APPENDIX F

IMPACT ASSESSMENT

1. Introduction

1.1. Background

Eskom has appointed Nemai Consulting as its Independent Environmental Consultant to undertake Environmental Impact Assessment for the Proposed Kriel-Matla Ash Transfer Link. Kriel Power Station (KPS) is a coal fired power station comprising of six units which produce a combined base load of 3 000 MW. The power station has a remaining operating life of 26 years and is scheduled to be decommissioned in 2039. To generate 3 000 MW of electricity coal is burnt by the boilers which produces ash as a waste product.

The ash is then disposed of and stored on the Ash Dam. Kriel Power Station Ash Dam will reach its maximum capacity in approximately June 2017 and Eskom is currently in the process of designing and undertaking the environmental authorisation for a new Ash Dam. However, according to the latest schedule a new ash dam will only be commissioned in September 2020, thus Kriel will not have sufficient capacity to deal with the ash generated between 2017 and 2020. Eskom proposed the Kriel-Matla Ash Transfer Link which will involve the following, as an intermediate solution for a period of approximately 3.5 - 4 years until the new Kriel Ash Dam is developed:

- The transferring of 100% of Kriel Power Station Ash to Matla Power Station Ash Dam.
- The return of all Kriel Ash Water from the Matla Power Station (MPS) Ash Dam to Kriel Power Station.

The proposed project will involve the development of four new ash pipelines from Kriel to Matla as well as an Ash Water Return (AWR) System comprising of three AWR pipelines In addition, a new Booster Pump House for Kriels AWR will be constructed adjacent to the existing Matla Booster Pump House, which will accommodate three new booster pumps.

1.2. Environmental Sensitivity

The following was noted for the sensitive environmental features for the proposed pipeline Routes:

- The site does not occur within a Critical biodiversity Area (CBA) and Ecological Support Area (ESA) identified by the Mpumalanga C-Plan.

- The Proposed Kriel-Matla Ash Transfer Link pipelines do not cross or is in approximation to any protected areas.
- The majority of the pipelines will be on heavily modified areas with only a small portion of the pipelines moderately modified and other natural areas.
- No heritage resources were found along the pipeline route-It should be noted that the sub-surface archaeological and/or historical deposits and graves are always a possibility. Care should be taken during any work in the entire area and if any of the above is discovered, an archaeologist/heritage practitioner should be commissioned to investigate.
- No pre-colonial heritage sites evident on the route.
- No historical period sites situated on the site.
- The pipelines fall within 500m radius of a Wetland.
- No specific sensitive fauna species were recorded on route.
- No threatened fauna species were observed on route.

2. Environmental Impacts

Environmental impacts are the change to the environment resulting from an environmental aspect, whether desirable or undesirable. Note that it is not the intention of the impact assessment to evaluate all potential environmental impacts associated by the project's environmental aspects, but rather to focus on the potentially significant direct and indirect impacts identified. The significant environmental impacts are listed in **Table 1** below.

The Environmental Management Programme (EMPr) strives to provide a comprehensive list of mitigation measures associated with the overall project-related aspects and impacts for the entire project life-cycle (i.e. pre-construction, construction, operation and decommissioning).

Table 1: Potentially significant environmental impacts associated with the project

Feature	Potential Impact
Geology and Soil	• Impacts associated with the sourcing of construction material and loss of topsoil • Soil erosion (land clearance and construction activities) • Destruction and/or altering of wetland soils • Soil pollution e.g. hydrocarbon and cement spillages
Flora	• Damage and loss of vegetation of conservation significance • Proliferation of exotic vegetation in disturbed areas

Feature	Potential Impact
Fauna	• Damage / clearance of habitat of conservation importance • Loss of fauna species of conservation significance • Obstruction to animal movement corridors
Air Quality	• Dust generation and emissions
Aesthetics	• There are no aesthetical value to the area which the pipeline route will cross as most of the route will be on the ash disposal facility
Transportation	• Construction-related traffic
Noise	• Noise nuisance of the construction phase
Safety & Security	• Safety risk to local community
Waste Management	• Land, air and water pollution through poor waste management practices • Management of excess spoil material
Socio – Economic	• *Contribution to local economy** • Nuisance from dust and noise • *Use of local goods and services**
Heritage resources	• No Heritage resources found on the site
Water Resource Quality – *Aquatic Biota*	• Alteration of habitat • Loss of aquatic-dependent biodiversity
Water Resource Quality – *Flow Regime*	• Alteration of flow • Affect aquatic biodiversity
Water Resource Quality – *Water Quality*	• Impacts on water quality through siltation and pollution.
Water Resource Quality – *Riparian habitat*	• Wetland/aquatic habitat unit destruction • Soil erosion

Positive Impacts

The findings of the specialists are of particular importance in terms of understanding the impacts of the project and managing the adverse implications of the project as these studies focused on the significant environmental issues identified.

3. Impact Assessment Methodology

The impacts and the proposed management thereof are first discussed on a qualitative level and thereafter quantitatively assessed by using the methodology provided below. Where applicable, the impact assessments and significance ratings provided by the respective specialists are included.

Information provided by specialists will be used to calculate an overall impact score by multiplying the product of the nature, magnitude and the significance of the impact by the sum of the extent, duration and probability based on the following equation:

Overall Score = (NxMxS)x(E+D+P)

Where: N = Nature
E = Extent
M = Magnitude
D = Duration
P= Probability
S = Significance

Table 2: Impact methodology table

Nature		
Negative	Neutral	Positive
-1	0	+1
Magnitude		
Low	Medium	High
1	2	3

Significance			
No impact/None	No impact after mitigation / Low	Residual impact after mitigation / Medium	Impact cannot be mitigated / High
0	1	2	3

Extent			
Local	Regional	National	International
1	2	3	4

Duration			
Short Term (0-5yrs)	Medium Term (5-11yrs)	Long Term	Permanent
1	2	3	4

Probability				
Rare/Remote	Unlikely	Moderate	Likely	Almost Certain
1	2	3	4	5

The following definitions apply:

For the methodology of the impact assessment, the analysis is conducted on a quantitative basis with regard to the nature, extent, magnitude, duration, probability and significance of the impacts. The following definitions and scoring system apply:

Nature (Status)
The project could have a positive, negative or neutral impact on the environment.

Extent
- Local – extend to the site and its immediate surroundings.
- Regional – impact on the region but within the province.
- National – impact on an interprovincial scale.
- International – impact outside of South Africa.

Magnitude
Degree to which impact may cause irreplaceable loss of resources.

