

ASSESSMENT OF ALTERNATIVES

1. IDENTIFYING ALTERNATIVES

The IEM procedure (Department of Environmental Affairs) stipulates that the environmental investigation needs to consider feasible alternatives for proposed developments. This means that for anyone development proposed there should consist of a number of possible proposals or alternatives for accomplishing the same objectives or meeting the same need. These guidelines suggest that alternatives be evaluated according to the following criteria:

- location,
- demand,
- activity,
- process,
- scheduling, and
- input.

The environmental assessor embarked on an extensive analysis of "feasible" alternatives as part of this Environmental Impact Study - an account of the alternatives that have been considered, is provided below.

Alternatives for the project, as well as for project design, were evaluated according to the guidelines provided by the Department of Environmental Affairs.

A number of alternatives have come to light - some alternatives were already known and some came to light during the specialist investigations that have been conducted. Hereunder a description is given of such feasible alternatives.

Alternatives are discussed in the following manner;

- the extent and significance of each identified environmental impact (only "significant issues"), will be elaborated upon, and
- the possibility for mitigation of each identified environmental impact will be elaborated upon.

In each instance below, the identified alternatives that are provided are linked to a number of significant potential impacts that might result from the proposed development.

For clarification purposes, the writer will first define the following terms, in order that the reader has a clear understanding what is meant by the terms **alternative & mitigation**.

Alternative: A possible course of action, in place of another, that would meet the same purpose and need (of a proposal). Alternative proposals can refer to any of the following but are not limited to:

- alternative sites for development,
- alternative projects for a particular site,
- alternative site layouts,
- alternative designs,
- alternative processes,
- alternative materials.

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Mitigation: The implementation of practical measures to reduce adverse impacts or enhance beneficial impacts of a proposed action. Proposed mitigation measures can influence (reduce) the significance of an impact (if designed and implemented correctly). Mitigation should specify how, where and when measures to reduce adverse impacts or enhance beneficial impacts, should be implemented.

2. LOCATION/SITE ALTERNATIVES

2.1. Introduction

Location alternatives were considered on account of the following impacts that might result from the establishment of the proposed filling station:

- **Impact / Issue:** Impacts resulting from potential damage to fauna & flora.
- **Impact / Issue:** Impacts upon the visual environment (visual resource) and "sense of place".
- **Impact / Issue:** Various impacts resulting from development within floodline area.

The extent of the above impacts is respectively: **Immediate, Immediate adjacent areas, Site.**

The significance of the above impacts are respectively: **Medium, Medium, Medium.**

2.2. Feasible alternatives

Several challenges had to be overcome when initially identifying/selecting a site for the proposed development. The main challenge was finding a site that could be developed without,

- unnecessarily stressing the environment,
- unnecessarily eroding the visual resource of the property,
- inducing negative impacts on adjacent properties,
- undertaking a development that is not economically viable.

The size of the site also had to be sufficient in order that a viable development could be undertaken and the site had to have access to the provision of engineering services.

The site to which this application applies meets all of the above challenges, as:

- There is an existing access road and electricity is already available on site,
- enough space for the filling station to be viable, is available (sufficient land is available),
- the condition of the site (in terms of geo-technical suitability), is acceptable,
- the proposed development is in concert with the policy of the local authority,
- negative impacts on adjacent properties resulting from the establishment of the filling station infrastructure will be minimal due to the location of the development,

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- unnecessary stressing/impacting of the environment can be mitigated through the implementation of the recommendations contained in this document.

Alternative positions for the components of the proposed development were considered based on the biophysical attributes of the area where the filling station is to be developed. Amendments to the layout plan were considered/made in order to accommodate the following natural components, viz;

- existing tracks/roads on the property,
- occurrence of engineering services, and
- protected trees.

The site has been classified as having a low conservation importance. The low conservation importance can be summarized as follows:

- The proposed development site has been disturbed by previous development of the adjacent buildings.
- No rare and endangered plants were noted.
- Falls within transformed area and within spatial development plan.

When the different development alternatives were analysed, it came to light that the location of the components of the development (e.g. roads and other communal facilities), are bound to have the same environmental impact, no matter where they are located. In view of this it was decided to provide for the following alternative courses of action in order to minimise impacts on flora;

- Excessive loss of vegetation should be avoided.

3. ACTIVITY ALTERNATIVES

3.1. Introduction

Activity alternatives were considered on account of the following impacts that might result from the establishment of the proposed development:

- **Impact / Issue:** Impacts resulting from damage to fauna & flora.
- **Impact / Issue:** Impacts upon the visual environment (visual resource) and "sense of place".
- **Impact / Issue:** Impacts resulting from the generation of waste.
- **Impact / Issue:** Impacts resulting from the generation of traffic.
- **Impact / Issue:** Impacts resulting from the generation of lighting and noise.

The extent of the above impacts is respectively: **Immediate, Immediate adjacent areas, Immediate, Sub-regional and Immediate adjacent.**

The significance of the above impacts are respectively: **Medium, Medium and Medium-High, Low and Low-Medium.**

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3.2. Feasible alternatives

Construction activity:

During the construction phase there are "activity alternatives" that should be considered, in order to limit the impact on the environment.

