

Vegetation Management Scope of Works:

Vegetation Control Standards outside Plantations

Normative Reference: EPC 32-247 – Environmental Procedure, Procedure for vegetation clearance and maintenance within overhead power line servitudes and on Eskom owned land:

- a) Trees growing to a height in excess of the horizontal distance of that tree from the nearest conductor which are identified as a risk to safe operation of the power line shall be treated and prevented from growing in such a manner as to endanger the line should they fall. (See corridor specification below for clarity)
- b) All vegetation posing a risk to the line or preventing access for maintenance purposes shall be managed.
- c) Various species of indigenous vegetation are protected by law in terms of which is necessary to obtain a permit from the relevant authority, in order to cut them. The list of “H protected tree species under the national forest act, 1998 (Act No 84 of 1998)” Gazetted by the department of Agriculture, Forestry and Fisheries from time to time: will be sourced and referenced by the contractor in lieu of the specific requirements in terms of protected species. No protected vegetation as per above act shall be cut without the required permits or licences
- d) Where there is any doubt as to whether a plant species is protected or not, the Department of Agriculture, Forestry and Fisheries (DAFF) or the local Eskom environmental practitioner in that Business Unit shall be consulted.
- e) Alien vegetation in servitude shall be managed in terms of the Regulation GNR.1048 of 25 May 1984 (as amended) issued in terms of the Conservation of Agricultural Resources Act, Act 43 of 1983. In Terms of these regulations, Eskom shall “control” i.e. to combat category 1, 2 and 3 plants to the extent necessary to prevent or to contain the occurrence, establishment, growth, multiplication, propagation, regeneration and spreading such plants within servitude areas or land owned by Eskom.
- f) On sites owned by Eskom, all vegetation proclaimed in terms of the Regulation shall be subject to control in terms of legislation.
- g) Control programs should be included as part on the Environmental Management Plans, and will need to be area and species specific. Due to the nature of alien vegetation, this programmer implementation may need to be more frequent than the three year interval recommended for indigenous vegetation. Alien vegetation can grow at rates significantly faster than 1 (one) meter per year.
- h) Care must be taken to ensure alien vegetation is not spread as a result of vegetation management processes through the transport of seeds or other vegetative material from one site to another.
- i) The responsibility for obtaining the appropriate permit/s from the relevant authority will be that of Eskom.
- j) Indigenous vegetation which does not interfere with the safe operation of the power line should be left undisturbed.
- k) Vegetation should be trimmed where it is likely that it intrudes on the minimum vegetation clearance distance, (MVCD) or will intrude on this distance before the next scheduled clearance.

Vegetation Control Standards In plantations or forests

Normative Reference: 0029E – maintenance and management agreement in forest plantation areas and servitude areas: The following clause in Eskom's Standard Servitude / Wayleave Agreement shall be adhered to:

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- a) No tree shall be allowed to grow to a height in excess of the horizontal distance of that tree from the nearest conductor of any power line or to grow in such a manner as to endanger the line should it fall or be cut down."
- b) Where the Servitude/Wayleave Agreement makes reference to a specific width within which no trees may be deliberately grown, then this restriction width will apply.
- c) Acceptable vegetation that does not grow high enough to cause interference with overhead power lines, or cause a fire hazard to any plantation, should not be cut or trimmed, unless it is growing in the road access area and then only at the discretion of Eskom, provided that this shall not preclude the preparation of fire belts as contemplated in this agreement.
- d) Where clearing for access purposes is essential, the width to be cleared shall be to a maximum of 8 meters.
- e) Deep valleys and sensitive areas that do not allow vehicle access, or legally protected areas are not to be cleared of acceptable vegetation provided the acceptable vegetation poses no threat to the operation and reliability of the power line.
- f) Clearing of acceptable vegetation for tower positions shall be the minimum required for the specific tower, regard being had for the provisions of clause 4.8, and the costs shall be for Eskom's account.
- g) Where power line servitudes enter plantations from non timber farmlands or on either side of a road or river, if the natural vegetation is such that a visual barrier cannot be left, the planting of suitable indigenous vegetation may be considered to provide aesthetic screening.
- h) Trees, shrubs, grass, natural features and topsoil which are not removed shall be protected from damage during operations. Scalping of the earth or any unnecessary disturbance shall not be allowed in any clearing operation.
- i) Specifications for necessary re vegetation of an area shall be determined jointly by Eskom and the Grower, and implemented on an area specific basis by Eskom in consultation with the Grower.
- j) Rivers, water courses and other water bodies shall be kept clear of felled trees, bush cuttings and debris. Where possible, the integrity of riverbanks shall be maintained and shall be dealt with in accordance with the provisions of clause 4.11 if they are disturbed or damaged.
- k) The Grower shall have the right to retain cut vegetation, in which case it shall attend to its removal. If not, the cut vegetation shall be removed by Eskom in a manner that is mutually acceptable.
- l) Neither party shall undertake controlled burning or the making of open fires within or near servitudes unless agreed upon in writing by both parties in this instance.