- Low – natural and social functions and processes are not affected or minimally affected.
- Medium – affected environment is notably altered; natural and social functions and processes continue albeit in a modified way.
- High – natural or social functions or processes could be substantially affected or altered to the extent that they could temporarily or permanently cease.

Duration

- Short term – 0-5 years.
- Medium term – 5-11 years.
- Long term – impact ceases after the operational life cycle of the activity either because of natural processes or by human intervention.
- Permanent – mitigation either by natural process or by human intervention will not occur in such a way or in such a time span that the impact can be considered transient.

Probability

- Almost certain – the event is expected to occur in most circumstances.
- Likely – the event will probably occur in most circumstances.
- Moderate – the event should occur at some time.
- Unlikely – the event could occur at some time.
- Rare/Remote – the event may occur only in exceptional circumstances.

Significance

Provides an overall impression of an impact's importance, and the degree to which it can be mitigated.
The range for significance ratings is as follows-
0 – Impact will not affect the environment. No mitigation necessary.
1 – No impact after mitigation.
2 – Residual impact after mitigation.
3 – Impact cannot be mitigated.

For example, the worst possible impact score of -117 would be achieved based on the following ratings:

N = Nature = -1
M = Magnitude = 3
S = Significance = 3
E = Extent = 4
D = Duration = 4
P= Probability = 5

Worst impact score = (-1 x 3 x 3) x (4+4+5) = -117

On the other hand, if the nature of an impact is 0 (neutral or no change) or the significance is 0 (no impact), then the impact will be 0.

Overall Impact Scores (OS) will therefore be ranked in the following way:

Table 3: Ranking of Overall Impact Scores

Impact Rating	Low/Acceptable	Medium	High	Very High

Score	0-30	-31-60	-61-90	-91-117

4. Impact Mitigation

Impacts are to be managed by assigning suitable mitigation measures. According to DEAT (2006), the objectives of mitigation are to:

- Find more environmentally sound ways of undertaking the activity/ies;
- Enhance the environmental benefits of a proposed activity;
- Avoid, minimise or remedy negative impacts; and
- Ensure that residual negative impacts are within acceptable levels.

Mitigation should strive to abide by the following hierarchy – (1) prevent; (2) reduce; (3) rehabilitate; and/or (4) compensate for the environmental impacts.

Figure 1: Mitigation Hierarchy

The proposed mitigation of the impacts includes specific measures identified by the technical team (including engineering solutions) and environmental specialists, stipulations of environmental authorities and environmental best practices. The mitigation measures that follow in the subsequent sections are not intended to be exhaustive, but rather focus on the significant impacts identified.

The EMPr (refer to **Appendix G** of the BAR) provides a comprehensive list of mitigation measures for the entire project, which extends beyond the impacts evaluated in the body of the BAR Report.

5. Impact Assessment

5.1. Planning and Design (Pre-Construction) Phase

<table>
<tr><th></th><th>Potential impacts:</th><th>Proposed mitigation:</th></tr>
<tr><td colspan="3">GEOLOGY AND SOIL</td></tr>
<tr><td></td><td>Loss of topsoil</td><td>During site preparation, special care must be taken during the clearing of the works area where organic material will be stored separately from the topsoil and spoil material to ensure for the protection thereof. This topsoil must be re-used during the rehabilitation phase.</td></tr>
<tr><td>Impact Rating:</td><td></td><td>
<table>
<tr><th></th><th>+/- Impacts</th><th>Extent</th><th>Magnitude</th><th>Duration</th><th>Probability</th><th>Significance</th><th>OS</th></tr>
<tr><td>Without Mitigation</td><td>-</td><td>Local</td><td>Medium</td><td>Short-term</td><td>Moderate</td><td>2</td><td>-20</td></tr>
<tr><td>With Mitigation</td><td>-</td><td>Local</td><td>Low</td><td>Short-term</td><td>Unlikely</td><td>1</td><td>-4</td></tr>
</table>
</td></tr>
<tr><td colspan="3">FLORA</td></tr>
<tr><td></td><td>Loss of flora of conservation importance</td><td>Clearing of site:
• During site preparation, topsoil and subsoil are stripped separately from each other and must be stored separately from spoil material for use in the rehabilitation phase. It should be protected from wind and rain, as well as contamination from diesel, concrete or wastewater.
• Records of all environmental incidents must be maintained and a copy of these records must be made available to authorities on request throughout the project execution.</td></tr>
<tr><td>Impact Rating:</td><td></td><td>
<table>
<tr><th></th><th>+/- Impacts</th><th>Extent</th><th>Magnitude</th><th>Duration</th><th>Probability</th><th>Significance</th><th>OS</th></tr>
<tr><td>Without Mitigation</td><td>-</td><td>Local</td><td>High</td><td>Medium-term</td><td>Likely</td><td>2</td><td>-42</td></tr>
<tr><td>With Mitigation</td><td>-</td><td>Local</td><td>Medium</td><td>Short-term</td><td>Likely</td><td>1</td><td>-12</td></tr>
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</td></tr>
<tr><td></td><td>Loss of protected trees and declining listed data species</td><td>Search and rescue:
• The plant species of conservation importance, namely Hypoxis hemerocallidea, recorded along the proposed route should be rescued. It is recommended that the plants can be dug-up, and moved a few meters to just outside the development footprint, and then replanted temporarily. This should be done on the same day to minimise the risk of introducing diseases and parasites to the plants. Removal of plants should be done mechanically, using hand tools. The optimal timeframe for removal and replanting is to perform the search, rescue and relocation in spring or early summer (September to November), once first rains have fallen, in order to facilitate establishment. Alternatively, these species can be rescued and relocated to a conservation area.</td></tr>
<tr><td>Impact Rating:</td><td></td><td>
<table>
<tr><th></th><th>+/- Impacts</th><th>Extent</th><th>Magnitude</th><th>Duration</th><th>Probability</th><th>Significance</th><th>OS</th></tr>
<tr><td>Without Mitigation</td><td>+</td><td>Local</td><td>Medium</td><td>Medium-term</td><td>Almost certain</td><td>2</td><td>+32</td></tr>
<tr><td>With Mitigation</td><td>+</td><td>Local</td><td>Low</td><td>Short-term</td><td>Likely</td><td>1</td><td>+4</td></tr>
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</table>

FAUNA									
	Loss of fauna of conservation importance.	Clearing of site: • During site preparation special care must be taken during the clearing of the works area to minimize damage or disturbance of roosting and nesting sites.							
Impact Rating:			**+/- Impacts**	**Extent**	**Magnitude**	**Duration**	**Probability**	**Significance**	**OS**
		Without Mitigation	-	Local	High	Medium-term	Likely	2	-42
		With Mitigation	-	Local	Medium	Medium-term	Likely	1	-14

