

IMPACT ASSESSMENT

IMPACTS THAT MAY RESULT FROM THE PLANNING AND DESIGN, CONSTRUCTION, OPERATIONAL, DECOMMISSIONING AND CLOSURE PHASES AS WELL AS PROPOSED MANAGEMENT OF IDENTIFIED IMPACTS AND PROPOSED MITIGATION MEASURES

List the potential direct, indirect and cumulative property/activity/design/technology/operational alternative related impacts (as appropriate) that are likely to occur as a result of the planning and design phase, construction phase, operational phase, decommissioning and closure phase, including impacts relating to the choice of site/activity/technology alternatives as well as the mitigation measures that may eliminate or reduce the potential impacts listed

Impact Assessment Methodology

The following requirements as stipulated in the Environmental Impact assessment Regulations, 2010, promulgated in terms of Section 24(5) of the National Environmental Management Act (Act 107 of 1998) as amended in 2014 were considered when undertaking an impact assessment, that-

- When undertaking an impact assessment a description and assessment of the significance of any environmental impacts, including;
 - i. Cumulative impacts, that may occur as a result of the undertaking of the activity during project life cycle;
 - ii. Nature of the impact;
 - iii. Extent and Duration of impact;
 - iv. The probability of Impact occurring
 - v. The degree to which the impact can be reversed;
 - vi. The degree to which the impact may cause irreplaceable loss of resources; and
 - vii. The degree to which the impact can be mitigated; should be considered

The method for determining the impact risk as well as the description for determining the impact risk is provided below:

1) Cumulative Impacts

Cumulative impacts¹ can simply be defined as the total impact that a series of developments, either present, past or future, will have on the environment within a specific region over a particular period of time

The spatial scale can be local, regional or global, whilst the frequency or temporal scale includes past, present and future impacts on a specific environment or region, therefore the potential cumulative impacts on the entire receiving environment are addressed for all the project phases and the mitigation measures implemented before and after.

2) Nature of the Impact

A description of what causes the effect, what will be affected and how will it be affected

3) Extent of Impacts

Extent indicates whether the impact will be local (limited to the immediate area or site of development), regional, national or international.

A score of between 1 and 5 is assigned. (with a score of 1 being low and a score of 5 being high)

Value	Rating (Exposure)	Description
5	Global/National	The effect of the impact will occur on a national/ and or global scale
4	Regional/Provincial	The effect will occur on the entire province or region
3	Local	The effect will extend as far as the development site area
2	Limited	The effect will be limited to the site and its immediate surroundings
1	Very limited	The effect will be limited to the specific isolated parts of the site

4) Probability of Impact occurring

The probability of an impact refers to the likelihood of an impact occurring. Probability is estimated on a scale, and a score of 1-5 is assigned.

Rating	Description
1	Very improbable(probably will not happen)
2	Improbable (some possibility, but low likelihood)
3	Probable (distinct possibility)
4	Highly Probable (most likely)
5	Definite (impact will occur regardless of any prevention measure)

5) Duration of impacts and degree to which impacts can be reversed

Duration refers to the actual impact timeframe. The reversibility of impacts is directly linked to the duration of the impacts. A factor is awarded in accordance with the following:

- Immediate: 0- <1 year- Factor 1
- Short term: 1 to 5 years - Factor 2
- Medium term: 5 to 15 years - Factor 3
- Long term: impact will only cease after the operational life of the activity, either because of natural process or by human intervention - Factor 4.
- Permanent: mitigation, either by natural process or by human intervention, will not occur in such a way or in such a time span that the impact can be considered transient - Factor 5.

Value/Factor	Description	Reversibility
1	Immediate	Immediately reversible
2	Short-term	Quickly reversible
3	Medium term	Reversible over time

4	Long term	Reversible over the long term
5	Permanent	Irreversible/ No mitigation measures will reduce the impact after implementation

6) Degree to which the impact may cause irreplaceable loss of resources (Magnitude)

The magnitude of the impact refers to the importance of the impact in relation to the significance of the development.

The magnitude is quantified on a scale from 1-10, where 1 is small and 10 is very high

Value	Description
1	Small and will have no effect on the environment
2	Minor and will result in an impact on processes
4	Low and will cause a slight impact on processes
6	Moderate and will result in processes continuing but in a modified way
8	High (processes are altered to the extent that they temporarily cease)
10	Very high (results in complete destruction of patterns and permanent cessation of processes)

7) The significance which is determined through a synthesis of the characteristics described above (refer to formula below) and can be assessed as low, medium or high

The **significance weightings** for each potential impacts are as follows:

Value	Description
<30 points	Low (the impact would not have a direct influence on the decision to develop in the area)
30-60 points	Medium (the impact could influence the decision to develop in the area unless it is effectively mitigated)
>60 points	High (the impact must have an influence on the decision process to develop in the area)

The significance is determined by combining the criteria in the following formula:

S= (E+D+M)P; where

S= Significance weighting

E= Extent

D= Duration

M= Magnitude

P= Probability

¹ DEAT (2004) Cumulative Effects Assessment, Integrated Environmental Management, Information Series 7, Department of Environmental Affairs and Tourism (DETA), Pretoria.

