

APPENDICES TO OMEGA SUBSTATION EMP

JUNE 2007

APPENDIX A

RECORD OF DECISION (ROD FOR THE  
CONSTRUCTION OF THE OMEGA SUBSTATION  
ISSUED BY THE DEPARTMENT OF  
ENVIRONMENTAL AFFAIRS AND TOURISM (DEAT)

AND

RECOMMENDATIONS SET OUT IN THE FINAL  
SCOPING REPORT



# **environment & tourism**

Department:  
Environmental Affairs and Tourism  
REPUBLIC OF SOUTH AFRICA

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Ref: 12/12/20/636

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Enquiries: Ms Mosili Ntene

Mr J Geeringh  
Eskom Holdings Limited: Transmission Division  
P.O Box 1091  
JOHANNESBURG  
2000

Fax: (011) 800 3917

Dear Mr John Geeringh

## **RECORD OF DECISION FOR: THE CONSTRUCTION OF THE PROPOSED Eskom TRANSMISSION 765kV OMEGA SUBSTATION AND ASSOCIATED LINE TURN-INNS ON THE FARM GROOT OLIPHANTSKOP NEAR KOEBERG.**

Your application for authorisation, in terms of section 22 of the Environment Conservation Act, 1989 (Act No. 73 of 1989) in respect of an activity identified in terms of section 21 of the Act, of 31 May 2004 regarding the above matter refers.

This department and the Western Cape department of Environmental Affairs and Development Planning have evaluated the final scoping report dated October 2005 and have considered your application.

By virtue of the power delegated to me in terms of section 33(1) of the Environment Conservation Act, 1989 (Act No. 73 of 1989) I hereby, in terms of section 22(3) of the Act, authorise:

- **Item 1 (a): The construction of the 1000m X 600m 765kV Omega substation and associated line turn-inns on the farm Groot Oliphantskop near Koeberg.**

Muhsheo wa zwa Vhupo na Vhuendlamashango • LiTiko le Teelmondzawo netokuVakasha • Isabe lemiCimbi yokusiNggongileyo noKhenkethe  
Ndzawulo ya Tinkaka & Mbanjo • Departement: Omgewingsake en Toetsme • Lefapha la Tikoloho le Bohanhleupi • Lefapha la Bojanale  
Kgoro ya Tikologo le Soeli • UmNyango wezeBhuduluko nokuVakasha • Umnyango Wezemvelo Nokuvakasha

- The purpose of the Omega substation is to accommodate the proposed new Eskom Transmission Gamma-Omega 765kV Transmission power line to facilitate the transfer of available generation capacity from the northern parts of South Africa to the Western Cape region where it is required for future load growth and to further supply this additional capacity in such a way as to improve security of supply in the national grid system in its entirety.
- The proposed development is compatible with the proposed site for the development in terms of topography, geotechnical considerations, ecological perspective, visual impact, archaeological impact, avifaunal impact, utilisation of the available land, grouping infrastructure close together, and limiting the impact on the environment.
- The environmental impact assessment complies with the requirements of the EIA Regulations.
- No fatal flaws have been identified during the EIA process and review of the information submitted.
- Information submitted by the independent environmental consultant is deemed to be sufficient and adequate to make an informed decision.
- Although there are perceived negative impacts associated with the substation, these can mostly be addressed through mitigation, design and strict EMP conditions. The net positive impact of the substation on the economy and stability of supply to the Western Cape outweighs localised perceived negative impacts.
- The mitigation measures proposed in the final scoping report dated October 2005 are appropriate and practical for implementation.
- Specific environmental specialist studies were commissioned as part of the environmental impact assessment process and it was found that the impact of this development was acceptable.
- It is envisaged that should the recommendations stipulated in Chapter 12 of the final scoping report dated October 2005 and the specialist reports contained in the final scoping report dated October 2005, and the conditions as stipulated in this record of decision be complied with, the negative environmental impact of this activity will be minimised.
- Based on the above, the department's conclusion is that this activity will not lead to any significant detrimental impact on the environment, that potential detrimental impacts resulting from this activity can be mitigated to acceptable levels and that the principles of section 2 of NEMA can be upheld.



## RECORD OF DECISION

### RECORD OF DECISION FOR PROJECT REFERENCE 12/12/20/636: PROPOSED CONSTRUCTION OF THE 765 KV OMEGA SUBSTATION AND ASSOCIATED TURN-INS FOR EIGHT EXISTING 400 KV TRANSMISSION LINES ON THE FARM GROOT OLIPHANTSKOP NEAR KOEBERG, WESTERN CAPE PROVINCE

By virtue of the power delegated by the Minister in terms of section 33(1) Environment Conservation Act, (Act 73 of 1989) ("the Act"), I hereby, in terms of section 22(3) of the Act, authorise Eskom Transmission to undertake the activity specified/detailed below subject to the indicated conditions.

#### 1. DESCRIPTION, EXTENT AND LOCATION OF THE ACTIVITY:

The development entails the construction of the 765kV Omega transmission substation and associated turn-ins for eight existing 400 kV transmission lines on the north-east portion of the farm Groot Oliphantskop near Koeberg in the Western Cape Province (described as site A in the final scoping report dated October 2005). The proposed substation forms part of the Cape Strengthening programme to supply the anticipated increasing demand for electricity in the Western and Southern Cape. Approximately 50ha (plus space for fencing) will be required to build the substation which will be an open air tubular structure. It will be approximately 45m high and will consist of three layers. Four 400kV transmission lines currently pass through the farm south of the proposed substation site and will need to turn into and then leave the substation. The proposed 765kV Gamma-Omega transmission line will enter the substation from the north east.

#### 2. KEY FACTORS INFORMING THE DECISION:

In reaching its decision in respect of the application, the department has taken, *inter alia*, the following information into consideration:

- The final scoping report dated October 2005.
- All specialist reports and appendices included in the final scoping report dated October 2005.
- Eskom's generic environmental management plan (EMP) for substation construction contained in the final scoping report dated October 2005.

In reviewing this information, the department made the following findings:

- The proposed development is part of Eskom's new capacity installation programme and is intended to meet the future electricity demands of South Africa and the Western Cape region in particular.