5.2 Construction Phase

	Potential impacts:	**Proposed mitigation:**
GEOLOGY AND SOIL		
	Soil erosion	Erosion Control: • Stabilisation of cleared areas to prevent and control erosion. • Monitoring to be conducted to detect erosion. • Rehabilitate all areas disturbed during construction. • The Contractor shall take measures to the approval of the Engineer to ensure that there is no undue storm water damage and soil erosion resulting from the construction activities outside the construction camp and works areas. • The Contractor shall ensure that run off from access and haul roads, and that diverted into cross and side drains, does not cause erosion. • At all stages of the project lifespan, storm water control measures as specified by the Engineer shall be applied to keep soil on site by minimising: o erosion of temporary stockpiles of topsoil and permanent spoil dumps; o erosion from construction roads, excavations and other cleared areas; o silt-laden run off from all areas stripped of vegetation, including excavation surfaces and stockpiles of spoil and topsoil; o contaminated run off from storage areas Execute topsoil placement only after all construction work has ceased. Replace and redistribute stockpiled topsoil together with herbaceous vegetation, overlying grass and other fine organic matter in all disturbed areas of the construction site, including temporary access routes and roads. Replace topsoil to the original depth. Place topsoil in the same area from where it was stripped off. If there is insufficient topsoil available from a particular soil zone to produce the minimum specified depth, topsoil of similar quality may be brought from other areas of similar quality.

<table>
<tr><td>Impact Rating:</td><td></td><td>
<table>
<tr><th></th><th>+/- Impacts</th><th>Extent</th><th>Magnitude</th><th>Duration</th><th>Probability</th><th>Significance</th><th>OS</th></tr>
<tr><td>Without Mitigation</td><td>-</td><td>Local</td><td>Medium</td><td>Short-term</td><td>Likely</td><td>3</td><td>-36</td></tr>
<tr><td>With Mitigation</td><td>-</td><td>Local</td><td>Low</td><td>Short-term</td><td>Unlikely</td><td>1</td><td>-4</td></tr>
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<tr><td></td><td>Loss of topsoil</td><td>Topsoil:
After excavation, all soils must be replaced in the same order as they were removed.
Remove, stockpile and preserve topsoil for re-use during rehabilitation.
Topsoil stripping management:
Soil must be stripped to a minimum depth of 300 mm or to the depth of bedrock where soil was shallower than 300 mm.
Herbaceous vegetation, overlying grass and other fine organic matter must not be removed from the stripped soil.
Disturbance of topsoil on construction sites with severe slopes must be minimized at all costs.
The topsoil stored must be on site.
Topsoil must be stripped in a dry condition in order to prevent compaction.

Topsoil stockpiling:
Soil stockpiles must not be higher than 1.5m and the slopes of soil stockpiles shall not have a vertical/horizontal gradient exceeding 1:1.5.
No vehicles are allowed access onto the stockpiles after they have been placed. Topsoil stockpiles must be clearly demarcated in order to prevent vehicle access and later identification as the resource for rehabilitation and vegetation establishment.
After topsoil stockpiling has been completed, the Contractor shall apply soil conservation measures to the stockpiles in the form of veld grass seeds, to allow grass to colonise topsoil piles during the construction phase.
All areas onto which topsoil is to be spread shall be graded to the approximate original land form with maximum slopes of 1:2.5 and shall be ripped prior to topsoil placement. The entire area to be top soiled shall be ripped parallel to the contours to a minimum depth of 150 mm.

Topsoil replacement and soil amelioration
Execute topsoil placement only after all construction work has ceased.
Replace and redistribute stockpiled topsoil together with herbaceous vegetation, overlying grass and other fine organic matter in all disturbed areas of the construction site, including temporary access routes and roads. Replace topsoil to the original depth.
Place topsoil in the same area from where it was stripped off. If there is insufficient topsoil available from a particular soil zone to produce the minimum specified depth, topsoil of similar quality may be brought from other areas of similar quality.

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<tr><td>Impact Rating:</td><td></td><td>
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<tr><td>Without Mitigation</td><td>-</td><td>Local</td><td>Medium</td><td>Short-term</td><td>Likely</td><td>3</td><td>-36</td></tr>
<tr><td>With Mitigation</td><td>-</td><td>Local</td><td>Low</td><td>Short-term</td><td>Unlikely</td><td>1</td><td>-4</td></tr>
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</td></tr>
<tr><td colspan="3">FLORA</td></tr>
<tr><td></td><td>Soil contamination, vegetation loss and vegetation disturbance due to fuel and chemical spills to the canals and</td><td>
Employ on site personnel responsible for preventing and controlling potential soil pollution through fuel and oil leaks and spills.
Make sure construction vehicles are maintained and serviced to prevent oil and fuel leaks.
Emergency on-site maintenance should be done over appropriate drip trays and all oil or fuel must be disposed of according to waste regulations.
Drip-trays must be placed under vehicles and equipment when not in use.
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	wetlands.	• Require the suitable establishment of erosion control mechanisms.

Impact Rating:

	+/- Impacts	Extent	Magnitude	Duration	Probability	Significance	OS
Without Mitigation	-	Local	High	Medium-term	Likely	2	-42
With Mitigation	-	Local	Medium	Medium-term	Likely	1	-14

	Vegetation and habitat disturbance due to the accidental introduction of alien species.	• Promote awareness to all personnel. • During construction activities, monitoring and control of alien weeds and invaders through hand removal; slashing (annuals) or chemical control (perennials). Chemical control may only be done upon approval from the Environmental Control Officer (ECO).

Impact Rating:

	+/- Impacts	Extent	Magnitude	Duration	Probability	Significance	OS
Without Mitigation	-	Local	High	Medium-term	Likely	2	-42
With Mitigation	-	Local	Medium	Medium-term	Likely	1	-14

	Vegetation and habitat disturbance due to pollution and littering during construction phase.	• The Contractor should employ personnel on site responsible for preventing and controlling of litter. Promote housekeeping with daily clean-ups on site. • Before construction commences, construction workers should be educated with regards to littering, *ad hoc* veld fires, and dumping. • No fires are allowed on site.

Impact Rating:

	+/- Impacts	Extent	Magnitude	Duration	Probability	Significance	OS
Without Mitigation	-	Local	Medium	Medium-term	Likely	2	-42
With Mitigation	-	Local	Low	Medium-term	Likely	1	-14

	Damage to plant life outside of the proposed pipeline route.	Construction activities should be restricted to the development footprint area. All workers must be trained before construction commences. Areas which could be deemed as no go should be clearly marked.

