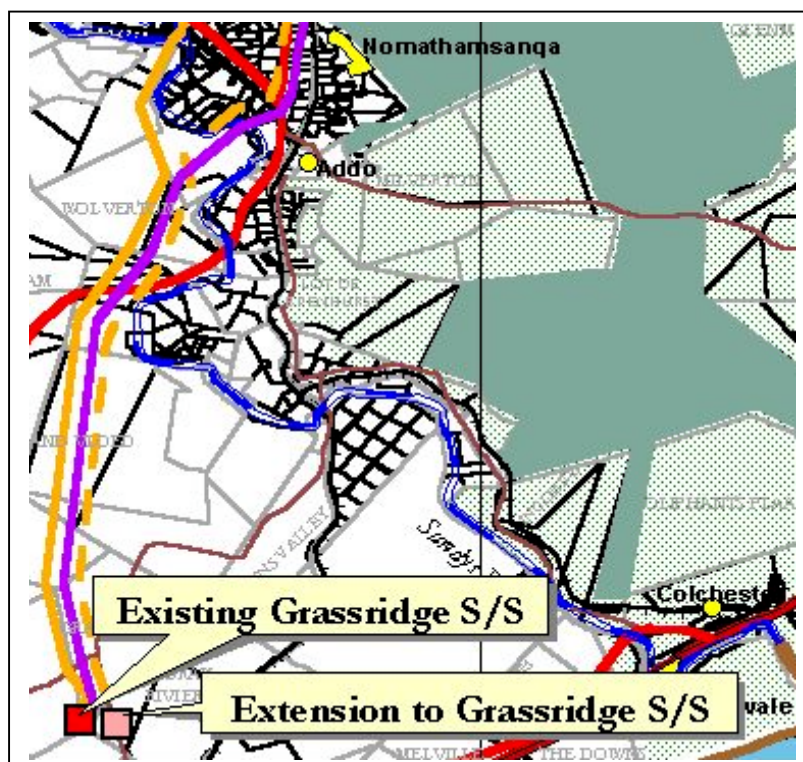


## 5. ASSESSMENT OF POTENTIAL IMPACTS ASSOCIATED WITH THE PROPOSED EXTENSION OF GRASSRIDGE SUBSTATION

A “mirror-image” of the existing Grassridge Substation is proposed to be constructed on the eastern side of the existing Grassridge Substation (Figure 5.1). This proposed substation is required to accommodate all new planned infrastructure, and to ensure reliability and robustness of the substation. The total footprint area required for the extension to the substation is estimated at 49 ha (400 m x 700 m).



**Figure 5.1:** The extension to Grassridge Substation is proposed to be located on the eastern side of the existing substation

Potential impacts associated with the construction of this substation extension are discussed below.

### 5.1. Potential Impacts on Agricultural Potential

The site proposed for the extension to Grassridge Substation was historically utilised for cattle grazing, but is currently not utilised for agricultural purposes.

### 5.1.1. *Potential Impacts*

The extension of Grassridge Substation may potentially result in the future loss of agricultural land and agricultural potential. However, this land is earmarked for the development of the Coega IDZ, and would therefore not be available for agricultural purposes in the future. Therefore, the extension to Grassridge Substation is not anticipated to have a significant impact on agricultural land and agricultural potential.

**Table 5.1:** Potential impacts on agricultural potential associated with the extension of Grassridge Substation

Nature	Extent	Duration	Probability	Significance	Status
Agricultural potential and agricultural land	Local	Permanent	Unlikely	None	None

## 5.2. *Potential Impacts on Flora*

The proposed site for the extension of Grassridge Substation falls within the Bontveld. This vegetation type is located on soils of a generally poor quality, and occurs in regions with round-the-year rainfall. Rich fynbos elements are characteristic of this vegetation type. Agricultural potential within this vegetation type is limited due to the calcareous nature of the soils.

### 5.2.1. *Potential Impacts on Red Data and Protected Flora*

The extension of the existing Grassridge Substation will result in the total clearing of approximately 4 ha of grassy dwarf shrubland in the Bontveld. This vegetation type contains a large number of protected flora species (refer to Appendix G). As the loss of these species will be permanent, this impact is anticipated to be of high significance. This impact will be restricted to the substation site, and will therefore be localised.

No Red Data flora species were recorded within the area proposed for the substation site.

