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 agricultural development on Portion 13 of Orange Falls Farm No. 16, Augrabies Falls Way, Augrabies, is as follows:

Construction phase:

Potential impacts on geographical and physical aspects:	**Potential impact on freshwater ecosystems**
Nature of impact:	The establishment of vineyards on an area that has small drainage lines. The drainage lines on the land where vineyards will be established are to be altered, if not destroyed. Digging of cut-off trench through drainage lines at upstream boundary of new blocks. Re-alignment of drainage lines into irrigation return flow channels. Alteration of drainage lines. Agri-chemicals down the drainage lines. Sediments down drainage lines. Tilling of new land. Removal of vegetation. Construction of irrigation infrastructure. Planting of vines. Movement of sediments down the drainage line, through the Brabees River.
Extent and duration of impact:	Local, during construction and operation
Probability of occurrence:	Definite
Degree to which the impact can be reversed:	Likely
Degree to which the impact may cause irreplaceable loss of resources:	Likely (very-low)
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:	Low (negative)
Proposed mitigation:	• According to the Freshwater Impact Report (Appendix D3), the significance of the impact on the small drainage lines is regarded as low because only short sections of the drainage lines are impacted. • It is not foreseen that the vineyard will ever be rehabilitated and allowed to some state closer to the original state prior to development, but that it would rather be re-planted after many years, once the vines become too old to render the expected yield. • There is not much that can be done in the line of mitigation of the environmental impact when the soil is prepared and the vines planted. The only significant mitigation that can be implemented is to make sure that vineyards are not over-irrigated and that as little as possible agricultural return flow is created. • The impact of a couple of new blocks of vineyards is low-negative. • The mitigation measures that are available indeed lower the significance from “medium” to “low”. • Do not disturb any land outside of designated agricultural areas. • Construction must not commence during the rainy season.

	• Create a 9m buffer around the main drainage line on site. • Prevent the over-use of agri-chemicals and fertilizers. • Prevent plant remnants to wash down drainage lines following the pruning season. • Do not work outside of the footprint of the proposed small reservoir and should be clearly demarcated. • Landscape the surroundings of the completed small reservoir.
Cumulative impact post mitigation:	Very-Low (negative)
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Low (negative)

Potential impact on biological aspects:	
Nature of impact:	**Loss of vegetation** - Direct loss of vegetation type and associated habitat due to construction and operational activities.
Extent and duration of impact:	Local, during the construction phase
Probability of occurrence:	Definite
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:	Very-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:	Very-Low (negative)
Proposed mitigation:	• Before any work is done the final construction footprint 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 minimising disturbance. • All construction must be done in accordance with an approved construction and operational phase Environmental Management Programme (EMPr), which must be developed by a suitably experienced Environmental Assessment Practitioner (EAP). • A suitably qualified Environmental Control Officer (ECO) must be appointed to monitor the construction phase in terms of the EMPr and the recommendations made in the Biodiversity Assessment, as well as any other conditions which might be DENC. • An application must be made to DENC for a flora permit in terms of the Northern Cape Nature Conservation Act, Act 9 of 2009) (NCNCA) with regards to impacts on species protected in terms of the act. • All Aloe species within the construction footprint must be searched & rescued and transplanted in nearby remaining natural veld. A watering programme for searched and rescued plants must be implemented and maintained until these plants have re-established themselves. • Apply for an NCNCA permit for the search and rescue of Aloe