Impact Rating:

	+/- Impacts	Extent	Magnitude	Duration	Probability	Significance	OS
Without Mitigation	-	Local	Medium	Medium-term	Likely	2	-42
With Mitigation	-	Local	Low	Medium-term	Likely	1	-14

FAUNA

	Disturbance to animals	• Animals residing within the designated area shall not be unnecessarily disturbed. • Before construction starts, construction workers must be educated with regards to littering and poaching. • The Contractor and his/her employees shall not bring any domestic animals onto site.

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

- Toolbox talks should be provided to contractors regarding disturbance to animals. Particular emphasis should be placed on talks regarding snakes.

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<tr><td>Impact Rating:</td><td></td><td>
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<tr><th></th><th>+/- Impacts</th><th>Extent</th><th>Magnitude</th><th>Duration</th><th>Probability</th><th>Significance</th><th>OS</th></tr>
<tr><td>Without Mitigation</td><td>-</td><td>Local</td><td>Medium</td><td>Medium-term</td><td>Unlikely</td><td>2</td><td>-20</td></tr>
<tr><td>With Mitigation</td><td>-</td><td>Local</td><td>Low</td><td>Medium-term</td><td>Unlikely</td><td>1</td><td>-5</td></tr>
</table>
</td></tr>
<tr><td></td><td>Allow for safe animal passage through and specifically out of the construction site</td><td>

- With regards to other areas which may need to be fenced temporarily during construction, i.e. aloe area where moles were found, a normal stock fence can be utilised, either diamond or rectangular fencing

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<tr><td>Impact Rating:</td><td></td><td>
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<tr><th></th><th>+/- Impacts</th><th>Extent</th><th>Magnitude</th><th>Duration</th><th>Probability</th><th>Significance</th><th>OS</th></tr>
<tr><td>Without Mitigation</td><td>-</td><td>Local</td><td>Medium</td><td>Medium-term</td><td>Unlikely</td><td>2</td><td>-20</td></tr>
<tr><td>With Mitigation</td><td>-</td><td>Local</td><td>Medium</td><td>Medium-term</td><td>Unlikely</td><td>1</td><td>-5</td></tr>
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</td></tr>
<tr><td colspan="3">AIR QUALITY</td></tr>
<tr><td></td><td>1. Excessive dust levels as a result of construction activities and movement of construction vehicles.
2. Vehicles and construction machinery's emissions.
3. Smoke from uncontrolled fires.</td><td>

- All reasonable measures should be taken to minimize air emissions in the form of smoke, dust and gases.
- Speed limits to be strictly adhered to.
- All construction vehicles must be serviced on a frequent basis as a means of limiting gaseous emissions.
- The Contractor will take preventative measures to minimise complaints regarding dust nuisances (*e.g.* screening, dust control, timing, pre-notification of affected parties).
- Bare areas must be watered to minimise dust.
- Dust pollution should be suppressed on access roads and the construction site during dry periods by regular application of water or biodegradable soil stabilisation agent. If water is used it must not be used in such a manner that the contractor could be accused of water wasting.
- No uncontrolled fires to be allowed on site.

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<tr><td>Impact Rating:</td><td></td><td>
<table>
<tr><th></th><th>+/- Impacts</th><th>Extent</th><th>Magnitude</th><th>Duration</th><th>Probability</th><th>Significance</th><th>OS</th></tr>
<tr><td>Without Mitigation</td><td>-</td><td>Local</td><td>Low</td><td>Short-term</td><td>Likely</td><td>1</td><td>-6</td></tr>
<tr><td>With Mitigation</td><td>-</td><td>Local</td><td>Low</td><td>Short-term</td><td>Unlikely</td><td>1</td><td>-4</td></tr>
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NOISE

	Excessive noise levels as a result of construction activities.	• Communities and local residents should be warned in advance by the Contractor of when construction activities and any/or blasting will start in their areas. • Construction activities to take place within the prescribed working hours. • Working hours to be agreed upon with Project Manager, so as to minimise disturbance to landowners and community members. • Noise preventative measures (*e.g.* screening, muffling, timing, pre-notification of affected parties) to be employed. • The Contractor should inform local residents and communities of any after – hour construction activities that will take place. • The Contractor must inform local communities and residents of any activity that could cause a nuisance to them. • Noise rules must be established for construction areas. • A "Code of conduct for Construction Workers" should be drawn up and agreed by all workers. The code should address public behaviour of the construction workers as well as their intent to abide to the principles, practices and customs of the local communities. • All construction vehicles must be serviced on a frequent basis as a means of limiting excessive noise levels. • The contractor must ensure the silencers of all construction vehicles and machinery is working.

Impact Rating:

	+/- Impacts	Extent	Magnitude	Duration	Probability	Significance	OS
Without Mitigation	-	Local	low	Short-term	Moderate	2	-10
With Mitigation	-	Local	Low	Short-term	Unlikely	1	-4

SAFETY AND SECURITY

	1. Uncontrolled access to proposed boundary extension. 2. Construction employees getting injured. 3. Open trenches and construction vehicles may pose a safety risk to pedestrians and animals	• Compliance with Occupational Health and Safety Act (Act No. 85 of 1993). • Contractor to provide an Occupational Health and Safety Management Plan to the Construction Manager for approval prior to the commencement of works in terms of the Construction Regulations (2014). • Proper supervision of employees at all times. Employees to be clearly identifiable. • Employees to remain within the site boundary and no loitering to be allowed. • Access into and out of the servitude must only be via existing access roads from local public roads. • Contractor to prepare and submit, for approval, a rescue procedure for employees in the case of an injury. • Any employees of the Contractor or his sub-contractors found to be in breach of any of the Environmental Protection specifications may be ordered to leave the site forthwith. • Supervisory staff of the contractor or sub-contractors shall not direct any person to undertake any activities, which would place such person/organization in contravention to any law, regulation or the EMPr itself. • Depending on the type of contravention or action it may also be necessary for the work to be called to a halt until such time as the contravention or action is corrected and investigated.

