

### Environmental Impact Assessment

In terms of Regulation 22(2)(i) of GN R.543 of the NEMA Environmental Impact Assessment Regulations, 2010, the impact assessment for the proposed KVV, Upington upgrade and licencing of the existing effluent management facility is as follows:

Construction phase:

<b>Potential impacts on geographical and physical aspects:</b>	
<b>Nature of impact:</b>	The new treatment works (reed bed) will be placed within the existing evaporation ponds footprint. The old evaporation ponds will be decommissioned and rehabilitated. The footprint of the new works (±10ha) will be much smaller than the existing footprint (±22ha). Thus the impact is expected to be positive.
<b>Extent and duration of impact:</b>	Local, during construction phase (short-term)
<b>Probability of occurrence:</b>	Probable
<b>Degree to which the impact can be reversed:</b>	Likely
<b>Degree to which the impact may cause irreplaceable loss of resources:</b>	Low –to negligible
<b>Cumulative impact prior to mitigation:</b>	Low - negative
<b>Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)</b>	Low - negative
<b>Degree to which the impact can be mitigated:</b>	High
<b>Proposed mitigation:</b>	<ul style="list-style-type: none"> <li>Placing the new treatment works within the existing footprint.</li> <li>Compliance with the environmental management programme, including detailed Method Statements that will ensure that the proposed mitigation measures can be effectively implemented and the identified impacts can be avoided or minimised as far as possible.</li> <li>An Environmental Control Officer should be appointed to the project, to ensure that the objectives of the required mitigation measures are met during project implementation.</li> <li>Removal of alien vegetation within the drainage line</li> </ul> <p>Due to the disturbed nature of the site, the proposed activity is expected to improve the conditions of the site as a whole.</p>
<b>Cumulative impact post mitigation:</b>	Negligible
<b>Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)</b>	Negligible to Low - positive

<b>Potential impact on biological aspects:</b>	
Nature of impact:	<b>Loss of vegetation and associated habitat, including protected plant species</b>
Extent and duration of impact:	Local, permanent
Probability of occurrence:	Unlikely
Degree to which the impact can be reversed:	Likely
Degree to which the impact may cause irreplaceable loss of resources:	Very 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:	Medium
Proposed mitigation:	<ul style="list-style-type: none"> <li>• All construction 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.</li> <li>• A suitably qualified Environmental Control Officer must be appointed to monitor the construction phase in terms of the EMP and the Biodiversity study recommendations as well as any other conditions which might be required by the Department of Environmental Affairs.</li> <li>• An integrated waste management system must be implemented during the construction phase.</li> <li>• All rubble and rubbish (if applicable) must be collected and removed from the site to a suitable registered waste disposal site.</li> <li>• All alien vegetation should be removed from the larger property.</li> <li>• The proposed new works should be placed within the existing disturbed area of the existing evaporation ponds. It will have the added advantage of negating any impact on protected species. In doing this the impact on natural veld and protected species is negated.</li> <li>• Permits must be obtained for the removal of any protected species which cannot be avoided.</li> <li>• Only existing access roads should be used for access to the terrain. Access roads must be clearly demarcated and access must be tightly controlled (deviations may not be allowed).</li> <li>• Indiscriminate clearing of areas must be avoided (all remaining natural areas to be regarded as no-go areas).</li> <li>• Once the construction is completed all further movement must be confined to the approved access road to allow the vegetation to re-establish over the rehabilitated larger footprint (the evaporation ponds area which have been rehabilitated).</li> <li>• Adequate measures must be implemented to ensure against erosion.</li> </ul>
Cumulative impact post mitigation:	Positive
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Very likely positive

<b>Potential impact on biological aspects:</b>	
Nature of impact:	<b>Removal on invasive alien vegetation</b>
Extent and duration of impact:	Local, temporary
Probability of occurrence:	Likely
Degree to which the impact can be reversed:	Not likely
Degree to which the impact may cause irreplaceable loss of resources:	Very unlikely
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:	Low-medium
Proposed mitigation:	<ul style="list-style-type: none"> <li>Stay within disturbed areas and existing roads.</li> <li>Do not use heavy construction vehicles to remove alien invasive species outside of the existing footprint.</li> </ul>
Cumulative impact post mitigation:	Positive
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Positive

<b>Potential impact on biological aspects:</b>	
Nature of impact:	<b>Impact on fauna and avi-fauna</b>
Extent and duration of impact:	Local, during construction
Probability of occurrence:	Very low (already disturbed area, the reed bed will be much better suited for fauna and avi-fauna)
Degree to which the impact can be reversed:	Unlikely
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)	Very low - negative
Degree to which the impact can be mitigated:	Medium
Proposed mitigation:	<ul style="list-style-type: none"> <li>The proposed new works should be placed within the existing disturbed area of the existing evaporation ponds. It will have the added advantage of negating any impact on natural veld.</li> <li>Compliance with the environmental management programme, including detailed Method Statements that will ensure that the proposed mitigation measures can be effectively implemented and the identified impacts can be avoided or minimised as far as possible.</li> <li>An Environmental Control Officer should be appointed to the project, to ensure that the objectives of the required mitigation measures are met during project implementation.</li> </ul>

