

## 6. APPROACH TO ENVIRONMENTAL IMPACT ASSESSMENT

As part of the overall project planning process, this Environmental Impact Assessment aims to achieve the following:

- to provide an overall assessment of the social and biophysical environments of the area affected by the proposed establishment of a Concentrating Solar Power Plant and associated infrastructure;
- to undertake a detailed assessment of the farm Olyvenhouts Drift in terms of environmental criteria;
- to identify and recommend appropriate mitigation measures for potentially significant environmental impacts; and
- to undertake a fully inclusive public participation process to ensure that I&AP issues and concerns are recorded.

### 6.1. Specialist Studies

In undertaking the Environmental Impact Assessment, Bohlweki Environmental were assisted by a number of specialists in order to comprehensively identify both potentially positive and negative environmental impacts (social and biophysical) associated with the project, evaluate the significance of the identified impacts, and propose appropriate mitigation measures, where required. The specialist team identified and evaluated the potential impacts for the nominated preferred site i.e. farm Olyvenhouts Drift. These specialists and their fields of expertise are outlined in Table 6.2.

**Table 6.2:** Specialists and their fields of expertise

<b>Name and Organisation</b>	<b>Field of Study</b>
Johan du Preez of MDA Consulting	Ecological Assessment (flora & fauna)
Jon Smallie of the Endangered Wildlife Trust	Avifauna Assessment
MetroGIS	Visual Impact Assessment and GIS mapping
Arthur Chapman and Jude Cobbing of the CSIR	Assessment of surface and groundwater impacts
Derek Cosijn of Jongens Keet and Associates	Noise Impact Assessment
Dawid de Waal of Afrosearch	Social Impact Assessment (SIA)

All of these specialist studies were undertaken within the EIA phase of the project, which concentrated on the preferred site (farm Olyvenhouts Drift), as identified during the Scoping phase.

In order to evaluate issues to subsequently assign an order of priority, it was

necessary to identify the characteristics of each potential issue/impact:

- the *nature*, which shall include a description of what causes the effect, what will be affected and how it will be affected;
- the *extent*, wherein it will be indicated whether the impact will be limited to the immediate areas or site of the development activity (local), limited to the immediate surroundings, sub-regional, regional, and/or national;
- the *duration*, wherein it will be indicated whether the lifetime of the impact will be of a short duration (0-5 years), medium-term (5 – 15 years), long-term (> 15 years) or permanent;
- the *probability*, which shall describe the likelihood of the impact actually occurring, indicated as improbable (low likelihood), probable (distinct possibility), highly probable (most likely) or definite (impact will occur regardless of any preventative measures);
- the *significance*, which shall be determined through a synthesis of the characteristics described above and can be assessed as low, medium or high.

As Eskom have the responsibility to avoid or minimise impacts and plan for the management of impacts (in terms of the EIA Regulations), the mitigation of significant impacts was discussed and conclusions and recommendations regarding the preferred sites were drawn.

## **6.2. Significance Rating Scales**

Although specialists are given free reign on how they conducted their research and obtained information, they are requested to provide the reports in a specific layout and structure, so that a uniform specialist report volume can be produced.

To ensure a direct comparison between various specialist studies, six standard rating scales are defined and used to assess and quantify the identified impacts. The rating system used for assessing impacts (or when specific impacts cannot be identified, the broader term issue should apply) is based on three criteria, namely:

- The relationship of the impact/issue to temporal scales (Box 6.1);
- The relationship of the impact/issue to spatial scales (Box 6.2); and
- The severity of the impact/issue (Box 6.3).

These three criteria are combined to describe the overall importance rating, namely the significance (Box 6.4). In addition, the following parameters are used to describe the impact/issues:

- The risk or likelihood of the impact/issue occurring (Box 6.5); and

- The degree of confidence placed in the assessment of the impact/issue (Box 6.6).

### 6.2.1. Temporal Scale

The temporal scale defines the significance of the impact at various time scales, as an indication of the duration of the impact.

**Box 6.1:** Temporal scale used in assessing issues.

- Short term - less than 5 years. Many construction phase impacts will be of a short duration.
- Medium term - between 5 and 15 years.
- Long term - between 15 and 30 years
- Permanent - over 30 years and resulting in a permanent and lasting change that will always be there.

### 6.2.2. Spatial Scale

The spatial scale defines physical extent of the impact.