### 5.2.2. *Potential Impacts on the Occurrence of Alien Species*

The minimum standards implemented by Eskom during the construction of a new substation include the clearance of all alien vegetation species within the substation area. This is achieved through the use of appropriate cutting and treatment with herbicides. During the operation and

maintenance of the substation, regrowth is cut and treated with an appropriate herbicide in order to prevent recolonisation of the area by these species. Therefore, the potential impact associated with the construction of the proposed substation in terms of alien vegetation species will be positive and will be of a long-term nature.

**Table 5.2:** Potential impacts on flora associated with the extension of Grassridge Substation

Nature	Extent	Duration	Probability	Significance	Status
Endangered, Red Data species	Local	Permanent	Unlikely	High	Negative
Protected species	Local	Permanent	Highly likely	High	Negative
Occurrence of alien vegetation	Regional	Long-term	Definite	High	Positive

### 5.2.3. Recommendations

- *Sensitive Species:*

A detailed survey of the final substation position, as well as any additional access roads should be undertaken by a qualified vegetation specialist prior to the commencement of construction activities in order to ensure that no Red Data or protected species are located within these areas. Where Red Data or protected plant species are identified within the proposed construction area, various mitigation measures can be implemented:

- \* Many sensitive plant species can be successfully relocated to similar habitats. This should be undertaken in the winter months as far as possible. This has proved to be successful during the current plant relocation exercise being undertaken within the Coega IDZ. Any plants which require relocation as a result of the construction of the proposed substation could be incorporated into those areas already established by the Coega Development Corporation (Pty) Ltd (CDC).
- \* Protected species can be successfully relocated to a nursery with the possibility of using them to rehabilitate mining and other disturbance sites in future. This has been a positive feature of the rehabilitation programme of PPC, who have funded research (Watson *et al.*, 1999) to rehabilitate mine sites in the Bontveld. Establishing and maintaining a nursery will provide plants for this purpose. The feasibility of such a nursery is currently being investigated by the CDC, to be operated on a concession basis.
- \* Where it is not desirable, or possible to successfully relocate sensitive plant species to other habitats or to a nursery (e.g. low-growing endemic geophytes such as *Euphorbia* and *Gasteria* species) due to sensitivities of the species with regards to

habitat preferences, the disturbance of any protected species should be undertaken under the supervision of a suitably qualified vegetation specialist.

- \* Standard practices implemented by Eskom (and included as part of all contracts) include a number of mitigation measures which will limit the clearance of vegetation and construction of access roads in sensitive areas.
- *Mitigation Factors to Minimise Re-colonisation of Alien Vegetation:*  
Mitigation measures already implemented by Eskom (as discussed above) must be implemented to ensure that the potential impacts associated with alien invasive vegetation is ameliorated. In addition, post-fire herbicide treatment should be implemented, particularly for woody species.

Appropriate site-specific management measures should be detailed within an Environmental Management Plan (EMP) for construction, operation and maintenance of the substation.

### 5.3. Potential Impacts on Terrestrial Fauna

The site proposed for the extension of Grassridge Substation is considered to be disturbed as a result of historical agricultural practices on the land (i.e. cattle grazing), as well as due to the existence of the existing Grassridge Substation, which ensures that large- and medium-sized fauna avoid the area. The habitat in the area of the proposed substation extension is not considered to be of a high quality, and is of a low significance to the faunal assemblage of the study area.

#### 5.3.1. Potential Impacts

As a result of the disturbed nature of the area proposed for the extension to Grassridge Substation, impacts related to the fauna occurring in this area are considered to be of a low significance.

**Table 5.3:** Potential impacts on terrestrial fauna associated with the extension of Grassridge Substation

Nature	Extent	Duration	Probability	Significance	Status
Habitat Destruction	Local	Permanent	Probable	Low	Negative
Sensitive Fauna Species	Local	Permanent	Unlikely	Low	Negative

### 5.3.2. Recommendations

The use of existing access roads to the Grassridge Substation area will minimise cut-lines and additional access roads. Appropriate site-specific management measures should be detailed within an EMP for construction, operation and maintenance of the substation.

## 5.4. Potential Impacts on Avifauna

Threatened and near-threatened species have been recorded from the area surrounding the proposed substation include the martial eagle, Stanley’s bustard, the African marsh harrier, the secretary bird, and the blue crane. No breeding populations of these species are known from the area. In addition, with the exception of Stanley’s bustard, all are reported as uncommon visitors to the region.

