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DRAFT BASIC ASSESSMENT REPORT

for

**Proposed Stormwater Drainage
and Associated Infrastructure at
the Kusile Power Station, near
Delmas, Mpumalanga**

**Report No : 22018-46-Rep-001-Kusile
Stormwater BA-Rev0**

Submitted to :

Department of Forestry, Fisheries and
Environment
Environment House
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Submitted on behalf of :

Eskom Holdings SOC Ltd
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4 November 2022

22018



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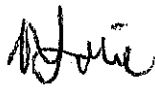


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DOCUMENT APPROVAL

ACTION	DESIGNATION	NAME	DATE	SIGNATURE
Prepared	Environmental Assessment Practitioner	Ms. N. Lalie	21/10/2022	
Reviewed	Environmental Lead	Dr. Mathys Vosloo	04/11/2022	
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Date	Revision	Author	Comments
04/11/2022	0	Ms. N. Lalie	Issued for public review

EXECUTIVE SUMMARY

A INTRODUCTION

Zitholele Consulting (Pty) Ltd (ZC) has been appointed by Eskom Holdings SOC Ltd (Eskom), to undertake the Basic Assessment process for the proposed construction of stormwater drainage and associated infrastructure at the Kusile Power Station, underneath the existing Overland Conveyor and near the existing radial stacker.

The proposed development of the stormwater drainage and associated infrastructure require Environmental Authorisation (EA) from the Competent Authority i.e. Department of Forestry, Fisheries and the Environment (DFFE) and a Water Use License (WUL) from the Department of Water and Sanitation (DWS) prior to construction. This Basic Assessment Report (BAR) deals with the EA process for consideration by the DFFE.

An Application for Environmental Authorisation form by way of a Basic Assessment (BA) Process in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA) as per the EIA Regulations of 2014 was submitted to the DFFE on 9 November 2022.

This BAR includes the following details:

- A description of the project, including project motivation;
- A description of the environment affected by the project, including Specialist Study findings;
- The Public Participation Process;
- Discussion of applicable alternatives;
- Assessment of impacts for the pre-construction, construction, operational and decommissioning phases; and
- The EAP's recommendations.

The purpose of this BAR is to provide the Interested and Affected Parties (I&APs), the approving authority, the DFFE, and the Commenting authorities with all the required and relevant information regarding the proposed project during the public review of the Draft BAR i.e. from 9 November 2022 to 12 December 2022.

Subsequent to the public review period, the comments received during the public review period will be responded to by the Environmental Assessment Practitioner (EAP). The Comments and Responses Report (CRR) which will include all comments received and responses thereto, will be included in the Final BAR that will be submitted to the DFFE for review and decision-making.

B LOCATION

The proposed stormwater drainage and associated infrastructure will be located at the Kusile Power Station complex within the Victor Khanye Local Municipality, near Delmas, Mpumalanga. The Power Station is located along Lone Rock Road (D686). The proposed infrastructure will be located underneath the existing overland conveyor system that conveys mixed coarse ash and gypsum from the power station to the radial stacker.

C PROJECT DESCRIPTION

The existing overland conveyor system is operating without stormwater infrastructure, and this has resulted in ash-laden stormwater runoff entering into the nearby wetlands, thereby contaminating the water resources. The proposed stormwater drainage and associated infrastructure is aimed at improving the environmental performance of the power station by eliminating the pollution of the watercourses.

The proposed activities entails the construction of the following infrastructure, viz, stormwater collection channels, Overland Conveyor (OLC) 1&2 collection sump with a working capacity of 125m³, the East Settling Tanks (EST) comprising of two compartments and a pump sump with a total storage capacity of 5394.3 m³, two 250NB interconnecting pipelines (Length = 45m each) from the OLC 1&2 sump to the EST, a 300mm diameter above ground steel pipeline to transfer clarified water from the east settling tank pump sump to the ash dump dirty water drain (Total Length - 688m), the West Settling Tanks (WST) comprising of two compartments and a pump sump with a total storage capacity of 1270.2m³, a 200mm diameter overland steel pipeline to transfer clarified water from the west settling tank pump sump to the ash dump dirty water drain (Total Length - 178m) and groundwater interception drains will also be installed underneath east and west settling tank foundations with groundwater drains draining to the environment. A gravel access road (169m in length and 6m wide) will be constructed from the sump to the EST.

D KEY IMPACTS

The following key impacts were identified and assessed within this BAR.

Pre-construction Phase

- Disturbance to faunal migration corridors

Construction Phase

- Destruction of heritage resources
- Destruction of fossil heritage / palaeontological resources
- Erosion of the wetland; deposition of dust; compaction of soil; altering hydromorphic soils

- Water quality impairment
- Change of drainage patterns; altering overland flow
- Loss of wetlands and a decrease in wetland functionality
- Loss and fragmentation of vegetation communities within the CBA
- Fragmentation effects that hinder the safe movement of faunal species
- Alteration of visual character of the site
- Temporary job creation

Operational Phase

- Surface water quality impairment
- Groundwater contamination
- Fragmentation of migration corridor for faunal species
- Loss and disturbance of floral and faunal species and communities. Loss and fragmentation of vegetation communities within the CBA

Decommissioning Phase

- Erosion of the wetland; deposition of dust; compaction of soil; altering hydromorphic soils
- Water quality impairment
- Change of drainage patterns, altering overland flow
- Loss of wetlands and a decrease in the functionality of the wetlands
- Loss and fragmentation of vegetation communities within the CBA
- Fragmentation effects that hinder the safe movement of faunal species
- Alteration of visual character
- Temporary job creation

E PROJECT ALTERNATIVES

To give effect to the principles of NEMA and Integrated Environmental Management (IEM), an EIA should assess a number of reasonable and feasible alternatives that may achieve the same end result as that of the preferred project alternative.

E-1 Location / Site Alternatives

There are no other location / site alternatives, as a need exists underneath the Overland Conveyor Link (OLC) system i.e. OLC 1 and OLC 2 system to convey stormwater run-off away from the nearby wetland. The OLC system 1 and 2 was constructed without a stormwater drainage system in place, and this led to stormwater runoff from the Radial Stacker and OLC entering into the nearby wetland i.e. the channelled valley bottom wetland.

The proposed construction of stormwater drainage underneath the OLC 1 and OLC 2 system and associated infrastructure, will divert stormwater run-off containing ash-laden water into a containment sump. The location of the containment sump (*which will act as a drainage basin*) will be at the lowest point of the stormwater drainage system, adjacent to the OLC and the power station internal road to ensure gravity within the channels to the sump.

The associated infrastructure, i.e. the East Settling Tank, inlet and outlet pipelines to and from the EST, the new West Settling Tank, inlet and outlet pipelines to and from the WST, the new gravel road (169m in length and 6m in width) and the 300mm diameter overland pipeline are ideally located near the OLC 1 and 2 system, Ash Disposal Facility (ADF) access road, the radial stacker, existing ash dump dirty water channel and the existing ash dump.

The proposed location of the stormwater drainage (v-drains) underneath the OLC system is within a transformed area of the Power Station and the associated infrastructure on either side of the ADF access road. The proposed construction of the associated infrastructure will occur within degraded grassland having low ecological sensitivity. Existing operations on site, the construction of the road and power station infrastructure has fragmented and disconnected the site from the natural areas.

E-2 Design / Layout Alternatives

The proposed design of the stormwater drainage and associated infrastructure was based on the following:

- Analysis and Design of Concrete Structures – John M. Robberts and Vernon Marshall
- Reinforced Concrete Designer's Handbook 10th Edition – Charles E. Reynolds and James C. Steedman
- SANRAL Drainage Manual 6th Edition

The following design criteria was also considered:

- The dirty water catchment area
- The drainage structures were designed for the 1:50 year return period
- Ogies weather station (SAWS Number: 0478093_W) with a Mean Annual Precipitation (MAP) of 745mm
- The natural ground levels were assessed in accordance with the Kusile Power Station Lidar Survey 2019
- Slope is 1:50 (2%)
- Manning's roughness coefficient is 0.013
- Catchment dimension is 450 m x 31 m
- Notional load of 1kN on crawl beam structure

No other layout alternatives were considered for the proposed stormwater drainage infrastructure. The proposed concrete V-drains which will serve as a channel for stormwater run-off underneath the existing OLC is considered ideal for the conveyance of the stormwater.

The V-drain channels are sized to ensure that no destruction to the conveyor foundation. For the conveyors, their foundation pad footings are spaced at 2.4m (edge to edge distance, therefore the two (2) v-drains channels linking the north and south side V-drain channels are 1.4m wide.

As indicated above, there are no ecologically sensitive areas within the study area that will be impacted by the proposed construction of the stormwater drainage and associated infrastructure. The layout has been optimised, based on the availability of land and the existing infrastructures that are found in the area. The location of the 300mm diameter overland pipeline from the EST to the existing ash dump dirty water channel, is located between the internal road and the existing gravel road. This will allow for easy access to the pipeline for maintenance and emergency purposes. The overland pipeline will be attached to pipe supports.

E-3 Technology Alternatives

Similar to the design / layout alternative, the selected technology option for the proposed stormwater drainage and associated infrastructure project was informed by:

- Current national and international best practice;
- SANRAL Drainage Manual 6th Edition; and
- The dirty water catchment area and the 1: 50-year return period.

The technology selected for implementation is that complies with all of the above-listed elements. There was, therefore, no need to investigate alternate technologies for the proposed stormwater infrastructure.

E-4 No-go Alternatives

This alternative considers the option of 'do nothing' and maintaining the status quo.

Should the DFFE decline the application, the nearby wetlands and watercourses will continue to be impacted by the lack of proper stormwater drainage and ash-laden water will continue to contaminate the watercourses, thereby resulting in the destruction of the associated faunal corridors. The DFFE would continue to issue environmental non-conformances to the Power Station. The Power Station may have to be shut-down, thereby impacting on Eskom's ability to provide electricity to the country. This will affect the local economy due to the lack of electricity infrastructure to sustain growth and development in all sectors.

If the proposed stormwater drainage and associated infrastructure is not approved, the present state of the environment (*in terms of the biological, physical, social and economic environment*) would continue to be negatively impacted by the lack of stormwater drainage and associated infrastructure, to contain the contaminated stormwater.

Therefore, the no-go alternative is not considered to be feasible.

F CONCLUSIONS AND RECOMMENDATIONS

It is the opinion of the EAP that should the project proceed, as impacts on the receiving environment can be minimised through the careful adherence to suggested mitigation measures. It is also recommended that the possible impacts on the channelled valley bottom wetland are monitored throughout the duration of the project, in accordance with the Wetland Rehabilitation Plan (Appendix 1 of the Wetland Baseline and Impact Assessment in Appendix E1).

The proposed stormwater drainage and associated infrastructure will enable ash-laden stormwater to be channelled along the v-drains from the overland conveyor to the sump, through the overland pipe to the EST and via interconnecting pipeline from the EST to the ash dump dirty water drains to avoid pollution of the nearby wetlands on site. The stormwater system will improve environmental performance of the Kusile Power Station.

The findings of the specialist studies undertaken together with the broader environmental assessment conclude that there are no fatal flaws that should prevent the project from proceeding. However, the following key impacts (Table 9-1) have been identified which will require the application of site and activity specific mitigation measures. These mitigation measures are included within the Environmental Management Programme (EMPr) to ensure that they receive the necessary attention.

The implementation of the Wetland Rehabilitation Plan (Appendix 1 of the Wetland Baseline and Impact Assessment in Appendix E1) is critical for the successful rehabilitation of the channelled valley bottom wetland that has been impacted by the current ash-laden stormwater runoff that is entering into the wetland system, thereby impacting on its functioning and water quality impairment.

Having assessed all the potential environmental impacts associated with the proposed development, it is the opinion of the EAP that the project is issued with a positive Environmental Authorisation from DFFE, based on the following reasons:

- The need and desirability of the project is attributed to the need for stormwater infrastructure to be installed underneath the existing overland conveyor that transfers mixed coarse ash and gypsum from the station to the radial stacker to prevent contamination of the wetlands and watercourses.
- A project-specific draft EMPr has been compiled according to (but not limited to) the impacts and mitigation measures included in this assessment. The Wetland Rehabilitation Plan is included as an Appendix to the EMPr and compliance with this Plan is legally-binding on Eskom to fulfil. This must be made a condition in the EA.
- The prescribed rehabilitation measures as per the Wetland Rehabilitation Plan, would improve the integrity and functioning of the system. Indirect benefits which contribute to water quality enhancement would be achieved through rehabilitation of the systems, and also the ability of the systems to support biodiversity. The rehabilitation of the

wetland is expected to improve the overall integrity (or health) and functioning of the wetland.

- The proposed installation of the stormwater infrastructure will lead to an overall improvement in the environmental compliance and performance of the Kusile Power Station.
- The proposed development will have minimal impacts on the receiving biophysical and socio-cultural and socio-economic environment. There are no fatal flaws that hinder the proposed development from proceeding.

To ensure that the identified negative impacts are minimised, and the positive impacts are enhanced, the following clauses are recommended as conditions of the Environmental Authorisation:

- The Environmental Management Programme (EMPr) is a legally binding document and the mitigation measures stipulated within the document and Basic Assessment Report must be implemented;
- An independent Environmental Control Officer (ECO) must be appointed to manage the implementation of the EMPr during the construction phase. Environmental Audit Reports must be compiled by the ECO and made available for inspection;
- Proactive measures must be taken to ensure that sediments and contaminants do not enter the channelled valley bottom wetland. The implementation of the Wetland Rehabilitation Plan for removal of the settled ash in the wetland will require a separate Application for Environmental Authorisation.
- Areas that have been disturbed during construction must be rehabilitated with species naturally occurring in the study area, and the disturbed areas should be monitored to detect any alien plant species and measures must be taken immediately to eradicate it from spreading.
- Disturbed surfaces to be rehabilitated, must be ripped and the area must be backfilled with excavated topsoil from the site.
- The vegetation cover must be restored by planting endemic grass species within the wetland and the surrounding areas that have been impacted by construction activities.
- Regular monitoring and maintenance (*such as removal of alien invasive plant species*) are required for successful revegetation/rehabilitation.
- If possible, the rehabilitated areas must be irrigated at regular intervals, taking care not to cause erosion or damage to the soil surface by using excessive force of water.
- The rehabilitated area is to be left undisturbed and all access prohibited, except when maintenance is being undertaken.
- During rehabilitation, the Contractor shall protect all areas susceptible to erosion by installing all necessary temporary and permanent drainage works, and by taking such other measures as may be necessary, to prevent the concentration of surface water and scouring of slopes, banks and other areas.
- All erosion, such as runnels, channels or sheet erosion, that develops during the project phase must be backfilled and consolidated, and the areas restored to their proper condition at the Contractor's expense.

- The Contractor shall not allow erosion to develop on a large scale before effecting repairs and all erosion damage shall be repaired as soon as possible and, in any case, not later than two months before the termination of the period of maintaining. All topsoil or other material accumulated inside drains shall be removed at the same time.
- The Monitoring Plan (Table 3-1) of the Wetland Rehabilitation Plan (Appendix 1 of the Wetland Baseline and Impact Assessment in Appendix E1) must be strictly enforced with regards to the methods, monitoring frequency and corrective action for vegetation cover, erosion, sedimentation, invasive alien plant species and solid waste management.
- All parties involved in the construction and ongoing maintenance of the proposed stormwater infrastructure (including Contractors, Engineers, and the Developer) are, in terms of NEMA's "Duty of Care" and "Remediation of Damage" principals (Section 28), required to prevent any pollution or degradation of the environment, be responsible for preventing impacts occurring, continuing or recurring and for the costs of repair of the environment.

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Appendix F1: Minutes of Pre-Application Meeting with DFFE

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Appendix F6: Preliminary Database of Interested and Affected Parties

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Appendix G: Environmental Management Programme (EMPr)

Appendix H: Drawings: Site Layout Plans

Appendix I: Application for Environmental Authorisation Form

LIST OF ACRONYMS

Acronym	Description
ADDD	Ash Dump Dirty Dam
ADF	Ash Disposal Facility
BA	Basic Assessment
BAR	Basic Assessment Report
BESS	Battery Energy Storage System
CA	Competent Authority
CBA	Critical Biodiversity Area
CRR	Comments and Responses Report
CVB	Channelled Valley Bottom
DBAR	Draft Basic Assessment Report
DFFE	Department of Forestry, Fisheries and the Environment
DWS	Department of Water and Sanitation
DPE	Department of Public Enterprise
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
EAPASA	Environmental Assessment Practitioner Association of South Africa
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
EMPr	Environmental Management Programme
ESA	Ecological Support Area
EST	East Settling Tank
GPS	Global Positioning System
GNR	Government Notice Regulation
HIA	Heritage Impact Assessment
HGM	Hydrogeomorphic Unit
I&APs	Interested and Affected Parties
IEM	Integrated Environmental Management
IWULA	Integrated Water Use License Application

Acronym	Description
IS	Importance and Sensitivity
NEMA	National Environmental Management Act 107 of 1998 (as amended)
NPAES	National Protected Areas Expansion Strategy
NT	National Treasury
NWA	National Water Act 36 of 1998
OHS	Occupational Health and Safety Act 85 of 1993
OLC	Overland Conveyor
PES	Present Ecological State
POSA	Plants of Southern Africa
POPIA	Protection of Personal Information Act, 2013 (Act No. 4 of 2013)
PPP	Public Participation Process
SAHRIS	South African Heritage Resources Information Systems
SACNASP	South African Council for Natural and Scientific Professions
SCC	Species of Conservation Concern
S&EIR	Scoping and Environmental Impact Reporting
VU	Vulnerable
WUL	Water Use Licence
WST	West Settling Tank
ZC	Zitholele Consulting

GLOSSARY OF TERMS

Term	Description
Alien species	A species that is not indigenous to the area or out of its natural distribution range.
Alternatives	Alternatives are different means of meeting the general purpose and need of a proposed activity. Alternatives may include location or site alternatives, activity alternatives, process or technology alternatives, temporal alternatives or the 'do nothing' alternative.
Assessment	The process of collecting, organising, analysing, interpreting and communicating information which is relevant.
Basic Assessment Process	As defined by NEMA.
Biological diversity	The variables among living organisms from all sources including, terrestrial, marine and other aquatic ecosystems and the ecological complexes they belong to.
Commence	The start of any physical activity, including site preparation and any other activity on site furtherance of a listed activity or specified activity, but does not include any activity required for the purposes of an investigation or feasibility study as long as such investigation or feasibility study does not constitute a listed activity or specified activity.
Construction	Construction means the building, erection or establishment of a facility, structure or infrastructure that is necessary for the undertaking of a listed or specified activity as per Regulations GNR 544, 545 and 546 of June 2010. Construction begins with any activity which requires Environmental Authorisation.
Cumulative impacts	The impact of an activity that in itself may not be significant, but may become significant when added to the existing and potential impacts eventuating from similar or diverse activities or undertakings in the area.
Decommissioning	To take out of active service permanently or dismantle partly or wholly, or closure of a facility to the extent that it cannot be readily re-commissioned. This usually occurs at the end of the life of a facility.
Direct impacts	Impacts that are caused directly by the activity and generally occur at the same time and at the place of the activity (e.g. noise generated by blasting operations on the site of the activity). These impacts are usually associated with the construction, operation or maintenance of an activity and are generally obvious and quantifiable.
'Do nothing' alternative	The 'do nothing' alternative is the option of not undertaking the proposed activity or any of its alternatives. The 'do nothing' alternative also provides the baseline against which the impacts of other alternatives should be compared.

Drainage	A drainage line is a lower category or order of watercourse that does not have a clearly defined bed or bank. It carries water only during or immediately after periods of heavy rainfall i.e. non-perennial, and riparian vegetation may or may not be present.
Ecosystem	A dynamic system of plant, animal and micro-organism communities and their non-living environment interacting as a functional unit.
Endangered species	Taxa in danger of extinction and whose survival is unlikely if the causal factors continue operating. Included here are taxa whose numbers of individuals have been reduced to a critical level or whose habitats have been so drastically reduced that they are deemed to be in immediate danger of extinction.
Endemic	An "endemic" is a species that grows in a particular area (is endemic to that region) and has a restricted distribution. It is only found in a particular place. Whether something is endemic or not depends on the geographical boundaries of the area in question and the area can be defined at different scales.
Environment	the surroundings within which humans exist and that are made up of: The land, water and atmosphere of the earth; Micro-organisms, plant and animal life; Any part or combination of (i) and (ii) and the interrelationships among and between them; and The physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and well-being.
Environmental assessment practitioner:	An individual responsible for the planning, management and coordinating of environmental management plan or any other appropriate environmental instruments introduced by legislation.
Environmental impact	An action or series of actions that have an effect on the environment.
Environmental management	Ensuring that environmental concerns are included in all stages of development, so that development is sustainable and does not exceed the carrying capacity of the environment.
Environmental management programme	An operational plan that organises and co-ordinates mitigation, rehabilitation and monitoring measures in order to guide the implementation of a proposal and its on-going maintenance after implementation.
Habitat	The place in which a species or ecological community occurs naturally.
Heritage	That which is inherited and forms part of the National Estate (Historical places, objects, fossils as defined by the National Heritage Resources Act of 2000).
Hazardous waste	Any waste that contains organic or inorganic elements or compounds that may, owing to the inherent physical, chemical or toxicological characteristics of that waste, have a detrimental impact on health and the environment.

Indigenous	All biological organisms that occurred naturally within the study area prior to 1800
Indirect impacts	Indirect or induced changes that may occur as a result of the activity (e.g. the reduction of water in a stream that supply water to a reservoir that supply water to the activity). These types of impacts include all the potential impacts that do not manifest immediately when the activity is undertaken, or which occur at a different place as a result of the activity.
Interested and affected party	Individuals or groups concerned with or affected by an activity and its consequences. These include the authorities, local communities, investors, work force, consumers, environmental interest groups and the general public.
Pollution	A change in the environment caused by substances (radio-active or other waves, noise, odours, dust or heat emitted from any activity, including the storage or treatment or waste or substances.
Rare species	Taxa with small world populations that are not at present Endangered or Vulnerable but are at risk as some unexpected threat could easily cause a critical decline. These taxa are usually localised within restricted geographical areas or habitats or are thinly scattered over a more extensive range. This category was termed Critically Rare by Hall and Veldhuis (1985) to distinguish it from the more generally used word "rare".
Red data species	Species listed in terms of the International Union for Conservation of Nature and Natural Resources (IUCN) Red List of Threatened Species, and/or in terms of the South African Red Data list. In terms of the South African Red Data list, species are classified as being extinct, endangered, vulnerable, rare, indeterminate, insufficiently known or not threatened (see other definitions within this glossary).
Riparian	The area of land adjacent to a stream or river that is influenced by stream-induced or related processes. Riparian areas which are saturated or flooded for prolonged periods would be considered wetlands and could be described as riparian wetlands. However, some riparian areas are not wetlands (e.g. an area where alluvium is periodically deposited by a stream during floods, but which is well drained).
Significant impact	An impact that by its magnitude, duration, intensity, or probability of occurrence may have a notable effect on one or more aspects of the environment.
Waste	Any substance, material or object, that is unwanted, rejected, abandoned, discarded or disposed of, or that is intended or required to be discarded or disposed of, by the holder of that substance, material or object, whether or not such substance, material or object can be re-used, recycled or recovered and includes all wastes as defined in Schedule 3 to the Waste Amendment Act (as amended on June 2014);

	or any other substance, material or object that is not included in Schedule 3 that may be defined as a waste by the Minister.
Watercourse	As per the National Water Act means - (a) a river or spring; (b) a natural channel in which water flows regularly or intermittently; (c) a wetland, lake or dam into which, or from which, water flows; and (d) any collection of water which the Minister may, by notice in the Gazette, declare to be a watercourse, and a reference to a watercourse includes, where relevant, its bed and banks.
Wetlands	land which is transitional between terrestrial and aquatic systems where the water table is usually at or near the surface, or the land is periodically covered with shallow water, and which under normal circumstances supports or would support vegetation typically adapted to life in saturated soil (Water Act 36 of 1998); land where an excess of water is the dominant factor determining the nature of the soil development and the types of plants and animals living at the soil surface (Cowardin et al., 1979).

DOCUMENT ROADMAP

This Basic Assessment Report (BAR) aims to conform to the requirements stipulated in Appendix 1 of the National Environmental Management Act 107 of 1998 (NEMA) Environmental Impact Assessment Regulations, 2014, as amended. The table below presents the document's structure, in terms of the aforementioned regulatory requirements. Based on the contents of this table, it is evident that the BAR conforms to the regulatory requirements and provides sufficient information to facilitate the Competent Authority (CA) to reach an informed decision with regards to granting or refusal of the Environmental Authorisation (EA).

Document Roadmap in terms of Appendix 1 NEMA EIA Regulations, 2014

Regulatory Requirement	Description	Document Section	
3(a)	Details of - (i) the EAP who prepared the report; and (ii) the expertise of the EAP, including a curriculum vita;	Appendix A Section 1.5	
3(b)	Details of the location of the activity, including: (i) the 21-digit Surveyor General code of each cadastral land parcel; (ii) where available, the physical address and farm name; and (iii) where the required information in items (i) and (ii) is not available, the coordinates of the boundary of the property or properties;	Section 2.2	
3(c)	A plan which locates the proposed activity or activities applied for as well as the associated structures and infrastructure at an appropriate scale, or, if it is - (i) a linear activity, a description and coordinates of the corridor in which the proposed activity or activities is to be undertaken; (ii) on land where the property has not been defined, the coordinates within which the activity is to be undertaken;	Appendix H Figure 2-2 and Figure 5-14	
3(d)	(d) a description of the scope of the proposed activity, including- (i) all listed and specified activities triggered and being applied for; (ii) a description of the associated structures and infrastructure related to the development;	Section 2.4 Section 4.1	
3(e)	a description of the policy and legislative context within which the development is located and an explanation of how the proposed development complies with and responds to the legislation and policy context.	Section 4	
3(f)	a motivation for the need and desirability for the proposed development, including the need and desirability of the activity in the context of the preferred location.	Section 2.6	
3(g)	a motivation for the preferred development footprint within the approved site.	Section 2.6 and Section 3.2	
3(h)	A full description of the process followed to reach the proposed development footprint within the approved site, including		
	(i)	details of the development footprint alternatives considered;	Section 3
	(ii)	details of the public participation process undertaken in terms of regulation 41 of the Regulations, including copies of the supporting documents and inputs;	Section 6
	(iii)	a summary of the issues raised by interested and affected parties, and an indication of the manner in which the issues were incorporated, or the reasons for not including them;	To be provided in the Final BAR

Regulatory Requirement	Description	Document Section
(iv)	the environmental attributes associated with the development footprint alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;	Section 5
(v)	the impacts and risks identified including the nature, significance, consequence, extent, duration and probability of the impacts, including the degree to which these impacts – (aa) can be reversed; (bb) may cause irreplaceable loss of resources; and (cc) can be avoided, managed or mitigated;	Section 7
(vi)	the methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks	Section 7
(vii)	positive and negative impacts that the proposed activity and alternatives will have on the environment and on the community that may be affected focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;	Section 7
(viii)	the possible mitigation measures that could be applied and level of residual risk;	Section 7
(ix)	if no alternative development locations for the activity were investigated, the motivation for not considering such; and	Section 3
(x)	a concluding statement indicating the preferred alternative development location within the approved site	Section 3.2
3(i)	a full description of the process undertaken to identify, assess and rank the impacts the activity and associated structures and infrastructure will impose on the preferred location through the life of the activity, including - (i) a description of all environmental issues and risks that were identified during the environmental impact assessment process; and (ii) an assessment of the significance of each issue and risk and an indication of the extent to which the issue and risk could be avoided or addressed by the adoption of mitigation measures	Section 7
3(j)	an assessment of each identified potentially significant impact and risk, including- (i) cumulative impacts; (ii) the nature, significance and consequences of the impact and risk; (iii) the extent and duration of the impact and risk; (iv) the probability of the impact and risk occurring; (v) the degree to which the impact and risk can be reversed; (vi) the degree to which the impact and risk may cause irreplaceable loss of resources; and (vii) the degree to which the impact and risk can be mitigated;	Section 7
3(k)	where applicable, a summary of the findings and recommendations of any specialist report complying with Appendix 6 to these Regulations and an indication as to how these findings and recommendations have been included in the final assessment report;	Section 9.1 Section 10
3(l)	an environmental impact statement which contains – (i) a summary of the key findings of the environmental impact assessment; (ii) a map at an appropriate scale which superimposes the proposed activity and its associated structures and infrastructure on the environmental sensitivities of the preferred site indicating any areas that should be avoided, including buffers; and (iii) a summary of the positive and negative impacts and risks of the proposed activity and identified alternatives;	Section 9.2 Section 10.1 Section 10.2 Section 10.3

Regulatory Requirement	Description	Document Section
3(m)	based on the assessment, and where applicable, recommendations from specialist reports, the recording of proposed impact management outcomes for the development for inclusion in the EMPr as well as for inclusion as conditions of authorisation	Section 10.2 Section 10.3 Appendix G: EMPr
3(n)	any aspects which were conditional to the findings of the assessment either by the EAP or specialist which are to be included as conditions of authorisation	Section 10.3
3(o)	a description of any assumptions, uncertainties and gaps in knowledge which relate to the assessment and mitigation measures proposed	Section 1.9
3(p)	a reasoned opinion as to whether the proposed activity should or should not be authorised, and if the opinion is that it should be authorised, any conditions that should be made in respect of that authorisation;	Section 10
3(q)	where the proposed activity does not include operational aspects, the period for which the environmental authorisation is required and the date on which the activity will be concluded, and the post construction monitoring requirements finalised	N/A
3(r)	an undertaking under oath or affirmation by the EAP in relation to: (i) the correctness of the information provided in the reports; (ii) the inclusion of comments and inputs from stakeholders and I&APs; (iii) the inclusion of inputs and recommendations from the specialist reports where relevant; and (iv) any information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested or affected parties	Section 1.6
3(s)	where applicable, details of any financial provisions for the rehabilitation, closure, and ongoing post decommissioning management of negative environmental impacts;	N/A
3(t)	any specific information that may be required by the competent authority; and	N/A
3(u)	any other matters required in terms of section 24(4)(a) and (b) of the Act.	N/A

1 INTRODUCTION

1.1 Project Background

Eskom Holdings SOC Limited (“Eskom”) is proposing to construct stormwater drainage and associated infrastructure underneath the existing Overland Conveyor Belt (OLC) at the Kusile Power Station in Mpumalanga.

The existing Overland Conveyor Belt 1 & 2 (OLC 1 & 2) system transmits mixed coarse ash and gypsum from the Kusile Power Station to the radial stacker. The system is operating without storm water drainage infrastructure to contain ash contaminated water along the conveyor servitudes, and this has resulted in ponding and discharge of the ash contaminated water into the nearby watercourse, thereby contaminating the environment. The ash contaminated water has also resulted in environmental non-conformances being issued to the Kusile Power Station for its operations around the Radial Stacker and the OLC.

Therefore, the purpose of project, is to prevent further environmental pollution, major impacts on surrounding wetlands, and spillage of ash laden stormwater into the nearby streams. This proposed solution entails the construction of stormwater channels (*concrete V-drains*) to contain and divert contaminated water to the proposed collection sumps for storage. Thereafter, the collection sumps will be emptied by means of pumping, through overland pipelines, to the East Settling Tank (EST). A new 300mm diameter overland pipeline will be constructed from the EST to the existing Ash Dump Dirty Water channel for final disposal to the existing Ash Dump Dirty Dam (ADDD). A new gravel road of approximately 6m in width and 169m in length, for operation and maintenance of the sumps and the EST will be constructed.

