

A.	Impact Rating: Construction	Pre- ASPECT	Enlargement of Zwartfontein dam and relocation of associated infrastructure Portion 8 & RE Farm Zwartfontein 792					Short Description of Mitigation Measures						
			IMPACT											
No.			WITHOUT MITIGATION					With Mitigation Score (Impact assessment)						
			Probability	Extent	Duration	Magnitude	Receiving Environment	Without Mitigation Score (Baseline)	Probability	Extent	Duration	Magnitude	Receiving Environment	
			-1	-2	-16	-8	-1	-5.6	-1	-2	-1	-1	-1	
		Potential loss of Swartland Shale Renosterveld												
			-1	-2	-16	-8	-1	-5.6	-1	-2	-4	-1	-1	
		Loss of Ecological Support Areas (ESA)												
1		Botanical												

**No loss of Swartland Shale Renosterveld is expected as the area is transformed by agricultural activities. Recommendations from the Botanical Specialist:**

- \* A suitably qualified ECO must be appointed;
- \* Before any work is done physically demarcate the footprint of the proposed dam & access routes route and strictly prohibit any vehicles or construction related activities outside of the demarcated footprint area - This can be done with danger tape, which should be removed once the construction activities have been completed;
- \* Ensure signs are put up reminding workers to stay on the existing roads.
- \* Indiscriminate cleaning of areas must be avoided;
- \* All alien plants to be removed within the construction footprint and immediate surroundings;
- \* An integrated waste plan to be agreed upon and implemented;
- \* Environmental Awareness training to be conducted with all workers;
- \* Implementation of the EMP

**ESA are already highly compromised in the area. Recommendations from the Botanical Specialist:**

- \* Ecological support areas should be established along the drainage line. Topsoil to be used for rehabilitation. But this will be difficult as the area has been subject to intensive agriculture over a long period of time. Topsoil to be used for rehabilitation.
- \* Before any work is done physically demarcate the footprint of the proposed dam & access routes and strictly prohibit any vehicles or construction related activities outside of the demarcated footprint area.
- \* Ensure signs are put up reminding workers to stay on the existing roads/ in the construction footprint.
- \* Indiscriminate cleaning of areas must be avoided;
- \* Environmental Awareness training to be conducted with all workers;
- \* Implementation of the EMP

<p>* Implementation of the EMP; Method statements to be in place *Inspect all vehicles/machines daily for the early detection of deterioration or leaks. * The contractor should ensure drip trays are placed under stationary vehicles/ machines. * Spill kits must be available. Workers should be trained how to use spill kits to rectify a spill immediately.</p> <p>* Records must be kept of any spills. *</p> <p>Portable toilets must be located at least 32m from the boundary of the any streams must be serviced regularly in order to prevent leakage/spillage.</p> <p>* No cement mixing on site. If cement to be mixed a method statement must be in place.</p>																														
<p><b>The riparian habitat around the drainage line is already considered to be transformed. To mitigate further disturbance:*</b>Implement the EMP; *Ecological support areas should be established along the drainage line. However, this will be difficult as the area has been subject to intensive agriculture over a long period of time. Topsoil must be used to rehabilitate the drainage line. * Before any work is done physically demarcate the footprint of the proposed dam &amp; access routes and strictly prohibit any vehicles or construction related activities outside of the demarcated footprint area.* Ensure signs are put up reminding workers to stay on the existing roads. * Indiscriminate cleaning of areas must be avoided; * Environmental Awareness training to be conducted with all workers. * As a precautionary measure, importance must be given to emergency preparedness with regards to any spillages or leakage of hydrocarbons on site.</p>																														



