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THE PROPOSED EXPANSION OF THE DIESEL STORAGE FACILITIES AT THE KOEBERG NUCLEAR POWER STATION, FARM DUYNEFONTYN NO. 1552, MELKBOSSTRAND

APPENDIX F: IMPACT ASSESSMENT

IMPACT ASSESSMENT

This assessment of impacts adheres to the minimum requirements in the EIA Regulations, 2014 and takes applicable official guidelines into account.

1. ASSESSMENT METHODOLOGIES AND CRITERIA, GAPS IN KNOWLEDGE, UNDERLAYING ASSUMPTIONS AND UNCERTAINTIES

The criteria is based on the EIA Regulations, published by the Department of Environmental Affairs and Tourism (April 1998) in terms of the Environmental Conservation Act, 1989 (Act 73 of 1989) and the Department of Environmental Affairs and Development Planning, Guidelines for involving Biodiversity Specialists in EIA Processes, 2005.

These criteria include:

Nature of the impact

This is an appraisal of the type of effect the construction, operation and maintenance of a development would have on the affected environment. This description should include what is to be affected and how.

Extent of the impact

Describe whether the impact will be: local extending only as far as the development site area; or limited to the site and its immediate surroundings; or will have an impact on the region, or will have an impact on a national scale or across international borders.

Duration of the impact

The specialist should indicate whether the lifespan of the impact would be short term (0-5 years), medium term (5-15 years), long term (16-30 years) or permanent.

Magnitude of the impact (intensity)

The specialist should establish whether the impact is destructive or benign and should be qualified as low, medium or high. The specialist study must attempt to quantify the magnitude of the impacts and outline the rationale used.

Probability of occurrence

The specialist should describe the probability of the impact actually occurring and should be described as improbable/unlikely (low likelihood), probable (distinct possibility), highly probable (most likely) or definite (impact will occur regardless of any prevention measures).

Reversibility

- **Completely reversible** the impact can be reversed with the implementation of minor mitigation measures.
- Partly reversible the impact is reversible but more intense mitigation measures are required
- Barely reversible the impact is unlikely to be reversed even with intense mitigation measures
- Irreversible the impact is irreversible and no mitigation measures exist

Irreplaceable loss of resources

Describes the degree to which resources will be irreplaceably lost due to the proposed activity. It can be no loss of resources, marginal loss, significant loss or complete loss of resources.

Cumulative effect

An effect which in itself may not be significant but may become significant if added to other existing or potential impacts that may result from activities associated with the proposed development. The cumulative effect can be:

- Negligible the impact would result in negligible to no cumulative effect
- Low the impact would result in insignificant cumulative effects
- Medium the impact would result in minor cumulative effects
- High the impact would result in significant cumulative effects

Significance

Significance of impacts are determined through a synthesis of the assessment criteria and is described as -

- Low negative- where it would have negligible effects and would require little or no mitigation
- Low positive the impact will have minor positive effects
- Medium negative the impact will have moderate negative effects and will require moderate mitigation
- Medium positive the impact will have moderate positive effects
- **High negative** the impact will have significant effects and will require significant mitigation measures to achieve an accepted level of impact
- High positive the impact will have significant positive effects
- Very high negative the impact will have highly significant effects and are unlikely to be able to be mitigated adequately
- **High positive** the impact will have highly significant positive effects

2. PLANNING, DESIGN AND CONSTRUCTION PHASE

The following tables describe all potential impacts that may result from the planning, design and construction phase, significance rating of impacts, proposed mitigation and significance rating of impacts after mitigation that are likely to occur as a result of the planning, design and construction phase.

Potential impact on geological and physical aspects:	Alternative 1: Ekhaya site (Preferred Alternative)	Alternative 2: Transport Garage site	Bulk Stores at the PEE Site: In combination with Alternative 1 and Alternative 2	No-go option
Nature of impact:				No impact on soil is foreseen.
Extent and duration of impact:	Local and long term	Local and long term	Local and long term	No impact
Magnitude of the impact:	Low	Low	Low	-
Probability of occurrence:	Improbable	Improbable	Improbable	-
Degree to which the impact can be reversed:	Completely reversible	Completely reversible	Completely reversible	-
Degree to which the impact may cause irreplaceable loss of resources:	No loss of resources	No loss of resources	No loss of resources	-
Cumulative impact prior to mitigation:	Low	Low	Low	No impact
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Low – Medium (Negative)	Low – Medium (Negative)	Low – Medium (Negative)	No impact
Degree to which the impact can be mitigated:	High	High	High	-
Proposed mitigation:	 The diesel tanks must have a secondary containment area to prevent subsurface leaks from seeping straight into the ground. The design must ensure that all runoff from development area is directed into the storm water management system, which must include an oil/water separator. All pipework must be double walled and comply with SANS 62- 1 and 2, SANS 1132 (pipework). All construction vehicles must be properly maintained to prevent leaks. Cement mixing must be confined to a designated area and must be done on an impervious surface, or pre-mixed cement must be used. Any fuel stored on site must be kept in bunded storage tanks. 			None required

