1: Technical design table dimensions

Structure	Width (m)	Length (m)	Footprint m ²	Height (m)
Spillway	10	62	620	0.6
Weir structure	1	34	34	2
Reno mattress	2	34	68	0.3
Armorflex	34	62	2108	0.15
Retailing walls	1	3.5	3.5	2



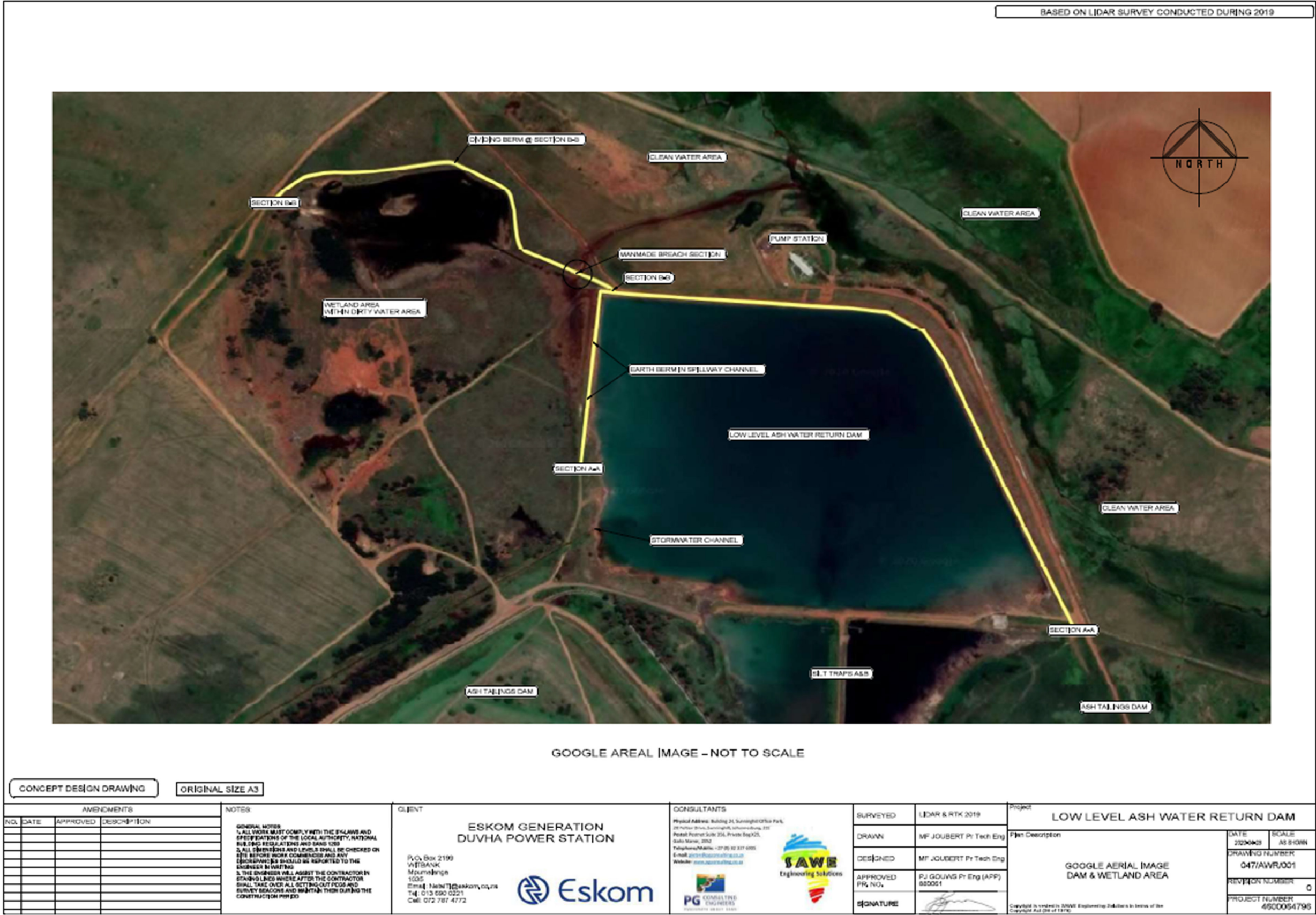


Figure 3: Dam and Wetland Area Google Aerial Image



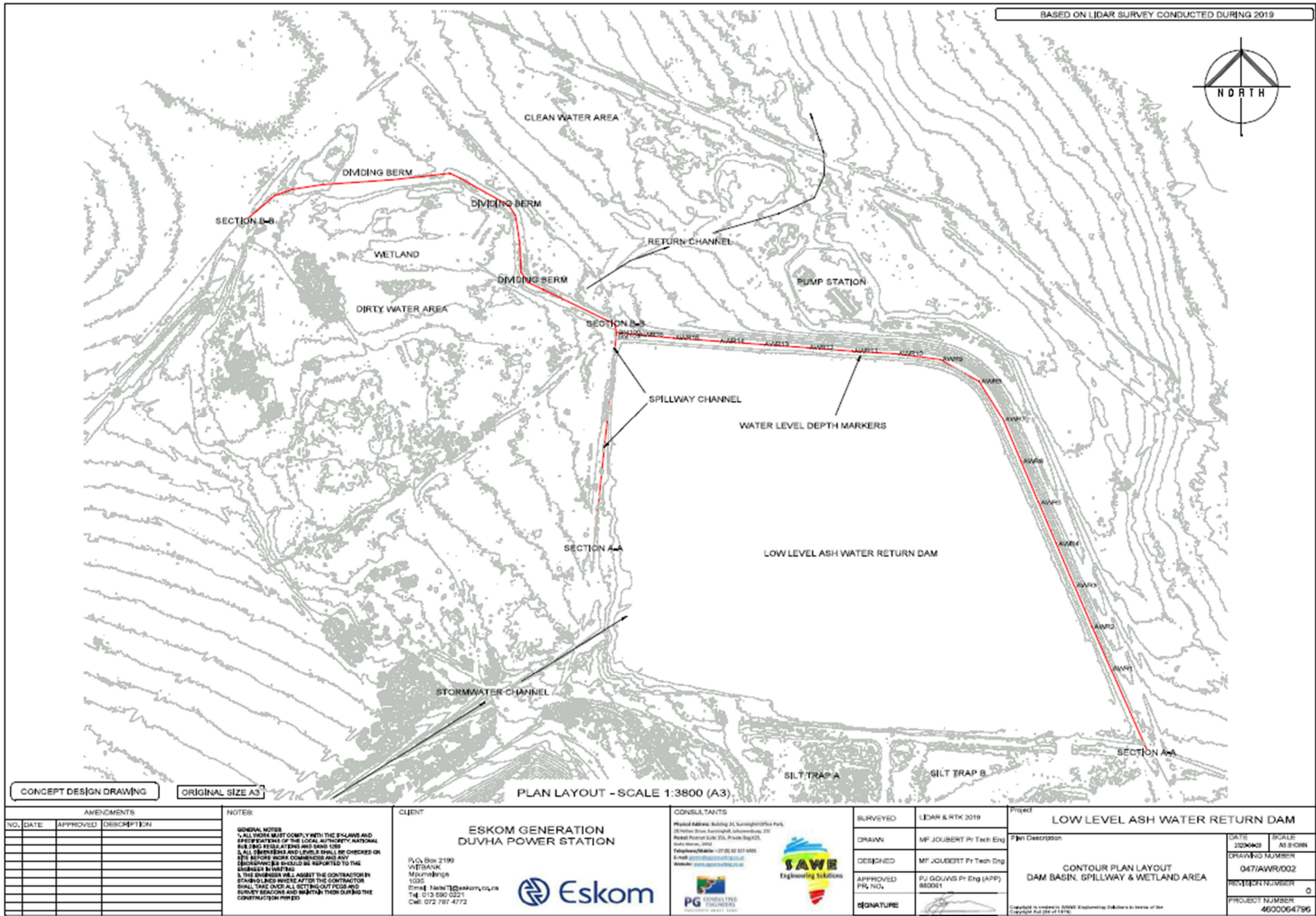


Figure 4: Contour Plan Layout Dam Basin Spillway and Wetland Area

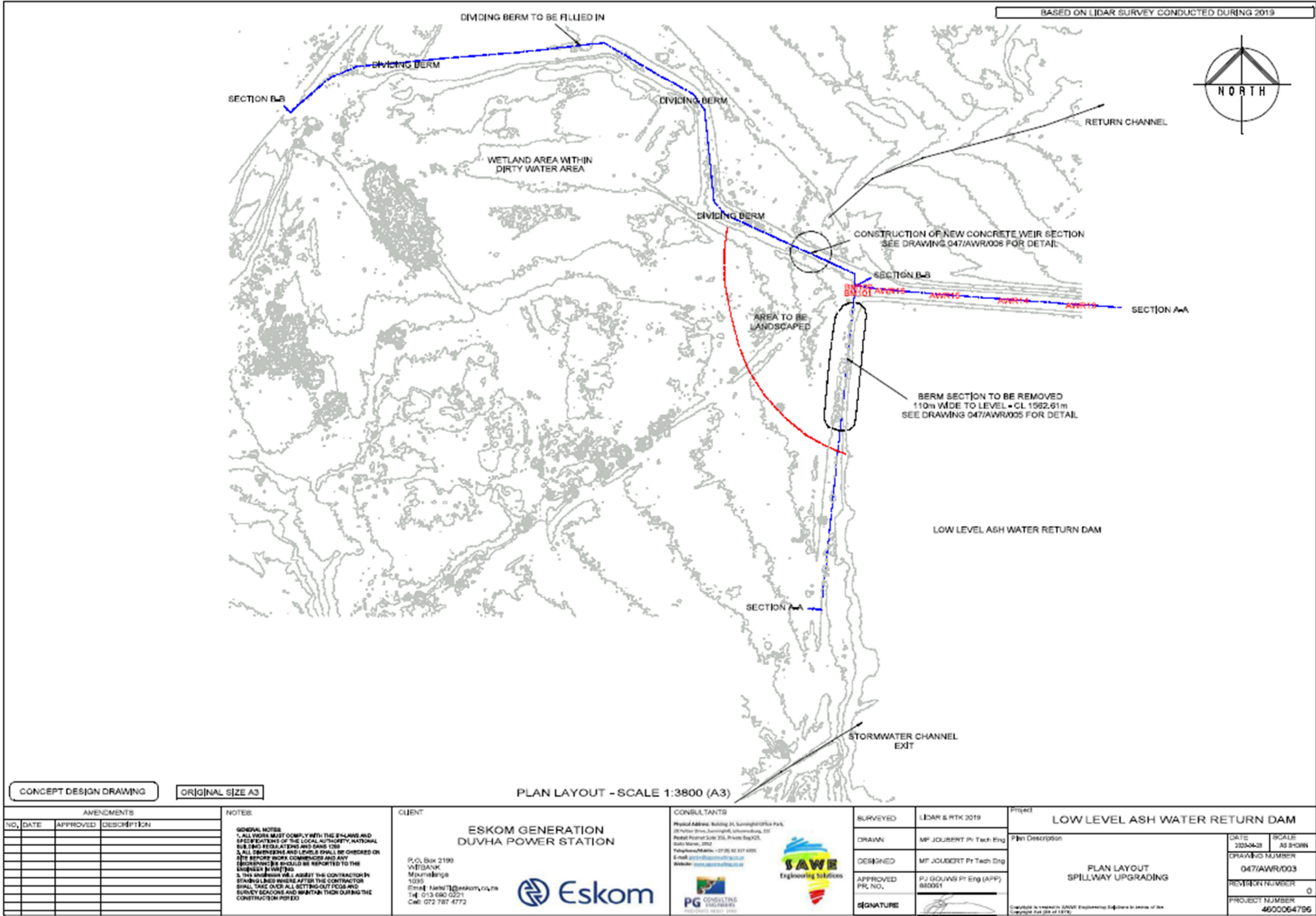


Figure 5: Plan Layout Spillway Upgrading

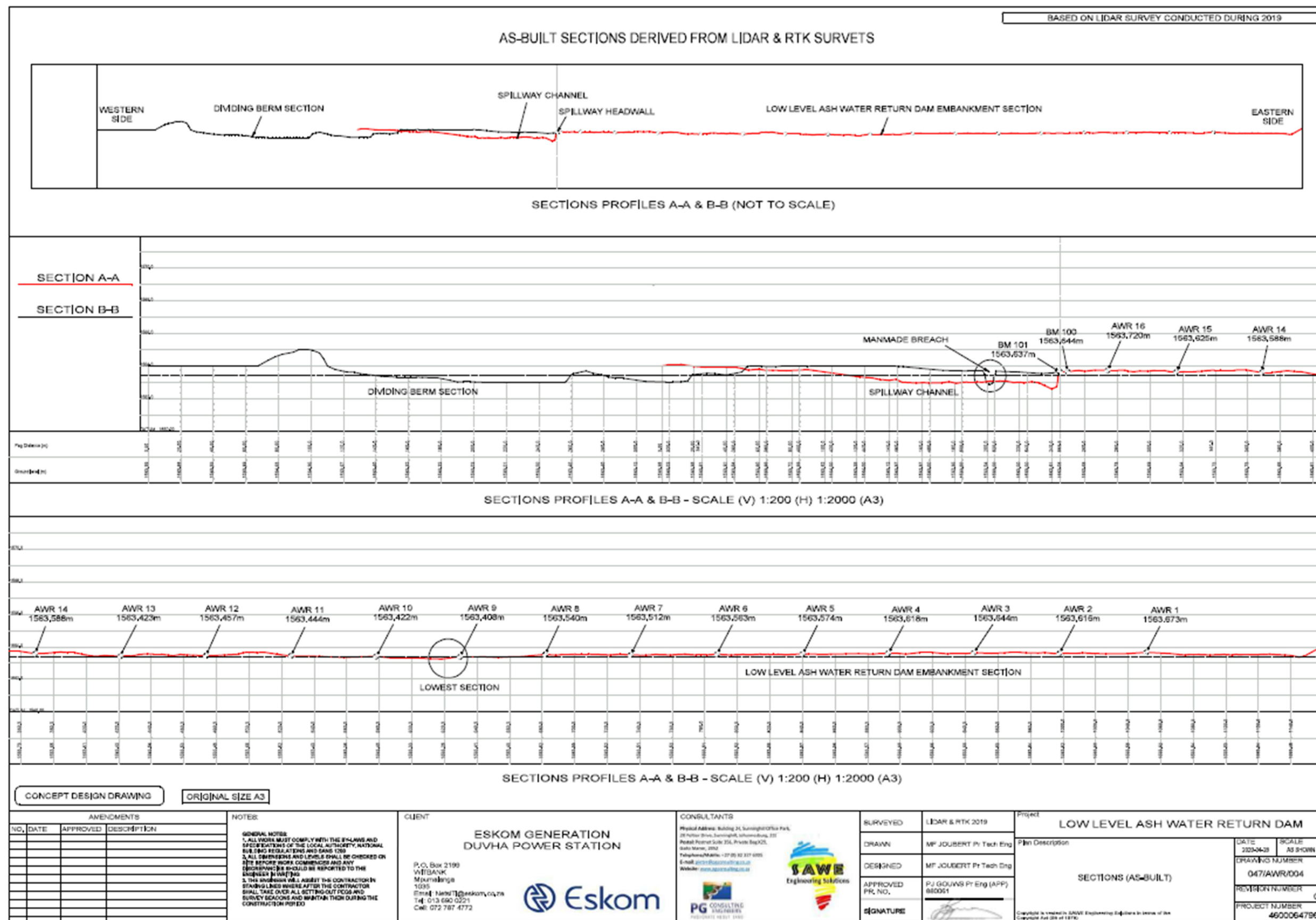


Figure 6: Sections (As-built)



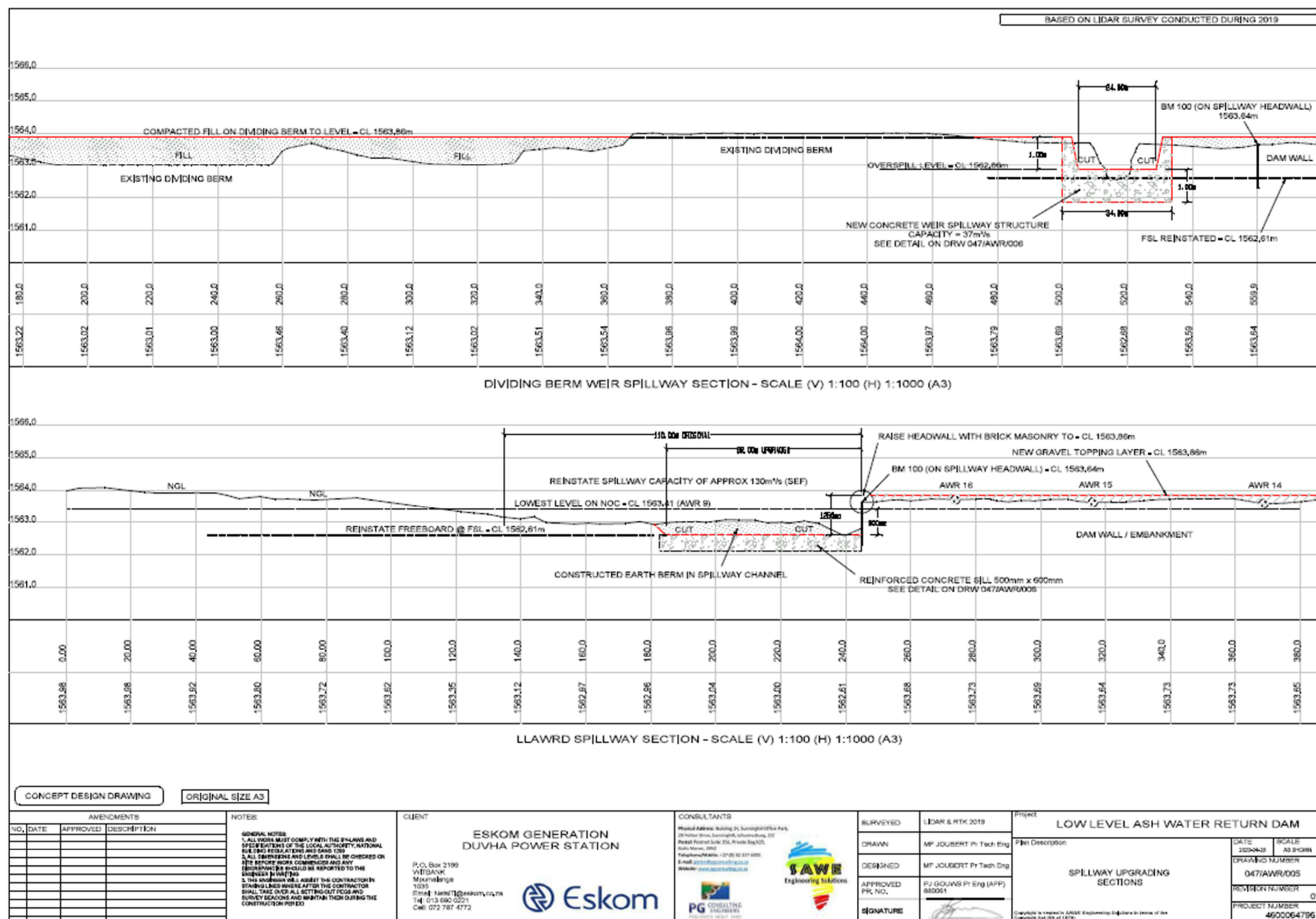


Figure 8: Spillway Upgrading Sections (B)

4.4 Listed and specified activities

The proposed project will trigger the following authorisations:

An Environmental Authorisation (“EA”) for listed activities provided in the Environmental Impact Assessment Regulations Listing Notices of 2014, as amended and published in terms of Sections 24(2), 24 (5), 24D, 44 and 47(A) (1) (b) of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (“NEMA”), as amended.

For the EA, a basic assessment (“BA”) is conducted in accordance with the NEMA and the Environmental Impact Assessment Regulations, 2014 (General Notice (“GN”) R982 of 4 December 2014) (“GN R982”), as amended. Listed activities have been identified and provided in Table 2.

A WULA in terms of Chapter 4 and Section 21 of the National Water Act (“NWA”) (No. 36 of 1998) is being applied for. Reference may be made to Table 3 for the listed activities associated with the proposed project. Water use activities Section 21 (c): Impeding or diverting the flow of water in a watercourse and Section 21 (i): Altering the bed, banks, course or characteristics of a watercourse are applicable.

Table 2: Activities and listed activities associated with the proposed project

Name of activity	Aerial extent of the activity (Ha or m ²)	Listed activity. Mark with an x where applicable or affected.	Applicable listing notice (GNR 983, GNR 984 or GNR 985)
Spillway reinstatement of the Low-Level Dam (within 32 metres of a watercourse)	The LLD spillway to be reinstated to a width of 10 m and length of 62 m. Total aerial extent: 620 m ² .	X	<u>Activity 12 of Listing Notice 1 (GNR 983 of 4 December 2014, as amended):</u> <i>The development of—</i> <i>(ii) infrastructure or structures with a physical footprint of 100 square metres or more;</i> <i>where such development occurs—</i> <i>(a) within a watercourse.</i> <i>(c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse.</i>
Concrete weir structure	A concrete weir structure at the diving berm will be at 34 m and approximate length of 1 m as per the civil drawing dimensions. Total aerial extent: 34 m ² .		



Name of activity	Aerial extent of the activity (Ha or m ²)	Listed activity. Mark with an x where applicable or affected.	Applicable listing notice (GNR 983, GNR 984 or GNR 985)
Spillway reinstatement of the Low-Level Dam: The LLD spillway will be reinstated to a proposed width of 10 m and length of 62 m. Initially, an earth berm was constructed which reduced the size of the spillway to current width of 10 m. Excavation of this berm will be undertaken and as a result it will easily exceed the volume of 10 m³ within 32 metres of a watercourse.	The LLD spillway to be reinstated to a width of 10 m and length of 62 m. Total aerial extent: 620 m².	X	<u>Activity 19 of Listing Notice 1 (GNR 983 of 4 December 2014, as amended):</u> <i>The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from a watercourse.</i>
Concrete weir structure: Excavation will be done to construct the weir structure at the diving berm breach which was constructed to control the flow between dirty and clean water areas (functioning as a hydrological system). infilling, foundation pouring, and concrete works involves both excavation and permanent alteration of the flow control structure.	A concrete weir structure at the diving berm will be at 34 m in length and approximate length of 1 m width as per the civil drawing dimensions. Total aerial extent: 34 m².		

Table 3: Applicable Water Use Activities associated with the proposed project

NWA Section 21 Water Use	Description (DWAF, 2009)	Expansion activities constituting the water use
Section 21 (c): Impeding or diverting	This water use relates to impeding or diverting flows but does not normally	The reinstatement of the spillway of the LLD and the construction of the



NWA Section 21 Water Use	Description (DWAF, 2009)	Expansion activities constituting the water use
the flow of water in a watercourse	cause any loss of water but rather influences the flow regime in a watercourse.	weir structure alters the natural flow dynamics within the adjacent wetland which is situated within 32 m. Accordingly, Section 21 (c) will be triggered.
Section 21 (i): Altering the bed, banks, course or characteristics of a watercourse	This water use relates to any change affecting the resource quality of the watercourse (the area within the riparian habitat or 1:100-year floodline, whichever is the greatest).	The reinstatement of the spillway of the LLD dam entails excavation and filling of the diving berm and within the spillway channel and the adjacent wetland. This physical modification alters the bed and banks of the watercourse. Accordingly, Section 21 (i) will be triggered.

5 Policy and legislative context

Table 4: Policy and legislative context

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT	HOW DOES THIS DEVELOPMENT COMPLY WITH AND RESPOND TO THE LEGISLATION AND POLICY CONTEXT
The Constitution of the Republic of South Africa (1996).	The Constitution of the Republic of South Africa was considered and applied throughout the draft BAR, as the Constitution states that everyone has the right; (a) to 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 Promotion of Access to Information Act, 2000 (Act No. 2 of 2000).	Without access to information, a person may be unable to determine whether or not his or her right to just administrative action (or to an environment not harmful to human health or wellbeing or, for that matter, any other Constitutional right) has been infringed. The purpose of the Promotion of Access to Information Act ("PAIA") is to give effect to the Constitutional right of access to any information held by the State and any information that is held by another person and that is required for the exercise or protection of any rights, and to provide for matters connected therewith. In addition to providing access to information, cognisance should be taken that PAIA also makes provision for the refusal of access to information that is deemed



APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT	HOW DOES THIS DEVELOPMENT COMPLY WITH AND RESPOND TO THE LEGISLATION AND POLICY CONTEXT
	to be of a sensitive, confidential or classified nature. This is captured under Chapter 4 of part 2 and 3 of PAIA.
The Environmental Impact Assessment Regulations (GN R982 dated 2014, as amended).	The draft BAR was compiled in terms of the requirements of Appendix 1 of the EIA Regulations (GN R.982 dated 2014, as amended).
The Environmental Impact Assessment Regulation. Listing Notice 1. (GN R983 dated 2014, as amended).	Activities 12 and 19 of Listing Notice 1 are applied for as part of the proposed project.
The Environmental Impact Assessment Regulation. Listing Notice 2. (GN R984 dated 2014, as amended).	Non applicable.
The Environmental Impact Assessment Regulation. Listing Notice 3. (GN R985 dated 2014, as amended).	Non applicable.
Guideline on Need and Desirability in terms of the EIA Regulations, 2010. Government Notice 891 of 2014	The need and desirability were assessed for the proposed project and are discussed in terms of the required format contained in the Guideline on Need and Desirability (GN 891 of 2014) in section 6 of the draft BAR.
The National Water Act (Act No. 36 of 1998, as amended).	The proposed project will require a WULA due to the proximity of the proposed project to a wetland, as a result a wetland delineation assessment will be conducted for the adjacent wetland, together with the GN 509 Risk Assessment. The outcome of the wetland risk assessment, along with professional recommendations, will guide whether the proposed water uses fall within the ambit of a General Authorisation (GA) under Section 39 of the National Water Act (Act 36 of 1998), be required. A WET-EcoServices assessment was conducted for the artificial wetland areas and confirmed very low functional value across all ecosystem services. Therefore, a GA is required.
The National Environmental Management: Biodiversity (Act 10 of 2004, as amended).	Biodiversity disturbance related to the proposed project were taken into account when the sites were selected.
SABS Code of Practice 0103 of 2008: The measurement and rating of environmental noise with respect to land use, health, annoyance and to speech communication. SABS Code of Practice 0328 of 2008: Environmental Noise Impact Assessments.	The SABS Code of Practice 0103 will be taken into account when the mitigation measures for the proposed project are identified.



APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT	HOW DOES THIS DEVELOPMENT COMPLY WITH AND RESPOND TO THE LEGISLATION AND POLICY CONTEXT
National Heritage Resources Act (Act No. 25 of 1999, as amended).	No permit is required, however, the South African Heritage Resources Agency ("SAHRA") and Mpumalanga Provincial Heritage Resources Authority ("MPHRA") are listed as stakeholders on the projects database and the reports will be submitted to them for commenting.

6 Need and desirability of the project

6.1 Need and Desirability in terms of the Guideline on Need and Desirability, 2017

In 2017, the then Department of Environmental Affairs published an Integrated Environmental Management Guideline, the Guideline on Need and Desirability. The following provides information on how the guideline requirements were considered in this BAR and should be read in conjunction with the guideline.

6.1.1 How will this development (and its separate elements/aspects) impact on the ecological integrity of the area?¹

The ecological integrity of the area has been assessed as part of the *Wetland Biodiversity Assessment of Reinstating the Low-Level Dam Spillway*, dated June 2025 (Appendix E1) on section 7.2, 7.3 and section 17. The proposed reinstatement of the Low-Level Dam ("LLD") spillway and associated infrastructure is located entirely within a highly disturbed, artificial aquatic environment that formed over historical diggings and dam seepages. According to the Wetland Biodiversity Assessment, the artificial wetland shows very low ecological importance and sensitivity.

A natural unchanneled valley-bottom wetland occurs approximately 320 metres north of the proposed works. This wetland lies well outside both the 44 m calculated buffer and the conservative 100 m buffer applied in the assessment and will not be directly or indirectly impacted by the proposed project.

Therefore, the proposed reinstatement of the LLD spillway will not negatively impact the ecological integrity of the receiving environment. All affected wetland areas are artificial systems of low ecological value, and the designs avoids any disturbance to natural aquatic features. The development will enhance hydrological control, reduce future risk of unregulated overflow events, and improve long-term water resource management without compromising biodiversity or ecosystem function. With appropriate mitigation measures in place, no significant adverse effects on ecological integrity are anticipated.

¹ Section 24 of the Constitution and section 2(4)(a)(vi) of NEMA refer.



The level of risk associated with the activity is considered low. The potential risks that have been identified in section 7.5 and were further assessed in detail in Section 8 and in the EMPr attached as Appendix F.

6.1.2 Promoting justifiable economic and social development²

According to *Emalahleni Local Municipality Integrated Development Plan* (“IDP”), dated 2022/2023 – 2026/2027, The population of Emalahleni increased by 59 762 and from 2016 to 2021 by 98 334. Estimated Population of Emalahleni represents 33,8 % of the population of Nkangala District Municipality in 2021 and it estimated that it will be 34,7% in 2030. Furthermore, Emalahleni IDP considers the southern parts of the municipality as the Energy Mecca of South Africa due to its rich deposits of coal reserves and power stations such as Kendal, Matla, Duvha and Kriel.