Enclosed please find the record of decision and the conditions under which your application is authorised.

Appeals must comply with the provisions of regulation 11 of the environmental impact assessment regulations, (Government Notices No. R. 1182 and 1183 of 5 September 1997), which reads as follows:

- (1) An appeal to the Minister or the provincial authority under section 35(3) of the act must be done in writing within 30 days from the date on which the record of decision was issued to the applicant in terms of regulation 10(1);
- (2) An appeal must set out all the facts as well as the grounds of appeal, and must be accompanied by all relevant documents or copies of them.
- (3) An appeal questionnaire may be used in the lodging of an appeal. It is obtainable from the department's offices at tel. (012) 310 3590 or e-mail: [cveeden@deat.gov.za](mailto:cveeden@deat.gov.za).



Ms Pam Yako  
Director – General  
Department of Environmental Affairs and Tourism  
Letter signed by: L McCourt  
Designation: Chief Director, Env. Impact Mngt  
Date: 18/9/2006

CC: Mr Fabio Venturi: Western Cape Department of Environmental Affairs and Development Planning

Fax: (021) 483 4372

Mr Gavin Wray: Eyethu Engineers CC

Fax: (031) 312 9930

The department has accordingly decided to grant Eskom Transmission authorisation in terms of Regulations R 1182 and R 1183 (as amended), promulgated under section 21, 22 and 26 of the Environment Conservation Act (Act 73 of 1989), subject to the conditions and provisions listed below.

### **3. CONDITIONS**

#### **3.1 DESCRIPTION AND EXTENT OF THE ACTIVITY**

The authorisation applies in respect of the construction of the construction of the 765kV Omega substation and associated turn-ins for eight existing 400 kV transmission lines on the farm Groot Oliphantskop near Koeberg in the Western Cape Province (described as site A as per the description of the final scoping report dated October 2005).

#### **3.2 SPECIFIC CONDITIONS**

##### **3.2.1 Environmental Management Plan (EMP)**

3.2.1.1 The applicant must develop and implement a site specific environmental management plan (EMP) for the design, construction and operational phases of the development. This EMP must be submitted to the relevant authorities for acceptance before commencement of any of the activities related to this authorisation. The EMP must include but not be limited to the following aspects:

- Rehabilitation of all areas disturbed during the construction phase of the project.
- Siting and management of construction camps, ablution and housing facilities as well as material storage areas used by the contractor. All work areas must be supplied with proper ablution facilities.
- Management and rehabilitation of access roads to individual construction areas that will not become permanent roads upon completion of construction. Any new road constructed for access purposes must comply with the relevant SANS codes and permission for construction must be obtained from this department as required by Schedule 1, item 1 (d) of R. 1182.
- Waste avoidance, minimisation and disposal of waste at an appropriate facility.
- Protection of any heritage sites likely to be impacted by the development should such sites be found during any phase of the project to follow.
- Management of traffic during the construction phase of the development where site access roads and other transportation networks intersect.
- A fire management plan for implementation on site.
- Implementation of site specific erosion and sediment control measures during construction and the maintenance and operational phases of the project.
- All recommendations stipulated in Chapter 12 and mitigation measures as proposed in Section 10.3, page 74, of the final scoping report forms part of this record of decision and must be implemented as part of the EMP.
- A detailed design drawing should accompany the EMP when presented to the authorities for acceptance.

- A site specific plan for the installation of mitigation measures to reduce and prevent avifaunal interaction with the substation.
- All the conditions of authorisation given in this record of decision, as appropriate to the design, construction and operational phases of the project.

3.2.1.2 The EMP must form part of the contractor's tender documentation for all contractors working on the project and must be endorsed contractually.

3.2.1.3 The EMP may be altered, where monitoring and auditing of the project shows this to be beneficial. Any alterations to the EMP must be submitted to this department for approval before such changes could be effected.

3.2.1.4 All contractors working on site must be informed with regard the contents of the EMP.

### **3.2.2 Environmental Control Officer (ECO)**

3.2.2.1 Eskom must appoint an independent environmental control officer (ECO) for the construction phase of the project who would on behalf of Eskom, on a daily basis monitor project compliance with conditions of this record of decision, environmental legislation, the EMP and the recommendations for mitigation of the final scoping report dated October 2005. The cost of the ECO shall be borne by Eskom.

3.2.2.2 Eskom must appoint the ECO one month before the start of construction and the authorities must be notified of such an appointment for communication purposes.

3.2.2.3 The ECO shall submit environmental compliance reports on a two-monthly basis, in writing, to the Director-General of the Department of Environmental Affairs and Tourism (DEAT) and copied to the Western Cape Department of Environmental Affairs and Development Planning.

3.2.2.4 The ECOs shall maintain the following on site:

- A daily site diary
- A non-conformance register
- A public complaint register

3.2.2.5 The ECOs shall remain employed until all rehabilitation measures, as required for implementation due to construction damage, are completed and the servitude is handed over to Eskom by the contractor.

### **3.2.3 Monitoring and auditing**

3.2.3.1 Records relating to monitoring and auditing must be made available for inspection to any relevant authority in respect of this development.

3.2.3.2 This department reserves the right to monitor and audit the development throughout its full life cycle to ensure that it complies with the conditions stipulated in the record of decision as well as mitigation measures in the final scoping report dated October 2005 and the EMP.



3.2.3.3 An independent post-construction environmental audit must be conducted to ensure that the conditions, mitigation measures and recommendations stipulated in this record of decision, the final scoping report dated October 2005 and the construction EMP are complied with before operation commences. The results of this audit must be submitted to the Director-General of the Department of Environmental Affairs and Tourism (DEAT) and copied to the Western Cape Department of Environmental Affairs and Development Planning.

3.2.3.4 The mitigation/rehabilitation measures proposed may be altered, where monitoring and auditing of the construction and operation of the project show this to be beneficial. Any alterations shall be subject to approval by this Department.

### **3.2.4 Transportation and handling of hazardous materials.**

3.2.4.1 During the construction of the substation, an effective monitoring system must be put in place to ensure safety and to detect any leakage or spillage of coolants from all oil containing equipment during their use.

