

THE PROPOSED UPGRADE OF ROAD P 254/1 SITUATED WITHIN VULAMEHLO AND UMZUMBE LOCAL MUNICIPALITIES, UGU DISTRICT MUNICIPALITY, KWAZULU- NATAL

SIGNIFICANCE SCORING REPORT

OVERVIEW

This section focuses on the environmental impacts that could potentially be caused by the proposed the upgrading of the existing Road P254/1 works during the planning, pre-construction, construction and operational phases of the project. The decommissioning of the road, bridges, culverts and causeway structures is not an anticipated event in the foreseeable future. Maintenance of infrastructure will be addressed under the operational phase.

Impact assessment must take account of the interactions between all aspects and associated activities of the development nature, scale and duration of effects on the environment, whether such effects are positive (beneficial) or negative (detrimental). Each issue or impact is also assessed according to the project stages from planning, through construction and operation to the decommissioning phase.

The Environmental Impact Assessment of the project's activities is determined by identifying the environmental aspects and then undertaking an environmental risk assessment to determine the significant environmental impacts. The significance scoring of this environmental impact assessment is focussed only on the Construction and Operational Phase.

MITIGATION

The potential to mitigate the negative impacts and enhance the positive impacts have been determined for each identified impact, mitigation objectives that result in a measurable reduction in impact have been provided. Management actions that could enhance the condition of the environment (i.e. potential positive impacts of the proposed project) have been identified. Where no mitigation is considered feasible, this must be stated and the reasons provided (DEAT, 2002).

The significance of environmental impacts has been assessed in the Draft Basic Assessment report taking into account any proposed mitigations. The significance of the impact "without mitigation" is the prime determinant of the nature and degree of mitigation required.

Significance scoring assesses and predicts the significance of environmental impacts through evaluation of the following factors; probability of the impact; duration of the impact; extent of the impact; and magnitude of the impact. The significance of environmental impacts is then assessed taking into account any proposed mitigations. The significance of the impact "without mitigation" is the prime determinant of the nature and degree

of mitigation required¹. Each of the above impact factors have been used to assess each potential impact using ranking scales (**Table 1**).

Unknown parameters are given the highest score (5) as significance scoring follows the Precautionary Principle. The Precautionary Principle is based on the following statement: *When the information available to an evaluator is uncertain as to whether or not the impact of a proposed development on the environment will be adverse, the evaluator must accept as a matter of precaution, that the impact will be detrimental. It is a test to determine the acceptability of a proposed development. It enables the evaluator to determine whether enough information is available to ensure that a reliable decision can be made.*

The Proponent is obliged to adhere to the requirements of Section 28 of the NEMA (Duty of Care and Remediation of Environmental Damage) which states that: *Duty of care and remediation of environmental damage: "(1) Every person who causes has caused or may cause significant pollution or degradation of the environment must take reasonable measures to prevent such pollution or degradation from occurring, continuing or recurring, or, in so far as such harm to the environment is authorised by law or cannot be reasonably be avoided or stopped, to minimise and rectify such pollution or degradation of the environment".*

DESCRIPTION OF THE SCORING PROCES

Table 1: Significance scoring used for each potential impact

Probability	Duration
1 - very improbable	1 - very short duration (0-1years)
2 - improbable	2- short duration (2-5 years)
3 - probable	3 - medium term (5-15 years)
4 - highly probable	4 - long term (>15 years)
5 - definite	5 - permanent/unknown
Extent	Magnitude
1 - limited to the site	2 – minor
2 - limited to the local area	4 – low
3 - limited to the region	6 – moderate
4 - national	8 – high
5 - international	10 – very high

CALCULATION: Significance Points = (Magnitude + Duration + Extent) x Probability.

The maximum value is 100 Significance Points.

Potential Environmental Impacts are rated as high, moderate or low significance as per the following:

<30 significance points = Low environmental significance

31-59 significance points = Moderate environmental significance

>60 significance points = High environmental significance

¹ Impact scores given "with mitigation" are based on the assumption that the mitigation measures recommended in this assessment are implemented correctly and rehabilitation of the site is undertaken. Failure to implement mitigation measures during and after construction will keep the impact at an unacceptably high level.

Table 2: Significance scoring of (a) Negative impact

Scoring value	Significance
>60	High environmental significance - Eliminating Mitigation may not be possible / practical. Consider fatal flaw.
31-59	Moderate environmental significance - Mitigation is therefore essential.
10-30	Low environmental significance - Mitigation is required to reduce the negative impacts and such impacts need to be evaluated carefully.
<15	Very Low - The impact is of little importance, but may require limited mitigation; or it may be rendered acceptable in light of proposed mitigation.