Duvha Power Station is one of the major contributors to local, provincial, and national electricity supply. As such, the proposed project contributes to the local economic and energy security. The reinstatement of the spillway will prevent costly unplanned shutdowns that could disrupt national power generation and ensure a long-term stability for industries reliant on a stable power grid.

Furthermore, the proposed project will generate temporary employment opportunities for local residents during the construction phase which contribute to economic transformation and job creation. The employment of local skilled and semi-skilled labour, along with the use of local materials and services used on the proposed project will stimulate short-term income generation and support the municipality’s objectives of reducing unemployment and alleviating poverty.

No negative impacts on the socio-economy as a result of the proposed project have been identified. Refer to section 7.7 of this report for the identification of positive impacts.

The needs of the community will be determined through the public participation process of this draft BAR with the results of the public participation process presented in the final BAR. The public participation process that will be conducted aims to ensure that all Interested and Affected parties (“I&As”) are provided with an opportunity of access to information regarding the proposed project and to raise any concerns or provide any comments on the project.

6.1.3 Cumulative Impact Significance and Influence on Need and Desirability

The cumulative impact assessment indicates that, without mitigation, continued hydrological modification and physical disturbance would contribute incrementally to the degradation of downstream

² Section 24 of the Constitution refers.



wetland functioning and ecosystem service delivery. However, when the specialist mitigation measures are implemented, cumulative impacts are assessed as low to moderate in significance, given that:

- The proposed works occur largely within an existing, modified aquatic and infrastructural footprint.
- No additional transformation of intact, highly sensitive natural wetlands is proposed.
- The development includes measures that stabilise flows and reduce uncontrolled erosion and sediment input relative to the existing condition.

As such, the post-mitigation cumulative impact significance does not preclude the proposed development and supports the need and desirability of the project, particularly where the intervention contributes to infrastructure safety, operational efficiency, and improved management of hydrological processes within an already transformed system.

7 Motivation for the overall preferred site, activities and technology alternative including a full description of the process followed to reach the proposed preferred alternatives within the site

7.1 Details of the development footprint alternatives considered

Specialist input was obtained to assess the possible development alternatives associated with the LLD spillway. The section below is a summary of the alternatives considered. Detailed advantages and disadvantages of each alternative are described in section 7.7 of this report.

7.1.2 Activity alternatives

7.1.2.1 Activity alternative 1: Reinstatement of the spillway of the LLD Dam (preferred alternative)

Only one alternative was considered as this is an already existing LLD Spillway. The preferred activity entails reinstating the LLD spillway on its original location in order to fulfil its operational and safety function. The spillway was reduced in size when an earth berm was constructed limiting the operational spillway width to 10 m, compared to the original design width of 110 m. This restriction compromised the dam's overflow handling capacity. The proposed reinstatement seeks to restore the spillway capacity by reinstating the width of the spillway to 62 m. This will reduce the risks of flood and overtopping during extreme rainfall events and also comply with the regulations (Regulation Gazette No. 35062). Furthermore, ensure that it meets the dam safety design standards, operational and safety requirements.

7.1.2.2 Activity alternative 1: Concrete Weir Structure (preferred alternative)

Only one alternative was considered as the concrete weir structure will be constructed over the existing manmade breach which was developed on the diving berm that separates the clean and dirty water



areas. A concrete weir will be constructed for proper management of flow when the dam spill in the event of floods and to prevent soil erosion. Furthermore, the weir will provide engineered control where uncontrolled flow currently exists.

7.1.2.3 Activity alternative 1: LLD Dam Crest (preferred alternative)

Only one alternative was considered as the existing dam crest has experienced settlement and surface deterioration over time due to normal operational wear and gradual subsidence. This compromises the crest stability, and stormwater shedding efficiency. The proposed activity entails resurfacing of the dam crest by applying a new wearing layer consisting of approximately 300 mm of gravel topping. This is to ensure integrity and safe operation along the dam crest and prevent erosion which can compromise the embankment stability and lifespan.

7.1.3 Location alternatives

7.1.3.2 Location alternative 1: Reinstatement of the spillway of the LLD Dam (preferred alternative)

No location alternatives were considered as the spillway should remain fixed at the downstream outlet of the LLD, integrated to the existing dam geometry. Alternative locations are not feasible as the relocation of the spillway will require the reconstructing of the existing entire dam structure. This is not technically and economically viable.

7.1.3.3 Location alternative 1: Weir Structure (preferred alternative)

No location alternatives were considered. This is due to the observed low point in the diving berm where uncontrolled overflow presently concentrates. Shifting this position is not viable due to existing topography and engineered berm elevations.

7.1.3.4 Location alternative 1: LLD Dam Crest (preferred alternative)

No location alternatives were considered. The activities are linked entirely to an existing dam crest footprint. Therefore, no alternatives are viable.

7.1.4 Design alternatives

There are no design and layout alternatives as the project entails the re-instatement of the LLD Spillway. This includes reinstating the area be upgraded and minor concrete works together with slope protection be constructed to prevent further scouring of the soil. Refer to Appendix E3 for a motivation from the engineers.

7.1.5 No-go option

The no-go option would be that the *status quo* of the environment would stay as is and there would be no additional impacts to the site. However, if the spillway of the LLD is not reinstated and its associated infrastructure, it would result in escalating dam wall erosion, potential dam failure and uncontrolled



downstream flooding. Most importantly, failure to comply with the regulations (Regulation Gazette No. 35062 Regulations regarding the Safety of Dams in terms of Section 123 (1) of the National Water Act, 1998). Furthermore, ensure that it meets the dam safety design standards, operational and safety requirements.

7.2 Details of the Public Participation Process followed

7.2.2 The public participation process for the proposed project will be conducted in terms of:

- The procedures and provisions in terms of the NEMA.
- Chapter 6 of the 2014 EIA Regulations.
- GN 807 of 2012; Public Participation Guideline.
- Other relevant legislation such as the Promotion of Access to Information Act ("PAIA"), 2000.

7.2.3 A detailed public participation process will be undertaken, and included the following:

- Key stakeholder identification.
- Method of notifications, e.g., advertisements, site notices, Background Information Document ("BID"), email notifications and bulk sms's.
- Registration of Interested and Affected Parties ("I&APs") and key stakeholders.
- Access and opportunity to comment on the draft BAR by I&APs.
- Consultation with the relevant authorities.

7.2.4 The following key stakeholder will be identified and notified of the proposed project:

- Landowner/s.
- Lawful occupier/s of the land.
- Landowners or lawful occupiers on adjacent properties.
- Municipal councillor.
- Municipality.
- Organs of state.
- Communities.
- Other Competent Authorities affected.

7.2.5 The following notification and consultation methods will be used:

- A newspaper advertisement was placed in the Witbank local newspaper on the 10th of October 2025. Refer to Annexure D1.



- Site notices were placed around the proposed project site at different, noticeable places; background information document (“BID”) will be sent to key stakeholders with email notifications. Refer to Annexure D2.
- The potential key stakeholders were notified of the proposed project and were provided with the opportunity to register as an I&AP via email. Refer to Annexure D3 and Annexure D7.
- Compilation of an interested and affected parties database. Refer to Annexure D4.
- Loading of the application on SAHRIS site. Refer to Annexure D5.
- Notification of interested and affected parties of the project on Whatsapp messages. Refer to Annexure D6.
- The draft BAR will be made available to the public for review for a period of thirty (30) days (10 October to the 8 November 2025). A hard copy will be placed at the Witbank and Middelburg Libraries. An electronic copy of the BAR will also be posted on the Shangani’s website (www.shangoni.co.za) for public comment for the same period of thirty days. Refer to Annexure D8.
- After the I&Aps comments have been addressed, the final BAR will be submitted to the Competent Authority for review. Once the Competent Authority has made a decision, registered stakeholders will be notified of the decision.



7.3 Summary of issues raised by I&APs

Table 5 below lists the comments the EAP have received thus far on the project. As an additional round of public participation is taking place all the comments and issues raised and reaction to those responses will be included in the final BAR.

Table 5: Summary of the issues raised by the I&APs

Date of comment, format of comment name of organisation/I&AP	Comment	Response from EAP/Applicant/Specialist																				
COMMENTS ON THE DRAFT BASIC ASSESSMENT REPORT FOR THE PROPOSED REINSTATEMENT OF THE LOW- LEVEL DAM SPILLWAY AND CONSTRUCTION OF WEIR STRUCTURE AT DUVHA POWER STATION, NEAR WITBANK TOWN, WITHIN THE EMALAHLENI LOCAL MUNICIPALITY, IN THE MPUMALANGA PROVINCE																						
Comments and responses during Draft Basic Assessment review period																						
	The draft Basic Assessment Report (BAR) dated October 2025 and received by this Competent Authority (CA) on 09 October 2025, refers. Following the review of the above-mentioned draft BAR and the application form, this letter serves to inform you that the following comments must be addressed and included in the amended draft BAR to be circulated for review and comments, should there be new information that was not included in the draft BAR currently circulated for comments: Project Description - The CA acknowledges the project description provided on page 8 and 9 of 51 of the application form and on page 13 to 15 of the draft BAR, however, you are advised to provide the footprint and dimensions of all the associated infrastructures (i.e., the footprint of the weir structure). In addition, for the linear infrastructures you are advised to provide their width and length. - Based on the above, you are advised to provide a technical detail table for the proposed development with the associated infrastructures (i.e., dimensions of the reno mattress).	- According to the designs provided by Eskom the Low-Level Dam spillway reinstatement has a width of 10 m and length of 62 m thus the development footprint is 620 m² and the height is 0.6 m. The weir structure width is 1 m, and length is 34 m thus the development footprint is 34 m² and the height is 2 m. The reno mattress has a width of 2 m and length of 34 m thus the development footprint if 64 m² and the height is 0.3 m. - The footprint weir structure (including the reno mattress and armoflex) is approximately 2200 m². - Temporary laydown area is 217 m² in extent and located to the west of the project area. - Refer to technical detail table below for the proposed development with the associated infrastructures. <table><tr><th>Structure</th><th>Width(m)</th><th>Length(m)</th><th>Footprint m²</th><th>Height(m)</th></tr><tr><td>Spillway</td><td>10</td><td>62</td><td>620</td><td>0.6</td></tr><tr><td>Weir structure</td><td>1</td><td>34</td><td>34</td><td>2</td></tr><tr><td>Reno mattress</td><td>2</td><td>34</td><td>68</td><td>0.3</td></tr></table>	Structure	Width(m)	Length(m)	Footprint m²	Height(m)	Spillway	10	62	620	0.6	Weir structure	1	34	34	2	Reno mattress	2	34	68	0.3
Structure	Width(m)	Length(m)	Footprint m²	Height(m)																		
Spillway	10	62	620	0.6																		
Weir structure	1	34	34	2																		
Reno mattress	2	34	68	0.3																		

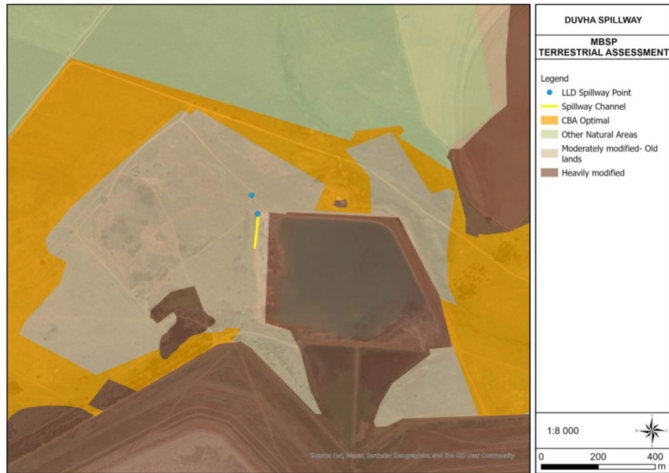


Date of comment, format of comment name of organisation/I&AP		Comment	Response from EAP/Applicant/Specialist															
		- The project description provided on the amended application form must be the same with the project description provided on the final report. - It has been noted that the Low-Level Dam (LLD) spillway designs will be optimized and upgraded to accommodate a maximum capacity of approximately 130m³/s which is equivalent to Safety Evaluation Discharge, therefore, you are advised that the proposed upgrade of the LLD must be within the footprint and scope of the LLD dam and spillway.		<table><tr><td>Armorflex</td><td>34</td><td>62</td><td>2108</td><td>0.15</td></tr><tr><td>Retailing walls</td><td>1</td><td>3.5</td><td>3.5</td><td>2</td></tr></table>	Armorflex	34	62	2108	0.15	Retailing walls	1	3.5	3.5	2	- The project description provided in the amended application form is aligned to the draft basic assessment report. - The SAWE/PG Consulting engineers have confirmed that the Low-Level Dam is within the footprint and scope of the Low-Level Dam and spillway.			
Armorflex	34	62	2108	0.15														
Retailing walls	1	3.5	3.5	2														
		Application form - It has been indicated in Appendix 3 of the application form that the landowner consent is not applicable as the applicant is the landowner, however, you are advised to complete and sign Appendix 3 of the application form. - It has been indicated in Appendix 9 of the application form that the list of SGID and coordinates of the proposed development are not applicable, therefore, the CA advised you to note the following: ➤ For linear infrastructure you are advised to provide the start, middle and end point coordinates. ➤ For infrastructures such as reno mattress, you are advised to provide four corner coordinates with the centre coordinate. - The CA acknowledges the submitted Appendix 14 (Screening tool report); however, it has been noted that the EIA reference number and compiler signature they are not included. Therefore, you are advised to include the EIA reference number on the signed abovementioned report to be submitted with the final BAR.		- Find attached updated signed landowners consent form. - Refer below for the gps co-ordinates of the start, middle and end of the linear infrastructure.  <table><tr><th>Linear Infrastructure</th><th>Gps co-ordinates</th></tr><tr><td>Weir start</td><td>S 25°55'29.54" E29°20'30.44"</td></tr></table>					Linear Infrastructure	Gps co-ordinates	Weir start	S 25°55'29.54" E29°20'30.44"						
Linear Infrastructure	Gps co-ordinates																	
Weir start	S 25°55'29.54" E29°20'30.44"																	



Date of comment, format of comment name of organisation/I&AP		Comment	Response from EAP/Applicant/Specialist								
			<table><tr><td>Weir end</td><td>S 25°55'29.03" E29°20'29.57"</td></tr><tr><td>Spillway start</td><td>S 25°55'32.42" E29°20'30.85"</td></tr><tr><td>Spillway end</td><td>S 25°55'30.08" E 29°20'31.20"</td></tr></table>	Weir end	S 25°55'29.03" E29°20'29.57"	Spillway start	S 25°55'32.42" E29°20'30.85"	Spillway end	S 25°55'30.08" E 29°20'31.20"		
		Weir end	S 25°55'29.03" E29°20'29.57"								
		Spillway start	S 25°55'32.42" E29°20'30.85"								
		Spillway end	S 25°55'30.08" E 29°20'31.20"								
											
	<table><tr><th>Temporary laydown area</th><th>Gps co-ordinates</th></tr><tr><td>Corner 1</td><td>25°55'36.31"S 29°20'25.98"E</td></tr><tr><td>Corner 2</td><td>25°55'36.76"S 29°20'26.44"E</td></tr><tr><td>Corner 3</td><td>25°55'37.06"S 29°20'26.03"E</td></tr><tr><td>Corner 4</td><td>25°55'36.71"S 29°20'25.62"E</td></tr></table>	Temporary laydown area	Gps co-ordinates	Corner 1	25°55'36.31"S 29°20'25.98"E	Corner 2	25°55'36.76"S 29°20'26.44"E	Corner 3	25°55'37.06"S 29°20'26.03"E	Corner 4	25°55'36.71"S 29°20'25.62"E
Temporary laydown area	Gps co-ordinates										
Corner 1	25°55'36.31"S 29°20'25.98"E										
Corner 2	25°55'36.76"S 29°20'26.44"E										
Corner 3	25°55'37.06"S 29°20'26.03"E										
Corner 4	25°55'36.71"S 29°20'25.62"E										
	The Screening tool has been updated with the EIA reference number and compiler signature.										



Date of comment, format of comment name of organisation/I&AP	Comment	Response from EAP/Applicant/Specialist
	Listed Activities - It has been noted that activity 12 of Listing Notice (LN) 1 is applied for, however, the infrastructure/s which is 100 square metres or more, are not included in the description of triggering the listed activity. Therefore, you are advised to provide footprints of infrastructure which are 100 square metres or more and are to be located within a watercourse to determine the applicability of this listed activity. - For activity 19 of LN 1, it has been noted that the word “certain and may be” is used for the description of triggering the listed activity. Please refrain from using such word/s, since it creates an uncertainty regarding the applicability of the listed activity applied for. - It has been noted that activities of LN 3 have not been applied for, while in Appendix A it has been indicated that the proposed development is located adjacent to Aquatic CBA's, and on page 15 of 73 of Appendix E (Wetland Biodiversity Assessment), it is indicated that “according to the Mpumalanga Biodiversity Sector Plan (MBSP), the project area intersects a CBA: Optimal zone, shown in orange on the map”. Therefore, the CA submits that the Applicant and the EAP must ensure that all relevant listed activities are applied for, are specific and can be linked to the development activity or infrastructure as described in the project description. In addition, the onus is on the applicant and the EAP to ensure that all the applicable listed activities are included in the application form and the final BAR. Failure to do so may result in unnecessary delays in the processing of the application. Should it be that activities in LN 3 are triggered, you are advised to circulate the amended draft BAR to the registered Interested and Affected Parties (I&APs) for review and comments. - In addition, when submitting the final BAR and activities of LN 3 are included with the amended application form, in the description of triggering the listed activities, you are advised to mention whether there are systematic biodiversity plans adopted by the	- According to the designs provided by Eskom the total of development footprint including the spillway, weir structure, reno mattress, armoflex and retaining walls and temporary laydown area is 3050 m². Therefore, activity 12 of Listing Notice 1 is applicable to this application. - The description of activity 19 of Listing Notice 1 has been amended to remove the word may. - The EAP can confirm that the activities do not trigger Listing Notice 3 activities. The proposed development is adjacent to the Aquatic CBA's. The statement made by the specialist that according to the Mpumalanga Biodiversity Sector Plan (MBSP), the project area intersects a CBA: Optimal zone, shown in orange on the map is incorrect as it is clearly indicated in the figure below the project area is not intersecting the CBA Optimal zone. The Wetland Biodiversity Assessment has been updated by the specialist and attached as Annexure E. 



Date of comment, format of comment name of organisation/I&AP	Comment	Response from EAP/Applicant/Specialist
	CA or bioregional plan in the area. Proof of such must be obtained from the relevant Provincial CA and submitted with the amended application form and final BAR. - Therefore, please kindly be advised that listed activities are not based on a precautionary approach. Please ensure that all the listed activities in the amended application form and final BAR are clear and final for decision making purposes. Should it not be clear that listed activity is triggered, such activity will not be considered in the decision-making process. In addition, it is the onus of the Environmental Assessment Practitioner (EAP) and the applicant to determine and define the infrastructures of the proposed private access road that trigger the applied listed activities. - If the activities applied for in the application form differ from those mentioned in the draft BAR, an amended application form must be submitted with the final BAR. Please note that the Department's application form template has been amended and can be downloaded from the following link https://www.environment.gov.za/documents/forms.	- Activities of LN 3 are not triggered as discussed above. - The Mpumalanga Biodiversity Sector Plan (MBSP) was formally adopted by the provincial MEC for Agriculture, Rural Development, Land and Environmental Affairs on May 26, 2023, serving as a crucial spatial planning tool to guide sustainable development by identifying Critical Biodiversity Areas (CBAs) and Ecological Support Areas (ESAs) for conservation, replacing older versions like the MBSP 2013, and informing land-use decisions to meet national and provincial biodiversity targets. - The listed activities included in the application form and Final BAR are the listed activities triggered. - The activities listed in the application form do not differ from those in the draft BAR.
	Alternatives - The CA acknowledges the alternative discussion provided on page 29 and 30 of the draft BAR, however, it has been noted that the design and layout alternatives for the three activities (i.e., weir structure, re-instate the spillway and low-level dam crest) are not included in the draft BAR, therefore, you are advised to provide layout and design alternatives for the proposed development. - In addition, you are advised to submit written proof of an investigation and motivation if no reasonable or feasible alternatives exist in terms of Appendix 1. Please note that no development would be allowed within sensitive areas, therefore, mitigation hierarchy must be considered. - Based on the above, you are required to provide all the alternatives considered for this development as per Appendix 1 of the NEMA EIA Regulations, 2014 as amended, in the final	- There are no design and layout alternatives for the three activities (i.e., weir structure, re-instate the spillway and low-level dam crest) see attached engineer motivation in Appendix E3. - Motivation in terms of no reasonable or feasible alternatives exists is discussed in section 7.9 of the draft BAR. - All the alternatives considered will be included in the Final BAR and the preferred option will be assessed and determined and will be clear throughout the report.



Date of comment, format of comment name of organisation/I&AP	Comment	Response from EAP/Applicant/Specialist
	report. Furthermore, the preferred option assessed must be determined and be clear throughout the report.	
	Cumulative Impact - The CA acknowledges the identified cumulative impacts provided on page 100 of the draft BAR and advised you to conduct a cumulative impact assessment as per the requirements of the EIA Regulations, 2014 as amended. In addition, ensure that the assessment of cumulative impact consider the following: ✓ Detailed process flow and proof must be provided, to indicate how the specialist's recommendations, mitigation measures and conclusions were taken into consideration in the assessment of cumulative impacts and when the conclusion and mitigation measures were drafted for this project. ✓ The cumulative impacts significance rating must also inform the need and desirability of the proposed development. ✓ A cumulative impact environmental statement on whether the proposed development must proceed.	- A detailed process flow and proof of how the specialist recommendations, mitigation measures and conclusions were taken into consideration in the assessment of cumulative impacts and when the conclusion and mitigation measures were drafted for this project are included in section 7.6 table 39. - Cumulative impacts were rated and included in the Draft BAR in section 7.6. - A cumulative impact environmental statement is included in section 9 of the Draft BAR.
	Specialist Assessments The CA acknowledges the attached Specialist Assessments Reports (Appendix E), and the screening tool report (Appendix 14) which identified specialist assessment themes. However, you are advised to submit a Site Sensitivity Verification Report (SSVR) that comply with the requirements of Government Notice No. 320 of 20 March 2020 (i.e., "the Protocols"), and in Government Notice No. 1150 of 30 October 2020. Please be reminded that this SSVR must be circulated to all interested and affected parties for a 30 days review and comments prior submission of the final BAR. You are requested to ensure that specialist studies are not submitted as one PDF document but as a separate PDF document.	- The Wetland specialist has amended the Wetland Biodiversity Assessment Report to include the Site Sensitivity Verification Report. The Wetland Biodiversity Assessment Report will be included in the public participation process. - The specialist studies identified by the screening tool were conducted and where no studies were conducted motivation is included in section 8 of the Draft BAR. - The Wetland Biodiversity Assessment Report was conducted in accordance with the Government Notice No. 320 of 20 March 2020 (i.e., "the Protocols"), and in Government Notice No. 1150 of 30 October 2020. Find attached updated report as Appendix E. - The specialist declaration form is attached in the Draft BAR. - The Wetland Biodiversity Assessment Report includes a detailed methodology in section 5 of the report. Rehabilitation is



Date of comment, format of comment name of organisation/I&AP	Comment	Response from EAP/Applicant/Specialist
	- In addition, you are reminded that the specialist studies to be undertaken for the proposed development must be identified by the screening tool. - It is brought to your attention that Procedures for the Assessment and Minimum Criteria for Reporting on identified Environmental Themes in terms of Sections 24(5)(a) and (h) and 44 of the National Environmental Management Act, 1998, when applying for Environmental Authorisation, which were published in Government Notice No. 320 of 20 March 2020 (i.e., "the Protocols"), and in Government Notice No. 1150 of 30 October 2020, have come into effect. Please note that specialist assessments must be conducted in accordance with these protocols unless proof is provided to demonstrate that the specialist assessments were commissioned prior to 50 days after the promulgation of GN 320 and after promulgation of GN1150 (30 October 2020). - In addition to the above, you are hereby drawn to the following: ✓ The Specialist Declaration of interest forms must be attached for all specialist studies to be conducted in the final BAR. The forms are available on Department's website (please use the Department's template). ✓ Specialist studies to be conducted must provide a detailed description of their methodology, as well as indicate the locations and descriptions of proposed rehabilitation, and all other proposed structures that they have assessed and are recommending for authorisations. ✓ The specialist studies must also provide a detailed description of all limitations to their studies. All specialist studies must be conducted in the right season and providing that as a limitation, will not be accepted. ✓ Should the appointed specialists specify contradicting recommendations, the EAP must clearly indicate the most reasonable recommendation and substantiate this with defensible reasons; and where necessary, include further expertise advice.	addressed in sections 8.3 and 13 of the report as well as a rehabilitation plan in table 16. - The Wetland Biodiversity Assessment Report includes assumptions and limitations in section 1.3. - The Wetland Specialist has no contradicting recommendations mentioned in the report. - The Wetland specialist Rudi Bezuidenhout is a professional registered in the field of Ecologist/Botanist Pr.Sci.Nat: (008867). - Refer to section 8 in the draft BAR and Appendix E4 Site Sensitivity Verification Report for a summary of the specialist studies required by the Screening Tool, a column indicating whether these studies will be conducted or not, and motivation if any study will not be undertaken. - If during the public participation process additional studies are required they will be included in the Final BAR.



Date of comment, format of comment name of organisation/I&AP	Comment	Response from EAP/Applicant/Specialist
	✓ Please note further that the protocols require certain specialists' to be registered with SACNASP. Refer to the relevant protocols in this regard. ✓ Please include a table in the final BAR summarising the specialist studies required by the Screening Tool, a column indicating whether these studies will be conducted or not, and motivation if any study will not be undertaken. Please note that if any of the specialists' studies and requirements recommended in the Department's Screening Tool are not commissioned, motivation for such must be provided in the report, as per the requirements of the Protocols. ✓ Should it be determined that there is a need for additional specialist studies to be undertaken based on the outcome of public participation, these must be commissioned and be included in the final BAR reports for public comment.	
	Layout and Sensitivity Maps • The CA acknowledges the layout map (Appendix A) submitted with the draft BAR, however, please note that the CA does not promote activities that are located within CBA 1 and ESA 1. Considering the above, ensure you obtain comments from the Provincial Department: Biodiversity Section and DFFE: Biodiversity Directorate and ensure that their inputs are included in the final BAR. • You are advised to indicate buffers on the final layout plan and legend for the high sensitivity area as recommended by the relevant specialist. • Based on the above, you are advised to submit a layout map that indicates the following (but not limited to the below), and the findings of the specialists must advise on what needs to be incorporated in the layout: ✓ The LLD dam. ✓ The Spillway. ✓ The Weir Structure. ✓ Permanent laydown area footprint.	• The project area doesn't fall within a CBA 1 or ESA 1 area as seen in the figure below. Comments will be obtained from the Provincial Department: Biodiversity Section and DFFE: Biodiversity Directorate and included in the Final BAR. • An email was sent to itshivhandekano@dfre.gov.za and mmatumba@dfre.gov.za and as well as 'BCAdmin@dfre.gov.za' and no response was received.



Date of comment, format of comment name of organisation/I&AP	Comment	Response from EAP/Applicant/Specialist
	✓ All supporting onsite infrastructure e.g., roads (existing and proposed). ✓ All existing infrastructure on the site. ✓ The location of sensitive environmental features on site e.g., CBAs, ESAs, heritage sites, wetlands, drainage lines etc. that will be affected. ✓ Buffer areas of the above sensitive areas; and ✓ All “no-go” areas. • Please ensure that the above map has a clear legend that communicates with the details of the map. • Available biodiversity information must be used in the finalisation of the map and infrastructure must not encroach on highly sensitive areas. • Ensure that similar colours are not used to differentiate between infrastructures. i.e., items must be easily distinguishable on the legend. • Google maps will not be accepted for decision-making purposes.	Comments requested from Biodiversity Section on sensitivity of project site (14/12/16/3/3/1/3206) - Message PDF... From: Lee Anne Fellows To: "biodiversity@efpa.co.za" Subject: Comments requested from Biodiversity Section on sensitivity of project site (14/12/16/3/3/1/3206) Importance: High Good day, Hope you are well. We are the appointed environmental consultants for the Eskom Duvha Power Station reinstatement of the Low-Level Dam Spillway project. During our public participation process the Department of Forestry, Fisheries and Environment provided the following comment: "The CA acknowledges the layout map (Appendix A) submitted with the draft BAA, however, please note that the CA does not promote activities that are located within CBA 1 and ESA 1. Considering the above, ensure you obtain comments from the Provincial Department: Biodiversity Section and DPFE: Biodiversity Directorate and ensure that their inputs are included in the final BAA". We have consulted the Mpumalanga Biodiversity Sector Plan and have found the project area to be classified as Moderately modified old lands. The project area is not located within CBA 1 or ESA 1. Please confirm or dispute our findings. Regards Lee Anne Fellows - Principle Consultant EPASA Registration number: 2019/050 SACHNASP Registration number: 115574 FW: Comments requested from Biodiversity Section on sensitivity of project site (14/12/16/3/3/1/3206) - Message PDF... From: Lee Anne Fellows Sent: Friday, 16 January 2026 08:56 To: "biodiversity@efpa.co.za" Cc: "biodiversity@efpa.co.za" Subject: Comments requested from Biodiversity Section on sensitivity of project site (14/12/16/3/3/1/3206) Importance: High Good day, Hope you are well. We are the appointed environmental consultants for the Eskom Duvha Power Station reinstatement of the Low-Level Dam Spillway project. During our public participation process the Department of Forestry, Fisheries and Environment provided the following comment: "The CA acknowledges the layout map (Appendix A) submitted with the draft BAA, however, please note that the CA does not promote activities that are located within CBA 1 and ESA 1. Considering the above, ensure you obtain comments from the Provincial Department: Biodiversity Section and DPFE: Biodiversity Directorate and ensure that their inputs are included in the final BAA". We have consulted the Mpumalanga Biodiversity Sector Plan and have found the project area to be classified as Moderately modified old lands. The project area is not located within CBA 1 or ESA 1.