B. Phase	Impact Rating: Construction	Enlargement of Zwartfontein dam and relocation of associated infrastructure Portion 8 & RE Farm Zwartfontein 792												
		WITHOUT MITIGATION					WITH MITIGATION							
No.	ASPECT	Probability	Extent	Duration	Magnitude	Receiving Environment	Without Mitigation Score (Baseline)	Probability	Extent	Duration	Magnitude	Receiving Environment	With Mitigation Score (Impact assessment)	Short Description of Mitigation Measures
1	Botanical	-1	-2	-1	-1	-1	-5,6	-1	-2	-1	-1	-1	-1,2	<p><b>No loss of Swartland Shale Renosterveld is expected as the area is transformed by agricultural activities.</b> Recommendations from the Botanical Specialist: * A suitably qualified ECO must be appointed; * Before any work is done physically demarcate the footprint of the proposed dam &amp; access routes route and strictly prohibit any vehicles or construction related activities outside of the demarcated footprint area - This can be done with danger tape, which should be removed once the construction activities have been completed; * Ensure signs are put up reminding workers to stay on the existing roads. * Indiscriminate cleaning of areas must be avoided; * All alien plants to be removed within the construction footprint and immediate surroundings; * An integrated waste plan to be agreed upon and implemented; * Environmental Awareness training to be conducted with all workers. * Implementation of the EMPPr</p> <p><b>ESA are already highly compromised in the area. Recommendations from the Botanical Specialist:</b> * Ecological support areas should be established along the drainage line. Topsoil to be used for rehabilitation. But this will be difficult as the area has been subject to intensive agriculture over a long period of time. Topsoil to be used for rehabilitation. * Before any work is done physically demarcate the footprint of the proposed dam &amp; access routes and strictly prohibit any vehicles or construction related activities outside of the demarcated footprint area. * Ensure signs are put up reminding workers to stay on the existing roads/ in the construction footprint. * Indiscriminate cleaning of areas must be avoided; * Environmental Awareness training to be conducted with all workers; * Implementation of the EMPPr</p> <p>* Implementation of the EMPPr; Method statements to be in place * Inspect all vehicles/machines daily for the early detection of deterioration or leaks. * The contractor should ensure drip trays are placed under stationary vehicles/ machines. * Spill kits must be available. Workers should be trained how to use spill kits to rectify a spill immediately. * Records must be kept of any spills. * Portable toilets must be located at least 32m from the boundary of the any streams must be serviced regularly in order to prevent leakage/spillage. * No cement mixing on site. If cement to be mixed a method statement must be in place.</p> <p><b>The riparian habitat around the drainage line is already considered to be transformed.</b> To mitigate further disturbance.*Implement the EMPPr. *Ecological support areas should be established along the drainage line. However, this will be difficult as the area has been subject to intensive agriculture over a long period of time. Topsoil must be used to rehabilitate the drainage line. * Before any work is done physically demarcate the footprint of the proposed dam &amp; access routes and strictly prohibit any vehicles or construction related activities outside of the demarcated footprint area. * Ensure signs are put up reminding workers to stay on the existing roads. * Indiscriminate cleaning of areas must be avoided; *Environmental Awareness training to be conducted with all workers. * As a precautionary measure, importance must be given to emergency preparedness with regards to any spillages or leakage of hydrocarbons on site. Implement Alternative A (Preferred) where compost storage is next to the house and not on the bank of the drainage line;</p>
		-1	-2	-1	-1	-1	-1,8	-2	-2	-1	-1	-1	-1,2	
		-1	-2	-1	-1	-1	-1,2	-1	-2	-1	-1	-1	-1,2	