Potential impact on geological and physical aspects:	Alternative 1: Ekhaya site (Preferred Alternative)	Alternative 2: Transport Garage site	Bulk Stores at the PEE Site: In combination with Alternative 1 and Alternative 2	No-go option
	incidental spills and pollutantsDrip trays are to be inspected		elling of machinery and to catch I effectiveness, and emptied when prevent overflow.	
Cumulative impact post mitigation:	Negligible	Negligible	Negligible	No impact
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Low (Negative)	Low (Negative)	Low (Negative)	No impact

Potential impact on biological aspects:	Alternative 1: Ekhaya site (Preferred Alternative)	Alternative 2: Transport Garage site	Bulk Stores at the PEE Site: In combination with Alternative 1 and Alternative 2	No-go option
Nature of impact:	Loss of Vegetation: Construction related activities will require the physical disturbance and removal of Kweek grass (<i>Cynodon</i> <i>dactylon</i>).	No impact on vegetation foreseen.	Loss of Vegetation: Construction related activities will require the physical disturbance and removal of Kweek grass (<i>Cynodon dactylon</i>).	Status quo remains - no impact.
Extent and duration of impact:	Local and permanent	No impact	Local and permanent	No impact
Magnitude of the impact:	Low	-	Low	-
Probability of occurrence:	Definite	-	Definite	-
Degree to which the impact can be reversed:	Irreversible	-	Irreversible	-
Degree to which the impact may cause irreplaceable loss of resources:	Complete loss	-	Complete loss	-
Cumulative impact prior to mitigation:	Medium	-	Medium	No impact
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Low (Negative)	-	Low (Negative)	No impact

Potential impact on biological aspects:	Alternative 1: Ekhaya site (Preferred Alternative)	Alternative 2: Transport Garage site	Bulk Stores at the PEE Site: In combination with Alternative 1 and Alternative 2	No-go option
Degree to which the impact can be mitigated:	High	-	High	-
Proposed mitigation:	 Demarcate and fence off the construction site boundaries upon site establishment and limit all activities to inside these boundaries. Limit the footprint area of the construction activity to the immediate site. Designate areas outside the construction footprint as No Go areas. Contractors must drive on existing access roads as far as possible to prevent formation of unnecessary tracks for access roads. Prohibit temporary storage of building material or soil within areas of natural vegetation falling outside of the construction footprint. Remove all alien and weed species encountered within areas disturbed by construction activities. Removal of species should take place throughout the construction and operational phases of the development. 	None required	 Demarcate and fence off the construction site boundaries upon site establishment and limit all activities to inside these boundaries. Limit the footprint area of the construction activity to the immediate site. Designate areas outside the construction footprint as No Go areas. Contractors must drive on existing access roads as far as possible to prevent formation of unnecessary tracks for access roads. Prohibit temporary storage of building material or soil within areas of natural vegetation falling outside of the construction footprint. Remove all alien and weed species encountered within areas disturbed by construction activities. Removal of species should take place throughout the construction and operational phases of the development. Rehabilitate the development 	None required

Potential impact on biological aspects:	Alternative 1: Ekhaya site (Preferred Alternative)	Alternative 2: Transport Garage site	Bulk Stores at the PEE Site: In combination with Alternative 1 and Alternative 2	No-go option
	footprint and areas disturbed during construction with species indigenous to the vegetation type during the decommissioning phase of the development.		footprint and areas disturbed during construction with species indigenous to the vegetation type during the decommissioning phase of the development.	
Cumulative impact post mitigation:	Low	No impact	Low	No impact
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Very Low (Negative)	No impact	Very Low (Negative)	No impact