Date of comment, format of comment name of organisation/I&AP	Comment	Response from EAP/Applicant/Specialist
	Environmental Management Programme (EMPr) - It has been noted that a draft EMPr is not submitted with the draft BAR, therefore, the CA submits that a draft EMPr that complies with the requirements of Appendix 4 of the EIA Regulation, as amended must be circulated with the included in the draft BAR. - In addition, the abovementioned draft EMPr must be submitted to relevant stakeholders for comments and comments must be included in the Comments and Responses Report (CRR) to be submitted with the final BAR. Participation Process - Based on the constitution of the communities in the area, communication must consider the use of local radio stations, advertisement, site notice and participation in the local languages to allow meaningful participation and approaches to community structures, committees and leaders. - The EAP is advised to reach illiterate, disabled and any other disadvantaged I&APs. - The EAP is advised to show an attempt made for the consultation i.e., having meetings with the local communities or their leaders or an investigation of their existence in the area. - Please ensure that the Public Participation Process is conducted in terms of Regulations 39, 40, 41, 42, 43 & 44 of the EIA Regulations 2014, as amended and the approved Public Participation Plan. - Please ensure that comments from all relevant stakeholders are submitted to the Department with the final BAR. This includes but is not limited to the Department of Forestry, Fisheries, and the Environment (DFFE): Protected Areas Planning and Management Effectiveness and Biodiversity Planning and Conservation (BCAdmin@dfre.gov.za); Mpumalanga Department of Agriculture, Rural Development, Land and Environmental Affairs (MDARDLEA), Mpumalanga Tourism and Park Agency (MTPA), Telkom, South African Heritage Resources	- The EMPr compiled in terms of Appendix 4 of the EIA Regulation as amended, is attached as annexure F. - The draft EMPr will be circulated to the relevant stakeholders for comments as per the public participation process and the comments will be included in the Comments and Responses Report to be submitted with the Final BAR. - Public participation will comprise of an advertisement in the local newspaper, site notices, written notices to adjacent landowners and stakeholders, and hard and electronic copies of the Draft BAR for a period of 30 days. - The EAP will include illiterate, disabled and other disadvantaged individuals in the public consultation process. - The EAP will arrange for consultation meetings to be held during the public consultation process. - Public Participation Process was conducted according to the EIA Regulations 2014, as amended. As extension was requested as per Regulation 19 (1)(b) of the EIA Regulations, 2014, as amended, "the revised reports or EMPr or, where applicable, a closure plan will be subjected to another public participation process of at least 30 days." Therefore, the draft BAR and associated annexures will be circulated for an additional 30 days to all relevant stakeholders and registered and interested affected parties. No Public Participation Plan was submitted with the application as well as no pre-application meeting was required. See appendix 1 of the application form for correspondence with the competent authority. - All comments from all relevant stakeholders will be included in the Final BAR. - Proof of correspondence with the various stakeholders will be included in the Final BAR. If no comments were received proof will be included where attempts were made to obtain comments.



Date of comment, format of comment name of organisation/I&AP	Comment	Response from EAP/Applicant/Specialist
	Agency ("SAHRA"), South African Civil Aviation Authority, Air Traffic and Navigation Services ("ATNS"), Endangered Wildlife Trust, Birdlife South Africa, Department of Human Settlement, Department of Water and Sanitation, South African National Defence Force, Local interest and affected groups, for example: Councillors and Rate Payers associations; Surrounding landowners, Farmer Organisations, Environmental Groups and NGOs; and Grassroots communities and structures as well as the affected district and local municipalities. • Proof of correspondence with the various stakeholders must be included in the final BAR. Should you be unable to obtain comments, proof must be submitted to the Department of the attempts that were made to obtain comments. • The comments and response trail report (C&R) must be submitted with the final BAR. The C&R report must incorporate all comments for this development and must be a separate document from the main report. • Please ensure that all issues raised, and comments received during the circulation of the draft BAR from registered I&APs and organs of state which have jurisdiction (including this Department's comments) in respect of the proposed activity are adequately addressed. Comments made by I&APs must be comprehensively captured (copy verbatim if required) and responded to clearly and fully. Please note that a response such as "Noted" is not regarded as an adequate response to I&AP's comments. • Just to reiterate that the amended draft BAR must be circulated to all interested and affected parties for a 30 days review and comments prior submission of the final BAR.	• The Comments and Response Report will include all comments received during the public participation process and will be a separate report. • All issues raised and comments received during the public participation process inclusive of the Departments comments will be adequately addressed and included in the Final BAR. • The Draft BAR will be circulated for a period of 30 days to all interested and affected parties for a 30 days review and comments prior to the submission of the final BAR.
	General You are further reminded to comply with Regulation 19(1)(a) of the NEMA EIA Regulations, 2014, as amended, which states that: Where basic assessment must be applied to an application, the applicant must, within	The EAP has requested extension until the 2 March 2026 to submit the Final BAR to the CA.



Date of comment, format of comment name of organisation/I&AP	Comment	Response from EAP/Applicant/Specialist
	90 days of receipt of the application by the competent authority, submit to the competent authority - (a) a basic assessment report, inclusive of specialist reports, an EMPr, and where applicable a closure plan, which have been subjected to a public participation process of at least 30 days and which reflects the incorporation of comments received, including any comments of the competent authority.” Should there be significant changes or new information that has been added to the BAR or EMPr which changes or information was not contained in the reports or plans consulted on during the initial public participation process, you are required to comply with Regulation 19(b) of the NEMA EIA Regulations, 2014, as amended, which states: “the applicant must, within 90 days of receipt of the application by the competent authority, submit to the competent authority – (b) a notification in writing that the basic assessment report, inclusive of specialist reports an EMPr, and where applicable, a closure plan, will be submitted within 140 days of receipt of the application by the competent authority, as significant changes have been made or significant new information has been added to the basic assessment report or EMPr or, where applicable, a closure plan, which changes or information was not contained in the reports or plans consulted on during the initial public participation process contemplated in sub-regulation (1)(a) and that the revised reports or, EMPr or, where applicable, a closure plan will be subjected to another public participation process of at least 30 days”. Should you fail to meet any of the timeframes stipulated in Regulation 19 of the NEMA EIA Regulations, 2014, as amended, your application will lapse. You are hereby reminded of Section 24F of the National Environmental Management Act, Act No. 107 of 1998, as amended, that no activity may commence prior to an Environmental Authorisation being granted by the Department.	



7.4 The Environmental attributes associated with the baseline environment

7.4.1 Type of environment affected by the proposed activity

A baseline description or “status quo” of the present environmental situation is provided in this part of the document. The following attributes / aspects have been described in detail, in the following respective chapters:

Chapter A: Geology.

Chapter B: Climate.

Chapter C: Topography.

Chapter D: Soil, land use and land capability.

Chapter E: Vegetation.

Chapter F: Fauna.

Chapter G: Surface water.

Chapter H: Groundwater.

Chapter I: Air Quality.

Chapter J: Noise.

Chapter K: Archaeology and Cultural History.

Chapter L: Sensitive Landscapes.

Chapter M: Visual Aspects.

Chapter N: Regional socio-economic structures.

Chapter O: Screening tool themes.

This section provides a summary of the baseline environment as applicable to the proposed project activities.

7.4.1.1 Chapter A: Geology

The information contained in this section is obtained from:

- *ESKOM - Wetland Risk Assessment for Duvha Power Station Village Road, compiled by Thero Services, dated 14 September 2023.*

According to Mucina & Rutherford (2006), the geology and soils aspect of this region are characterised by red to yellow sandy soils of the Ba and Bb land type. The geology of this region as shown in Figure 9 includes sandstone and shale of the Madzaringwe Formations which are Karoo Supergroup, characterised by the Kwaggasnek and quaternary lithostratigraphic layers as shown on Figure 10.





Figure 9: Duvha Geological Formations Detail (source: Duvha Power Station Stormwater Management Plan, compiled by SAWE – PG Consulting, 2020)

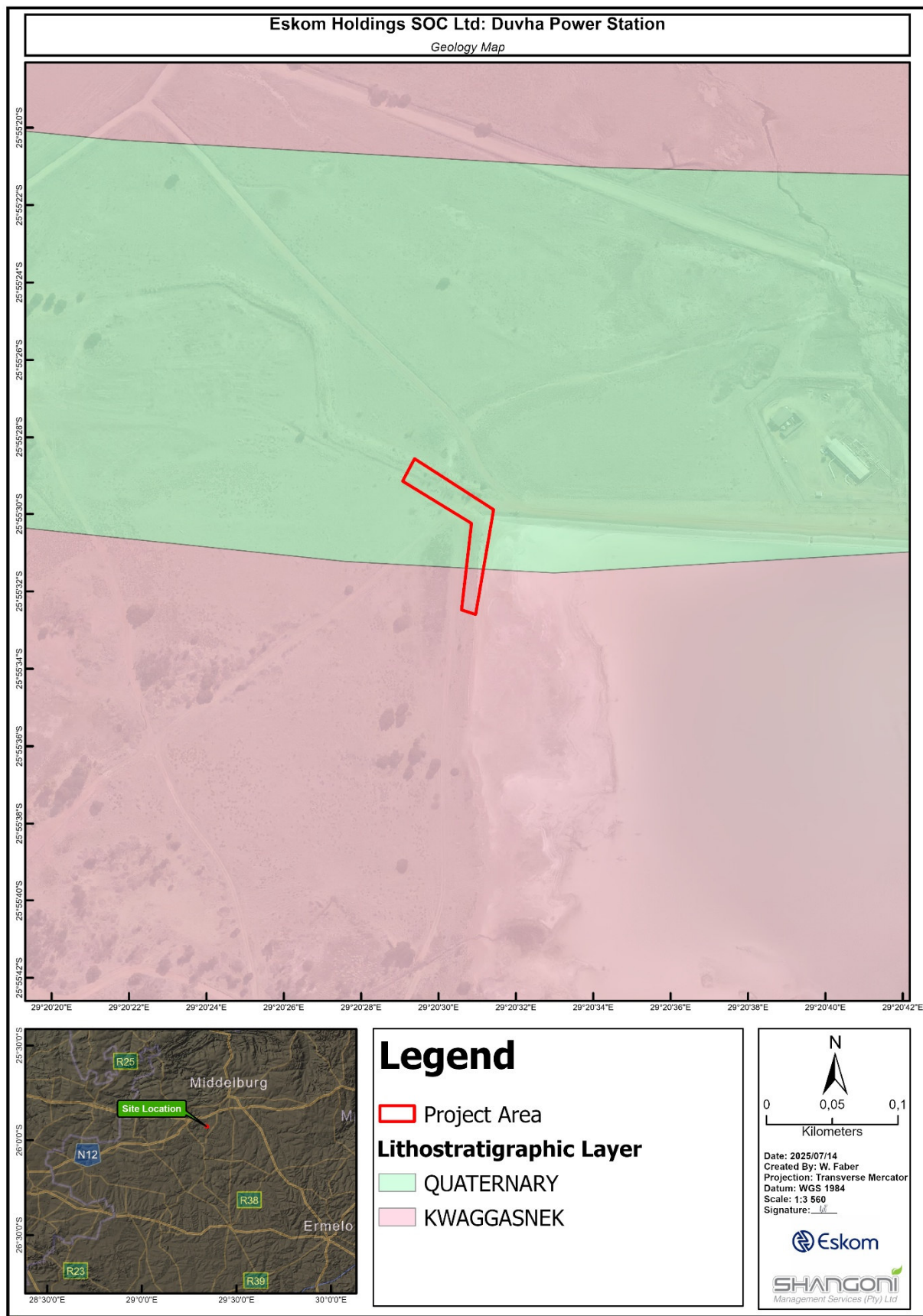


Figure 10: Geology Map

7.4.1.2 Chapter B: Climate

Witbank has temperate highland tropical climate with dry winters climate. The district's yearly temperature is 22.52°C which is 1.3% higher than South Africa's averages. The area's annual high temperature is 27.04 °C and the annual low temperature is 14.16 °C. The warmest month is December, and the coldest month is June. Therefore, the site area has very low heatwave hazard.

Witbank typically receives about 72.32 mm of precipitation and has 121.11 rainy days (33.18% of the time) per year, with the wettest month being January (178.76 mm) and the driest month June (5.45 mm). Witbank is characterised by humidity level of 69.66% with overall average Mean Annual Precipitation ("MAP") of 72.32 mm. The site area is a semi-arid zone with moderate rainfall hazard and moderate frost hazard. Figure 11 shows the monthly weather patterns of Witbank.

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Nov	Oct	Dec	Year
Record high °C (°F)	43.44 (110.19)	39.3 (102.74)	39.3 (102.74)	38.27 (100.89)	36.2 (97.16)	36.2 (97.16)	33.09 (91.56)	37.23 (99.01)	41.37 (106.47)	41.37 (106.47)	40.33 (104.59)	41.37 (106.47)	43.44 (110.19)
Average high °C (°F)	29.05 (84.29)	29.2 (84.56)	28.62 (83.52)	26.23 (79.21)	25.54 (77.97)	23.35 (74.03)	22.84 (73.11)	25.51 (77.92)	27.8 (82.04)	28.09 (82.56)	28.87 (83.97)	29.47 (85.05)	27.04 (80.67)
Daily mean °C (°F)	25.29 (77.52)	25.23 (77.41)	24.44 (75.99)	21.86 (71.35)	20.17 (68.31)	17.37 (63.27)	17.43 (63.37)	20.47 (68.85)	23.37 (74.07)	24.08 (75.34)	24.97 (76.95)	25.65 (78.17)	22.52 (72.54)
Average low °C (°F)	17.42 (63.36)	17.3 (63.14)	16.26 (61.27)	13.88 (56.98)	11.74 (53.13)	8.88 (47.98)	8.95 (48.11)	11.25 (52.25)	14.38 (57.88)	15.63 (60.13)	16.67 (62.01)	17.51 (63.52)	14.16 (57.49)
Record low °C (°F)	11.38 (52.48)	12.41 (54.34)	8.27 (46.89)	8.27 (46.89)	5.17 (41.31)	3.1 (37.58)	2.07 (35.73)	3.1 (37.58)	6.21 (43.18)	8.27 (46.89)	9.31 (48.76)	7.24 (45.03)	2.07 (35.73)
Average precipitation mm (inches)	178.76 (7.04)	124.61 (4.91)	113.47 (4.47)	56.28 (2.22)	13.66 (0.54)	5.45 (0.21)	6.7 (0.26)	12.19 (0.48)	27.94 (1.1)	82.48 (3.25)	101.26 (3.99)	145.07 (5.71)	72.32 (2.85)
Average precipitation days (≥ 1.0 mm)	19.28	16.17	15.14	9.4	3.29	1.22	1.6	2.64	5.08	12.41	16.27	18.62	10.09
Average relative humidity (%)	80.32	80.5	79.99	76.91	66.52	60.14	60.32	56.78	58.04	66.73	72.24	77.51	69.66
Mean monthly sunshine hours	12.77	12.67	11.6	8.25	8.81	8.8	8.72	8.68	10.15	12.18	12.64	12.79	10.67

Figure 11: Monthly weather in Witbank (source: <https://weatherandclimate.com/south-africa/mpumalanga/witbank>)

In addition, Witbank experiences moderate to strong winds at times. The average hourly wind speed in Witbank experiences mild seasonal variation over the course of the year. The windier part of the year lasts for 3.9 months, from July to November, with average wind speeds of more than 7.6 miles per hour. The windiest month of the year in Witbank is September, with an average hourly wind speed of 9.0 miles per hour. The calmest month of the year in Witbank is March, with an average hourly wind speed of 6.3 miles per hour. The wind is most often from the East from January to April, with a peak percentage of 46% in February. Figure 12 shows wind direction in Witbank.



Wind Direction in Witbank

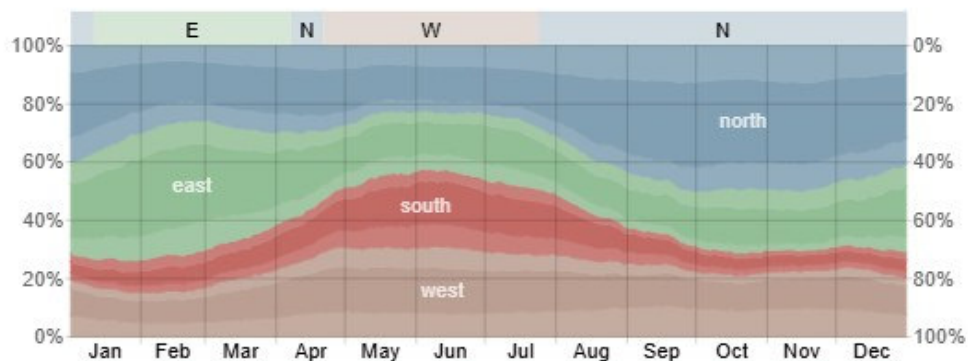


Figure 12: Monthly weather in Witbank (source: <https://weatherspark.com/y/95842/Average-Weather-in-Witbank-Mpumalanga-South-Africa-Year-Round>)

7.4.1.3 Chapter C: Topography

Witbank is characterized by Highveld topography, and it is located at a height of approximately ± 1600 m above sea level. The landscape and drainage patterns are generally flat.

The topography of the site area ranges between 1,533 meters above sea level (“MASL”) and 1,546 masl as depicted by the circle in Figure 13 and Figure 14. The terrain in this area is described as plains with open low hills or ridges, with slopes that vary between 0 - 3% and 3 -12%.

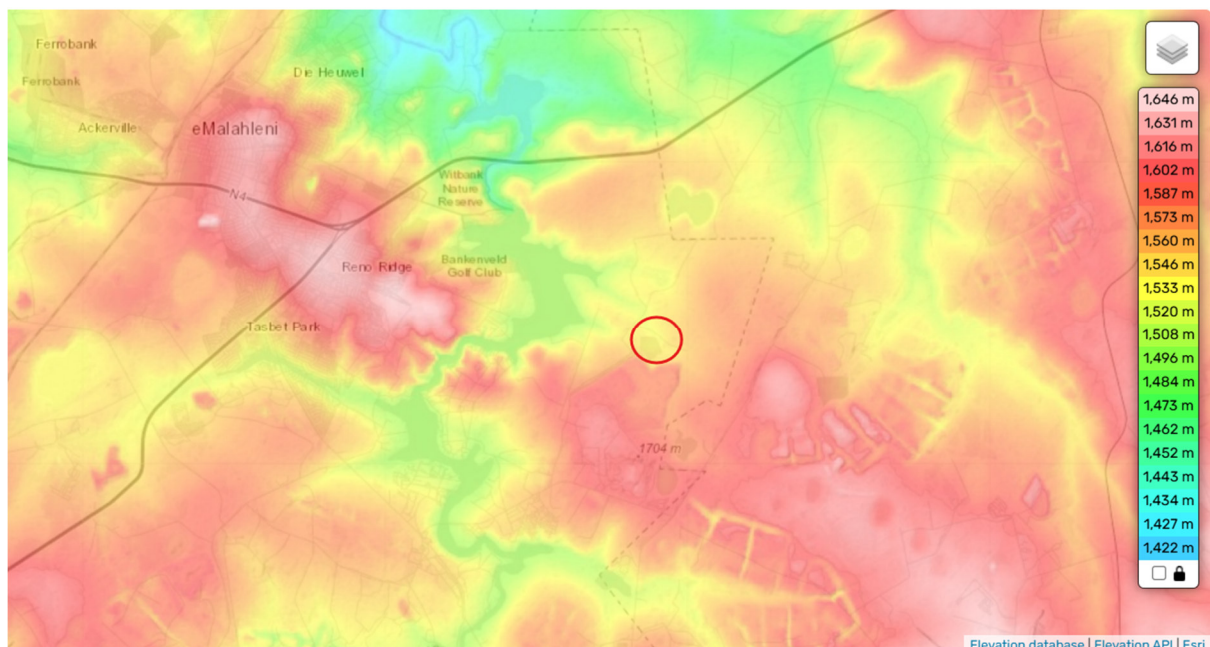


Figure 13: Elevation Map (source: <https://en-za.topographic-map.com/map-9s8tf/eMalahleni/?center=-25.8932%2C29.25419&zoom=13>)



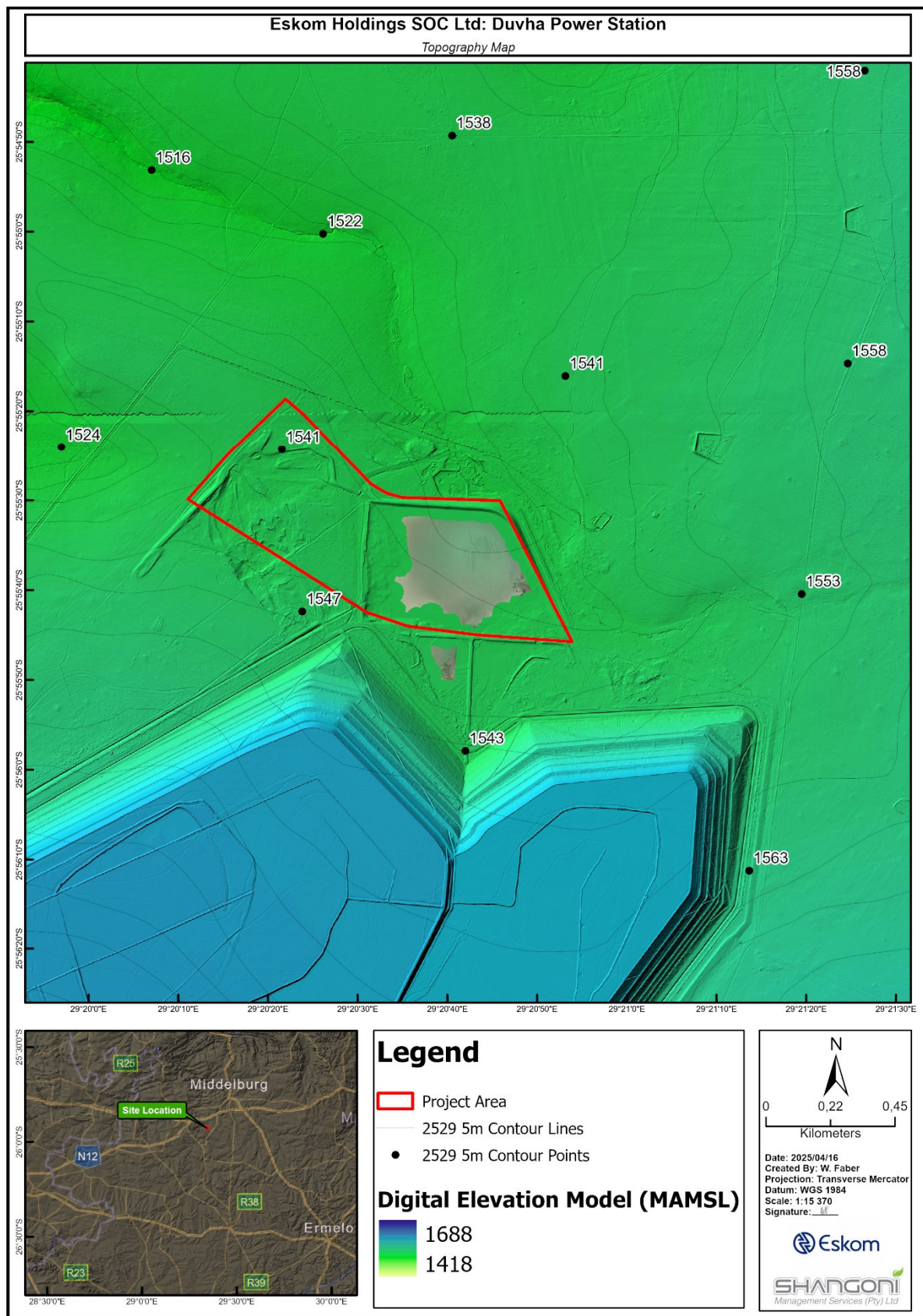


Figure 14: Topography of the site area

7.4.1.4 Chapter D: Soil, land use and land capability

ESKOM: Wetland Risk Assessment for Duvha Power Station Village Road, Compiled by Thero Services, and dated September 2023.

According to the land type database (Land Type Survey Staff, 1972 - 2006), the dominant soil within the site area is Ba 4 land type with Plinthic horizon soils. The soil classification class is soils with plinthic catena, with upland duplex and marginalitic soils being rare. It is characterised by Dystrophic and mesotrophic red soils are widespread. For dystrophic soils, the sum of the exchangeable basic cations is less than 5 cmol (+) kg⁻¹ whereas mesotrophic soils are defined as soils that have between 5 and 15 cmol (+) kg⁻¹ exchangeable basic cations. These basic cations include Ca, Mg, K, and Na and are essential for a well-functioning soil.

According to Mucina & Rutherford (2006), the geology and soils aspect of this region are characterised by red to yellow sandy soils of the Ba and Bb land type as observed during the site visit and shown on Figure 15 and Figure 16. Furthermore, the site area dominantly has a range of 10 - 15 % to 20 - 35 % clay A horizon and a range of 5 -10 % to 20 – 35 % clay B horizon.



Figure 15: Red soil on site



Figure 16: Red- greyish soil on site

Land capability and land use

The land cover and land use of the site area and its immediate surrounding area was interpreted from the 2022 National Land Cover Datasets. The data depicts a highly transformed and disturbed landscape. Figure 17 shows that the site area has small fragments of natural grassland and open woodland, although they are fragmented and often located along the fringes of disturbed area. Additionally, in the peripheral zones the site area has old Fields (Grass, Trees, Bush) in varying forms. These represent previously cultivated or disturbed lands undergoing natural regrowth. These areas are not in active agricultural production.

The site landscape also includes herbaceous wetlands (current and historical) as shown in Figure 17. These types of wetlands are primarily located along drainage features and low-lying depressions. According to the *Reinstating the Low-Level Dam Spillway Wetland Biodiversity Assessment* compiled by Limosella Consulting, dated June 2025, indicates that although these herbaceous wetlands are mapped as a wetland watercourse, in the National Freshwater Ecosystem Priority Areas (“NFEPA”) and National Biodiversity Act 2018 datasets, the study shows that the wetland does not represent a natural wetland system but rather an engineered containment structure with wetland-like characteristics. However, downstream of the LLD, the spillway channel connects to a valley-bottom wetland associated with a non-perennial river. This wetland drains into the Witbank Dam.



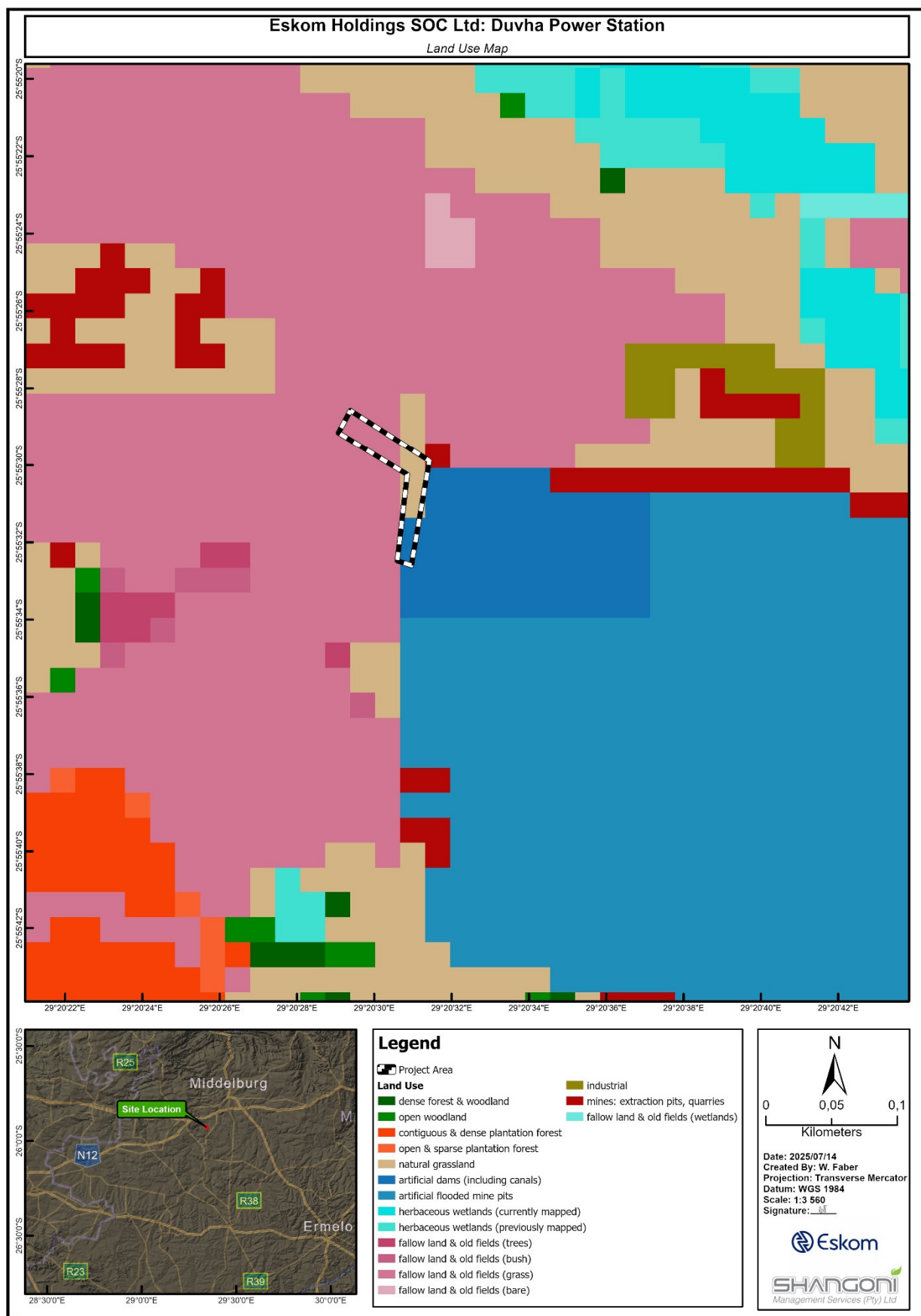


Figure 17: Land types of the site and immediate surrounds



7.4.1.5 Chapter E: Vegetation

The following information was extracted from:

- *Terrestrial Ecological Assessment Report for the Proposed Duvha Ash Dam Seepage Interception Drains*, compiled by Nema Consulting and dated July 2017.
- *ESKOM: Wetland Risk Assessment for Duvha Power Station Village Road*, Compiled by Thero Services, and dated September 2023.