**Box 6.2:** Spatial scale used in assessing issues.

- *Individual* - this scales applies to person/s in the area.
- *Household* - this scales applies to households in the area.
- *Localised* - small scale impacts - from a few hectares in extent to e.g. the local district area.
- *Regional* - Provincial
- *National* - South Africa.
- *International*

### 6.2.3. Severity/Beneficial Rating Scale

The severity scale is used in order to scientifically evaluate how severe negative impacts would be, or how beneficial positive impacts would be on a particular affected system or a particular affected party. It is a methodology that attempts to remove any value judgements from the assessment, although it relies on the professional judgement of the specialist.

**Box 6.3:** Severity/beneficial scale use in the EIA.

<p><b>Very severe</b> An irreversible and permanent change to the affected system(s) or party(ies) which cannot be mitigated. For example, the permanent change to topography resulting from a quarry.</p>	<p><b>Very beneficial</b> A permanent and very substantial benefit to the affected system(s) or party(ies), with no real alternative to achieving this benefit. For example, the creation of a large number of long term jobs.</p>
<p><b>Severe</b> Long term impacts on the affected system(s) or party(ies) that could be mitigated. However, this mitigation would be difficult, expensive or time consuming or some combination of these. For example, the clearing of forest vegetation.</p>	<p><b>Beneficial</b> A long term impact and substantial benefit to the affected system(s) or party(ies). Alternative ways of achieving this benefit would be difficult, expensive or time consuming, or some combination of these. For example, an increase in the local economy.</p>
<p><b>Moderately severe</b> Medium to long term impacts on the affected system(s) or party (ies), that could be mitigated. For example constructing a narrow road through vegetation with a low conservation value.</p>	<p><b>Moderately beneficial</b> A medium to long term impact of real benefit to the affected system(s) or party(ies). Other ways of optimising the beneficial effects are equally difficult, expensive and time consuming (or some combination of these), as achieving them in this way. For example a slight improvement in the (local) roads.</p>
<p><b>Slight</b> Medium or short term impacts on the affected system(s) or party(ies). Mitigation is very easy, cheap, less time consuming or not necessary. For example, a temporary fluctuation in the water table due to water abstraction.</p>	<p><b>Slightly beneficial</b> A short to medium term impact and negligible benefit to the affected system(s) or party(ies). Other ways of optimising the beneficial effects are easier, cheaper and quicker, or some combination of these. For example, a slight increase in the amount of goods available for purchasing.</p>
<p><b>No effect</b> The system(s) or party(ies) is not affected by the proposed development.</p>	<p><b>Don't know/Can't know</b> In certain cases it may not be possible to determine the severity of an impact.</p>

**6.2.4. Significance Scale**

The environmental significance scale is an attempt to evaluate the importance of a particular impact. This evaluation needs to be undertaken in the relevant context, as an impact can either be ecological or social, or both. The evaluation of the significance of an impact relies heavily on the values of the person making the judgement. For this reason, impacts of especially a social nature need to reflect the

values of the affected society. A six-point significance scale has been applied (see Box 6.4).

**Box 6.4:** The significance rating scale

**VERY HIGH**

These impacts would be considered by society as constituting a major and usually permanent change to the (natural and/or social) environment, and usually result in **severe** or **very severe** effects, or **beneficial** or **very beneficial** effects.

**Example:** The loss of a species would be viewed by informed society as being of VERY HIGH significance.

**Example:** The establishment of a large amount of infrastructure in a rural area, which previously had very few services, would be regarded by the affected parties as resulting in benefits with a VERY HIGH significance.

**HIGH**

These impacts will usually result in long term effects on the social and/or natural environment. Impacts rated as HIGH will need to be considered by society as constituting an important and usually long term change to the (natural and/or social) environment. Society would probably view these impacts in a serious light.

**Example:** The loss of a diverse vegetation type, which is fairly common elsewhere, would have a significance rating of HIGH over the long term, as the area could be rehabilitated.

**Example:** The change to soil conditions will impact the natural system, and the impact on affected parties (in this case people growing crops on the soil) would be HIGH.

**MODERATE**

These impacts will usually result in medium- to long-term effects on the social and/or natural environment. Impacts rated as MODERATE will need to be considered by society as constituting a fairly important and usually medium term change to the (natural and/or social) environment. These impacts are real but not substantial.