3.2.4.2 The transportation, handling and storage of hazardous substances must comply with all the provisions of the Hazardous Substances Act, (Act No.15 of 1973), associated regulations as well as SANS 10228 and SANS 10089 codes. Should a temporary bulk fuel supply storage facility be required on site, it must comply with the mentioned SANS codes and authorisation must be obtained from DEAT as required by Section 1, item 1 (c) (ii) of R, 1182.

### **3.2.5 Rehabilitation after construction**

3.2.5.1 No exotic plant species may be used for rehabilitation purposes. Only indigenous plants may be utilised.

3.2.5.2 Implementation of measures aimed at controlling invasive plant species and weeds must be implemented.

3.2.5.3 No disturbance of the land at any stream or rivers edge is allowed unless such disturbance complies with legislation and conforms to strict design parameters.

3.2.5.4 Disturbance to vegetation must be restricted to the absolute minimum and areas disturbed as a result of construction activities must be rehabilitated as soon as possible to the satisfaction of the ECOs and this department.

3.2.5.5 Soil erosion must be prevented during construction activities. Land degraded as a result of the above shall be rehabilitated as soon as possible.

### **3.2.6 Design specifications**

3.2.6.1 The design of all physical structures such as housing, lighting and roads should be consistent with and complementary to the sense of place and should not be allowed to form a visual intrusion to the view shed of other users of the area. The design of the substation site must include measures for landscaping and screening.

3.2.6.2 All the relevant and applicable Provincial Guidelines for this kind of development must be considered for the proposed development.

### 3.2.7 Compliance with other legislation

3.2.7.1 Archaeological remains, artificial features and structures older than 60 years are protected by the National Heritage Resources Act, 1999 (Act No. 25 of 1999). Should any archaeological artefacts be exposed during excavation for the purpose of laying foundations, construction in the vicinity of the finding must be stopped. An archaeologist must be called to the site for inspection. Under no circumstances shall any artefacts be destroyed or removed from the site. The South African Heritage Resource Agency must be contacted to this effect. Their recommendations should be included in the construction EMP and be adhered to.

3.2.6.2 All provisions of the Occupational Health and Safety Act, 85 of 1993, and any other applicable legislation must be adhered to by the holder of this authorisation.

3.2.6.3 All provisions of the National Water Act, 36 of 1998, must be adhered to by the holder of this authorisation. No development may take place under the 1:50 year flood line of any river or stream that is affected by the property under development.

3.2.6.4 Should fill material be required for any purpose, the use of borrow pits must comply with the provisions of the Minerals and Petroleum Resources Development Act, 28 of 2002 administered by the Department of Minerals and Energy.

3.2.6.5 No indigenous and/or protected vegetation may be removed without the required permits from the relevant Provincial Nature Conservation departments.

### 3.2.7 Waste management

3.2.7.1 An integrated waste management approach must be used that is based on waste minimisation and best practice, and should incorporate reduction, recycling, re-use and disposal, where appropriate. All waste generated on site during the construction and/or operation of the development must be stored, handled and disposed of in an environmentally acceptable way, and as directed by this Department or any other relevant authority.

3.2.7.2 Solid waste (such as sand, gravel, concrete and waste material) that cannot be used as filling and other litter and waste generated during the construction and operational phases must be removed from site and be disposed of safely and responsibly at a landfill licensed in terms of section 20 of the Environment Conservation Act, 1989 (Act No. 73 of 1989).

### 3.2.8 Other

3.2.8.1 All recommendations and mitigation measures as proposed in the final scoping report dated October 2005 must be implemented as adhered to.

- 3.2.8.2 The applicant must ensure that no animal or plant be disturbed or removed from the construction site without approval/permit, adequate measures have been implemented to protect the surrounding environment against fires and all construction and maintenance waste be appropriately disposed of and the area kept clean.
- 3.2.8.3 All identified heritage sites shall be marked as know go areas and may not be under any circumstances be disturbed.
- 3.2.8.4 A resolution by Eskom with the City of Cape Town regarding the potential conflict with the planned M12 expressway must be submitted to this department before construction commences. Mitigation measures must be investigated with the Department of Public Works (Transport Branch) regarding the impact of construction vehicles using the main road during the construction period.
- 3.2.8.5 A layout plan and detailed description of visual mitigation measures including but not limited to terrace slopes, earthwork berms, lighting and screening vegetation must be developed and implemented. This should also include but is not limited to the proposed mitigations addressing the nocturnal visual effect the substation will have. A montage illustrating the nocturnal visual impact of the proposed development on the surrounding landscape must be investigated and mitigation measures proposed and implemented.
- 3.2.8.6 A proposed conservation strategy must be proposed and implemented for identified and sensitive biodiversity features within the property including but not limited to a detailed vegetation rehabilitation programme from a recognised specialist botanist where natural vegetation or vegetated ground is disturbed, addressing sensitive hydrological and avifaunal habitats. This must include but not be limited to consideration of future land use/sale/ownership.
- 3.2.8.7 A layout plan and detailed description for the proposed stormwater attenuation structures must be proposed and implemented including but not limited to the hydrological impact of such structures on the sensitive hydrological features (as identified in the Hydrological Assessment Report) within and surrounding the proposed locality (Site A).

### 3.3 GENERAL CONDITIONS

- 3.3.1 This authorisation is granted only in terms of section 22 of the Environment Conservation Act, Act No.73 of 1989, and does not exempt the holder thereof from compliance with any other legislation.
- 3.3.2 This authorisation refers only to the activity as specified and described in the final scoping report dated October 2005. Any other activity listed under section 21 of the Environment Conservation Act, 1989 (No. 73 of 1989) which is not specified above, is not covered by this authorisation, and must therefore comply with the requirements of the Environment Conservation Act, Government Notice R. 1182 and R.1183 (as amended).
- 3.3.3 This authorisation is subject to the approval of the relevant local authorities in terms of any legislation administered by those authorities.