Table3: Significance scoring of (b) Positive impact

Scoring value	Significance
>60	Very highly beneficial
31-59	Highly beneficial
10-30	Moderately beneficial
<15	Beneficial

POTENTIAL IMPACTS AND SIGNIFICANCE

The proposed project (**alternative 1: preferred**) according to the Engineering report compiled by Samani Consulting (2014) involves the upgrading of the existing Road P254/1 from a gravel base to a type 3 blacktop. The new road will be 8.5m wide over a length of approximately 28km with full surface drainage. In addition old culverts and dilapidated stormwater structure will be upgraded to better handle the flood occurrences. The design speed will be 60km/hr with the minimum horizontal radius of 110m and a minimum K value of 16. At natural water courses and stream crossings, pipe crossings or low level causeways using portal culverts will be constructed with associated inlet and outlet structures. All storm water runoff from the site must be supplemented by soft engineering and the use of Sustainable Drainage Systems (SUDS). The following impacts as per Section 2 and 4 of the draft Basic Assessment Report make up this alternative:

Alternative 1 is composed of the following activities:

- The preferred site alternative 1
- The preferred design or Layout (alternative 1): the use of soft engineering and Sustainable Drainage Systems (SUDS)

ANALYSIS OF THE SIGNIFICANCE OF IMPACTS ON BIODIVERSITY AND ECOLOGICAL PROCESSES

PHASE	IMPACTS		PROBABILITY	DURATION	EXTENT	MAGNITUDE	SIGNIFICANCE
construction	Soil erosion and sedimentation.	Without mitigation	5	3	2	8	80 (high)
		With mitigation	4	3	2	6	54 (moderate)
operational	Soil erosion and sedimentation.	Without mitigation	4	5	2	6	66 (high)
		With mitigation	3	5	1	4	36 (moderate)
construction	Loss of indigenous species and species diversity including protected/threatened species	Without mitigation	5	2	2	8	72 (high)
		With mitigation	4	2	1	6	48 (moderate)
construction	Direct Impacts to aquatic habitat	Without mitigation	5	3	2	4	44 (moderate)
		With mitigation	5	3	2	4	44 (moderate)
operational	Impacts to aquatic habitat (alien encroachment)	Without mitigation	3	3	2	4	32 (moderate)
		With mitigation	3	2	2	4	28 (low)
construction	Hydrological impacts	Without mitigation	3	2	2	8	48 (moderate)

		With mitigation	3	2	2	6	42 (moderate)
operational	Hydrological impacts	Without mitigation	3	4	2	6	54 (moderate)
		With mitigation	3	4	2	6	54 (moderate)
construction	Reduction in wetland vegetation	Without mitigation	5	3	2	6	66 (high)
		With mitigation	4	2	1	6	42 (moderate)
operational	Reduction in wetland vegetation	Without mitigation	4	4	1	4	36 (moderate)
		With mitigation	3	2	1	2	12 (very low)
construction	Degradation of wetland areas	Without mitigation	4	5	2	8	88 (high)
		With mitigation	3	4	1	6	48 (moderate)
operational	Degradation of wetland areas	Without mitigation	4	5	2	6	66 (high)
		With mitigation	3	5	1	4	36 (moderate)

construction	Pollution of water resources and soil	Without mitigation	5	4	3	8	96 (high)
		With mitigation	4	3	2	6	54 (moderate)
operational	Pollution of water resources and soil	Without mitigation	4	5	2	8	88 (high)
		With mitigation	3	5	1	4	36 (moderate)
construction	Spread of Alien Invasive species	Without mitigation	4	5	3	6	72 (high)
		With mitigation	3	5	2	4	44 (moderate)
operational	Spread of Alien Invasive species	Without mitigation	4	5	2	4	44 (moderate)
		With mitigation	3	5	1	2	18 (low)
construction	Disturbance to fauna and livestock	Without mitigation	4	2	1	4	28 (low)
		With mitigation	3	2	1	2	12 (very low)

ANALYSIS OF THE SIGNIFICANCE OF IMPACTS ON SOCIAL AND SOCIO-ECONOMIC ENVIRONMENT

PHASE	IMPACT		PROBABILITY	DURATION	EXTENT	MAGNITUDE	SIGNIFICANCE
construction	Increased air & dust levels	Without mitigation	5	2	1	6	48 (moderate)
		With mitigation	3	2	1	4	24 (low)
construction	Road safety & Traffic	Without mitigation	4	2	1	4	28 (low)
		With mitigation	3	2	1	2	12 (very low)
construction	Noise pollution	Without mitigation	5	2	1	8	64 (high)
		With mitigation	4	2	1	6	42 (moderate)

POSITIVE IMPACTS

PHASE	IMPACT	PROBABILITY	DURATION	EXTENT	MAGNITUDE	SIGNIFICANCE
construction	Empowerment of the local community members living in the area relating to temporary employment opportunities	4	2	2	6	48 (Highly beneficial)
operational	Improvements to the P254/1 Road itself will generate direct and indirect economic impacts to the local and regional economy.	3	2	2	4	28 (Moderately beneficial)
operational	Improvement on the current situation, both in terms of improved air quality and vegetation survival as a result of reduced dust levels.	5	3	2	6	66 (Very highly beneficial)
operational	Removal of alien vegetation	3	2	2	6	42 (Highly beneficial)