The most significant impact upon the biological environment will manifest during the construction period when disturbance of the natural environment will take place. As an alternative to conventional construction methods, it is proposed that an "Environmental Management Programme for construction" be compiled that can provide guidelines to contractors on alternative ways of conducting construction activities and to lessen the overall impact of construction.

Alternatives allow people who are not directly involved in the project (e.g. I&APs), to evaluate various aspects of the proposed project and how they were arrived at. It also provides a framework for the relevant authority's (LEDET's) decision-making process. If unforeseen difficulties arise during the construction or operation of the project, re-examination of these alternatives may help to provide rapid and cost-effective solutions.

Contractors should remove all waste generated by themselves during the construction period and it should be disposed of at a suitable solid waste disposal site - "dumping in the bush" should not take place.

Activity alternatives during operational phase:

Activity alternatives (for the operational phase) were identified by the respective specialist studies that have been conducted.

a) Solid waste & sewerage

The diesel depot waste will mainly consist of households and it will be collected in waste bins. The proposed development will not produce hazardous waste. Because of the remoteness of application property the Ba-Phalaborwa Municipality currently provides no refuse removal services although from discussions with the relevant officials at the municipality, the municipality is planning to institute such a service to the area. The closest refuse dumping site is the Ba-Phalaborwa dumping site in Phalaborwa town.

The proposed development area has no municipal sewer point. It is proposed herewith that onsite sewage treatment be provided. A closed system will be implemented, such as a Lilliput System.

b) Alternative Energy Sources

There is currently Eskom power on site.

c) Transport, traffic noise and vibration:

The main access to the proposed development will be obtained via the existing access road. The subject property is on the southern side of the road.

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Options which can serve to reduce this impact are:

- introduce measures to lower the speeds of vehicles driving along the access road,
- the entrance gate to the proposed development should not be located directly adjacent to the main road (the entrance gate should be removed from the road somewhat in order to accommodate cars waiting to gain access into the proposed development).
- allow construction vehicles to enter and leave the site only at designated points.

4. PROCESS ALTERNATIVES

No process alternatives were considered.

5. INPUT ALTERNATIVES

5.1. Introduction

Input alternatives were considered on account of the following impact that might result from the establishment of the filling station:

- **Impact / Issue:** Impact upon the visual environment (visual resource) and "sense of place".

The extent of the above impact is: **Immediate adjacent areas.**

The significance of the above impact is: **Low to medium.**

5.2. Feasible alternatives

Alternatives relating to the use of alternative materials were identified during the conducting of the environmental impact assessment study. Alternatives relating to the following were identified:

- Colour choices when painting buildings, roofs and other structures in the development should associate with the natural surroundings e.g. brown, grey green, buff or olive. Colours should be matt, not glossy so as to reduce reflection and glare from surfaces. The visual quality of these types of developments is typically high, however this can be improved by the use of this mitigation measure.

Options that exist with regards to inputs include;

- Communal facilities in the proposed development should be architect designed so as to blend in with the prevailing architectural character of the area,
- Only permitting the planting of indigenous trees within the development area,
- Use of plants for landscaping which have low water requirements (indigenous plants normally require less watering compared to imported varieties).

6. DEMAND ALTERNATIVES

No demand alternatives were considered.

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7. SCHEDULING ALTERNATIVES

7.1. Introduction

Scheduling alternatives were considered on account of the following impact that might result from the construction of the filling station:

- **Impact / Issue:** Impact resulting from damage to fauna & flora.

The extent of the above impact is: **Immediate**.

The significance of the above impact is: **Medium**.

7.2. Feasible alternatives (timing of the project activities)

Hereunder the writer will allude to the "timing" of the project actions and its environmental implications.

It is proposed that the following conditions (mitigation measures) be included into the EMP of the project;

- The timing of construction activities must take into account the likely impacts on the environment.
- The timing of construction should coincide with seasons in which environmental elements are at smallest risk.
- Site clearing/preparation (prior to construction), should be scheduled to coincide with the flowering period of most protected species of plants. Special care needs to be taken in order for these species not to be disturbed by the development.

8. NO ACTION ALTERNATIVE

The "no-action" alternative was considered on account of the following impact that might result from the establishment of the proposed filling station:

- **Impact / Issue:** Impact resulting from damage to the biological environment.

The extent of the above impact is: **Immediate**.

The significance of the above impact is: **Medium**.

In this instance the "no action" option was considered as an alternative. It was found that mitigation measures can reduce the significance of impacts if designed and implemented correctly. Therefore, the "no action" alternative was found not to be a feasible alternative.

The consequences of "non-establishment" of the expansion of the diesel depot in Tzaneen:

- a) The expansion of the diesel depot will result in the creation of more job opportunities for the local people. Such job creation will take place in the construction phase as well as the operational phase (general operation of the filling station).
- b) The construction period will require ±10 people over a 1 month period. The operational phase will employ fewer people.

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The non-establishment of the proposed development would mean that these opportunities would not be created for local contractors and local civic engineers. Further, a substantial amount of job opportunities will be lost for the local people if the development does not take place.

- c) The potential for the proposed development to have a positive impact on the economic and social environments/sectors stems from the need that presently exists for diesel in the fast growing Tzaneen.

The consequences of the “no-go” option or the “non-establishment” of the proposed expansion would mean that this need for diesel would not be addressed. The need for diesel will remain and will in fact only increase. Therefor it can be stated that the proposed development would provide in much needed diesel.

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