3.3.4 The applicant must, within 7 (seven) calendar days of the date of signature of this record of decision inform all registered interested and affected parties and the relevant local authority of at least the following:

- (i) That an authorisation has been issued to the applicant to proceed with the construction and operation of the activity.
- (ii) If requested, provide copies of this ROD.
- (iii) That any appeals against the issuing of the authorisation must be lodged with the Minister of Environmental Affairs and Tourism within 30 (thirty) days from the date on which this ROD has been issued to the applicant at the address stipulated in this ROD.
- (iv) That an appeal questionnaire may be used in the lodging of an appeal. It is obtainable from the department's offices at tel. (012) 310 3590 or e-mail: [cveeden@deat.gov.za](mailto:cveeden@deat.gov.za).
- (v) The date on which the ROD was issued to the applicant in terms of regulation 10(1) and the date by which appeals must reach the Minister.

Failure to inform interested and affected parties within the stipulated time period may result in the Minister considering requests from such parties for condonation to submit a late appeal favourably.

3.3.5 One week's written notice must be given to this department before commencement of construction activities. Such notice shall make clear reference to the site location details and reference number given above.

3.3.6 One week's written notice must be given to this department before commencement of operation activities. Such notice shall make clear reference to the site location details and reference number given above.


3.3.7 The applicant shall be responsible for ensuring compliance with the conditions contained in this ROD by any person acting on his behalf, including but not limited to, an agent, servant, or employee or any person rendering a service to the applicant in respect of the activity, including but not limited to, contractors and consultants.

3.3.8 The applicant must notify the department in writing, within 24 (twenty four) hours if any condition of this authorisation cannot, or is not, adhered to. The notification must be supplemented with reasons for non-compliance.

3.3.9 A copy of the authorisation and ROD shall be available on site during construction and all staff, contractors and sub-contractors shall be familiar with or be made aware of the contents of this authorisation and ROD.

3.3.10 Compliance/non-compliance records must be kept and shall be made available on request from the authorities within five days of receipt of the request.

3.3.11 Any changes to, or deviations from, the project description set out in this letter must be approved, in writing, by the department before such changes or deviations may be effected. In assessing whether to grant such approval or not, the department may request such information as it deems necessary to evaluate the significance and impacts of such changes or deviations.

- 3.3.12 This department may review the conditions of this record of decision from time to time and may, by notice in writing to the applicant, amend, add or remove a condition.
- 3.3.13 In the event that the predicted impacts exceed the significance as predicted by the independent consultant in the final scoping report dated October 2005 and supporting documentation, the authorisation may be withdrawn after proper procedures have been followed.
- 3.3.14 In the event of any dispute concerning the significance of a particular impact, the opinion of the department of Environmental Affairs and Tourism (DEAT) in respect of its significance will prevail.
- 3.3.15 The applicant must notify the department, in writing, at least 10 (ten) days prior to the change of ownership, project developer or the alienation of any similar rights for the activity described in this letter. The applicant must furnish a copy of this document to the new owner, developer or person to whom the rights accrue and inform the new owner, developer or person to whom the rights accrue that the conditions contained herein are binding on them.
- 3.3.16 Where any of the applicant's contact details change, including the name of the responsible person, the physical or postal address and/or telephonic details, the applicant must notify the department as soon as the new details become known to the applicant.
- 3.3.17 National government, provincial government, local authorities or committees appointed in terms of the conditions of this application or any other public authority or authorisation shall not be held responsible for any damages or losses suffered by the applicant or his successor in title in any instance where construction or operation subsequent to construction be temporarily or permanently stopped for reasons of non-compliance by the applicant with the conditions of approval as set out in this document or any other subsequent document emanating from these conditions of approval.
- 3.3.18 If any condition imposed in terms of this authorisation is not complied with, the authorisation may be withdrawn after 30 days written notice to the applicant in terms of section 22(4) of the Environment Conservation Act, 1989 (Act No. 73 of 1989).
- 3.3.19 Failure to comply with any of these conditions shall also be regarded as an offence and may be dealt with in terms of sections 29, 30 and 31 of the Environment Conservation Act, 1989 (Act No. 73 of 1989), as well as any other appropriate legal mechanisms.
- 3.3.20 The applicant shall be responsible for all costs necessary to comply with the above conditions unless otherwise specified.
- 3.3.21 Any complaint from the public during construction must be attended to as soon as possible to the satisfaction of the parties concerned. A complaints register must be kept up to date and shall be produced upon request.
- 3.3.22 Departmental officials shall be given access to the properties earmarked for construction activities for the purpose of assessing and/or monitoring compliance with the conditions contained in this document at all reasonable times.
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- 3.3.23 All outdoor advertising associated with this activity, whether on or off the property concerned, must comply with the South African Manual for Outdoor Advertising Control (SAMOAC) available from this department.

#### 3.4 DURATION OF AUTHORISATION

If the activity authorised by this letter does not commence within 5 (five) years from the date of signature of this letter, the authorisation will lapse and the applicant will need to reapply for exemption or authorisation in terms of the above legislation or any amendments thereto.

#### 4. CONSEQUENCES OF NON-COMPLIANCE

The applicant must comply with the conditions set out in this letter. Failure to comply with any of the above conditions may result in, *inter alia*, the department withdrawing the authorisation, issuing directives to address the non-compliance – including an order to cease the activity – as well as instituting criminal and/or civil proceedings to enforce compliance.

#### 5. APPEALS

Appeals in respect of this decision must be lodged with the Minister of Environmental Affairs and Tourism within 30 (thirty) days of the date of this decision. Appeals can be submitted utilising one of the following methods:

By facsimile: (012) 322 0082  
 By post: Private Bag X447, Pretoria 0001  
 By hand: 2<sup>nd</sup> Floor, Fedsure Forum Building, North Tower, cor. Van der Walt and Pretorius Streets, Pretoria.

Appeals must comply with the provisions of Regulation 11 of Government Notice No. R. 1183 which reads as follows:

- (1) An appeal to the Minister or provincial authority under section 35(3) of the Act must be done in writing within 30 days from the date on which the ROD was issued to the applicant in terms of regulation 10(1);
- (2) An appeal must set out all the facts as well as the grounds of appeal, and must be accompanied by all relevant documents or copies of them which are certified as true by a commissioner of oaths.

An appeal questionnaire may be used in the lodging of an appeal. It is obtainable from the department's offices at tel. (012) 310 3590 or e-mail: [cvaeden@deat.gov.za](mailto:cvaeden@deat.gov.za).