A West Settling Tanks (WST) comprising of two compartments and a pump sump will be constructed to the west of the radial stacker. A 200mm diameter overland steel pipeline to transfer clarified water from the WST pump sump to the ash dump dirty water drain will be constructed. Groundwater interception drains will also be installed underneath east and west settling tank foundations with groundwater drains draining to the channelled valley bottom wetland. A portion of the groundwater drain outlet pipe will be constructed in the channelled valley bottom wetland. The drain outlet pipe will convey groundwater from the EST and WST to the wetland. Note that this is clean groundwater and is not clarified water.

Zitholele Consulting (Pty) Ltd (“Zitholele”) has been appointed by Eskom, as the independent Environmental Assessment Practitioner (EAP) to undertake a Basic Assessment (BA) Process, including the Public Participation Process and Specialist Studies for the proposed project.

1.2 Purpose of this Report

In accordance with the National Environmental Management Act, No. 107 of 1998 (Act No. 107 of 1998) (NEMA) and the EIA Regulations of 4 December 2014 (Government Notice Regulation (GN R.982) (as amended), the issuing of an EA requires the undertaking of a BA process, with the associated Public Participation Process (PPP) and required the Specialist Studies. This will enable the Competent Authority (CA) to decide whether or not, to issue an EA for the proposed development.

The EIA Regulations of 2014 (as amended) allows for a BA process to be undertaken for activities with environmental impacts as listed in Listing Notice 1 (GN R.983) and Listing Notice 3 (GN R.985), as well as for the undertaking of a more rigorous two-tiered Scoping and Environmental Impact Reporting (S&EIR) process for activities with potentially greater environmental impact. Activities that may trigger the need to undertake a S&EIR process are listed in Listing Notice 2, as stipulated in GN R.984.

In terms of the EIA regulations of 2014 (as amended), activities associated with the proposed development are listed under Listing Notice 1 (GN R.983) and Listing Notice 3 (GN R.985), which requires a BA process to be undertaken. As such, a BA Process will be followed.

1.3 Report Structure

This Basic Assessment Report (BAR) aims to conform to the requirements stipulated in Appendix 1 of the National Environmental Management Act 107 of 1998 (NEMA) Environmental Impact Assessment Regulations, 2014, as amended.

This report documents the process and findings of the BA process and associated PPP for the proposed stormwater drainage and associated infrastructure. This report will be subject to a public comment period, after which it will be finalised, and submitted to the Competent Authority (CA) i.e. the Department of Forestry, Fisheries and the Environment (DFFE) for review and decision-making.

The BA Report is structured according to the following chapters:

- Chapter 1 provides background to proposed development and the BA process.
- Chapter 2 provides a description of proposed development.
- Chapter 3 provides details of the alternatives assessment.
- Chapter 4 outlines the policy and legislative context of the proposed development.
- Chapter 5 describes the affected biophysical and socio-economic environment.
- Chapter 6 outlines the approach to undertaking the BA and Public Participation Process.
- Chapter 7 describes the methodology for impact identification and assessment of impacts.
- Chapter 8 provides an assessment of the potential cumulative impacts

- Chapter 9 provides a summary of the key environmental findings.
- Chapter 10 presents the conclusions and recommendations based on the findings of the BA Report.
- Chapter 11 provides references used in the compilation of the BA Report.

1.4 Details of Environmental Assessment Practitioner

Zitholele is an empowerment company formed to provide specialist consulting services primarily to the public sector in the fields of Water Engineering, Integrated Water Resource Management, Environmental and Waste Services, Communication (public participation and awareness creation) and Livelihoods and Economic Development.

Zitholele has no vested interest in the proposed project and hereby declares its independence as required in terms of the EIA Regulations. Table 1-1 provides the Environmental Assessment Practitioner (EAP) details. CVs of the EAPs that undertook the assessment and compiled the report is included in Appendix A.

Table 1-1: Details of the Environmental Assessment Practitioner

Name and Surname	Ms. Natasha Lalie (EAP)
Highest Qualification	MSc (Environment and Society), University of Pretoria
Professional Registration	Registered EAP: Environmental Assessment Practitioners Association of South Africa (EAPASA), Registration No. 2021/3611.
Company Represented	Zitholele Consulting (Pty) Ltd
Physical Address	Building 1, Maxwell Office Park, Magwa Crescent West, Waterfall City, Midrand
Postal Address	P O Box 6002, Halfway House, 1685
Contact Number	011 207 2060
Facsimile	086 674 6121
E-mail	natashal@zitholele.co.za
Name and Surname	Dr. Mathys Vosloo (Project Associate, Project Consultant)
Highest Qualification	PhD (Zoology)
Professional Registration	Registered <i>Pr.Sci.Nat.</i> (Registration no. 400136/12) with South African Council for Natural Scientific Professions (SACNASP)
Company Represented	Zitholele Consulting (Pty) Ltd
Physical Address	Building 1, Maxwell Office Park, Magwa Crescent West, Waterfall City, Midrand
Postal Address	P O Box 6002, Halfway House, 1685
Contact Number	011 207 2079
Facsimile	086 674 6121
E-mail	mathysv@zitholele.co.za

1.5 Expertise of the Environmental Assessment Practitioner

Ms. Natasha Lalie has a MSc. Environment and Society from the University of Pretoria and has been an Environmental Assessment Practitioner (EAP) for almost nineteen years. She has undertaken numerous Scoping Reports, Environmental Management Programmes (EMPr's), Environmental Screening and Feasibility Studies and Environmental Permitting and

Licensing project, as required by NEMA and the EIA Regulations (as amended). She has been involved in a wide range of projects, which include waste management, industrial, township establishments, mixed-use development, road upgrades, infrastructure developments, change of land use, lodge developments, proposed bulk water pipelines, proposed transmission power lines, proposed filling stations, shopping centre developments and so on. Natasha Lalie is a registered EAP with the Environmental Assessment Practitioners Association of South Africa (EAPASA) since September 2021.

Dr Mathys Vosloo graduated from the Nelson Mandela Metropolitan University with a PhD in Zoology in 2012, after successfully completing a MSc in Zoology and BSc (Hons) in Zoology. Dr Vosloo is a member of the International Association for Impact Assessments (IAIA) and is a registered Professional Natural Scientist (*Pr. Sci. Nat*) in the field of Ecological Science with the South African Council for Natural Scientific Professionals (SACNASP) since 2012. He has been involved in electricity generation, transmission and distribution projects and their potential impacts on the environment for a large part of his career. Mathys has gained extensive experience in managing integrated environmental authorisation processes and has successfully managed large projects through the phases of EIA in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) and National Environmental Management Waste Act, 2008 (Act No. 59 of 2008). Mathys has also been involved in Water Use Licensing as a component of integrated authorisation processes.

Dr. Vosloo has been involved in electricity generation, transmission and distribution projects and their potential impacts on the environment for a large part of his career. Mathys has gained extensive experience in managing integrated environmental authorisation processes and has successfully managed large projects through the phases of EIA in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) and National Environmental Management Waste Act, 2008 (Act No. 59 of 2008). Mathys has also been involved in Water Use Licensing as a component of integrated authorisation processes. Mathys has a comprehensive understanding of the relevant environmental legislation and works intimately with specialist consultants to ensure that potential impacts are accurately identified, assessed and mitigated.

1.6 Statement of Zitholele's Independence and EAP Affirmation

Neither Zitholele, nor any of the authors of this Report have any material interest in the outcome of this Report, nor do they have any pecuniary or other interest that could be reasonably regarded as being capable of affecting their independence or that of Zitholele. Zitholele has no beneficial interest in the outcome of the assessment which is capable of affecting its independence.

EAP AFFIRMATION:

Section 16 (1) (b) (iv), Appendix 1 Section 3 (1) (r), Appendix 2 Sections 2 (l) and (j) and Appendix 3 Section 3 (s) of the Environmental Impact Assessment (EIA) Regulations, 2014 (promulgated in terms of the NEMA), require an undertaking under oath or affirmation by the EAP in relation to:

- The correctness of the information provided in the report;
- The inclusion of comments and inputs from stakeholders and interested and affected parties;
- The inclusion of inputs and recommendations from the specialist reports where relevant; and
- Any information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested and affected parties.

Zitholele and the EAPs managing this project hereby affirm that:

- To the best of our knowledge, the information provided in the report is correct, and no attempt has been made to manipulate information to achieve a particular outcome. Some information, especially pertaining to the project description, was provided by the applicant and/or their sub-contractors.
- To the best of our knowledge all comments and inputs from stakeholders and interested and affected parties have been captured in the report and no attempt has been made to manipulate such comment or input to achieve a particular outcome. Written submissions are appended to the report while other comments are recorded within the report. For the sake of brevity, not all comments are recorded verbatim and are mostly captured as issues, and in instances where many stakeholders have similar issues, they are grouped together, with a clear listing of who raised which issue(s).

Information and responses provided by the EAP to interested and affected parties are clearly presented in the report. Where responses are provided by the applicant (not the EAP), these are clearly indicated.

The EAP Declaration of Interest is included in Appendix B.

1.7 DFFE Screening Tool Assessments

In terms of GN R 960 (promulgated on 5 July 2019) and Regulation 16(1)(b)(v) of the 2014 EIA Regulations (as amended), the submission of a Screening Report generated from the DFFE's national web based environmental screening tool (<https://screening.environment.gov.za>) is compulsory for the submission of applications in terms of Regulation 19 and 21 of the 2014 EIA Regulations.

The screening tool assessments were undertaken for the project study area and the results of the screening tool assessments are presented in Table 1-2 and Table 1-3 below.

Table 1-2: Development Site Environmental Sensitivities assigned by the DFFE Screening Tool Assessment

Theme	Development Site Environmental Sensitivities
Agriculture	High
	Medium
Animal Species	Medium
Aquatic Biodiversity	Low
	Very high
Archaeological and Cultural Heritage	Low
Civil Aviation	Low
Defence	Low
Palaeontology	Medium
Plant Species	Low
	Medium
Terrestrial Biodiversity	Very High

Table 1-3: Specialist assessments identified in terms of the DFFE Screening Tool Assessment

Specialist Assessment	Development Site
Landscape/Visual Impact Assessment	A site verification assessment was undertaken. Refer to the photos of the site in Section 5.9, Photoplate 1. The site occurs within the boundary of the existing Kusile Power Station, underneath the existing OLC and near the existing radial stacker. The motivation for not undertaking this study is described below: <i>The proposed infrastructure will be at-ground level. There are no sensitive receptors surrounding the site that will have direct views of the site.</i>
Archaeological and Cultural Heritage	An Exemption letter from undertaking an Archaeological and Cultural Heritage Impact Assessment is provided in Appendix E4. The Screening Tool Report identified the site to have a low sensitivity.
Palaeontology Impact Assessment	The Palaeontological Impact Assessment of the development site and is included in Appendix E5.
Terrestrial Biodiversity Impact Assessment	A site sensitivity verification assessment was undertaken. The Screening Tool identified a 'Very High' terrestrial biodiversity sensitivity and through site investigations, the Terrestrial Ecologist found the site to be of a 'Low' sensitivity. Therefore, a Terrestrial Biodiversity Compliance Statement has been undertaken and is provided in Appendix E3.
Aquatic Biodiversity Impact Assessment	The Site Verification Assessment by an Aquatic Scientist with experience in wetland identification and delineation indicated that the watercourses within the project area were classified as wetland systems and typical riverine characteristics were not present. The watercourse associated with the stormwater drainage and associated infrastructure project was delineated as a channelled valley bottom wetland, namely VBC1.

Specialist Assessment	Development Site
	A Wetland Delineation and Functional Assessment was undertaken for the wetlands occurring within the 500m radius of the site. The Wetland Delineation and Functional Assessment is provided in Appendix E1.
Hydrology Assessment	A Hydrological and Floodline Assessment is included in Appendix E6.
Socio-Economic Assessment	<p>The Site Verification Assessment confirmed that the site is surrounded by vacant land. There are no sensitive receptors surrounding the site. <i>A Socio-Economic Impact Assessment will therefore not be undertaken.</i></p> <p>Limited jobs are to be created during the construction phase. The project will have a positive impact, in terms of improved environmental performance, as it will eliminate dirty water (<i>ash laden water</i>) spills into the surrounding environment.</p> <p>Key stakeholders were identified and notified of the proposed development. Refer to Section 5.8.</p>
Plant Species Assessment	Plant species assessment was included with the Terrestrial Biodiversity Compliance Statement that has been undertaken and included as Appendix E3.
Animal Species Assessment	Animal species assessment was included with the Terrestrial Biodiversity Compliance Statement that has been undertaken and included as Appendix E3.

The DFFE Screening Tool Assessments are presented in Appendix C.

1.8 Specialist Team

Specialist input in the fields of Terrestrial Ecology (flora and fauna), Freshwater and Aquatic Ecologists, Geohydrologist, Hydrologist, Archaeologist and Palaeontologist were identified to undertake the Specialist Studies for the proposed stormwater drainage and associated infrastructure. These specialists were appointed by Zitholele to undertake the necessary assessments to identify, assess impacts and propose appropriate mitigation and management measures for the identified impacts in their respective fields. The specialists commissioned for the project, including qualifications and professional registrations are provided in Table 1-4.

Table 1-4: Specialist team commissioned for the Kiwano Solar PV and BESS project

Specialist Field	Company	Specialist	Qualifications and Professional Registration
Terrestrial Ecology	The Biodiversity Company	Mr. Martinus Erasmus	B-Tech degree in Nature Conservation, Tshwane University of Technology SACNASP: <i>Cand. Sci. Nat.</i> Registration No. 118630: Ecological Science.
		Mr. Andrew Husted	MSc. Aquatic Science, University of Johannesburg SACNASP: <i>Pr. Nat. Sci.</i> , Registration No. 400213/11: Ecological Science, Environmental Science and Aquatic Science.

Specialist Field	Company	Specialist	Qualifications and Professional Registration
Aquatic and Wetland Ecology	The Biodiversity Company	Mr. Rian Pienaar	M.Sc. Environmental Science, North-West University Potchefstroom SACNASP: <i>Cand. Sci. Nat.</i>), Registration No. 135544: Environmental Science
		Mr. Andrew Husted	MSc. Aquatic Science, University of Johannesburg SACNASP: <i>Pr. Nat. Sci.</i> , Registration No. 400213/11: Ecological Science, Environmental Science and Aquatic Science.
Hydrology	Hydrological Environmental Engineering Solutions	Ms. Carla du Plessis	BEng Civil (Hons) University of Pretoria
		Mr. Deon van der Merwe	B Eng (Agric) - University of Pretoria - 1992 MBL - University of South Africa - 2001 <i>Pr Eng</i> – Engineering Council of South Africa (ECSA), Registration No. 960070
Heritage and Archaeology	PGS Heritage	Mr. Wouter Fourie	BA (Hon) Archaeology, University of Pretoria Accredited Professional Archaeologist (ASAPA) - 0041 Accredited Professional Heritage Practitioner (APHP)
Palaeontology	PGS Heritage	Ms. Elize Butler	MSc (Cum Laude) in Zoology, University of the Free State
Geohydrology	Milnex cc	Mr. Albert Kruger	B.Sc. Hons (Environmental sciences), North-West University SACNASP Reg. No. 123145 - Earth Science.
		Ms. Marietjie Kruger	B.Sc. Hons (Environmental Sciences: Hydrology), North-West University SACNASP Reg. No. 117644 - Water Resources Science.

The specialist Declaration of Interests are provided in Appendix D.

1.9 Assumptions and Limitations

The following assumptions and limitations were applicable to the studies undertaken within this BA Process:

- All information provided by the developer and I&APs to the environmental team was correct and valid at the time it was provided.
- It is assumed that the development site identified by the Applicant represents a suitable site for the proposed development of stormwater drainage and associated infrastructure.
- Studies assume that any potential impacts on the environment associated with the proposed development will be avoided, minimised or mitigated.
- This report and its investigations are project-specific.

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- This report was informed by the information provided by the Applicant, project engineers and findings of various specialist studies and site investigations undertaken at the time of compilation of this report.
 - The specialist studies conducted meet the minimum requirements, and as such, no additional studies were undertaken.
 - All spatial data available to the EAP was utilised in the assessment of the proposed development. It was not deemed necessary for additional spatial data to be obtained.

1.9.1 Terrestrial Biodiversity Compliance Statement

- All datasets accessed and utilised for this assessment are considered to be representative of the most recent and suitable data for the intended purposes;
- The handheld Global Positioning System (GPS) utilised for the fieldwork had a maximum accuracy of 5m. As such, any features spatially logged and mapped as part of this report may be offset by approximately 5m; and
- Only a single season survey was conducted for the respective studies, this would constitute a dry season survey, however the data received is considered sufficient to derive a meaningful baseline;
 - Flora identification is limited due to the lack of aboveground plant parts used to determine species, especially with regards to bulbous plants;
 - Cold blooded animals, such as reptiles and amphibians, are less active during these times and are thus less frequently observed.

1.9.2 Geohydrological Impact Assessment

- Auger refusal was encountered in all auger holes due to backfill material and rocks; and
- The study area was limited to underneath and within proximity to the Overland Conveyor Belt.

1.9.3 Wetland and Aquatic Baseline and Impact Assessment

- Areas characterised by external wetland indicators have been focussed on for this study. Areas lacking these characteristics, i.e. disturbed areas, developed areas etc. have not been focussed on;
- The desktop and On-site verification indicated that the watercourses within the project area were classified as wetland systems and typical riverine characteristics were not

present. According to the SASS5 methodologies outlined in Dickens and Graham (2002), wetland sites are not appropriate for SASS5 or the application of biological bands as provided in Dallas (2007). Therefore, macroinvertebrate assemblage was not assessed, and the focus was afforded to the wetland assessment. Furthermore, with the lack of riverine habitat Ichthyofauna assessment was not conducted;

- The GPS used for water resource delineations is accurate to within five meters.
- Therefore, the wetland delineation plotted digitally may be offset by at least five meters to either side; and
- The Wetland Rehabilitation Plan was undertaken before the conclusion of this project and have been added as an Appendix to the Wetland and Aquatic Baseline and Impact Assessment (Appendix E1).

1.9.4 Palaeontological Impact Assessment

- The focal point of geological maps is the geology of the area, and the sheet explanations of the Geological Maps were not meant to focus on palaeontological heritage. Many inaccessible regions of South Africa have never been reviewed by palaeontologists and the data is generally based on aerial photographs alone. Locality and geological information of museums and universities databases have not been kept up to date, or data collected in the past have not always been accurately documented.
- Comparable Assemblage Zones in other areas are also used to provide information on the existence of fossils in an area, which has not documented in the past. When using similar Assemblage Zones and geological formations for Desktop studies, it is generally assumed that exposed fossil heritage is present within the footprint. A field-assessment will thus improve the accuracy of the desktop assessment.

2 PROJECT DESCRIPTION

This chapter provides an overview of the proposed project and details the project scope which includes details relating to the planning/design, construction, operation, and decommissioning activities.

2.1 Regional Setting

The Kusile Power Station is located approximately 9km south-west of the Balmoral town in the Mpumalanga Province. Access to the site is gained from the R686 Provincial Roads. The study area is located at the Kusile Power Station, within the coarse ash OLC where the transport of ash and gypsum from the power station to the radial stacker occurs (Table 2-1).

Table 2-1: Details relating to project location

Local Municipality	Delmas Local Municipality
District Municipality	Nkangala District Municipality
Ward Number	Ward 9
Access to the site	Access to the site is gained from the R686 Provincial Roads.
Nearest Towns	Balmoral ~9km from the site Botleng ~26km from the site Witbank ~30km from the site Ogies ~ 20km from the site Kendal ~16km from the site Kwa-Guqa ~19km from the site Delmas ~30km from the site Phola ~15km from the site Witbank ~32km from the site

2.2 Project Site Description

The proposed development (*part of the stormwater v-drain and associated infrastructure*) will be located on Portion 1 of the Farm Hartebeesfontein 537 JR and the remainder of the proposed stormwater v-drain and associated infrastructure will be located on the Remainder of the Farm Klipfontein 566JR, approximately 32km north-east of Delmas. Details relating to the above properties and the ownership thereof, is provided in Table 2-2.

The site for the proposed development occurs within Ward 9 of the Victor Khanye Local Municipality within the Nkangala District Municipality in the Mpumalanga Province.

Table 2-2: Development property details of Portion 1 of the Farm Hartebeesfontein 537 JR

Property No.	537
Portion of Property	1
Property Type	Farm
Holding Area	Portion 1 of the Farm Hartebeesfontein 537 JR
Registration Division	JR
Surveyor-General Cadastral Code	T0JR00000000053700001
Property Area Size (ha)	475ha
Development Area Size (ha), of the linear infrastructure	~242m ²
Property Owner	Eskom Holdings SOC Limited

Title Deed Number	T106356/2007
Registration Date	2007/08/07

Table 2-3: Development property details of the Remainder of the Farm Klipfontein 566JR

Property No.	566
Portion of Property	0
Property Type	Farm
Holding Area	Remainder of the Farm Klipfontein 566JR
Registration Division	JR
Surveyor-General Cadastral Code	T0JR00000000056600000
Property Area Size (ha)	346.36
Development Area Size (ha), excl. linear infrastructure.	~16,800m ²
Property Owner	Eskom
Title Deed Number	T34481/1947
Registration Date	1947

The Kusile Power Station is accessed from the R686 Provincial Roads (Lone Rock Road). The site for the proposed stormwater drainage and associated infrastructure is accessed from the main internal roads through the power station. The proposed stormwater infrastructure will be located south-west of the existing Kusile Power Station, underneath the existing OLC and near the existing radial stacker.

2.3 Surrounding Land Uses

Refer to Table 2-4 for a description of the land uses surrounding the site earmarked for the proposed stormwater and associated infrastructure.

Table 2-4: Surrounding land uses

Direction	Land Use and Distance
North	Kusile Power Station Complex (adjacent) Lone Rock Road (R686) (~2km)
North-east	Open veld consisting of degraded vegetation (adjacent) Power Station Complex (adjacent) Channelled valley bottom wetland (adjacent)
East	Open veld consisting of degraded vegetation (adjacent) Power station internal road (adjacent)
South-east	Power station internal road (~200m)
South	Power station internal road (~160m) Ash dump (~350m)
South-west	Radial stacker (adjacent)
West	Open veld consisting of degraded vegetation (adjacent) Lone Rock Road (R686) (~1km)
North-west	Channelled valley bottom wetland (adjacent) Ash Dump Dirty Dam (ADDD) (~500m)

The proposed stormwater drainage and associated infrastructure refers to the following (refer to the location of the proposed infrastructure on Figure 2-2):

- Construction of stormwater collection channels (V-drain) underneath the existing OLC
- OLC 1&2 collection sump with a working capacity of 125m³
- East Settling Tanks (EST) comprising of two compartments and a pump sump with a total storage capacity of 5394.3m³
- Two 250NB interconnecting pipelines (Length = 45m each) from the OLC 1&2 sump to the EST
- A 300mm diameter above ground steel pipeline to transfer clarified water from the east settling tank pump sump to the ash dump dirty water drain (Total Length - 688m)
- West Settling Tanks (WST) comprising of two compartments and a pump sump with a total storage capacity of 1270.2 m³
- A 200mm diameter overland steel pipeline to transfer clarified water from the west settling tank pump sump to the ash dump dirty water drain (Total Length - 178m)
- Groundwater interception drains will also be installed underneath the east and west settling tank foundations with the groundwater outlet drain pipe draining to the channelled valley bottom wetland
- A gravel access road (169m) will be constructed from the sump to the EST, thereby connecting to the existing gravel road.



Figure 2-1: Locality map

ZITHOLELE CONSULTING

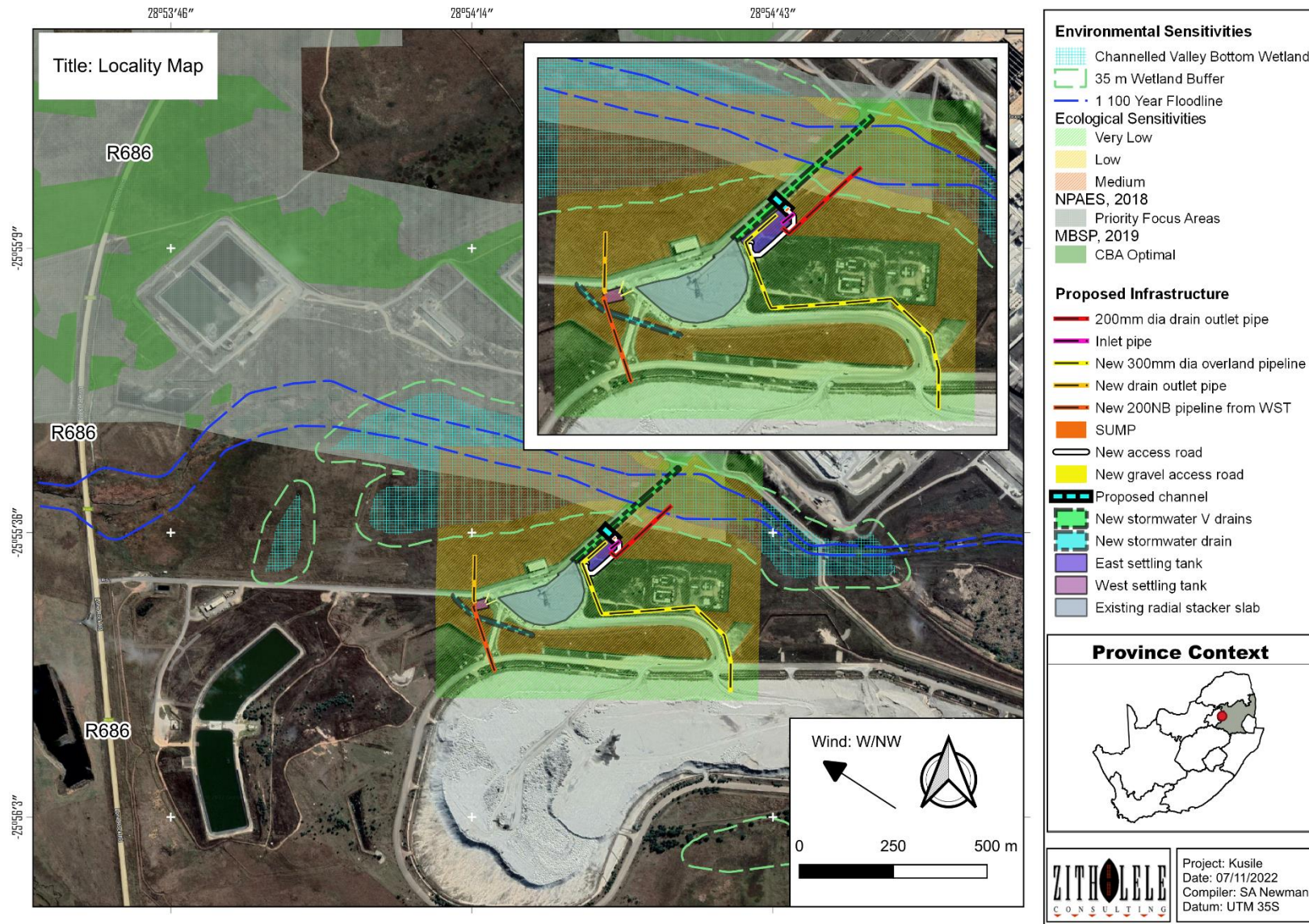


Figure 2-2: Locality map of proposed infrastructure

2.4 Description of the Planned Activities

Eskom Holdings SOC Ltd proposes the construction of stormwater drainage underneath the existing Overland Conveyor Belt and associated infrastructure near the power station Armcor Culvert or embankment and the existing radial stacker at the Kusile Power Station in Mpumalanga.

The Overland Link Conveyor 1 & 2 (OLC 1 & 2) system transmits mixed coarse ash and gypsum from the power station to the radial stacker. The system is currently operating without storm water drainage infrastructure to contain ash contaminated water along the conveyor servitudes, and this resulted in ponding and discharge of the wastewater into the watercourse, thereby contaminating the environment. The ash contaminated water has also resulted in environmental non-conformances being issued by the ECO to the Kusile Power Station for its operations around the radial stacker and the OLC.

Therefore, the purpose of project, is to prevent environmental pollution, major impacts on surrounding wetlands, and spillage of ash laden stormwater into the nearby streams. This proposed solution entails the construction of stormwater channels and associated infrastructure to contain and divert contaminated water to the proposed collection sumps for storage. Thereafter, the collection sumps will be emptied by means of pumping, through overland pipelines, to the EST. A new overland pipeline will be constructed from the East Settling Tank to the existing Ash Dump Dirty Water channel for final disposal to the existing Ash Dump Dirty Dam (ADDD). A new gravel road will be constructed from the sump to the EST, for operation and maintenance of the sumps and the tank.

2.4.1 System summary description

The detailed design for the OLC 1&2 Drainage system includes stormwater channels, a collection sump, and pipelines. The collection sump is situated on the south side of the OLC 1&2 system at the lowest point to ensure gravity flow within the channels to the sump. The collection sump acts as a drainage basin to temporarily store water from the identified dirty catchment area of the OLC 1&2 system. Subsequently, the water is pumped through a pipeline to the EST. The design includes stormwater channels to drain water from the identified dirty catchment area of the OLC 1&2 system to the collection sump. The design also includes earthworks (slope shaping, i.e. backfill and/or cut) to ensure runoff to the stormwater channels.

Refer to Drawing No. K30300098/06-571 (East Settling Tank) for the proposed infrastructure in Appendix H.

2.4.2 Upgrade of the Radial Stacker

The radial stacker ash storage slab currently has no facilities to prevent ash being washed off the slab and into the perimeter drains during storm events, nor to settle the ash for recovery to the slab or to pass clarified water free of ash to the Ash Dump Dirty Drain (ADDD).

There are no facilities to settle the ash before washing off the radial stacker slab to the East canal or the buried pipeline inlet sumps. These two existing facilities, including the inlet sumps along the length of the buried pipeline and the pipeline itself, have become totally blocked with ash. Because the ash has pozzolanic properties, it has hardened and is difficult to remove. The result of the blockages is that ash and dirty stormwater are being spilled to the surrounding environment.

The aim is to retain as much ash from the storm run-off as possible on the stacker slab, and then to settle and clarify the remaining stormwater discharge from the slab in new East and West Settling tanks, before transferring clarified water to the Ash Dump Dirty Dam (ADDD) complex via the existing ash dump perimeter dirty drain.

This will be achieved firstly by constructing an up-stand wall 700 mm high and 430m in total length, around most of the perimeter of the slab as shown in concept design Figure 2-3. Decant outlet chambers positioned at intervals at low spots will transfer clarified water off the slab into the perimeter channels.