The site area falls within Grassland biome, this biome is mainly found on central plateau of South Africa, and the inland areas of KwaZulu-Natal and the Eastern Cape. Grasslands are dominated by a single layer of grasses. The site area is found within the Eastern Highveld Grassland (Gm 12) vegetation type as shown in Figure 19 below.

The vegetation of this vegetation type is characterised by short and dense grasslands that occur in moderately undulating plains which include low hills and pan depressions. Small scattered rocky outcrops are common in this area with wiry, sour grasses accompanied by some woody species which include *Celtis africana*, *Parinari capensis*, *Protea caffra*, etc.

Eastern Highveld Grassland

This Grassland is found on slightly to moderately undulating plains, including some low hills and pan depressions and consist of short, dense grassland, dominated by the usual highveld grass composition (*Aristida*, *Digitaria*, *Eragrostis*, *Themeda*, *Tristachya* etc) with small, scattered rocky outcrops with wiry, sour grasses and some woody species. Woody species include *Acacia caffra*, *Celtis africana*, *Diospyros lycioides* subsp. *lycioides*, *Parinari capensis*, *Protea. caffra* and *Rhus magalismontana* (Mucina and Rutherford, 2006).

The conservation status is described as Endangered with a conservation target of 24%. Approximately 44% of the Eastern Highveld Grassland has been transformed, primarily by cultivation, plantations, mining, urbanization and building of dams. Erosion is very low and no serious alien infestation is reported, although species such as *Acacia mearnsii* can become dominant in disturbed places (Mucina and Rutherford, 2006). No remnants of this vegetation type still exist on the site area due to mining activities.

The site area has been highly transformed and disturbed due to ash dams, alien plant infestation and mining activities. According to the Mpumalanga Biodiversity Conservation Plan, the proposed site area falls within the “Moderately modified - Old lands”. This was also observed during the site visit as shown on Figure 18.



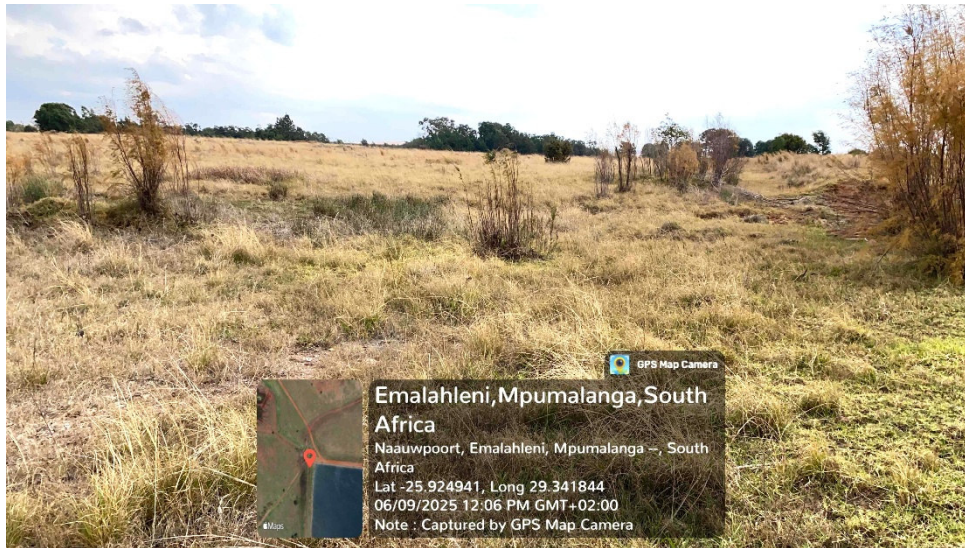


Figure 18: Vegetation cover on site

Terrestrial Threatened Ecosystems

In terms of section 52(1) (a), of the National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004) the revised National List of Ecosystems that are Threatened and In Need of Protection was gazetted on 18 November 2022. The list classified all threatened or protected ecosystems in South Africa. The purpose of categorising these ecosystems is to prioritise conservation areas in order to reduce the rates of ecosystem and species extinction, as well as preventing further degradation and loss of structure, function, and composition of these ecosystems. It is estimated that threatened ecosystems make up 9.5% of South Africa, with critically endangered and endangered ecosystems accounting for 2.7%, and vulnerable ecosystems 6.8% of the land area. It is therefore vital that Threatened Terrestrial Ecosystems inform proactive and reactive conservation and planning tools, such as Biodiversity Sector Plans, municipal Strategic Environmental Assessments (“SEAs”) and Environmental Management Frameworks (“EMFs”), Environmental Impact Assessments (“EIAs”) and other environmental applications (Mucina et al. 2006). These threatened ecosystems are listed as *Endangered*. However, as shown on Figure 20, the site area does not fall under a threatened terrestrial ecosystem, this is due to the area already transformed to mining area.



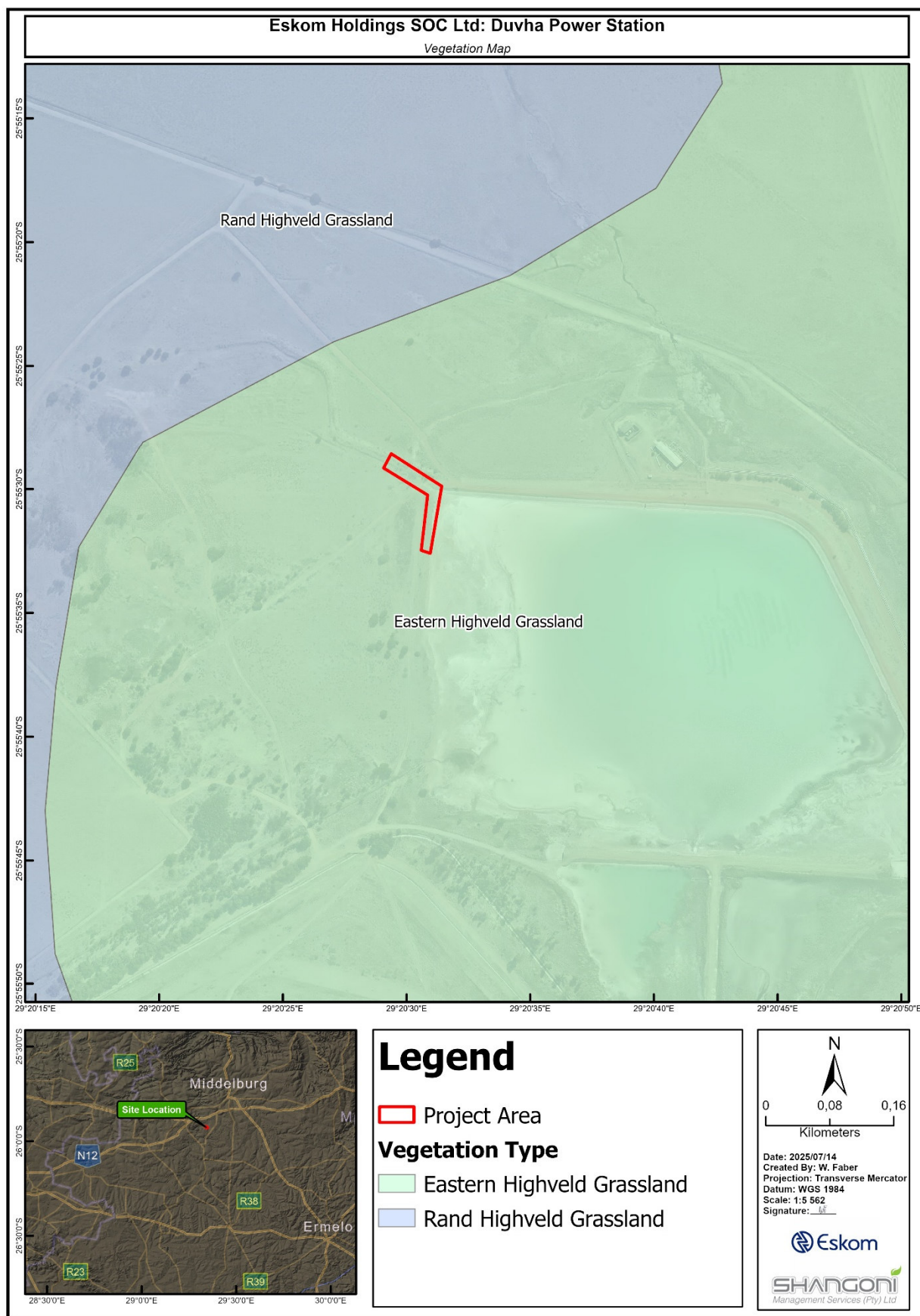


Figure 19: Vegetation map



Figure 20: Sensitivity Map

Red Data Plant Species

The site area is located within the 2529CD Quarter Degree Square (QDS) in terms of the 1:50 000 grid of South Africa. SANBI used this grid system as a point of reference to determine any Red Data plant species or any species of conservation importance occurring in South Africa. This can be used to determine the list of species which could potentially occur within an area. Table 6 provides details on the Red Data plant species which have been recorded in 2529CD grid cell. Table 7 indicates the Red Data plant species that were previously recorded in 2529CD by Mpumalanga Tourism and Parks Agency (MTPA). The definitions of the conservation status are provided in Table 8.

Table 6: Floral species of conservational significance recorded from the QDS of 2529CD

Family	Species	Threat status	Growth forms
Amaryllidaceae	Crinum bulbispermum (Burm.f.) Milne-Redh. & Schweick.	Declining	Geophyte, hydrophyte
Amaryllidaceae	Crinum macowanii Baker	Declining	Geophyte
Apocynaceae	Pachycarpus suaveolens (Schltr.) Nicholas & Goyder	VU	Herb, succulent
Aquifoliaceae	Ilex mitis (L.) Radlk. var. mitis	Declining	Shrub, tree
Asteraceae	Callilepis leptophylla Harv.	Declining	Herb
Hypoxidaceae	Hypoxis hemerocallidea Fisch., C.A.Mey. & Avé-Lall.	Declining	Geophyte
Mesembryanthemaceae	Khadia carolinensis (L.Bolus) L.Bolus	VU	Succulent
Rubiaceae	Pavetta zeyheri Sond. subsp. middelburgensis (Bremek.) P.P.J.Herman	Rare	Dwarf shrub



Family	Species	Threat status	Growth forms
Zamiaceae	Encephalartos lanatus Stapf & Burt Davy	NT	Shrub, tree

Note: NT=Near Threatened, VU=Vulnerable

Table 7: Farm Names where the Red Data Plant species were recorded, which could potentially occur in the study area (MTPA data)

Farm Name/Town	Scientific Name	Conservation RSA	MTPA	Endemic
Kalbasfontein 284 JS	Encephalartos lanatus	NT	NT	SA
Middelburg	Encephalartos lanatus	NT	NT	SA
Middelburg Dist.; Middelburg	Eucomis autumnalis	Declining	Declining	FSA
Middelburg Dist.; Middelburg	Hypoxis hemerocallidea	LC	LC	FSA
Middelburg Town and Townlands	Brachycorythis conica subsp transvaalensis	CR	CR	SA
Middelburg Town and Townlands 287 JS	Brachycorythis conica subsp transvaalensis	CR	CR	SA
Middelburg; Pokwani	Callilepis leptophylla	Declining	Declining	FSA
Naauwpoort 335 JS	Frithia humilis	EN	EN	SA
Olifants River	Pachycarpus suaveolens	VU	VU	FSA
Rietfontein 314 JS	Habenaria schimperiana	LC	Rare	NOT



Farm Name/Town	Scientific Name	Conservation RSA	MPA	Endemic
Springs; Geduld golf course.	Habenaria bicolor	NT		NOT
Vaalbank 289 JS	Anacampseros subnuda subsp. lubbersii	VU	VU	SA
	Boophone disticha	LC	LC	
	Callilepis leptophylla	Declining	Declining	FSA
	Hypoxis hemerocallidea	LC		NOT
Witbank Municipal Area	Anacampseros subnuda subsp. lubbersii	VU	VU	SA

Note: CR= Critically Endangered, EN= Endangered, VU=Vulnerable, NT=Near Threatened

Table 8: Definitions of Red Data status (Raimondo et al. 1999)

Symbol	Status	Description
CR	Critically Endangered	A taxon is Critically Endangered when the best available evidence indicates that it meets any of the five International Union for Conservation of Nature (IUCN) criteria for Critically Endangered, and is therefore facing an extremely high risk of extinction in the wild.
EN	Endangered	A taxon is Endangered when the best available evidence indicates that it meets any of the five IUCN criteria for Endangered, and is therefore



Symbol	Status	Description
		facing a very high risk of extinction in the wild.
VU	Vulnerable	A taxon is Vulnerable when the best available evidence indicates that it meets any of the five IUCN criteria for Vulnerable and it is therefore considered to be facing a high risk of extinction in the wild.
NT	Near Threatened	A taxon is Near Threatened when available evidence indicates that it nearly meets any of the five IUCN criteria for Vulnerable, and is therefore likely to qualify for a threatened category in the near future.
N/A	Declining	A taxon is Declining when it does not meet any of the five IUCN criteria and does not qualify for the categories Critically Endangered, Endangered, Vulnerable or Near Threatened, but there are threatening processes causing a continuing decline in the population.
N/A	Rare	A taxon is rare when it meets any of the four South African criteria for rarity, but is not exposed to any direct or plausible potential threat and does not qualify for a category of threat according to the five IUCN.



7.4.1.6 Chapter F: Fauna

The following information was extracted from:

- *Terrestrial Ecological Assessment Report for the Proposed Duvha Ash Dam Seepage Interception Drains*, compiled by Nema Consulting and dated July 2017.

Mammals

As previously indicated in section 7.4.1.5, the site area is located within the 2529CD in terms of the 1:50 000 grid of South Africa. Potential mammal species that could be found on the site area are listed in Table 9 below. According to the list, no mammal species of conservation importance are known to occur on this region. Due to the habitat disturbance, the list is likely to overestimate the occurrence of mammal species in the area.

Table 9: Mammal species recorded in the grid cell 2529CD (ADU, 2017), which could potentially occur on the site area

Family	Genus	Species	Subspecies	Common name	Red list category	Atlas region endemic
Bovidae	Antidorcas	marsupialis		Springbok	Least Concern	Yes
Bovidae	Connochaetes	gnou		Black Wildebeest	Least Concern	Yes
Bovidae	Damaliscus	pygargus	phillipsi	Blesbok	Least Concern	
Bovidae	Kobus	ellipsiprymnus		Waterbuck	Not listed	Yes
Bovidae	Oryx	gazella		Gemsbok	Least Concern	Yes
Bovidae	Ourebia	ourebi		Oribi	Endangered	Yes
Bovidae	Tragelaphus	strepsiceros		Greater Kudu	Least Concern	Yes



Family	Genus	Species	Subspecies	Common name	Red list category	Atlas region endemic
Canidae	Vulpes	chama		Cape Fox	Least Concern	Yes
Cercopithecidae	Cercopithecus	pygerythrus	pygerythrus	Vervet Monkey	Least Concern	
Erinaceidae	Atelerix	frontalis		Southern African Hedgehog	Near Threatened	Yes
Felidae	Panthera	pardus		Leopard	Least Concern	Yes
Herpestidae	Cynictis	penicillata		Yellow Mongooses	Least Concern	Yes
Herpestidae	Herpestes	sanguineus		Slender Mongooses	Least Concern	Yes
Herpestidae	Suricata	suricatta		Meerkat	Least Concern	Yes
Hyaenidae	Hyaena	brunnea		Brown Hyena	Near Threatened	Yes
Leporidae	Pronolagus	randensis		Jameson's Red Rock Hare	Least Concern	Yes
Procaviidae	Procavia	capensis		Rock Hyrax	Least Concern	Yes
Viverridae	Genetta	maculata		Rusty-spotted Genet	Not listed	Yes



Mammals recorded within the proposed site

During the field assessment, mammal species diversity was very low, and this could have been due to habitat transformation and mining activities. Mammals are naturally sensitive to disturbances. As a result, only seven mammal species were recorded on sites during the study as indicated on Table 10. No Red Data mammal species were recorded.

Table 10: Mammals recorded on the four proposed site area

Scientific name	English name	Status
<i>Sylvicapra grimmia</i>	Common Duiker	LC
<i>Hystrix africaeaustralis</i>	Cape Porcupine	LC
<i>Damaliscus pygargus phillipsi</i>	Blesbok	LC
<i>Equus quagga</i>	Plains zebra	LC
<i>Lepus saxatilis</i>	Scrub hare	LC
<i>Cryptomys hottentotus</i>	African Mole Rat	LC
<i>Galerella sanguinea</i>	Slender mongoose	LC

Note: LC= Least Concern

Habitat available for species of conservation importance

Table 11 indicates suitable habitat of the Red Data mammal species, together with the probability of occurrence.

Table 11: Red Data Listed mammal species which could potentially occur on site with suitable habitats and their probability of occurrence (Skinner and Chimimba, 2005)

Common name	Red list category	Suitable habitat	Probability of occurrence
Southern African Hedgehog	Near Threatened	Prefers grass and bushveld that is not too damp and with a good covering of leaves and other debris. They have generally been recorded from scrub brush, western Karoo,	Low



Common name	Red list category	Suitable habitat	Probability of occurrence
		grassland and suburban gardens	
Oribi	Endangered	Inhabits floodplains, grasslands, open plains and montane grasslands, and marginally in light bushland	Low

Avifauna

As previously indicated, the site area falls within the grassland biome and this biome is considered home to 52 of the 122 Important Bird and Biodiversity Area ("IBA") in South Africa (O' Connor and Bredenkamp, 1997). Of South Africa's 841 bird species, 350 occur in the Grassland Biome. This includes 29 species of conservation concern, 10 endemics, and as many as 40 specialist species that are exclusively dependent on grassland habitat. Threatened grassland bird species range from Little brown jobs (LBJs) (such as Yellow breasted Pipit, Rudd's Lark and Botha's Lark) to the larger charismatic species (such as Secretarybird, Denham's Bustard, African Grass-Owl and Southern Bald Ibis) (Barnes, 1998).

Table 12 provides the important of what could potentially be encountered in a suitable habitat anywhere within the square of 2529CD, but not necessarily within the exact proposed site area.

Table 12: Red Data Bird species recorded in grid cell 2529CD which could potentially occur in the study sites (SABAP 1) (Harrison et al. (1997), Barnes (2000), SABAP2, Ansara, (2004) and Tarboton et al. 1987).

Common Name	Conservation Status	Suitable Habitat	Probability of Occurrence
White-headed Vulture	Aegypius occipitalis	It is found in open savannahs and thorn bush.	Low
African Grass-Owl	Tyto capensis	Likely to be found in rank grass adjacent to wetlands.	Medium



Common Name	Conservation Status	Suitable Habitat	Probability of Occurrence
Blue Crane	Anthropoides paradiseus	Can be present in the pockets of remaining grassland and wetlands.	Medium
African Marsh Harrier	Circus ranivorus	It is found in the Southern African wetlands, riverine forests and moist grasslands.	Low

Reptiles

According to O' Connor and Bredenkamp (1997), the grassland biome houses 22% of South Africa's endemic reptiles. Table 13 lists reptile species which are recorded in the grid cell 2529CD based on the South African Reptile Conservation Assessment (ADU, 2017). According to the list, no species of conservation importance are known to occur in the vicinity of the proposed site.

Table 13: Reptile species recorded in grid cell 2529CD which could occur on the study sites (ADU, 2017)

Family	Genus	Species	Subspecies	Common Name	Red List Category	Atlas Region Endemic
Agamidae	Agama	atra		Southern Rock Agama	Least Concern (SARCA 2014)	
Chamaeleonidae	Chamaeleon	dilepis	dilepis	Common Flap-neck Chameleon	Least Concern (SARCA 2014)	
Colubridae	Telescopus	semiannulatus	semiannulatus	Eastern Tiger Snake	Least Concern	



Family	Genus	Species	Subspecies	Common Name	Red List Category	Atlas Region Endemic
					(SARCA 2014)	
Cordylidae	Cordylus	vittifer		Common Girdled Lizard	Least Concern (SARCA 2014)	
Elapidae	Hemachatus	haemachatus		Rinkhals	Least Concern (SARCA 2014)	
Gekkonidae	Hemidactylus	mabouia		Common Tropical House Gecko	Least Concern (SARCA 2014)	
Gekkonidae	Lygodactylus	capensis	capensis	Common Dwarf Gecko	Least Concern (SARCA 2014)	
Gekkonidae	Pachydactylus	affinis		Transvaal Gecko	Least Concern (SARCA 2014)	Yes
Gerrhosauridae	Gerrhosaurus	flavigularis		Yellow-throated Plated Lizard	Least Concern (SARCA 2014)	
Lamprophiidae	Aparallactus	capensis		Black-headed Centipede-eater	Least Concern (SARCA 2014)	



Family	Genus	Species	Subspecies	Common Name	Red List Category	Atlas Region Endemic
Lamprophiidae	Atractaspis	bibronii		Bibron's Stiletto Snake	Least Concern (SARCA 2014)	
Lamprophiidae	Boaedon	capensis		Brown House Snake	Least Concern (SARCA 2014)	
Lamprophiidae	Lycodonomorphus	rufulus		Brown Water Snake	Least Concern (SARCA 2014)	
Scincidae	Trachylepis	punctatissima		Speckled Rock Skink	Least Concern (SARCA 2014)	
Scincidae	Trachylepis	varia		Variable Skink	Least Concern (SARCA 2014)	
Testudinidae	Stigmochelys	pardalis		Leopard Tortoise	Least Concern (SARCA 2014)	
Typhlopidae	Afrotyphlops	bibronii		Bibron's Blind Snake	Least Concern (SARCA 2014)	



Family	Genus	Species	Subspecies	Common Name	Red List Category	Atlas Region Endemic
Viperidae	Causus	rhombeatus		Rhombic Night Adder	Least Concern (SARCA 2014)	

Habitat requirements for Red Data reptile species

The data sourced from MTPA indicates that only two species of conservation concern are known to occur in the vicinity of the proposed site area. Table 14 provides the important of what could potentially be encountered in a suitable habitat anywhere within the square of 2529CD, but not necessarily within the exact proposed site area.

Table 14: Red Data reptile species recorded in grid cell 2529CD which could potentially occur in the study sites (MTPA data)

Common Name	Conservation Status	Suitable Habita	Probability of occurrence
Coppery Grass Lizard	NT	Open grassland. Rocky ridges and slopes	Low
Striped harlequin snake	NT	The favoured habitats of this snake are moist savanna and grasslands. It is known to inhabit old termitaria in grassland habitat.	Low

Amphibians

Amphibians are an important component of South Africa's exceptional biodiversity and are such worthy of both research and conservation effort (Siegfried, 1989). This is made additionally relevant by international concern over globally declining amphibian populations, a phenomenon currently undergoing intensive investigation but is still poorly understood (Wyman, 1990 & Wake, 1991). This decline seems to have worsened over the past 25 years and amphibians are now more threatened than



either mammals or birds, though comparisons with other taxa are confounded by a shortage of reliable data.

Frogs are useful environmental bio-monitors (bio-indicators) and may act as an early warning system for the quality of the environment. According to Frog Atlas of Southern African (ADU, 2017), only one frog species of conservation importance has been recorded in grid cell 2529CD. In addition, wetlands near the proposed works are likely an important breeding habitat for most of the frog species which occurs in this region. Table 15 indicates frogs that were recorded in grid cell 2529CD.

Table 15: Amphibian species recorded in the grid cell 2529CD (ADU, 2017), which could potentially occur on the proposed site area

Family	Genus	Species	Common Name	Red List Category	Atlas Region Endemic
Bufonidae	Schismaderma	carens	Red Toad	Least Concern	
Bufonidae	Sclerophrys	capensis	Raucous Toad	Least Concern	
Bufonidae	Sclerophrys	gutturalis	Guttural Toad	Least Concern	
Hyperoliidae	Kassina	senegalensis	Bubbling Kassina	Least Concern	
Hyperoliidae	Semnodactylus	wealii	Rattling Frog	Least Concern	
Phrynobatrachidae	Phrynobatrachus	natalensis	Snoring Puddle Frog	Least Concern	
Ptychadenidae	Ptychadena	porosissima	Striped Grass Frog	Least Concern	
Pyxicephalidae	Amietia	delalandii	Delalande's River Frog	Least Concern	Yes
Pyxicephalidae	Cacosternum	boettgeri	Common Caco	Least Concern	
Pyxicephalidae	Pyxicephalus	adspersus	Giant Bull Frog	Near Threatened	



Family	Genus	Species	Common Name	Red List Category	Atlas Region Endemic
Pyxicephalidae	Strongylopus	fasciatus	Striped Stream Frog	Least Concern	
Pyxicephalidae	Tomopterna	cryptotis	Tremelo Sand Frog	Least Concern	
Pyxicephalidae	Tomopterna	natalensis	Natal Sand Frog	Least Concern	

7.4.1.7 Chapter G: Surface water

The following information was obtained from:

- *Eskom Duvha Power Station Wetland Delineation Report, dated 2020 by Kimpopax (Pty) Ltd.*
- *Wetland Biodiversity Assessment of Reinstating the Low-Level Dam Spillway, Compiled by Limosella Consulting, dated June 2025.*

The site area is in B11G quaternary catchment of the Olifants WMA as shown on Figure 22. The major rivers of the Olifants WMA include Elands, Wilge, Steelpoort, Olifants and Letaba rivers. The Olifants Catchment covers about 54 570 km² and is subdivided into 9 secondary catchments. The total mean annual runoff is approximately 2400 million cubic metres per year. The Olifants River and some of its tributaries, notably the Klein Olifants River, Elands River, Wilge River and Bronkhorstspuit, rise in the Highveld grasslands.

The upper reaches of the Olifants River Catchment are characterised mainly by mining, agricultural and conservation activities. Over-grazing and highly erodible soils result in such severe erosion, in parts of the middle section, that after heavy rains the Olifants River has a red-brown colour from all the suspended sediments.

Thirty large dams in the Olifants River Catchment include the Witbank Dam, Renosterkop Dam, Rust de Winter Dam, Blyderivierspoort Dam, Loskop Dam, Middelburg Dam, Ohrigstad Dam, Arabie Dam and the Phalaborwa Barrage. In addition, many smaller dams in this catchment, have a considerable combined capacity. The Olifants River meanders past the foot of the Strydpoort Mountains and through the Drakensberg, descending over the escarpment. The Steelpoort and Blyde tributaries, and others, join the Olifants. River before it enters the Kruger National Park and neighbouring private game reserves. Crossing the Mozambique border, the Olifants River flows into the Dam³.

³ https://www.dws.gov.za/iwqs/rhp/state_of_rivers/state_of_crocsabieolif_01/olif_eco.html



The proposed activities are within an artificial seepage wetland and approximately 95 m southwest of the artificial wetland. The proposed temporary laydown area is located 75 and 93 m from the artificial wetlands as illustrated in Figure 21 below.