A. CONSTRUCTION PHASE

NATURE OF IMPACT: TRANSFORMATION OF VEGETATION		
	Without Mitigation	With Mitigation
Extent	Limited (2)	Very limited (1)
Duration	Medium term (3)	Short term (2)
Magnitude	High (8)	Moderate (6)
Probability	Definite (5)	High Probable (4)
Significance	High (55)	Low (36)
Status (positive or negative)	Negative	Negative
Reversibility	Yes	Yes
Irreplaceable loss of resources?	Yes	No
Can impacts be mitigated		No
Mitigation: Keep to the parameters of the site footprint, rehabilitate and have an alien invasive management plan		
Cumulative impacts: None expected		
Residual Impacts: No residual impacts are expected		
Discussion: The site is environment is transformed by agricultural activities and another portion is natural environment.		

NATURE OF IMPACT: DESTRUCTION/ DAMAGE OF PROVINCIALY PROTECTED SPECIES		
	Without Mitigation	With Mitigation
Extent	Provincial (4)	Limited (2)
Duration	Permanent (5)	Short term (2)
Magnitude	Very High (10)	Minor (2)
Probability	Definite (5)	improbable (2)
Significance	High (95)	Low (12)
Status (positive or negative)	Negative	Negative
Reversibility	Yes	Yes
Irreplaceable loss of resources?	Yes	No
Can impacts be mitigated		yes
Mitigation: Relocation of species		
Cumulative impacts: With mitigation is low		
Residual Impacts: No residual impacts are expected		
Discussion: Plant relocation management plan to be compiled and no site camps to be established and provincially flora permit to be applied for before the commencement of construction. Rehabilitation of the surrounding area of the site must be executed as soon as construction phase is done.		

NATURE OF IMPACT: EROSION		
	Without Mitigation	With Mitigation
Extent	Local (3)	Limited (2)
Duration	Short term (2)	Short term (2)
Magnitude	Moderate (6)	Minor (2)
Probability	Definite (5)	Highly probable (4)
Significance	Medium (55)	Low (24)
Status (positive or negative)	Negative	Negative
Reversibility	Yes	Yes
Irreplaceable loss of resources?	Yes	No
Can impacts be mitigated		yes
Mitigation: Limit activities to the assessment		
Cumulative impacts: Low with mitigation		
Residual Impacts: No residual impacts are expected		
Discussion: Stormwater management plan to be compiled and submitted and rehabilitation within the immediate and surrounding to prevent continuous erosion.		

NATURE OF IMPACT: WATER RESOURCES DISTURBANCE		
	Without Mitigation	With Mitigation
Extent	Local (3)	Limited (2)
Duration	Medium term (3)	Short term (2)
Magnitude	Very High (10)	High (8)
Probability	Definite (5)	Highly probable (4)
Significance	High (80)	Medium (39)
Status (positive or negative)	Negative	Negative
Reversibility	No	Yes
Irreplaceable loss of resources?	Yes	Yes
Can impacts be mitigated		yes
Mitigation: Implement storm water management		
Cumulative impacts: Low		
Residual Impacts: No residual impacts are expected		
Discussion: Water use licence to be applied for with the Department of Water and Sanitation, storm water management plan is implemented to separate rain/run off and dirty water and have keep all water resources clean.		

NATURE OF IMPACT: ALIEN INVASIVE SPECIES		
	Without Mitigation	With Mitigation
Extent	Local (3)	Very limited (1)
Duration	Short term (2)	Immediately (1)
Magnitude	Moderate (6)	Small (1)
Probability	Highly probable (4)	improbable (2)
Significance	Medium (44)	Low (6)
Status (positive or negative)	Negative	Negative
Reversibility	Yes	Yes
Irreplaceable loss of resources?	Yes	Yes
Can impacts be mitigated		yes
Mitigation: Alien invasive management plan to be compiled		
Cumulative impacts: Low		
Residual Impacts: No residual impacts are expected		
Discussion: N/A		

NATURE OF IMPACT: WATER POLLUTION		
	Without Mitigation	With Mitigation
Extent	Local (3)	Limited (2)
Duration	Short term (2)	immediate (1)
Magnitude	Very High (10)	Minor (6)
Probability	Probable (3)	improbable (2)
Significance	Medium (45)	Low (18)
Status (positive or negative)	Negative	Negative
Reversibility	Yes	Yes
Irreplaceable loss of resources?	Yes	Yes
Can impacts be mitigated		yes
Mitigation: Implement storm water management		
Cumulative impacts: Low		
Residual Impacts: No residual impacts are expected		
Discussion: Water use licence to applied for with the Department of water and sanitation, storm water management plan is implemented to separate rain/run off and dirty water and have keep all water resources clean.		

B. OPERATIONAL PHASE

NATURE OF IMPACT: SOCIO-ECONOMIC		
	Without Mitigation	With Mitigation
Extent	Local (3)	Local (3)
Duration	Long term (4)	Long term (4)
Magnitude	Moderate (6)	Moderate (6)
Probability	Definite (5)	Definite (5)
Significance	High (65)	High (65)
Status (positive or negative)	Positive	Positive
Reversibility	No	Yes
Irreplaceable loss of resources?	No	No
Can impacts be mitigated		Yes
<p>Mitigation: A complaints registry should be in place for recordkeeping. If there are issues raised by the labourers, they should be addressed promptly to avoid conflicts</p>		
<p>Cumulative impacts: N/A</p>		
<p>Residual Impacts N/A</p>		
<p>Discussion: The impact is considered positive the municipality intends to hire the locals during the life span of the life span</p>		