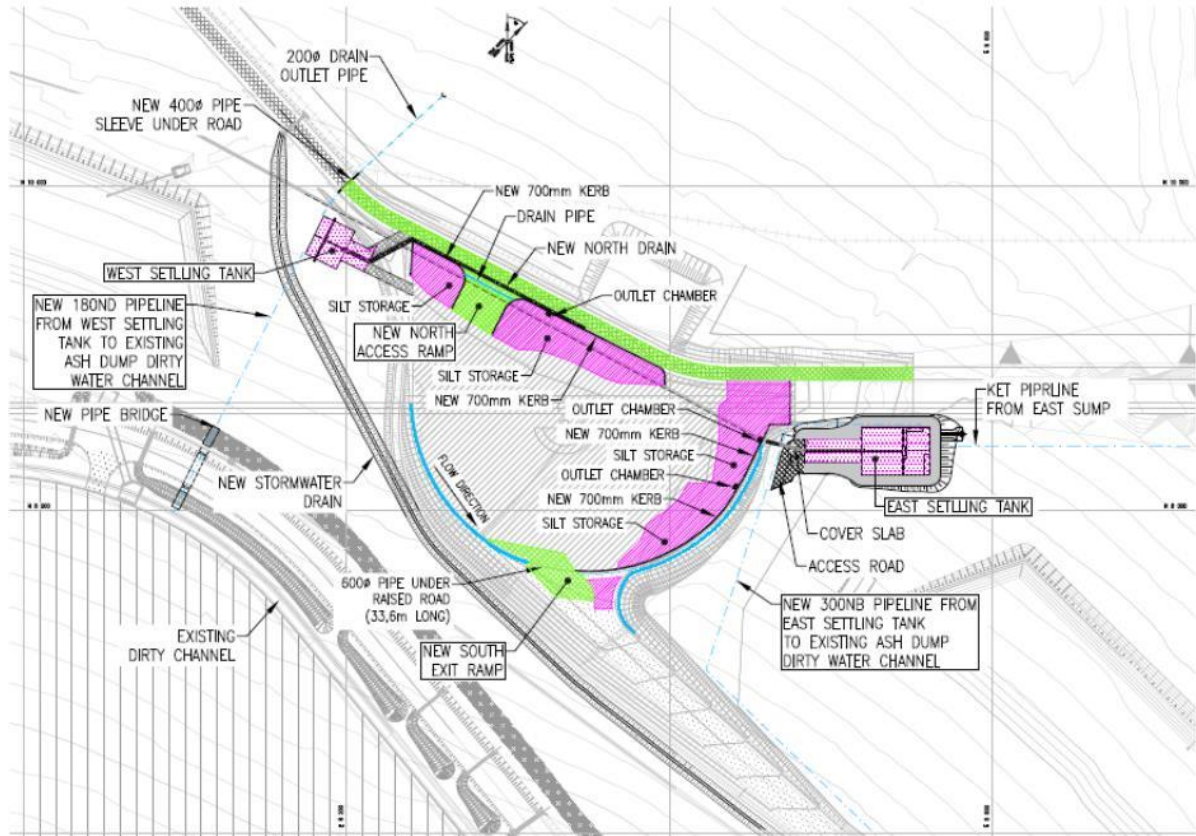


Figure 2-3: Conceptual Design Plan

The stacker slab is divided into two zones as shown in Figure 2-3:

- A large zone draining South-Eastwards towards the East trapezoidal perimeter drain
- A smaller zone draining North-Westwards towards the Northern perimeter of the slab, where a new rectangular perimeter drain will be necessary.

Clarified water from minor storm events on the Eastern part of the slab catchment will be decanted through outlet chambers, after settling out of the ash, to the existing trapezoidal perimeter drain on the East perimeter and hence to a new East Settling Tank.

Similarly, the Northern slab zone will discharge clarified water from minor storms via a new North perimeter drain to a new West Settling Tank.

Slab overflow with suspended ash solids that cannot be contained on the slab in a large storm, and all other ash-laden stormwater discharge will then be passed to the new East and West settling / detention tanks for settling out of suspended ash and transfer of clarified water to the settling tank pump sump.

After decanting clarified water from the East and West settling tanks into the tank collection/pump sumps, the clarified water will be pumped to the ADDD in two new above ground steel pipelines, via the existing ash dump dirty water channel.

Both pumping options will use standard submersible pumps serviced by slewing, pillar jib cranes, similar to those used in the Fly Ash/Unit 1/EAD de-gritting sump.

Proposed infrastructure for the radial stacker are illustrated on Drawing No. K30300098-06591_Radial Stacker Upgrade in Appendix H. The following infrastructure is proposed:

- 500mm high wall
- 600mm dia pipe under raised road
- 775mm high wall
- Covered trenches x 2
- Extent of flooded area
- New gate 2 and 3
- New 775mm kerb wall
- New 775mm kerb
- New 900mm wide access walkway to Gate G1
- New 900mm wide access walkway to Gate G2
- New 900mm wide access walkway
- New north drain
- New silt storage areas x 3

2.4.3 West Settling tank

The new west settling tank is shown on Drawing No. K30300098-06-566 (West Settling Tank) in Appendix H.

Three pipe bridges will be constructed to carry a 200mm dia pipeline over the stormwater channels. Please also refer to Drawing No: K30300098/06-565 in Appendix H.

Two pipe culverts for the 200-diameter pipe are required under the access roads. Pre-cast "ROCLA" units, comprising a base slab and a culvert unit, are to be used here. Refer to Drawing No. 30300098/06-583 for detail design and Drawing No. K30300098/06-566 for the location of the culverts on the Drawing in Appendix H.

A new stormwater drain is proposed from the radial stacker to the existing road. Refer to Drawing No. K30300098/06-566 in Appendix H for the location of the new stormwater drain.

Two new gravel access roads will connect to the existing radial stacker from the West Settling Tanks.

The proposed stormwater drainage and associated infrastructure refers to the following:

- Construction of stormwater collection channels (V-drain) underneath the existing OLC
- OLC 1&2 collection sump with a working capacity of 125m³
- East Settling Tanks (EST) comprising of two compartments and a pump sump with a total storage capacity of 5394.3m³
- Two 250NB interconnecting pipelines (Length = 45m each) from the OLC 1&2 sump to the EST
- A 300mm diameter above ground steel pipeline to transfer clarified water from the east settling tank pump sump to the ash dump dirty water drain (Total Length - 688m)
- West Settling Tanks (WST) comprising of two compartments and a pump sump with a total storage capacity of 1270.2 m³
- A 200mm diameter overland steel pipeline to transfer clarified water from the west settling tank pump sump to the ash dump dirty water drain (Total Length - 178m)
- Groundwater interception drains will also be installed underneath the east and west settling tank foundations with a groundwater outlet drain draining into the channelled valley bottom wetland
- A gravel access road (169m length and 6m width) will be constructed from the sump the EST

2.5 Actions to be undertaken during each lifecycle phase

2.5.1 Pre-Construction and Construction Process for proposed development

The pre-construction and construction of the proposed development will be undertaken in the following steps:

- Undertaking and completion of proposed development concept;
- Obtain the relevant permits and siting approval (Undertake the BA and IWULA Processes);
- Pre-Construction site work, such as Geotechnical Investigations;

-
- Undertaking of, and compliance with pre-construction activities and conditions in terms of the Environmental Authorisation and Water Use License (WUL);
 - Demarcation of the no-go areas and the construction footprint areas;
 - Site preparation (vegetation clearance) and excavations for the above proposed infrastructure;
 - Foundations for the construction of the EST and WST;
 - Installation of the concrete v-drains, interconnecting pipelines and the overland pipelines;
 - Construction and/or installation of water supply and storm water management infrastructure; and
 - Testing and commissioning.

The construction phase for the proposed project will take approximately 2 years.

2.5.2 Operational and Maintenance Activities

After the installation and commissioning, the responsibility for safe operation and asset management will be transferred to the Eskom operation team. It should be noted that in some cases the manufacturer of certain components remains responsible for maintenance of specific components as part of a service agreement. A plan for systematic maintenance and function testing should be kept on location, showing in detail how components and systems should be tested and what should be observed during testing. Visual periodical and mandatory services should be kept in place. Maintenance may be performed manually or automated. In case of manual maintenance, a higher level of safety precautions needs to be undertaken.

2.5.3 Decommissioning and Recycling Activities

The proposed stormwater infrastructure will be in operation at the Kusile Power Station for the lifespan of the power station. In the event that the Kusile Power Station will be decommissioned in the future, the installed infrastructure would require de-installation.

The infrastructure will be disassembled, removed from the site, transported, re-used/recycled. Before the transportation of the components of the stormwater infrastructure, it should be made sure that the infrastructure and its components are safe to transport.

The decommissioning of the stormwater infrastructure will have similar activities to those that are performed during construction. The decommissioning activities anticipated once the facility reached its end of life are the following:

- Disassembling of the components of the stormwater and associated infrastructure and appropriate disposal to landfill.
- Site preparation, removal of all equipment for disposal and re-use.

- Site Rehabilitation to acceptable level as per Environmental Management Programme (EMPr) guidelines.

2.6 Project Need and Desirability

As explained in the project description (Section 2.4), contaminated ash-laden stormwater run-off is entering into the nearby watercourses and the surrounding environment, as a result of the lack of a proper stormwater drainage infrastructure being in place at OLC1 and 2 and the radial stacker. Environmental non-conformances have been issued by the DFFE to the Power Station for the operations around the radial stacker and the OLC 1 and 2 system. Therefore, a need exists at the site in particular, i.e. at the radial stacker and the OLC 1 and 2 systems for stormwater drainage to prevent further contamination of the watercourse.

The construction of the stormwater drainage and associated infrastructure will ensure that the operation of the OLC 1 and 2 system will be in compliance with the environmental requirements. Stormwater runoff will be directed to the proposed stormwater channels (v-drains) to contain and divert contaminated water to the proposed collection sumps for storage. Thereafter, the collection sumps will be emptied by means of pumping, through overland pipelines, to the Radial Stacker's collection sump. A new overland pipeline will be constructed from the East Settling Tank to the existing Ash Dump Dirty Water channel for final disposal to the existing Ash Dump Dirty Dam (ADDD).

3 CONSIDERATION OF ALTERNATIVES

In terms of the EIA Regulations, reasonable and feasible alternatives are required to be considered within the EIA process. All identified, feasible alternatives are required to be assessed in terms of social, biophysical, economic and technical factors. A key challenge of the EIA process is the consideration of alternatives. Most guidelines use terms such as 'reasonable', 'practicable', 'feasible' or 'viable' to define the range of alternatives that should be considered. Essentially there are two types of alternatives:

- Incrementally different (modifications) alternatives to the project; and
- Fundamentally (totally) different alternatives to the project.

Fundamentally different alternatives are usually assessed at a strategic level, and EIA practitioners recognise the limitations of project specific EIAs to address fundamentally different alternatives.

Incrementally different alternatives relate specifically to the project under investigation. "Alternatives", in relation to a proposed activity, means different ways of meeting the general purposes and requirements of the activity, which may include alternatives to:

- the property on which, or location where, it is proposed to undertake the activity;
- the type of activity to be undertaken;
- the design or layout of the activity;
- the technology to be used in the activity; and
- the operational aspects of the activity.

These alternatives are discussed below.

3.1 Approach to the assessment of alternatives

This section discusses the alternatives that will be considered as part of the EIA. NEMA requires that alternatives to a proposed activity must be considered (NEMA, Section 24). Alternatives are different means of meeting the general purpose and need of a proposed activity. In the BA process, the consideration of alternatives is always important, should the proposed site not fit into the parameters of the EIA framework. The alternatives can be categorised as follows.

- Location / Site alternatives
- Layout Alternatives
- Technology Alternatives
- No-Go alternative

3.2 Location / Site Alternatives

There are no other location / site alternatives, as a need exists underneath the Overland Conveyor Link (OLC) system i.e. OLC 1 and OLC 2 system to convey stormwater run-off away from the nearby wetland. The OLC system 1 and 2 was constructed without a stormwater drainage system in place, and this led to stormwater runoff entering into the nearby wetland i.e. the channelled valley bottom wetland.

The proposed construction of stormwater drainage underneath the OLC 1 and OLC 2 system and associated infrastructure near the OLC system and the radial stacker, will divert stormwater run-off containing ash-laden water into a containment sump. The location of the containment sump (*which will act as a drainage basin*) will be at the lowest point of the stormwater drainage system, adjacent to the OLC and the power station internal road to ensure gravity within the channels to the sump. The location for the sump is located strategically to ensure provision for the gypsum conveyors proposed to be constructed in the future.

The associated infrastructure, i.e. the East Settling Tank, inlet and outlet pipelines to and from the EST, the new West Settling Tank, inlet and outlet pipelines to and from the WST, the new gravel road and the 300mm dia overland pipeline are ideally located near the OLC 1 and 2 system, internal power station road, the radial stacker, existing ash dump dirty water channel and the existing ash dump.

The proposed location of the stormwater drainage (v-drains) underneath the OLC system is within a transformed area of the power station i.e. on either side of the ADF access road or Armcor Culvert (Embankment). The proposed construction of the associated infrastructure will occur within degraded grassland having low ecological sensitivity. Existing operations on site, the construction of the road and power station infrastructure has fragmented and disconnected the site from the natural areas.

Given the reasons outlined above, there are no other site alternatives for the proposed stormwater drainage and associated infrastructure.

3.3 Design / Layout Alternatives

The proposed design of the stormwater drainage and associated infrastructure was based on the following:

- Analysis and Design of Concrete Structures – John M. Robberts and Vernon Marshall
- Reinforced Concrete Designer's Handbook 10th Edition – Charles E. Reynolds and James C. Steedman
- SANRAL Drainage Manual 6th Edition

The following design criteria was also considered:

- The dirty water catchment area
- The drainage structures were designed for the 1:50 year return period
- Ogies weather station (SAWS Number: 0478093_W) with a Mean Annual Precipitation (MAP) of 745mm
- The natural ground levels were assessed in accordance with the Kusile Power Station Lidar Survey 2019
- Slope is 1:50 (2%)
- Manning's roughness coefficient is 0.013
- Catchment dimension is 450 m x 31 m
- Notional load of 1kN on crawl beam structure

No other layout alternatives were considered for the proposed stormwater drainage infrastructure. The proposed concrete V-drains which will serve as a channel for stormwater run-off underneath the existing OLC is considered ideal for the conveyance of the stormwater.

The V-drain channels are sized to ensure no destruction to the conveyor foundation. For the conveyors, their foundation pad footings are spaced at 2.4m (edge to edge distance, therefore the two (2) V-drains channels linking the north and south side V-drain channels are 1.4m wide.

As indicated above, there are no ecologically sensitive areas within the study area that will be impacted by the proposed construction of the stormwater infrastructure. The layout has been optimised, based on the availability of land and the existing infrastructures that are found in the area. The location of the 300mm diameter overland pipeline from the EST to the existing ash dump dirty water channel, is located between the internal road from the Radial Stacker to the ADF and the existing gravel road. This will allow for easy access to the pipeline for maintenance and emergency purposes. The overland pipeline will be attached to pipe supports.

The OLC 1&2 collection sump and the two pipelines connecting it to the EST will be constructed and installed as per the supplier's design specifications.

3.4 Technology Alternatives

Similar to the design / layout alternative, the selected technology option for the proposed stormwater drainage and associated infrastructure project was informed by:

- Current national and international best practice;
- SANRAL Drainage Manual 6th Edition; and
- The dirty water catchment area and the 1: 50-year return period.

The technology selected for implementation is that complies with all of the above-listed elements. There was, therefore, no need to investigate alternate technologies for the proposed stormwater infrastructure.

3.5 No-go Alternatives

This alternative considers the option of 'do nothing' and maintaining the status quo.

Should the DFFE decline the application, the nearby wetlands and watercourses will continue to be impacted by the lack of proper stormwater drainage and ash-laden water will continue to contaminate the watercourses, thereby resulting in the destruction of the associated faunal corridors. The DFFE would continue to issue environmental non-conformances to the Power Station. The Power Station may have to be shut-down, thereby impacting on Eskom's ability to provide electricity to the country. This will affect the local economy due to the lack of electricity infrastructure to sustain growth and development in all sectors.

If the proposed stormwater infrastructure is not approved, the present state of the environment (*in terms of the biological, physical, social and economic environment*) would continue to be negatively impacted by the lack of stormwater drainage and associated infrastructure, to contain the contaminated stormwater.

Therefore, the no-go alternative is not considered to be feasible.

4 POLICY AND LEGISLATIVE CONTEXT

This chapter provides an overview of the legal context of the proposed project, including the applicable legislation, guidelines and information that will inform the BA process.

4.1 Requirement for an EIA

In terms of Sections 24 and 24D of NEMA, as read with Government Notices R983, as amended, a Basic Assessment process is required for the proposed development. The table below contains the listed activities in terms of the EIA Regulations of December 2014, as amended, which apply to the proposed development, and for which an application for an EA has been applied. Table 4-1 also includes a description of those project activities, which relate to the applicable listed activities.

Table 4-1: Listed activities triggered by the proposed project

Activity No(s):	Basic Assessment Activity(ies) as set out in Listing Notice 1 of the EIA Regulations, 2014 as amended	Applicability of listed activities to the proposed development
12 of GNR No. 983	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; (b) in front of a development setback; or (c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse.	The proposed stormwater drainage (v-drain) will occur 32m of the channelled valley bottom wetland. The drainage outlet pipe will occur within the channelled valley bottom wetland. A section of the outlet pipe will occur 32m of the wetland.
19 of GNR No. 983	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.	The drainage outlet pipe will occur within the channelled valley bottom wetland. The construction of the stormwater drainage infrastructure (V-drain) will not directly impact on the wetland as the v-drain will be constructed within the internal Ash Disposal Facility (ADF) access road at the Kusile Power Station.
14 of GNR No. 985	xii) The development of infrastructure or structures with a physical footprint of 10 square metres or more. Where such development occurs – (a) within a watercourse. (c) if no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse. (a) In Mpumalanga: (ii) Outside urban areas, in:	The proposed stormwater drainage and associated infrastructure will be more than 10m ² in extent. The study area occurs in Mpumalanga. A portion of the site occurs within a CBA (<i>Systematic Biodiversity Plan was adopted by the Mpumalanga Department of Agriculture, Rural Development, Land and Environmental Affairs</i>). A portion of the site falls within the priority focus areas for expansion according to the 2016 NPAES dataset.

Activity No(s):	Basic Assessment Activity(ies) as set out in Listing Notice 1 of the EIA Regulations, 2014 as amended	Applicability of listed activities to the proposed development
	(bb) National Protected Area Expansion Strategy Focus Areas (NPAES). (ff) Critical biodiversity areas (CBA) or ecosystems service areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans.	The proposed stormwater drainage (v-drain) will occur 32m of the channelled valley bottom wetland. The drainage outlet pipe will occur within the channelled valley bottom wetland. A section of the outlet pipe will occur 32m of the wetland.

Refer to Table 4-2 for the co-ordinates of the listed activities.

Table 4-2: Co-ordinates of listed activities triggered by the proposed project

Listed Activity No. and Activity No.	Activity Description	Co-ordinates of listed activities
Listing Notice No. 1: Activity 12	Construction of stormwater v-drain within 32m of the channelled valley bottom wetland	Start: 25°55'30.08"S and 28°54'34.28"E End: 25°55'34.12"S and 28°54'29.46"E
	Drain outlet pipe in the wetland and 32m of the channelled valley bottom wetland	Start: 25°55'33.62"S and 28°54'33.38"E End: 25°55'35.19"S and 28°54'31.68"E
Listing Notice No. 1: Activity 19	Drain outlet pipe in the wetland	Start: 25°55'33.62"S and 28°54'33.38"E End: 25°55'34.42"S and 28°54'32.48"E
Listing Notice No. 3: Activity 14	Construction of stormwater v-drain within 32m of the channelled valley bottom wetland, within the CBA and the NPAES.	Start: 25°55'30.08"S and 28°54'34.28"E End: 25°55'34.12"S and 28°54'29.46"E
	Drain outlet pipe in the wetland and 32m of the channelled valley bottom wetland, within the CBA and the NPAES.	Start: 25°55'33.62"S and 28°54'33.38"E End: 25°55'35.19"S and 28°54'31.68"E

4.2 Regulatory and Legal Context

4.2.1 Legislation and Guidelines that have informed the preparation of this Basic Assessment Report

The following legislation and guidelines have informed the scope and content of this BAR:

- National Environmental Management Act (NEMA) 107 of 1998

- EIA Regulations, published under Chapter 5 of NEMA (GNR R982 in Government Gazette No 40772 of December 2014, as amended)
- Guidelines published in terms of the NEMA EIA Regulations, in particular:
 - i. Public Participation in the EIA Process
 - ii. Integrated Environmental Management Information Series (published by DFFE)

Several other Acts, standards or guidelines have also informed the project process and the scope of issues assessed in this report. A listing of relevant legislation is provided in Table 4-3.

Table 4-3: Relevant legislative permitting requirements applicable to the proposed development

Legislation	Applicable Requirements	Relevant Authority	Compliance requirements
National Legislation			
National Environmental Management Act (Act No 107 of 1998)	<p>The EIA Regulations have been promulgated in terms of Chapter 5 of the Act. Listed activities which may not commence without an environmental authorization are identified within these Regulations.</p> <p>In terms of S24(1) of NEMA, the potential impact on the environment associated with these listed activities must be assessed and reported on to the competent authority charged by NEMA with granting of the relevant environmental authorization.</p> <p>In terms of GN R982, R983 and R985 of December 2014, a Basic Assessment Process is required to be undertaken for the proposed project.</p>	DFFE – Competent Authority.	<p>An Environmental Authorisation (EA) is required, by way of a BA process.</p> <p>The BAR report has been submitted to the DFFE.</p>
National Environmental Management Act (Act No 107 of 1998)	In terms of the Duty of Care Provision in S28(1) the project proponent must ensure that reasonable measures are taken throughout the life cycle of this project to ensure that any pollution or degradation of the environment associated with this project is avoided, stopped or minimized. In terms of NEMA, it has become the legal duty of a project proponent to consider a project holistically, and to consider the cumulative effect of a variety of impacts.	DFFE	The licensing requirements above applies to the project. The Duty of Care Provision will continue to be applied throughout the life cycle of the project.
Environment Conservation Act (Act No 73 of 1989)	National Noise Control Regulations (GN R154 dated 10 January 1992)	DFFE – lead authority.	There is no requirement for a noise permit, in terms of the legislation. Noise impacts may result from specific activities carried out during the construction phase of the project and could present an intrusion impact to the workers of the Power Station.
National Water Act (Act No 36 of 1998)	Water uses under S21 of the Act must be licensed, unless such water uses falls into one of the categories listed in S22 of the Act or falls under the general authorization (and then registration of the water use is	Department of Water and Sanitation (DWS)	The proposed stormwater drainage and associated infrastructure occurs within the

Legislation	Applicable Requirements	Relevant Authority	Compliance requirements
	required). Consumptive water uses may include the taking of water from a water resource and storage - Sections 21a and b. Non-consumptive water uses may include impeding or diverting of flow in a water course - Section 21c; and altering of bed, banks or characteristics of a watercourse – Section 21i.		500m regulated area of the wetland and within the 1: 100-year floodline of the channeled valley bottom wetland. Therefore, a Water Use License (WUL) will be required in terms of Section 21(c) and 21 (i) of the National Water Act, 1998 (Act No. 36 of 1998).
National Environmental Management: Air Quality Act (Act No 39 of 2004)	<p>Sections 18, 19 and 20 of the Act allow certain areas to be declared and managed as “priority areas” in terms of air quality. Declaration of controlled emitters (Part 3 of Act) and controlled fuels (Part 4 of Act) with relevant emission standards.</p> <p>Section 32 makes provision for measures in respect of dust control. Section 34 makes provision for:</p> <ol style="list-style-type: none"> i. the Minister to prescribe essential national noise standards – <ol style="list-style-type: none"> (a) for the control of noise, either in general or by specified machinery or activities or in specified places or areas; or (b) for determining – <ol style="list-style-type: none"> (i) a definition of noise (ii) the maximum levels of noise (2) When controlling noise, the provincial and local spheres of government are bound by any prescribed national standards. 	<p>DFFE – air quality</p> <p>Local Municipality - Noise</p>	<p>No permitting or licensing requirements applicable for air quality aspects. The section of the Act regarding noise control is in force, but no standards have yet been promulgated. Draft regulations have however, been promulgated for adoption by Local Authorities. An atmospheric emission license issued in terms of Section 22 may contain conditions in respect of noise. This will, however, not be relevant to the facility, as no atmospheric emissions will take place. The Act provides that an air quality officer may require any person to submit an atmospheric impact report if there is reasonable suspicion that the person has failed to comply with the Act.</p>
National Heritage Resources Act (Act No 25 of 1999)	<p>Section 38 states that Heritage Impact Assessments (HIAs) are required for certain kinds of development including:</p> <ul style="list-style-type: none"> • the construction of a road, power line, pipeline, canal or other similar linear development or barrier exceeding 300 m in length. 	<p>DFFE where heritage assessment is a component of the BA process.</p>	<p>An exemption from undertaking an HIA was completed.</p> <p>A permit may be required should identified cultural/heritage sites on</p>

Legislation	Applicable Requirements	Relevant Authority	Compliance requirements
	<ul style="list-style-type: none"> any development or other activity which will change the character of a site exceeding 5 000 m² in extent. <p>The relevant Heritage Resources Authority must be notified of developments such as linear developments (such as roads and power lines), bridges exceeding 50 m, or any development or other activity which will change the character of a site exceeding 5 000 m²; or the rezoning of a site exceeding 10 000 m² in extent. This notification must be provided in the early stages of initiating that development, and details regarding the location, nature and extent of the proposed development must be provided. Standalone HIAs are not required where an EIA is carried out, as long as the EIA contains an adequate HIA component that fulfils the provisions of Section 38. In such cases only those components not addressed by the EIA should be covered by the heritage component.</p>		<p>site be required to be disturbed or destroyed, as a result of the proposed development.</p>
<p>National Environmental Management: Biodiversity Act (Act No 10 of 2004)</p>	<ul style="list-style-type: none"> Provides for the MEC/Minister to identify any process or activity in such a listed ecosystem as a threatening process (S53) A list of threatened and protected species has been published in terms of S 56(1) - Government Gazette 29657. Three government notices have been published, i.e. GN R 150 (Commencement of Threatened and Protected Species Regulations, 2007), GN R 151 (Lists of critically endangered, vulnerable and protected species) and GN R152 (Threatened or Protected Species Regulations). Provides for listing threatened or protected ecosystems, in one of four categories: critically endangered (CR), endangered (EN), vulnerable (VU) or protected. The first national list of threatened terrestrial ecosystems has been gazetted, together with supporting information on the listing process including the purpose and rationale for listing ecosystems, the criteria used to identify listed ecosystems, the implications of listing ecosystems, and summary statistics and national maps of listed ecosystems (National Environmental Management: Biodiversity Act: National list of 	<p>DFFE</p> <p>Application for tree removal permit</p>	<p>Under this Act, a permit would be required for any activity which is of a nature that may negatively impact on the survival of a listed protected species.</p> <p>A Terrestrial Biodiversity Compliance Statement has been undertaken as part of the Basic Assessment Process.</p> <p>No Species of Conservation Concern (SCC) were identified within the footprint of the proposed development. A permit is therefore not required.</p>

Legislation	Applicable Requirements	Relevant Authority	Compliance requirements
	<p>ecosystems that are threatened and in need of protection, (G 34809, GN 1002), 9 December 2011).</p> <ul style="list-style-type: none"> • DFFE published Regulations on Alien and Invasive Species (AIS) in terms of the National Environmental Management: Biodiversity Act, on Friday 1st August 2014. A total of 559 alien species are now listed as invasive, in four different categories. A further 560 species are listed as prohibited, and may not be introduced into the country 		<p>As such, the potential occurrence of critically endangered, endangered vulnerable, and protected species and the potential for them to be affected has been considered.</p>
<p>Conservation of Agricultural Resources Act (Act No 43 of 1983)</p>	<ul style="list-style-type: none"> • Regulation 15 of GNR1048 provides for the declaration of weeds and invader plants, and these are set out in Table 3 of GNR1048. Declared Weeds and Invaders in South Africa are categorized according to one of the following categories: <ul style="list-style-type: none"> • Category 1 plants: are prohibited and must be controlled. • Category 2 plants: (commercially used plants) may be grown in demarcated areas providing that there is a permit and that steps are taken to prevent their spread. Category 3 plants: (ornamentally used plants) may no longer be planted; existing plants may remain, as long as all reasonable steps are taken to prevent the spreading thereof, except within the floodline of watercourses and wetlands. • These regulations provide that Category 1, 2 and 3 plants must not occur on land and that such plants must be controlled by the methods set out in Regulation 15E. 	<p>DFFE</p>	<ul style="list-style-type: none"> • While no permitting or licensing requirements arise from this legislation, this Act will find application during the EIA phase and will continue to apply throughout the life cycle of the project. In this regard, soil erosion prevention and soil conservation strategies must be developed and implemented. In addition, a weed control and management plan must be implemented.
<p>National Forests Act (Act No. 84 of 1998)</p>	<p>» Protected trees: According to this act, the Minister may declare a tree, group of trees, woodland or a species of trees as protected. The prohibitions provide that 'no person may cut, damage, disturb, destroy or remove any protected tree, or collect, remove, transport, export, purchase, sell, donate or in any other manner acquire or dispose of any protected tree, except under a license granted by the Minister'.</p> <p>» Forests: Prohibits the destruction of indigenous trees in any natural forest without a license.</p>	<p>DFFE</p>	<p>As per the Terrestrial Biodiversity Compliance Statement, no Protected trees or forest patches occur on site</p> <p>No permit will be required for the proposed activity.</p>
<p>National Veld and Forest Fire Act (Act 101 of 1998)</p>	<p>In terms of S12 the applicant must ensure that the firebreak is wide and long enough to have a reasonable chance of preventing the fire from spreading, not causing erosion, and is reasonably free of inflammable</p>	<p>DFFE</p>	<p>No permitting or licensing requirements arise from this</p>

Legislation	Applicable Requirements	Relevant Authority	Compliance requirements
	material. In terms of S17, the applicant must have such equipment, protective clothing, and trained personnel for extinguishing fires.		legislation, as fires will not occur on site.
Hazardous Substances Act (Act No 15 of 1973)	<p>This Act regulates the control of substances that may cause injury, or ill health, or death by reason of their toxic, corrosive, irritant, strongly sensitizing or inflammable nature or the generation of pressure thereby in certain instances and for the control of certain electronic products. To provide for the rating of such substances or products in relation to the degree of danger; to provide for the prohibition and control of the importation, manufacture, sale, use, operation, modification, disposal or dumping of such substances and products.</p> <p>» Group I and II: Any substance or mixture of a substance that might by reason of its toxic, corrosive etc., nature or because it generates pressure through decomposition, heat or other means, cause extreme risk of injury etc., can be declared to be Group I or Group II hazardous substance;</p> <p>» Group IV: any electronic product;</p> <p>» Group V: any radioactive material.</p> <p>The use, conveyance or storage of any hazardous substance (such as distillate fuel) is prohibited without an appropriate license being in force.</p>	Department of Health	It is necessary to identify and list all the Group I, II, III and IV hazardous substances that may be on the site and in what operational context they are used, stored or handled. If applicable, a license is required to be obtained from the Department of Health.
Occupational Health and safety Act, 1993 (Act No.85 of 1993)	Relevant sections include Section 8. General duties of employers to their employees. Relevant sections include Section 9. General duties of employers and self-employed persons to person other than their employees.	Department of labour	A permit or a license is not required, however the Applicant must take note and implement Section 8 and 9 of the Occupational Health and Safety Act.
National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008)	<p>The Minister may by notice in the Gazette publish a list of waste management activities that have, or are likely to have, a detrimental effect on the environment. The Minister may amend the list by –</p> <p>» Adding other waste management activities to the list.</p> <p>» Removing waste management activities from the list.</p> <p>» Making other changes to the particulars on the list. In terms of the Regulations published in terms of this Act (GN 921), a Basic Assessment or Environmental Impact Assessment is required to be</p>	DFFE	N/A

Legislation	Applicable Requirements	Relevant Authority	Compliance requirements
	<p>undertaken for identified listed activities. Any person who stores waste must at least take steps, unless otherwise provided by this Act, to ensure that:</p> <ul style="list-style-type: none"> » The containers in which any waste is stored, are intact and not corroded or in any other way rendered unfit for the safe storage of waste. » Adequate measures are taken to prevent accidental spillage or leaking. » The waste cannot be blown away. » Nuisances such as odor, visual impacts and breeding of vectors do not arise; and » Pollution of the environment and harm to health are prevented. 		
<p>NEM:WA: National Waste Management Strategy (GN 344 of 4 May 2012)</p>	<p>The objects of the NEM:WA and National Waste Management Strategy (NWMS) are structured around the steps in the waste management hierarchy, which is the overall approach that informs waste management in South Africa. The waste management hierarchy consists of options for waste management during the lifecycle of waste, arranged in descending order of priority: waste avoidance and reduction, re-use and recycling, recovery, and treatment and disposal as the last resort.</p>	<p>DFEE</p>	<p>It is therefore necessary to consider the re-use and recycling of all waste products by Eskom.</p>
<p>National Road Traffic Act (Act No 93 of 1996)</p>	<ul style="list-style-type: none"> » The technical recommendations for highways (TRH 11): "Draft Guidelines for Granting of Exemption Permits for the Conveyance of Abnormal Loads and for other Events on Public Roads" outline the rules and conditions which apply to the transport of abnormal loads and vehicles on public roads and the detailed procedures to be followed in applying for exemption permits are described and discussed. » Legal axle load limits and the restrictions imposed on abnormally heavy loads are discussed in relation to the damaging effect on road pavements, bridges, and culverts. » The general conditions, limitations, and escort requirements for abnormally dimensioned loads and vehicles are also discussed and reference is made to speed restrictions, power/mass ratio, mass distribution, and general operating conditions for abnormal loads and vehicles. Provision is also made for the granting of permits for all other exemptions from the requirements of the National Road Traffic Act and the relevant Regulations. 	<p>Provincial Department of Transport (Provincial Roads)</p> <p>South African National Roads Agency Limited (SANRAL) (National Roads)</p>	<p>An abnormal load / vehicle permit may be required to transport the various components to site for construction.</p> <p>These include: Route clearances and permits will be required for vehicles carrying abnormally heavy or abnormally dimensioned loads. Transport vehicles exceeding the dimensional limitations (length) of 22m. Depending on the trailer configuration and height when loaded.</p>

Legislation	Applicable Requirements	Relevant Authority	Compliance requirements
Promotion of Access to Information Act, 2000 (Act No. 2 of 2000)	The Act recognises that everyone has a Constitutional right of access to any information held by the state and by another person when that information is required to exercise or protect any rights. The purpose of the Act is to foster a culture of transparency and accountability in public and private bodies and to promote a society in which people have access to information that enables them to exercise and protect their rights.	DFFE	The Public Participation Process (PPP) has been undertaken in an open and transparent manner to ensure all stakeholders have access to information regarding the proposed development and have the opportunity to register and comment on the application (refer to the Public Participation Process that was undertaken in Section 6).
Provincial Legislation			
Mpumalanga Biodiversity Sector Plan of 2014	The Mpumalanga Biodiversity Sector Plan contains various classes of environmental features i.e. Critical Biodiversity Areas (CBAs), which have two sub-categories of CBA (CBA Irreplaceable and CBA Optimal), Ecological Support Areas (ESAs), Other Natural Areas (ONAs), Moderately or Heavily Modified Areas.	Mpumalanga Department of Agriculture, Rural Development, Land and Environmental Affairs (MDARDLEA)	According to the Conservation Plan, the project area overlaps with portions heavily modified area, with some CBA Optimal

5 DESCRIPTION OF THE AFFECTED ENVIRONMENT

This section of the report provides a description of the environment that may be affected by the proposed Project. This information is provided in order to assist the reader in understanding the receiving environment within which the proposed Project is situated. Features of the biophysical, social and economic environment that could directly, or indirectly be affected by, or could affect, the proposed development has been described. This information has been sourced from existing information available for the area, and aims to provide the context within which this BA is being conducted. A comprehensive description of each aspect of the affected environment is included within the Specialist Report contained within the Appendices.