Potential impact on biological aspects:	Alternative 1: Ekhaya site (Preferred Alternative)	Alternative 2: Transport Garage site	Bulk Stores at the PEE Site: In combination with Alternative 1 and Alternative 2	No-go option
Nature of impact:	Potential impact on surface water: Although no surface water features occur on or in proximity to the site, some wetlands occur in the surrounding areas and could be affected as a result of uncontrolled surface run-off from the construction site.	No impact on surface water foreseen.	Potential impact on surface water: Although no surface water features occur on or in proximity to the site, some wetlands occur in the surrounding areas and could be affected as a result of uncontrolled surface run-off from the construction site.	No impact
Extent and duration of impact:	Site and short term	N/A	Site and short term	No impact
Magnitude of the impact:	Medium	-	Medium	-
Probability of occurrence:	Unlikely	-	Unlikely	-
Degree to which the impact can be reversed:	Partly reversible	-	Partly reversible	-
Degree to which the impact may cause	Marginal loss	-	Marginal loss	-

Potential impact on biological aspects:	Alternative 1: Ekhaya site (Preferred Alternative)	Alternative 2: Transport Garage site	Bulk Stores at the PEE Site: In combination with Alternative 1 and Alternative 2	No-go option
irreplaceable loss of resources:				
Cumulative impact prior to mitigation:	Medium	No impact	Medium	No impact
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Medium-high (negative)	No impact	Medium-high (negative)	No impact
Degree to which the impact can be mitigated:	High	-	High	-
Proposed mitigation:	 Refuelling and servicing of vehicles must be undertaken at designated service areas and on an impermeable surface. Make use of a drip tray when refuelling vehicles or equipment on site. Place drip trays under engines of vehicles or equipment when parked or stored overnight or longer. Spill kits to clean up accidental spills from vehicles or equipment must be well marked and available on site. Workers must undergo induction to ensure that they are prepared for rapid clean-up procedures. Immediately clean oil and fuel spills and dispose of contaminated material (soil, 	None required	 Refuelling and servicing of vehicles must be undertaken at designated service areas and on an impermeable surface. Make use of a drip tray when refuelling vehicles or equipment on site. Place drip trays under engines of vehicles or equipment when parked or stored overnight or longer. Spill kits to clean up accidental spills from vehicles or equipment must be well marked and available on site. Workers must undergo induction to ensure that they are prepared for rapid clean-up procedures. Immediately clean oil and fuel spills and dispose of contaminated material (soil, etc.) at licensed waste disposal sites. 	None required

Potential impact on biological aspects:	Alternative 1: Ekhaya site (Preferred Alternative)	Alternative 2: Transport Garage site	Bulk Stores at the PEE Site: In combination with Alternative 1 and Alternative 2	No-go option
	 etc.) at licensed waste disposal sites. Do not release any pollutants, including sediment, sewage, cement, fuel, oil, chemicals, hazardous substances, waste water, etc., into the environment. Compile a procedure for the storage, handling and transport of different hazardous materials and ensure that it is strictly adhered to. Ensure vehicles and equipment are in good working order and drivers and operators are trained with respect to actions to be taken in the case of a spill or leak. 		 Do not release any pollutants, including sediment, sewage, cement, fuel, oil, chemicals, hazardous substances, waste water, etc., into the environment. Compile a procedure for the storage, handling and transport of different hazardous materials and ensure that it is strictly adhered to. Ensure vehicles and equipment are in good working order and drivers and operators are trained with respect to actions to be taken in the case of a spill or leak. 	
Cumulative impact post mitigation:	Negligible	No impact	Negligible	No impact
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Negligible	No impact	Negligible	No impact

Potential impact on air quality:	Alternative 1: Ekhaya site (Preferred Alternative)	Alternative 2: Transport Garage site	Bulk Stores at the PEE Site: In combination with Alternative 1 and Alternative 2	No-go option
Nature of impact:	Dust nuisance and exhaust fur There is potential for the air q generate dust through exposing nuisance factor for land users an in use.	Status quo remains – no dust will be generated.		
Extent and duration of impact:	Local and short term	Local and short term	Local and short term	No impact
Magnitude of the impact:	Low	Low	Low	
Probability of occurrence:	Definite	Definite	Definite	
Degree to which the impact can be reversed:	Completely reversible	Completely reversible	Completely reversible	
Degree to which the impact may cause irreplaceable loss of resources:	Negligible	Negligible	Negligible	
Cumulative impact prior to mitigation:	Low	Low	Low	No impact
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Low (Negative)	Low (Negative)	Low (Negative)	No impact
Degree to which the impact can be mitigated:	High	High	High	
Proposed mitigation:	 Dust suppression methods, so large tracts of exposed surfact must be considered. Stock piles and spoil heaps muteral construction vehicles must lead and surfact adhered to. 	None required		
Cumulative impact post mitigation:	Negligible	Negligible	Negligible	No impact
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Low (Negative)	Low (Negative)	Low (Negative)	No impact

