In terms of Regulation 19(3) of GN R.326 of the NEMA Environmental Impact Assessment Regulations, 2014, as amended (07 April 2017), the impact assessment for the proposed Paulshoek Bulk Water Supply Development is as follows:

Construction phase:

Potential impacts on geographical and physical aspects:	**Potential impact on freshwater ecosystems**
Nature of impact:	There are no watercourses (streams or wetlands) on the property, or within 32m of the property. The closest watercourse is a small ephemeral stream located approximately 50m away
Extent and duration of impact:	Local, during construction and operation
Probability of occurrence:	Unlikely
Degree to which the impact can be reversed:	High
Degree to which the impact may cause irreplaceable loss of resources:	Negligible
Cumulative impact prior to mitigation:	None expected
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Negligible
Degree to which the impact can be mitigated:	High
Proposed mitigation:	• All construction and operation of the site must be done in accordance with an approved construction and operational phase Environmental Management Plan (EMP), which must be developed by a suitably experienced Environmental Assessment Practitioner. Particular importance must be given to emergency preparedness with regards to any spillages or leakage of hydrocarbons on site. • The control of construction waste water, any contaminated water and/or stormwater must be properly controlled, as per the EMP. No wastewater is allowed to be released into any watercourses
Cumulative impact post mitigation:	Negligible
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Negligible

Potential impact on biological aspects:	
Nature of impact:	**Loss of vegetation** Land-use and Cover: Possible impact on socio-economic activities as a result of the physical footprint or associated activities.
Extent and duration of impact:	Local, medium-term
Probability of occurrence:	Possible
Degree to which the impact can be reversed:	Low

Degree to which the impact may cause irreplaceable loss of resources:	Unlikely
Cumulative impact prior to mitigation:	Insignificant
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Insignificant
Degree to which the impact can be mitigated:	Low
Proposed mitigation:	- All construction must be done in accordance with an approved construction and operational phase Environmental Management Plan (EMP), which must include these recommendations. - A suitably qualified Environmental Control Officer must be appointed to monitor the construction phase in terms of the EMP and any other conditions pertaining to specialist studies. - Site 1 should be the preferred site, with Site 2 as an alternative. Please note that during the site visit the author also identified a further potential option immediately to the east of the existing reservoir site (Refer to point 3 in Figure 8), which can also be considered (as it also shows the same disturbance footprint as encountered at Site 1). - Impacts on the small drainage line near the south-western corner of Site 2 should be avoided as it should be easy to fit the proposed evaporation ponds within the disturbed footprint without impacting on this feature. - An application must be made to DENC for a flora permit in terms of the NCNCA with regards to impacts on species protected in terms of the act. - Search & rescue operation must be implemented for individual plants that might be impacted as recommended in Table 3 (Page 21). - Access must be limited to routes approved by the ECO. - Before any work is done the site and access routes must be clearly demarcated (with the aim at minimal width/smallest footprint). The demarcation must include the total footprint necessary to execute the work, but must aim at minimum disturbance. - Lay-down areas or construction sites must be located within already disturbed areas or areas of low ecological value (e.g. near the existing reservoir site) and must be pre-approved by the ECO. - Indiscriminate clearing of any area outside of the construction footprint must be avoided. - All areas impacted as a result of construction must be rehabilitated on completion of the project. • This includes the removal of all excavated material, spoil and rocks, all construction related material and all waste material. • It also included replacing the topsoil back on top of the excavation as well as shaping the area to represent the original shape of the environment.

	- An integrated waste management approach must be implemented during construction. • Construction related general and hazardous waste may only be disposed of at Municipal approved waste disposal sites. • All rubble and rubbish should be collected and removed from the site to a suitable registered waste disposal site.
Cumulative impact post mitigation:	Insignificant
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Insignificant

Potential impact on biological aspects:	
Nature of impact:	**Loss of vegetation** Vegetation Status: Possible loss of vulnerable or endangered vegetation and associated habitat.
Extent and duration of impact:	Local, short-term
Probability of occurrence:	Probable
Degree to which the impact can be reversed:	Low
Degree to which the impact may cause irreplaceable loss of resources:	Unlikely
Cumulative impact prior to mitigation:	Low
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Low
Degree to which the impact can be mitigated:	Low
Proposed mitigation:	Mitigation as per above
Cumulative impact post mitigation:	Insignificant
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Insignificant

Potential impact on biological aspects:	
Nature of impact:	**Loss of vegetation** Conservation Priority Areas: Possible impact on Protected areas, CBA, ESA or centres of endemism.
Extent and duration of impact:	Local, medium-term
Probability of occurrence:	Probable
Degree to which the impact can be reversed:	Low
Degree to which the impact may cause irreplaceable loss of resources:	Unlikely

Cumulative impact prior to mitigation:	Insignificant
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Low
Degree to which the impact can be mitigated:	Low
Proposed mitigation:	Mitigation as per above
Cumulative impact post mitigation:	Insignificant
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Insignificant