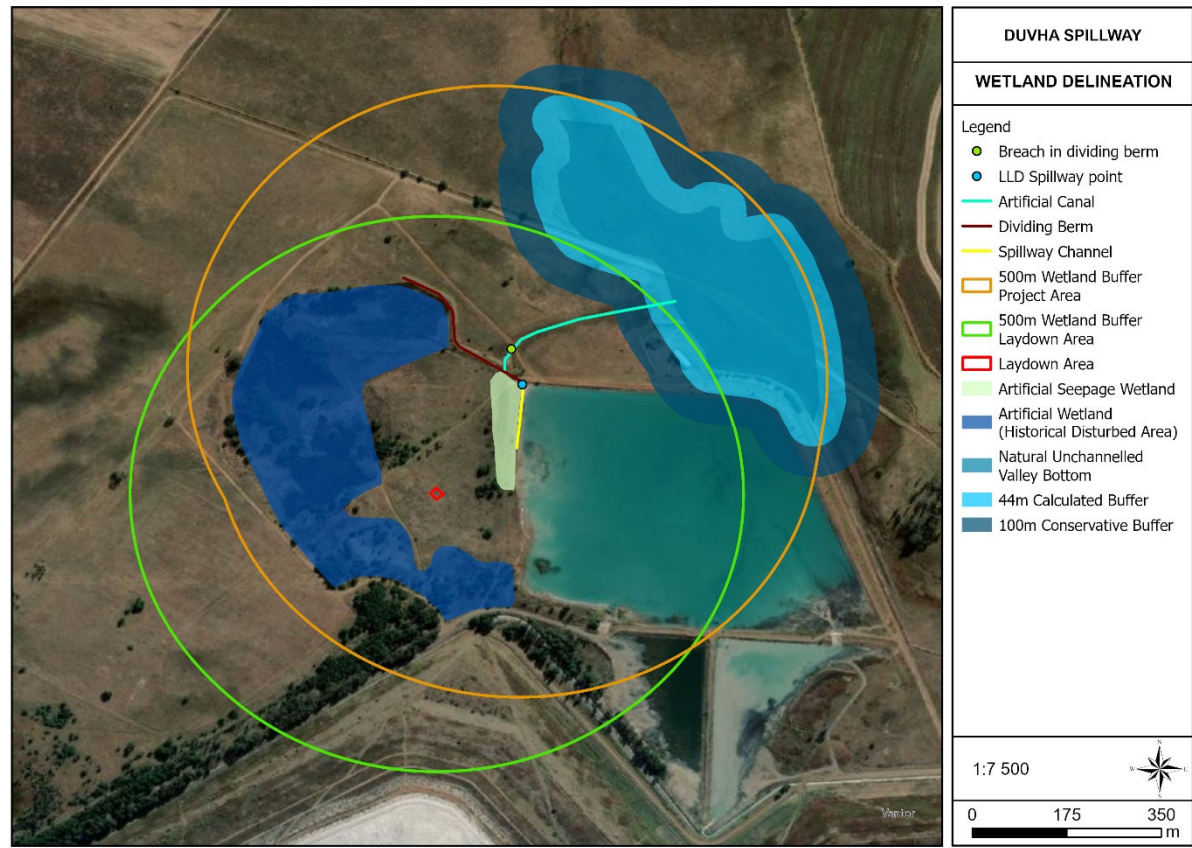


Figure 21: Wetland Delineation Map (Source: Reinstating the Low-Level Dam Spillway Wetland Biodiversity Assessment, 2025)



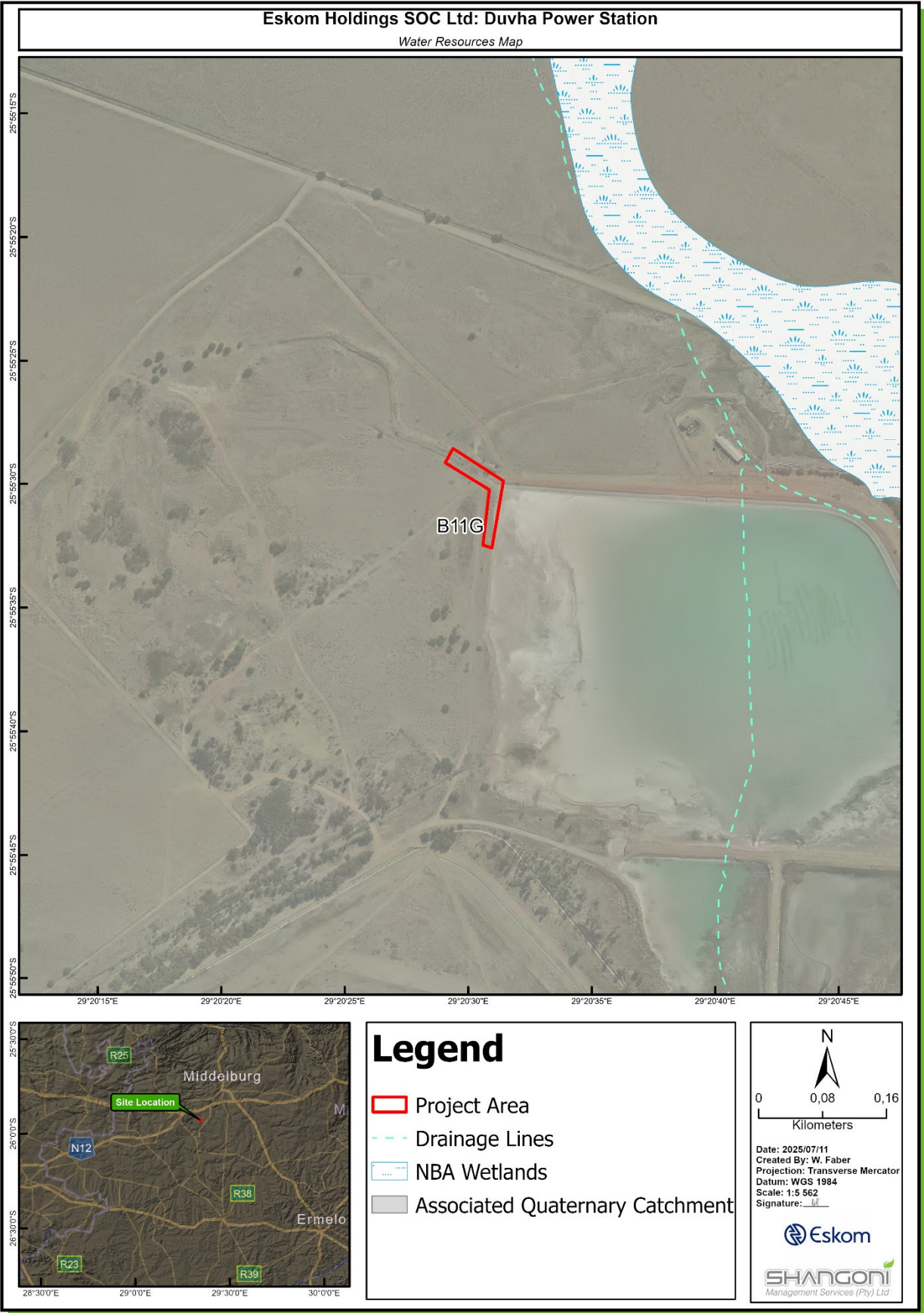


Figure 22: Water Resource Map



7.4.1.8 Chapter H: Groundwater

The following information was obtained from:

- *Groundwater Resource Assessment Phase II. Hydrogeological Map Series*, compiled by Department of Water and Sanitation (DWS), dated 2010.
- *Duvha Power Station Ash dam, raw and ash water dams seepage interception drains in Mpumalanga province Basic Assessment Report*, compiled by Nemai Consulting, dated 2019.

According to the Department of Water and Sanitation ("DWS") Aquifer Classification of South Africa map, the area is classified as a 'minor aquifer' zone as shown in Figure 23 below. Groundwater occurrence is largely controlled by the degree of weathering and fracturing of the rock formations, especially along lineaments and fault zones. Localised weathered zones may act as shallow aquifers with variable permeability and storage capacity, while unweathered bedrock typically exhibits low primary porosity.

The site area receives episodic recharge from rainfall events, overflow from the LLD, stormwater channels, and potential seepage through earth materials surrounding the dam embankments. This may result in temporary saturation of the shallow vadose zone and even localised mounding of the groundwater table, particularly during the rainy season.

The groundwater quality in this area is influenced by a combination of geological, hydrological and anthropogenic factors. According to the Duvha Power Station Ash dam, raw and ash water dams seepage interception drains in Mpumalanga province Basic Assessment Report, compiled by Nemai Consulting, dated 2019 and Duvha Power Station Water Use Licence (Licence No. 27/2/1/C211/1/1), water quality parameters such as electrical conductivity (EC) range from 70 to 150 mS/m, with occasional spikes near infrastructures due to historical coal combustion waste disposal and surface water impoundments. The pH is generally slightly acidic to neutral, and there may be elevated concentrations of sulphates, chlorides, and metals, which is typical of regions affected by ash leachate seepage.

The proposed project is unlikely to pose significant risks to the regional groundwater regime due to the shallow and limited nature of the aquifer, however, mitigation measures must be implemented.



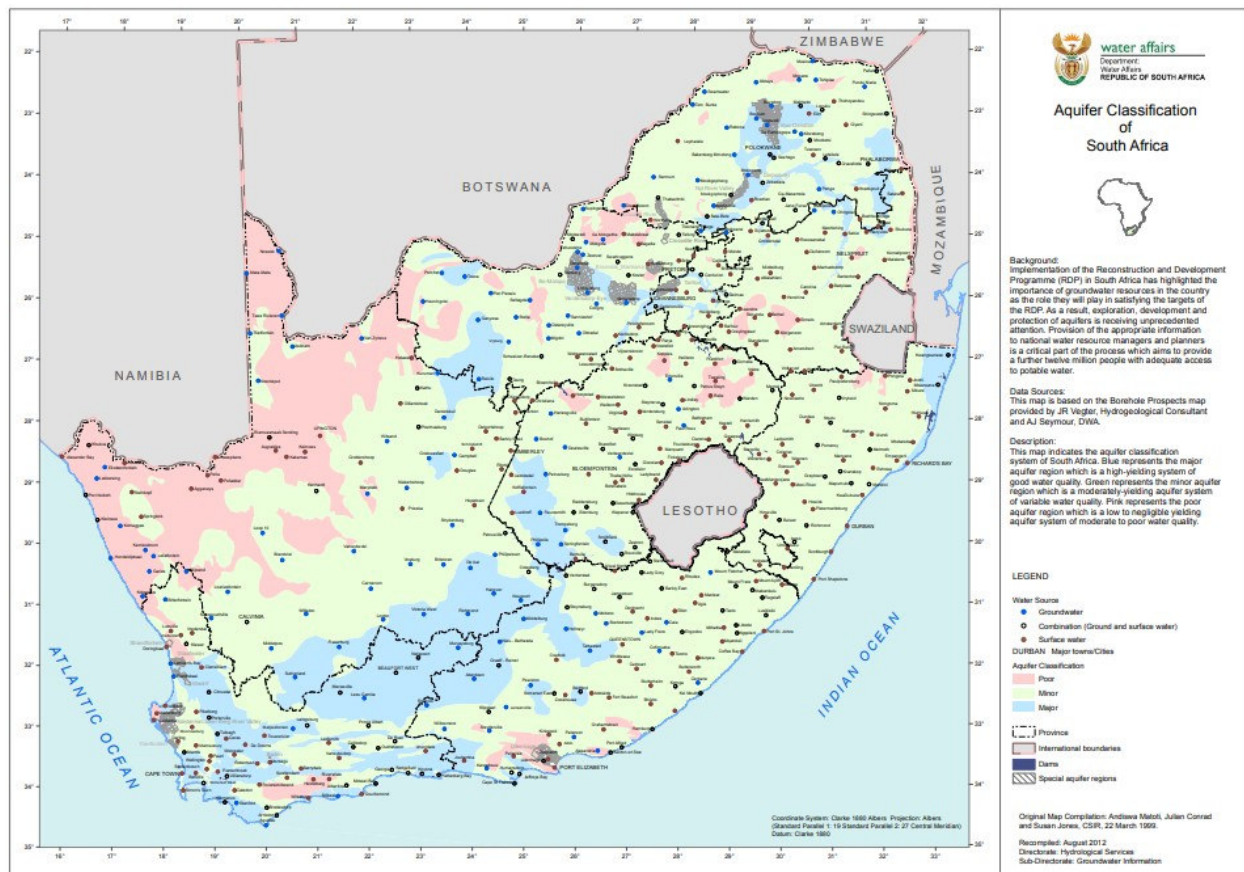


Figure 23: DWS Aquifer Classification Map

7.4.1.9 Chapter I: Air Quality

The following information was obtained from:

- *Highveld Priority Area Air Quality Management Plan (HPA AQMP)*, compiled by Department of Environmental Affairs (DEA), dated 2011.
- *Baseline Characterisation of the Ambient Air Quality and Emission Inventory of the HPA. Report* compiled for the Department of Environmental Affairs, dated, 2016.

Duvha Power Station is located within the Mpumalanga Highveld, which is one of South Africa's most environmentally sensitive airsheds due to the concentration of coal-fired power stations, coal mining operations, industrial activities, and unpaved road transport. This region has been formally declared a Highveld Priority Area ("HPA") in terms of Section 18 of the National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004), owing to persistent exceedances of National Ambient Air Quality Standards ("NAAQS") for pollutants such as particulate matter (PM_{10} and $PM_{2.5}$), sulphur dioxide (SO_2), and nitrogen dioxide (NO_2) (DEA, 2011).

Duvha Power Station, operated by Eskom, is a coal-fired base load power station with six (6) generating units and a total generation capacity of 3,600 MW. The station is a significant contributor to local and regional air emissions, particularly SO_2 and PM, given its reliance on pulverised coal combustion and

dry ash handling systems. The emissions from Duvha and other nearby stations, including Kendal and Kriel, collectively impact the regional ambient air quality, frequently pushing pollutant concentrations above health-based thresholds, especially during winter months when atmospheric inversion layers are more prevalent (Scorgie et al., 2016).

Duvha was identified as one of the key point sources of air pollution within the HPA. The South African Air Quality Information System (“SAAQIS”), assist to maintain ambient air quality monitoring stations in eMalahleni, Middelburg, and Ogies. Figure 24 below shows one of eMalahleni monitoring station indicating with its air quality index on Figure 25 indicating good air quality. This data was recorded on 27 July 2025.

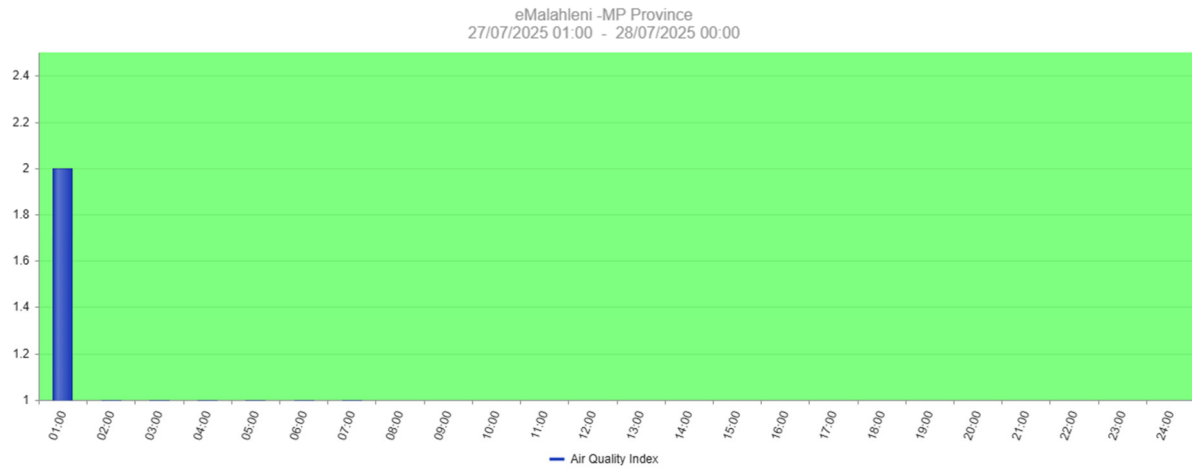


Figure 24: eMalahleni, Mpumalanga Province Air quality Monitoring Station graph(Source: SAAQIS, 2025)

When the AQI is...	At-risk individuals such as children, the elderly and persons with health concerns should...	The general population should...
Low (Green)	Enjoy your usual outdoor activities.	Enjoy your usual outdoor activities
Moderate (Yellow)	Adults and children with lung problems, and adults with heart problems, who experience symptoms , should consider reducing strenuous physical activity, particularly outdoors.	Enjoy your usual outdoor activities
High (Orange)	Adults and children with lung problems, and adults with heart problems, should reduce strenuous physical exertion, particularly outdoors, and particularly if they experience symptoms. People with asthma may find they need to use their reliever inhaler more often. Older people should also reduce physical exertion	Anyone experiencing discomfort such as sore eyes, cough or sore throat should consider reducing activity, particularly outdoors
Very High (Red)	Adults and children with lung problems, adults with heart problems, and older people, should avoid strenuous physical activity. People with asthma may find they need to use their reliever inhaler more often	Reduce physical exertion, particularly outdoors, especially if you experience symptoms such as cough or sore throat
Hazardous (Purple)	Adults and children with lung problems, adults with heart problems, and older people, should avoid strenuous physical activity. People with asthma may find they need to use their reliever inhaler more often	Reduce physical exertion, particularly outdoors, especially if you experience symptoms such as cough or sore throat

Figure 25: eMalahleni, Mpumalanga Province Air quality Monitoring Station Air Quality Index (Source: SAAQIS, 2025)



7.4.1.10 Chapter J: Noise

Duvha Power Station is situated approximately 15 km east of eMalahleni within a heavily industrialised and mining-intensive zone of Mpumalanga. The surrounding acoustic environment is therefore influenced by a baseline of elevated anthropogenic noise levels, largely dominated by activities such as coal-fired power generation, open-cast and underground mining, bulk material handling, haul truck movements, and rail transport. According to the South African National Standard (SANS) 10103:2008 on acceptable ambient sound levels, areas characterised by industrial and mining operations are typically classified as having "very noisy" or "noisy" outdoor acoustic climates, with expected baseline ambient noise levels often exceeding 70 dBA (daytime) in proximity to active infrastructure.

While Duvha Power Station is a significant fixed source of continuous operational noise—emanating from boilers, cooling towers, fans, conveyor belts, and auxiliary plant—these sounds are constant and well-established in the area. The proposed project will only introduce temporary and localised construction noise, primarily from earthmoving equipment, concrete batching, haulage, and general site preparation. These activities are expected to occur during daylight hours and are unlikely to significantly elevate existing ambient noise levels beyond current industrial norms. In addition, there are no residential or noise-sensitive receptors that occurs immediately adjacent to the proposed site area and it is dominated by Eskom infrastructures. The receiving environment is already acoustically modified.

7.4.1.11 Chapter K: Archaeology and Cultural History

The following information was obtained from *Duvha Power Station Ash dam, raw and ash water dams seepage interception drains in Mpumalanga province Basic Assessment Report*, compiled by Nemai Consulting, dated 2019.

Originally (1880-1914) the early residents of Witbank area were mainly stock farmers as there was no market for agricultural produce. Crops were restricted to the needs of the local families. Early travellers in the area, such as Thomas Baines, as far back as 1872 mentioned the coal used by local residents as fuel. Evidence has also been found that at first the African people, and later the Voortrekkers, mined coal from the outcrop, especially in the riverbeds, and transported it by ox-wagon to the Witwatersrand.

Actual systematic mining at Witbank only started in 1896 when Samuel Stanford, together with the Neumann Group, established the company Witbank Colliery Limited, and sank the first shaft on the farm Witbank. Earlier the farm was generally known as Swartbosch although the official name was Leraatsfontein. It was given the name Witbank because it was not so cumbersome and because of the large quartz rock which, in the words of Thomas Baines, "loomed like a wagon tent in the distance." The town Witbank was laid out in 1903 by Witbank Colliery Limited and in the same year Samuel Stanford erected the first wood and iron building, consisting of a shop and hotel. Witbank Colliery Limited controlled the town until 9 April 1906 when a health committee was appointed. On 13 May 1910 a village council was elected and on the 8 November 1914 the town was granted municipal status. The mining of coal did not initially result in a population increase. But with the advent of the railway line



between Pretoria and Lourenco Marques (now Maputo) the mining industry was firmly placed on an economic basis, and thereafter the population increased considerably⁴.

During the seventies the demand for electricity in South Africa increased at an average of nine percent per year. In response to this demand, ESKOM had to virtually double its generating capacity. Against this background, construction of Duvha power station started in November 1975 on a farm called Speekfontein just outside Witbank. Duvha was one of South Africa's largest fossil fired power stations, and was often referred to as the "flagship" of the ESKOM fleet. The combined generating capacity of the six units is 3 600 MW, enough power to supply a city three times the size of Johannesburg with electricity. The availability of coal and water makes this area ideally suited for the establishment of power stations. When Duvha was completed the smoke-stacks were the tallest freestanding concrete structures in the Southern Hemisphere each 300 metres tall (July 1992). Unit 1 went into commercial service on 18 August 1980, Unit 2 on 1 October 1980, Unit 3 on 16 September 1981, Unit 4 on 1 July 1982, Unit 5 on 31 March 1983 and Unit 6 on 22 February 1984⁵.

During the site visit, no heritage sites were identified on the proposed site area.

7.4.1.12 Chapter L: Sensitive Landscape

The following information was abstracted from the *Reinstating the Low-Level Dam Spillway Wetland Biodiversity Assessment Report*, Compiled by Limosella Consulting, dated June 2025.

Description of the Receiving environment

A review of available literature and spatial data formed the basis of a characterisation of the biophysical environment in its theoretically undisturbed state and consequently an analysis of the degree of impact to the ecology of the study site in its current state. Table 16 below provides a summary of the important aspects.

⁴ <http://global.britannica.com/EBchecked/topic/646020/Witbank>

⁵ <http://www.eskom.co.za/sites/heritage/Pages/Duvha.aspx>



Table 16: A summary of relevant site information obtained from a review of available spatial data (Limosella, June 2025)

National Screening Tool (https://screening.environment.gov.za/screening-tool) - Aquatic	
	The spillway is located on an area classified as having Low Aquatic Sensitivity, however, the wetlands in the north and east is classified as having Very High Aquatic Sensitivity.
Hydrology and National Freshwater Ecosystem Priority Area (“NFEPA”) (2011) Database	
Important Rivers (Figure 27) National Freshwater Ecosystem Priority Areas (NFEPA) (Driver, et al., 2012) and National Biodiversity Assessment (NBA) (SANBI, 2018) Wetlands	The primary watercourse feature is the Low-Level Dam (LLD), an artificial off-channel ash return dam. Although mapped as a wetland in the NFEPA and NBA2018 datasets, it does not represent a natural wetland system but rather an engineered containment structure with wetland-like characteristics. Downstream of the LLD, the spillway channel connects to a valley-bottom wetland associated with a non-perennial river. This wetland drains into the Witbank Dam. - NBA (2018) list the watercourses as Vulnerable. - NFEPA (2011) list the watercourses as Vulnerable.
Quaternary Catchment	B11G
WMA (Government Gazette, 16 September 2016)	#2 - Olifants: Major rivers include Elands, Wilge, Steelpoort, Olifants and Letaba Rivers
Wetland Ecosystem Type (Ollis, et al., 2013)	Mesic Highveld Grassland Group 4 Ecosystem Threat Status: Critically Endangered Protection Level: Not Protected
Eco-Region Level 2 (DWS, 2024)	Highveld 11.02
Present Ecological State (PES), Ecological Importance (EI) and Ecological Sensitivity (ES) Model (DWA, 2024)	The Present Ecological State (PES), Ecological Importance (EI) and Ecological Sensitivity (ES) were determined per Sub-Quaternary Reaches (SQR) for Secondary Catchments in South Africa. The SQRs of the study site is: 1155(PES=D)(EI=High)(ES=High)
Surface Strategic Water Source (GSWS) (Driver, et al., 2014)	Not located on a SWSA



National Screening Tool (https://screening.environment.gov.za/screening-tool) - Aquatic	
General Description (Mucina & Rutherford, 2006)	
Broad Vegetation Units (Figure 26)	Gm 12 - Eastern Highveld Grassland
Topography	Slightly to moderately undulating plains, including some low hills and pan depressions.
Conservation Status	Endangered
Climate	Summer rainfall with very dry winters. MAP between about 600 and 700 mm. Frost fairly frequent in winter. Strongly seasonal summer rainfall, with very dry winters. MAP 650–900 mm (overall average: 726 mm), MAP relatively uniform across most of this unit, but increases significantly in the extreme southeast. The coefficient of variation in MAP is 25% across most of the unit, but drops to 21% in the east and southeast. Incidence of frost from 13–42 days, but higher at higher elevations.
Geology and Soil	
Geology	Rhyolite is a fine-grained, silica-rich volcanic rock that is typically light in colour. It is the extrusive equivalent of granite and is formed from high-viscosity lava that cools quickly at or near the Earth's surface. Rhyolite often contains small crystals of quartz and feldspar and may exhibit banding or flow textures due to its viscous nature. In terms of hydrology, rhyolite tends to be impermeable, contributing to surface runoff and limited infiltration, which can promote the formation of wetlands or seeps downslope.
Soil (ENPAT, 2024)	Ba4 - Plinthic catena: dystrophic and/or mesotrophic; red soils widespread, upland duplex and marginal soils rare.
Biodiversity Sector Plan (Figure 27)	
Critical Aquatic Biodiversity Areas (Figure 28)	According to the Mpumalanga Biodiversity Sector Plan (MBSP), The proposed construction footprint (spillway and weir) is also surrounded by Moderately Modified and Heavily Modified areas associated with historical land use, ash disposal, and infrastructure. While the development is largely constrained to disturbed zones, care must be taken to avoid further encroachment into the intact CBA area, and any unavoidable impacts should be accompanied by appropriate mitigation measures.





Figure 26: Vegetation of the study site (Limosella, June 2025)

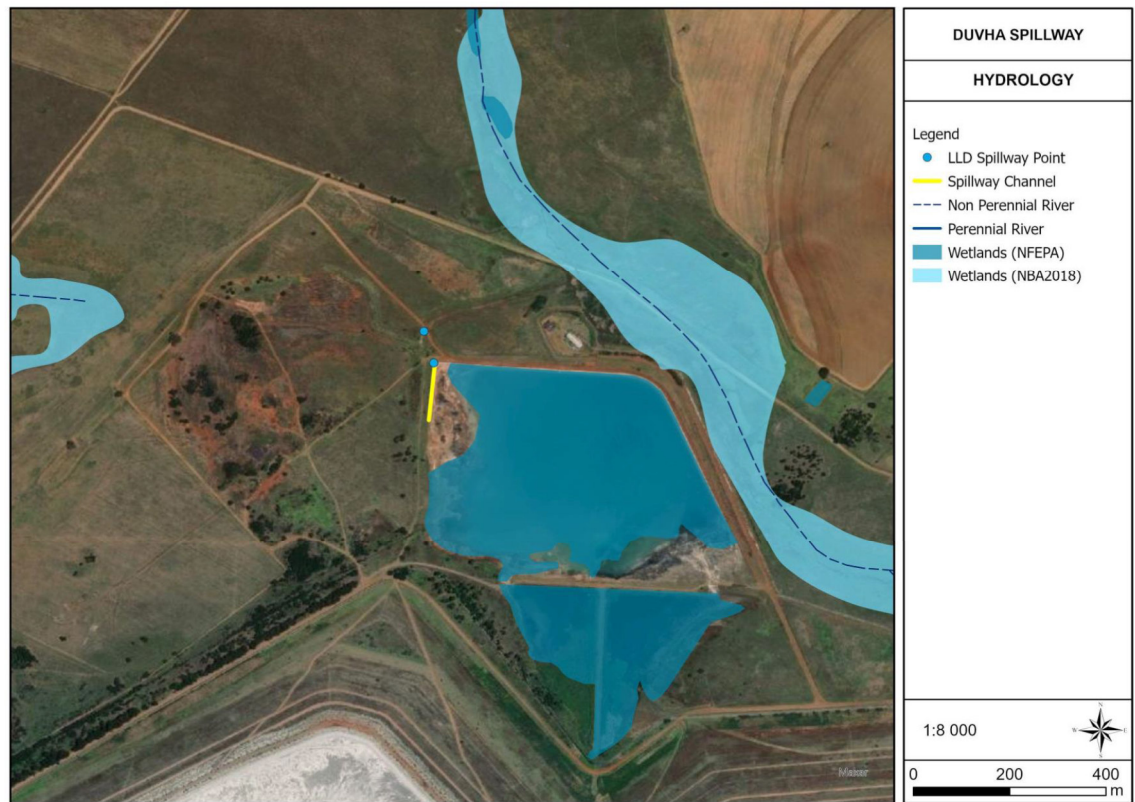


Figure 27: Regional hydrological relative to the study site (Limosella, June 2025)





Figure 28: Critical Biodiversity Areas relevant to the study site (Limosella, June 2025)

Wetland/ Riparian delineation

The Classification System for Wetlands and Other Aquatic Ecosystems (Ollis, et al., 2013) in South Africa is a hierarchical framework designed to standardise the identification and categorisation of aquatic ecosystems. Table 17 provides a detailed classification of the watercourse based on the six-tiered framework for aquatic ecosystem description. This framework considers biophysical, geomorphological, and hydrological factors, as well as specific site descriptors. The classification is essential for understanding the ecological character, functioning, and sensitivity of the system, and it informs appropriate management and mitigation measures related to the proposed dam wall rehabilitation activities.

Table 17: Classification System for Wetlands and Other Aquatic Ecosystems in South Africa (Ollis, et al., 2013, Limosella, 2025)

Level	Name	Description	Purpose
1	System	Broadly categorises ecosystems as marine, estuarine, inland, or artificial systems.	Defines the overarching environment where the aquatic ecosystem is located.
2	Regional Setting	Places the system within a bioregional context (e.g.,	Provides insight into the climatic and geographical



Level	Name	Description	Purpose
		ecoregions, climatic zones).	influences shaping the ecosystem.
3	Landscape Unit	Defines the geomorphological context (e.g., valleys, plateaus, floodplains).	Establishes how the landscape influences hydrology and ecosystem structure.
4	Hydrogeomorphic (HGM) Unit	Categorises ecosystems based on hydrology, geomorphology, and water sources.	Differentiates systems like rivers, floodplains, depressions, or seepage wetlands.
5	Hydrological Regime	Focuses on the hydrology, including: - 5A: Inundation Period - Frequency and duration of surface water presence. - 5B: Saturation Period - Duration of soil saturation without surface water.	Provides detailed understanding of water movement and its influence on ecosystems.
6	Descriptors	Adds specific characteristics, such as: - Natural vs. Artificial systems - Salinity, pH, substratum type, vegetation cover, and geology.	Offers detailed descriptions of physical and ecological attributes for site-specific management.