### 5.4.1. Potential Impacts

No significant new impacts are expected to occur as a result of the extension of Grassridge Substation, due to the permanent impacts that are already evident in the area as a result of the existing Grassridge Substation. However, impacts are expected to occur during the construction period due to localised disturbance of the area. This impact is anticipated to be of a short-term nature and of low significance.

**Table 5.4:** Potential impacts on avifauna associated with the extension of Grassridge Substation

Nature	Extent	Duration	Probability	Significance	Status
During construction	Local	Short-term	Likely	Low	Negative
During operation	None	-	None	-	-

### 5.4.2. Recommendations

In order to minimise potential impacts on avifauna during the construction phase, appropriate site-specific management measures should be detailed within an EMP for construction of the substation. The use of existing access roads will reduce the further disturbance of habitats in the area, thus minimising impacts on avifauna species.

## **5.5. Potential Visual Impacts**

Any change in a local view through the introduction of a new development in the line-of-sight can be considered as a visual impact. The significance of this visual impact is influenced by the nature or “quality” of the affected landscape, the degree of change in the landscape which occurs as a result of the development, as well as by the landscape’s capacity to absorb the impact. The assessment of a visual impact is highly subjective, and depends largely on the views of the individual and the aesthetic value of the view. Visual impacts are usually considered most significant when the development is not of a similar nature to other developments in the area, or is readily viewed from areas of public access, paths, roads and view points, or in areas which are characterised by significant natural features.

### ***5.5.1. Development Feature Characteristics of the Study Area***

- *Land use:*

The proposed extension of Grassridge Substation falls within the proposed Coega IDZ area, within which the land use is largely to be for industrial use. The proposed future land use of this area differs substantially from the current peri-urban setting and rural quality.

- *Existing development:*

Existing infrastructure within the study area includes the existing Grassridge Substation, the existing 400 kV and 220 kV Transmission lines into Grassridge Substation, and existing powerlines from the Grassridge Substation. In addition, the Coega IDZ area is proposed to be developed into an area mainly for industrial use associated with the Port of Ngqura. The degree of visibility in this relatively flat landscape is influenced largely by distance as well as atmospheric conditions at the coast.

The existing Grassridge Substation and existing linear infrastructure within the study area imposes an existing visual impact on the study area. In addition, the proposed industrial activities within the Coega IDZ area is anticipated to have a visual impact on the local area.

### ***5.5.2. Assessment Methodology***

Maps indicating the visibility of the proposed substation have been calculated from a digital elevation model (DEM) and provide an indication of positions within the study area from which the

feature is visible (viewsheds). In using a DEM the maps are based on topography alone. They, therefore, represent the worst-case scenario as they do not account for buildings, vegetation or other man-made structures which may obscure views of the development from viewers. The extent of the visibility of an object in the landscape diminishes at an exponential rate as the distance between the observer and the object increases (Hull and Bishop, 1988).

Viewsheds indicate positions within a study area from which a development feature is visible. They are useful for analysing the visual impact of point features, such as the towers associated with the linear powerline feature. The approach followed was to calculate the viewsheds associated with the substation, and then to provide a graduated scale of potential visibility. The graduated scale reflects the number of points along the feature which are visible from any specific location within the study area.

In order to assess the potential visual impact of the proposed substation, the following criteria were used in addition to the viewshed analysis:

- Character quality or value of the existing view or viewpoint – as determined by existing land use, topographic features, vegetation, etc.
- Visibility of development/visual intrusiveness – visibility of the substation based on sight and distance of critical viewpoints, as well as the design and extent of the development feature .
- Visual absorption capacity – the potential of the landscape to absorb the proposed development.
- Compatibility with surrounding land uses.
- Scale of the development relative to local elements.
- Critical views.

Impacts associated with the proposed substation extension were evaluated using the set of criteria described in Table 5.5 overleaf.