Potential impact on biological aspects:	
Nature of impact:	**Loss of vegetation** Connectivity: Possible loss of identified terrestrial and aquatic critical biodiversity areas, ecological support areas or ecological corridors.
Extent and duration of impact:	Local, short-term
Probability of occurrence:	Probable
Degree to which the impact can be reversed:	Low
Degree to which the impact may cause irreplaceable loss of resources:	Unlikely
Cumulative impact prior to mitigation:	Low
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Low
Degree to which the impact can be mitigated:	Low
Proposed mitigation:	Mitigation as per above
Cumulative impact post mitigation:	Insignificant
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Insignificant

Potential impact on biological aspects:	
Nature of impact:	**Loss of vegetation** Flora: Potential impact on threatened or protected plant species.
Extent and duration of impact:	Local, long-term
Probability of occurrence:	Probable
Degree to which the impact can be reversed:	Low
Degree to which the impact may cause irreplaceable loss of resources:	Unlikely
Cumulative impact prior to mitigation:	Low

Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Low
Degree to which the impact can be mitigated:	Low
Proposed mitigation:	Mitigation as per above
Cumulative impact post mitigation:	Insignificant
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Insignificant

Potential impact on biological aspects:	
Nature of impact:	**Loss of vegetation** Invasive Alien Species: No impacts
Extent and duration of impact:	
Probability of occurrence:	
Degree to which the impact can be reversed:	
Degree to which the impact may cause irreplaceable loss of resources:	
Cumulative impact prior to mitigation:	
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	
Degree to which the impact can be mitigated:	
Proposed mitigation:	
Cumulative impact post mitigation:	
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	

Potential impact on biological aspects:	
Nature of impact:	**Loss of vegetation** Veld Fire: The risk of veld fires as a result of the proposed activities.
Extent and duration of impact:	Local, short-term
Probability of occurrence:	Probable
Degree to which the impact can be reversed:	Low
Degree to which the impact may cause irreplaceable loss of resources:	Unlikely
Cumulative impact prior to mitigation:	Insignificant
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Low
Degree to which the impact can be mitigated:	Low

Proposed mitigation:	Mitigation as per above
Cumulative impact post mitigation:	Insignificant
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Insignificant

Potential impacts on socio-economic aspects:	
Nature of impact:	**Temporary jobs will be created in the construction industry during the construction phase.**
Extent and duration of impact:	Local. During the construction phase of the activity
Probability of occurrence:	Definite
Degree to which the impact can be reversed:	NA. This is a positive impact
Degree to which the impact may cause irreplaceable loss of resources:	NA
Cumulative impact prior to mitigation:	Low - positive
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Low - positive
Degree to which the impact can be mitigated:	Medium
Proposed mitigation:	No mitigation measures are required. Temporary jobs will be created during the construction phase
Cumulative impact post mitigation:	Low - positive
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Low - positive

Potential impacts on cultural-historical aspects:	
Nature of impact:	**The loss of cultural or historic aspects during construction**
Extent and duration of impact:	Local, during construction phase
Probability of occurrence:	The overall palaeontological impact significance of the proposed Bulk Water Supply System development on the Remainder of Leliefontein 614 near Paulshoek, Namaqualand region of the Northern Cape, is considered to be VERY LOW. This is because the study area is underlain by unfossiliferous metamorphic basement rocks (granite-gneisses *etc*) and / or mantled by superficial sediments of low palaeontological sensitivity while the development footprint is very small.
Degree to which the impact can be reversed:	N/A
Degree to which the impact may cause irreplaceable loss of resources:	Unlikely
Cumulative impact prior to mitigation:	Low – Negative
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Very Low – Negative

Degree to which the impact can be mitigated:	Limited
Proposed mitigation:	- The proposed development will not negatively impact on any significant archaeological resources, however it is recommended that site PLSK1 be formally recorded. - PLSK1 must not be impacted by the proposed development and a 20m buffer around the site must be implemented. - There is no heritage objection to the proposed development and neither site is preferred from a heritage perspective. - It is recommended that, pending the exposure of significant new fossils during development, exemption from further specialist palaeontological studies and mitigation be granted for this development. - There are no objections on palaeontological heritage grounds to authorisation of the proposed bulk water supply development. Should any substantial fossil remains (*e.g.* vertebrate bones and teeth, shells, calcretised burrows) be encountered during excavation, however, these should be reported to SAHRA for possible mitigation by a professional palaeontologist (Contact details: Dr Ragna Redelstorff, SAHRA, P.O. Box 4637, Cape Town 8000. Tel: 021 202 8651. Email: rredelstorff@sahra.org.za).
Cumulative impact post mitigation:	Very-Low
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Very-Low

Potential noise impacts:	
Nature of impact:	**Noise impact from machinery and plant on the neighbouring properties during construction**
Extent and duration of impact:	Local, Duration of construction phase
Probability of occurrence:	Probable
Degree to which the impact can be reversed:	Low
Degree to which the impact may cause irreplaceable loss of resources:	Negligible
Cumulative impact prior to mitigation:	Low – negative
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Medium Low – negative
Degree to which the impact can be mitigated:	Medium
Proposed mitigation:	The following measures should be implemented amongst others: • The Contractor shall endeavour to keep noise generating activities to a minimum.