Potential impact on socio-economic aspects:	Alternative 1: Ekhaya site (Preferred Alternative)	Alternative 2: Transport Garage site	Bulk Stores at the PEE Site: In combination with Alternative 1 and Alternative 2	No-go option
Nature of impact:	Job creation: The development is expected to	generate temporary jobs during th	ne construction phase.	No job creation foreseen.
Extent and duration of impact:	Immediate & short term	Immediate & short term	Immediate & short term	No impact.
Magnitude of the impact:	Low	Low	Low	-
Probability of occurrence:	Probable	Probable	Probable	-
Degree to which the impact can be reversed:	N/A	N/A	N/A	-
Degree to which the impact may cause irreplaceable loss of resources:	No loss of resources	No loss of resources	No loss of resources	-
Cumulative impact prior to mitigation:	Low (Positive)	Low (Positive)	Low (Positive)	No positive impact
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Low (Positive)	Low (Positive)	Low (Positive)	No positive impact
Degree to which the impact can be mitigated:	Medium	Medium	Medium	-
Proposed mitigation:			e local procurement practices and o maximize the benefits to the local	None required.
Cumulative impact post mitigation:	Low (Positive)	Low (Positive)	Low (Positive)	No positive impact
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Low (Positive)	Low (Positive)	Low (Positive)	No positive impact

Potential impact on cultural-historical aspects:	Alternative 1: Ekhaya site (Preferred Alternative)	Alternative 2: Transport Garage site	Bulk Stores at the PEE Site: In combination with Alternative 1 and Alternative 2	No-go option	
Nature of impact:	The proposed development is no	ne proposed development is not expected to have any impact on cultural or historic resources.			

Potential noise impacts:	Alternative 1: Ekhaya site (Preferred Alternative)	Alternative 2: Transport Garage site	Bulk Stores at the PEE Site: In combination with Alternative 1 and Alternative 2	No-go option
Nature of impact:	Construction vehicles and other hours. Increased noise levels ma	No noise impact foreseen.		
Extent and duration of impact:	Local & short term	Local & short term	Local & short term	No impact
Magnitude of the impact:	Low	Low	Low	-
Probability of occurrence:	Probable	Probable	Probable	-
Degree to which the impact can be reversed:	Completely reversible	Completely reversible	Completely reversible	-
Degree to which the impact may cause irreplaceable loss of resources:	No loss of resources	No loss of resources	No loss of resources	-
Cumulative impact prior to mitigation:	Low (Negative)	Medium (Negative)	Medium (Negative)	No impact
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Low (Negative)	Medium (Negative)	Medium (Negative)	No impact
Degree to which the impact can be mitigated:	High	High	High	-
Proposed mitigation:	 Construction activities as well as the use of construction vehicles on the road must only occur between 07:00am and 05:00pm. All construction vehicles must be fitted with silencers to avoid excessive noise. All equipment to be adequately maintained and kept in good working order to reduce noise. All employees must be given the necessary ear protection gear. Noise levels must comply with the SANS 100103 – 0994 (recommended noise levels). All mitigation measures relating to noise control as described in the EMPr must be adhered to. 			None required.
Cumulative impact post mitigation:	Negligible	Negligible	Negligible	No impact
Significance rating of impact after mitigation	Low (Negative)	Low (Negative)	Low (Negative)	No impact

Potential noise impacts:	Alternative 1: Ekhaya site (Preferred Alternative)	Alternative 2: Transport Garage site	Bulk Stores at the PEE Site: In combination with Alternative 1 and Alternative 2	No-go option
(Low, Medium, Medium-High, High, or Very-High)				

Potential visual impacts:	Alternative 1: Ekhaya site (Preferred Alternative)	Alternative 2: Transport Garage site	Bulk Stores at the PEE Site: In combination with Alternative 1 and Alternative 2	No-go option
Nature of impact:	No visual impacts are expected s Power Station.	since the proposed development w	ill occur within the already developed	I area of the Koeberg Nuclear

3. OPERATIONAL PHASE

The following tables describe all possible impacts that may result from the operational phase, significance rating of impacts, proposed mitigation and significance rating of impacts after mitigation that are likely to occur as a result of the operational phase.