5.1 Biophysical Environment

5.1.1 Climate

The mean annual precipitation of quaternary catchment B20F is 666.8mm/a. The area receives most of its rain during the summer (November to March). The average temperatures and rainfall for the nearest town i.e. Balmoral, is presented in Figure 5-1 (Meteroblue, 2022).

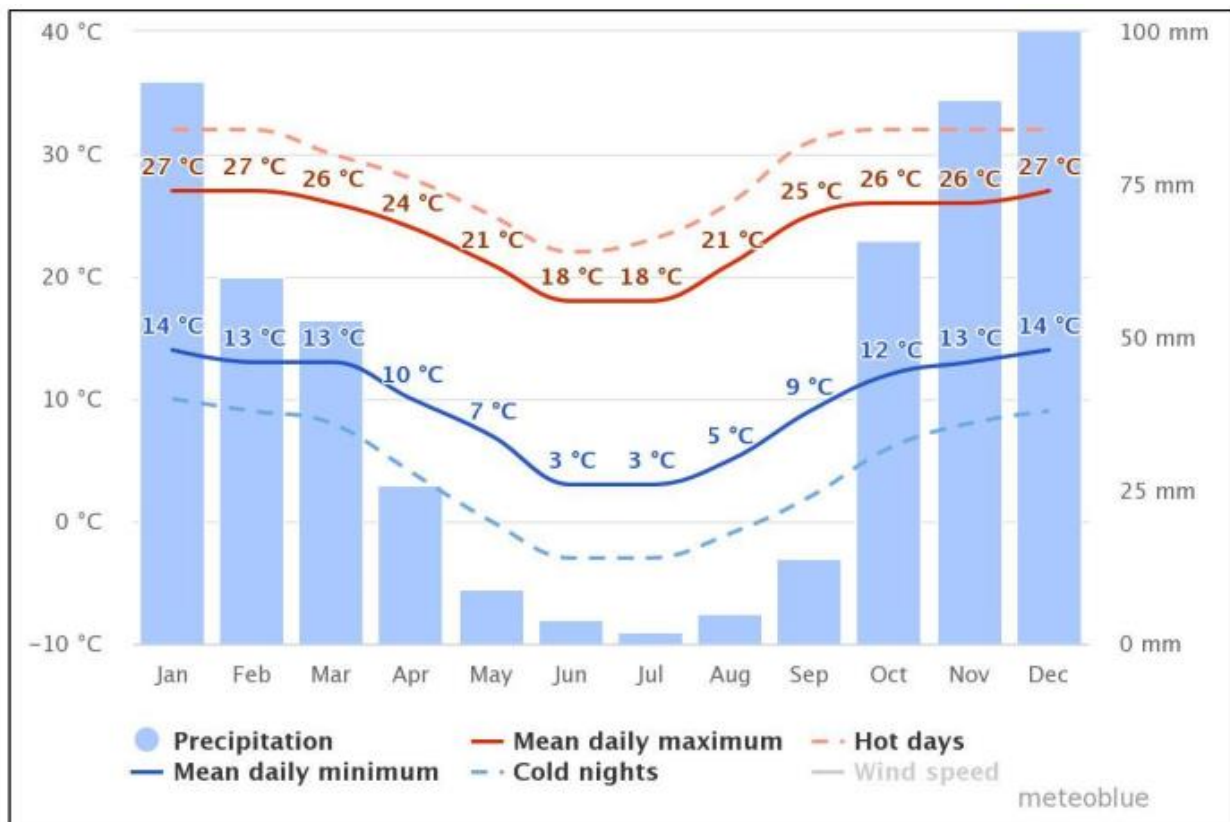


Figure 5-1: Average temperatures and precipitation

5.2 Soil and Geology

According to the land type database (Land Type Survey Staff, 1972 - 2006), the project area is characterised by the Bb 11 and 12. The Bb land type consists of plinthic catena. Upland duplex and marginalitic soils are rare and dystrophic and/or mesotrophic red soils are not widespread.

The geology of this area is characterised by the Pretoria group and the Witwatersrand Subgroup’s quartzite ridges as well as the Rooiberg Group’s Selons River Formation which is from the Transvaal Supergroup. The parent geology from this vegetation type supports shallow soils like Glenrosa and Mispah which typically forms on slopes and ridges where topsoil is likely to wash off (Mucina & Rutherford, 2006).

5.3 Topography and Drainage

The topography of the study area slopes in a general westerly direction, towards a wetland area surrounding the Overland Conveyor Link, with a non-perennial river flowing from west to east, through the study area towards the Wilge River, approximately 6km west of the site (Milnex, 2022).

A Digital Elevation Model (DEM) has been created to identify lower laying regions as well as potential convex topographical features which could point towards preferential flow paths. The 500 m regulated area ranges from 1 448 to 1 504 metres above sea level (MASL). The lower laying areas (generally represented in dark blue) represent area that will have the highest potential to be characterised as wetlands (see Figure 5-2) (The Biodiversity Company, 2022).

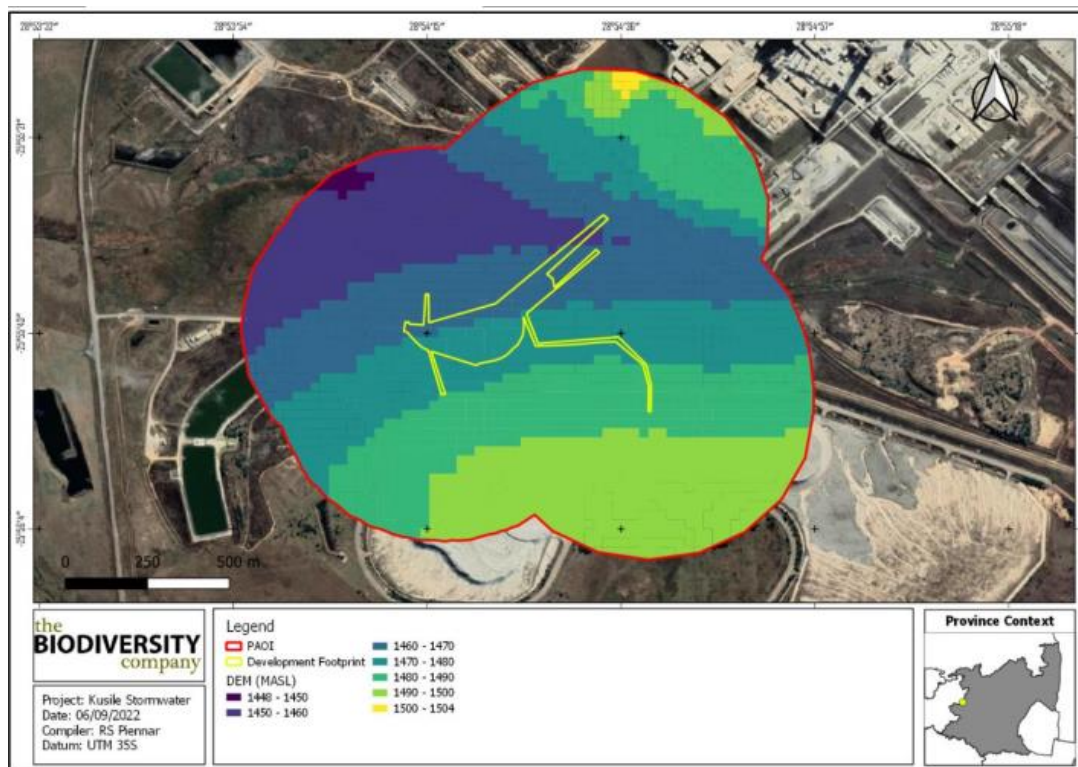


Figure 5-2: Digital Elevation Model of the Project Area of Influence (PAOI)

5.4 Freshwater Environment

A Wetland and Aquatic Baseline and Impact Assessment was undertaken by The Biodiversity Company for the proposed stormwater drainage and associated infrastructure (Refer to Appendix E1). The paragraphs below summarises the main findings of this assessment.

Two different wetland types were delineated in accordance with DWF (2005) guidelines. The two types of wetlands are classified as (1) Channelled Valley Bottom wetland (HGM 1) and (2) depression wetland (HGM 2). The Channelled Valley Bottom wetland is located in close proximity to the proposed development and has been investigated in detail.

HGM 1 scored ‘moderately high’ for ecosystem services. This wetland unit (Channelled Valley Bottom Wetland) is known for their ability to attenuate floods, streamflow regulation and erosion control during wet seasons. HGM 1 scored a high ecosystem services score for the assimilation of both carbon, phosphates and toxicants due to its location downslope of the power station. The HGM unit has high volumes of hydrophyte vegetation that plays an important role in the above-mentioned ecosystem services and help the HGM unit to score ‘high’ scores.

The HGM unit scored between ‘intermediate’ and ‘moderately high’ scores for the direct benefits such as provisioning of water, food and resources for human use. This is due to the fact that wetlands are located inside the power stations fence where there is little to no people to use the wetlands. The hydrophyte vegetation present within the wetlands consist mostly of sedges, grasses with some reeds which is not regularly used by humans as resources. There is little to no cultivation taking place within the wetlands to provide food.

5.4.1 Present Ecological State (PES)

The PES of the wetland within the project area is provided in Table 5-1.

Table 5-1: Summary of the scores for the wetland PES

Wetland	Hydrology		Geomorphology		Vegetation	
	Rating	Score	Rating	Score	Rating	Score
HGM 1	D: Largely Modified	4.0	C: Moderately Modified	2.6	D: Largely Modified	5.6
Overall PES Score	4.0		Overall PES Class		D: Largely Modified	

HGM 1 is rated as having an overall PES class of Class D (Largely modified) which indicated a large degree of modification. The main modification to the wetland is to the hydrology and vegetation cover of the wetlands due to the modification in the wetlands catchment as well as some modifications inside the wetlands themselves. Modifications to the catchment of the HGM unit consists of power station activities as well as agricultural fields to the west of the wetland.

The wetlands is also subject to roads and conveyor crossing through the wetland altering waterflow in the wetland. The modification to the wetland’s catchment causes an increase in

waterflow during the rainy season which leads to a modification in the wetland function. The increase in subwater flows, due to the modification to the wetland catchments has formed some channels within the HGM unit that may lead to erosion and the loss of sediment within the wetland.

The wetland has undergone modification to their vegetation cover due to the construction of the road and the conveyor within the wetland as well as the flow of ash laden stormwater run-off from the conveyor into the wetland. The ash makes it undesirable for hydrophyte vegetation to grow. The ash also makes the soil ore suitable for alien invasive plant species to take over and out compete the hydrophyte vegetation. Thus, there are multiple alien invasive plant species present within the wetland which will outcompete the natural hydrophytes if left unattended. Alien invasive plant species take up a lot of space as well as large volumes of water making the habitat less suitable for hydrophytes that plays an importance role in wetlands function. Hydrophytes are important to help prevent erosion and sedimentation and help in providing clean water for the downstream users.

5.4.2 Importance and Sensitivity Assessment (IS)

The results of the IS assessment are shown in Table 5-2. Various components pertaining to the protection of a wetland is considered for the IS, including Strategic Water Source Areas (SWSA's), the NFEPA wet veg protection status and the protection status of the wetland itself considering the NBA wetland dataset. The IS for the HGM units has been calculated to be 'moderate', which combines the relatively high protection status of the wet veg type and the low protection status of the wetland itself.

Table 5-2: The IS results for the delineated HGM unit

HGM Type	Wet Veg Type	Wet Veg		Wetland Condition	NBA Wetlands		SWSA (Y/N)	Calculated IS
		Ecosystem Threat Status	Ecosystem Protection Level		Ecosystem Threat Status 2018	Ecosystem Protection Level		
HGM 1	Mesic Highveld Grassland Group 4	Critical Endangered	Not Protected	D/E/F Seriously Modified	Critical	Not Protected	N	Moderate

5.4.3 Buffer requirements

The 'Preliminary guideline for determination of buffer zones for rivers, wetlands and estuaries' (Macfarlane et al, 2014) was used to determine the appropriate buffer zone for the proposed activities. After taking into consideration the different activities, the post-mitigation buffer size for the delineated wetlands were scientifically calculated as 35m (see Figure 5-3).

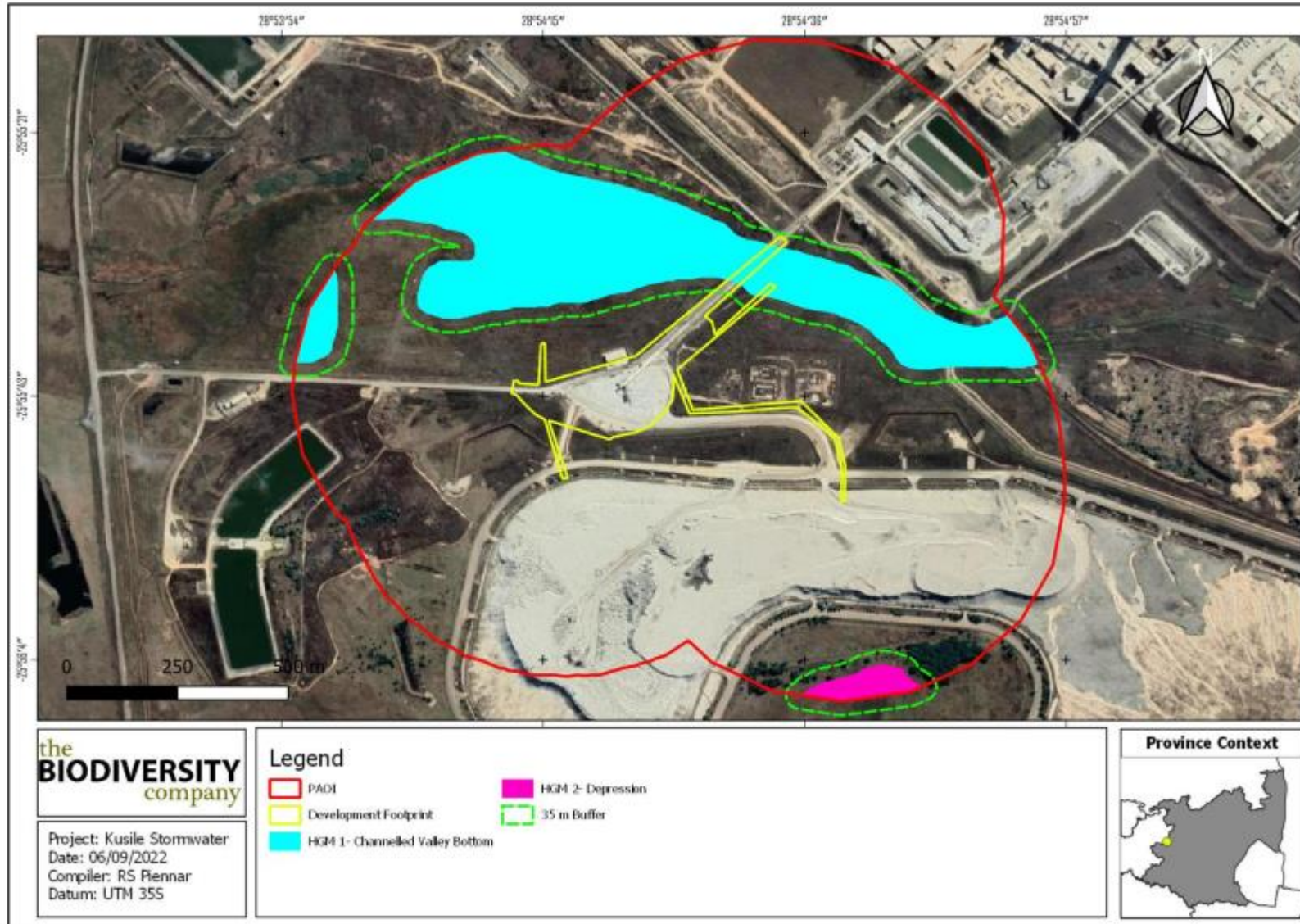


Figure 5-3: Extent of recommended buffer zones from the delineated wetlands

5.5 Hydrology

A Hydrological and Floodline Assessment was undertaken by Hydrological Environmental Engineering Solutions (Pty) Ltd, to determine the 1:50 and 1:100 - year floodlines for the proposed storm water infrastructure underneath the overland conveyor. Refer to the Hydrological and Floodline Assessment in Appendix E6. The paragraphs that follows provides the main findings of the assessment.

A drainage line (channelled valley bottom wetland) occurs in the north-western portion of the site. see Figure 5-4.

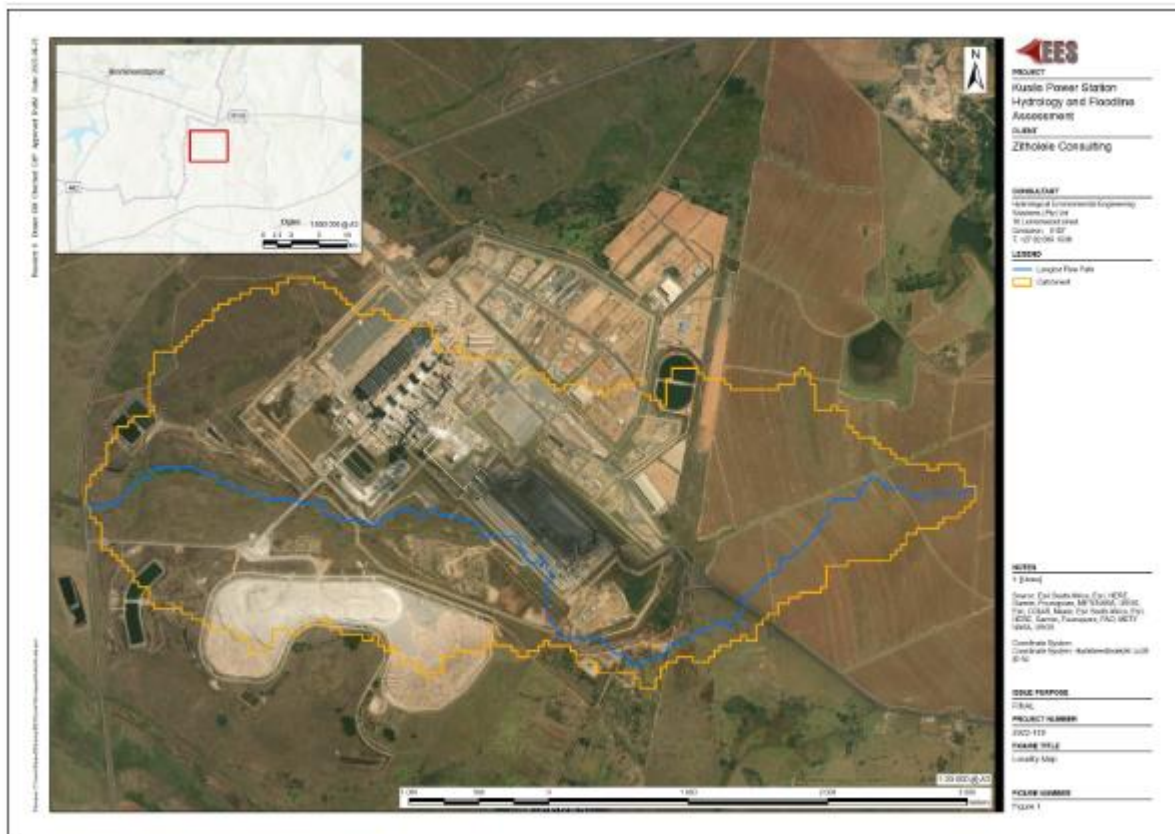


Figure 5-4: Catchment areas and locality for Kusile Power Station drainage line

The HECRAS model from the Hydrologic Engineering Centre, US Army Corps of Engineers (Brunner, 2010) was utilised to model the 1:50 and 1:100-year floodlines. The input into this model requires cross sections of the flow channel, the peak flows, the roughness estimates, and the boundary conditions. The position of the cross sections for this project is shown in Figure 5-5.

The graphical results of the HECRAS model were plotted as 1:50 and 1:100-year floodlines and is shown in Figure 5-6 and Figure 5-7, respectively.



Figure 5-5: Cross section positions for the Kusile Power Station drainage line



Figure 5-6: 1:50 year floodline for the Kusile Power Station drainage line



Figure 5-7: 1:100-year floodline for the Kusile Power Station drainage line

5.5.1 Recommendations from Hydrological Assessment

The following recommendations are made based on the results of the HecRAS model:

- A 0.9m high berm is required on the left side of the trench at cross section 190 to prevent the water from spilling out of the trench and into the surrounding catchment.
- A 0.4m high berm is required on the left side of the trench at cross section 284 to prevent the water from spilling out of the trench and into the surrounding catchment.
- A 0.6m high berm is required on the right side of the trench at cross section 284 to prevent the water from spilling out of the trench and into the surrounding catchment.
- A 0.4m high berm is required on the right side of the trench at cross section 320 to prevent the water from spilling out of the trench and into the surrounding catchment.

5.6 Groundwater Resources

A Geohydrological Impact Assessment was undertaken by Milnex Management Services (Pty) Ltd for the proposed development (refer to Appendix E2). Two (2) monitoring boreholes (MP14-001 and BW-BH14) were assessed during the field investigation. Refer to Figure 5-8 for the location of the monitoring boreholes. The groundwater levels measured were 9.76 and 4.62mbgl, respectively. Based on the groundwater monitoring data (MWEM, 2022), groundwater within the study area is impacted based on the exceedance of Mg, pH, EC, Ca, SO₄, F and NO₃ to the prescribed limits within the water use licence 04/B20F/BCFGIJ/41 and 04/B20F/CGI/1836. Several sources of contamination are present on site, of which the coal and ash storage area are within vicinity of the study area.

The potential impact of waste disposal methods emphasizes the need to manage transport methods and implement on-site practices to prevent the detrimental impact on the surrounding sensitive receptors (*surrounding water resources*). If proper management and mitigation measures are applied, the potential impact on groundwater resources will have a low impact.

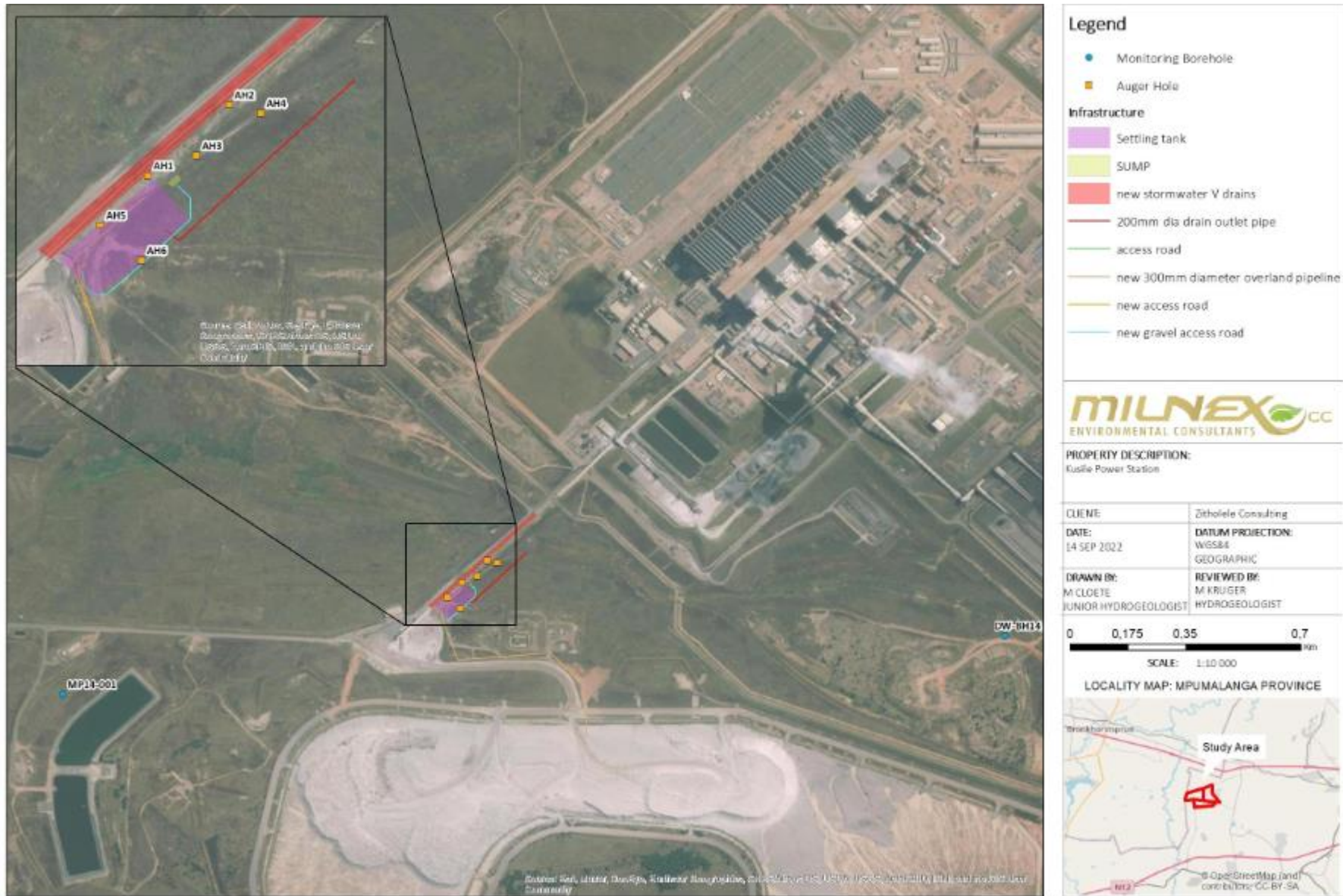


Figure 5-8: Locality map for the Auger hole and the monitoring boreholes

5.7 Terrestrial Biodiversity

In line with the protocol for the specialist assessment and minimum report content requirements for environmental impacts on terrestrial biodiversity, as per Government Notice 320 published in terms of NEMA, dated 20 March 2020: "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" – section 3, subsection 1:

- An applicant intending to undertake an activity identified in the scope of the protocol, on a site identified on the screening tool as being of 'Very High' sensitivity for terrestrial biodiversity, must submit a Terrestrial Biodiversity Specialist Assessment; however
- Where the information gathered from the site sensitivity verification differs from the designation of 'Very High' terrestrial biodiversity sensitivity on the screening tool and it is found to be of a 'Low' sensitivity, then a Terrestrial Biodiversity Compliance Statement must be submitted.

The information obtained from a site sensitivity verification, which involved both a desktop assessment and a field survey, confirmed that the site (project area) is mostly of a 'Low' sensitivity. Therefore, a Terrestrial Biodiversity Compliance Statement was completed for this project by The Biodiversity Company. Refer the signed copy of the Terrestrial Biodiversity Compliance Statement in Appendix E3. The findings of the Terrestrial Biodiversity Compliance Statement is discussed in the paragraphs that follows.

In summary, the site for the proposed development, occurs within a 'vulnerable' ecosystem (Ecosystem Threat Status (NBA, 2018) and according to the Mpumalanga Biodiversity Sector Plan (MBSP), 2014, the project area overlaps with portions of heavily modified area, with a portion falling within a Critical Biodiversity Area (CBA) Optimal area (Figure 5-9). The project area does overlap with priority focus areas for expansion according to the 2016 NPAES dataset (Figure 5-10).