	Species. • Topsoil must be removed to a depth of 15 – 20 cm and protected and stored separately for re-use during rehabilitation. • All topsoil (at all excavation sites) must be removed and stored separately for re-use for rehabilitation purposes. Topsoil and vegetation must be replaced over the disturbed soil to provide a source of seed and seed bed to encourage re-growth of the species removed during construction. • An application must be made to DENC for a flora permit in terms of the NC NCA with regards to impacts on species protected in terms of the Act. • Access must be limited to routes approved by the Environmental Control Officer (ECO). • Lay-down areas or construction sites must be located within already disturbed areas or areas of low ecological value and must be pre-approved by the ECO. • Indiscriminate clearing of any area outside of the construction footprint must be avoided. • Erosion control measures must be implemented in accordance with the EMPr. • All areas impacted as a result of construction must be rehabilitated on completion of the project. • An Integrated waste management approach must be implemented during construction. All rubble and rubbish (if applicable) must be collected and removed from the site to a suitable registered waste disposal site. • All alien vegetation must be cleared from all associated footprints within the various construction sites.
Cumulative impact post mitigation:	Very-Low to Insignificant
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Very-Low to 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:	N/A. This is a positive impact
Degree to which the impact may cause irreplaceable loss of resources:	N/A.
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:	Possible. However, the impact significance of the proposed vineyard development on important archaeological heritage is assessed as Low (refer to Appendix D2). Overall, the results of the field assessment indicate that the proposed activity (i.e. a vineyard development) will not have an impact of great significance on pre-colonial archaeological heritage. A relatively small number of mixed MSA and LSA tools were documented during the study which, occur mostly in an isolated, and degraded context. Indications are that, in terms of archaeological heritage, the receiving environment is not a sensitive or threatened landscape. No mitigation is required prior to agricultural activities commencing.
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)	Low – Negative
Degree to which the impact can be mitigated:	Limited
Proposed mitigation:	• No archaeological mitigation is required is prior to construction activities commencing. • Should any unmarked human burials/remains or ostrich eggshell water flask caches be uncovered, or exposed during construction activities, these must immediately be reported to the archaeologist (Jonathan Kaplan 082 321 0172), or the South African Heritage Resources Agency (SAHRA) (Att Ms Natasha Higgitt 021 462 4502). Burials, etc. must not be removed or disturbed until inspected by the archaeologist. • During construction, any possible discovery of finds such as stone tools scatters, artefacts, human remains, or fossils are made, the operations must be stopped, and the ECO in charge of these developments ought to be alerted immediately. • These discoveries ought to be protected (preferably in situ), and the ECO must report to SAHRA so that appropriate mitigation (e.g. recording, collection) can be carried out by a professional archaeologist or palaeontologist. SAHRA Contact details: South African Heritage Resources Agency, 111 Harrington Street, PO Box 4637, Cape Town 8000, South Africa. Email: Phone: +27 (0)21 462 4502. Fax: +27 (0)21 462 4509 Web: www.sahra.org.za). The ECO and Engineer are also to be informed. • If unmarked human burials are uncovered, the SAHRA Burial Grounds and Graves (BGG) Unit (Thingahangwi Tshivhase/ Mimi Seetelo – 021 320 8490), must be alerted immediately as per section 36(6) of the NHRA and item 5 of the Schedule. • If any heritage resources are uncovered during the course of

	the development, a professional archaeologist or palaeontologist, depending on the nature of the finds, must be contracted as soon as possible to inspect the heritage resources. If the newly discovered heritage resources prove to be of archaeological or palaeontological significance, a Phase 2 rescue operation may be required subject to permits issued by SAHRA. • Note that the Contractor may not, without a permit issued by the responsible heritage resource authority; destroy, damage, excavate, alter, deface or otherwise disturb any archaeological resources. • The Environmental Management Programme (EMPr) must be implemented and an Environmental Control Officer (ECO) must be appointed.
Cumulative impact post mitigation:	Negligible
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	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:	Definite
Degree to which the impact may cause irreplaceable loss of resources:	Negligible
Cumulative impact prior to mitigation:	Very-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:	Medium
Proposed mitigation:	The following measures should be implemented amongst others: • The SANS noise standards must be adhered to. • Existing speed limits should be adhered to. • The potential impacts associated with construction related activities and heavy vehicles can be effectively mitigated. • The proposed development should be phased and site clearing confined to the specific areas under construction. • Dust suppression measures must be implemented when site clearing takes place, such as wetting of exposed areas and access roads. • Construction related activities should comply with all relevant building regulations. • Construction only to take place during normal working hours. • No work must be permitted on Sundays or Public Holidays. • Drivers should be made aware of the potential dust and noise impacts. • The Contractor shall endeavour to keep noise generating.

	activities to a minimum. • Dust suppression measures must be implemented to reduce impacts associated with the movement of construction vehicles, including wetting of gravel roads and ensuring that vehicles used to transport sand and building materials are fitted with tarpaulins or covers. • All vehicles must be road-worthy and drivers must be qualified, made aware of the potential road safety issues, and need for strict speed limits. • By keeping vehicles in good condition, loud noise can be prevented. • The implementation of the EMPr.
Cumulative impact post mitigation:	Very-low (negative)
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Low – negative