Loss of riparian habitat during construction of the compost storage (Alternative A)	-1	-2	-1	-1	-1	-1	-1,2	-1	-2	-1	-1	-1	-1,2																				<p><b>The riparian habitat around the drainage line is already considered to be transformed.</b> To mitigate further disturbance.*Implement the EMP; *Ecological support areas should be established along the drainage line. However, this will be difficult as the area has been subject to intensive agriculture over a long period of time. Topsoil must be used to rehabilitate the drainage line. * Before any work is done physically demarcate the footprint of the proposed dam &amp; access routes and strictly prohibit any vehicles or construction related activities outside of the demarcated footprint area.* Ensure signs are put up reminding workers to stay on the existing roads. * Indiscriminate cleaning of areas must be avoided; *Environmental Awareness training to be conducted with all workers. * As a precautionary measure, importance must be given to emergency preparedness with regards to any spillages or leakage of hydrocarbons on site. Implement Alternative A (Preferred) where compost storage is next to the house and not on the bank of the drainage line;</p>
Loss of riparian habitat during construction of the compost storage (Alternative B)	-1	-2	-1	-1	-1	-1	-1,2	-1	-2	-1	-1	-1	-1,2																				<p><b>The riparian habitat around the drainage line is already considered to be transformed.</b> To mitigate further disturbance.*Implement the EMP; *Ecological support areas should be established along the drainage line. However, this will be difficult as the area has been subject to intensive agriculture over a long period of time. Topsoil must be used to rehabilitate the drainage line. * Before any work is done physically demarcate the footprint of the proposed dam &amp; access routes and strictly prohibit any vehicles or construction related activities outside of the demarcated footprint area.* Ensure signs are put up reminding workers to stay on the existing roads. * Indiscriminate cleaning of areas must be avoided; *Environmental Awareness training to be conducted with all workers. * As a precautionary measure, importance must be given to emergency preparedness with regards to any spillages or leakage of hydrocarbons on site. Implement Alternative A (Preferred) where compost storage is next to the house and not on the bank of the drainage line;</p>
Alteration of hydrology/ flow of streams surrounding dam due to enlargement of the dam and increased storage capacity & construction of associated infrastructure (Alternative A - only alternative)	-16	-2	-4	-2	-1	-5							-1,2																				<p><b>Drainage line is considered transformed. An existing water use right is in place for abstraction from the Berg river.</b> *Implement Alternative A (Preferred) where compost storage is next to the house and not on the bank of the drainage line; *Adherence to conditions as set out in the EA and WUL; *Strict monitoring in place with regards to water abstraction.*Implementation of the EMP; *Environmental Awareness training to be conducted with all workers; *A suitably qualified ECO must be appointed; * Before any work is done physically demarcate the footprint of the proposed dam &amp; access routes route and strictly prohibit any vehicles or construction related activities outside of the demarcated footprint area - This can be done with danger tape, which should be removed once the construction activities have been completed; * Ensure signs are put up reminding workers to stay on the existing roads; *Portable toilets must be located at least 32m from the boundary of the any streams must be serviced regularly in order to prevent leakage/spillage.</p>
Alteration of the drainage line during construction of compost storage facility next to house (Alternative A - preferred)	-8	-2	-4	-2	-1	-3,4							-1,2																				<p><b>Drainage line is considered transformed. An existing water use right is in place for abstraction from the Berg river.</b> *Implement Alternative A (Preferred) where compost storage is next to the house and not on the bank of the drainage line; *Adherence to conditions as set out in the EA and WUL; *Strict monitoring in place with regards to water abstraction.*Implementation of the EMP; *Environmental Awareness training to be conducted with all workers; *A suitably qualified ECO must be appointed; * Before any work is done physically demarcate the footprint of the proposed dam &amp; access routes route and strictly prohibit any vehicles or construction related activities outside of the demarcated footprint area - This can be done with danger tape, which should be removed once the construction activities have been completed; * Ensure signs are put up reminding workers to stay on the existing roads; *Portable toilets must be located at least 32m from the boundary of the any streams must be serviced regularly in order to prevent leakage/spillage.</p>