**Table 5.5:** Visual assessment criteria ratings

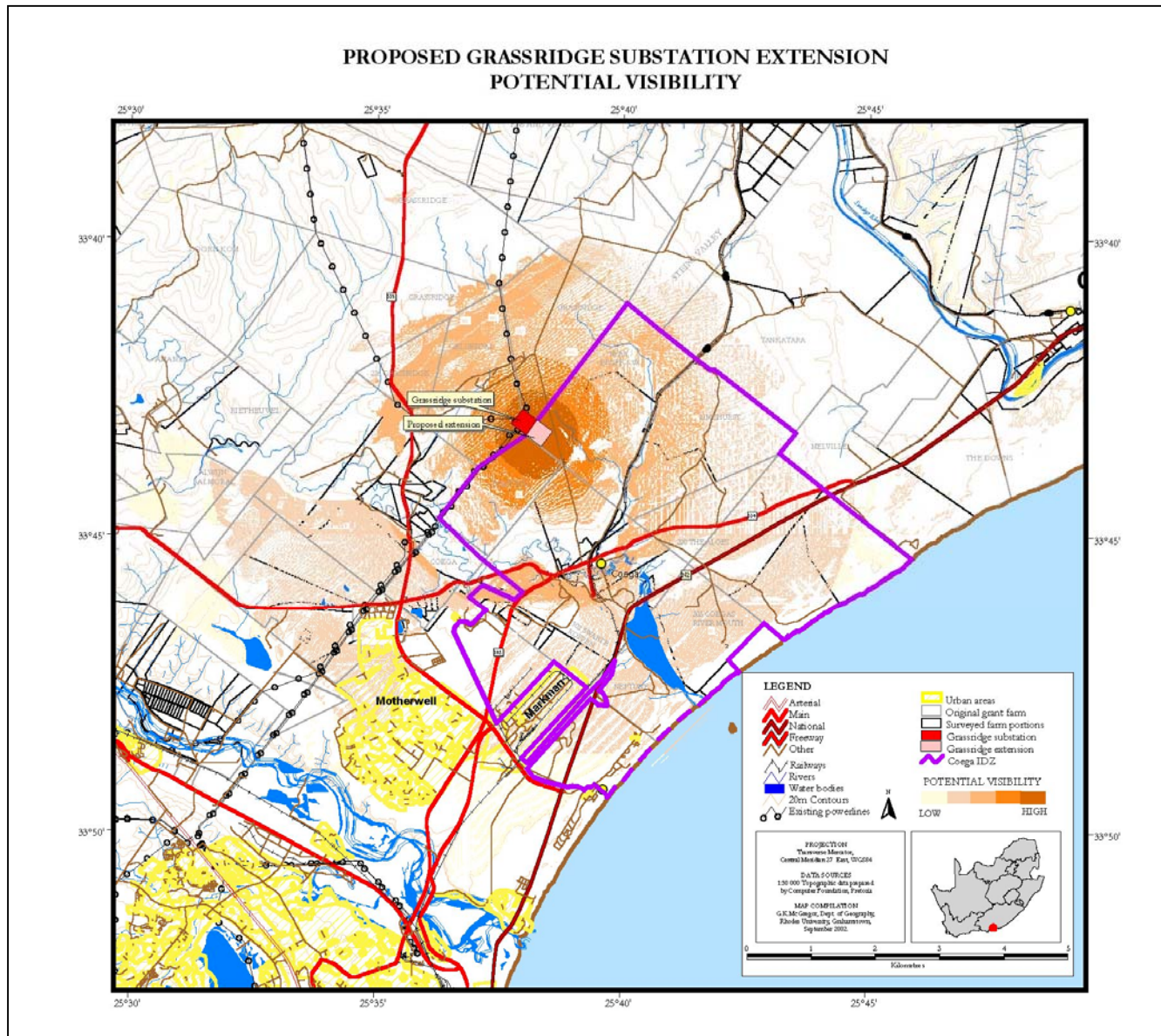
Criteria	High Impact	Moderate Impact	Low Impact
Character, quality or value of the existing view or viewpoint	The development is set within a very attractive setting, which is largely uninfluenced by other developments of a similar nature.	The development is set within an area which has some aesthetic and visual merit, which is partially influenced by other developments of a similar nature.	The development is set in an area which has little or no aesthetic value and is largely influenced by other developments of a similar nature.
Visual intrusiveness of the proposed development	The development is visible from many places beyond 1 km.	The development is visible from within 1 km, but is partially obscured by intervening objects.	The development is only partly visible or not visible at all from within 1 km.
Visual absorption capacity	The development is not visually accepted by the surrounding landscape due to the landscape being of uniform texture, flat slope and having limited vegetation cover.	The development is visually accepted into the surrounding landscape less easily due to the landscape being less diverse in terms of landform, texture and vegetation.	The development is visually easily accepted into the landscape due to the landscape being diverse in terms of landform, texture and vegetation.
Compatibility with surrounding land uses	The development appears totally out of place with regards to the surrounding area.	The development can be accommodated within the surrounding area to some degree.	The development can easily be accommodated within the surrounding area.
Scale of development relative to local elements	Vertical variation of the landscape is limited and most elements are related to the human and horizontal scale.	A landscape with some horizontal and vertical elements in some contrast to the human scale.	A landscape which has horizontal and vertical elements in high contrast to the human scale.
Critical views	Views of the development detract from the natural views from private properties or natural areas.	Views of the development partially detract from the natural views from private properties or natural areas.	Views of the development do not detract from the natural views of private properties or natural areas.