Weeding and Herbicide Application in Substations:

Cycle 1

- a) Hand pull of weeds and remove to legal dumping site
- b) Apply approved granular sterilent herbicide

Cycle 2

- a) Hand pull of weeds and remove to legal dumping site (regrowth)
- b) Apply approved granular sterilent herbicide

Corridor Specification

Vegetation will be cleared and managed to provide for access, safety clearance, and prevention of fires in accordance with paragraph 4.3 and line clearance in accordance with paragraph 4.3.1 below.

Vegetation Clearance for access purposes (inspection, repair and maintenance), safety clearance, and prevention of fires in Servitudes and Wayleaves

NOTE: Where there is a specific risk to operations as a result of equipment design or environmental condition - the Operating Unit will manage vegetation on merit. The justification for this shall only be in exceptional circumstances and shall be open to scrutiny and review.

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Nominal voltage	Servitude building restriction widths (measured from the centre line of the power line) *	Maximum Vegetation Clearance
11 kV	9 m	4m on either side of the centre line will be cleared. Grass and scrubs will be managed in accordance with Annex B which is biome and land use dependant
22 kV	11 m	4m on either side of the centre line will be cleared. Grass and scrubs will be managed in accordance with Annex B which is biome and land use dependant
88 kV	11 m	5 m on either side of the centre line will be cleared. Grass and scrubs will be managed in accordance with Annex B which is biome and land use dependant
132 kV	15,5 m	8 m on either side of the centre line will be cleared. Grass and scrubs will be managed in accordance with Annex B which is biome and land use dependant
220 to 765 kV	22 m to 40 m	Clear from the centre of the power line up to the outer conductor, plus an additional 10 meters on either side. Grass and scrubs will be managed in accordance with Annex B which is biome and land use dependant.
533 kV DC	15 m	8 m either side of the centre line will be cleared. Grass and scrubs will be managed to a width of 15 meter either side of the centre of the line

Vegetation Clearance for Power Lines

- Vegetation will be managed to maintain clearance to all conductors on the line. This Minimum Vegetation Clearance Distance (MVCD) shall be the sum of "A – Minimum Vegetation clearance" and "B – the Expected Growth Rate in three (3) years".
- High Risk Trees outside the corridor: Trees growing to a height in excess of the horizontal distance of that tree from the nearest conductor which are identified as a risk to safe operation of the power line shall be treated and prevented from growing in such a manner as to endanger the line should they fall.
- Minimum Vegetation Clearance
- A minimum vegetation clearance in accordance with Columns 6 and 8, Table E1 "Minimum Clearance for Powerlines": SANS10280 will be maintained at all times

Minimum Clearance Table: Vegetation to Power Line

System nominal r.m.s. voltage kV	Minimum vertical clearances (m)	Minimum horizontal Clearances (m)
>1 up to and including 44	3	3
66	3.2	3
88	3.4	3
132	3.8	3