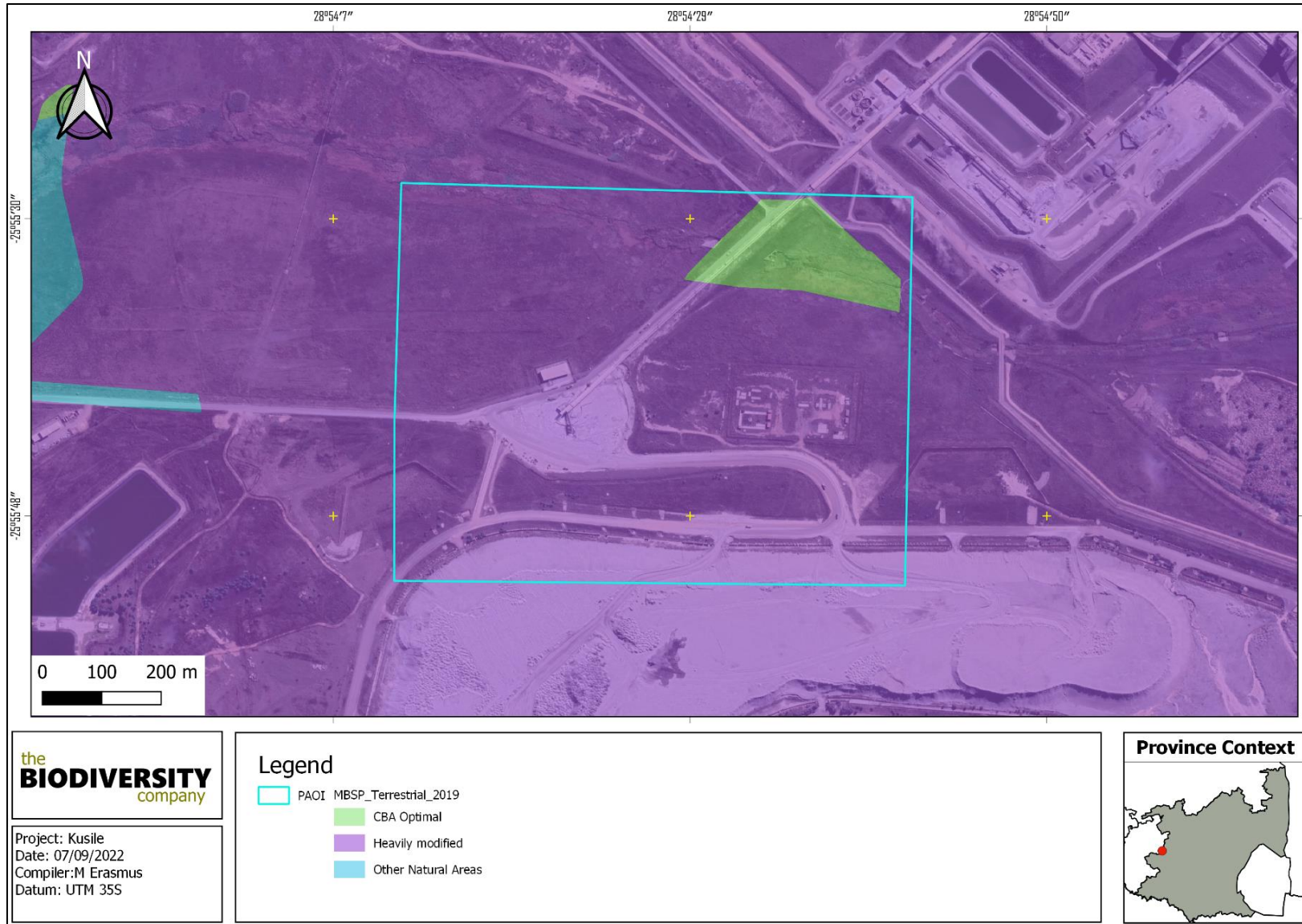


Figure 5-9: The project area superimposed on the C-Plan dataset



Figure 5-10: The project area superimposed on the NPAES dataset

5.7.1 Vegetation Type

The project area is situated within the Grassland Biome. The Grassland Biome in South Africa occurs mainly on the Highveld, the inland areas of the eastern seaboard, the mountainous areas of KwaZulu-Natal and the central parts of the Eastern Cape. The topography is mainly flat to rolling, but also includes mountainous regions and the Escarpment (Mucina & Rutherford, 2006). Major macroclimatic traits that characterise the Grassland Biome include:

- Summer to strong summer rainfall and winter drought; and
- Frost is common, and fog is found on the upper slopes of the Great Escarpment and seaward scarps (Mucina & Rutherford, 2006).

Grasslands characteristically contain herbaceous vegetation of a relatively short and simple structure that is dominated by graminoids, usually of the family Poaceae. Woody plants are rare (usually made up of low or medium-sized shrubs), absent, or confined to specific habitats such as smaller escarpments or koppies. Core grassland areas usually have deep, fertile soils although a wide spectrum of soil types occurs (Mucina & Rutherford, 2006).

The grassland Biome is comprised of 4 parent bioregions and a total of 72 different vegetation types. The project area is largely situated within the Soweto Highveld Grassland vegetation type (Figure 5-11).

(a) Eastern Highveld Grassland

This vegetation type occurs on slightly to moderately undulating planes, including some low hills and pan depressions. The vegetation is a short dense grass land 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. Some 44% transformed primarily by cultivation, plantations, mines, urbanisation and by building of dams. No serious alien invasions are reported (Mucina & Rutherford, 2006).

(b) Important Plant Taxa

Important plant taxa are those species that have a high abundance, a frequent occurrence or are prominent in the landscape within a particular vegetation type (Mucina & Rutherford, 2006).

(c) Conservation Status

According to Mucina and Rutherford (2006), this vegetation type is classified as Endangered. The national target for conservation protection for both these vegetation types is 24%, but only a few patches are statutorily conserved in Nooitgedacht Dam and Jericho Dam Nature Reserves and in private reserves (Holkransse, Kransbank, Morgenstond).

Some 44% of this vegetation type has already been transformed primarily by cultivation, plantations, mines, urbanisation and by building of dams.

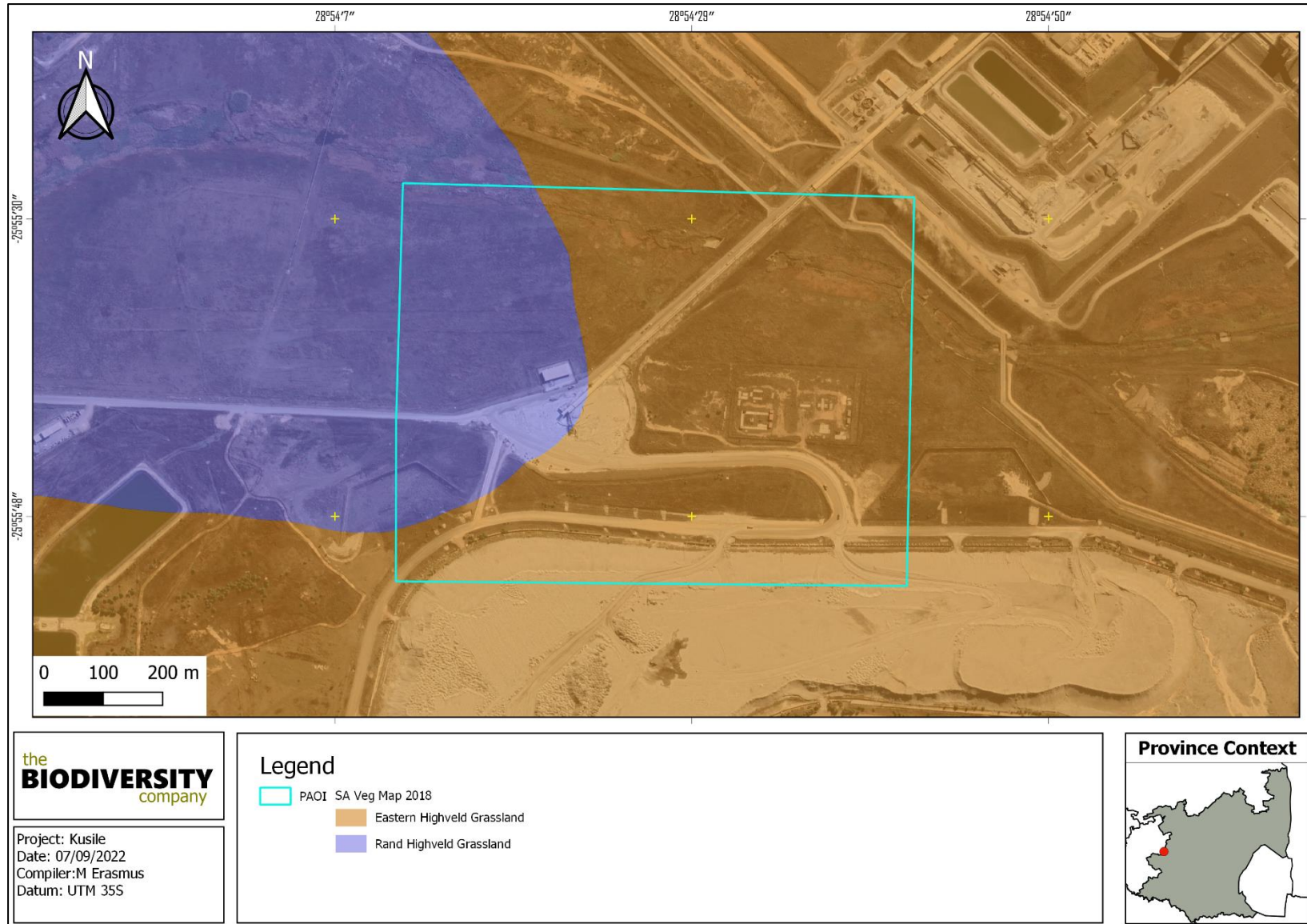


Figure 5-11: The project area showing the regional vegetation types (BGIS, 2018)

(d) Botanical Assessment

Based on the Plants of Southern Africa (BODATSA-POSA, 2019) database, 290 plant species have the potential to occur within the project area and its surroundings. Of these species, one (1) is listed as being Species of Conservation Concern (SCC), and Table 5-3 below outlines these SCC identified through the desktop assessment, which could potentially occur on site. However, during the site survey, the species was not found on site.

Table 5-3: Plant Species of Conservation Concern potentially occurring in the project area

Family	Species	Author1	IUCN	Ecology
Anacardiaceae	<i>Searsia gracillima</i>	(Engl.) Moffett	NT	Indigenous; Endemic

5.7.2 Floral and vegetation

The project area was found in a heavily modified condition, mainly attributed to the Power station and its impacts associated, resulting in the area being largely unnatural or disturbed in some way. Dust from the road, as well as ash from Power station has degraded the veld severely. The area has been disconnected and fragmented from any natural areas. These aspects further limit the functional capacity of the project area. The majority of the development footprint is located within or along roads or transformed areas and their associated servitudes, which are considered with very low sensitivity.

The only area of indigenous vegetation stands included grassland which was found in wetland areas. The CBA identified by the Conservation Plan that overlaps with the medium sensitivity area (drainage/wetland) may be considered viable, albeit disturbed. No protected trees or SCC flora species were observed.

Refer to the images below for photographs showing the habitats and the overall state of the project area.

The POSA database, along with the iNaturalist list of species for the area (research grade identifications) and the Mucina and Rutherford (2006) diagnostic species indicate that 295 species of indigenous plants are expected to occur within the development area and surrounding landscape. The POSA database and the screening tool indicates that 3 threatened species are expected to occur within the assessment area.

5.7.3 Faunal features

Largely based on the South African Bird Atlas Project Version 2 (SABAP2, 2017), IUCN Digital Distribution Maps (IUCN, 2016), and the Animal Demography Unit (ADU, 2020) databases, Table 5-4 summarises the total number of animal species that have the potential to occur in or around the project area, and the corresponding number of SCC.

Table 5-4: Total number of potential fauna species present, and corresponding SCC

Fauna Type		Total Potential No.	Total SCC
Avifauna		235	9
Mammals		87	16
Herpetofauna	Amphibians	26	1
	Reptiles	73	3

These numbers exclude any animals that only occur within nature reserves and private reserves. Of the 9 avifaunal SCC, none are likely to be found resident in the project area due to a lack of suitable habitat and the associated modified nature of the project area and surrounds.

Of the 20 total mammal SCC listed, none of the mammal SCC are likely to be found resident within the project area.

None of the herpetofauna SCC are likely to be found within the project area.

The general modified state of the area coupled with the with high levels of sensory disturbance associated with Kusile, results in a high level of persecution and unsuitable environmental conditions.

During the site visit, mammal activity was low, due to the extent of disturbance in general, as well as the poor habitat condition. Mammal activity was observed within the water resource areas (wetlands), species like Water Mongoose (*Atilax paludinosus*) tracks were observed. The species present are most likely not resident due to the modified state of the area, however using the drainage/wetland areas for forage or a migration corridor. No SCC were observed during the field survey.

5.7.4 Habitat Survey and Site Ecological Importance (SEI)

The water resource (wetland) systems are areas that are saturated with water for most periods throughout the year, and in this case act as a migration corridor and area used for foraging. This habitat occurs in a disturbed state due to the surrounding land uses. This habitat was identified by the respective Wetland and Aquatic Baseline and Impact Assessment by The Biodiversity Company (TBC, 2022).

The disturbed habitat has been modified from its natural state, and it represents habitat that has been historically impacted, and has subsequently recovered to some degree. This habitat is largely limited to areas that have been impacted through edge effects from the Power Station and associated impacts, roads, and land use, as well as mismanagement and inadequate rehabilitation procedures. These habitats are not entirely transformed, but exist in a constant disturbed state, as they cannot recover to a more natural state, due to the ongoing disturbances and impacts received.

Transformed habitat was present in the form of the existing road, existing infrastructure or any other areas devoid of vegetation, artificially. Due to the transformed nature of this habitat, it is regarded as having a very low sensitivity.

The delineated habitat types have each been allocated a sensitivity category, or SEI, and this breakdown is presented in Table 5-5 below. To identify and spatially present sensitive features in terms of the relevant specialist discipline, the sensitivities of each of the habitat types delineated within the project area are mapped in Figure 5-12.

It is important to note that this map does not replace any local, provincial, or national government legislation relating to these areas or the land use capabilities or sensitivities of these environments.

Table 5-5: Site Ecological Importance assessment summary of the habitat types delineated within the project area

Habitat (Area)	Conservation Importance	Functional Integrity	Biodiversity Importance	Receptor Resilience	Site Ecological Importance
Water Resources (Disturbed)	Medium	Low	Low	Low	Medium
Disturbed Grassland	Low	Low	Low	Medium	Low
Transformed	Low	Low	Very Low	Medium	Very Low



Figure 5-12: Biodiversity SEI delineation relevant to the project area

The completion of the terrestrial desktop and field studies disputes the 'Very High' sensitivity presented by the DFFE Screening Report. The project area is largely modified, and as such, is assigned a sensitivity rating of 'Low' to 'Medium', and the CBA status is considered to be more representative of Ecological Support Area (ESA), due to the poor habitat condition. Due to the largely transformed/disturbed state of the area, only a small, degraded portion represents a viable 'Vulnerable' VU ecosystem, represented by the water resource habitat.



Figure 5-13: Biodiversity SEI delineation relevant to the project area

5.8 Composite Sensitivity Map

The site for the proposed development, occurs within a 'vulnerable' ecosystem (Ecosystem Threat Status (NBA, 2018) and according to the Mpumalanga Biodiversity Sector Plan (MBSP), 2014, the project area overlaps with portions of heavily modified area, with a portion falling within a Critical Biodiversity Area (CBA) Optimal area (Figure 5-14). The project area does overlap with priority focus areas for expansion according to the 2016 NPAES dataset (Figure 5-14).

]The project area was found in a heavily modified condition, mainly attributed to the Power station and its impacts associated, resulting in the area being largely unnatural or disturbed in some way. Dust from the road, as well as ash from Power station has degraded the veld severely. The area has been disconnected and fragmented from any natural areas. These aspects further limit the functional capacity of the project area. The majority of the development footprint is located within or along roads or transformed areas and their associated servitudes, which are considered with very low sensitivity.

The only area of indigenous vegetation stands included grassland which was found in wetland areas. The CBA identified by the Conservation Plan that overlaps with the medium sensitivity area (drainage/wetland) may be considered viable, albeit disturbed. No protected trees or Species of Conservation Concern (SCC) flora species were observed.

Mammal activity was observed within the water resource areas (wetlands), and species like Water Mongoose (*Atilax paludinosus*) tracks were observed. The species present are most likely not resident due to the modified state of the area, however using the drainage/wetland areas for forage or a migration corridor.

The channelled valley bottom wetland area has medium ecological sensitivity with the remaining portion of the site having low ecological sensitivity (refer to Figure 5-14).

No adverse impact on heritage and fossil heritage resources are expected by the project and it is recommended that the project can commence on the condition that the recommendations of the Palaeontological Impact Assessment are implemented as part of the EMPr.

Refer to the composite sensitivity map in Figure 5-14.

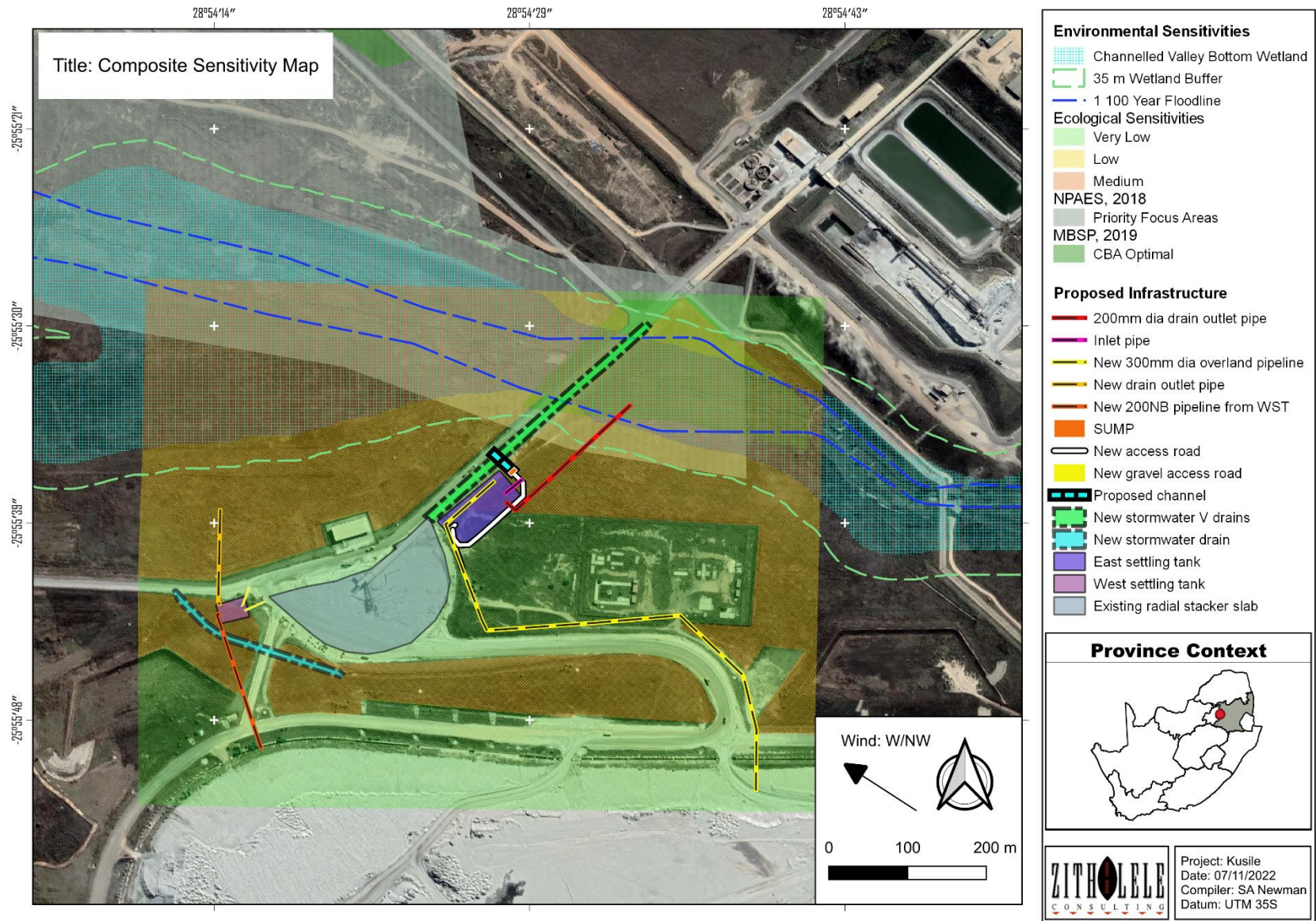


Figure 5-14: Composite Sensitivity Map

5.9 Socio-Economic Aspects

The site is surrounded by vacant land, agricultural and mining activities. There are no residential areas within a 5km radius of the site that will be impacted by nuisance impacts such as noise and air pollution. Appropriate mitigation measures such as dust suppression will be implemented during the construction phase, which will be of a short-term duration.

Construction activity and increased traffic may generate noise that will be of a temporary nature during the construction phase of the proposed development. In order to reduce this impact, mitigation measures as follows must be implemented to ameliorate the negative impacts, viz, Construction times must be restricted to working hours (06:00-18:00). All construction equipment or machinery should be switched off when not in use. Construction equipment must be kept in good working condition.

Limited jobs are to be created during the construction phase. The project will have a positive impact, in terms of improved environmental performance, as it will eliminate dirty water (ash laden water) spills into the surrounding environment. Key stakeholders were identified and notified of the proposed development.

Due to the relatively small scale and site-specific extent of the proposed development, it is not deemed necessary that a separate Socio-Economic Impact Assessment be undertaken. A Socio-Economic Impact Assessment therefore has not be undertaken.

The Kusile Power Station occurs within the Victor Khanye Local Municipality. The following socio-economic information was extracted from the Victor Khanye Local Municipality Integrated Development Plan (IDP) for 2021/2022.

According to Stats SA (2016 community survey) Victor Khanye Municipality's population has grown from 75 452 to 84 151 in 5 years. This recorded a growth rate of 2.5% per annum between 2011 and 2016. By 2030 population growth is estimated at 118 903 given the historic population growth per annum, indicative of the migration of labour attracted to the area as a result of the potential for economic growth and resultant job opportunity. The municipality has the 3rd smallest population in Mpumalanga province and 5.8% of total population of Nkangala.

Delmas is the primary node in the Victor Khanye Municipal area. The remainder of the Municipality is largely rural in nature, however small economic concentrations exist in a few smaller towns, namely Botleng and Elloff. The urban areas are mainly residential with supportive services such as business, social facilities etc. The economy of Victor Khanye Local Municipality is relatively diverse, the largest sector in terms of output as well as proportional contribution being agriculture, followed by community services and trade. The Municipality is highly dependent on the neighbouring Ekurhuleni Metro for job opportunities. The land uses adjacent to the N12 Corridor should be developed as economic concentrations, capitalizing off the passers-by and the linkage it provides to regional markets. The local economy is relatively diversified with the largest sector, in terms of output as well as proportional contribution being the trade sector. The

growing sector is trade sector followed by the agriculture sector and the mining sector. During recent years the total output of the agriculture sector experienced significant levels of growth while the mining and minerals sector declined. The sectors which experienced expansion in terms of output in the Victor Khanye Municipal area are as follows:

- i. Agriculture
- ii. Manufacturing
- iii. Trade
- iv. Transport
- v. Finance

5.9.1 Rate of unemployment

The unemployment level has been reduced from 28.2 to 21.6 in terms of global insight figures. This reduction is as a result of an increase in investments in the local economy. The employment situation is expected to improve over the medium term with additional jobs expected in the mining sector. The latest statistic reflects that the employment level in the Victor Khanye Local Municipality is currently at 28, 9%. Based on the 2016 definition of Economically Active Population of 30,415 the unemployment rate is reflected at 21.6, this represents an overall gain in employment compared to 2011. This figure is high when we consider the economic activity in the area, but obviously impacted by the migration influx of job seekers. Leading industries in employment comprise of Trade (18, 7%), Agriculture (18, 2%) and Community Services contributing (14, 3%). However, the former two sectors are experiencing a decline in employment in the last few years whilst Community Services has increased and Mining as an employer has grown and now contributes 12, 7%.

5.9.2 Income distribution

The income level per household is considered a better barometer of poverty and reflects that 42% can be classified as indigent, as they earn less than R1, 600 per month, as per Stats SA 2016. Not all these households have registered to qualify for access to free basic services as provided in the Indigent Policy guidelines. This issue is currently being progressed by the municipal administration. There is a negative trend developing as more households are reportedly below the poverty line.

The average household income level in the Victor Khanye Local Municipality areas is reflected as R80 239 per annum, ranking it 9th with respect the overall province statistics standing.

5.9.3 Education

The Victor Khanye Local Municipality has an inherited problem, namely that the low-income levels per household in the community correlate to the low education levels in the area.

The 2016 Survey shows that 25% of the population above 15 years of age has had no schooling or did not complete primary school. Of this number 5,528 are basically illiterate and therefore future meaningful employment prospects are virtually impossible. A further 41% of the population did not complete the schooling curriculum and therefore did not reach the level of matric.

As a result, job seekers will be restricted to unskilled manual work where the main employer in this sector of employment, namely agriculture, is receding as a leading employer. This poses a huge problem within the communities as the dependency syndrome increases and criminal activities increase.

5.10 Aesthetic Environment

A site visit was undertaken by the EAP on 31 May 2022. The proposed construction activities for the installation of the stormwater infrastructure will occur within the confines of the existing Kusile Power Station complex, underneath the Overland Conveyor and near the radial stacker. The proposed construction activities will be at-ground level and the site is relatively flat. Refer to Photoplate 1 for the existing condition of the site.



Existing overland conveyor from the power station to the radial stacker



Flat terrain of the existing conveyor system



The section of the site underneath the conveyor system



The existing ash dump in the horizon of the photo. A close-up view of the area underneath the conveyor system with a stormwater runoff carrying ash-laden stormwater



Existing radial stacker on flat terrain



Site for the proposed sump located on flat terrain

Photoplate 1: Existing site conditions

There are no sensitive receptors such as residential areas occurring within a 5km radius of the proposed development that will have direct views of the proposed construction activities. The land uses occurring within a 5km radius of the Power Station are mainly vacant land, industrial land uses, agriculture and mining activities. The site is already transformed by the existing conveyance of coarse ash and gypsum from the Kusile Power Station to the radial stacker. With the installation of the proposed stormwater infrastructure within the Kusile Power Station complex, the visual character of the site and the sense of place will not be altered. This impact is therefore not significant, and a motivation is hereby provided that a Visual Impact Assessment (VIA) not be undertaken for the proposed construction of the stormwater drainage and associated infrastructure.

5.11 Heritage

As per the Screening Tool Report generated by the web-based DFFE Screening Tool, the archaeological and cultural heritage theme of the site has a low sensitivity. As such, an exemption from undertaking a Heritage Impact Assessment (HIA) was submitted to SAHRA. The exemption letter was compiled by PGS Heritage. Refer to the exemption letter in Appendix E4.

The findings below summarises the findings of the site observation undertaken by the archaeologist.

The site is heavily disturbed, due to the development of the Kusile Power Station and the ash dump/conveyer infrastructure. The area where the existing infrastructure and proposed additional infrastructure are to be installed, remained open grassland and utilised for farming (refer to Figure 5-15, Figure 5-16). The structure (single dwellings) indicated on the 1970 and 1985 topographical maps were removed during the development of the Kusile Power Station and no longer exists.

The site is currently transformed, and no historic, Iron Age or Stone Age heritage resources were noted during the site visit (PGS Heritage, 2022).