Should the applicant wish to appeal any aspect of this decision, the applicant must notify and furnish copies of the appeal which will be submitted to the Minister, to all registered interested and affected parties. Proof of such notification must be submitted to the Minister with the appeal. Failure to comply with this provision may result in the Minister refusing to consider the appeal.

**6. APPLICANT:**

Eskom Transmission  
P O Box 1091  
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Contact person: Mr J Geeringh  
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**7. CONSULTANT:**

Eyethu Engineers CC  
PO Box 70358  
**OVERPORT**  
Durban  
4067

Contact person: Mr G Wray  
Tel: (031) 303 7630  
Fax: (011) 312 9930

**8. SITE VISIT**

A site visit was undertaken by the applicant, consultants, specialists and officials from the Western Cape Department of Environmental Affairs and Development Planning and the Department of Environmental Affairs and Tourism during 2004.



Ms Pam Yako  
Director - General  
Department of Environmental Affairs and Tourism  
Letter signed by: Ms L McCourt  
Designation: Chief Director, Environmental Impact Management

Date: 18/9/2006

## 10.3 SUGGESTED MITIGATION

### 10.3.1 Visual Impact: Mitigatory Measures

Measures suggested in the visual scoping report to reduce the visual impact of the proposed substation include:

- Placing the structures in such a way as to maximise the buffer zone between the structures and the roads/railway line.
- The retention of as much existing vegetation as possible, specifically the existing mature trees in the area.
- The use of stepping in the building platform to minimise cut-and fill areas and the lowering of the structures into the site as much as possible.
- The sculpting of the cut and fill slopes to create a visually more natural building platform.
- The re-establishment of natural looking and functioning alternative watercourses where existing watercourses will be interrupted.
- The establishment of indigenous Fynbos on the cut-and-fill slopes. *(Note this is unlikely within the substation fence boundary due to fire hazard).*
- The establishment of indigenous Fynbos within the buffer zone inside the fences and on all potential open spaces between the components of the substation. This is subject to the necessary technical and safety considerations. *(Note this is unlikely within the substation fence boundary due to fire hazard).*
- The re-establishment of either Fynbos or some agricultural activity on the remaining farmland around the substation, depending on the proposed land use. i.e. the land must not just be allowed to lie fallow and become a breeding ground for invasive species.
- The establishment of climbing plants on sections of the perimeter fencing. This is subject to safety and security considerations. Such planting should be done with specific viewpoints in mind and be used to break the monolithic nature or soften the visual impact of the development from those specific viewpoints. These viewpoints will have to be identified once construction has begun and the exact nature of the visual impacts are established.
- The establishment of tree lines in strategic places both on the property and along ridgelines on adjacent properties. Once again these tree lines should be implemented with specific views in mind. i.e. many partial views from specific places along the N7



and other roads could be mitigated in this way and larger views of the substation could be broken up using this method. This would of course, require negotiations with the adjoining landowners but if views from their own properties could be mitigated in this way, it should not be hard to demonstrate the validity of this technique.

- The planting of tree lines around the perimeter is not indicated because the height of the structures, (up to 45m,) will not be shielded by trees at close range, and because straight lines of trees along the perimeter will only serve to emphasis the unnatural shape of the substation.
- The rehabilitation and extension of the tree lines along the Old Mamre Road and the M19 could also be used as mitigation from various viewpoints.
- Steel components within the substation should not be painted but be galvanised and allowed to oxidise naturally over time. The grey produced in this process will help to reduce the visual impact.
- Those parts of the substation that require the protection of paint should be painted in colours chosen from a palette that is matched to the natural colours found in the surrounding landscape.
- All lighting, especially perimeter security lighting must be shielded to minimise light spillage and pollution. No direct light sources must be seen from outside the site.
- Signage should be simple and unobtrusive and not be seen anywhere against the skyline.
- A concerted effort should be made to reduce the height and scale of the structures, if at all possible.

#### 10.3.2. Stormwater and Hydrology: Mitigatory Measures

It is recommended that a detailed stormwater management plan be prepared once the layout and positioning of the substation has been finalised. This should include mitigation measures to be adopted to reduce run-off from the site, such as avoiding point source discharge points, encouraging slower path velocities by grassing stormwater channels rather than having concrete lined drains to increase infiltration. Use vegetation rather than "hard" surfaces – grassing wherever possible.

A detention facility should be constructed to ensure that peak flow leaving the site after the development has been completed, does not exceed the peak flows prior to development. Once the extent of the work is defined an Engineer should be appointed to design a detention facility of suitable capacity.

Earthworks should be carefully planned to ensure that there are no inter-catchment disturbances i.e. transfer of flow from one catchment to another due to the amendment of natural ground levels.

Erosion protection and grit traps should be constructed during construction to prevent erosion of sands and subsequent silting of downstream watercourses.

Should Site A be utilised, mitigation would be required on the loss of the seasonal drainage line that bisects the site and flows into the Upper tributaries of the Salt River. It is suggested that this drainage furrow could be relocated to channel runoff away from the substation complex.

This potential sedimentation of the watercourses and wetlands downstream of the sites C and A during the construction phase could be mitigated to a large extent by completing the excavation work before the rainy season and by stabilising and re-vegetating the disturbed areas (Ninham Shand, 1996).

#### 10.3.3 Archaeology and Cultural Impacts: Mitigatory Measures

Where possible the substation is to be sited such that the footprint does not conflict directly with any of the heritage resources on the farm (this is possible as shown in Figures 8, 9 & 10. Sites GO1(A2) (historic farmstead and outbuildings) and GO3(C1) (stone age quarry) should be regarded as no-go areas.

Activities such as uncontrolled souvenir hunting and/or vandalism, and construction activities such as vehicle movement, dumping of fill etc need to be carefully addressed in conservation management plan not only for the site but for the remainder of the farm.

Heritage Western Cape (Archaeology, Palaeontology and Meteorites Committee) have reviewed the specialist archaeology report. A Conservation Management Plan (CMP) should be drawn up to deal with the direct and indirect impacts that heritage resources (archaeological sites, human grave, historical buildings and the cultural landscape) would sustain during the implementation of the construction of the substation and the use of the property thereafter.