Cumulative impact post mitigation:	Positive
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Positive

<b>Potential impacts on socio-economic aspects:</b>	
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:	Very unlikely
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:	Positive
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Positive

<b>Potential impacts on cultural-historical aspects:</b>	
Nature of impact:	The loss of Archaeological heritage during construction
Extent and duration of impact:	Local, during construction phase
Probability of occurrence:	Unlikely (Archaeological report)
Degree to which the impact can be reversed:	High
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)	Very low - Negative
Degree to which the impact can be mitigated:	Limited
Proposed mitigation:	<ul style="list-style-type: none"> <li>The proposed new works should be placed within the existing disturbed area of the existing evaporation ponds. It will have the added advantage of negating any impact on area not already disturbed.</li> <li>Should any such remains be uncovered, or exposed during excavations, these must immediately be reported to Dr David Morris at the McGregor Museum in Kimberly (082 222 4777 or</li> </ul>

	053 839 2706), and the area sealed off. Burials or ostrich eggshell caches must not be removed until inspected by the archaeologist.
Cumulative impact post mitigation:	Negligible
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Negligible

<b>Potential noise impacts:</b>	
Nature of impact:	Noise impact from machinery and plant during construction
Extent and duration of impact:	Local, Duration of construction 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:	Negligible
Cumulative impact prior to mitigation:	Negligible
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Negligible
Degree to which the impact can be mitigated:	Probable
Proposed mitigation:	<ul style="list-style-type: none"> <li>The site is located well away from the urban areas. It is thus unlikely that the machinery used may cause noise disturbance.</li> <li>Noise mitigation measures are dealt with in the EMP.</li> </ul>
Cumulative impact post mitigation:	Negligible
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Negligible

<b>Potential visual impacts:</b>	
Nature of impact:	Unightly views due to construction site. Disturbed areas are to be rehabilitated after construction, which will improve the overall visual impact of the site considerably
Extent and duration of impact:	Local, during duration of construction
Probability of occurrence:	Probable
Degree to which the impact can be reversed:	N/a, however, once completed the overall visual should be considerably improved.
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:	<ul style="list-style-type: none"> <li>Rehabilitation of the remaining disturbed footprint of the old evaporation ponds</li> <li>Compliance with the EMP</li> </ul>

Cumulative impact post mitigation:	Negligible
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Negligible

Operational phase:

<b>Potential impacts on the geographical and physical aspects:</b>	
Nature of impact:	The operational phase of the treatment works (including rehabilitation of the remaining evaporation ponds) is expected to pose a much improved treatment system (overflow going into the Uppington waste treatment system), will enable re-use of the treated water and should serve as an attractive nesting place for many avifauna species.
Extent and duration of impact:	Long term
Probability of occurrence:	Very likely
Degree to which the impact can be reversed:	Medium
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:	High
Proposed mitigation:	<ul style="list-style-type: none"> <li>• All maintenance activities will consider the environment.</li> <li>• The Operational Manager will ensure that any maintenance activities that are undertaken are carried out in line with the specifications and recommendations set out in section 3 of the EMP.</li> <li>• Any incidents that have resulted in a large negative impact on the environment are to be reported to Department of Environmental Affairs.</li> <li>• A well planned maintenance schedule must be drafted by the Operational Manager.</li> <li>• General operation and management of the oxidation pond system must be in according to best operation practises.</li> <li>• A sufficient budget allowances must be made available for maintenance.</li> <li>• All stand-by equipment must be regularly checked (every 3 months).</li> <li>• All equipment must be kept clean. Any equipment using fuels or oils, hydraulic liquids must be checked regularly for leaks.</li> <li>• Staff is to be trained to recognise possible problems and how to respond to the situation.</li> </ul>
Cumulative impact post mitigation:	Negligible
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Low – negative to negligible

High)	
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<b>Potential impact biological aspects:</b>	
Nature of impact:	The operational phase of the treatment works is expected to pose no direct threat to any biodiversity aspects (vegetation).
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)	

<b>Potential impacts on the socio-economic aspects:</b>	
Nature of impact:	The activity will not only improve the effluent treatment and capacity of the existing works for but have the potential of reducing water use within the facility (using treated water as wash and irrigation water) and thus water demands on Upington Municipality. Potentially the treated water could also be used for beneficial irrigation of small holdings in the vicinity.
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:	Positive

Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Positive
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<b>Potential impacts on the cultural-historical aspects:</b>	
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)	

<b>Potential noise impacts:</b>	
Nature of impact:	No noise impacts are expected during the operational phase for 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)	

<b>Potential visual impacts:</b>	
Nature of impact:	No visual impacts are expected during the operational phase for this activity. Disturbed areas are to be rehabilitated after

	construction, which will improve the overall visual impact of the site considerably.
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:

Decommissioning of the treatment works can only be considered if both the KVV and OWK facilities are closed down. Since both these companies are currently expanding the potential impacts thereof is considered irrelevant.