C. Operational Phase	Impact Rating:	Enlargement of Zwartfontein dam and relocation of associated infrastructure Portion 8 & RE Farm Zwartfontein 792													
		WITHOUT MITIGATION					WITH MITIGATION								
No.	ASPECT	Probability	Extent	Duration	Magnitude	Receiving Environment	Without Mitigation Score (Baseline)	Probability	Extent	Duration	Magnitude	Receiving Environment	With Mitigation Score (Impact assessment)	Short Description of Mitigation Measures	
1	Water		-1	-2	-1	-1	-1	-1,2	-1	-2	-1	-1	-1	-1,2	Drainage line is considered transformed. An existing water use right is in place for abstraction from the Berg river. *Adherence to conditions as set out in the EA and WUL,*Strict monitoring in place with regards to water abstraction (operate within ambit of WUL); *Ensure the spillway & drainage line is clear of nuisance vegetation and sedimentation to ensure overflow. * ensure abstraction point/pumps is in good working condition
			-2	-2	-2	-2	-2	-2	-1	-1	-1	-1	-1	-1	Build compost facility next to house on site (Alternative A - preferred) and not next to relocated pumphouse next to the drainage line (Alternative B). Delivery trucks must be prohibited in the drainage line. All vehicles to stay on roads
			-16	-1	-16	-2	-2	-7,4	-1	-1	-1	-1	-1	-1	Build compost facility next to house on site (Alternative A - preferred) and not next to relocated pumphouse next to the drainage line (Alternative B). Delivery trucks must be prohibited in the drainage line. All vehicles to stay on roads
			-4	-2	-4	-4	-1	-3	-1	-2	-1	-1	-1	-1,2	* Preserve reeds ; Keep natural vegetation in upper drainage line; *Monitor areas below the dam wall (at the spillway) after heavy rainfall events for erosion and sedimentation. * Should erosion and incision be noted, immediate corrective measures must be undertaken. * Nuisance vegetation and sedimentation to be removed to ensure overflow; * Rehabilitation measures may include the filling of erosion gullies and rills, and the stabilization of gullies with silt fences.

		Potential agricultural return flow in drainage line	-16	-2	-4	-2	-2	-2	-2	-5,2	-4	-2	-2	-1	-1	-1	-2	Contemporary irrigation technology demands the measuring of soil moisture and irrigation accordingly. This would limit return flow.
		Potential spillage of compost in drainage line	-16	-2	-8	-2	-2	-2	-6	-1	-1	-1	-1	-1	-1	-1	-1	This storage facility will store up to maximum 80 000L or 80m³ of compost and comprise off a cement slab with walls with no roof to contain any possible spills. The storage facility must comply to National Norms and Standards for the storage of Waste in terms of the National Environmental Management: Waste Act (Act No. 59 of 2008). Build compost facility next to house on site (Alternative A - preferred) and not next to relocated pumphouse next to the drainage line (Alternative B). Delivery trucks must be prohibited in the drainage line. All vehicles to stay on roads
	Soil	Potential spillage of compost	-16	-2	-8	-2	-2	-2	-6	-1	-1	-1	-1	-1	-1	-1	-1	This storage facility will store up to maximum 80 000L or 80m³ of compost and comprise off a cement slab with walls with no roof to contain any possible spills. The storage facility must comply to National Norms and Standards for the storage of Waste in terms of the National Environmental Management: Waste Act (Act No. 59 of 2008). Build compost facility next to house on site (Alternative A - preferred) and not next to relocated pumphouse next to the drainage line (Alternative B). Delivery trucks must be prohibited in the drainage line. All vehicles to stay on roads
2	Dust	Potential dust from operations	-1	-2	-1	-1	-1	-1	-1,2	-1	-2	-1	-1	-1	-1	-1	-1,2	No dust expected during operations
3	Visual	Potential visual impact from operations	-1	-2	-1	-1	-1	-1	-1,2	-1	-2	-1	-1	-1	-1	-1	-1,2	No visual impact expected during operations, the dam will fit in with the surrounding land use which is agriculture
4	Noise	Potential noise impact from operations	-1	-2	-1	-1	-1	-1	-1,2	-1	-2	-1	-1	-1	-1	-1	-1,2	No noise expected during operations