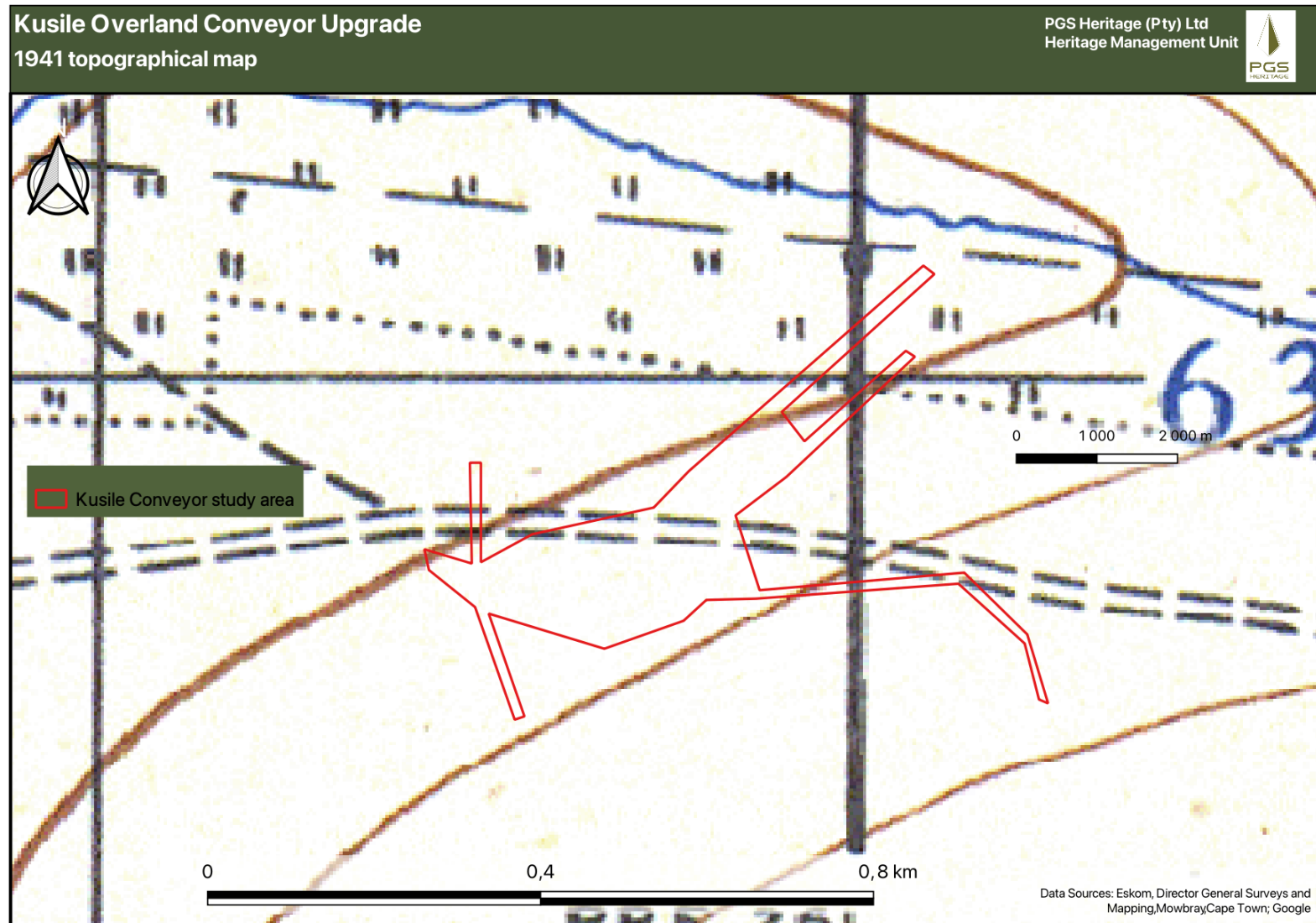


Figure 5-15:1st Edition 1941 Topographic Map (2528DD)

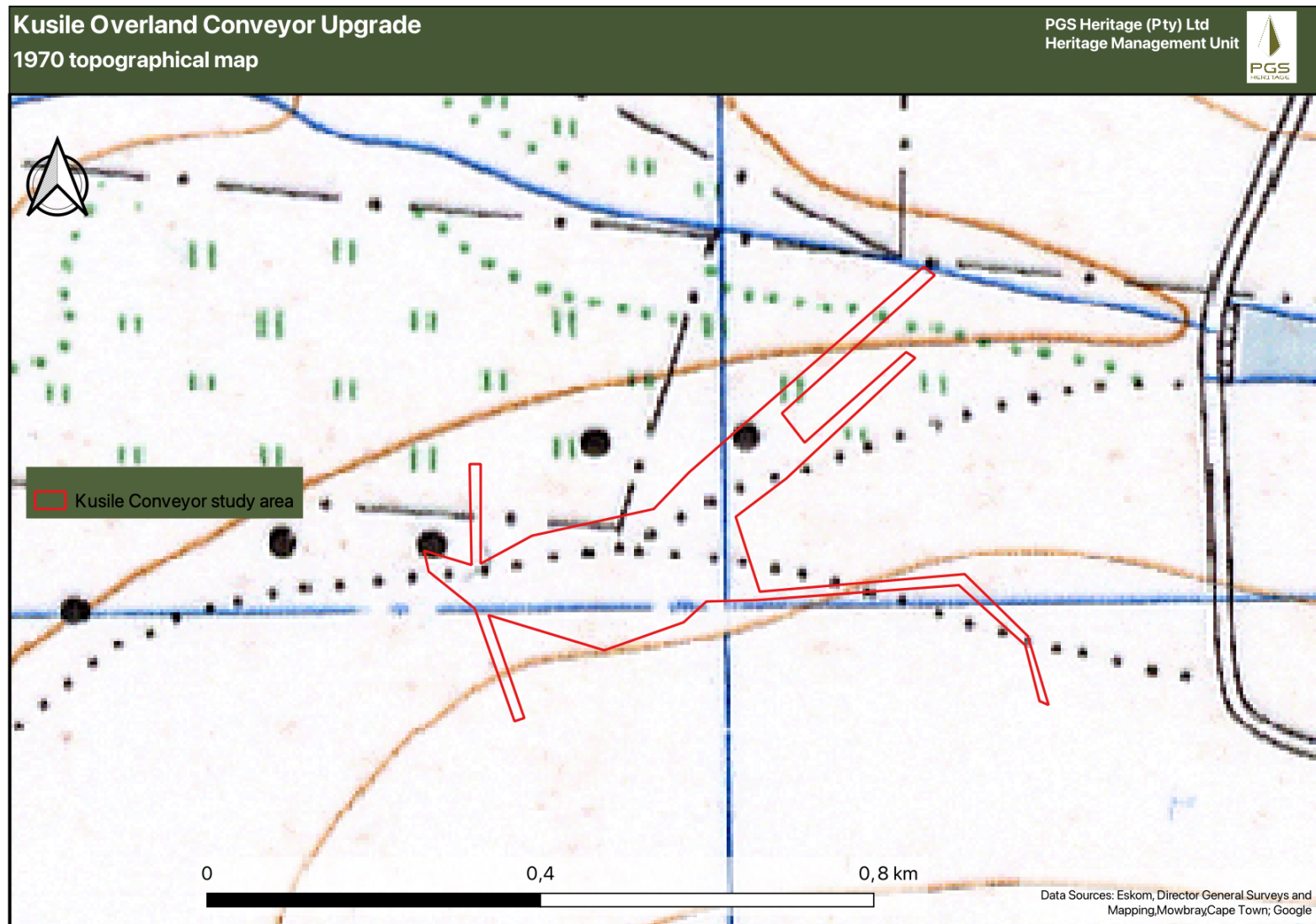


Figure 5-16: 2nd Edition 1970 Topographic Map (2528DD)

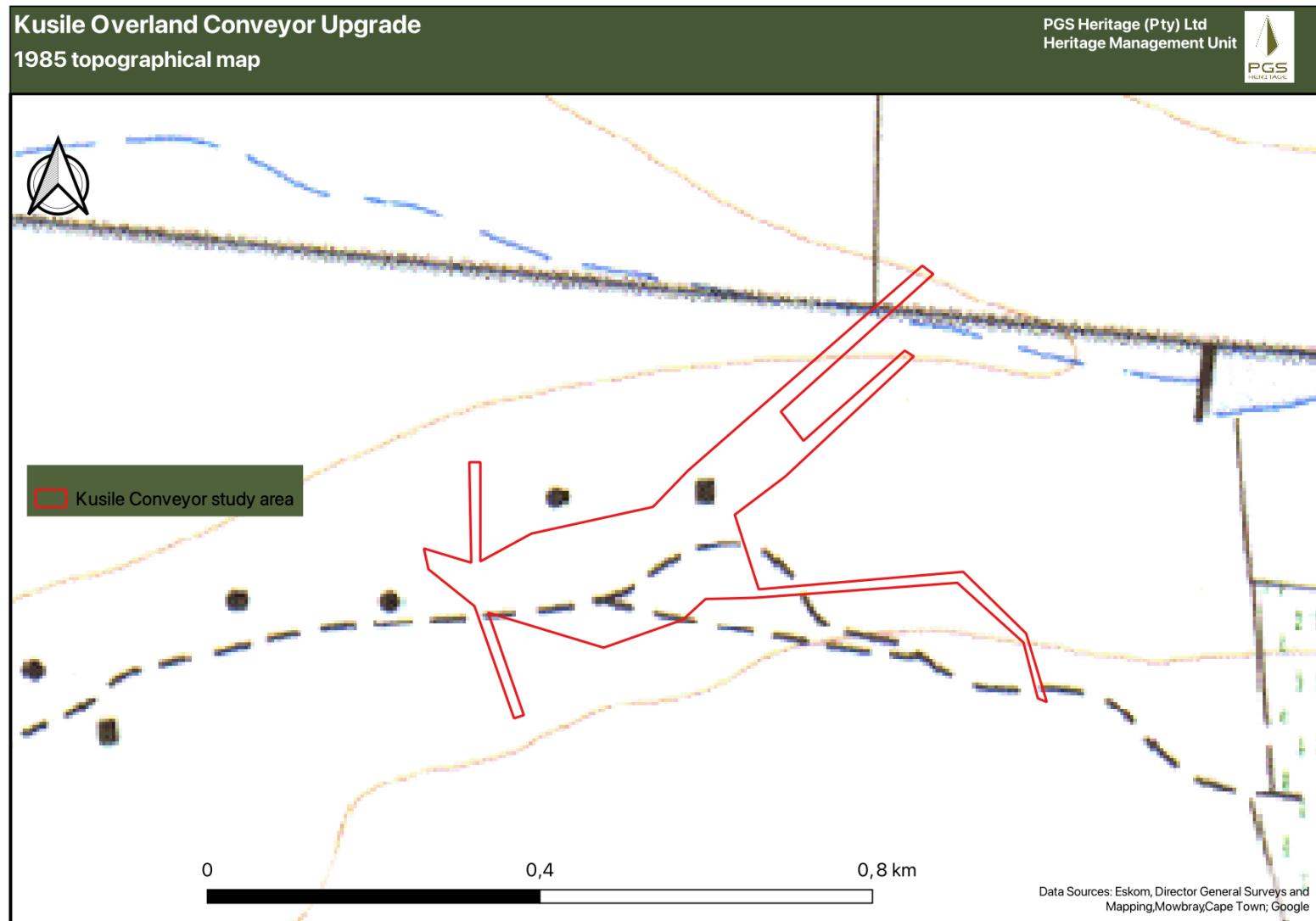


Figure 5-17: 3rd Edition 1985 Topographic Map (2528DD)

5.12 Palaeontological Resources

A Palaeontological Impact Assessment was undertaken by Banzai Environmental (refer to Appendix E5). As per the Screening Tool Report generated by the web-based DFFE Screening Tool, the palaeontological theme of the site has a high sensitivity. The findings of this study is summarised below.

The proposed Kusile stormwater and associated infrastructure is largely underlain by the Dwyka Group (Karoo Supergroup) with a small portion underlain by the Silverton Formation of the Pretoria Group (Transvaal Supergroup). Refer to Figure 5-18. The Pretoria Group sedimentary rocks in and near the study area are extensively intruded, and locally metamorphosed, by sills of diabase. The diabase has no palaeontological significance. However, the existence of the diabase rocks would have had a thermal metamorphic effect on nearby sediments and would decrease the chance of fossil preservation. According to the PalaeoMap of the South African Heritage Resources Information System (SAHRIS) the Palaeontological Sensitivity of the Dwyka Group is Moderate while that of the Silverton Formation is Very High (Almond et al, 2013; SAHRIS website).

A site-specific field survey of the development footprint was conducted on foot and by motor vehicle on 29 August 2022. No fossiliferous outcrop was detected in the proposed development. The apparent infrequency of fossil heritage in the proposed development footprint suggests that the impact of the development will be of a Low significance in palaeontological terms. It is therefore considered that the proposed development will not lead to damaging impacts on the palaeontological resources of the area. The construction of the development may thus, be permitted in its whole extent, as the development footprint is not considered sensitive in terms of palaeontological resources.

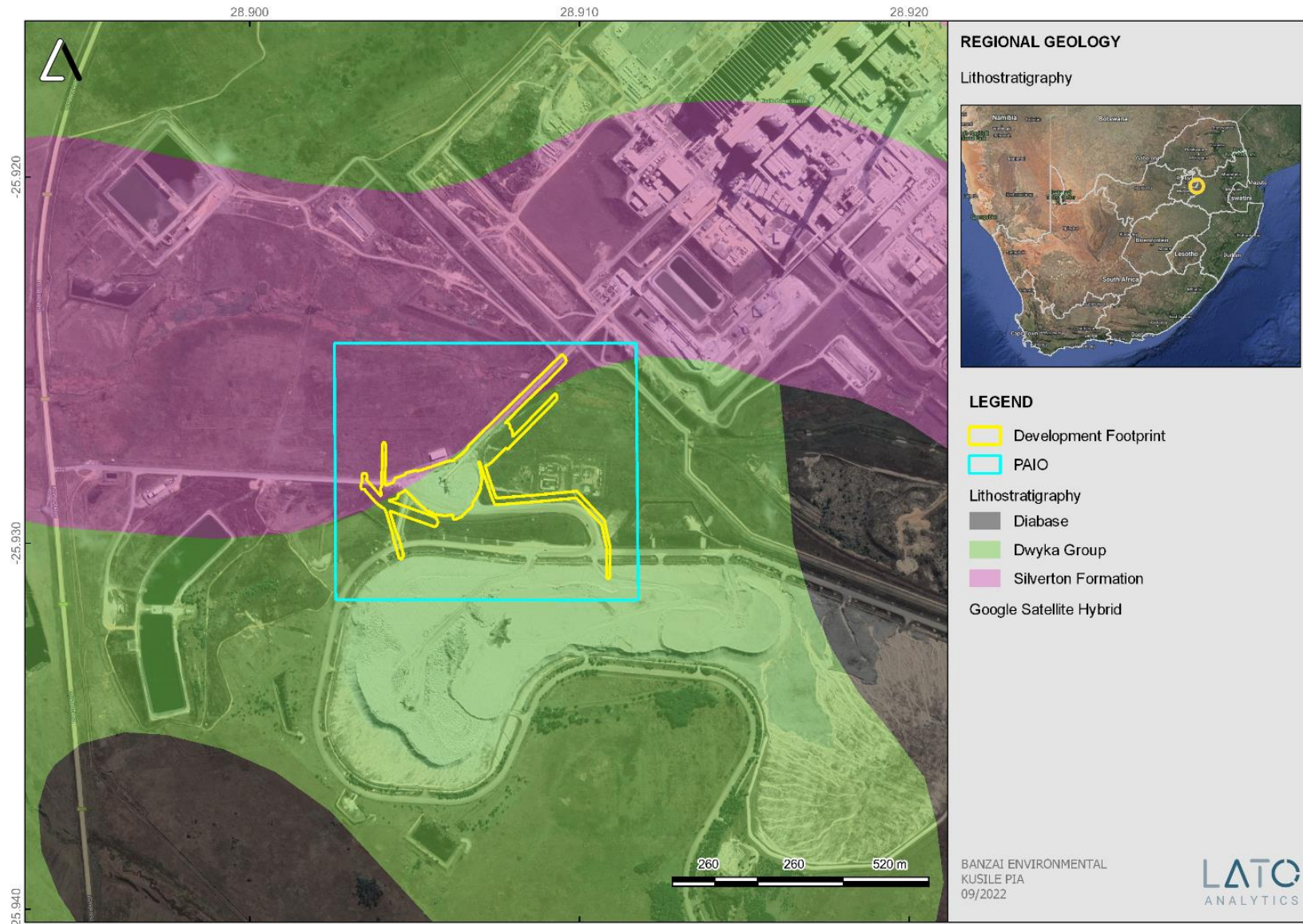


Figure 5-18: Updated Geology (Council of Geosciences, Pretoria) of the proposed Kusile study area near Delmas in Mpumalanga

6 PUBLIC PARTICIPATION PROCESS

The Basic Assessment process refers to that process (in line with the EIA Regulations) which involves the identification and assessment of direct, indirect, and cumulative environmental impacts associated with a proposed project/ activity. The BA process culminates in the submission of a Final BAR (including an Environmental Management Programme (EMPr)) to the Competent Authority for decision-making. The BA process is illustrated below:

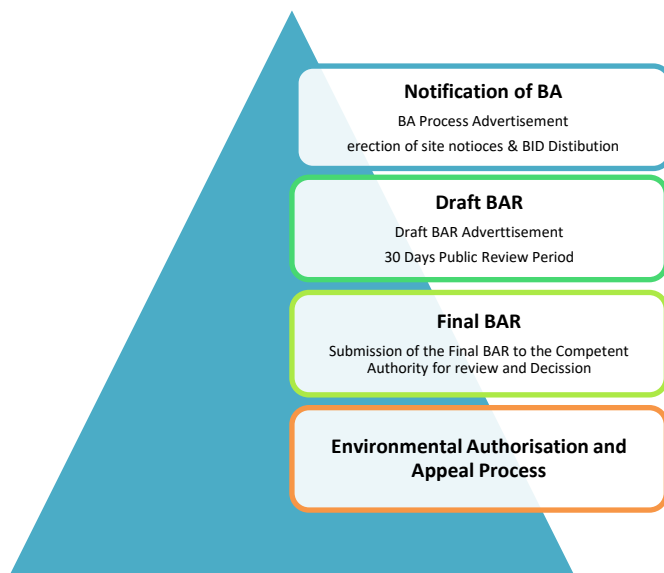


Figure 6-1: Basic Assessment flowchart

6.1 Draft Basic Assessment Report for public review and comment

This Basic Assessment Report for public review has been prepared by Zitholele, to assess the potential significance of environmental impacts associated with proposed stormwater drainage and associated infrastructure, located at the Kusile Power Station, near Delmas in Mpumalanga. This process will be undertaken in support of an application for Environmental Authorisation, to the DFFE. The 30-day period for review will be from 9 November 2022 to 12 December 2022. The report will be available for public review at the following locations:

- Delmas Public Library, Van Riebeeck Ave, Delmas Ext 8, 2210
- Kwa-Guqa Public Library, Intshe Street, KwaGuqa ,Witbank,1073
- Documents will be available electronically at the following links:
 - <https://tinyurl.com/2p9bxjw3>
 - <https://tinyurl.com/yc37ztjw>
- Zitholele’s website: www.zitholele.co.za/environmental, under heading “Kusile Stormwater”

The Draft BAR is aimed to provide Interested and Affected Parties (I&APs) with the opportunity to receive information regarding the proposed project, participate in the process, and raise issues of concern. The Draft BAR is aimed at detailing the nature and extent of the proposed development, identifying potential issues associated with the proposed project, and defining the extent of studies required within the BA Process. This is achieved through an evaluation of the proposed project, involving the project proponent, appointment of specialist consultants, and a consultation process with key stakeholders that included both relevant government authorities and I&APs.

6.1.1 Tasks completed during the Basic Assessment Process

The EIA Phase for the proposed development has been undertaken in accordance with the EIA Regulations published in GN 40772 in December 2014, in terms of NEMA, as amended. Key tasks undertaken within the EIA phase included:

- Consultation with relevant decision-making and regulating authorities (at National, Provincial and Local levels);
- Undertaking a Public Participation Process throughout the BA process, in accordance with Chapter 6 of EIA regulations 2014 (as amended) to identify any additional issues and concerns associated with the proposed project. Preparation of a Comments and Response Report detailing key issues raised by I&APs as part of the BA Process;
- Undertaking of independent Specialist Studies, in accordance with Appendix 6 of EIA regulations 2014 (as amended);
- Preparation of a Draft BAR in accordance with Appendix 1 of EIA regulations 2014 (as amended); and
- Preparation of a Final BAR in accordance with Appendix 1 of EIA regulations 2014 (as amended).

The above tasks are discussed in detail below.

6.1.2 Authority Consultation

The DFFE is the Competent Authority for this application. A record of all authority consultation undertaken, is included within this BAR. Consultation with the Competent Authorities (i.e. DFFE) has continued throughout the BA Process. On-going consultation included the following:

- Pre-Application Meeting which was held with the DFFE on the 15 August 2022.
- A follow-up Pre-Application Meeting was held with the DFFE on 4 October 2022.
- A Pre-Application Meeting for the Water Use License Application (WULA) which was held with the Department of Water and Sanitation (DWS) on 3 October 2022.
- Notification and Consultation with Organs of State that may have jurisdiction over the project, including:
 - i. Provincial departments
 - ii. Local Municipality

-
- The draft BAR will be submitted to the DFFE for review on 9 November 2022 for comments, simultaneously with public review of the Draft BAR.
 - Similarly, the draft BAR will be submitted to the organs of state during the public review of the draft BAR.

A record of the authority consultation (*minutes of the authority meetings*) are included within Appendix F1 and F2 of the draft BAR).

6.1.3 Public Involvement and Consultation

The aim of the Public Participation Process is primarily to ensure the following:

- Information containing all relevant facts, in respect of the proposed project are made available to potential stakeholders and I&APs.
- Participation by potential I&APs is facilitated in such a manner that all potential stakeholders and I&APs will be provided with a reasonable opportunity to comment on the proposed project.
- Comments received from stakeholders and I&APs are recorded, and incorporated into the Final BAR.

In order to accommodate the varying needs of stakeholders and I&APs within the study area, as well as to capture their inputs regarding the project, various opportunities for stakeholders and I&APs to be involved in the BA Process will be provided as follows:

- Telephonic consultation sessions (consultation with various parties from the BA Project Team, including the Project Participation Consultant, lead Environmental Consultant as well as Specialist Consultants).
- Written, faxed or e-mail correspondence.
- The Draft BAR is available for a 30-day public review period from 9 November 2022 to 12 December 2022. The comments received from I&APs will be captured within a Comments and Response Report (CRR), which will be included within the final Basic Assessment Report, for submission to the DFFE for decision-making.

The following key public participation tasks will be, or have been undertaken in terms of the requirement of Chapter 6 of the EIA Regulations of December 2014, as amended:

- Fixing a notice board at a place conspicuous to the public at the boundary or on the fence of:
 - i. the site where the activity to which the application relates is or is to be undertaken; and
 - ii. any alternative site mentioned in the application;
- Giving written notice to:
 - i. the owner or person in control of that land if the applicant is not the owner or person in control of the land;
 - ii. the occupiers of the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;

-
- iii. owners and occupiers of land adjacent to the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;
 - iv. the municipal councilor of the ward in which the site or alternative site is situated and any organization of ratepayers that represent the community in the area;
 - v. the municipality which has jurisdiction in the area;
 - vi. any organ of state having jurisdiction in respect of any aspect of the activity; and
 - vii. any other party as required by the competent authority.
- Placing an advertisement in:
 - i. one local newspaper; and
 - I&APs registry is open and maintained throughout the BA process.
 - The Draft BAR will be made available for Public Review.
 - Comments received will be collated and addressed accordingly.

In compliance with the requirements of Chapter 6 of the EIA Regulations, 2014, the following summarises the key public participation activities conducted to date:

- *Announcement of the project and invitation to register as I&APs:*
 - An English newspaper advertisement was published in the Streek Nuus on 14 October 2022 (refer to Appendix F-3);
 - Site notices were placed at the entrance to the Kusile Power Station, Delmas Public Library and Victor Khanye Local Municipality Office on-site on 19 October 2022 (refer to Appendix F-4).; and
 - Background Information Documents (BIDs) were also distributed via email on 24 October 2022. Proof of this distribution is included (refer to Appendix F-5).
- *Identification of I&APs and establishment of a database (Appendix F-6).*

Identification of I&APs was undertaken by Zitholele through existing contacts and databases, recording responses to site notices and the newspaper advertisement, as well as through the process of networking. The key stakeholder groups identified include authorities, local and district municipalities, public stakeholders, Parastatals and Non-Governmental Organizations (refer to *Appendix F-6*).

6.1.4 Registration of I&APs during project announcement

All stakeholders and I&APs that requested to be registered have been recorded within a database of registered I&APs, please refer to (*Appendix F-7*). Organs of state are also included in the database of registered I&APs. While I&APs were encouraged to register their interest in the project from the onset of the process undertaken by Zitholele, the identification and registration of I&APs has been on-going for the duration of the BA Process. Refer to the Comments and Responses Report in *Appendix F-8* that provides the requests for registration and comments

provided by the I&APs during the registration period and the EAP's responses to the comments. The original comments and responses are included in Appendix 1 of Appendix F-8.

6.1.5 Protection of Personal Information Act, No.4 of 2013

The Protection of Personal Information Act (POPIA), No 4 of 2013, promote the protection of personal information that is processed by public and private bodies while introducing certain conditions to establish minimum requirements for the processing of personal information. Pertinent sections of the Act became effective on 1 July 2021.

Zitholele drew all I&APs attention to the fact that the PPP team will collect, maintain and store personal information from Interested and Affected Parties that register an interest in this BA and WULA process for the purpose of executing this process only. Collected I&AP information managed by Zitholele Consulting is furthermore available to the applicant, Eskom Holdings SOC Ltd, during the course of the BA and WULA process.

Zitholele Consulting (Pty) Ltd further acknowledge that this BA and WULA process is a public process and all stakeholders were informed that some personal information limited to I&AP name, surname, affiliation, declaration of interest and comments and opinions provided will be included in the BA and WULA documentation that will be made available for public review and comment. Full contact details will however only be made available to the DFFE and the DWS, upon submission of the final BAR and WULA Reports.

6.1.6 Draft BAR for public review and comment

The Draft BAR is available for public review and comment from 9 November 2022 to 12 December 2022.

Interested and Affected Parties were notified of the availability of the draft BAR for public review and comment as follows (refer to notification documents in Appendix F9):

- An English newspaper advertisement was placed in the Streek Nuus;
- English site notices will be placed at strategic locations; and
- A notification letter will be sent to I&APs on the database.

6.1.7 Identification and Recording of Issues and Concerns

Issues and comments raised by I&AP's over the duration of the BA process will be incorporated into the Comments and Response Report. The Comments and Response Report will include responses from members of the EAP project team and/or the project proponent.

The CRR will be included in the Final BAR that will be submitted to the DFFE for consideration and decision-making after the conclusion of the PPP. Correspondences will include any telephonic queries fielded and emails received from stakeholders. The CRR will also include the

responses by the EAP to the comments raised by the I&APs. Proof of correspondence between the stakeholders and Zitholele Consulting will be included as an Appendix to the Comments and Responses Report.

6.1.8 Notifying I&APs of the decision

All the stakeholders will be notified via email and SMS of the decision made by the DFFE on the EA, once it is issued by the DFFE.

7 IMPACT IDENTIFICATION AND ASSESSMENT

This chapter serves to assess the significance of the positive and negative environmental impacts (direct, indirect, and cumulative) expected to be associated with the proposed Project.

The planning phase of this project will evaluate the following phases:

- Pre-Construction / Construction – will include pre-construction surveys, site preparation, construction site demarcation, vegetation clearance, transportation of material to site; excavations, stockpiling on site, waste management, and undertaking site rehabilitation including implementation of a stormwater management plan.
- Operation – will include operation and maintenance of the stormwater drainage and associated infrastructures.
- Decommissioning –Note that impacts associated with decommissioning are expected to be similar to those associated with construction activities. Therefore, these impacts are not considered separately within this chapter.

7.1 Impact Assessment Rating Methodology

7.1.1 Impact Assessment Methodology

The impacts will be ranked according to the methodology described below. Where possible, mitigation measures will be provided to manage impacts. In order to ensure uniformity, a standard impact assessment methodology will be utilised so that a wide range of impacts can be compared with each other. The impact assessment methodology makes provision for the assessment of impacts against the following criteria, as discussed below.

a. DIRECT, INDIRECT & CUMULATIVE

Descriptor	Definition
Direct Impact	Direct impacts are impacts that are caused directly by the activity and generally occur at the same time and at the place of the activity. These impacts are usually associated with the construction, operation or maintenance of an activity and are generally obvious and quantifiable.
Indirect Impact	Indirect impacts of an activity are indirect or induced changes that may occur as a result of the activity. These types of impacts include all the potential impacts that do not manifest immediately when the activity is undertaken, or which occur at a different place as a result of the activity.
Cumulative Impact	Cumulative impacts are impacts that result from the incremental impact of the proposed activity on a common resource when added to the impacts of other past, present or reasonably foreseeable future activities. Cumulative impacts can occur from the

Descriptor	Definition
	collective impacts of individual minor actions over a period of time and can include both direct and indirect impacts.

b. IMPACT DIRECTION

Descriptor	Definition
Positive	Environment overall will benefit from the impact/risk
Negative	Environment overall will be adversely affected by the impact/risk
Neutral	Environment overall will not be affected

c. SPATIAL EXTENT OF IMPACT

Extent Descriptor	Definition	Rating
Site	Impact footprint remains within the boundary of the site.	1
Local	Impact footprint extends beyond the boundary of the site to the adjacent surrounding areas.	2
Regional	Impact footprint includes the greater surrounds and may include an entire municipal or provincial jurisdiction.	3
National	The scale of the impact is applicable to the Republic of South Africa.	4
Global	The impact has global implications	5

d. DURATION OF IMPACT

Duration descriptor	Definition	Rating
Construction / Decommissioning phase only	The impact endures for only as long as the construction or the decommissioning period of the project activity. This implies that the impact is fully reversible.	1
Short term	The impact continues to manifest for a period of between 3 and 5 years beyond construction or decommissioning. The impact is still reversible.	2
Medium term	The impact continues between 6 and 15 years beyond the construction or decommissioning phase. The impact is still reversible with relevant and applicable mitigation and management actions.	3
Long term	The impact continues for a period in excess of 15 years beyond construction or decommissioning. The impact is only reversible with considerable effort in implementation of rigorous mitigation actions.	4
Permanent	The impact will continue indefinitely and is not reversible.	5

e. POTENTIAL INTENSITY OF IMPACT

Criteria for impact rating of potential intensity of a negative impact.

Potential Intensity Descriptor	Definition of negative impact	Rating
Low	Negative change with no associated consequences.	1
Moderate-Low	Nuisance impact	2
Moderate	Substantial alteration and/or reduction in environmental quality/loss of habitat/loss of heritage/loss of welfare amenity	4
Moderate-High	Severe alteration to faunal or floral populations/loss of livelihoods/individual economic loss.	8
High	Extreme alteration to human health linked to mortality/loss of a species/endemic habitat.	16

Criteria for the impact rating of potential intensity of a positive impact.

Potential Intensity Descriptor	Definition of positive impact	Rating
Low	Positive change with no other consequences.	1
Moderate-Low	Economic development	2
Moderate	Improved environmental quality/improved individual livelihoods.	4
Moderate-High	Net improvement in human welfare	8

f. PROBABILITY / LIKELYHOOD OF IMPACT

Likelihood Descriptor	Definition	Rating
Improbable	The possibility of the impact occurring is negligible and only under exceptional circumstances.	0.1
Very Unlikely	The possibility of the impact occurring is low with a less than 30% chance of occurring.	0.2
Unlikely	The impact has a 30% to 50% chance of occurring.	0.5
Likely	The impact has a 51% to 90% chance of occurring.	0.75
Definite	The impact has a >90% chance of occurring regardless of preventative measures.	1

g. SIGNIFICANCE RATING SCALE

Score	Implications for Decision-making	Rating
< 3	The risk/impact may result in minor alterations of the environment and can be easily avoided by implementing appropriate mitigation measures and will not have an influence on decision-making. Project can be authorised with low risk of environmental degradation	Low
3 - 9	The risk/impact will result in moderate alteration of the environment and can be reduced or avoided by implementing the appropriate mitigation measures and will only have an influence on the decision-making if not	Moderate

Score	Implications for Decision-making	Rating
	mitigated. Project can be authorised but with conditions and routine inspections. Mitigation measures must be implemented.	
10 - 20	The risk/impact will result in major alteration to the environment even with the implementation on the appropriate mitigation measures and will have an influence on decision-making. Project can be authorised but with strict conditions and high levels of compliance and enforcement. Monitoring and mitigation are essential.	High
21 - 26	The risk/impact will result in very major alteration to the environment even with the implementation on the appropriate mitigation measures and will have an influence on decision-making. The project cannot be authorised unless major changes to the engineering design are carried out to reduce the significance rating.	Fatally Flawed

Reversibility of the Impacts: The extent to which the impacts/risks are reversible assuming that the project has reached the end of its life cycle (decommissioning phase):

Descriptor	Definition
High reversibility	Impact is highly reversible at end of project life.
Moderate reversibility	Moderate reversibility of impacts.
Low reversibility	Low reversibility of impacts.
Impacts are non-reversible	The impact is permanent, i.e., this is the least favourable assessment for the environment.

Irreplaceability of Receiving Environment/Resource Loss caused by impacts/risks: The degree to which the impact causes irreplaceable loss of resources assuming that the project has reached the end of its life cycle (decommissioning phase):

Descriptor	Definition
High irreplaceability	The project will destroy unique resources that cannot be replaced, i.e. this is the least favourable assessment for the environment

Descriptor	Definition
Moderate irreplaceability	Moderate irreplaceability of resources
Low irreplaceability	Low irreplaceability of resources.
Resources are replaceable	The affected resource is easy to replace/rehabilitate, i.e. this is the most favourable assessment for the environment.

Confidence: The degree of confidence in predictions based on available information and specialist knowledge

Descriptor	Definition
Low	EAP / Specialist has low confidence in assessment due to significant limitations such as unavailability of data or information
Medium	EAP / Specialist has medium confidence in assessment due to some limitations such as unavailability of data or information
High	EAP / Specialist has high confidence in assessment.

7.2 Design, Planning and Pre-Construction Phase

7.2.1 Heritage Resources

No impacts on heritage resources have been identified during the Pre-Construction Phase of the proposed development.

7.2.2 Palaeontological Resources

No impacts on palaeontological resources have been identified during the Pre-Construction Phase of the proposed development.

7.2.3 Surface water and wetlands

No impacts on surface water and wetlands have been identified during the Pre-Construction Phase of the proposed development.

7.2.4 Groundwater

No impacts on groundwater have been identified during the Pre-Construction Phase of the proposed development.

7.2.5 Visual

No impacts on the aesthetic environment have been identified during the Pre-Construction Phase of the proposed development.

7.2.6 Socio-economic

No impacts on the socio-economic environment have been identified during the Pre-Construction Phase of the proposed development.

7.2.7 Terrestrial Biodiversity

Impacts identified

As per the Terrestrial Biodiversity Compliance Statement, the pre-construction phase activities are considered a low risk. This phase of the assessment would include, amongst others, site demarcation for construction activities and preparation for commencement of construction.

If the construction footprint is not clearly demarcated, construction activities may cause disturbance to faunal migration corridors i.e. the channelled valley bottom wetland which is a foraging area for faunal species.

Impact Assessment

The impact of this disturbance was rated as 'moderate' prior to the mitigation and is 'low' post-mitigation. See Impact Assessment Table 7-1.