Potential dust impacts:	
Nature of impact:	**Dust impact during construction (earth moving equipment)**
Extent and duration of impact:	Local, Duration of construction phase
Probability of occurrence:	Probable
Degree to which the impact can be reversed:	Definite
Degree to which the impact may cause irreplaceable loss of resources:	Negligible
Cumulative impact prior to mitigation:	Very-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:	Medium
Proposed mitigation:	The following measures should be implemented amongst others: • Excessive dust during construction, can be reduced by spraying water regularly to control dust generation. Other suitable dust control mitigation measures can also be considered. • The Contractor must take all reasonable measures to minimize the generation of dust as a result of construction activities resulting from along-construction-route activities (but must also take into account possible water constrictions of the area). • The onsite construction site agent must take into account prevailing wind strength and wind direction and must have preventative measures on standby to minimize dust pollution that may cause damage to people and property. • The liberation of dust into the surrounding environment shall be effectively controlled by the use of, inter alia, water spraying and/or other dust-allaying agents. The speed of haul trucks and other vehicles must be strictly controlled to avoid dangerous conditions, excessive dust or excessive deterioration of the road being used. • The implementation of the EMPr.

Cumulative impact post mitigation:	Very-low (negative)
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Very-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:	Very-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:	• The EMPr 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. • Existing speed limits must be adhered to. • The potential impacts associated with construction related activities and heavy vehicles can be effectively mitigated. • The proposed development should be phased and site clearing confined to the specific areas under construction. • Dust suppression measures must be implemented when site clearing takes place, such as wetting of exposed areas and access roads. • Construction related activities must comply with all relevant building regulations. • Construction only to take place during normal working hours. • No work must be permitted on Sundays or Public Holidays.
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:	
Nature of impact:	**Impact on freshwater resources** – Irrigation return flow that could be entering the nearby Brabees River as result of the cut-off trenches. Possible agri-chemicals entering nearby drainage lines.
Extent and duration of impact:	Local, during the operational phase

Probability of occurrence:	Probable
Degree to which the impact can be reversed:	Medium
Degree to which the impact may cause irreplaceable loss of resources:	Low
Cumulative impact prior to mitigation:	Low (negative)
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Medium (negative)
Degree to which the impact can be mitigated:	Low (negative)
Proposed mitigation:	• Do not over-irrigate the vines. • Monitor soil the moisture. • Adhere to scientifically defined irrigation program. • Prevent over-use of agri-chemicals and fertilizers. • Prevent plant remnants to wash down drainage line following pruning season. • The implementation of the Environmental Management Programme (EMPr).
Cumulative impact post mitigation:	Very- low (negative)
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Low (negative)

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 will provide job opportunities during the construction and the operational phase. - This development has the potential to positively contribute to the local economic development of the area. - This development has the potential to provide an economic injection in the local community, by means of creating employment opportunities. - The proposed development will contribute towards the agricultural production within Augrabies.
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:	Low - Positive
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Low - 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:	**Localised noise can be expected during the operation phase, mainly from tractors and other farming equipment. Spraying of vines to keep it fugus-free. The site is located within an area that is known for intensive agricultural developments.**
Extent and duration of impact:	Local, during the operational phase
Probability of occurrence:	Definite
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:	Negligible
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:	Low
Proposed mitigation:	The following measures should be implemented amongst others: • The SANS noise standards must be adhered to. • Existing speed limits should be adhered to. • The potential impacts associated with construction related activities and heavy vehicles can be effectively mitigated. • Spraying of vineyards only to take place during normal working hours. • No work must be permitted on Sundays or Public Holidays. • Drivers should be made aware of the potential dust and noise impacts. • The Contractor shall endeavour to keep noise generating activities to a minimum. • All vehicles must be road-worthy and drivers must be qualified, made aware of the potential road safety issues,

	and need for strict speed limits. • By keeping vehicles in good condition, loud noise can be prevented. • The implementation of the EMPr.
Cumulative impact post mitigation:	Negligible
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Negligible

Potential dust impacts:	
Nature of impact:	**The activity is not expected to have dust impacts 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 visual impacts:	
Nature of impact:	**The activity is not expected to have a visual impact during the operational phase as development is located within an area of Augrabies that are being used for intensive farming practices.**
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.