D.	Impact Rating: Rehabilitation Phase	Enlargement of Zwartfontein dam and relocation of associated infrastructure Portion 8 & RE Farm Zwartfontein 792												
		WITHOUT MITIGATION					WITH MITIGATION							
No.	ASPECT	Probability	Extent	Duration	Magnitude	Receiving Environment	Without Mitigation Score (Baseline)	Probability	Extent	Duration	Magnitude	Receiving Environment	With Mitigation Score (Impact assessment)	Short Description of Mitigation Measures
1	Botanical	-2	-2	-1	-1	-1	-1,4	-1	-2	-1	-1	-1	-1,2	*Implementation of the EMPr *Rehabilitation method statement to be in place; *Vehicles should be inspected to reduce risk of potential soil contamination from hydrocarbon spills. *The contractor should ensure drip trays are placed under stationary vehicles/ trucks. * Spill kits must be available. Workers should be trained how to use spill kits to rectify a spill immediately. Records must be kept of any spills.
2	Water	-2	-2	-1	-1	-1	-1,4	-1	-2	-1	-1	-1	-1,2	*Implementation of the EMPr *Rehabilitation method statement to be in place; *Ensure construction activities and vehicles are restricted to the demarcated areas to prevent further degradation. Access roads to the dam should be limited to a singular route in and out; * Vehicles will not be permitted tin No-go areas
3	Dust	-2	-2	-1	-1	-1	-1,4	-1	-2	-1	-1	-1	-1,2	* Ensure construction activities and vehicles are restricted to the demarcated areas to prevent further degradation. Access roads to the dam should be limited to a singular route in and out; * Vehicles will not be permitted to drive through the streams
4	Visual	-1	-2	-1	-1	-1	-1,2	-1	-2	-1	-1	-1	-1,2	*Implementation of the EMPr* Dust will be monitored if dust becomes a problem, dust will be controlled by means of water spray vehicles or other practical means. No over-watering of the mining area or roads surfaces should occur. Under extreme windy conditions work will be stopped. No visual impact during rehabilitation, if anything rehabilitation of the area will increase visual aesthetic of the area *Implementation of the EMPr; Method statement to be in place
5	Noise	-1	-2	-1	-1	-1	-1,2	-1	-2	-1	-1	-1	-1,2	*Noise is expected to be minimal * No communities in close proximity to the construction site* Works should take place during daylight hours.

E	Impact Rating: Construction Phase	NO-GO ALTERNATIVE						WITH MITIGATION(N/A)						Short Description of Mitigation Measures	
		ASPECT	IMPACT	Probability	Extent	Duration	Magnitude	Receiving Environment	Without Mitigation Score (Baseline)	Probability	Extent	Duration	Magnitude		Receiving Environment
1	Botanical	Potential loss of Swariland Shale Renosterveld	-1	-1	-1	-1	-1	-1	-1						The implementation of the no-go option would mean the status quo of the environment will remain the same. No
		Loss Ecological Support Areas	-1	-1	-1	-1	-1	-1	-1						The implementation of the no-go option would mean the status quo of the environment will remain the same. No
		Soil contamination from vehicles/ concrete/ portable toilets	-1	-1	-1	-1	-1	-1	-1						The implementation of the no-go option would mean the status quo of the environment will remain the same. No
2	Water	Loss of riparian habitat during construction of the dam wall & pumphouse	-1	-1	-1	-1	-1	-1	-1						The implementation of the no-go option would mean the status quo of the environment will remain the same. No
		Alteration of hydrology/ flow othe stream downstream of the dam wall during construction of the dam wall & spillway	-1	-1	-1	-1	-1	-1	-1						The implementation of the no-go option would mean the status quo of the environment will remain the same. No
3	Heritage	Loss of archaeological/ palaeological resources	-1	-1	-1	-1	-1	-1	-1						The implementation of the no-go option would mean the status quo of the environment will remain the same. No
4	Dust	Potential dust from construction activities	-1	-1	-1	-1	-1	-1	-1						The implementation of the no-go option would mean the status quo of the environment will remain the same. No
5	Visual	Potential visual impact from construction	-1	-1	-1	-1	-1	-1	-1						The implementation of the no-go option would mean the status quo of the environment will remain the same. No
6	Noise	Potential noise from construction	-1	-1	-1	-1	-1	-1	-1						The implementation of the no-go option would mean the status quo of the environment will remain the same. No