220	4.4	3
275	4.9	3
400	5.6	3.2
765	8.5	5.5

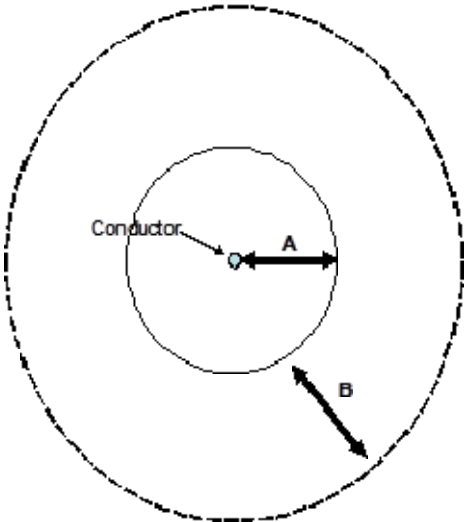


Figure 1: Minimum Vegetation Clearance Distance $MVCD = A + B$

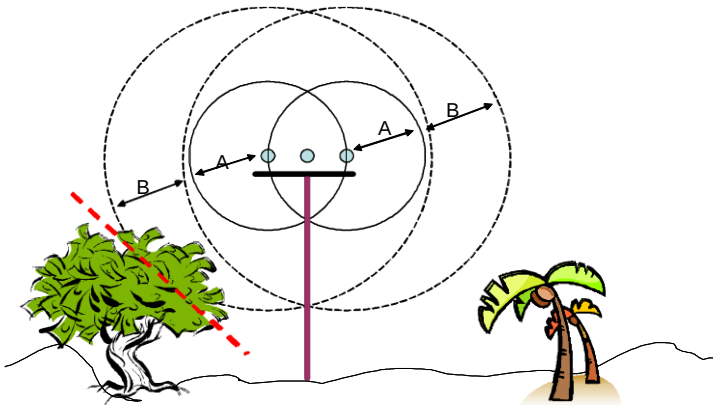


Figure 2: Low Voltage Lines

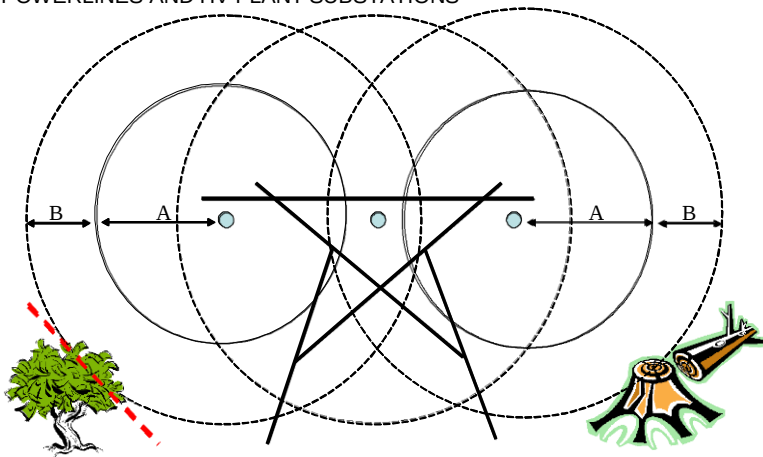


Figure 3: Lines with Nominal Voltage greater than 1 000 Volt

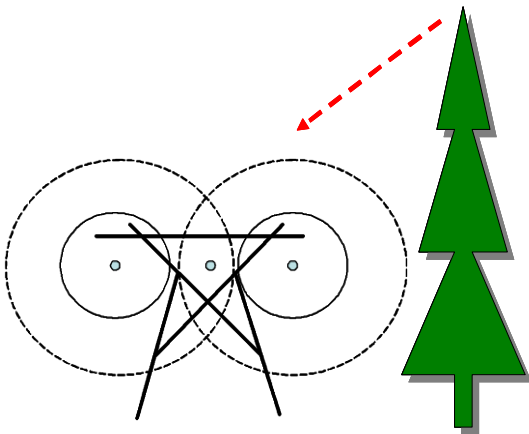


Figure 4: Projected growth before next cutting

Herbicides

This contract is based on the fact that the contractor has a Pest Control Operator License and that he is an expert on the use of herbicides to destroy vegetation. If the Employers Agent observes that the re-growth is outside the acceptable norm, the contractor will be instructed to cut all of the stumps again and apply an herbicide of the Employers choice. If this happens on numerous lines it will be accepted that the contractor is not supplying an acceptable standard of work and this will lead to the termination of the contract.

The contractor will guarantee the effectiveness of the herbicides used at all times.