### 5.5.3. Potential Impacts

- *Visual intrusiveness:*

The visibility of the substation from the majority of study area is low to negligible. The visual impact associated with this proposed development will be most noticeable from the surrounding higher lying landscape, as well as from within the Coega IDZ area itself (Figure 5.2). It is not anticipated that the proposed substation would be visible from the proposed GANP. The significance of the impact within the visibility zone is considered to be high, as this infrastructure is steel-intensive and considered to be visually intrusive.





**Figure 5.2:** Potential visibility of the proposed extension of Grassridge Substation

- *Degree of view obstruction:*  
The frame-like structure of the substation infrastructure presents a low degree of view obstruction as a result of it not being a solid structure, and allows for blending with background colour/patterns of most landscapes to a large degree. Shortly after erection, once natural weathering of the steel frame has occurred, the towers are typically marginally shiny and reflective.
  
- *Character, quality or value of the existing view or viewpoint and compatibility with the surrounding land use:*  
The study area is currently largely free of heavy urban and industrial development. The majority of the area is sparsely populated and largely characterised by agricultural activities. The existing Grassridge Substation has played a role in pre-determining the character and views for the immediate area. It is not anticipated that the proposed extension of Grassridge Substation will significantly alter the existing character and quality of the area.

**Table 5.6:** Potential visual impacts associated with the extension of Grassridge Substation

Nature	Extent	Duration	Probability	Significance	Status
Visual intrusiveness	Local	Long-term	Probable	High	Negative
Degree of view obstruction	Local	Long-term	Probable	Low	Negative
Character, quality or value and surrounding land use	Local	Long-term	Probable	Low	Negative

## 5.6. Potential Impacts on Archaeological, Cultural and Historical Sites

### 5.6.1. Archaeological Sites

The following archaeological remains are known to occur within the area and may be found:

1. Several reports referred to Earlier Stone Age (approximately 250 000 million years old) stone artefacts in (i) primary and (ii) secondary contexts in the vicinity of Grassridge. The extensive gravel terraces exposed by streams and rivers contain large numbers of flaked cobbles and other debris of stone tool production.
  - (i) One of South Africa's most important Earlier Stone Age finds and excavations was conducted just west of Grassridge, at Amanzi Springs. In a series of spring deposits a large number of stone tools were found *in situ* to a

depth of 3-4 m. Remarkably wood and seed material preserved in the spring deposits, possibly dating to between 250 000 to 800 000 years old.

- (ii) Early Stone tools and handaxes were reported from Coega Kop and also collected previously from the banks of the Coega River and Sundays River (Albany Museum collections). These stone artefacts are in secondary context, and like the river gravels been exposed to large scale disturbance, i.e. roads, farming activities and other human development.
2. Later Stone Age sites (last 20 000 years) of San (Bushmen) hunter-gatherer and Khoekhoen (Khoikhoi) pastoralist origins. The former contain stone tools and food waste which are typical of San hunter-gatherer way of life and the latter contains similar material as well as pottery. These sites may also contain large frequencies of freshwater mussel.
3. Human remains may also be found in the area, either prehistoric or historical.

#### **5.6.2. Historical Sites**

The region has witnessed much activity in historical times, but little material evidence probably survived, except in cases where people were living for a number of years. The remains may include remnants of indigenous kraal settlements, military camps and foundations of buildings and scatters of artefacts, although none of these have been recorded to date.

The following historical activities are known to have occurred in the area:

Dutch hunters who passed through the area in 1702 reported a Khoekhoen settlement in the vicinity of Grassridge/Brakrivier. In November 1776, Anders Sparrman found a community of Cochoqua Khoekhoen (remnants of the Cochoqua who had fled the Cape after their defeat in the second Khoekhoen-Dutch War one hundred years previously) and a group of Gonaqua Khoekhoen living on the Coega River. By this date there were already farms in the area.

### 5.6.3. *Potential Impacts*

It is anticipated that archaeological/historical sites will consist of small scatters of material. The construction of the proposed substation extension should have little effect and impact on heritage sites. It is anticipated that these impacts will be both positive and negative.