Impact Rating:

	+/- Impacts	Extent	Magnitude	Duration	Probability	Significance	OS
Without Mitigation	-	Local	High	Short-term	Unlikely	3	-36

		With Mitigation	-	Local	High	Short-term	Rare	1	-9

WASTE MANAGEMENT

	Land, air and water pollution through poor waste management practises.	• No ablution facilities to be positioned within riparian areas. • Sufficient ablution facilities to be provided at the Construction Camp and along construction servitude. • Suitable litter receptacles to be positioned strategically across the site at all working areas. • Waste must be separated at source (e.g. containers for glass, paper, metals, plastics, organic waste and hazardous wastes). • The Contractor shall dispose of all refuse generated on site or from the activities of construction or its related activities. The contractor shall on a weekly basis dispose of all refuse at an approved refuse disposal site. Proof of disposal must be kept on record. • Littering by the workers is prohibited. Clearly marked litterbins must be provided on site. • Monitor the presence of litter on site. All staff shall be sensitised to this effect. • The entire site will be cleared of construction material, metal, tins, glass bottles, and food packaging or any other type of empty container or waste material or waste equipment used by the construction team on a daily basis. • Waste material that may harm man or animals should be removed immediately. • No hazardous materials, e.g. oil, diesel and fuel should be disposed of in the veldt. Any diesel, oil or petrol spillages are to be collected and stored in specially marked containers and disposed of at a permitted waste disposal site and must be treated as hazardous waste. • No refuse or litter is allowed to be burnt on site. • The recycling of all waste is to be encouraged of both the contractor and staff. • All vehicle parking areas and vehicle servicing areas are to be inspected carefully for diesel, oil and other spillages weekly. • Excess spoil material should be disposed of at a location identified by the Contractor and approved by the Engineer and ECO. Where possible spoil should be used to fill, shape and rehabilitate borrow pits.

Impact Rating:

	+/- Impacts	Extent	Magnitude	Duration	Probability	Significance	OS
Without Mitigation	-	Local	Medium	Short-term	Likely	3	-36
With Mitigation	-	Local	Medium	Short-term	Unlikely	1	-8

SOCIO-ECONOMIC

	1. Damages to property, including structures, fencing, gates and roads. 2. Damaging Eskom reputation for adjacent landowners/ public.	• Register to be kept of recorded damages. Construction-related damages to be repaired by Contractor. • Establish employment strategy. • Contractor to appoint a Community Liaison Officer (CLO), or to assign such responsibilities to a competent staff member who will have adequate time to fulfil relevant functions. • Good landowner/ public relations to be maintained.

Impact Rating:

	+/- Impacts	Extent	Magnitude	Duration	Probability	Significance	OS
Without Mitigation	-	National	Medium	Medium-term	Unlikely	2	-24
With Mitigation	-	Local	Low	Short-term	Rare	0	0

HERITAGE

	Damage to archaeological sites.	• If any archaeological material, such sites, objects or features, as well as graves and burials are uncovered during construction activities on site. Work will cease immediately and an archaeologist should be contacted as a matter of urgency in order to assess such occurrences. • Permits to be obtained from the PHRA-G if heritage resources are to be impacted upon. • No person may, without a permit issued by SAHRA or a provincial heritage resources authority – o Destroy, damage, alter, exhume or remove from its original position or otherwise disturb the grave of a victim of conflict, or any burial ground or part thereof which contains such graves; o Destroy, damage, alter, exhume, remove from its original position or otherwise disturb any grave or burial ground older than 60 years which is situated outside a formal cemetery administered by a local authority or; o Bring onto or use at a burial ground or grave referred to in above any excavation equipment, or any equipment which assists in the detection or recovery of metals.

Impact Rating:

	+/- Impacts	Extent	Magnitude	Duration	Probability	Significance	OS
Without Mitigation	-	Local	Low	Short-term	Unlikely	2	-10
With Mitigation	-	Local	Low	Short-term	Unlikely	1	-6

WATERCOURSES

In the case of the aquatic specialist study, the impact assessment methodology used deviates slightly from the approach followed above. However, the quantitative basis for this specialist evaluation of the impacts to the river and associated wetlands still satisfied the intention of BAR.

The risk assessment was conducted in accordance with the Department of Water and Sanitation (DWS) risk-based water use Authorisation approach and delegation guidelines. The details (scoring) of the assessment are provided below.

Table 4: Risk assessment scoring by Aquatic and Wetland Specialist

Rating	Severity	Spatial scale	Duration	Probability
7	Very significant impact on the environment. Irreparable damage to highly valued species, habitat or eco system. Persistent severe damage.	International The effect will occur across international borders	Permanent: No Mitigation No mitigation measures of natural process will reduce the impact after implementation.	Certain/ Definite. The impact will occur regardless of the implementation of any preventative or corrective actions.
6	Significant impact on highly valued species, habitat or ecosystem.	National Will affect the entire country	Permanent: Mitigation Mitigation measures of natural process will reduce the impact.	Almost certain/Highly probable It is most likely that the impact will occur.

5	Very serious, long-term environmental impairment of ecosystem function that may take several years to rehabilitate	Province/ Region Will affect the entire province or region	Project Life The impact will cease after the operational life span of the project.	Likely The impact may occur.
4	Serious medium term environmental effects. Environmental damage can be reversed in less than a year	Municipal Area Will affect the whole municipal area	Long term 6-15 years	Probable Has occurred here or elsewhere and could therefore occur.
3	Moderate, short-term effects but not affecting ecosystem functions. Rehabilitation requires intervention of external specialists and can be done in less than a month.	Local Local extending only as far as the development site area	Medium term 1-5 years	Unlikely Has not happened yet but could happen once in the lifetime of the project, therefore there is a possibility that the impact will occur.
2	Minor effects on biological or physical environment. Environmental damage can be rehabilitated internally with/ without help of external consultants.	Limited Limited to the site and its immediate surroundings	Short term Less than 1 year	Rare/ improbable Conceivable, but only in extreme circumstances and/ or has not happened during lifetime of the project but has happened elsewhere. The possibility of the impact materialising is very low as a result of design, historic experience or implementation of adequate mitigation measures
1	Limited damage to minimal area of low significance, (e.g. ad hoc spills within plant area). Will have no impact on the environment.	Very limited Limited to specific isolated parts of the site.	Immediate Less than 1 month	Highly unlikely/None Expected never to happen.

The significance of the impact/risk is calculated according to Table 5.

Table 5: Significance ratings/risk and management descriptions by Aquatic and Wetland Specialist

Significance										
		Consequence (severity + scale + duration)								
Probability / Likelihood		1	3	5	7	9	11	15	18	21
	1	1	3	5	7	9	11	15	18	21
	2	2	6	10	14	18	22	30	36	42
	3	3	9	15	21	27	33	45	54	63
	4	4	12	20	28	36	44	60	72	84
	5	5	15	25	35	45	55	75	90	105
	6	6	18	30	42	54	66	90	108	126

	7	7	21	35	49	63	77	105	126	147

Significance = (Severity + Scale + Duration) x Probability

Significance		
High (Major)	**108- 147**	A very serious impact which, if negative, may be sufficient by itself to prevent implementation of the project. The impact may result in permanent change. Very often these impacts are immitigable and usually result in very severe effects, or very beneficial effects.
Medium-High (Moderate)	**73 - 107**	A serious impact, if not mitigated, may prevent the implementation of the project (if it is a negative impact). These impacts would be considered by society as constituting a major and usually a long-term change to the (natural &/or social) environment and result in severe effects or beneficial effects
Medium-Low (Minor)	**36 - 72**	An important impact which requires mitigation. The impact is insufficient by itself to prevent the implementation of the project but which in conjunction with other impacts may prevent its implementation. These impacts will usually result in either a positive or negative medium to long-term effect on the social and/or natural environment.
Low (Negligible)	**0 - 35**	An acceptable impact for which mitigation is desirable but not essential. The impact by itself is insufficient even in combination with other low impacts to prevent the development being approved. These impacts will result in either positive or negative medium to short term effects on the social and/or natural environment.