The watercourse is classified (Ollis, et al., 2013) from level 1 to 4 (Table 18).

Table 18: Summary of the result of the study area with application of Levels 1 to 4 of the Classification System for Wetlands and Other Aquatic Ecosystems in South Africa (Ollis, et al., 2013)

Level 1	Level 2	Level 3	Level 4: HGM Unit
System	NFEPA Wetland Vegetation Group	Landscape Unit	Level 4A
Inland	Mesic Highveld Grassland Group 4	Slope and Valley Bottom	Artificial wetlands and Unchannelled Valley Bottom

Difficult to delineate wetlands

The guidance provided by Job (2009) is directly relevant to the current study area (Table 19), as the spillway surroundings include several artificial wetland-like features, namely the seepage wetland, the



canal leading to the natural wetland, and the artificial wetland overlying the historical diggings. These areas display typical wetland indicators such as hydrophytic vegetation, saturated soils, and signs of surface water retention, yet they are clearly non-natural in origin, having formed due to dam seepage, excavation, or engineered water diversion.

Table 19: List of types of sites that are difficult to delineate (Jobs, 2009; Limosella, June 2025)

Type of “difficult site”	Approach	Relevance to the Study Site
Some or all, wetland indicators are present but is a non-natural wetland (e.g. some dams, road islands)	- Decide on the relative permanence of the change and whether the area can now be said to be functioning as a wetland. - Time field observations during the wet season, when natural hydrology is at its peak, to help to differentiate between naturally occurring versus human-induced wetland. - Decide appropriate policy/management i.e. can certainly land uses be allowed due to “low” wetland functional value, or does the wetland perform key functions despite being artificial.	- The relative permanence of these artificial wetlands suggests that although they now function as wetland systems, their origin and hydrology are entirely anthropogenic. They lack natural catchment processes and geomorphic setting. - Field observations, including current site verification, support the conclusion that these features formed post-construction and are not present in historical imagery (e.g., 1962). Therefore, their classification as natural wetlands is not supported. - From a management and policy perspective, these artificial wetlands are considered to have low ecological functional value. While they may perform limited roles such as water storage or vegetation support, they do not warrant the same level of regulatory protection as natural wetlands. Land use and infrastructure reinstatement within or near these features can proceed with appropriate mitigation, without invoking formal wetland buffers or DWS 500 m regulated areas.

Buffer Zones

Buffer zones are typically applied to natural wetlands and riparian areas to safeguard ecological functioning and reduce the risk of disturbance from adjacent activities. In this case, no buffer zones have been applied to the artificial wetlands identified near the LLD spillway, including the seepage wetland, canal, and the wetland overlying the historical diggings. These features are all of anthropogenic origin and do not qualify for formal buffer delineation under wetland policy guidelines.



For the natural unchanneled valley-bottom wetland located approximately 320 m north of the spillway, a buffer zone was calculated using the (Macfarlane & Bredin, 2017) methodology, In accordance with the requirements of GN509 of 2016 (and the revised GN4167 of 2022), yielding a site-specific buffer of 44 m. However, to ensure a conservative approach, a 100 m buffer was applied. The proposed construction activities occur well outside this buffer, and as discussed in the results section, no direct or indirect impacts are anticipated to the natural wetland.

Regarding the DWS 500 m (Figure 29) regulated area, this radius is generally applied around natural wetlands to determine the need for a Water Use Licence in terms of Section 21(c) and (i) of the National Water Act. In this case, no natural wetlands occur within or adjacent to the LLD spillway footprint. Since the nearest natural wetland is more than 300 m away and the other water features are artificial, it is not appropriate or feasible to establish a 500 m regulated area around the project footprint for the purpose of licensing. The assessment thus focuses on activities directly associated with the spillway and dam wall, where regulatory triggers are based on proximity to and alteration of artificial and engineered watercourses.

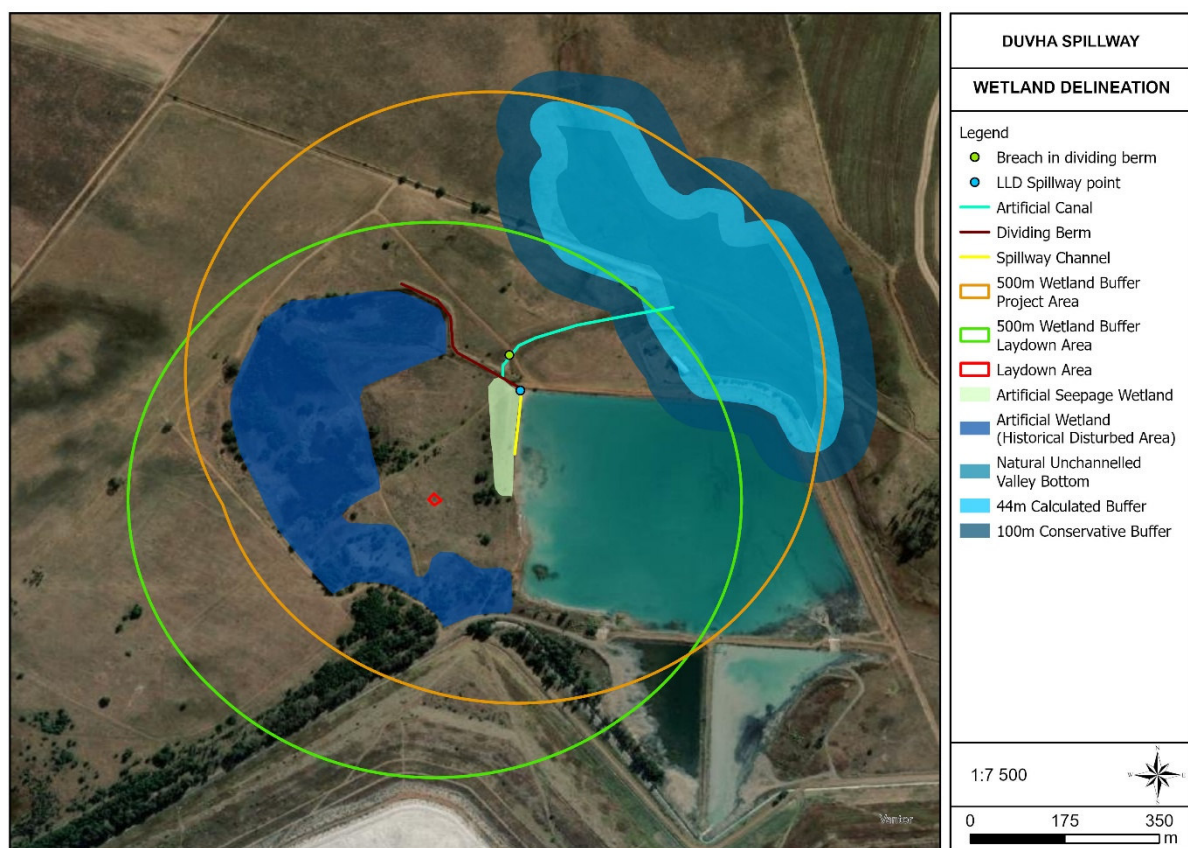


Figure 29: The watercourse delineation with calculated buffer zones (Limosella, June 2025)
Vegetation and Soil

Artificial Seepage Wetland:

The artificial seepage wetland adjacent to the LLD spillway is characterised by soils that are persistently moist but do not display redoximorphic features, such as mottling or greying, which are typical indicators



of prolonged anaerobic conditions in natural wetlands. Instead, the soils are uniformly red (Figure 30), suggesting a well-drained origin not typically associated with naturally hydromorphic conditions.

Despite the soil limitations, the vegetation is distinctly hydrophytic, with species such as *Juncus rigidus* dominating the permanent (central) zone of the wetland. The edge and temporary zones support a mix of facultative and upland species, including *Cyperus longus*, *Andropogon eucomus*, *Andropogon huilensis*, *Eragrostis gummiflua*, *Haplocarpha scaposa*, *Imperata cylindrica*, *Helichrysum mundtii*, and *Sporobolus africanus*. These species indicate temporary to seasonal saturation and are consistent with wetland fringe vegetation.

Several Alien invasive species (“AIS”) were recorded both within and adjacent to the wetland. Invasive woody species such as *Acacia mearnsii* and *Eucalyptus* sp. were noted throughout the wetland and surrounding areas. Other AIS included *Pennisetum clandestinum* (kikuyu), *Datura ferox*, and scattered individuals in adjacent upland areas. Terrestrial edge species observed outside the wetland included *Asclepias fruticosa* and *Seriphium plumosum*, indicating a transition into more typical grassland or old-field vegetation types. Figure 30 gives a general overview of the vegetation and substrate composition.



Figure 30: General Vegetation and substrate composition of the artificial seepage wetland (Limosella, June 2025)



Artificial Wetland – Previously Disturbed Area:

The artificial wetland situated within the area of historical diggings is characterised by permanent standing water, with depths sufficient to submerge woody AIS such as *Eucalyptus* spp. and *Acacia mearnsii* (Figure 31). These species, which are not naturally adapted to prolonged inundation, are growing within the central zone of the wetland, indicating that the current water regime is likely more recent and not aligned with their ecological preferences. Despite this, hydrophytic species such as *Persicaria lapathifolia* thrive in these deeper areas, suggesting colonisation by wetland-adapted flora.

In the shallower margins, species such as *Phragmites australis* dominate, forming dense stands. The edges of the wetland include additional AIS such as *Cortaderia selloana* (pampas grass), which is known for its aggressive spread and habitat alteration. Other wetland species present in this artificial system are consistent with those found in the adjacent seepage wetland, including facultative hydrophytes that tolerate seasonal saturation.

The presence of standing water, wetland vegetation, and invasive species confirms that the area has developed wetland characteristics due to artificial modification of hydrology, likely through excavation and water diversion. However, as with the seepage wetland, its origin is clearly anthropogenic, and its functional value is considered limited in terms of natural wetland processes or biodiversity conservation.



Figure 31: General Vegetation and substrate composition of the artificial wetland - Previously Disturbed (Limosella, June 2025)



Artificial Canal and Dividing Berm:

The artificial canal and dividing berm, including the breached area, exhibit clear signs of anthropogenic origin. The canal is straight and engineered, with banks dominated by terrestrial vegetation, including grasses and scattered AIS. Standing water was observed in both the canal and breached section during the site visit, likely the result of recent rainfall or a spill event. Hydrophytic vegetation was limited within the canal channel itself, with only sparse wetland species present until the point where the canal discharges into the natural unchanneled valley-bottom wetland. At this interface, the vegetation shifts noticeably, with indigenous wetland species such as *Typha capensis* becoming dominant.

The dividing berm was vegetated primarily by grasses and invasive species, similar in composition to the adjacent seepage wetland, and showed signs of trampling by livestock or wildlife, particularly in areas where water had pooled (Figure 32). The soil within the canal channel was dark red and clay-rich, consistent with the soils observed in the artificial seepage wetland and lacked redoximorphic indicators typically associated with prolonged natural saturation.

These features further support the classification of the canal and berm as artificial and disturbed, functioning primarily as flow diversion structures rather than natural wetland systems. Their ecological integrity is low, although connectivity to the downstream natural wetland warrants attention for broader management purposes.



Figure 32: General Vegetation and substrate composition of the artificial canal and Dividing berm (Limosella, June 2025)

A summary of the dominant vegetation and soil characteristics for a level 6 assessment are described in Table 20 below.

Table 20: Summary of the Level 6 dominant soil and vegetation characteristics of the wetlands on the study site

6A: Natural vs Artificial	Dominant Descriptor Categories (Level 6)		
	Vegetation Cover, Form and Status		
	6A: Veg Cover	6B, C & D Primary Form	6E: Veg Conditions
Artificial	Vegetated	AIS and Grasses	Largely AIS

Watercourse functional assessment

In order to reflect a comprehensive suite of assessments appropriate for the watercourse type and characteristics, the assessments outlined on Table 21 were undertaken (Given the artificial nature of the wetland features associated with the LLD spillway, namely the seepage wetland, the historical diggings area, the artificial canal, and the dividing berm, a full WET-Health assessment is not appropriate. These systems have no natural reference condition, as they originated from anthropogenic activities such as dam seepage, excavation, or flow diversion. Applying WET-Health in this context would yield artificially low Present Ecological State “(PES)” scores and misrepresent their functional capacity.

Instead, the WET-EcoServices tool (Kotze et al., 2020) was applied to evaluate the combined functional value of these artificial wetlands. This approach focuses on the ecosystem services currently provided—such as flood attenuation, sediment trapping, and limited habitat provision—regardless of the wetland's origin. Grouping the artificial areas into a single functional unit for assessment reflects their shared hydrological influence and degraded, non-natural character.

In addition to EcoServices, the Ecological Importance and Sensitivity (“EIS”) framework was used to support interpretation of management value. While these systems may not be natural, some may perform limited regulatory or supporting functions in the broader landscape and could inform land-use decisions, particularly where erosion control or water retention is evident.

The Recommended Ecological Category (“REC”) (Rountree et al., 2013), however, was not applied to these artificial systems, as it is specifically intended for natural wetlands with a defined reference state.



Applying the REC to anthropogenic systems would be inappropriate and potentially misleading. Instead, REC is only considered for the natural unchanneled valley-bottom wetland located approximately 320 m downstream of the LLD, which is of natural origin, visible in historical imagery, and ecologically intact enough to warrant formal assessment should future work include it.

Given the artificial nature of the wetland features associated with the LLD spillway, namely the seepage wetland, the historical diggings area, the artificial canal, and the dividing berm, a full WET-Health assessment is not appropriate. These systems have no natural reference condition, as they originated from anthropogenic activities such as dam seepage, excavation, or flow diversion. Applying WET-Health in this context would yield artificially low PES scores and misrepresent their functional capacity.

Instead, the WET-EcoServices tool (Kotze et al., 2020) was applied to evaluate the combined functional value of these artificial wetlands. This approach focuses on the ecosystem services currently provided—such as flood attenuation, sediment trapping, and limited habitat provision—regardless of the wetland's origin. Grouping the artificial areas into a single functional unit for assessment reflects their shared hydrological influence and degraded, non-natural character.

In addition to EcoServices, the EIS framework was used to support interpretation of management value. While these systems may not be natural, some may perform limited regulatory or supporting functions in the broader landscape and could inform land-use decisions, particularly where erosion control or water retention is evident.

Table 21: Assessments undertaken in the current assessment

Watercourse Type	Assessment Method
Artificial Wetland Areas	- Ecosystem Services: WetEcosystem Services V2 (ES) (Kotze et al., 2020). - Ecological Importance and Sensitivity (EIS) - (Kotze et al., 2020).

Summary of findings:

Table 22 is a summary of the functional assessment for the wetlands within the study site.

Table 22: Summary of wetland functionality

Classification	Artificial Wetland Areas
WetEcoServices	Very Low for all metrics
EIS (Kotze et al., 2020)	Low Category - Wetlands that are not ecologically important and sensitive at any scale. The biodiversity of these wetlands is ubiquitous and not sensitive to flow and habitat



	modifications. They play an insignificant role in moderating the quantity and quality of water in major rivers.
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7.4.1.13 Chapter M: Visual aspects

The proposed project is not expected to have any visual impacts in the long-term. Short term impacts during the constructional phase are expected where construction of the LLD spillway, concrete weir structure and LLD crest raising is expected. However, all activities will be guided by the EMPr, reference may be made to section B below for the EMPr.

7.4.1.14 Chapter N: Regional socio-economic structure

The following information was obtained from:

- Emalahleni Local Municipality Integrated Development Plan, 2022/2023 – 2026/2027.

Emalahleni Municipal area, which means the “place of coal”, consists inter alia of the towns of eMalahleni, Kwa-Guqa, Ga-Nala and Ogies. The town of eMalahleni was established in 1903. It was named after a ridge of white rock located near the present railway station. In the early years, this ridge was a halting place for transport wagons and a trading post. Emalahleni Local Municipality (“ELM”) is located within the Mpumalanga Province and is situated in the jurisdictional area of the Nkangala District Municipality.

Population

According to Statistics South Africa (Community Survey 2016), Emalahleni’s population has increased from 395 466 people recorded in the Census of 2011 to 455 228 people recorded in 2016. According to the CSIR Green Book estimated population in Emalahleni Municipality is 553 562 in 2021 and will be 648 163 in 2030. The 2021 estimated population represent Emalahleni Municipality as the second highly populated municipality in Mpumalanga Province after City of Mbombela; from the third position. From 2011 to 2016 the population of Emalahleni increased by 59 762 and from 2016 to 2021 by 98 334. Estimated Population of Emalahleni represents 33,8 % of the population of Nkangala District Municipality in 2021 and it estimated that it will be 34,7% in 2030.

eMalahleni is composed of all racial groups with 391,982 Black African, which shows an increase since 2011; Coloured 5 450; Indian or Asian 3 762 and White 54 033. The tables indicate changes of population groups since 2011 and it shows an increase in both African/Black and Indian/Asian and



decrease in both Coloured and White population since 2011 as shown on

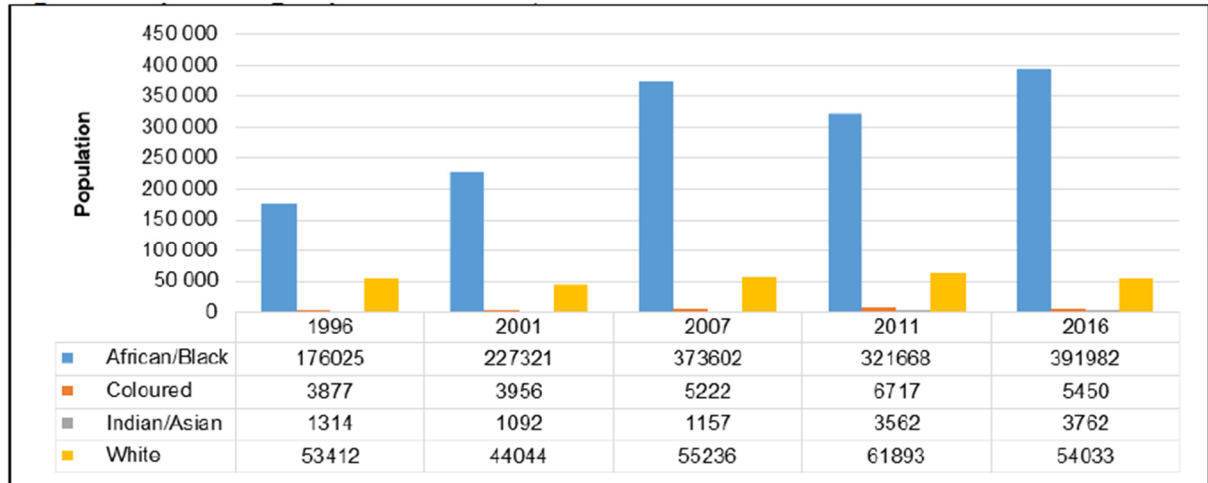


Figure 33: Racial populations

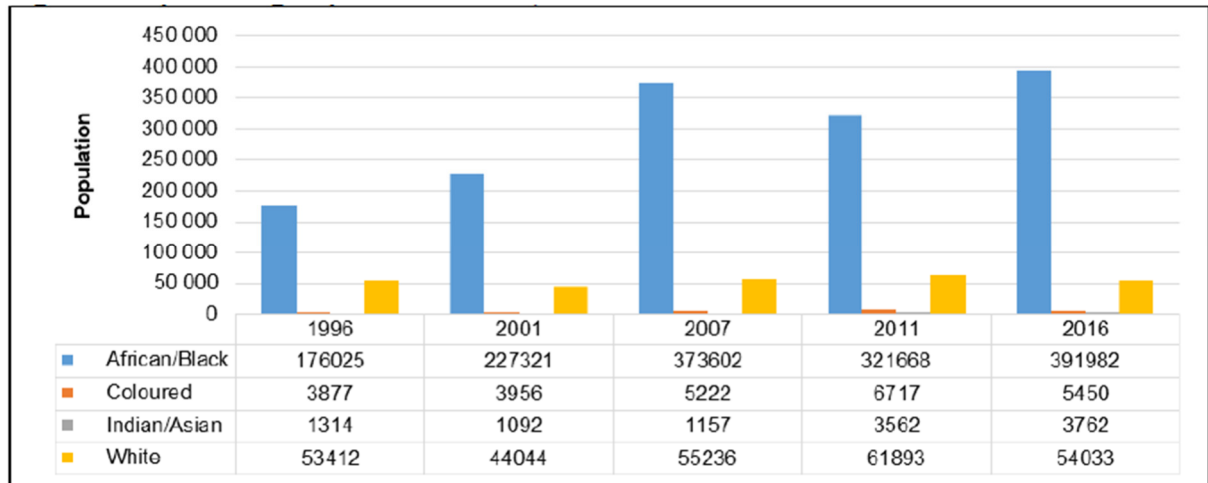


Figure 33: Population groups of eMalahleni, 2011-2016 (Source: Emalahleni Local Municipality IDP, 2022/2023 – 2026/2027)

Education

Table 23 below indicates statistics on educational achievements since 1996 to 2016 according to Statistics South Africa and Mpumalanga Province Department of Education. eMalahleni percentage of people with no schooling declining from 14% in 1996 to 5% in 2016.

Table 23: Educational achievements in Emalahleni, 1996-2016

Year	1996	2001	2007	2011	2016
No schooling	14%	14%	8%	6%	5%
Primary	20%	20%	20%	13%	10%



Year	1996	2001	2007	2011	2016
Grade 8 – grade 11	35%	33%	40%	33%	34%
Less than matric & certificate/Diploma	3%	1%	5%	1%	1%
Matric only	18%	24%	19%	31%	37%
NTC1/N1/NIC/V Level2-N6/NTC6				5%	6%
Post matric	10%	8%	8%	10%	8%

In 2021 Emalahleni Municipality registered 79,6 % pass rate on matric. Even though the matric pass rate is high and satisfying, it is worrying that pass rate with admission to degree studies is low; 31,9% in 2020 and 34,5% in 2021 for Emalahleni. Functional literacy is 90, 9%, which is the highest in Nkangala District Municipality and the whole province.

Unemployment

The unemployment rate of eMalahleni decreased from 27.3% in 2011 to 25, 3% in 2015 and 26.6% in 2016. eMalahleni's unemployment rate was the 5th lowest among all the municipal areas of Mpumalanga.

In terms of the recent SERO Report unemployment is 28, 2%; which is 1% below the national unemployment, which is 29%. In 2018 unemployment rate for females 34.8% and that of males (23.9%) as per the latest Municipal Profile Report. Youth unemployment rate according to the Census figure was 36.0% with especially very high youth unemployment rate of females. Unemployment within females is assumed to be as a result of low level of education and inadequate skills, which impact on their employability a challenge. In terms of youth labour i.e. between ages 15-34, the rate is also decreasing from 50.2% in 2001 to 36.0% in 2011.

According the 2022 SERO Report Covid-19 pandemic changed the unemployment situation in eMalahleni; it let it to deteriorate. In 2020 expanded unemployment rate was 33,3%, that of females was 41,2 % that of youth (15-34 years) was 45,9%. In 2016 expanded unemployment rate was 31,8%, that of females 39,8% and youth 42,7 %. Estimated number of jobs lost in 2020 because of Covid-19 was 14 705. This is not surprising because of the negative growth in a number of sectors of the economy in Emalahleni except in agriculture.

Table 24 below indicates the economic growth performance at the municipality. Mining declined by - 6.7%, manufacturing -13.6%, utilities -8.3%, construction -20.7%, trade -13.3% transport -16.7%, finance -0.1 % and community services by -3.5%.



Table 24: Economic Growth

Industry	Estimate Economic Growth in 2020
Agriculture	7.6%
Mining	-6.7%
Manufacturing	-13.6%
Utilities	-8.3%
Construction	-20.7%
Trade	-13.3%
Transport	-16.7%
Finance	-0.1%
Community services	-3.5%
TOTAL	Between -8% & -9%

7.4.1.15 Chapter O: Screening tool themes

The following information was obtained from

- *Screening Report for an Environmental Authorization as required by the 2014 EIA Regulations – Reinstatement of the low-level dam spillway at Duvha Power Station*, dated 18 July 2025 compiled and generated by Shangoni: Mukovhe Nemavhola and The Department of Forestry Fisheries and the Environment (“DFFE”) respectively.

Environmental Sensitivity

According to the screening tool generated for the proposed project, various sensitivities were picked up for various themes and multiple themes were noted to having high sensitivities.

The following summary of the site area environmental sensitivities is identified. Only the highest environmental sensitivity is indicated. The footprint environmental sensitivities for the proposed development footprint⁶ as identified, are indicative only and must be verified on site by a suitably

⁶ “development footprint”, means the area within the site on which the development will take place and includes all ancillary developments for example roads, power lines, boundary walls, paving etc. which require vegetation clearance or which will be disturbed and for which the application has been submitted.



qualified person before the specialist assessments identified below can be confirmed. Reference may be made to Table 25 for the environmental sensitivity as per the screening tool.

Table 25: Development Area Environmental Sensitivity

Theme	Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
Agriculture Theme		X		
Animal Species Theme			X	
Aquatic Biodiversity Theme				X
Archaeological and Cultural Heritage Theme				X
Civil Aviation Theme			X	
Defence Theme				X
Palaeontology Theme			X	
Plant Species Theme				X
Terrestrial Biodiversity Theme	X			

Specialist assessments Undertaken

Based on the selected classification, and the known impacts associated with the proposed development, the following specialist assessments have been undertaken for inclusion in the Basic assessment report.

Aquatic Biodiversity Impact Assessment.

- *Reinstating the Low-Level Dam Spillway Wetland Biodiversity Assessment Report*, compiled by Limosella Consulting and dated June 2025. Reference may be made to Annexure E1 for the report.

Results of the environmental sensitivity of the proposed area

The following section represents the results of the screening for environmental sensitivity of the proposed site for relevant environmental themes associated with the project classification. It is the duty of the EAP to ensure that the environmental themes provided by the screening tool are comprehensive and complete for the project. Refer to the disclaimer.

Relative Agriculture Theme Sensitivity

The agricultural theme was noted to having a high sensitivity with sensitivity features seen in the Table 26 and Figure 34 below.

Table 26: Agricultural Sensitivity Features



Sensitivity	Feature(s)
High	09. Moderate-High
High	10. Moderate-High



Figure 34: Map of Relative Agriculture Theme Sensitivity – Screening tool

Relative Animal Species Theme Sensitivity

The animal species theme was noted to having medium sensitivity with sensitivity features seen in the Table 27 and Figure 35 below.

Table 27: Animal Species Sensitivity Features

Sensitivity	Feature(s)
Medium	Aves-Hydroprogne caspia
Medium	Mammalia-Crocidura maquassiensis
Medium	Mammalia-Hydrictis maculicollis
Medium	Mammalia-Ourebia ourebi ourebi
Medium	Reptilia-Kinixys lobatsiana



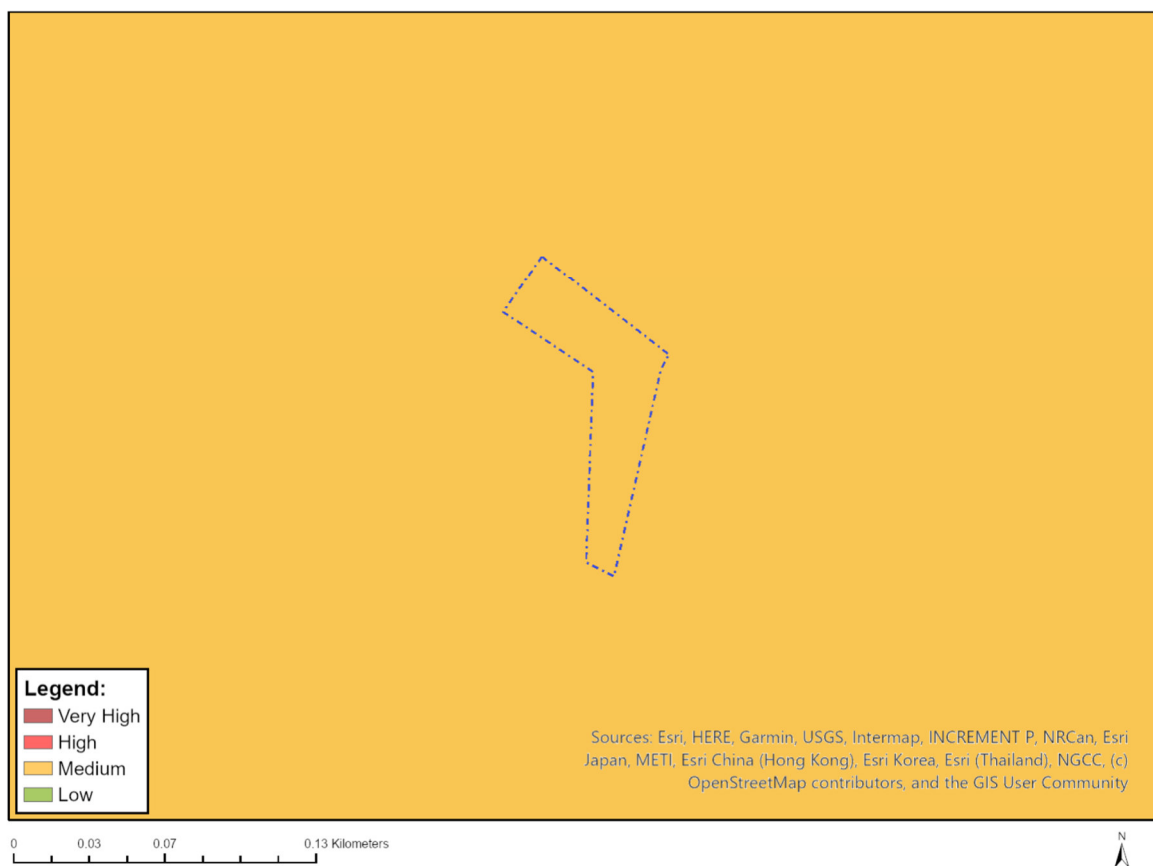


Figure 35: Map of Relative Animal Species Theme - Screening tool

Relative Aquatic Biodiversity Theme Sensitivity

The aquatic biodiversity theme was noted to having low sensitivity with sensitivity features seen in the Table 28 and Figure 36 below.