A positive impact is that sites previously not known of/identified will be discovered (before or during construction activities), primarily through excavation activities associated with development. Artefacts can be retrieved, and these sites can then be recorded/reported, which will enlarge site records and assist in managing and conserving the region's heritage resources and provide insights for future research.

As cultural heritage resources are non-renewable and economic values cannot be placed on these resources, should damage or loss of these resources occur, potential destruction of the sites is considered as a significant negative impact. Care should, therefore, be taken such that minimal damage occurs to these sites during the construction of access roads, camps, tower sites and during other worker activities. No historical artefacts should be removed by unqualified personnel at any time.

**Table 5.7:** Potential impacts on archaeological, cultural and historical sites associated with the extension of Grassridge Substation

Nature	Extent	Duration	Probability	Significance	Status
Impacts on heritage sites and remains at substation site	Local	Permanent	Likely	Low - Moderate	Negative
Impacts on heritage sites and remains at camp sites	Local	Permanent	Likely	Moderate	Negative

### 5.6.4. *Recommendations*

All archaeological remains, artificial features and structures older than 100 years, and historic structures older than 60 years are protected by the National Heritage Resources Act (No 25 of 1999). In order to remove, disturb or demolish these, a permit is required from the South African Heritage Resource Agency (SAHRA) and in certain cases, permission from the local communities (e.g. the removal or disturbance of human remains) must be negotiated.

The following is required to be considered and incorporated into an EMP prior to construction activities being initiated.

1. Plans of construction infrastructure, i.e. access roads, camps and tower positions should be made available to archaeologists/historians to inspect and visit. Archaeologists/historians should inspect a number of identified tower and other construction sites to investigate and assess the nature and density of possible heritage sites and cultural material on and around them. From this it would be possible to make recommendations and to motivate for the removal of material before construction starts.
2. Following the inspections, archaeologists and historians should then inform construction managers, prior to construction activities commencing, of what heritage sites and cultural material may be encountered, and the procedures to follow in the event of such sites being encountered.
3. All construction workers should be informed not to disturb historic sites, make any collections of material (i.e. medallions, cartridges or other artefacts), and not to disturb (dig, camp or make fires within) cave or shelter deposits.
4. If heritage sites and/or cultural material are found, work should be stopped at that site, and archaeologists/historians immediately informed. Sufficient time should be allowed for the excavation, removal or collection of material from the site, should it be deemed necessary.

## 5.7. Potential Impacts on the Social Environment

### 5.7.1. Influx of Workers

Given the specialist nature of the construction of substation, Eskom would make use of expert contractors. Therefore, it is highly unlikely that unemployed individuals would be drawn to the area in search of employment at the substation site.

However, additional personnel will probably be required during the operation phase of the substation extension (as this extension would effectively double the size of the existing substation). It is anticipated that these employees will reside in the surrounding areas (e.g. Motherwell, Port Elizabeth, etc. ).

**Table 5.8:** Impacts associated with influx of workers as a result of the proposed extension to Grassridge Substation

Nature	Extent	Duration	Probability	Significance	Status
Influx of workers – construction phase	Local	Short-term	Unlikely	Low	Negative
Influx of workers – operation phase	Local	Short-term	Likely	Low	Negative

- *Mitigation Measures:*

It is proposed that the following mitigation measures be implemented:

- \* Contractors and permanent Eskom employees should adhere to conditions outlined within the EMP.
- \* Workers should be subject to penalties and fines should they not adhere to the conditions outlined within the EMP.
- \* Workers should be made aware of adjoining property owners' concerns so that they are familiar with the sensitive issues.
- \* A specific contact person should be identified to allow I&APs to easily direct their queries and concerns and obtain general information (e.g. reporting problems with the line, enquiring about Eskom workers on the property, lodging complaints etc).

### 5.7.2. *Construction Camps*

One of the main impacts relating to the construction period is the establishment of construction camps. Construction camps are usually perceived as being a source of increase in crime in the immediate vicinity of a construction camp, environmental pollution (water, sanitation, littering etc.), and health risks (e.g. the spread of sexually transmitted diseases). Although these negative impacts are not necessarily justified or cannot be attributed solely to the construction camps, the conduct of the contractors should be appropriately managed through the implementation of strict measures outlined within the EMP.