	Aquatic Ecosystem • **Removal of Vegetation** The removal of vegetation around a construction area exposes the surface area leaving the soil prone to erosion. This may result in siltation of the water resource and this will have an impact on the downstream water users and the aquatic life as well;	• The construction phase should be limited to the dry months of the year (May-October) where possible to limit mobilisation of sediments or hydrocarbon runoff; • Engineered solutions such as sediment fences or silt traps should be used where appropriate to limit increased sedimentation of surface water resources during construction; • Minimise the removal of vegetation in the infrastructure footprint area; • Re-vegetation of the construction footprint as soon as possible; • Existing access roads must be prioritized to avoid construction of new access roads in the area; and • The river must not be utilised for abstraction, or washing of equipment, etc., in order to minimise the risk of water pollution during construction activities. All necessary water abstractions from any surface water resource must be authorised as prescribed by the NWA and be subject to the provisions of a water use license and general authorisation.

Impact Rating WITH mitigation:

and Inadequate storm water management and soil stabilisation measures in cleared areas could lead to erosion and associated sedimentation of nearby watercourses

- **Installation of Pipelines**

The use of machinery during construction and installation of pipelines have the potential of hydrocarbons (fuel and oil) leakages which can result in the contamination of the receiving water resources;

Movement of heavy construction machinery around stream may result in disturbance of the river banks, and destabilises the soil. This will increase the chance of erosion during rainfall thereby result in sedimentation of the water resources;

The uncontrolled interaction of construction workers with the watercourses could lead to pollution of the water in the river. Examples of this may be the washing of equipment within the watercourse; and
Establishing of new access paths for construction across watercourses may lead to the erosion of banks and disturbance of riparian vegetation that may trigger the further development of gulley (donga) erosion thereby reducing the quality of water

Activity: Removal of Vegetation			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: Siltation of Water Resources			
Prior to mitigation/ management			
Duration	2 (Short term)	The impacts are anticipated to occur for the duration of the construction phase which is predicted to be less than 1 year.	30 (Negligible)
Extent	2 (Limited)	The impacts are likely to be isolated around the construction activities.	
Intensity	2 (Minor)	Only minor rated intense impacts are anticipated.	
Probability	5 (Likely)	The impacts are likely to occur.	
Nature	Negative		
Post mitigation/ management			
Duration	2 (Short term)	The impacts are anticipated to occur for the duration of the construction phase which is predicted to be less than 1 year.	16 (Negligible)
Extent	2 (Limited)	The impacts are likely to be isolated around the construction activities.	
Intensity	2 (Minor)	Only minor rated intense impacts are anticipated.	
Probability	2 (Improbable)	The impacts are improbable.	
Nature	Negative		
Activity: Pipeline Installation			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: Contamination of Water (Hydrocarbon Spillages)			
Prior to mitigation/ management			
Duration	2 (Short term)	The impacts are anticipated to occur for the duration of the construction phase which is predicted to be less than 1 year.	40 (Minor)
Extent	2 (Limited)	The impacts are likely to be isolated around the construction activities.	
Intensity	4 (Moderate)	Moderately negative impacts are anticipated	

		Probability	5 (Likely)	The impacts are likely to occur.	
		Nature	Negative		
		Post mitigation/ management			
		Duration	2 (Short term)	The impacts are anticipated to occur for the duration of the construction phase which is predicted to be less than 1 year.	28 (Negligible)
		Extent	2 (Limited)	The impacts are likely to be isolated around the construction activities.	
		Intensity	3 (Moderate)	Moderately negative impacts are anticipated.	
		Probability	4 (probable)	The impacts are improbable.	
		Nature	Negative		
	Aquatic Impacts The impacts of the proposed pipeline crossing during the construction phase are presented below. The following impacts are expected to potentially occur as a result of the proposed water use. Increased runoff as a result of vegetative cover loss could result in instream and riparian habitat modification or destruction through erosion, flow, bed, channel and water quality modification. Water quality modification can be related to an increase in the amount of suspended/dissolved solids which can result in increased sedimentation and changes to the physical chemistry of the water in downstream regions. These physical impacts could lead to reduced aquatic biodiversity	• During the construction phase vehicles will be used in proximity to aquatic resources. The use of these vehicles presents risk of persistent hydrocarbon pollution events which can be avoided through the use of the following management actions: • Hydrocarbon spill kits and employee training in their use; • Regular inspection for leakages and subsequent repair (maintenance); and • The refuelling/oiling of vehicles in contained areas (bunded areas) built to the capacity of the facility provided with sumps. • The removal of vegetative cover as well as the construction of roads has been recognised as being responsible for increased runoff, sedimentation and subsequent water and habitat quality degradation in downstream portions of river systems (WRC, 2014). As such the careful management of vegetation removal and sedimentation control should take place. This can be achieved through the brief points below: • Minimise the removal of vegetation in the infrastructure footprint area; • Revegetation of the construction footprint as soon as possible; • Where storm water enters river systems, sediment/silt and debris trapping, as well as energy dissipation control measures must be put in place; • Storm water must be diverted from construction activities and managed in such a manner to disperse runoff and prevent the concentration of storm water flow; • Sequential removal of the vegetation (not all vegetation immediately); and • The vegetation of unpaved roadsides. • All areas to be affected by the proposed project will be rehabilitated after construction and all waste generated by the construction activities will be stored in a temporary demarcated storage area, prior to disposal thereof at a licensed registered landfill site. • As much vegetation growth as possible should be promoted within the proposed development site in order to protect soils and to reduce the percentage of the surface area which is left as bare ground. In this regard special mention is made of the need to use indigenous vegetation species as the first choice during landscaping. The plant material to be used for rehabilitation should be similar to what is found in the surrounding area		

Impact Rating WITH mitigation:

Watercourse pipeline crossing			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: Water and habitat quality modification			
Prior to mitigation/ management			
Duration	2 (Short term)	The impacts are anticipated to occur for the duration of the construction phase which is predicted to be less than 1 year.	30 (Negligible)
Extent	2 (Limited)	The impacts are likely to be isolated around the construction activities.	
Intensity	2 (Minor)	Only minor rated intense impacts are anticipated.	
Probability	5 (Likely)	The impacts are likely to occur.	
Nature	Negative		
After mitigation/ management			
Duration	2 (Short term)	The impacts are anticipated to occur for the duration of the construction phase which is predicted to be less than 1 year.	16 (Negligible)
Extent	2 (Limited)	The impacts are likely to be isolated around the construction activities.	
Intensity	2 (Minor)	Only minor rated intense impacts are anticipated.	
Probability	2 (Improbable)	The impacts are improbable.	
Nature	Negative		

5.3 Operation Phase

	Potential impacts:	**Proposed mitigation:**
GEOLOGY AND SOIL		
	Soil erosion	Monitoring to be conducted to detect erosion

Impact Rating:			+/- Impacts	Extent	Magnitude	Duration	Probability	Significance	OS
		Without Mitigation	-	Local	Medium	Short-term	Likely	3	-36
		With Mitigation	-	Local	Low	Short-term	Unlikely	1	-4

FLORA

	The proposed construction activities may affect biodiversity through the encroachment of exotic vegetation following soil disturbance, in addition the maintenance of the area would disturb naturalised species within the area.	• Newly cleared soils will have to be re-vegetated and stabilised as soon as construction has been completed and there should be an on-going monitoring program to control and/or eradicate newly emerging invasive. • Encroachment of alien vegetation should be monitored regularly and controlled; the area must be kept clear of all invader plants as per the Conservation of Agricultural Resources Act, 1983 (Act No 43 of 1983). Rehabilitation measures must be employed until such a time as indigenous species are established. • As much vegetation growth as possible should be promoted within the proposed replacement in order to protect soils and to reduce the percentage of the surface area which is left as bare ground. In this regard special mention is made of the need to use indigenous vegetation species as the first choice during landscaping.

Impact Rating:	+/- Impacts	Extent	Magnitude	Duration	Probability	Significance	OS
Without Mitigation	-	Local	Medium	Medium-term	Likely	2	-28
With Mitigation	-	Local	Low	Medium-term	Unlikely	1	-10

FAUNA

	Disturbance of faunal species	• The disturbance of fauna should be minimized. • Animals residing within the designated area shall not be unnecessarily disturbed.

Impact Rating:	+/- Impacts	Extent	Magnitude	Duration	Probability	Significance	OS
Without Mitigation	-	Local	Medium	Medium-term	Likely	2	-28
With Mitigation	-	Local	Low	Medium-term	Unlikely	1	-10

AESTHETICS

	Visual impacts associated with the operation of the pipeline.	• After the construction phase, the areas disturbed must be rehabilitated by appropriate landscaping, levelling, topsoil dressing, land preparation, alien plant eradication and vegetation establishment. • Monitor the re-growth of invasive vegetative material. • Manage encroachment of exotic vegetation as necessary.

Impact Rating:	+/- Impacts	Extent	Magnitude	Duration	Probability	Significance	OS
Without Mitigation	-	Local	Medium	Short-term	Likely	1	-12

			With Mitigation	+	Local	Medium	Short-term	Almost Certain	2	+28
SOCIO-ECONOMIC										
	Pipeline maintenance	Monitoring of the leakage of pipes as well as the wear-and-tear of the pipeline.								
Impact Rating:				**+/- Impacts**	**Extent**	**Magnitude**	**Duration**	**Probability**	**Significance**	**OS**
			Without Mitigation	-	Local	Medium	Medium-term	Likely	1	-16
			With Mitigation	-	Local	Low	Short-term	Unlikely	0	0

WATERCOURSES

Aquatic Ecosystem –

Spills or leaks associated with either poor seals or more significant faults such as breaks/bursts. This could lead to contamination of water resource when the slurry enters the stream or wetland.

- It is recommended that pipeline structures at the river crossing should cover the bottom part of the pipeline, this should be designed and placed in way that enables it to contain and divert any spill/leakages away from the stream;
- Monitoring of pipeline leakages on the section where it crosses the stream should be undertaken on a weekly base. This will ensure detection of leaks or faults in the pipeline and immediately repair before significant spill/burst occur;
- It is recommended that water quality monitoring be undertaken on a monthly basis to ensure detection of impacts from leakages of the slurry;
- If pipeline spills/leakage occurs the following mitigation approach is recommended:
- Ensure that the emergency spillage response plan is drafted and accessible to the responsible monitoring team;
- Containment of sludge and water as much as possible using berms and cut off trenches;
- Sludge which is present within the river reaches should be removed by mechanical means;
- Accidental spills or leaks or pipe bursts resulting in the contamination of the receiving water environment should be reported to the authorities and downstream communities/water users should be informed not to use the water until any potential impacts are sufficiently mitigated;
- Storm water management channels or catchment paddocks will be put in place, these is necessary to both contain any spillage as well as to contain runoff generated during normal and extreme rainfall events; and
- All pump discharge pipelines will be fitted with pressure transmitters, which will be utilised to trip the associated pump if a pressure drop is detected and therefore the pumping of sludge will be terminated immediately

Impact Rating WITH mitigation:

Activity: Pipeline Installation			
Dimension	**Rating**	**Motivation**	**Significance**
Impact Description: Contamination of Water (Hydrocarbon Spillages)			
Prior to mitigation/ management			
Duration	5 (Project Life)	The impacts are anticipated to occur for the duration of the project.	60 (Minor)
Extent	3 (Local)	The impact might extend only as far as the development site area.	