Table 28: Aquatic Biodiversity Sensitivity Features

Sensitivity	Feature(s)
Low	Low sensitivity



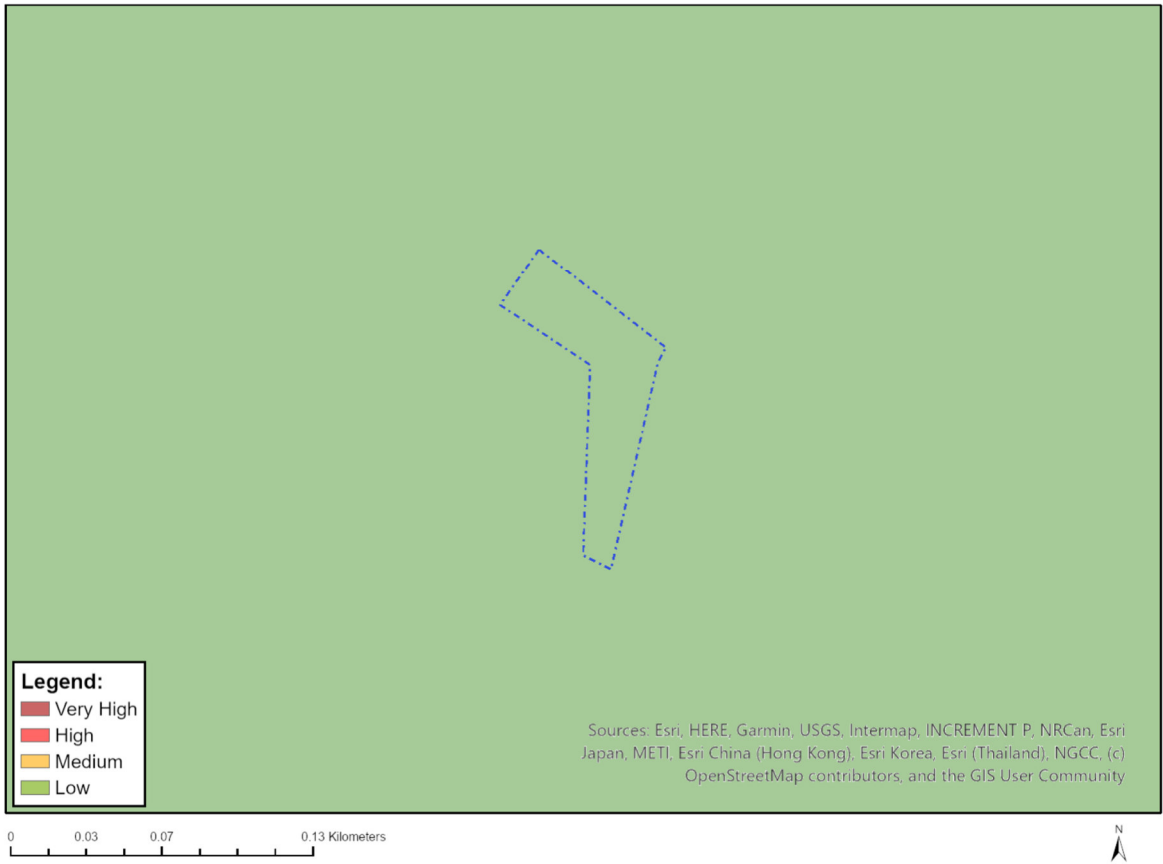


Figure 36: Map of Relative Aquatic Biodiversity Theme Sensitivity

Relative Archaeological and Cultural Heritage Theme Sensitivity

The archaeological and cultural heritage theme was noted to having a low sensitivity with sensitivity features seen in the Table 29 and Figure 37 below.

Table 29: Archaeological and Cultural Heritage Sensitivity Features

Sensitivity	Feature(s)
Low	Low sensitivity



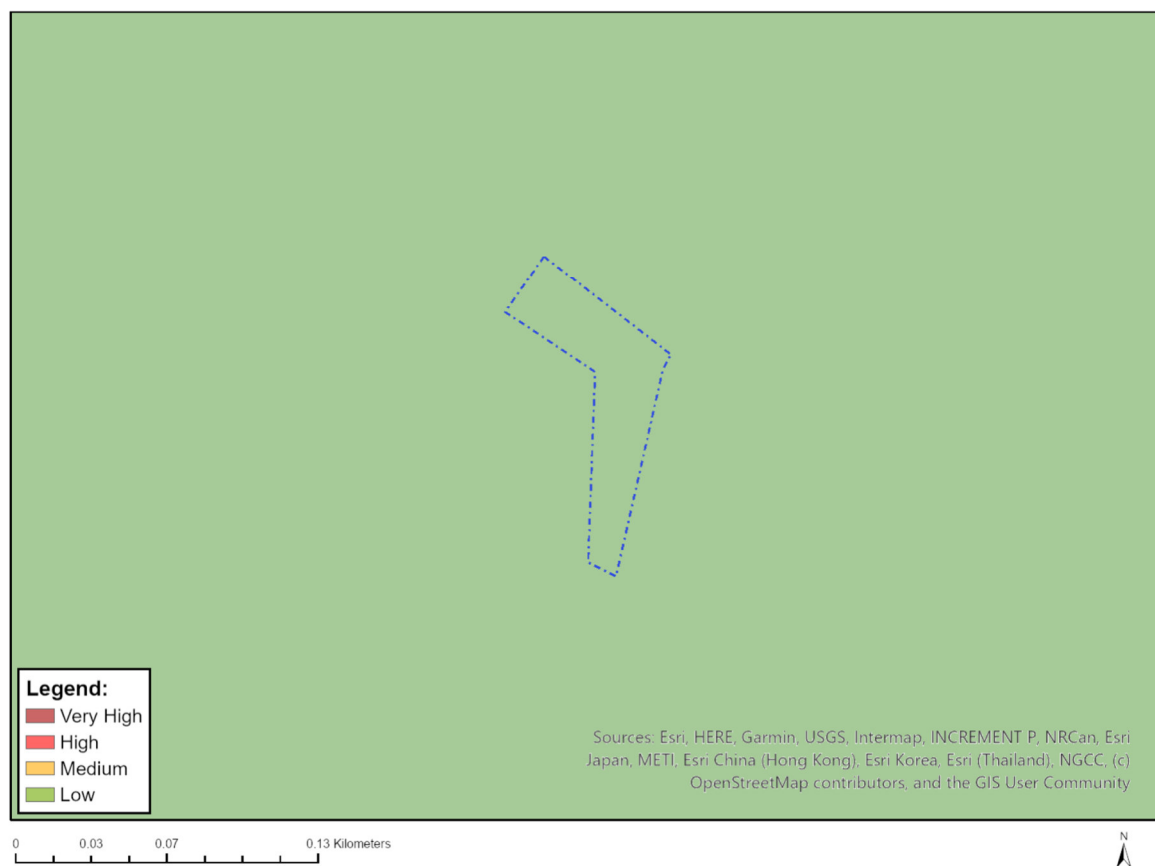


Figure 37: Map of Relative Archaeological and Cultural Heritage Theme Sensitivity

Relative Civil Aviation Theme Sensitivity

The Civil Aviation theme was noted to having a medium sensitivity with sensitivity features seen in the Table 30 and Figure 38 below.

Table 30: Civil Aviation Sensitivity Features

Sensitivity	Feature(s)
Medium	Between 8 and 15 km of other civil aviation aerodrome





Figure 38: Map of Relative Civil Aviation Theme Sensitivity

Relative Defence Theme Sensitivity

The Defence theme was noted to having a low sensitivity with sensitivity features seen in the Table 31 and Figure 39 below.

Table 31: Defence Sensitivity Features

Sensitivity	Feature(s)
Low	Low sensitivity



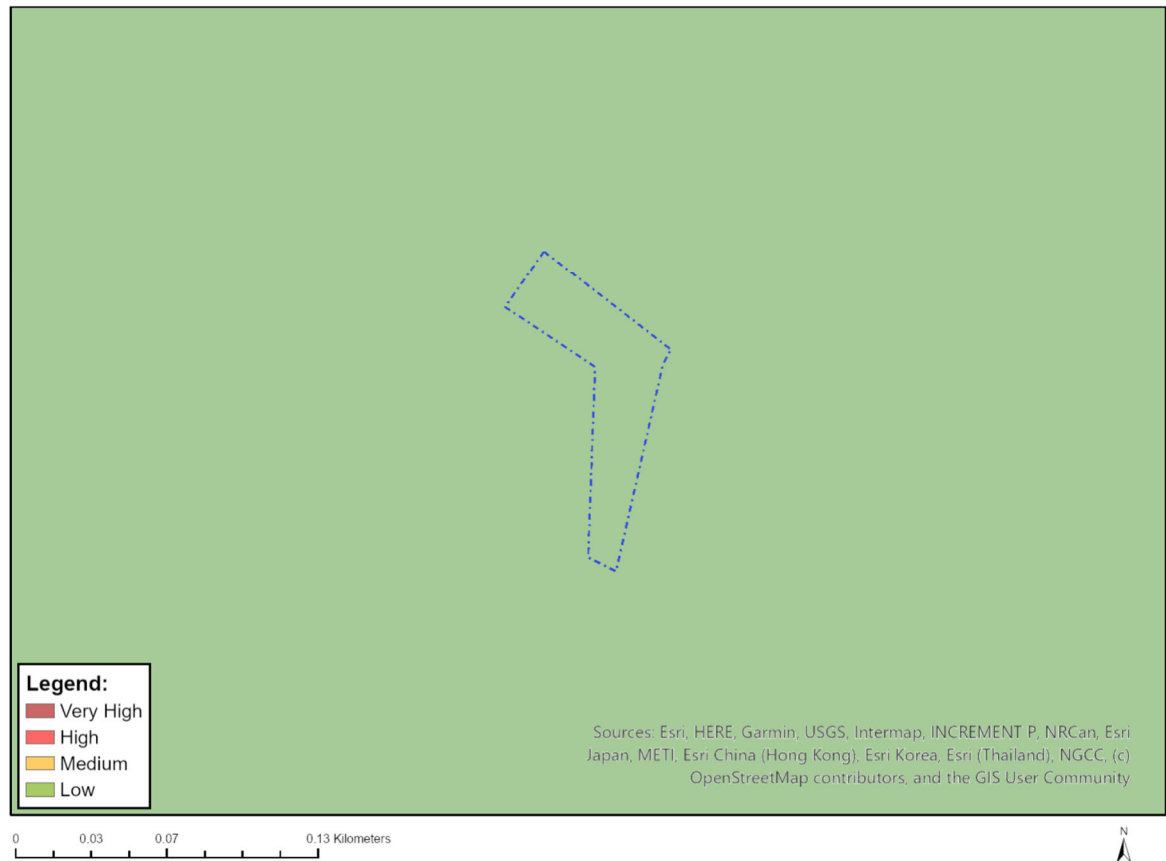


Figure 39: Map of Relative Defence Theme Sensitivity

Relative Palaeontology Theme Sensitivity

The Palaeontology theme was noted to having a medium sensitivity with sensitivity features seen in the Table 32 and Figure 40 below.

Table 32: Palaeontology Sensitivity Features

Sensitivity	Feature(s)
Low	Features with a Low paleontological sensitivity
Medium	Features with a Medium paleontological sensitivity





Figure 40: Map of Relative Palaeontology Theme Sensitivity

Relative Plant Theme Sensitivity

The Plant Species theme was noted to having a low sensitivity with sensitivity features seen in the Table 33 and Figure 41 below.

Table 33: Plant Species Sensitivity Features

Sensitivity	Feature(s)
Low	Low Sensitivity



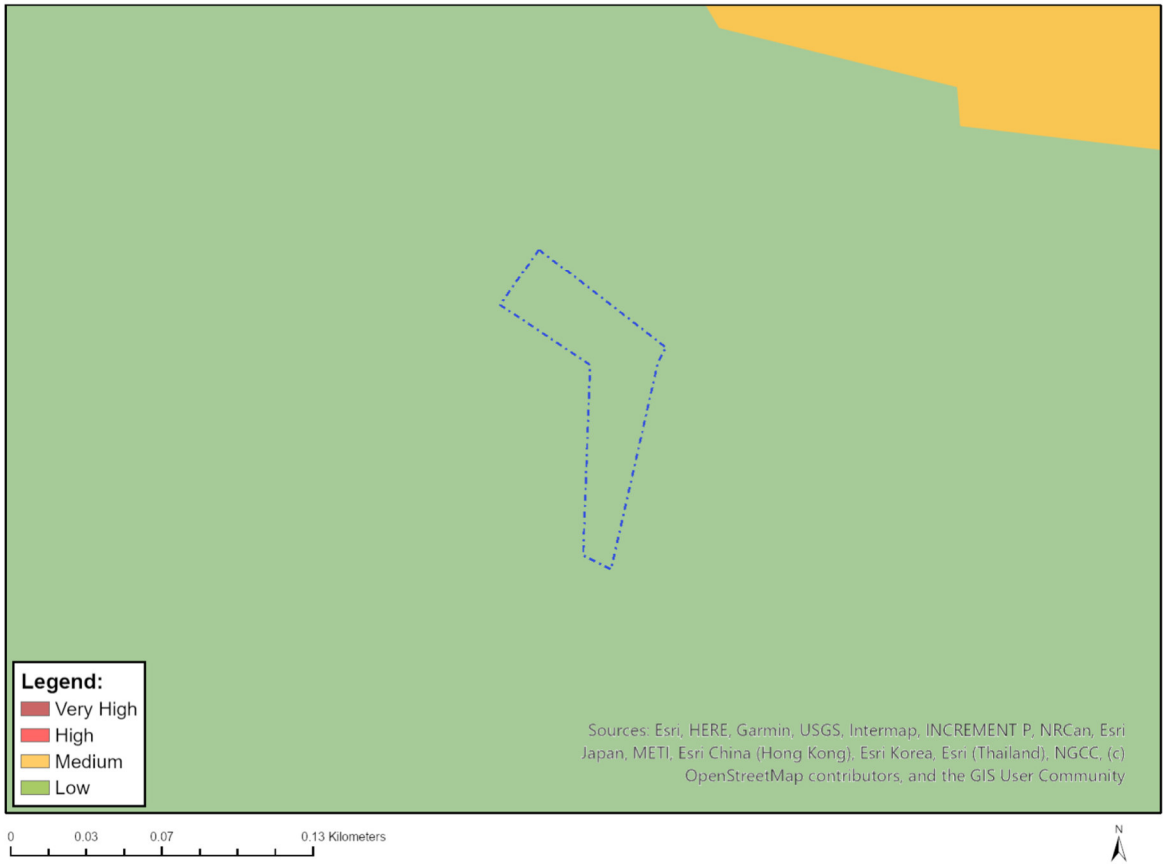


Figure 41: Map of Relative Plant Species Theme Sensitivity

Relative Terrestrial Biodiversity Theme Sensitivity

The Terrestrial Biodiversity theme was noted to having a very high sensitivity with sensitivity features seen in the Table 34 and Figure 42 below.

Table 34: Terrestrial Biodiversity Features

Sensitivity	Feature(s)
Very High	EN_Eastern Highveld Grassland





Figure 42: Map of Relative Terrestrial Biodiversity Theme Sensitivity



7.5 Methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks.

Table 35 and Table 37 indicate the methodology used in order to assess the probability and magnitude of the impact. Table 36 provides the risk matrix used to plot the probability against the magnitude in order to determine the severity of the impact.

Table 35: Determination of Probability of Impact.

Score	Frequency of Aspect / Unwanted Event	Availability of Pathway from the source to the receptor	Availability of Receptor
1	Never known to have happened, but may happen	A pathway to allow for the impact to occur is never available	The receptor is never available
2	Known to happen in industry	A pathway to allow for the impact to occur is almost never available	The receptor is almost never available
3	< once a year	A pathway to allow for the impact to occur is sometimes available	The receptor is sometimes available
4	Once per year to up to once per month	A pathway to allow for the impact to occur is almost always available	The receptor is almost always available
5	Once a month - Continuous	A pathway to allow for the impact to occur is always available	The receptor is always available

Step 1: Determine the **PROBABILITY** of the impact by calculating the average between the Frequency of the Aspect, the Availability of a pathway to the receptor and the availability of the receptor.

Table 36: Determination of severity of the impact.

Environmental Impact Rating / Priority					
Probability	Magnitude				
	1 Minor	2 Low	3 Medium	4 High	5 Major
5 Almost Certain	Low	Medium	High	High	High
4 Likely	Low	Medium	High	High	High
3 Possible	Low	Medium	Medium	High	High



Environmental Impact Rating / Priority					
2 Unlikely	Low	Low	Medium	Medium	High
1 Rare	Low	Low	Low	Medium	Medium

Step 3: Determine the **SEVERITY** of the impact by plotting the averages that were obtained above for Probability and Magnitude in the table below.



Table 37: Determination of magnitude of impact

Score	SOURCE			RECEPTOR		
	Duration of impact	Extent	Volume Quantity Intensity	Toxicity / Destruction Effect	Reversibility	Sensitivity environmental component of
1	Lasting days to a month	Effect limited to the site. (metres);	Very small quantities / volumes / intensity (e.g., < 50 l or < 1 ha)	Non-toxic (e.g., water) / Very low potential to create damage or destruction to the environment	Bio-physical and/or social functions and/or processes will remain unaltered.	Current environmental component(s) are largely disturbed from the natural state. Receptor of low significance / sensitivity
2	Lasting 1 month to 1 year	Effect limited to the activity and its immediate surroundings. (tens of metres)	Small quantities / volumes / intensity (e.g., 50 l to 210 l or 1 ha to 5 ha)	Slightly toxic / Harmful (e.g., diluted brine) / Low potential to create damage or destruction to the environment	Bio-physical and/or social functions and/or processes might be negligibly altered or enhanced / Still reversible	Current environmental component(s) are moderately disturbed from the natural state. No environmentally sensitive components.
3	Lasting 1 – 5 years	Impacts on extended area beyond site boundary (hundreds of metres)	Moderate quantities / volumes / intensity (e.g., > 210 l < 5000 l or 5 – 8 ha)	Moderately toxic (e.g., slimes) Potential to create damage or destruction to the environment	Bio-physical and/or social functions and/or processes might be notably altered or enhanced / Partially reversible	Current environmental component(s) are a mix of disturbed and undisturbed areas. Area with some environmental sensitivity (scarce / valuable environment etc.).
4	Lasting 5 years to Life of Organisation	Impact on local scale / adjacent sites (km's)	Very large quantities / volumes / intensity (e.g., 5000 l – 10 000 l or 8 ha– 12 ha)	Toxic (e.g., diesel & Sodium Hydroxide)	Bio-physical and/or social functions and/or processes might be considerably altered or enhanced / potentially irreversible	Current environmental component(s) are in a natural state. Environmentally sensitive environment / receptor (endangered species / habitats etc.).
5	Beyond life of Organisation / Permanent impacts	Extends widely (nationally or globally)	Very large quantities / volumes / intensity (e.g., > 10 000 l or > 12 ha)	Highly toxic (e.g., arsenic or TCE)	Bio-physical and/or social functions and/or processes might be severely/substantially altered or enhanced / Irreversible	Current environmental component(s) are in a pristine natural state. Highly Sensitive area (endangered species, protected habitats etc.)

Step 2: Determine the **MAGNITUDE** of the impact by calculating the average of the factors above



7.6 Impacts and risks identified including the nature, significance, consequence, extent, duration and probability of the impacts, including the degree to which these impacts

Table 38: Determination of preliminary potential impacts for the proposed project

Environmental Component	Aspect affected	Activity	Potential Impact	Reversibility	Irreplaceable loss	Phase	Size and scale of disturbance	Significance pre-mitigation ⁷			Mitigation Type	Significance post- mitigation		
								Probability	Magnitude	Significance		Probability	Magnitude	Significance
Social	Communication	Communication with I&AP's including neighbouring landowners.	Poor communication and lack of transparency of project information that may lead to conflict with I&AP's including neighbouring landowners.	Reversible	Medium Degree	Planning and pre-construction	Local and regional	3	2	M	Preventative	1	1	L
Topography ⁸	Impacts to hydrological function at landscape level.	LLD spillway reinstatement	The sources of this impact include the compaction of soil, the removal of vegetation, surface water redirection, changes to watercourse morphology or input of high energy surface water which could occur during construction and operation of the mining development.	Reversible	Low Degree	Construction and Operational	Local and Downstream	2	2	L	Preventative	1	1	L
		Construction of weir structure												
Geology and soil ⁹	Sedimentation	LLD spillway reinstatement	Construction and maintenance activities will result in earthworks and soil disturbance as well as the disturbance of natural vegetation. This could result in the loss of topsoil, sedimentation of the watercourses and pan and increase the turbidity of the water. Possible sources of the impacts include: - Earthwork activities during construction. - Clearing of surface vegetation will expose the soils, which in rainy events would wash through the watercourse, causing sedimentation. In addition, indigenous vegetation communities are unlikely to colonise eroded soils successfully and seeds from proximate alien invasive trees can spread easily into this eroded soil. - Disturbance of soil surface. - Disturbance of slopes through creation of roads and tracks adjacent to the watercourse. - Erosion (e.g. gully formation, bank collapse)	Reversible	Low Degree	Construction and Operational	Local and Downstream	2	2	L	Preventative	1	1	L
		Construction of weir structure												
		LLD Crest Raising												
Terrestrial ecology: Fauna and Flora ¹⁰	Introduction and spread of alien vegetation.	LLD spillway reinstatement	The moving of soil and vegetation resulting in opportunistic invasions after disturbance and the introduction of seed in building materials and on vehicles. Invasions of alien plants can impact on hydrology, by reducing the quantity of water entering a watercourse, and outcompete natural vegetation,	Reversible	Low Degree	Construction and Operational	Local area	2	2	L	Preventative	1	1	L
		Construction of weir structure												

⁷ H = High; M = Medium; L = Low

⁸ The risk assessment was taken from the report *Reinstating the Low-Level Dam Spillway Wetland Biodiversity Assessment*, compiled by Limosella Consulting, dated June 2025 (Annexure E1)

⁹ The risk assessment was taken from the report *Reinstating the Low-Level Dam Spillway Wetland Biodiversity Assessment*, compiled by Limosella Consulting, dated June 2025 (Annexure E1)

¹⁰ The risk assessment was taken from the report *Reinstating the Low-Level Dam Spillway Wetland Biodiversity Assessment*, compiled by Limosella Consulting, dated June 2025 (Annexure E1)



Environmental Component	Aspect affected	Activity	Potential Impact	Reversibility	Irreplaceable loss	Phase	Size and scale of disturbance	Significance pre-mitigation ⁷			Mitigation Type	Significance post-mitigation		
								Probability	Magnitude	Significance		Probability	Magnitude	Significance
		LLD Crest Raising	decreasing the natural biodiversity. Once in a system alien invasive plants can spread through the catchment. If allowed to seed before control measures are implemented alien plants can easily colonise and impact on downstream users.											
	Loss and disturbance of watercourse habitat and fringe vegetation.	Operational and maintenance activities.	Loss and disturbance of watercourse habitat and fringe vegetation due to direct development on the watercourse as well as changes in management, fire regime and habitat fragmentation.	Reversible	Low Degree	Construction and Operational	Local area	2	2	L	Preventative	1	1	L
Sensitive landscape: Aquatic Environment ¹¹	Changes in water quality	Operational and maintenance activities	Changes in water quality due to input of foreign materials e.g. due to increased sediment load, contamination by chemical and /or organic effluent, and /or eutrophication. Construction and operational activities may result in the discharge of solvents and other industrial chemicals, leakage of fuel/oil from vehicles and the disposal of sewage resulting in the loss of sensitive biota in the wetlands/rivers and a reduction in watercourse function.	Reversible	Low Degree	Construction and Operational	Local and Downstream	2	2	L	Preventative	1	1	L
	Loss of aquatic biota	Operational and maintenance activities	Loss of instream habitat, deposition of wind-blown sand, loss of fringing vegetation and erosion, alteration in base flow, natural fire regimes and subsequent loss of non-marginal and marginal vegetation. Increase in invasive species due to disturbance. Change in water quality. Changes in flow Loss and disturbance of biota due to direct development on the watercourse as well as changes in habitat including water quality, the water column, increased sediment, increased alien vegetation fire regime and habitat fragmentation.	Reversible	Low Degree	Construction and Operational	Local and Downstream	2	2	L	Preventative and Reduction	1	1	L
Noise	Noise level	- All construction activities - Construction workers - Operational machineries	Increase in noise levels and disturbance due to construction vehicles and equipment.	Reversible	Low Degree	Construction and operational	Local area	3		M	Preventative	2	1	L
Air quality	Changes in air quality	LLD spillway reinstatement	Construction vehicles may have an impact on the air quality of the site area due to the emissions released by the vehicles and generation of dust.	Reversible	Low Degree	Construction	Local area	3	2	M	Preventative	1	1	L
		Construction of weir structure LLD Crest Raising												

¹¹ The risk assessment was taken from the report *Reinstating the Low-Level Dam Spillway Wetland Biodiversity Assessment*, compiled by Limosella Consulting, dated June 2025 (Annexure E1)



Environmental Component	Aspect affected	Activity	Potential Impact	Reversibility	Irreplaceable loss	Phase	Size and scale of disturbance	Significance pre-mitigation ⁷			Mitigation Type	Significance post-mitigation		
								Probability	Magnitude	Significance		Probability	Magnitude	Significance
Visual	Visual disturbance	- Presence of construction equipment on site. - Site establishment.	Temporary visual disturbance during construction activities.	Reversible	Low Degree	Construction	Local area	2	2	L		1	1	L
		Construction activities	Incorrect waste management.	Reversible	Low Degree	Construction	Local area	3	2	M	Preventative	1	1	L
Archaeological and Cultural Importance	Impacts on cultural sites	No archaeological and cultural sites were found within or near the site area.		Reversible	Low Degree	Construction	Local area	3	2	M	Preventative	1	1	L
Socio-economic	Employment	LLD spillway reinstatement	The creation of employment and skills development in the area, resulting in social upliftment.	Positive impact	Positive impact	Construction and operational	Local and regional area	Positive impact						
		Construction of weir structure												
		LLD Crest Raising												
Land use and land capability	Safety compliance regulations and to	All activities	The proposed location of the activities is in relation to the original location of the existing LLD spillway. The proposed activities area for fulfilling the operational and safety function. Therefore, it will reduce flood during extreme rainfall and also comply with dam safety design standards and regulations.	Positive impact	Positive impact	Construction and operational	Local and regional area	Positive impact						
Cumulative impacts	Cumulative impacts	Operational and maintenance activities	Continued modification of flow regimes through dam operations, spillway infrastructure, and artificial channels contributes incrementally to the loss of natural hydrological functioning downstream, with associated degradation of wetland ecological integrity.	Reversible	Low Degree	Construction and Operational	The cumulative impacts are based on activities within a 30 km radius, aligned with DFFE requirements	2	2	L	Preventative and Reduction	1	1	L



Detailed Process Flow: Cumulative Impact Assessment

- Identification of potential cumulative impacts in the area by the appointed Wetland specialist.
- Wetland Biodiversity Assessment and Aquatic Site Sensitivity Verification Report for Reinstating the Low-Level Dam Spillway, Compiled by Limosella Consulting, dated June 2025 provided mitigation measures and site-specific recommendations (e.g., Calculated Buffer Zone: 44 m Conservative Buffer: 100 m, Artificial Wetland Areas: No Buffer).
- With input from the specialist the EAP has identified cumulative impacts as indicated in the table below.
- Mitigations as per specialist study are incorporated into the Environmental Management Plan Programme (EMPr) attached as Appendix F.
- The cumulative impact is quantified in the risk assessment as above (The cumulative impacts are based on activities within a 30 km radius, aligned with DFFE requirements).
- A final environmental statement determines if the project should proceed based on the cumulative findings as discussed in section 9.

Table 39: Identified cumulative impacts¹²

Environmental component (Aspects affected)	Potential Impact description	Cumulative effect	Potential Result	Mitigation
Topography and hydrology	Continued modification of hydrology: Ongoing dam operations, spillway modification, and artificial canals alter flow patterns which can result to Incremental loss of natural hydrological function downstream.	Incremental loss of natural hydrological function downstream.	Degradation of downstream wetland functioning and ecological integrity.	Maintain controlled flow regimes; monitor downstream impacts; avoid further channelisation.