Potential impact on geological and physical aspects:	Alternative 1: Ekhaya site (Preferred Alternative)	Alternative 2: Transport Garage site	Bulk Stores at the PEE Site: In combination with Alternative 1 and Alternative 2	No-go option
Nature of impact:	Soil and Groundwater contain Potential for soil contamination	No risk foreseen.		
Extent and duration of impact:	Immediate site, long term	Immediate site, long term	Immediate site, long term	No impact
Magnitude of the impact:	High	High	High	-
Probability of occurrence:	Improbable	Improbable	Improbable	-
Degree to which the impact can be reversed:	Completely reversible	Completely reversible	Completely reversible	-
Degree to which the impact may cause irreplaceable loss of resources:	No loss of resources	No loss of resources	No loss of resources	-
Cumulative impact prior to mitigation:	Medium (Negative)	Medium (Negative)	Medium (Negative)	No impact
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Medium (Negative)	Medium (Negative)	Medium (Negative)	No impact
Degree to which the impact can be mitigated:	High	High	High	-
Proposed mitigation:	 Any significant spills or leak Management Act, 1997 (Act Tanker delivery drivers mus switch. In the event of the pump di supply must be cut off by she All relevant staff must under spillages during fuel dispensi An Emergency Response I emergency procedures and i Automatic shut-off valve on lease 	None required.		

Cumulative impact post mitigation:	Low (Negative)	Low (Negative)	Low (Negative)	No impact
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Negligible	Negligible	Negligible	No impact

Potential impact on geological and physical aspects:	Alternative 1: Ekhaya site (Preferred Alternative)	Alternative 2: Transport Garage site	Bulk Stores at the PEE Site: In combination with Alternative 1 and Alternative 2	No-go option
Nature of impact:	Fire risk Potential fires can arise as a results in a fire.	No risk foreseen.		
Extent and duration of impact:	Local, short term	Immediate site, long term	Immediate site, long term	No impact
Magnitude of the impact:	Medium	Medium	Medium	-
Probability of occurrence:	Improbable	Improbable	Improbable	-
Degree to which the impact can be reversed:	Completely reversible	Completely reversible	Completely reversible	-
Degree to which the impact may cause irreplaceable loss of resources:	No loss of resources	No loss of resources	No loss of resources	-
Cumulative impact prior to mitigation:	Medium (Negative)	Medium (Negative)	Medium (Negative)	No impact
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Medium (Negative)	Medium (Negative)	Medium (Negative)	No impact
Degree to which the impact can be mitigated:	High	High	High	-
Proposed mitigation:	 No fires are to be permitted of Ensure that emergency production accidents to employees, use Ensure that no smoking is performed and sufficient fire-figling. Ensure that all personnel on and how the equipment is op Suitably maintain firefighting 	None required.		

	Ensure that all mitigation me operational phase.			
Cumulative impact post mitigation:	Low (Negative)	Low (Negative)	Low (Negative)	No impact
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Low (Negative)	Low (Negative)	Low (Negative)	No impact

Potential impact on biological aspects:	Alternative 1: Ekhaya site (Preferred Alternative)	Alternative 2: Transport Garage site	Bulk Stores at the PEE Site: In combination with Alternative 1 and Alternative 2	No-go option
Nature of impact:	No impacts are foreseen on any biological aspects during the operational phase.			

Potential impact on socio-economic aspects:	Alternative 1: Ekhaya site (Preferred Alternative)	Alternative 2: Transport Garage site	Bulk Stores at the PEE Site: In combination with Alternative 1 and Alternative 2	No-go option
Nature of impact:	No impacts are foreseen on an	y socio-economic aspects durin	g the operational phase.	

Potential noise impacts:	Alternative 1: Ekhaya site (Preferred Alternative)	Alternative 2: Transport Garage site	Bulk Stores at the PEE Site: In combination with Alternative 1 and Alternative 2	No-go option
Nature of impact:	No noise impacts foreseen duri	ng the operational phase.		

Potential visual impacts:	Alternative 1: Ekhaya site (Preferred Alternative)	Alternative 2: Transport Garage site	Bulk Stores at the PEE Site: In combination with Alternative 1 and Alternative 2	No-go option
Nature of impact:	No visual impacts foreseen du	ing the operational phase.		

4. DECOMMISSIONING PHASE

The proposed development will not be decommissioned, therefore this is not applicable.

No other impacts were identified.