**Table 5.9:** Potential impacts associated with construction camps as a result of the proposed extension to Grassridge Substation

Nature	Extent	Duration	Probability	Significance	Status
Impacts associated with construction camps	Local	Short-term	Likely	Moderate	Negative

- *Mitigation Measures:*

The following mitigation measures are proposed:

- \* Construction camps for the construction of the substation extension should be located near support services, and ideally not in the vicinity of residential dwellings.
- \* Construction workers should not have to cross over busy roads to access support services and/or the construction site.

- \* The construction camps should be equipped with the necessary water and sanitation facilities.
- \* Local labour should be used, where possible.
- \* Contractors and permanent Eskom employees should adhere to conditions outlined within the EMP.
- \* Communication channels should be implemented in order to enable I&APs to report misconduct and/or environmental damage observed as a result of the activities associated with construction camps. Such duties should ideally be undertaken by an Environmental Site Officer.

### 5.7.3. *Disruption in Daily Living and Movement Patterns*

It is anticipated that the construction activities will result in some intrusions and disruptions in the daily living and movement patterns of the property owners adjacent to the proposed substation site and access roads. Such disruptions could be caused by the movement of construction vehicles and employees. This would especially occur in the following cases:

- where private dwellings and farm worker accommodation are situated near to the proposed substation site or access roads; and
- where private dwellings and farm worker accommodation are close to the construction camps.

These impacts would, however, be of a short duration and are anticipated to be of low to moderate significance.

The negative social impacts on the living and movement patterns of the property owners during the operation phase of the project are anticipated to be minimal.

**Table 5.10:** Potential impacts associated with disruption of daily living and movement patterns as a result of the proposed extension of Grassridge Substation

Nature	Extent	Duration	Probability	Significance	Status
Disruption of daily living and movement patterns – construction phase	Local	Short-term	Likely	Moderate	Negative
Disruption of daily living and movement patterns – operation phase	Local	Short-term	Likely	Low	Negative

- *Mitigation Measures:*

Possible mitigation measures include:

- \* Adjacent property owners and nearby communities should be informed well in advance of the construction schedule and any changes to this work schedule.
- \* Construction vehicles should keep to the speed limit and should avoid busy roads, as far as possible.
- \* Construction activities should not be undertaken after-hours or over weekends.
- \* Construction camps should not be located near private dwellings and communities.

#### 5.7.4. *Employment Opportunities*

Due to the highly-skilled nature of the construction activities associated with the extension of the substation, and due to the short construction period it is not expected that a large number of jobs would be created by the proposed project. However, local labour could be employed for unskilled activities. Given the limited employment opportunities along the route, it is therefore also highly unlikely that unemployed individuals would be drawn to the area in search of employment.

Additional personnel will probably be required during the operation phase of the substation extension (as this extension would effectively double the size of the existing substation). However, due to the skilled nature of the tasks required to be undertaken for these maintenance activities, it is not anticipated that there would be large numbers of employment opportunities created as a result of the proposed project.

Therefore, it is not anticipated that there would be any long-term benefit with regards to the creation of employment as a result of this proposed project.

**Table 5.11:** Employment opportunities associated with the proposed extension of Grassridge Substation

Nature	Extent	Duration	Probability	Significance	Status
Employment opportunities – construction phase	Local	Short-term	Likely*	Low	Positive
Employment opportunities – operation phase	Local	Short-term	Likely*	Low	Positive

\*Skilled labourers



- *Mitigation Measures:*

The following mitigation measures are proposed:

- \* If there is a need for unskilled labour during the construction or operation phases of the project, local community members (e.g. from the Motherwell or Port Elizabeth area) should be employed.
- \* Ensure on-site training is provided to locals, where necessary.

#### **5.7.5. Health, Safety and Security**

Construction camps are usually associated with an increase in the spread of fires posing a health and safety risk to the surrounding property owners and animals.

Concerns regarding health and safety with construction workers residing in the area, as well as the potential for the spread of sexually transmitted diseases and specifically HIV/AIDS have been raised. The construction activities associated with the erection of the substation are such that construction workers will not be housed in the area for an extended period. It is, therefore, unlikely that there would be frequent contact between the construction workers and local communities, thereby minimising the spread of sexually transmitted diseases. This issue should, however, be sensitively dealt with, especially where local communities are involved.

Safety and security is a serious source of concern and unauthorised entry of workers on private properties should be avoided at all times.