At all times the herbicides must be mixed and applied strictly according to the manufacturer's instructions. If the herbicides are not applied within the time period specified by the manufacturer the Eskom Representative will give an instruction that all work must stop. The contractor will then re-cut the stumps and apply herbicides. If this is not possible the Eskom Representative will make a note of this and the contractor will either cut this portion again or receive no payment for that portion.

The correct herbicides treatment is an integral part of this contract. This includes correct herbicide selection, mixing and application as soon as possible. It is suggested that each team use 2 staff members to apply herbicides.

Restrictions and Limitations to Vegetation Management Operations

Restriction of activity by the contractor

Where trees have to be felled or trimmed in close proximity to power lines and / or other services and it cannot be done safely, these services must be suspended and removed in order for such dangerous trees to be felled. This entails in extreme cases:

- a) Arranging power outages and in some cases removing line components for the felling to proceed: and/or
- b) Collaborating with other service providers to make their services and assets safe or removing where possible their services temporarily so that felling can proceed.

NOTE: It must be considered that these trees pose a danger to assets, services and the health and safety of the public at large as well as to the persons felling trees. These other risks must be given due attention and priority.

Safety of Eskom/Contractor Personnel

Normative Reference: 34-190 – Access to farms (includes strategy on dealing with game farms):

No person must endanger his/her life or the life of another staff member by entering a property where there is a reasonable suspicion that dangerous animals such as lions, tigers, leopards, rhinoceroses, buffaloes, etc., are present.

Staff should seek to enter such properties accompanied by security staff from the game farm. It is also advised that staff working in and around game farms be trained on how to identify problem animals and how to behave to ensure the safety of his/her life as well as that of another employee.

Whenever any person employed by Eskom or its mandatories gain knowledge of the introduction of dangerous animals in an area where Eskom infrastructure exists, such knowledge shall be conveyed to Land Development for mapping, investigation and/or measuring and to the responsible manager in conjunction with the Customer Services Area Manager to engage the land- owner.

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Stakeholder Management

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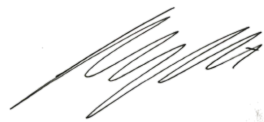
Agreement in Forest Plantation Areas and Servitude Areas

Normative reference: 34-190 – access to farms (includes strategy on dealing with game farms):

Note: that all vegetation management within commercial forestry areas shall be done in terms of the Timber Growers Agreement, the "Maintenance and Management Agreement in Forest Plantation Areas and Servitude Areas". This document has however not been accepted by all foresters, but can be used as a guideline for future agreements. Should a deviation from below be required, a specific agreement with the Timber Growers Industry will be negotiated and contracted.

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ITEM	STANDARD	FOLLOW UP
Plantation Trees	All trees or re-growth within the overturning distance or the specific tree restriction width as defined in the servitude / way leave agreement to be cut horizontally within 100mm of the ground. Stumps to be treated with herbicide. However and notwithstanding the above paragraph, where the timber growers have elected to allow plantations to encroach within these distances, then all the associated risks and responsibilities shall be borne by the Grower.	Re-growth to be treated with herbicide as necessary.
Acceptable vegetation under a power line within 6m beyond the outer phases	All acceptable vegetation that will attain a height in excess of 4m, cut horizontally within 100mm of the ground. Treat stumps with herbicide	Re-growth to be treated with herbicide as necessary.
Acceptable vegetation within the defined Servitude between the edge of the servitude or the timber whichever is the closer and 6m from the outer phase	Acceptable vegetation that will attain a height in excess of the overturning distance, cut horizontally within 100mm of the ground. Treat stumps with herbicides.	Re-growth to be treated with herbicide as necessary.
Declared weeds and invader plants within the overturning distance or the specific tree restriction width as defined in the servitude / way leave agreement	Treat with herbicide or cut at 100mm above ground level, treat stumps with herbicide.	Re-growth to be treated with herbicide as necessary.
Access routes to towers / structures	Where necessary, clear all trees and bush at ground level, treat with herbicide. Grass growth to be encouraged in collaboration with the Grower.	Re-growth to be treated with herbicide as necessary.
10m around power line structures, stays and within tower positions	Clear all trees and bush at ground level, treat with herbicide	Re-growth to be treated with herbicide as necessary.



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Programme Manager

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Supported.
MP Mabanda
Action Snr Manager M&O
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