Table 7-1: Impacts on fauna during Pre-Construction

Impact Description		Impact type	Extent (E)	Duration (D)	Potential Intensity (P)	Likelihood (L)	Impact Rating & Significance (IR&S)
Impact	Direct Impact:	Significance without Mitigation					
Impact Direction:	Negative	Existing Impact	2	2	4	0.75	6 - MOD
Aspect:	Lack of demarcation of the development footprint	Project Impact	2	1	4	0.75	5 - MOD
<u>Potential Impact:</u>		Significance with Mitigation					

Impact Description	Impact type	Extent (E)	Duration (D)	Potential Intensity (P)	Likelihood (L)	Impact Rating & Significance (IR&S)	
Disturbance to faunal migration corridors	Residual Impact	2	1	2	0.2	1 - LOW	
	Reversibility	Moderate reversibility					
	Irreplaceability	Moderate irreplaceability					
	Cumulative Impact						
	Cumulative Impact	1	1	1	0.1	0 - LOW	
	Confidence	High					

Proposed Mitigation Measures (Impact Management Actions)

- All personnel are to undergo Environmental Awareness Training. A signed register of attendance must be kept for proof. Discussions are required on all sensitive environmental receptors within the project area to inform contractors and site staff of the presence of sensitive habitat features, such as the channelled valley bottom wetland, and management requirements in line with the Environmental Authorisation and within the EMPr.
- Contractors and employees must all undergo a strict environmental induction and be made aware of the sensitive habitats within and nearby to the project area.
- Activities should as far as possibly take place within the 'low' sensitivity areas. Any activities that must take place within the 'medium' sensitivity areas must take special precautions against disturbing fauna species, as well as the habitat.
- Areas to be developed/disturbed must be specifically demarcated so that during the construction/activity phase, only the demarcated areas be impacted upon.
- Once the development layout has been confirmed, the open areas must be fenced off appropriately pre-construction in order to allow animals to move or be moved into these areas before breaking ground activities occur. Construction activities must take place systemically.
- A qualified environmental control officer must be on site when construction begins. A site walk through is recommended by a suitably qualified ecologist prior to any construction activities, preferably during the wet season and any additional SSC should be noted. Should animals not move out of the area on their own, relevant specialists must be contacted to advise on how the species can be relocated.

7.3 Construction Phase

7.3.1 Heritage Resources

Impacts identified

No heritage resources or sensitive heritage areas were identified within the study area. However, potential exists for heritage resources to be uncovered during excavations.

Impact Assessment

The impact on heritage resources is rated as 'low' prior to the mitigation and is 'low' post-mitigation. See Impact Assessment in Table 7-2.

Table 7-2: Impact on heritage resources during construction

Impact Description		Impact type	Extent (E)	Duration (D)	Potential Intensity (P)	Likelihood (L)	Impact Rating & Significance (IR&S)	
Impact	Direct Impact:	Significance without Mitigation						
Impact Direction:	Negative	Existing Impact	1	1	1	0.1	0 - LOW	
Aspect:	Uncovering of heritage resources during excavation activities	Project Impact	1	1	1	0.1	0 - LOW	
<u>Potential Impact:</u>		Significance with Mitigation						
Destruction of heritage resources		Residual Impact	1	1	1	0.1	0 - LOW	
		Reversibility	Moderate reversibility					
		Irreplaceability	Moderate irreplaceability					
		Cumulative Impact						
		Cumulative Impact	1	1	1	0.1	0 - LOW	
		Confidence	High					

Proposed Mitigation Measures (Impact Management Actions)

In the unlikely event of unmarked human burials, burial pits, potsherds or stone tools being uncovered during earthworks for the proposed development, these must be reported immediately to the South African Heritage Resources Agency (SAHRA) (Ms. Nokukhanya Khumalo (021 362 2535)).

7.3.2 Palaeontological Resources

Impacts identified

No fossil heritage resources were identified within the study area. However, potential exists for fossil heritage resources to be uncovered during excavations.

Impact Assessment

The impact on fossil heritage resources is rated as 'low' prior to the mitigation and is 'low' post-mitigation. See Impact Assessment in Table 7-3.

Table 7-3: Impact on fossil heritage resources during construction

Impact Description		Impact type	E	D	P	L	IR&S
Impact	Direct Impact:	Significance without Mitigation					
Impact Direction:	Negative	Existing Impact	1	1	1	0.1	0 - LOW
Aspect:	Uncovering of fossil heritage resources during excavation activities	Project Impact	1	1	1	0.1	0 - LOW
<u>Potential Impact:</u>		Significance with Mitigation					
Destruction of fossil heritage / palaeontological resources		Residual Impact	1	1	1	0.1	0 - LOW
		Reversibility	Moderate reversibility				
		Irreplaceability	Moderate irreplaceability				
		Cumulative Impact					
		Cumulative Impact	1	1	1	0.1	0 - LOW
Confidence		High					

Proposed Mitigation Measures (Impact Management Actions)

- If a chance find is made the person responsible for the find must immediately stop working and all work that could impact that finding must cease in the immediate vicinity of the find.
- The person who made the find must immediately report the find to his/her direct supervisor which in turn must report the find to his/her manager and the ESO or site manager. The ESO or site manager must report the find to the relevant Heritage Agency (South African Heritage Research Agency, SAHRA). (Contact details: SAHRA, 111 Harrington Street, Cape Town. PO Box 4637, Cape Town 8000, South Africa. Tel: 021 462 4502. Fax: +27 (0)21 462 4509. Web: www.sahra.org.za). The information to the Heritage Agency must include photographs of the find, from various angles, as well as the GPS co-ordinates.
- A preliminary report must be submitted to the Heritage Agency within 24 hours of the find and must include the following: 1) date of the find; 2) a description of the discovery and a

3) description of the fossil and its context (depth and position of the fossil), GPS coordinates.

- Photographs (the more the better) of the discovery must be of high quality, in focus, accompanied by a scale. It is also important to have photographs of the vertical section (side) where the fossil was found.
- Upon receipt of the preliminary report, the Heritage Agency will inform the ESO (or site manager) whether a rescue excavation or rescue collection by a palaeontologist is necessary.
- The site must be secured to protect it from any further damage. No attempt should be made to remove material from their environment. The exposed finds must be stabilized and covered by a plastic sheet or sand bags. The Heritage agency will also be able to advise on the most suitable method of protection of the find.
- If the fossil cannot be stabilized the fossil may be collected with extreme care by the ESO. Fossils finds must be stored in tissue paper and in an appropriate box while due care must be taken to remove all fossil material from the rescue site.
- Once the Heritage Agency has issued the written authorization, the developer may continue with the development on the affected area.

7.3.3 Surface water resources and wetlands

Impacts identified

A Channelled Valley Bottom (CVB) wetland occurs at the northern portion of the site i.e. at the start of the proposed construction of the stormwater v-drains (approximately 250m from the existing radial stacker).

During construction, the operation of heavy machinery and equipment in close proximity to the watercourse and excavations may result in the following potential impacts:

- Erosion of the wetland
- Deposition of dust
- Compaction of soil
- Altering hydromorphic soils

During construction, ablution facilities, domestic and industrial waste, storage of chemicals, mixes and fuel may result in water quality impairment.

The stripping and stockpiling of topsoil may result in the following:

- Drainage patterns change
- Altering overland flow

The removal/clearing of vegetation to facilitate the installation of the proposed infrastructure may lead to the indirect loss of wetlands and a decrease in the functionality of the wetlands.

Impact Assessment

The significance ratings of the impacts on the wetlands before mitigation is rated as 'moderate'. However, with the implementation of mitigation and management measures as proposed by the wetland specialist, the impact significance will be reduced to 'low', as is evident from Table 7-4.

Table 7-4: Impact on surface water resources and wetlands during construction

Impact Description		Impact type	E	D	P	L	IR&S
Impact	Direct Impact:	Significance without Mitigation					
Impact Direction:	Negative	Existing Impact	2	2	8	1	12 - HIGH
Aspect:	Operation of heavy machinery and equipment (including excavations) in close proximity to the watercourse	Project Impact	1	2	8	0.5	6 - MOD
<u>Potential Impact:</u>		Significance with Mitigation					
Erosion of the wetland; deposition of dust; compaction of soil; altering hydromorphic soils		Residual Impact	1	1	1	0.5	2 - LOW
		Reversibility	Moderate reversibility				
		Irreplaceability	Low irreplaceability				
		Cumulative Impact					
		Cumulative Impact	1	1	1	0.1	0 - LOW
Confidence		High					
Impact Description		Impact type	E	D	P	L	IR&S
Impact	Direct Impact:	Significance without Mitigation					
Impact Direction:	Negative	Existing Impact	2	2	8	1	12 - HIGH
Aspect:	Ablution facilities, domestic and industrial waste, storage of chemicals, mixes and fuel	Project Impact	1	2	8	0.5	6 - MOD
<u>Potential Impact:</u>		Significance with Mitigation					
Water quality impairment		Residual Impact	1	1	1	0.1	0 - LOW
		Reversibility	Moderate reversibility				
		Irreplaceability	Low irreplaceability				
		Cumulative Impact					
		Cumulative Impact	1	1	1	0.1	0 - LOW
Confidence		High					
Impact Description		Impact type	E	D	P	L	IR&S
Impact	Direct Impact:	Significance without Mitigation					
Impact Direction:	Negative	Existing Impact	2	2	8	1	12 - HIGH
Aspect:	Stripping and stockpiling of topsoil	Project Impact	1	2	8	0.5	6 - MOD
<u>Potential Impact:</u>		Significance with Mitigation					

Impact Description		Impact type	E	D	P	L	IR&S	
Change of drainage patterns, altering overland flow		Residual Impact	1	1	1	0.1	0 - LOW	
		Reversibility	Moderate reversibility					
		Irreplaceability	Low irreplaceability					
		Cumulative Impact						
		Cumulative Impact	1	1	1	0.1	0 - LOW	
		Confidence	High					
Impact Description		Impact type	E	D	P	L	IR&S	
Impact	Indirect Impact:	Significance without Mitigation						
Impact Direction:	Negative	Existing Impact	1	3	4	0.5	4 - MOD	
Aspect:	Removal/clearance of vegetation	Project Impact	1	2	8	0.5	6 - MOD	
<u>Potential Impact:</u>		Significance with Mitigation						
Loss of wetlands and a decrease in the functionality of the wetlands		Residual Impact	1	1	1	0.5	2 - LOW	
		Reversibility	Moderate reversibility					
		Irreplaceability	Low irreplaceability					
		Cumulative Impact						
		Cumulative Impact	1	1	1	0.1	0 - LOW	
		Confidence	High					

Proposed Mitigation Measures (Impact Management Actions)

The following mitigation measures must be implemented:

- All excavations within the wetland's 35m buffer zone must be carried out by means of manual labour, instead of heavy vehicles.
- The contractors used for the construction should have spill kits available prior to construction to ensure that any fuel, oil or hazardous substance spills are cleaned-up and discarded correctly;
- All construction activities must be restricted to the development footprint area. This includes laydown and storage areas, ablutions, offices etc.;
- During construction activities, all rubble generated must be removed from the site;
- Construction vehicles and machinery must make use of existing access routes;
- All chemicals and toxicants to be used for the construction must be stored in a bunded area;
- All machinery and equipment should be inspected regularly for faults and possible leaks, these should be serviced off-site;
- All contractors and employees should undergo induction which is to include a component of environmental awareness. The induction is to include aspects such as the need to avoid littering, the reporting and cleaning of spills and leaks and general good "housekeeping";
- Adequate sanitary facilities and ablutions on the servitude must be provided for all personnel throughout the project area. Use of these facilities must be enforced (these

facilities must be kept clean so that they are a desired alternative to the surrounding vegetation);

- All removed soil and material stockpiles must be protected from erosion, stored on flat areas where run-off will be minimised, and be surrounded by bunds;
- Any exposed earth should be rehabilitated promptly by planting suitable vegetation (vigorous indigenous grasses) to protect the exposed soil;
- No dumping of construction material on site may take place;
- All waste generated on site during construction must be adequately managed;
- Separation and recycling of different waste materials should be supported;
- The first 300 mm of soil must be stockpiled separate from the soil excavated deeper than 300 mm;
- No heavy machinery must be allowed within the delineated wetland. All excavations must be carried out via manual labour, instead of heavy machinery/vehicles;
- Lighter vehicles (small trucks and other vehicles) required for the proposed activities should only be allowed to use existing roads (including dirt roads);
- All excavations within the wetland's 35m buffer zone must be carried out by means of manual labour, instead of heavy vehicles.

Post-construction, the Wetland Rehabilitation Plan (Appendix 1 of Appendix E1) must be implemented to prescribe measures to prevent further deterioration / loss of ecological integrity and functioning of the system. The following rehabilitation measures must be implemented:

- The contaminated silt/material that settled into the artificial drainage line and the channelled valley bottom wetland on site must be removed.
- The areas excavated for the construction activities must be backfilled with topsoil to ensure successful rehabilitation.
- The surface of this topsoil area outside of the delineated wetland must be slightly compacted to compensate for subsidence of this material.
- Vegetation cover must be restored to decrease flow velocities, assimilate contaminants, increase biodiversity and minimise erosion.
- It is recommended that all invasive species located within wetland, as well as the rehabilitation focus area affected by the proposed activities be controlled / removed. This is to improve the conditions of the wetland as well as to, most importantly, decrease competition between the re-vegetated *Cyperus* spp./ *Imperata cylindrica* and alien invasive species.

In terms of design, the following must be implemented:

- Soft or green engineering features should be incorporated into the management of stormwater. Only clean water may be discharged into the wetland areas; and
- Stormwater diversions and channels should be vegetated swales and impermeable material must be avoided. Litter traps / nets should be attached to stormwater outlets (discharge areas). These must be monitored and managed particularly after rainfall events.

The Contractor shall make every effort to preserve the area, to minimise environmental disturbance and to inform employees as to the ecological sensitivity and importance of the area. The Contractor shall be responsible for any avoidable damages to the environment resulting from the actions of any employees.

The time of planting must be carried out as far as is practicable during the period most likely to produce beneficial results, but as soon as possible after the soil properties are estimated to be adequate. The seasonal period is from the beginning of April to the end of October.

The mitigation measures with regards to the following aspects of rehabilitation must be adhered to (as per the Wetland Rehabilitation Plan in Appendix 1 of Appendix E1):

- Erosion;
- Establishing cover;
- Fire;
- Shaping;
- Trimming;
- Soiling and seeding;
- Watering, weeding, cutting and replanting;
- Planting/seeding of natural vegetation; and
- Preparation for grassing.

In terms of monitoring of the rehabilitation activities, the following must be undertaken:

- Regular monitoring and maintenance (such as removing Alien Invasive Plants (AIP) /weeds and encroachment) must be undertaken for successful revegetation/rehabilitation. Monitoring must consist of photo points and documentation of observations. It is recommended seasonally for the first two years of establishment and at least annually thereafter.
- General maintenance must involve AIP and weed control as well as thinning of encroachment. Continues weed control is critical to the success of revegetation and should be a high priority. Weeding around plants is necessary to avoid competition and stress. This must be carried out as required;
- There must be AIP and weed control during the first two years after rehabilitation and the undesired species must be controlled from spreading. As with site preparation, removal of weed can be accomplished by mechanical means. Care must be taken not to damage the emerging plants or the soil layer. Stringent weed management may eventually increase the area's resistance to further weed invasion by favouring the growth and establishment from the seedbank;
- If possible, the rehabilitated areas must be irrigated at regular intervals, taking care not to cause erosion or damage the soil surface by using an excessive force of water; and
- The rehabilitated area must be left undisturbed, and all access prohibited, except when maintenance is being undertaken.

The Monitoring Plan (Table 3-1) of the Wetland Rehabilitation Plan must be implemented to evaluate the success of the rehabilitation efforts in terms of vegetation cover, erosion, sedimentation, invasive plant species and solid waste management.

7.3.4 Groundwater

No impacts on groundwater have been identified during the Construction Phase of the proposed development.

7.3.5 Terrestrial Biodiversity

Impacts identified

Majority of the site where the proposed infrastructure is located, occurs within low ecological sensitive areas due the high degree of transformation from its original state, caused by the operational activities of the Kusile Power Station. The portions of the site that have medium ecological sensitivity i.e. the area where the channelled valley bottom wetland is located, is a migration corridor for faunal species. It is a foraging area for the faunal species. It contains indigenous vegetation, albeit in a disturbed condition.

Construction activities may cause a further loss and fragmentation of vegetation communities within the CBA (medium ecological sensitive area) in the vicinity of the project area.

Construction activities in the CBA / channelled valley bottom wetland area may lead to fragmentation effects that may hinder the safe movement of faunal species.

Impact Assessment

The significance ratings of the impacts on terrestrial biodiversity before mitigation is rated as 'moderate'. With the implementation of mitigation and management measures as proposed by the ecologist, the impact significance is 'low', as is evident from Table 7-5.

Table 7-5: Impact on terrestrial biodiversity during construction

Impact Description		Impact type	E	D	P	L	IR&S
Impact	Direct Impact:	Significance without Mitigation					
Impact Direction:	Negative	Existing Impact	1	2	4	0.5	4 - MOD
Aspect:	Construction activities within the medium sensitive ecological area	Project Impact	1	1	4	0.5	3 - MOD
<u>Potential Impact:</u>		Significance with Mitigation					
Loss and fragmentation of vegetation communities within the CBA		Residual Impact	1	1	1	0.5	2 - LOW
		Reversibility	Moderate reversibility				
		Irreplaceability	Low irreplaceability				

Impact Description		Impact type	E	D	P	L	IR&S
		Cumulative Impact					
		Cumulative Impact	1	1	1	0.1	0 - LOW
		Confidence	High				
Impact Description		Impact type	E	D	P	L	IR&S
Impact	Direct Impact:	Significance without Mitigation					
Impact Direction:	Negative	Existing Impact	1	2	4	0.5	4 - MOD
Aspect:	Construction activities within the medium sensitive ecological area	Project Impact	1	1	4	0.5	3 - MOD
Potential Impact:		Significance with Mitigation					
Fragmentation effects that hinder the safe movement of faunal species	Residual Impact	1	1	1	0.1	0 - LOW	
	Reversibility	Moderate reversibility					
	Irreplaceability	Low irreplaceability					
	Cumulative Impact						
	Cumulative Impact	1	1	1	0.1	0 - LOW	
	Confidence	High					

Proposed Mitigation Measures (Impact Management Actions)

Areas of indigenous vegetation, even secondary communities outside of the direct project footprint, should under no circumstances be fragmented or disturbed further. Clearing of vegetation should be minimized and avoided where possible, especially in medium sensitivity areas.

All vehicles and personnel must make use of the existing roads and walking paths, especially construction vehicles.

No plant species whether indigenous or exotic should be brought into/taken from the project area, to prevent the spread of exotic or invasive species or the illegal collection of plants.

Leaking equipment and vehicles must be repaired immediately or be removed from project area to facilitate repair.

A hydrocarbon spill management plan must be put in place to ensure that should there be any chemical spill out or over that it does not run into the surrounding areas. The Contractor must ensure the following:

- The Contractor shall be in possession of an emergency spill kit that must always be complete and available on site.

-
- Drip trays or any form of oil absorbent material must be placed underneath vehicles/machinery and equipment when not in use.
 - No servicing of equipment is to take place on site unless necessary.
 - All contaminated soil / yard stone shall be treated in situ or removed and be placed in containers.
 - It is important to appropriately contain any diesel storage tanks and/or machinery spills (e.g., accidental spills of hydrocarbons, oils, diesel etc.) in such a way as to prevent them leaking and entering the environment.

Natural areas remaining adjacent to the development footprint must be left to naturally regenerate. Ensure that fire and cutting control methods are not to be used to clear areas containing natural indigenous vegetation.

No trapping, killing, or poisoning of any wildlife is to be allowed. Signs must be put up to enforce this. These actions are illegal in terms of provincial environmental legislation.

The areas to be developed (or activity areas) must be specifically demarcated to prevent the movement of staff or equipment/vehicles into the surrounding environments. Signs must be put up to enforce this.

Outside lighting should be designed and limited to minimize impacts on fauna. Fluorescent and mercury vapor lighting should be avoided, and sodium vapor (yellow) lights should be used wherever possible.

All construction and maintenance motor vehicle operators must undergo an environmental induction that includes instruction on the need to comply with speed limits, to respect all forms of wildlife. Speed limits must be enforced to ensure that road killings and erosion is limited. Speed bumps must be built to force slow speeds.

Noise must be kept to a minimum during the evenings/ at night to minimize all possible disturbances to amphibian species and nocturnal mammals.

Activities must be scheduled during the least sensitive periods, to avoid migration, nesting, and breeding seasons as far as possible.

Signs must be put up in order to show the importance and sensitivity of surrounding areas and their functions. This especially pertains to the channelled valley bottom wetland area.

Environmentally friendly dust suppressant products must be used.

Any holes/deep excavations must be dug and planted in a progressive manner and should not be left open overnight. Should the holes be left overnight, they must be covered temporarily to ensure no small fauna species fall in and must be subsequently inspected prior to backfilling.

The implementation of an Alien Invasive Plant Management Plan is very important, due to the presence of invasive plants on site. If left unchecked, will continue to grow and spread prolifically, leading to further and more significant deterioration to the health of the natural environment, within and nearby the project area. The Plan must especially pertain to any recently cleared and changed areas.

The footprint area of the construction area should be kept to a minimum. The footprint area must be clearly demarcated to avoid unnecessary disturbances to adjacent areas. Road footprints must be kept to prescribed widths.

It is recommended that all waste be removed from site on a weekly basis to prevent rodents and pests from entering the site and proliferating.

A pest control plan must be put in place and implemented; it is imperative that poisons not be used.

Dust-reducing mitigation measures must be put in place and be strictly adhered to, particularly for all dirt roads and any earth dumps. This includes the wetting of exposed soft soil surfaces and not conducting activities on windy days which will increase the likelihood of dust being generated. Only environmentally friendly suppressants may be used to avoid the pollution of water sources. Speed limits must be put in place to reduce erosion, and speed bumps should also be constructed.

A dust monitoring programme must be developed and implemented for the construction area.

The following must be implemented with regards to waste management:

- Waste management must be a priority and all waste must be collected and stored adequately. It is recommended that all waste be removed from site on a weekly basis to prevent rodents and pests entering the site.
- Refuse bins must be emptied and secured.
- Temporary storage of domestic waste shall be in covered waste skips.
- Maximum domestic waste storage period must be 10 days.
- Any litter, spills, fuels, chemical and human waste in and around the project area must be removed and disposed of timeously and responsibly.
- It must be made an offence to litter or dump any material outside of specially demarcated and managed zones. Signs and protocols must be established to explain and enforce this.
- A minimum of one toilet must be provided per 10 persons. Portable toilets must be regularly pumped dry to ensure that the system does not degrade over time and spill into the surrounding area.
- The Contractor should supply sealable and properly marked domestic waste collection bins and all solid waste collected shall be disposed of at a licensed disposal facility.
- Under no circumstances may domestic waste be burned on site. Waste may never be stored in an open pit where it is susceptible to the elements such as wind and rain.

7.3.6 Visual

Impacts identified

The proposed development will occur within the confines of the existing power station, near the existing overland conveyor link and the radial stacker. No impacts on groundwater have been identified during the Construction Phase of the proposed development.

There are no visual receptors (adjacent landowners) who will have sight of the proposed construction activities.

Impact Assessment

The Eskom employees may have direct views of the construction activities and equipment on site, that will be a short duration, and within an area that is currently disturbed due to the ash conveyance activities that are currently taking place on site.

The significance ratings of the visual impacts on the employees at Eskom, before mitigation is rated as Low. With the implementation of mitigation and management measures, the impact significance will be low, as is evident from Table 7-6.

Table 7-6: Impact of change of visual character on site during construction

Impact Description		Impact type	E	D	P	L	IR&S	
Impact	Indirect Impact:	Significance without Mitigation						
Impact Direction:	Negative	Existing Impact	1	1	1	0.5	2 - LOW	
Aspect:	Construction activities and placement of construction equipment on site	Project Impact	1	1	1	0.5	2 - LOW	
<u>Potential Impact:</u>		Significance with Mitigation						
Alteration of visual character of the site	Residual Impact		1	1	1	0.1	0 - LOW	
	Reversibility	High reversibility						
	Irreplaceability	Resources are replaceable						
	Cumulative Impact							
	Cumulative Impact		1	1	1	0.1	0 - LOW	
Confidence		High						

Proposed Mitigation Measures (Impact Management Actions)

The following mitigation measures must be implemented:

- The construction area must at all times be neat and tidy.
- All litter must be collected and removed (daily) and disposed of appropriately.

- Equipment and construction vehicles must be stored or parked in designated areas.
- The construction camp must be screened with shade cloth.
- If construction is necessary during night-time, light sources should be directed inwards and downwards to prevent obtrusive lighting and light pollution.
- Dust suppression techniques should be implemented especially on windy days. Exposed soil stockpiles shall be covered, kept damp or protected using organic binding agents or alternative techniques that are not water intensive.

7.3.7 Socio-economic

Impacts identified

Construction activities will be a short duration temporary employment opportunity will be created, via construction related activities such as clearance of vegetation, manual labour for excavations and the installation of the proposed stormwater drainage and associated infrastructure.

Due to the high percentage of unemployment in the area, sufficient unskilled labour is available for the project and the community in which the labour resides in close proximity to the development site. The project must be used from the start to train people and transfer skills as far as possible. The tender specifications for any construction work on the project must include a compulsory utilisation of a certain percentage of local labour and the compulsory training of local labour.

Impact Assessment

In light of the above, the project will positively impact on the surrounding community and local economy due to possible skills development and income generation. This impact is predicted to have a low positive significance. Refer to Table 7-7.

Table 7-7: Temporary job creation on site during construction

Impact Description		Impact type	E	D	P	L	IR&S
Impact	Direct Impact:	Significance without Mitigation					
Impact Direction:	Positive	Existing Impact	1	1	1	0.1	0 - LOW
Aspect:	Construction activities	Project Impact	1	1	1	0.1	0 - LOW
<u>Potential Impact:</u>		Significance with Mitigation					
Temporary job creation	Residual Impact		1	1	1	0.5	2 - LOW
	Reversibility	High irreplaceability					
	Irreplaceability	Resources are replaceable					
	Cumulative Impact						
	Cumulative Impact		1	1	1	0.1	0 - LOW
	Confidence	Medium					

Proposed Mitigation Measures (Impact Management Actions)

The following mitigation measures must be implemented to enhance the positive impact:

- As far as possible, employ local residents during construction, where applicable. This will ensure a reduced dependency on temporary employment in addition to enhancing the living standards of local people.
- Use manual labour where possible and practical.
- Ensure recruitment measures are aimed particularly at construction workers classified as designated employees in terms of the Employment Equity Act (black people, as defined in the Act, women, and disabled people). A local employment procedure and recruitment process should be developed in consultation with local authorities and representatives. Eskom should ensure that a transparent process of employment is followed to limit opportunities for conflict situations.
- Ensure that the Labour Relations Amendment Act, 2002 (Act No. 12 of 2002) as well as the necessary policies and procedures are taken into consideration to ensure the correct procurement procedures.

7.4 Operational Phase

7.4.1 Heritage Resources

No impacts are expected during the operation phase. As such, no impact assessment was undertaken.

7.4.2 Palaeontological Resources

No impacts are expected during the operation phase. As such, no impact assessment was undertaken.

7.4.3 Surface water resources and wetlands

Impacts identified

Should there be a lack of maintenance of the stormwater infrastructure, contaminated stormwater may enter into the wetland and watercourses, thereby leading to pollution of the water resources.

Impact Assessment

The significance ratings of the impacts on the wetlands before mitigation is rated as 'moderate'. However, with the implementation of mitigation and management measures as proposed by the wetland specialist, the impact significance will be reduced to 'low', as is evident from Table 7-8.

Table 7-8: Impact on surface water resources and wetlands during the operational phase

Impact Description		Impact type	Extent (E)	Duration (D)	Potential Intensity (P)	Likelihood (L)	Impact Rating & Significance (R&S)	
Impact	Direct Impact:	Significance without Mitigation						
Impact Direction:	Negative	Existing Impact	2	3	8	0.75	10 - HIGH	
Aspect:	Lack of maintenance of stormwater infrastructure	Project Impact	1	1	4	0.5	3 - MOD	
<u>Potential Impact:</u>		Significance with Mitigation						
Surface water quality impairment		Residual Impact	1	1	1	0.5	2 - LOW	
		Reversibility	Moderate reversibility					
		Irreplaceability	Low irreplaceability					
		Cumulative Impact						
		Cumulative Impact	1	1	1	0.1	0 - LOW	
		Confidence	High					

Proposed Mitigation Measures (Impact Management Actions)

Stormwater infrastructure must be monitored for malfunction and leakages to ensure that spillage of contaminated stormwater is prevented from entering into the wetland and watercourses.

7.4.4 Groundwater

Impacts identified

Based on the groundwater monitoring data (MWEM, 2022), groundwater within the study area is impacted based on the exceedance of Mg, pH, EC, Ca, SO₄, F and NO₃ to the prescribed limits within the water use licences. Several sources of contamination are present on site, of which the coal and ash storage area are within vicinity of the study area. Current activities on site and its result of contamination is therefore evident.

Should be lack of maintenance of the installed stormwater infrastructure, there would be increased contamination of the surface and groundwater resources through seepage from spilled mixed coarse ash and gypsum.

Impact Assessment

The significance ratings of the impacts on the wetlands before mitigation is rated as 'moderate'. However, with the implementation of mitigation and management measures as proposed by the Geohydrologist, the impact significance will be reduced to 'low', as is evident from Table 7-9.

Table 7-9: Impact on groundwater during the operational phase

Impact Description		Impact type	E	D	P	L	IR&S
Impact	Direct Impact:	Significance without Mitigation					
Impact Direction:	Negative	Existing Impact	2	3	8	0.75	10 - HIGH
Aspect:	Lack of maintenance of stormwater infrastructure	Project Impact	1	1	4	0.5	3 - MOD
<u>Potential Impact:</u>		Significance with Mitigation					
Groundwater contamination	Residual Impact	1	1	1	0.5	2 - LOW	
	Reversibility	Moderate reversibility					
	Irreplaceability	Low irreplaceability					
	Cumulative Impact						
	Cumulative Impact	1	1	1	0.1	0 - LOW	
	Confidence	High					

Proposed Mitigation Measures (Impact Management Actions)

The proposed implementation of stormwater drainage infrastructure to contain ash contaminated stormwater water runoff along the conveyor servitudes will improve the current scenario.

All areas that contain spilled ash must be cleaned up, post-construction.

Stormwater infrastructure must be maintained as follows:

- Avoid overflow of sumps
- Undertake routine area inspections for spillages
- Undertake regular clean up and maintenance
- An Emergency Response Plan must be in place in the event of the occurrence of spillages.

7.4.5 Socio-economic

No impacts are expected during the operation phase. As such, no impact assessment was undertaken.

7.4.6 Visual

No impacts are expected during the operation phase. As such, no impact assessment was undertaken.

7.4.7 Terrestrial Biodiversity

Impacts identified

Majority of the site for the proposed development occurs in low ecological sensitivity areas that is transformed and invaded by alien plant species. A portion of the proposed stormwater infrastructure will occur within the medium ecological sensitive area i.e. the CBA within the channelled valley bottom wetland. This area is a foraging and migration corridor for faunal species. If alien invasive plant species continue to proliferate in this area, fragmentation of vegetation communities will occur within the CBA. This will impact on the loss and disturbance of floral and faunal species and communities.