There is a growing concern over the long-term health risks associated with exposure to electro-magnetic fields (EMFs) from substations, although there are still disparities in scientific circles regarding the real health threat of these EMFs and what levels could be considered as safe. Irrespective of research findings, the perception still exists that substations are detrimental to human health. Although restriction to the substation area limits the constant exposure to these EMFs, this issue should be sensitively dealt with.

**Table 5.12:** Impacts on health, safety and security associated with the proposed extension of Grassridge Substation

Nature	Extent	Duration	Probability	Significance	Status
Health, safety and security impacts – construction phase	Local	Short-term	Likely	High	Negative
Health, safety and security impacts – operation phase	Local	Long-term	Likely	Low	Negative

- *Mitigation Measures:*

The following mitigation measures are proposed:

- \* A fire emergency plan should be established and implemented through the EMP.
- \* Construction workers living in construction camps should be discouraged from using fires for cooking or heating purposes.
- \* Firebreaks should be allowed, but Eskom should not unnecessarily clear vegetation.
- \* Local labour should be used wherever possible.
- \* AIDS awareness campaigns should be provided to workers.
- \* The construction area should be fenced off to avoid any safety risks for humans and animals.
- \* General safety measures in terms of construction work should be implemented and relevant regulations adhered to (Occupational Health and Safety Act).
- \* Eskom vehicles and workers should be easily identifiable.

### 5.7.6. *Intrusion Impacts*

Potential intrusion impacts associated with the proposed project include:

- visual impacts associated with the proposed substation extension;
- noise impacts during the construction phase;
- air/dust pollution during the construction phase; and
- potential water pollution during the construction phase.

- *Visual impact:*

It is anticipated that the extension of the Grassridge Substation will have a significant impact on the aesthetics of the local area due to the doubling in size of the existing substation, as well as the increase in the number of Transmission lines entering and

exiting the substation. However, the concentration of electricity infrastructure in a single area will limit the visual impact on the broader area.

- *Noise impact:*

Noise impacts associated with the construction phase and construction camp is anticipated. The proximity of residences, communities and businesses to the construction sites and camps would determine the intensity of this impact. This impact could be rated to only have a nuisance impact.

- *Air/Dust pollution:*

Vehicular movement on gravel roads could lead to dust pollution in some areas during dry conditions. This impact would be of a short duration during the construction phase, and is anticipated to be of low significance.

- *Water pollution:*

A lack of proper water and sanitation facilities at the construction camps could result in water pollution. Eskom, however, have requirements which are required to be adhered to by contractors, including the handling of waste, water usage, etc. These guidelines will be stipulated in the Environmental Management Plan (EMP).

**Table 5.13:** Intrusion impacts associated with the proposed extension of Grassridge Substation

Nature	Extent	Duration	Probability	Significance	Status
Visual impacts	Local	Permanent	Likely	High	Negative
Noise impacts – construction phase	Local	Short-term	Likely	Low	Negative
Air/dust pollution – construction phase	Local	Short-term	Probable	Low	Negative
Water pollution – construction phase	Local	Short-term	Probable	Moderate	Negative

- *Mitigation Measures:*

The following mitigation measures are recommended:

- \* Noise-generating construction activities (especially those associated with vehicles and heavy machinery) should be restricted to working hours.
- \* Construction equipment and vehicles should be maintained in a good working condition so as to minimise the generation of noise.

- \* The conduct of workers residing in the construction camps should be monitored, and should be in compliance with the specifications of the EMP.
- \* The construction schedule should be communicated with potentially affected parties.
- \* Dust-suppression techniques should be used along gravel roads, when required.
- \* Adequate water and sanitation facilities are to be supplied at construction camps.
- \* Fuels and chemicals must be stored in appropriate containers where these are kept on-site.
- \* An EMP for construction should be compiled outlining management measures which must be implemented in order to minimise intrusion impacts.

## **5.8. Conclusions**

The majority of the potential impacts associated with the proposed extension of Grassridge Substation are anticipated to be restricted to the construction phase, and are thus of a short-term nature. These construction impacts can largely be minimised through the compilation and implementation of a site-specific EMP, which should form part of the construction contractors contract. Therefore, no significant impacts are anticipated as a result of the construction of the proposed substation extension.

No significant impacts are anticipated as a result of the operation and maintenance of the proposed extension of Grassridge Substation, provided that appropriate mitigation measures are implemented through a site-specific EMP. This is due to the fact that the existing Grassridge Substation has an existing impact on the surrounding area, and the extension of this substation is not anticipated to add significantly to this impact.