#### 10.3.4 Avifauna – Mitigatory Measures

The wetland on Site C is regarded as a “no go” area by the avifaunal specialist. Mitigation of the impact of the substation, transmission lines and associated infrastructure can best be achieved by liaison with the Endangered Wildlife Trust at the detailed design phase and prior to the commencement of construction. Mitigation of bird collision impacts include the use of dynamic devices such as bird flappers for the marking of powerlines. It is recommended that the Endangered Wildlife Trust be consulted before a final decision is taken on the type of device to be used in this instance, as new products might be available by the time the substation and associated infrastructure is constructed.

### 10.3.5 Botany – Mitigatory Measures

No “no go” areas were identified by the botanical specialist. Recommendations for mitigation include:

- Avoidance of patched of natural vegetation when aligning powerlines and roads, and thus avoiding any indirect impacts, (a 1ha patch just west of the railway opposite the entrance to the main farmhouse, and a 10ha patch south-southeast of the farmhouse).
- It is suggested that a comprehensive alien clearing strategy should be put in place for the areas on the property that still support natural vegetation, and cattle should not be allowed to graze in areas with natural vegetation.
- All alien clearing should be done according to DWAF (probably very similar to Eskom guidelines) approved methodology, and it is important to note that no heavy machinery should impact on the natural areas.

### 10.3.6. Health and Safety Impacts – Mitigatory Measures

In the previous study by Ninham Shand (1996), possible health impacts associated with the substation were assessed by Drs RI Erlich and I.London, of the Occupational and Environmental Health Research Unit, at the University of Cape Town. They identified two health considerations that are associated with the substation, the possibility of a transformer fire/explosion and exposure to electromagnetic fields (EMF). The potential risk is determined by the likelihood of residential populations settling in close proximity to the substation and transmission lines.

A transformer failure of one or more of the transformers could result in a fire and spillage of the purified mineral oil used for insulation and coolant. According to Eskom, the probability of a failure is low, but even in a worst-case scenario, the health effects of a transformer failure would not affect people beyond the perimeter fence. In the case of a fire, the products of combustion would be released to the surrounding environment. These would be mainly carbon soot, carbon monoxide and carbon dioxide and the impact on the surrounding population would be low (Ninham Shand, 1996).

In this reportedly unlikely event of a transformer failure of one of the transformers, the purified mineral oil, which is used as a coolant would be released. If it is not burnt as a result of the failure, there is a possibility (low) that this oil could get into the drainage furrows crossing A and the wetland near C and spread downstream into the Salt River systems. Such an impact is likely to have short duration (Ninham Shand, 1996).

To mitigate against oil contamination of streams and wetlands as a result of an accident during the operational phase of the substation, the substation complex will have bunded detention ponds to contain an oil spill. This is Eskom practice for substations.

Distance from source is a critical factor in determining the strength of the EMF. Eskom prescribes guidelines for the separation of residential areas from transmission lines and

substations. These guidelines are based on calculations of EMF strength for each situation and comply with the standards of the International Radiation Protection association (IRPA) (Ninham Shand, 1996).

Although, various studies have suggested that residential exposure to EMF is associated with an increase in cancer, the scientific evidence is not conclusive. Given the considerable dispute about the accuracy of exposure characterisation, and the variation in electrical current strengths and distances of the subject communities from transmission lines, it is not possible to make definitive statements about the associated health risks. However, the risks of cancer and other physiological disturbances associated with continuous residence in proximity to transmission lines carrying high AC current are probably small, if any. There is nevertheless, a growing public awareness of some of the uncertainty surrounding EMF. This may increasingly result in the public perceiving transmission lines and substations as a health risk (Ninham Shand, 1996).

According to Ninham Shand (1996) as the strength of EMF decreases rapidly with distance from electrical installations, vertical and horizontal separation from electrical installations is the primary mitigation measure. The height of transmission line pylons plays a key role in reducing the strength of EMF at ground level. The height of a 400kV pylon and the 765kV pylon to be used at Omega is 36m and 44m respectively which results in a ground level reading, which is within the IRPA standards. Other measures, which are required to mitigate potential health risks associated with the substation include:

- Compliance with IRPA guidelines, or any new standards, and
- Ensuring that EMF readings for the substation and transmission lines are a matter of public record.

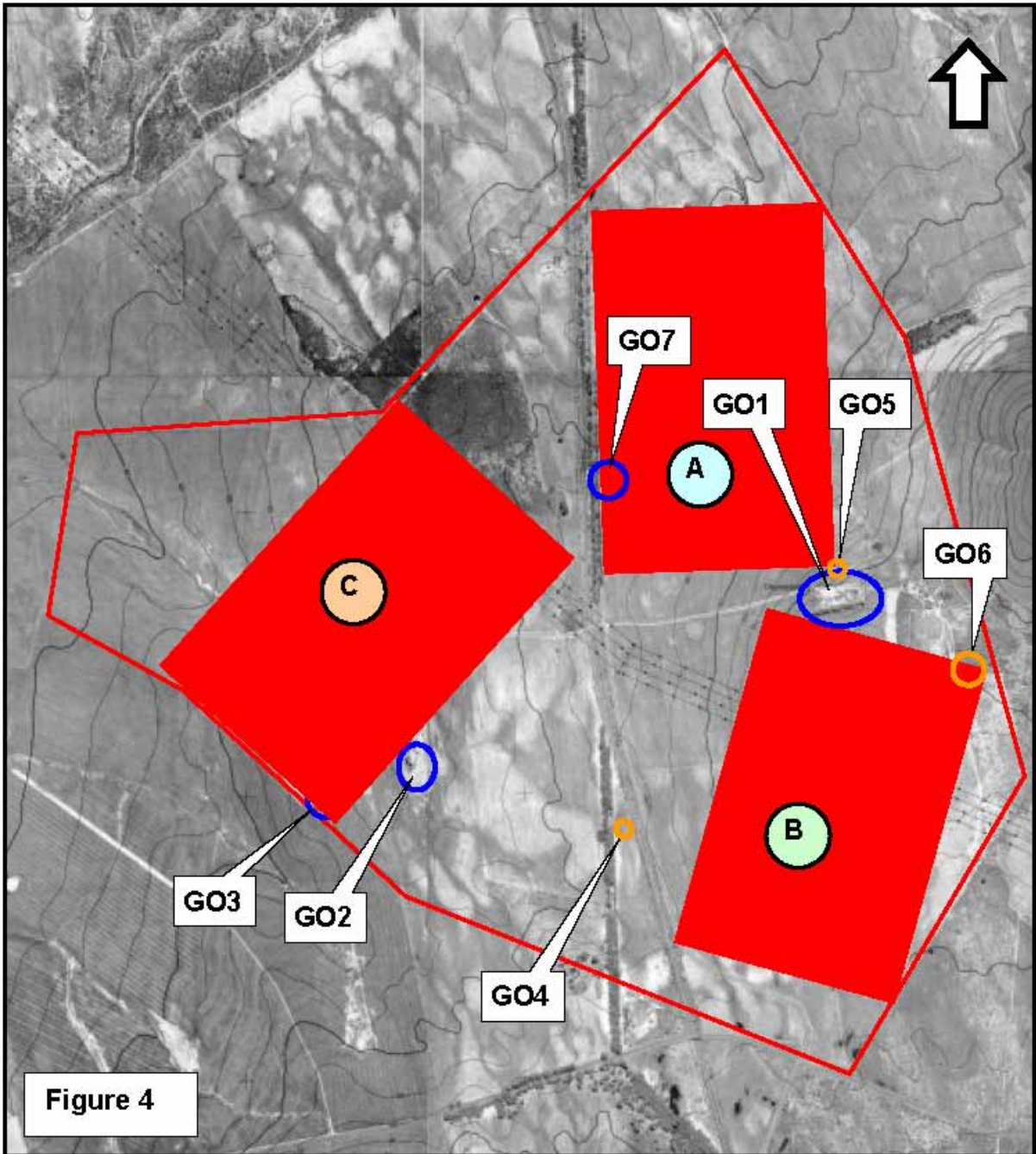
Standard setback distances between residential development, substations and transmission lines are:

- 40m from the 765kV transmission lines,
- 27,5m from the 400kV transmission lines, and
- The perimeter fence is the setback line for substations.

Although the perimeter fence provides an adequate setback between the substation and residential development, it would be feasible to set back the residential development even further to make provision for landscaping to screen the substation and at the same time to appease any subjective public concerns about living close to a substation. These setbacks should result in a reduction of a potential negative impact from a moderate magnitude to a low (Ninham Shand, 1996).

## APPENDIX B

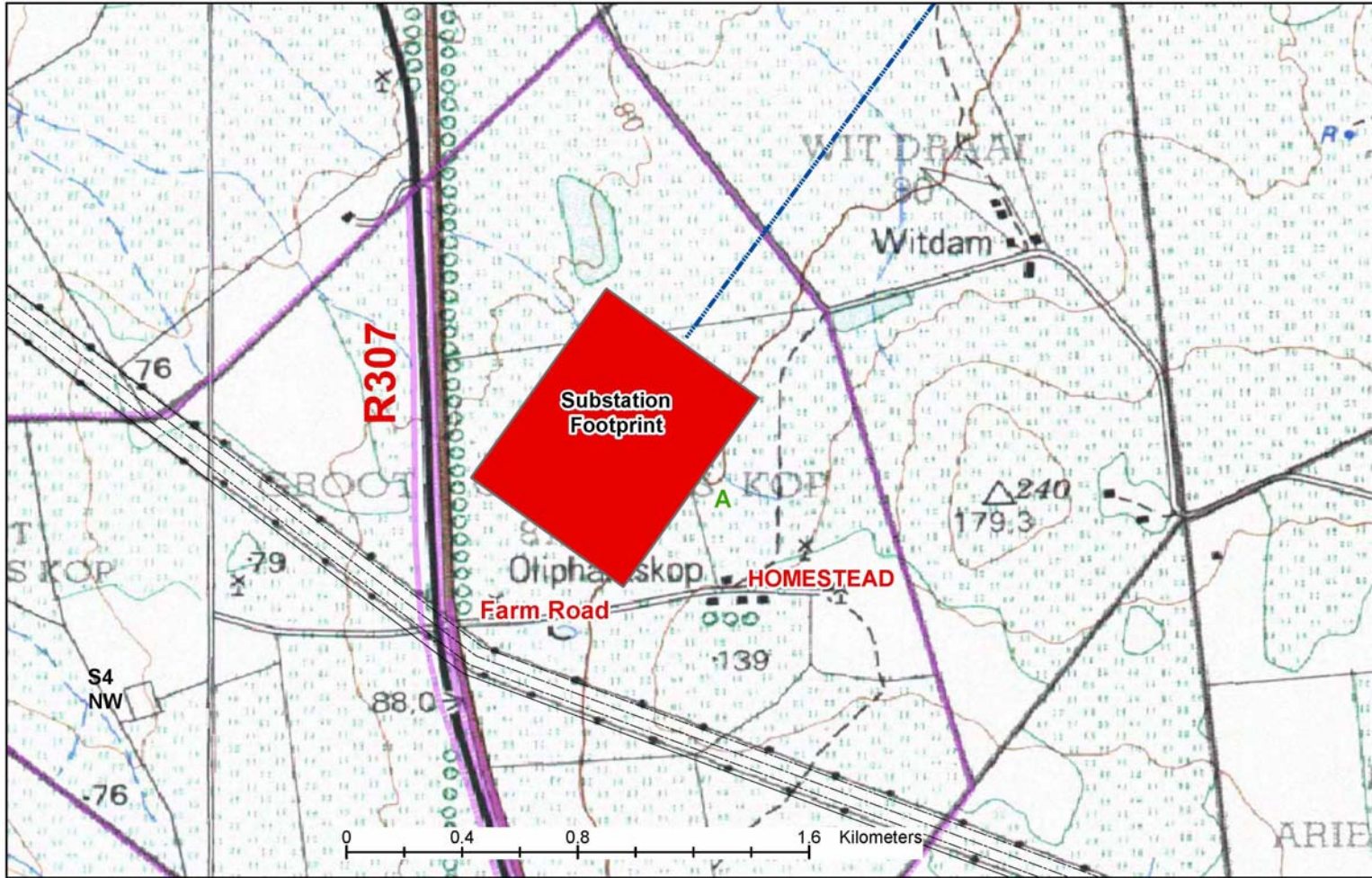
### MAP SHOWING SENSITIVE HERITAGE RESOURCES