Impact Assessment

The significance ratings of the impacts on terrestrial biodiversity before mitigation is rated as 'moderate'. However, with the implementation of mitigation and management measures, the impact significance will be reduced to 'low', as is evident from Table 7-4.

Table 7-10: Terrestrial biodiversity impacts during the operational phase

Impact Description		Impact type	E	D	P	L	IR&S
Impact	Direct Impact:	Significance without Mitigation					
Impact Direction:	Negative	Existing Impact	2	3	8	0.75	10 - HIGH
Aspect:	Poor management of area where the stormwater infrastructure is installed in the CBA	Project Impact	1	1	4	0.5	3 - MOD
<u>Potential Impact:</u>		Significance with Mitigation					
Fragmentation of migration corridor for faunal species		Residual Impact	1	1	1	0.5	2 - LOW
		Reversibility	Moderate reversibility				
		Irreplaceability	Low irreplaceability				
		Cumulative Impact					
		Cumulative Impact	1	1	1	0.1	0 - LOW
Confidence		High					
Impact Description		Impact type	E	D	P	L	IR&S
Impact	Direct Impact:	Significance without Mitigation					
Impact Direction:	Negative	Existing Impact	2	3	8	0.75	10 - HIGH
Aspect:	Poor management of area where the stormwater infrastructure is installed in the CBA	Project Impact	1	1	4	0.5	3 - MOD
<u>Potential Impact:</u>		Significance with Mitigation					
Loss and disturbance of floral and faunal species and communities.		Residual Impact	1	1	1	0.5	2 - LOW
		Reversibility	Moderate reversibility				

Impact Description	Impact type	E	D	P	L	IR&S
Loss and fragmentation of vegetation communities within the CBA	Irreplaceability	Low irreplaceability				
	Cumulative Impact					
	Cumulative Impact	1	1	1	0.1	0 - LOW
	Confidence	High				

Proposed Mitigation Measures (Impact Management Actions)

Areas of indigenous vegetation, even secondary communities outside of the direct project footprint, should under no circumstances be fragmented or disturbed further. Clearing of vegetation should be minimized and avoided where possible, especially in medium sensitivity areas.

All vehicles and personnel must make use of the existing roads and walking paths, especially construction/operational vehicles.

No plant species whether indigenous or exotic should be brought into/taken from the project area, to prevent the spread of exotic or invasive species or the illegal collection of plants.

Leaking equipment and vehicles must be repaired immediately or be removed from project area to facilitate repair.

All footprints to be rehabilitated progressively and landscaped after construction is complete. Rehabilitation of the disturbed areas existing in the project area must be made a priority. Topsoil must also be utilised, and any disturbed area must be re-vegetated with plant and grass species which are endemic to this vegetation type.

Areas that are denuded during construction need to be re-vegetated with indigenous vegetation to prevent erosion during flood events. This will also reduce the likelihood of encroachment by alien invasive plant species.

Storm Water run-off & Discharge Water Quality monitoring:

- Incorporate green /soft engineering storm water measures. Avoid unnecessary vegetation clearing and avoid preferential surface flow paths;
- Cut-off trenches must be incorporated into the design to decrease contamination of watercourses.
- Contaminated water must not be discharged into the watercourses.

All released water must be within DWAF (1996) water quality standards for aquatic ecosystems, and discharge must be managed to avoid scouring and erosion of the receiving systems.

Outside lighting should be designed and limited to minimize impacts on fauna. Fluorescent and mercury vapor lighting should be avoided, and sodium vapor (yellow) lights should be used wherever possible.

The implementation of an Alien Invasive Plant management plan is very important, especially because of the invasive species identified on site which, if left unchecked, will continue to grow and spread prolifically leading to further and more significant deterioration to the health of the natural environment within and nearby to the project area. The plan must especially pertain to any recently cleared and changed areas.

It is recommended that all waste be removed from site on a weekly basis to prevent rodents and pests from entering the site and proliferating.

A pest control plan must be put in place and implemented, and it is imperative that poisons not be used.

A dust monitoring programme must be developed and implemented for the area.

7.5 Decommissioning Phase

The proposed stormwater infrastructure will be in operation at the Kusile Power Station for the lifespan of the power station. In the event that the Kusile Power Station will be decommissioned in the future, the installed infrastructure would require de-installation.

The infrastructure will be disassembled, removed from the site, transported, re-used/recycled. Before the transportation of the components of the stormwater infrastructure, it should be made sure that the infrastructure and its components are safe to transport.

The decommissioning of the stormwater infrastructure will have similar activities to those that are performed during construction. The decommissioning activities anticipated once the facility reached its end of life are the following:

- Disassembling of the components of the stormwater and associated infrastructure and appropriate disposal to landfill.
- Site preparation, removal of all equipment for disposal and re-use.
- Site Rehabilitation to acceptable level as per Environmental Management Programme (EMPr) guidelines.

7.5.1 Heritage Resources

No impacts are expected during the decommissioning phase. As such, no impact assessment was undertaken.

7.5.2 Palaeontological Resources

No impacts are expected during the decommissioning phase. As such, no impact assessment was undertaken.

7.5.3 Surface water and wetland resources

The anticipated impacts associated with the decommissioning phase of the project is anticipated to be largely similar to impacts experienced during the construction phase. The impact assessment undertaken in Section 7.3.3 is therefore applicable to the decommissioning phase of the project.

7.5.4 Groundwater Resources

No impacts are expected during the decommissioning phase. As such, no impact assessment was undertaken.

7.5.5 Terrestrial Biodiversity

The anticipated impacts associated with the decommissioning phase of the project is anticipated to be largely similar to impacts experienced during the construction phase. The impact assessment undertaken in Section 7.3.5 is therefore applicable to the decommissioning phase of the project.

7.5.6 Visual environment

The anticipated impacts associated with the decommissioning phase of the project is anticipated to be largely similar to impacts experienced during the construction phase. The impact assessment undertaken in Section 7.3.6 is therefore applicable to the decommissioning phase of the project.

7.5.7 Socio-economic environment

The anticipated impacts associated with the decommissioning phase of the project is anticipated to be largely similar to impacts experienced during the construction phase. The impact assessment undertaken in Section 7.3.7 is therefore applicable to the decommissioning phase of the project.

7.6 Assessment of 'Do Nothing' Alternative or 'No-Go' Alternative

The do-nothing' alternative (i.e. no-go alternative) is the option of not constructing the development and operation of the proposed stormwater drainage and associated infrastructure at the existing OLC and radial stacker at the Kusile Power Station. Should this alternative be selected, the status quo of the environment will remain.

Should the DFFE decline the application, the nearby wetlands and watercourses will continue to be impacted by the lack of proper stormwater drainage and ash-laden water will continue to contaminate the watercourses, thereby resulting in the destruction of the associated faunal corridors and fragmentation of the vegetation communities within the CBA. The DFFE would continue to issue environmental non-conformances to the Power Station. The Power Station may have to be shut-down, thereby impacting on Eskom's ability to provide electricity to the country. This will affect the local economy due to the lack of electricity infrastructure to sustain growth and development in all sectors.

If the proposed stormwater infrastructure is not approved, the present state of the environment (*in terms of the biological, physical, social and economic environment*) would continue to be negatively impacted by the lack of stormwater drainage and associated infrastructure, to contain the contaminated stormwater.

Therefore, the no-go alternative is not considered to be feasible.

8 ASSESSMENT OF POTENTIAL CUMULATIVE IMPACTS

One of the key information requirements as set out in Appendix 1 of the NEMA EIA regulations, 2014, as amended is the assessment of potentially significant cumulative impacts and risks that may be associated with a proposed development.

The definition of "cumulative impact" in terms of the NEMA EIA Regulations, 2014, as amended state that cumulative impact: "in relation to an activity, means the past, current and reasonably foreseeable future impact of an activity, considered together with the impact of activities associated with that activity, that in itself may not be significant, but may become significant when added to the existing and reasonably foreseeable impacts eventuating from similar or diverse activities". A key aspect of considering cumulative impacts is therefore the consideration of project impacts together with impacts that may arise from similar developments within a reasonable proximity to the proposed development that is being assessed.

The proposed stormwater infrastructure at the OLC and the radial stacker at the Kusile Power Station will serve as a remedial measure for the current environmental degradation that is taking place on site due to the ash-laden stormwater runoff entering into the wetlands and contaminating the water resources. The proposed development is therefore site-specific. Potential cumulative impacts associated with the proposed stormwater infrastructure project are discussed in this chapter.

8.1 Surface Water and Wetlands

No cumulative impacts were identified for surface water and wetland features given that all impacts are mitigated to an impact significance category of LOW. This is also evident due to the fact that the project is initiated to provide stormwater drainage infrastructure to ensure operation of the OLC 1 and OLC 2 system is in compliance with the environmental requirements. The

proposed infrastructure will thus, eliminate dirty water (ash laden stormwater) spills into the surrounding environment.

8.2 Terrestrial Biodiversity

No cumulative impacts were identified for terrestrial biodiversity given that all impacts are mitigated to an impact significance category of LOW. This is also evident due to the fact that the project is initiated to provide stormwater drainage infrastructure to ensure operation of the OLC 1 and OLC 2 system is in compliance with the environmental requirements. The Wetland Rehabilitation Plan will be implemented post-construction, to ensure the re-instatement of the endemic vegetation within the CBA and the channelled valley bottom wetland, to allow for faunal migration corridors to be maintained and ensure the control of alien invasive plant species.

9 SUMMARY OF KEY ENVIRONMENTAL FINDINGS

In accordance with the EIA Regulations (GN No. 982), this section provides a summary of the key findings of the Basic Assessment (BA) Process, including Specialist Study findings. This section also provides a reasoned opinion as to whether the activity should or should not be authorised and conditions that should be made in respect of that authorisation, as necessary.

This chapter provides a summary of the impacts identified and significance ratings, summary of key findings and recommendations from specialists and a motivation for the proposed development.

9.1 Summary of key findings and recommendations

This section summarises the key findings and recommendations from the respective specialist assessments that has materially contributed to the conclusions and overall recommendations made by the EAP for this application.

9.1.1 Surrounding Land use and Infrastructure

The project site earmarked for the proposed stormwater drainage and associated infrastructure, is located entirely within the existing Kusile Power Station (Figure 2-2) near the OLC 1 and OLC 2 systems and the radial stacker. The proposed 300mm dia overland pipeline that will convey the clarified water from the EST to the ash dump, is located close to the existing ash dump dirty water drain. There are no sensitive receptors that will have direct views of the construction activities that will occur within the existing Kusile Power Station. Furthermore, nuisance impacts such as noise and air pollution are not significant impacts, as there are no sensitive receptors, such as residential areas located near the site for construction.

9.1.2 Terrestrial Biodiversity

The project area was found to be in a heavily modified condition, mainly attributed to the Power station and its impacts associated, resulting in the area being largely unnatural or disturbed in some way. Dust from the road, as well as ash from Power station has degraded the veld severely. The area has been disconnected and fragmented from any natural areas. These aspects further limit the functional capacity of the project area. The majority of the development footprint is located within or along roads or transformed areas and their associated servitudes, which are considered with very low sensitivity.

The only area of indigenous vegetation stands included grassland which was found in channelled valley bottom wetland areas. The CBA identified by the Mpumalanga Conservation Plan that overlaps with the medium sensitivity area (wetland) may be considered viable, albeit disturbed. No protected trees or SCC flora species were observed on site.

Mammal activity was low, due to the extent of disturbance in general, as well as the poor habitat condition. Mammal activity was observed within the water resource areas (wetlands), species like Water Mongoose (*Atilax paludinosus*) tracks were observed. The species present are most likely not resident due to the modified state of the area, however using the drainage/wetland areas for forage or a migration corridor. No SCC were observed during the field survey.

A portion of the proposed stormwater infrastructure (drain outlet pipe from the EST) will occur within the channelled valley bottom wetland. The drain outlet pipe will convey groundwater that is found underneath the EST to the wetland, and it will not contain stormwater runoff. The proposed stormwater v-drain will be constructed underneath the Overland Conveyor on the internal power station road and construction activities will not occur directly within the wetland. The remaining associated infrastructure such as the following will not occur within the wetland and will be located in 'low' ecological sensitive areas that consists of alien invasive plant species:

- Sump;
- EST;
- WST
- Interconnecting pipelines from the OLC 1 and 2 system to the EST;
- 300mm diameter above ground steel pipeline to transfer clarified water from the east settling tank pump sump to the ash dump dirty water drain;
- A 200mm diameter overland steel pipeline to transfer clarified water from the WST pump sump to the ash dump dirty water drain; and
- A gravel access road (169m) will be constructed from the sump the EST.

Due to the modified state of most of the area, most areas no longer represent viable portions of a Vulnerable (VU) ecosystem, however the medium sensitive areas are viable constituents, albeit disturbed.

The screening report classified both the animal and plant theme sensitivity as 'medium'. Following the field survey findings, both the animal and plant species themes may be re-classified as having 'Low' sensitivities. This is since there is limited suitable habitat available to support the regular occurrence of any faunal SCC within the project area.

Completion of the Terrestrial Biodiversity Assessment led to a disputing of the 'Very High' classification for the terrestrial biodiversity theme sensitivity as allocated by the National Environmental Screening Tool. Most of the project area has instead been assigned a 'Low' to 'Medium' sensitivity, because of the extent of environmental disturbance that has taken place, and the fact that limited SCC were observed and are unlikely to frequently occur within the project area. It is noted that the 'Medium' sensitivity sections of the project area may, however, support the occasional foraging of avifaunal and/or mammal SCC.

The water resource habitats of the project area are regarded as important, and it is vital that the management outcomes presented, be adhered to, in order to mitigate the negative environmental impacts that will stem from the development of the project area. The completion of the proposed

project should result in prevention/limitation of environmental pollution, major impacts on surrounding wetlands, and spillage of ash laden stormwater into the nearby streams and is therefore considered favourably.

9.1.3 Surface water and wetlands

The wetland found inside the Project Area of Influence (PAOI) was classified as being a Channelled Valley Bottom wetland. The Present Ecological State (PES) of the wetland is “Largely Modified”. The majority of modifications to wetlands in the study area is from the transformation of the wetland’s catchment through anthropogenic activities.

The Ecosystem Services of the wetland was rated to be “Moderately High” for the study area. The channel valley bottom scored higher ecosystem services scores, due to its ability to regulate streamflow, prevent flooding and help with erosion control. The vegetation cover within the wetland, plays a major role in the ecosystem services scores. The delineated wetland within the study area is rated to be “Moderately” sensitive due to the relatively high protection status of the wet veg type and the low protection status of the wetland itself.

The buffer zone calculated for the delineated wetlands is 35m. This buffer zone will ensure the conservation of the delineated wetland from the proposed activities.

As indicated above, the proposed stormwater v-drains will not occur directly in the wetland, as it would be constructed underneath the overland conveyor on the internal power station road. The drain outlet pipe from the EST will convey groundwater to the wetland and a portion of this pipe will be located within the wetland.

The risks on the wetland are considered low (post-mitigation). No moderate post-mitigation risks are anticipated to occur for the proposed project. Overall, the impacts associated with this service development are unlikely to negatively impact water resources to any appreciable level, provided that the suggested mitigations measures are effectively implemented.

Additionally, the project focusses on preventing stormwater to reach the watercourse, thus risks associated with leaks are considered low.

9.1.4 Heritage Resources

The site is transformed, and no historic, Iron Age or Stone Age heritage resources were noted during the site visit. Should heritage resources such as unmarked graves, stone tools and other heritage resources be uncovered during earthworks, the construction must cease and the findings must be reported immediately to SAHRA. Therefore, there are no fatal flaws that were identified that hinder the proposed development from a heritage point of view.

9.1.5 Palaeontological Resources

No fossiliferous outcrop was detected within the footprint of the proposed development. The apparent infrequency of fossil heritage in the proposed development footprint suggests that the impact of the development will be of a low significance in palaeontological terms. It is therefore considered that the proposed development will not lead to damaging impacts on the palaeontological resources of the area. The construction of the development may thus, be permitted in its whole extent, as the development footprint is not considered sensitive in terms of palaeontological resources.

Although no further mitigation measures were required due to the occurrence of low fossil heritage, the implementation of a chance find procedure was recommended, nonetheless.

9.1.6 Groundwater resources

Based on the groundwater monitoring data (MWEM, 2022), groundwater within the study area is impacted based on the exceedance of Mg, pH, EC, Ca, SO₄, F and NO₃ to the prescribed limits within the existing WUL's. Several sources of contamination are present on site, of which the coal and ash storage area are within vicinity of the study area. Contamination of groundwater is therefore evident, as a result of the current activities on site.

The lack of stormwater drainage to contain and safely dispose the ash-laden water, warrants the need to implement on-site practices to prevent the detrimental impact on the surrounding sensitive receptors (surrounding water resources).

The implementation of the proposed development, i.e. construction of stormwater drainage and associated infrastructure to contain the ash laden water along the stormwater v-drains along the overland conveyor for disposal into ash dumps will avoid contamination of the nearby watercourses and groundwater resources.

If proper management and mitigation measures are applied, the potential impact on groundwater resources will have a low impact during the operational phase of the project.

9.1.7 Visual Environment

The site is located within the Kusile Power Station complex and the proposed stormwater infrastructure will be located underneath the overland conveyor and near the radial stacker. The site is transformed and not visible to the surrounding landowners. During construction, staff employed at Eskom may have direct views of the construction site which will be of a temporary duration. With the implementation of good housekeeping the visual impacts will be kept to a minimum.

9.1.8 Socio-economic environment

The site is located in an area where there are high levels of unemployment. Temporary jobs may be created during the construction phase which would have positive impacts through skills transfer and a generation of income. However, the positive impacts will be enhanced should unemployed people from the local area be recruited for the construction activities.

9.2 Summary of impacts and significance ratings

A concise summary of the impacts that has been identified for the proposed stormwater drainage and associated infrastructure, as well as the residual impact significance ratings after the implementation of the proposed mitigation measures (impact management actions) are provided in Table 9-1.

Overall, successful mitigation of the majority of identified impacts resulted in a residual impact of LOW (-). Furthermore, none of the residual impacts remained with a moderate (negative), high (negative) or very high (negative) impact rating after the implementation of the proposed mitigation measures (impact management actions).

The positive residual impacts associated with the proposed development are low (positive) attributed to temporary job creation during the construction phase.

Table 9-1: Summary of impacts and residual impact significance ratings for the proposed development

Phase	Environmental Component / Impact	Impact identified	Residual Impact
Pre-Construction	Heritage resources	No impacts identified	-
Pre-Construction	Palaeontological resources	No impacts identified	-
Pre-Construction	Surface water resources and wetlands	No impacts identified	-
Pre-Construction	Groundwater resources	No impacts identified	-
Pre-Construction	Visual	No impacts identified	-
Pre-Construction	Socio-economic	No impacts identified	-
Pre-Construction	Terrestrial Biodiversity	Disturbance to faunal migration corridors	LOW (-)
Construction	Heritage resources	Destruction of heritage resources	LOW (-)
Construction	Palaeontological resources	Destruction of fossil heritage / palaeontological resources	LOW (-)
Construction	Surface water resources and wetlands	Erosion of the wetland; deposition of dust; compaction of soil; altering hydromorphic soils	LOW (-)
		Water quality impairment	LOW (-)
		Change of drainage patterns; altering overland flow	LOW (-)

Phase	Environmental Component Impact	Impact identified	Residual Impact
		Loss of wetlands and a decrease in wetland functionality	LOW (-)
Construction	Terrestrial Biodiversity	Loss and fragmentation of vegetation communities within the CBA	LOW (-)
		Fragmentation effects that hinder the safe movement of faunal species	LOW (-)
Construction	Visual	Alteration of visual character of the site	LOW (-)
Construction	Socio-economic	Temporary job creation	LOW (+)
Construction	Groundwater	No impacts identified	-
Operation	Heritage resources	No impacts identified	-
Operation	Palaeontological resources	No impacts identified	-
Operation	Socio-economic	No impacts identified	-
Operation	Visual	No impacts identified	-
Operation	Surface water resources and wetlands	Surface water quality impairment	LOW(-)
Operation	Groundwater resources	Groundwater contamination	LOW(-)
Operation	Terrestrial Biodiversity	Fragmentation of migration corridor for faunal species	LOW (-)
		Loss and disturbance of floral and faunal species and communities. Loss and fragmentation of vegetation communities within the CBA	LOW (-)
Decommissioning	Surface water resources and wetlands	Erosion of the wetland; deposition of dust; compaction of soil; altering hydromorphic soils	LOW (-)
		Water quality impairment	LOW (-)
		Change of drainage patterns, altering overland flow	LOW (-)
		Loss of wetlands and a decrease in the functionality of the wetlands	LOW (-)
Decommissioning	Terrestrial Biodiversity	Loss and fragmentation of vegetation communities within the CBA	LOW (-)
		Fragmentation effects that hinder the safe movement of faunal species	LOW (-)

Phase	Environmental Component / Impact	Impact identified	Residual Impact
Decommissioning	Visual	Alteration of visual character	LOW (-)
Decommissioning	Socio-economic	Temporary job creation	LOW (+)
Decommissioning	Heritage resources	No impacts identified	-
Decommissioning	Palaeontology	No impacts identified	-
Decommissioning	Groundwater	No impacts identified	-

10 CONCLUSION AND RECOMMENDATIONS

10.1 Impact Statement

Eskom is proposing to construct stormwater drainage and associated infrastructure underneath the existing Overland Conveyor Belt (OLC) and near the radial stacker at the Kusile Power Station in Mpumalanga.

The proposed stormwater infrastructure will be constructed to prevent further environmental pollution, major impacts on the surrounding wetlands, and spillages of ash laden stormwater into the nearby streams. This proposed solution entails the construction of stormwater channels (concrete V-drains) to contain and divert contaminated water to the proposed collection sumps for storage. Thereafter, the collection sumps will be emptied by means of pumping, through overland pipelines, to the Radial Stacker's collection sump. A new 300mm diameter overland pipeline will be constructed from the East Settling Tank to the existing Ash Dump Dirty Water channel for final disposal to the existing Ash Dump Dirty Dam (ADDD). A new gravel road of approximately 6m in width and 169m in length, for operation and maintenance of the sumps and the tank will be constructed.

Environmental sensitivities were identified through the DFFE online screening tool, as well as a desktop screening independently undertaken by the EAP and a site visit. Several specialist studies were identified as a result of the screening undertaken for the proposed development and the following studies were commissioned to support the Application for Environmental Authorisation:

- Terrestrial Biodiversity Compliance Statement (*including Animal and Plant Species Assessment*)
- Exemption letter from undertaking an Archaeological and Cultural Heritage Impact Assessment
- Palaeontological Impact Assessment
- Geohydrological Impact Assessment
- Wetland Delineation and Functional Assessment (*including a Wetland Rehabilitation Plan*)
- Hydrological and Floodline Assessment

A summary of the specialist assessments was compiled in Chapter 5, 7, 8 and 9 of this BAR. It was concluded that no fatal flaws were identified that hinder the proposed development from proceeding. The Wetland Delineation and Functional Assessment and the Groundwater Impact Assessment have indicated that the proposed stormwater infrastructure will improve the environmental condition of the site in terms of having proper infrastructure in place to contain ash-laden stormwater runoff for disposal into the existing ADDD.

With mitigation measures, no impact significance ratings of 'very high', 'high' and 'moderate' were reported.

The following impacts were given 'low negative' significance ratings after the implementation of mitigation measures during the pre-construction phase:

- Disturbance to faunal migration corridors

The following impacts were given 'low negative' significance ratings after the implementation of mitigation measures during the construction phase:

- Destruction of heritage resources
- Destruction of fossil heritage / palaeontological resources
- Erosion of the wetland; deposition of dust; compaction of soil; altering hydromorphic soils
- Water quality impairment
- Change of drainage patterns; altering overland flow
- Loss of wetlands and a decrease in wetland functionality
- Loss and fragmentation of vegetation communities within the CBA
- Fragmentation effects that hinder the safe movement of faunal species
- Alteration of visual character of the site

The following impacts were given 'low positive' significance ratings after the implementation of mitigation measures during the construction phase:

- Temporary job creation

The following impacts were given 'low negative' significance ratings after the implementation of mitigation measures during the operational phase:

- Surface water quality impairment
- Groundwater contamination
- Fragmentation of migration corridor for faunal species
- Loss and disturbance of floral and faunal species and communities. Loss and fragmentation of vegetation communities within the CBA

The following impacts were given 'low negative' significance ratings after the implementation of mitigation measures during the decommissioning phase:

- Erosion of the wetland; deposition of dust; compaction of soil; altering hydromorphic soils
- Water quality impairment
- Change of drainage patterns, altering overland flow
- Loss of wetlands and a decrease in the functionality of the wetlands
- Loss and fragmentation of vegetation communities within the CBA
- Fragmentation effects that hinder the safe movement of faunal species
- Alteration of visual character

The following impacts were given 'low positive' significance ratings after the implementation of mitigation measures during the construction phase:

- Temporary job creation

The findings of the impact assessment are considered to be within acceptable limits of change. On balance of social, economic, cultural and biophysical impacts, the impacts of the proposed development are considered acceptable if the mitigation measures discussed in this report and the EMPr (Appendix G) are strictly implemented.

10.2 EAP's reasoned opinion

It is the opinion of the EAP that should the project proceed, as impacts on the receiving environment can be minimised through the careful adherence to suggested mitigation measures. It is also recommended that the possible impacts on the channelled valley bottom wetland are monitored throughout the duration of the project, in accordance with the Wetland Rehabilitation Plan (Appendix 1 of Appendix E1).

The proposed stormwater drainage and associated infrastructure will enable ash-laden stormwater to be channelled along the v-drains from the overland conveyor to the sump and via interconnecting pipelines to the ash dump dirty water drains to avoid pollution of the nearby wetlands on site. The stormwater system will improve environmental performance of the Kusile Power Station.

The findings of the specialist studies undertaken together with the broader environmental assessment conclude that there are no fatal flaws that should prevent the project from proceeding. However, the following key impacts (Table 9-1) have been identified which will require the application of site and activity specific mitigation measures. These mitigation measures are included within the Environmental Management Programme (EMPr) to ensure that they receive the necessary attention.

The implementation of the Wetland Rehabilitation Plan (Appendix 1 of Appendix E1) is critical for the successful rehabilitation of the channelled valley bottom wetland that has been impacted by the current ash-laden stormwater runoff that is entering into the wetland system, thereby impacting on its functioning and water quality impairment.

Having assessed all the potential environmental impacts associated with the proposed development, it is the opinion of the EAP that the project is issued with a positive Environmental Authorisation from DFFE, based on the following reasons:

- The need and desirability of the project is attributed to the need for stormwater infrastructure to be installed underneath the existing overland conveyor that transfers

transmits mixed coarse ash and gypsum from the station to the radial stacker to prevent contamination of the wetlands and watercourses.

- A project-specific draft EMPr has been compiled according to (but not limited to) the impacts and mitigation measures included in this assessment. The Wetland Rehabilitation Plan is included as an Appendix to the EMPr and compliance with this Plan is legally-binding on Eskom to fulfil. This must be made a condition in the EA.
- The prescribed rehabilitation measures as per the Wetland Rehabilitation Plan, would improve the integrity and functioning of the system. Indirect benefits which contribute to water quality enhancement would be achieved through rehabilitation of the systems, and also the ability of the systems to support biodiversity. The rehabilitation of the wetland is expected to improve the overall integrity (or health) and functioning of the wetland.
- The proposed installation of the stormwater infrastructure will lead to an overall improvement in the environmental compliance and performance of the Kusile Power Station.
- The proposed development will have minimal impacts on the receiving biophysical and socio-cultural and socio-economic environment. There are no fatal flaws that hinder the proposed development from proceeding.

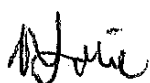
10.3 Proposed recommendations for inclusion in EA

To ensure that the identified negative impacts are minimised, and the positive impacts are enhanced, the following clauses are recommended as conditions of the Environmental Authorisation:

- The EMPr is a legally binding document and the mitigation measures stipulated within the document and Basic Assessment Report must be implemented.
- An independent Environmental Control Officer (ECO) must be appointed to manage the implementation of the EMPr during the construction phase. Environmental Audit Reports must be compiled and made available for inspection.
- Proactive measures must be taken to ensure that sediments and contaminants do not enter the channelled valley bottom wetland. Sediments and contaminated material (mixed coarse ash and gypsum) that is currently in the wetland and surrounding areas must be removed as far as possible as per the recommendations of the Wetland Rehabilitation Plan. The implementation of the Wetland Rehabilitation Plan for removal of the settled ash in the wetland will require a separate Application for Environmental Authorisation.
- Areas that have been disturbed during construction must be rehabilitated with species naturally occurring in the study area, and the disturbed areas should be monitored to detect any alien plant species and measures must be taken immediately to eradicate it from spreading.
- Disturbed surfaces to be rehabilitated, must be ripped and the area must be backfilled with excavated topsoil from the site.
- The vegetation cover must be restored by planting endemic grass species within the wetland and the surrounding areas that have been impacted by construction activities.

- Regular monitoring and maintenance (*such as removal of alien invasive plant species*) are required for successful revegetation/rehabilitation.
- If possible, the rehabilitated areas must be irrigated at regular intervals, taking care not to cause erosion or damage to the soil surface by using excessive force of water.
- The rehabilitated area is to be left undisturbed and all access prohibited, except when maintenance is being undertaken.
- During rehabilitation, the Contractor shall protect all areas susceptible to erosion by installing all necessary temporary and permanent drainage works, and by taking such other measures as may be necessary, to prevent the concentration of surface water and scouring of slopes, banks and other areas.
- All erosion, such as runnels, channels or sheet erosion, that develops during the project phase must be backfilled and consolidated, and the areas restored to their proper condition at the Contractor's expense.
- The Contractor shall not allow erosion to develop on a large scale before effecting repairs and all erosion damage shall be repaired as soon as possible and, in any case, not later than two months before the termination of the period of maintaining. All topsoil or other material accumulated inside drains shall be removed at the same time.
- The Monitoring Plan (Table 3-1) of the Wetland Rehabilitation Plan (Appendix 1 of Appendix E1) must be strictly enforced with regards to the methods, monitoring frequency and corrective action for vegetation cover, erosion, sedimentation, invasive alien plant species and solid waste management.
- All parties involved in the construction and ongoing maintenance of the proposed stormwater infrastructure (including Contractors, Engineers, and the Developer) are, in terms of NEMA's "Duty of Care" and "Remediation of Damage" principals (Section 28), required to prevent any pollution or degradation of the environment, be responsible for preventing impacts occurring, continuing or recurring and for the costs of repair of the environment.

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DOCUMENT1

List of Appendices

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Appendix D: Specialist Declarations

Appendix E1: Wetland and Aquatic Baseline and Impact Assessment

Appendix E2: Geohydrological Impact Assessment

Appendix E3: Terrestrial Biodiversity Compliance Statement

Appendix E4: Exemption Letter for Heritage Impact Assessment

Appendix E5: Palaeontological Impact Assessment

Appendix E6: Hydrological and Floodline Assessment

Appendix F1: Minutes of Pre-Application Meeting with DFFE

Appendix F2: Minutes of Pre-Application Meeting with DWS

Appendix F3: Newspaper Advertisement

Appendix F4: Site Notice Text and Placement

Appendix F5: Background Information Document and proof of distribution

Appendix F6: Preliminary Database of Interested and Affected Parties

Appendix F7: Database of Registered Interested and Affected Parties

Appendix F8: Comments and Responses Report

Appendix F9: Notification of Draft BAR for public review

Appendix G: Environmental Management Programme (EMPr)

Appendix H: Drawings: Site Layout Plans

Appendix I: Application for Environmental Authorisation Form