**Example:** The loss of a sparse, open vegetation type of low diversity may be regarded as MODERATELY significant.

**Example:** The provision of a clinic in a rural area would result in a benefit of MODERATE significance.

**LOW**

These impacts will usually result in medium to short term effects on the social and/or natural environment. Impacts rated as LOW will need to be considered by the public and/or the specialist as constituting a fairly unimportant and usually short term change to the (natural and/or social) environment. These impacts are not substantial and are likely to have little real effect.

**Example:** The temporary change in the water table of a wetland habitat, as these systems are adapted to fluctuating water levels.

**Example:** The increased earning potential of people employed as a result of a development would only result in benefits of LOW significance to people who live some distance away.

### **NO SIGNIFICANCE**

There are no primary or secondary effects at all that are important to scientists or the public.

**Example:** A change to the geology of a particular formation may be regarded as severe from a geological perspective, but is of NO significance in the overall context.

In many cases scientists have to produce an assessment in the absence of all the relevant and necessary data. Where there is incomplete or unavailable information, it is important to always make clear that certain information is lacking, if the incomplete information is essential to a reasoned choice among alternatives.

There are two acceptable procedures to follow to compensate for a shortage of data:

- **It is more important to identify likely environmental impacts than to precisely evaluate the more obvious impacts**  
All assessors (the different specialists) try to evaluate all the significant impacts, recognising that precise evaluation is not possible. It is better to have a *possible* or *unsure* level of certainty on important issues than to be *definite* about unimportant issues (see Box 4.6).
- **It is important to be conservative when reporting likely environmental impacts**  
Because of the fact that assessing impacts with a lack of data is more dependable on your own scientific judgement, the rating on the certainty scale cannot be too high. If the evidence for a potential type of impact is not definitive in either direction, the conservative conclusion is that the impact **cannot be ruled out with confidence**, not that the impact is not proven. It is for these reasons that a *degree of certainty* scale has been provided, as well as the categories DON'T KNOW and CAN'T KNOW.

### 6.2.5. Risk or likelihood

The risk or likelihood of all impacts taking place as a result of project actions differs. There is no doubt that some impacts would occur if the road goes ahead, but certain other (usually secondary) impacts are not as likely, and may or may not result from the road. Although these impacts may be severe, the likelihood of them occurring may affect their overall significance and will be taken into account.

**Box 6.5:** The risk or likelihood scale.

- *Very unlikely to occur* – the chance of these impacts occurring is extremely slim, e.g. an earthquake destroying a bridge.
- *Unlikely to occur* – the risk of these impacts occurring is slight. For example an impact such as an increase in alcoholism and associated family violence as a result of increased wealth is unlikely to occur
- *May occur* – the risk of these impacts is more likely, although it is not definite, for example the chance that a road accident may occur during the construction phase
- *Will definitely occur* – there is no chance that this impact will not occur, for example the clearing of vegetation.

### 6.2.6. Degree of confidence or certainty

It is also necessary to state the degree of certainty or confidence with which one has predicted the significance of an impact. For this reason, a 'degree of certainty' scale has been provided to enable the reader to ascertain how certain we are of our assessment of significance:

**Box 6.6:** The degree of certainty or confidence used in this EIA.

- Definite:** More than 90% sure of a particular fact. To use this one will need to have substantial supportive data.
- Probable:** Over 70% sure of a particular fact, or of the likelihood of that impact occurring.
- Possible:** Only over 40% sure of a particular fact or of the likelihood of an impact occurring.
- Unsure:** Less than 40% sure of a particular fact or the likelihood of an impact occurring.

### **6.3. Assumptions and Limitations**

The assumptions and limitations on which this study has been based include:

- *Assumptions:*
  - \* All information provided by Eskom and I&APs to the Environmental Team was correct and valid at the time it was provided. The consultants and specialist investigators do not accept any responsibility in the event that additional information comes to light at a later stage of the process.
  - \* The nominated preferred site identified in the Environmental Scoping Study is technically and economically viable.
  - \* All data from unpublished research is valid and accurate.
  - \* It is not always possible to involve all interested and affected parties individually. Every effort was, however, made to involve as many broad based representatives of the stakeholders in the nominated area. The assumption has, therefore, been made that those representatives with whom there has been consultation, are acting on behalf of the parties which they represent.
  
- *Limitations:*
  - \* This report and its investigations are project-specific, and consequently the environmental team did not evaluate any other power source alternatives.