	• Construction only to take place during normal working hours • Compliance with the appropriate legislation with respect to noise shall be mandatory.
Cumulative impact post mitigation:	Low – negative
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Low – negative

Potential visual impacts:	
Nature of impact:	**Unsightly views due to construction site.**
Extent and duration of impact:	Local, during duration of construction
Probability of occurrence:	Probable
Degree to which the impact can be reversed:	Possible
Degree to which the impact may cause irreplaceable loss of resources:	N/A
Cumulative impact prior to mitigation:	Low - negative
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Low - negative
Degree to which the impact can be mitigated:	Probable
Proposed mitigation:	Visual impact mitigation measures will be dealt with in the EMP The EMP must be enforced and monitored by the ECO. • The Contractor shall restrict all his activities, materials, equipment and personnel to within the area specified. • Construction material must be stored in areas designated by the site agent and in a neat and orderly manner. • The Contractor must ensure that all structures, equipment, materials and facilities used or created on site for or during construction activities are removed once the project has been completed. The construction site must be cleared and cleaned to the satisfaction of the ECO. Immediately after the demolition of the camp site, the contractor shall restore the site to its original state, paying particular attention to its appearance relative to the general landscape.
Cumulative impact post mitigation:	Very low - negative
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Very Low - negative

Operational phase:

Potential impacts on the geographical and physical aspects:	**Potential impact on freshwater ecosystems**
Nature of impact:	No impacts expected
Extent and duration of impact:	
Probability of occurrence:	
Degree to which the impact can be reversed:	

Degree to which the impact may cause irreplaceable loss of resources:	
Cumulative impact prior to mitigation:	
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	
Degree to which the impact can be mitigated:	
Proposed mitigation:	
Cumulative impact post mitigation:	
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	

Potential impact biological aspects:	
Nature of impact:	**No biological aspects are expected to be impacted during the operational phase**
Extent and duration of impact:	
Probability of occurrence:	
Degree to which the impact can be reversed:	
Degree to which the impact may cause irreplaceable loss of resources:	
Cumulative impact prior to mitigation:	
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	
Degree to which the impact can be mitigated:	
Proposed mitigation:	
Cumulative impact post mitigation:	
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	

Potential impacts on the socio-economic aspects:	
Nature of impact:	The project is expected to: - provide job opportunities during the construction and the operational phase.
Extent and duration of impact:	Local, Permanent
Probability of occurrence:	Definite
Degree to which the impact can be reversed:	NA
Degree to which the impact may cause irreplaceable loss of resources:	NA, the impact is a positive impact
Cumulative impact prior to mitigation:	NA
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	NA
Degree to which the impact can be mitigated:	NA, the impact is a positive impact
Proposed mitigation:	No mitigation measures are required
Cumulative impact post mitigation:	Medium - Positive
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Medium - Positive

Potential impacts on the cultural-historical aspects:	
Nature of impact:	**No cultural or historic impacts are expected during the operational phase of this activity.**
Extent and duration of impact:	
Probability of occurrence:	
Degree to which the impact can be reversed:	
Degree to which the impact may cause irreplaceable loss of resources:	
Cumulative impact prior to mitigation:	
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	
Degree to which the impact can be mitigated:	
Proposed mitigation:	
Cumulative impact post mitigation:	
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	

Potential noise impacts:	
Nature of impact:	**No significant noise impacts are expected during the operational phases**
Extent and duration of impact:	
Probability of occurrence:	
Degree to which the impact can be reversed:	
Degree to which the impact may cause irreplaceable loss of resources:	
Cumulative impact prior to mitigation:	
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	
Degree to which the impact can be mitigated:	
Proposed mitigation:	
Cumulative impact post mitigation:	
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	

Potential visual impacts:	
Nature of impact:	**The activity is not expected to have a visual impact during the operational phase as the development is rather small and fitting with the surrounding land-uses.**
Extent and duration of impact:	
Probability of occurrence:	
Degree to which the impact can be reversed:	
Degree to which the impact may cause irreplaceable loss of resources:	
Cumulative impact prior to mitigation:	
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	
Degree to which the impact can be mitigated:	
Proposed mitigation:	
Cumulative impact post mitigation:	
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	

Decommissioning:

The project as proposed does not require ‘decommissioning’ or ‘closure’, as such the potential impacts thereof is considered irrelevant.