		Intensity	4 (Moderate)	Moderately negative impacts are anticipated.	
		Probability	5 (Likely)	The impact may occur. <65% probability.	
		Nature	Negative		
		Post mitigation/ management			
		Duration	5 (Project Life)	The impacts are anticipated to occur for the duration of the project.	30 (Negligible)
		Extent	2 (Limited)	The impacts are limited to the site and its immediate surroundings	
		Intensity	3 (Moderate)	Moderately negative impacts are anticipated	
		Probability	3 (probable)	The impacts are improbable.	
		Nature	Negative		
	Aquatic Impacts The impacts of the proposed pipeline crossing during the operation phase are presented below. The following impacts are expected to potentially occur as a result of the proposed water use. Habitat impacts resulting in flow, bed and channel modification could potentially occur within a limited area downstream of the proposed infrastructure.	• No crossings should take place over riffle/rapid habitats as these are the most sensitive; slow deep/shallow habitats should be favoured; • The crossing points should be stabilised to reduce the resulting erosion and downstream sedimentation; • Structures must not be damaged by floods exceeding the magnitude of those which are may occur on average once in every 100 years; • The indiscriminate use of heavy vehicles and machinery within the instream and riparian habitat will result in the compaction of soils and vegetation and must be controlled; • Erosion prevention mechanisms must be employed to ensure the sustainability of all structures to prevent instream sedimentation; • The crossing points should be unobtrusive (above 1:100 water mark) to prevent the obstruction and subsequent habitat modification of downstream portions; • Diversion trenches and berms should convey dirty water to temporary ditches so as to contain runoff; • Soils adjacent the river that has been compacted must be loosened to allow for germination; • Stockpiling of removed soil and sand must be done outside the 1:100 floodline or delineated riparian habitat (whichever is greater). This will prevent solids from washing into the river; • Unpaved roads used to inspect and construct the pipelines should have their sides vegetated; • No hinges/flanges should be present within the pipeline over the river system as these points are prone to leakages. Therefore, an elongated section devoid of flanges/hinges should be used; and • Should a spillage occur an emergency management plan, including rehabilitation plan, with emergency cut off valves should be in implemented			
Impact Rating WITH mitigation:		**Watercourse pipeline crossing**			
		Dimension	**Rating**	**Motivation**	**Significance**
		Impact Description: Water and habitat quality modification			
		Prior to mitigation/ management			

		Duration	5 (Project life)	The impacts are anticipated to occur for the duration of the operation phase which is predicted as the time period in which the project will occur.	36 (Negligible)
		Extent	2 (Limited)	The impacts are likely to be isolated around the pipeline activities.	
		Intensity	2 (Minor)	Only minor rated intense impacts are anticipated.	
		Probability	4 (Probable)	The impacts are probable to occur.	
		Nature	Negative		
		After mitigation/ management			
		Duration	5 (Project life)	The impacts are anticipated to occur for the duration of the operation phase which is predicted to the time period in which the project will occur.	18 (Negligible)
		Extent	2 (Limited)	The impacts are likely to be isolated around the pipeline activities.	
		Intensity	2 (Minor)	Only minor rated intense impacts are anticipated.	
		Probability	2 (Improbable)	The impacts are improbable.	
		Nature	Negative		

5.4 Operational and Construction Phase of Wetlands

	Potential impacts:	**Proposed mitigation:**
	Wetland disturbance Disturbance due to Presence of Heavy Machinery Movement of heavy machinery through wetland areas during the construction of the pipeline may result in compaction of sediment in the wetland, reducing natural infiltration through those areas. Further to this, minor disturbance of soil will result; which will promote the spread of alien or	Wetland areas should be avoided as far as possible during the construction and decommissioning phases. The following mitigation measures have been prescribed: - To prevent soil compaction in the wetland, the surface sediments should be lightly loosened after heavy machinery and vehicles have passed through the wetland areas; - Areas of bare soil should be revegetated with plugs or mats of Cynodon dactylon (Couch Grass) and Imperata cylindrica (Cottonwool Grass) to prevent erosion during floods; - Steel containment structures should be fitter along the length of the section of pipeline that crosses the wetland and - Diesel/oil spills should be reported within 24 hours and a spillkit should be readily available within proximity to the site to clean up the spill.

Impact Rating WITH mitigation:	invasive plant species already present in the wetland, such as: *Cortaderia selloana*, *Tagetes minuta* and *Seriphium plumosum*. Increased erosion and sedimentation may incur as an additional impact of soil disturbance. During the operational phase, regular maintenance will be required. Due to the short-term operation of the pipeline (4 years), it is recommended that maintenance should only be undertaken bi-annually (or less frequent if possible) to prevent disturbance to the wetland. Minor disturbance to the wetland is expected during the operational phase. It is assumed that the pipeline will be left in situ after operation and that there will not be a decommissioning phase.	

Parameters	*Severity*	*Spatial scale*	*Duration*	*Probability*	*Significance*
Impact	***Disturbance to the soil – erosion, compaction and sedimentation***				
Construction Phase					
Pre-mitigation	Moderate (3)	Local (3)	Permanent (6)	Likely (6)	66 (Minor)
Post-mitigation	Moderate (3)	Local (3)	Short-term (2)	Likely (6)	42 (Minor)
Operation Phase					
Pre-mitigation	Moderate (3)	Limited (2)	Short-term (2)	Likely (6)	42 (Minor)
Post-mitigation	Minor (2)	Limited (2)	Short-term (2)	Likely (6)	30 (Low)

5.3 Decommissioning Phase

Please note that currently there are no decommissioning and closure phase that will take place for the proposed pipelines. However, if decommissioning will be undertaken a separate Basic Assessment Report inclusive of a site decommissioning Environmental Management Programme should be developed and implemented.

Table 4: Example was what would be accepted in the decommission Phase

Activity	Impact summary	Significance	Proposed mitigation
Decommission Phase	Topsoil Placement	Low	**Topsoil replacement and soil amelioration** Execute topsoil placement only after all construction work has ceased. Replace and redistribute stockpiled topsoil together with herbaceous vegetation, overlying grass and other fine organic matter in all disturbed areas of the construction site, including temporary access routes and roads. Replace topsoil to the original depth. Place topsoil in the same area from where it was stripped off. If there is insufficient topsoil available from a particular soil zone to produce the minimum specified depth, topsoil of similar quality may be brought from other areas of similar quality.
	Rehabilitation of the site	Low	All areas to be affected by the proposed project will be rehabilitated after construction and all waste generated by the construction activities will be stored in a temporary demarcated storage area, prior to disposal thereof at a licensed registered landfill site. As much vegetation growth as possible should be promoted within the proposed development site in order to protect soils and to reduce the percentage of the surface area which is left as bare ground. In this regard special mention is made of the need to use indigenous vegetation species as the first choice during landscaping. The plant material to be used for rehabilitation should be similar to what is found in the surrounding area.

5.4 "No Go" Alternative

Should the proposed project not commence, the Kriel Power Station, will reach its maximum capacity in approximately June 2017, which would have to shut down if the project is not launched before then and No electricity will be generated as a result. Workers would lose their jobs which in some case may be the only income of a family. This would also place tremendous stresses on the Matla Power Station to fulfil the needs of the local communities in regards to electricity demands and failures such as more frequent power failures.

The construction of the pipelines will not have any substantial impact on the environment, and the socio – economic impact greatly over weighs that of the biophysical. Environmental rehabilitation and restoration will be conducted to rehabilitate the environment as far as feasible to the pre – construction state. It is thus advised that the project should go ahead.