¹² The cumulative impacts are based on activities within a 30 km radius, aligned with DFFE requirements



Environmental component (Aspects affected)	Potential Impact description	Cumulative effect	Potential Result	Mitigation
Fauna and flora	Increase in alien invasive species: Construction disturbance adds to existing Alien Invasive Species ("AIS") presence in berms and wetlands which can result in spread and dominance of invasive species across the broader wetland and grassland matrix.	Spread and dominance of invasive species across the broader wetland and grassland matrix.	Loss of indigenous biodiversity; reduced habitat quality.	Implement AIS control plan during and post-construction.
Soils	Sediment and nutrient input: Combined runoff from infrastructure and spillways contributes to sediment/nutrient load which can result in long-term sedimentation and eutrophication in downstream systems.	Long-term sedimentation and eutrophication in downstream systems.	Decline in water quality; encroachment of aggressive wetland vegetation.	Install erosion and sediment controls; maintain vegetation cover.
Terrestrial Ecology	Habitat simplification and fragmentation: Ongoing development fragments aquatic and terrestrial habitat which can result in cumulative reduction in faunal movement and habitat heterogeneity.	Cumulative reduction in faunal movement and habitat heterogeneity.	Reduced ecological resilience and species richness.	Retain buffer zones around natural wetlands; minimise further encroachment.
Sensitive landscape: Aquatic Environment	Reduced ecosystem service delivery: Repeated alteration of natural features reduces wetland capacity for service provision which can result in decline in	Decline in regional flood attenuation, water quality regulation, and biodiversity support	Increased vulnerability to climate extremes and land degradation.	Restore functionality in natural systems where possible; prioritise no further transformation.



Environmental component (Aspects affected)	Potential Impact description	Cumulative effect	Potential Result	Mitigation
	regional flood attenuation, water quality regulation, and biodiversity support. Changes in water quality due to input of foreign materials e.g. due to increased sediment load, contamination by chemical and /or organic effluent, and /or eutrophication. Construction and operational activities may result in the discharge of solvents and other industrial chemicals, leakage of fuel/oil from vehicles and the disposal of sewage resulting in the loss of sensitive biota in the wetlands/rivers and a reduction in watercourse function.			
Geology and soil	Construction and maintenance activities will result in earthworks and soil disturbance as well as the disturbance of natural vegetation. This could result in the loss of topsoil, sedimentation of the watercourses and pan and increase the turbidity of the water.	Regional soil and natural vegetation disturbances.	Loss of topsoil, sedimentation of the watercourses and increase of the turbidity of the water.	Install erosion and sediment controls; maintain vegetation cover.
Socio-Economic	Jobs will be retained, providing income and, therefore, having a further impact on the regional socio-economy aspects of the area.	Upliftment of the region and improved economic environment.	Positive impact to the region.	Maximise positive impact by appointing local contractors as far as possible.



7.7 The positive and negative impacts that the proposed activity (in terms of the initial site layout) and alternatives will have on the environment and the community that may be affected

As previously discussed, no alternatives were identified. As provided in the Table 40 below, an assessment of the project as opposed to the no-go option was assessed.

Table 40: The advantages and disadvantages of the proposed project

Alternative	Advantages	Disadvantages
The project	Environmental: The project will reduce the risks of flood and overflowing during extreme rainfall events. Technical/Engineer: The project will ensure compliance with the dam safety regulations such as Regulation Gazette No. 35062. Furthermore, it will ensure that the dam meets the design standards, operational and safety requirements. Economical: The project will provide jobs during construction phase and operational phase. As such, this will support economic growth and profitability. Social: Job creation, and additional socio-economic benefit to the community.	Environmental: The proposed project is within an artificial seepage wetland and within 32 m of an artificial wetland and a natural unchanneled valley bottom and it is also approximately 1.2 km southeast of the Witbank Dam. Should proper mitigation measures not followed, the above mentioned may be affected. Technical/Engineer: None identified. Economical: Financial implications for the project for Eskom. Social: The LLD spillway stay at risk of over flooding and overtopping during extreme rainfall events.

7.8 The possible mitigation measures that could be applied and the level of risk

The impact management measures, and level of risk have been included under section 7.5 of Part A.

7.9 Motivation where no alternative sites were considered

No site alternatives were considered as this is an already existing LLD Spillway. In 2013 another earth berm was constructed downstream of the LLD Spillway as a preventative measure for any overflow. Therefore, since then it has been practice containing ash water in a bund along the LLD Spillway to prevent contamination to the natural stream.

In 2019 Duvha Power Station had a risk of LLD overtopping when the level was at 7.7 m and freeboard on the dam wall was approximately 300 mm due to inadequate discharge capability caused by constructed berms. LLD is classified as a category II by The Department of Water and Sanitation as part of dam safety regulation dam and according to the same regulation it is a requirement that the dam should have adequate spillway system to prevent dam failures. In order to comply with the regulation



Duvha need to remove the earth berm and reshape the spillway channel to its original capacity based on the SED (safety evaluation discharge) for a Category II-dam.

The preferred activity entails reinstating the LLD spillway on its original location in order to fulfil its operational and safety function. The spillway should remain fixed at the downstream outlet of the LLD, integrated to the existing dam geometry. Alternative locations are not feasible as the relocation of the spillway will require the reconstructing of the existing entire dam structure. This is not technically and economically viable.

7.10 Statement motivating the alternative development location within the overall site

Refer to section 7.1 for the description of the process undertaken to identify, assess and rank the impacts and risks of the activity at the preferred location (in respect of the final site layout plan) through the life of the activity.

All impacts and associated significance as identified are contained within section 7.5. As further provided, an indication of the extent to which the impacts can be avoided or addressed by the adoption of mitigation measures is provided. The methodology applied in assessing and ranking the impacts at the preferred site and associated preferred alternatives is described in section 7.6. No significant risks associated with the project were identified post mitigation.

8 Summary of specialist reports

Based on the selected classification in the Screening Tool, and the known impacts associated with the proposed development, the following list of specialist assessments have been identified for inclusion in the assessment report. It is the responsibility of the EAP to confirm this list and to motivate in the assessment report, the reason for not including any of the identified specialist study including the provision of photographic evidence of the site situation.

Table 41: Specialist assessments identified and undertaken

No	Specialist assessment	Undertaken
1	Landscape/Visual Impact Assessment	No
2	Archaeological and Cultural Heritage Impact Assessment	No
3	Palaeontology Impact Assessment	No
4	Terrestrial Biodiversity Impact Assessment	Yes
5	Aquatic Biodiversity Impact Assessment	Yes
6	Hydrology Assessment	No



No	Specialist assessment	Undertaken
7	Socio-Economic Assessment	No
8	Plant Species Assessment	No
9	Animal Species Assessment	No

Based on the above, the following specialist input will be required for undertaking the licencing processes:

- Wetland Biodiversity Assessment – The site area has been highly transformed and disturbed due to ash dams, alien plant infestation and mining activities. According to the Mpumalanga. Biodiversity Conservation Plan, the proposed site area falls within the “Moderately modified - Old lands”.
- Wetland delineation Assessment - this study will provide recommendations on the placement of erosion protection, spillway infrastructure and wetland rehabilitation measures.

Refer to Appendix E4 - Site Sensitivity Verification Report.

8.1 Wetland Biodiversity Assessment

The following information was extracted from the *Wetland Biodiversity Assessment and Aquatic Site Sensitivity Verification Report* dated June 2025 compiled by Limosella Consulting.

The proposed reinstatement of the Low-Level Dam (LLD) spillway and associated infrastructure at Duvha Power Station is a necessary intervention to restore safe discharge capacity, ensure compliance with dam safety regulations, and reduce the long-term risk of uncontrolled overflow. The development footprint is entirely confined to artificial or heavily modified features, including the seepage wetland, canal, dividing berm, and the disturbed wetland overlying historical diggings. These features, while exhibiting wetland-like characteristics, are of anthropogenic origin and were confirmed to have very low ecological and functional value based on the WET-EcoServices assessment.

No direct impacts on natural wetlands or watercourses are anticipated. The nearest natural unchannelled valley-bottom wetland lies approximately 320 m from the activity footprint and remains outside both the calculated and conservative buffer zones. As such, no triggers under Section 21(f) or (g) of the National Water Act apply, and Section 21(c) and (i) are considered only as a precaution due to the proximity of engineered water features. The natural wetlands are confirmed to be highly sensitive as indicated in the screening report, the artificial wetlands are less sensitive but does contribute to some extent to ecosystem services.

All potential impacts are limited, localised, and temporary, and can be effectively mitigated through standard best-practice construction and rehabilitation measures. Long-term, the project is expected to reduce operational risk, enhance flow control, and prevent further degradation of surrounding artificial



wetlands. As such, the development is considered environmentally acceptable and aligned with national policies on sustainable water resource management and climate adaptation. The important factors, relevant to Environmental Authorisation for the proposed project, are summarised in the table below:

Quaternary Catchment and WMA areas	B11G Limpopo-Olifants (LOCMA) #2 - Olifants: Major rivers include Elands, Wilge, Steelpoort, Olifants and Letaba Rivers
Watercourse	The primary watercourse feature is the Low Level Dam (LLD), an artificial off-channel ash return dam. Although mapped as a wetland in the NFEPA and NBA2018 datasets, it does not represent a natural wetland system but rather an engineered containment structure with wetland-like characteristics. Downstream of the LLD, the spillway channel connects to a valley-bottom wetland associated with a non-perennial river. This wetland drains into the Witbank Dam. - NBA (2018) list the watercourses as Vulnerable. - NFEPA (2011) list the watercourses as Vulnerable
Classification (SANBI, 2013)	Artificial Wetland Areas
WetEcoServices	Very Low for all metrics
EIS (Kotze, et al., 2020)	Low Category - Wetlands that are not ecologically important and sensitive at any scale. The biodiversity of these wetlands is ubiquitous and not sensitive to flow and habitat modifications. They play an insignificant role in moderating the quantity and quality of water in major rivers
Coj Generic Buffer and Calculated Buffer Zone (Macfarlane et al, 2015)	Calculated Buffer Zone: 44 m Conservative Buffer: 100 m Artificial Wetland Areas: No Buffer
DWS 2024 Risk Assessment	Risk scores fall in the Low category
National Screening Tool Findings	This study confirms that the natural wetlands are highly sensitive as indicated on the screening report, the artificial wetlands are less sensitive.

In accordance with the requirements of Government Notice No. 320 of 20 March 2020, a site sensitivity verification was undertaken prior to, and in support of, the aquatic specialist assessment. The purpose of this process was to verify the current land use and environmental sensitivities identified by the national environmental screening tool and to ensure that the specialist assessment is informed by confirmed site conditions. The site sensitivity verification process and outcomes are summarised in Table 42 below.



Table 42: Site Sensitivity Verification in accordance with GN 320 (20 March 2020)

GN 320 Requirement	Compliance Response
Requirement: Prior to commencing with a specialist assessment, the current use of the land and the environmental sensitivity of the site identified by the screening tool must be confirmed by undertaking a site sensitivity verification.	A site sensitivity verification was undertaken prior to the aquatic biodiversity and wetland assessment to verify the land use and aquatic sensitivities identified by the environmental screening tool. The verification focused on aquatic features associated with the existing low-level dam, spillway, downstream channel, and associated wetland areas within the development footprint.
2.1 The site sensitivity verification must be undertaken by an environmental assessment practitioner or a specialist.	The site sensitivity verification was undertaken by a suitably qualified aquatic specialist registered with the South African Council for Natural Scientific Professions (SACNASP), with demonstrated experience in aquatic biodiversity assessments, wetland delineation, and regulatory compliance.
2.2(a) Desktop analysis using satellite imagery.	A desktop verification was conducted using recent and historical aerial and satellite imagery, topographical mapping, and available spatial datasets. This analysis verified the spatial extent of natural wetland areas, artificial or modified wetland features associated with historical infrastructure, and the surrounding land use context.
2.2(b) Preliminary on-site inspection.	A preliminary site inspection was undertaken to ground-truth the desktop findings and confirm current site conditions. The inspection verified the presence, condition, and degree of modification of both natural wetland areas and artificial wetland features, as well as the extent of instream and riparian disturbance associated with existing infrastructure.
2.2(c) Other available and relevant information.	Additional relevant information reviewed included existing specialist studies, project documentation, regulatory guidance, and photographic records. These sources were used to contextualise the origin, function, and condition of natural versus artificial wetland components within the study area.
2.3(a) Confirmation or dispute of current land use and environmental sensitivity identified by the screening tool.	The site sensitivity verification confirmed the presence of both natural and artificial wetland components within the study area. Natural wetland and their buffer areas were verified as highly sensitive due to their ecological functioning, hydrological connectivity, and biodiversity value. Artificial or engineered wetland areas associated with historical infrastructure were verified as having a medium sensitivity , reflecting their modified origin, reduced ecological integrity, and partial reliance on anthropogenic hydrological inputs.



GN 320 Requirement	Compliance Response
2.3(b) Motivation and evidence (e.g. photographs) supporting the verified or revised sensitivity.	The differentiation in sensitivity is supported by site observations, photographic evidence, and interpretation of satellite imagery, which collectively demonstrate intact hydrological and vegetative characteristics in natural wetland areas, contrasted with structural modification, altered flow regimes, and simplified vegetation assemblages in artificial wetland features.
2.3(c) Submission together with the relevant assessment report in accordance with the EIA Regulations.	This site sensitivity verification is documented as part of the aquatic specialist assessment report and is submitted in support of the Basic Assessment Report in accordance with the Environmental Impact Assessment Regulations, 2014 (as amended). The verified sensitivity classifications directly inform the impact assessment and mitigation measures presented in subsequent sections of this report.

8.1.2 Reference to the applicable section of the report

Section 7.6 Impacts and risks identified and mitigation measures in the EMPr in Appendix F.

9 Environmental impact statement

9.1 Summary of the key findings of the environmental impact assessment

The methodology utilised to undertake the impact assessment has incorporated, amongst other skills, professional experience and specialists, relevant literature and local knowledge of the site and surrounding area.

According to the risk assessment in section 7.6 all impacts were low post mitigation.

Based on the cumulative impact assessment undertaken, and taking into account the verified environmental sensitivities, specialist recommendations, and proposed mitigation measures, it is concluded that the proposed development may proceed, provided that:

- No further encroachment into natural, highly sensitive wetland areas occurs;
- Specialist-recommended mitigation measures are fully implemented and maintained; and
- Ongoing monitoring is undertaken to identify and respond to cumulative downstream effects over time.

Under these conditions, the proposed development is not expected to result in unacceptable cumulative environmental impacts and is considered environmentally justifiable within the context of the existing modified landscape.



Mitigation and management measures for the predicted impacts are included in the EMPr Appendix F and need to be implemented by the applicant. The implementation of the mitigation measures will result in the minimisation of the significance of the potential impacts (post-mitigation).

It is the EAP's opinion that based on the process that has been followed and the findings of the impact assessment, in conjunction with the proposed mitigation measures, that no unmanageable adverse impacts are expected to occur.



10 Final Site Layout Map

Reference may be made to Figure 43 for the final site layout map.

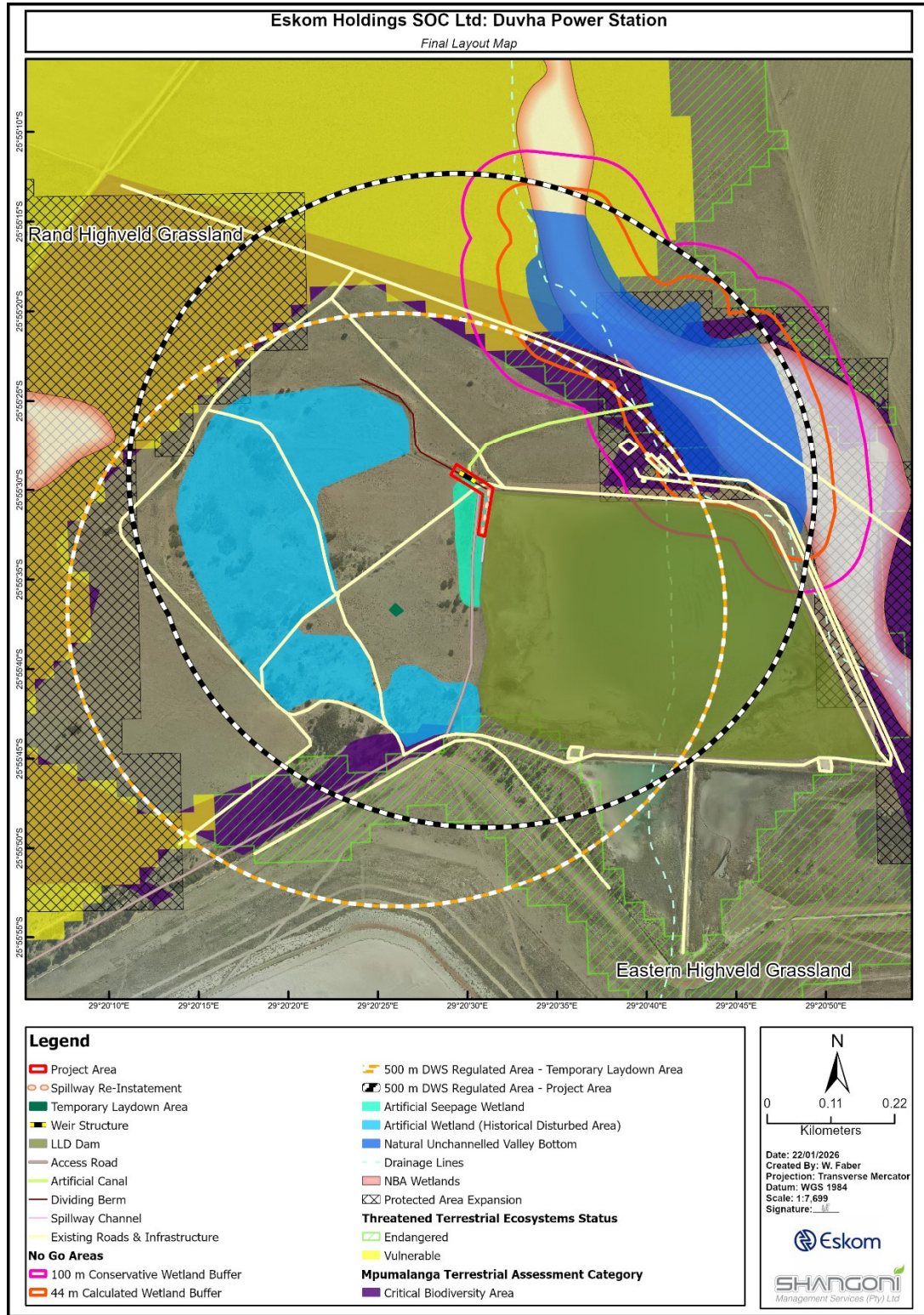


Figure 43: Final site layout map

11 Summary of the positive and negative impacts and risks of the proposed activity and identified alternatives

Table 43: Summary of environmental impacts after mitigation

Environmental Aspect	Significance Post Mitigation
TOPOGRAPHY	
Impacts to hydrological function at a landscape level: The sources of this impact include the compaction of soil, the removal of vegetation, surface water redirection, changes to watercourse morphology or input of high energy surface water which could occur during construction and operation of the mining development.	L
GEOLOGY AND SOIL	
Construction and maintenance activities will result in earthworks and soil disturbance as well as the disturbance of natural vegetation. This could result in the loss of topsoil, sedimentation of the watercourses and pan and increase the turbidity of the water.	L
TERRESTRIAL ECOLOGY: FAUNA AND FLORA	
Introduction and spread of alien vegetation: The moving of soil and vegetation resulting in opportunistic invasions after disturbance and the introduction of seed in building materials and on vehicles. Invasions of alien plants can impact on hydrology, by reducing the quantity of water entering a watercourse, and outcompete natural vegetation, decreasing the natural biodiversity. Once in a system alien invasive plants can spread through the catchment. If allowed to seed before control measures are implemented alien plants can easily colonise and impact on downstream users.	L
Loss and disturbance of watercourse habitat and fringe vegetation: Loss and disturbance of watercourse habitat and fringe vegetation due to direct development on the watercourse as well as changes in management, fire regime and habitat fragmentation.	L
AQUATIC	
Changes in water quality: Changes in water quality due to input of foreign materials e.g. due to increased sediment load, contamination by chemical and /or organic effluent, and /or eutrophication. Construction and operational activities may result in the discharge of solvents and other industrial chemicals, leakage of fuel/oil from vehicles and the disposal of sewage resulting in the loss of sensitive biota in the wetlands/ rivers and a reduction in watercourse function.	L
Loss of habitat (including Irreplaceable CBA). Loss of instream habitat, deposition of wind-blown sand, loss of fringing vegetation and erosion, alteration in base flow, natural fire regimes and subsequent loss of non-marginal and marginal vegetation. Increase in invasive species due to disturbance. Change in water quality. Changes in flow Loss and disturbance of biota due to direct development on the watercourse as well as changes in habitat including water quality, the water column, increased sediment, increased alien vegetation fire regime and habitat fragmentation.	L



12 Proposed impact management objectives and the impact management outcomes for inclusion in the EMPr

Based on the assessment and where applicable the recommendations from specialist reports, Table 44 below summarises the impact management objectives and the impact management outcomes for the development for inclusion in the EMPr as well as for inclusion as conditions of authorisation.

Table 44: Impact management objectives and the impact management outcomes

Environmental Aspect	Objective	Summary of impact management outcome
Topography	None	Minimise disturbance by remaining in the demarcated footprint.
Geology and soil	Prevent soil erosion and sedimentation	Confine works to the working area and utilise existing access roads.
Terrestrial Ecology: Fauna and flora	Minimise vegetation and habitat loss and Control spread of alien invasive species	Disturbance of vegetation limited to development footprint. Prevent the unnecessary destruction of natural habitat and associated animal life within the development area and surrounds.
Sensitive landscape: Aquatic Environment	Avoid indirect impact on natural wetland	Maintain 100 m buffer from natural wetland and prevent unregulated water release during works
Sites of archaeological and cultural importance	Prevent the destruction of and loss of sites of cultural and archaeological importance.	No archaeological and cultural importance sites are within the proposed location for the expansion of the broiler houses.
Socio-economic aspects	Enhance the positive socio-economic impacts.	Implementation of approved Social and Labour Plan.

13 Aspects for inclusion as conditions of authorisation

Should the DFFE grant authorisation for this project, approval should be subject to the following conditions for the EMPr/EA:

- The proposed project should remain in full compliance with the requirements of the BAR and with all regulatory requirements.
- The BAR should be implemented by qualified environmental personnel who have the competence and credibility to interpret the requirements of the BAR. Such persons must be issued with a written mandate by the power station management to provide guidance and instructions to employees and contractors.
- Construction activities are expected to take place within delineated watercourses, as such, the specialists Wetland Biodiversity Assessment and the EMPr should be used as a tool to mitigate the impacts to the receiving wetland environments. All construction activities such a machinery storage,



camp sites and stockpiling must not occur within the watercourse or its 100 m wetland buffer as stipulated in the Wetland Biodiversity Assessment specialist report.

- Rehabilitation plan to be implemented as described in the EMPr.

Construction activities to take place under supervision of a qualified Environmental Control Officer (“ECO”). The following must be considered:

- No vegetation clearance may be allowed to commence prior clearly demarcating all areas to be cleared. The ECO responsible for environmental compliance on site should further be allowed to implement any additional measures he/she deems necessary and the associated necessary training (e.g., ecological, hydrocarbon management etc.) should be incorporated into the contractors’ induction.
- Ongoing development and implementation of dust management programme.
- Implementation of the necessary storm water management measures to avoid discharge or seepage of affected water into the natural surface water environment.
- Monitoring and management of the natural surface water environment should also receive priority. Degradation of these natural systems should be avoided.
- No work or disturbance of any nature is permitted to take place within the 100 m scientific buffer zone. All main structures must remain outside of the wetlands and associated buffer zones.
- Any sedimentation, foreign spills, AIP proliferation or general deterioration to sensitive habitats should be prevented, mitigated and minimised as far as possible.
- Should any sensitive animal or plant species be identified the necessary mitigation measures should be carried out.

14 Description of any assumptions, uncertainties and gaps in knowledge

In terms of the EIA Regulations GN R982 Appendix 1(3)(o), the Environmental Assessment Practitioner (“EAP”) must provide a description of any assumptions, uncertainties and gaps in knowledge upon which the impact assessment has been based. The table below provides the assumptions and limitations applicable to the specialist reports.

Table 45: Specialist assumptions and limitations

Specialist	Assumptions and Limitations
Wetland Biodiversity Assessment and Aquatic Site Sensitivity Verification Report for Reinstating the Low-Level Dam Spillway, Compiled by Limosella Consulting, dated June 2025	Due the clients’ deadlines, a site visit was conducted during the winter on 5 July 2023, and although water was observed in the wetlands the vegetation layer was lacking in diversity due to overgrazing. • All wetlands within 500 m of any developmental activities should be identified as per the DWS authorisation regulations, as well as 100 m from any river. Watercourses that fall outside of the site, but that fall within 100/500 m of the proposed activities were



Specialist	Assumptions and Limitations
	delineated based on desktop analysis of vegetation gradients visible from aerial imagery. - Deriving a 100% factual report based on field collecting and observations can only be done over several years and seasons to account for fluctuating environmental conditions and migrations. Since environmental impact studies deal with dynamic natural systems additional information may come to light at a later stage. - The specialist responsible for this study reserves the right to amend this report, recommendations and/or conclusions at any stage should any additional or otherwise significant information come to light. - Floodline calculations fall outside the scope of the current assessment. - A Red Data scan, fauna and flora, were not included in the current study. - Species composition described for landscape units aimed at depicting characteristic species and did not include a survey for cryptic or rare species. - The recreation grade GPS used for wetland and riparian delineations is accurate to within five meters. - Watercourses delineation plotted digitally may be offset by at least five meters to either side. Furthermore, it is important to note that, while converting spatial data to final drawings, several steps in the process may affect the accuracy of areas delineated in the current report. The scale at which maps and drawings are presented in the current report may become distorted should they be reproduced by for example photocopying and printing. - Determination of permissible abstraction rates, volumes, or thresholds was not included in the scope of this study. This information must be compiled separately by a suitably qualified hydrologist or water resource specialist in support of the Section 21(a) water use application. - It is acknowledged that new or unforeseen environmental impacts, natural events, or human interventions may alter the state of the watercourses and surrounding landscape after this assessment is completed. As such, this report reflects conditions at the time of the site visit and desktop review.

15 Reasoned opinion as to whether the proposed activity should or should not be authorised

15.1 Reasons why the activity should be authorised or not

In terms of collectively considering ecological, social, and economic impacts it is important to remember that while there might be some trade-offs between the considerations, in South Africa all development must in terms of Section 24 of the Constitution be ecologically sustainable, while economic and social



development must be justifiable. There are, therefore, specific "trade-off" rules that apply. Environmental integrity may never be compromised, and the social and economic development must take a certain form and meet certain specific objectives for it to be considered justifiable.¹³

From the impact assessment undertaken no significant environmental impacts were identified as long as the mitigation measures are adequately implemented and the project remains within the presented footprint for development. The benefits that will arise from the proposed project is the increase in safety of the LLD.

From all specialists' opinions, the impacts can be mitigated to low. No impacts are noted to being high. All medium significance impacts pre-mitigation will be lowered to low significance impacts post-mitigation.

In terms of collectively considering ecological, social and economic impacts, the EAP is of opinion that the proposed activities and project as a whole should be allowed, provided that the management objectives and management measures as presented in this BAR are implemented to effectively manage, prevent, control and / or stop environmental impacts from occurring.

16 Period for which the Environmental Authorisation is required

The operation life span of Duvha Power Station is until 2034. Therefore, the period for which EA is required is at least 10 years (from the date of approval provided by the DFFE).

17 Specific Information required by the competent Authority

17.1 Compliance with the provisions of sections 24(4)(a) and (b) read with section 24 (3) (a) and (7) of the National Environmental Management Act (Act 107 of 1998). the BAR report must include the:

17.1.1 Impact on the socio-economic conditions of any directly affected person

Results of investigation, assessment and evaluation of impact on any directly affected person	Reference to where mitigation is reflected
Duvha Power Station strives to: Maintain a positive impact on the economic and socio-economic environment as the proposed project will contribute to job creation and skills development in the area.	Part A Section 7.5

¹³ Guideline on need and desirability in terms of the Environmental Impact Assessment (EIA) Regulations, 2010 (GN 891 of 20 October 2014)



17.2 Impact on any national estate referred to in section 3 (2) of the National Heritage Resources Act c

Results of investigation, assessment and evaluation of impact on any national estate	Reference to where mitigation is reflected
The proposed project will have no impact on national estate (heritage resources) in terms of the Heritage Resources Act (Act 25 of 1999).	Part A Section 7.5

18 Other matters required in terms of sections 24(4)(a) and (b) of the Act.

Section 7.3 contained in table 5 indicate specific information required by the competent authority.

19 Undertaking

The EAP herewith confirms

- the correctness of the information provided in the reports ☒
- the inclusion of comments and inputs from stakeholders and I&APs ; ☐
- the inclusion of inputs and recommendations from the specialist reports where relevant; ☐ and
- the acceptability of the project in relation to the finding of the assessment and level of mitigation proposed; ☒

Signature of EAP

Date

20 Declaration of independence

Shangoni hereby declares that it is an independent auditor in that it has no business, financial, personal or other interest in this project in respect of which Shangoni is appointed. Furthermore, no circumstances exist that may compromise the objectivity of Shangoni, excluding fair remuneration for work performed in connection with this project.

Report compiled **Draft For Client**
by: **Review**

Lee-Anne Fellowes

EAPASA Registration
number: 2019/850

Report reviewed by: **Draft For Client**
Review

Jan Nel



SACNASP

Registration number:

115574