3318CB Melkbosstrand & 3318DA Philadelphia (Mapping information supplied by - Chief Directorate: Surveys and Mapping. Website: w3sli.wcape.gov.za)

APPENDIX C –

SITE PLAN



--- Existing Powerlines

Substation Footprint

Groot Oliphantskop Farm



OMEGA SUBSTATION  
Eyethu Engineers June 07



## APPENDIX D

### GENERAL STORMWATER CONTROL PRINCIPLES

## **1 Effects of Stormwater on the Site**

- *Construction activities frequently result in diversions of natural water flow resulting in concentration of flow and an increase in the erosive potential of the water.*
- *Serious financial and environmental impacts can be caused by unmanaged stormwater.*

## **2 General Mitigatory Measures**

- a) To prevent stormwater damage, the increase in storm water run-off resulting from construction activities must be estimated and the drainage system assessed accordingly.
- b) A drainage plan must be submitted to the Engineer for approval and must include the location and design criteria of any temporary stream crossings (siting and return period etc)
- c) During site establishment, stormwater culverts and drains are to be located and covered with metal grids to prevent blockages if deemed necessary by the Engineer. (e.g. due to demolition work).
- d) Temporary cut off drains and berms may be required to capture stormwater and promote infiltration.
- e) The Contractor shall not in any way modify nor damage the banks or bed of streams, rivers, wetlands, other open water bodies and drainage lines adjacent to or within the designated area, unless required as part of the construction project specification. Where such disturbance is unavoidable, modification of water bodies should be kept to a minimum in terms of:
  - Removal of riparian vegetation
  - Opening up of the stream channel
- f) Earth, stone and rubble is to be properly disposed of so as not to obstruct natural water pathways over the site. i.e.: these materials must not be placed in stormwater channels, drainage lines or rivers.
- g) There should be a periodic checking of the site's drainage system to ensure that the water flow is unobstructed.
- h) The use of high velocity stormwater pipelines should be avoided in favour of open, high friction, semi-permeable channels wherever feasible.
- i) A number of smaller stormwater outfall points should be constructed rather than a few large outfall points.
- j) Stormwater outfalls should be designed to reduce flow velocity and avoid streambank and soil erosion.

## **3 Stormwater Detention Ponds**

- a) Detention ponds should be vegetated either with wetland vegetation or grass as indicated by the ECO.
- b) The detention ponds must not block the water flow, but should encourage spreading of the flow over a wider area to reduce velocity and encourage infiltration.
- c) Peak stormwater discharge from the site / area should not be increased with development of the site / area. Stormwater should be detained on site through the use of stormwater detention ponds wherever possible. A series of detention ponds may be required where flow volumes are high.

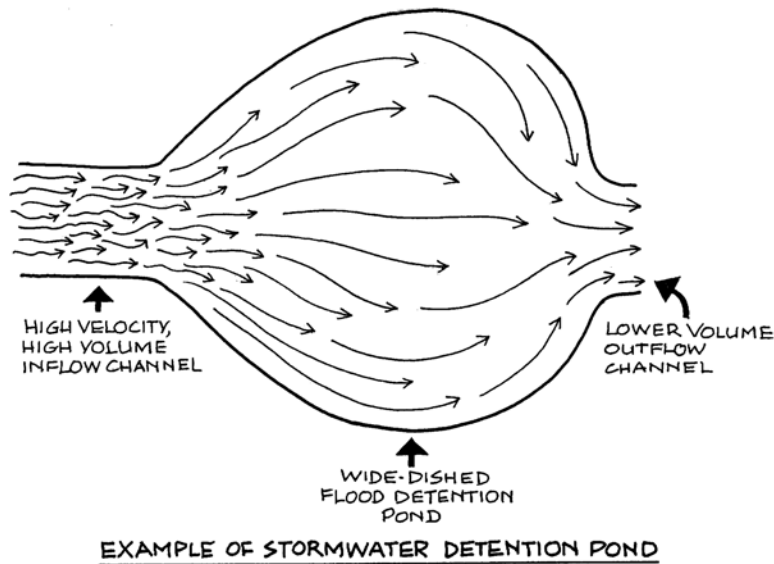


Figure 1: Reduced flow velocity due to dispersal by detention pond.

#### 4 Unchannelled Flow

- a) During construction unchannelled flow must be controlled to avoid soil erosion.
- b) Where large areas of soil are left exposed, rows of straw / hay or bundles of cut vegetation should be dug into the soil in contours to slow surface wash and capture eroded soil.
- c) The spacing between rows will be dependant on slope.

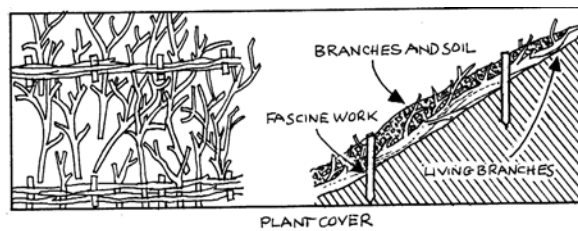


Figure 2: Brush packing of plant material to guard against loss of topsoil during heavy rains.

- d) Where surface runoff is concentrated (e.g. along exposed roadways / tracks), flow should be slowed by contouring with hay bales or bundled vegetation generated during site clearance operation.
- e) If the area must be used for construction vehicles, berms may be used instead. The berms must be at least 30cm high and well compacted. The berms should channel concentrated flow into detention ponds or areas protected with hay bales for flow reduction and sediment capture.

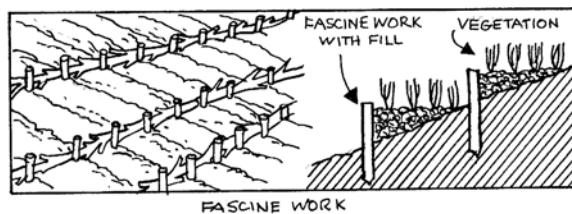


Figure 3: Fascine work to guard against erosion and washaways.