# Distribution environmental screening document (DESD) Reticulation Powerlines and Ancillary Services

Ratified and accepted by Environmental Practitioner Environmental Specialist Head of Engineering Survey (one signature please)
Accepted by Land Owner/s/Users I have seen the completed document and accept the recommendations made
Assessor/s
Form completed by: EARL DANIELS Signature:

- 1. Fill the report in as neatly and completely as possible.
- 2. Where the question / statement is not applicable mark N/A.
- 3. The form must be completed in consultation with someone who knows the area well and who can also predict if any future development is envisaged (e.g. a land owner, land user, specialist, etc.).
- 4. Indicate sensitive areas on a map and/or spanning plans.
- 5. When in doubt, consult the Environmental Practitioner in your region.

The purpose of this *DESD* is to:

- Determine whether or not the project should be subject to R386 or R387, published in terms of the National Environmental Management Act No. 107 of 1998.
- 2. Identify and mitigate the negative impact of Eskom's activities to a minimum in line with both Legislation and Eskom's Environmental Policies.
- 3. This report is a guide to Route Selection, Construction and Field Services.

NOTE Complete the report before the survey!!!

This is not an office exercise.

Extra sheets of paper may be added and referenced if insufficient space has been provided.

TRANSMISSI ANNEX Q OF DISTRIBUTION	T OF RETICULATION AND SUB- ION PROJECTS: F CAPITAL INVESTMENT IN THE ON BUSINESS	SCSPVABP7 0 PAGE 2 OF 16
1 Project de	scription	
Project name/Su	ırvey	
Area	Bethlehem	
Project number	NW-STM-1209-1876-00005 File nu	ımber
Rural scheme/ Feeder	Lindley Munic-Vooros Voltag	e 22kV
Supply from (Scheme name,	LVS1pole numbers for tee-off)	
Supply to (Farm name, etc	LVS227 :.)	
2 Properties	traversed	
Farm name		
Registration nun	nber and Division	Sub-division
Compilation num	nber Line length/Si	te area (m²) 50Km
<b>Lindley Munic</b>	-De-load Vooros feeder from Burma	
3 Brief descr	ription of the surrounding area	
lands and maiz	ne covered with moist cold Highveld gras ze crops present. Grazing cattle and birds ne. The route of the line is also covered	were observed along the route of

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Could the proposed project have an impact on or be constrained by any of the following environmental aspects?

river, small streams and vleis present along the route of the proposed line. .....

.....

Encircle the appropriate aspect, giving a description of the present state as well as an indication of the possible negative impact. Note that mitigating measures for these impacts are to be included in the Environmental Management Programme.

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#### 4 Physical environment

**4.1 Water:** streams rivers dams wetlands springs floodplains OTHER

Present condition: The line is crossing the perennial Valsriver on farm Brandhoek 20 and Lloyd George 750 (See image 1). The line is connecting to pole mounted transformer (E 27° 56′ 43.8″, S -27° 52′ 57.5″) close to the Valsriver on farm Williesdeel 974. There is a perennial stream with eroded banks where the proposed line is crossing farm Jacobasrust 692 and Maresrust 515 (See image 2). The proposed line will be crossing a non-perennial stream twice on farm Onverwag 1013. The line crosses another part of the Herbstspruit on farm Driekant 835, Vlakspruit 423, Franshoek 842, Herbstspruit 346 and Babsie 497. There is a cemented farm dam present on farm Triangle 598 where the line is going to stand (See image 3). Farm Groenvallei 54 has non perennial streams on it where the proposed line is crossing. A non-perennial pan is present on farm Stonehenge 264. Farm Bulthoek 950 has a high underground water table with a water well present (See image 4).

**Potential impact** (e.g. threat of pollution): There is a potential risk of water pollution or altering of banks of water bodies. The loss of biodiversity and their habitats. The disturbance or divergence of the natural flow of storm water or water in a stream.

Comments/ mitigating measures: Do not construct or plant poles within a distance of 100m from the edge of river bank or any water body. No poles should be planted within the 100 year flood line of a river or stream. No excavations should be made within a water body. Refrain from any sort of littering in and around the water bodies. No driving in or through water bodies must take place and construction vehicles should be serviced regularly. Do not let oil spill in or close to water bodies and any oil spilling incident must be reported immediately to the environmental management section: Mahlatse Moeng 051 404 2287/ Andrea van Gensen 051 404 2040.



Image 1: River crossing at farms Loyd and George

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Image 2: Line crossing at farm Maresrust 515



Image 3: Cemented farm dam on farm Triangle 598

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Image 4: High water table with water well present on farm Bulthoek 950

**4.2 Soil:** sandy rocky clayey OTHER Loam soil..........

**Present condition:** Mainly loam soil was observed along the route of the proposed line. Mainly sandy soil was observed at eroded river and stream banks on farms Loyd and George (See image 5), Maresrus515 and Jacobasrust 692, Driekant 835, Vlakspruit 423, Franshoek 842, Herbstspruit 346 and Babsie 497.

**Potential Impact:** There is a potential of erosion of soil along the route of the line with all construction traffic involved. The riverbanks that are sandy and already eroded have a potential to experience loss of top soil through wind, water erosion processes and during construction. A potential risk of falling poles where it is planted in eroded sand soil might have an impact on the electrical supply in the area. Land pollution and the pollution of soil through littering and the spilling of chemicals might have an impact on the fertility of soil for agricultural activities i.e. land cultivation and the crops.

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**Comments/** mitigating measures: Do not plant poles in or close to highly eroded areas. Construction vehicles and other oil containing equipment should be serviced regularly. No vehicle movement should be conducted through eroded areas and one access route should be utilized to the construction sites. Do not litter in and around the area.

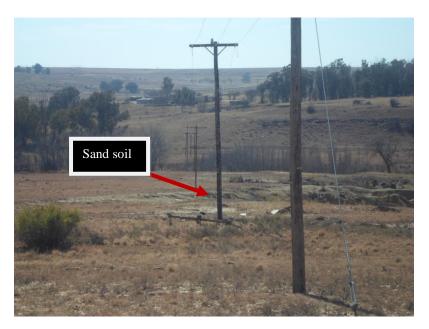


Image 5: Sand soil on eroded river bank

**4.3 Topography:** mountain ridges hills valleys ravines dongas OTHER .......

**Present condition**: The plain along the route of the line is mainly deeply undulating with hills present and valleys where the river crossings are found. There is a deep valley and a hill present on farm Tygerkloof 415 portion 1 (See image 6). A high hill present on farm Dorethea 819. There are deep dongas present close to the river-crossing on farm Loyd and George.

**Potential impact** (e.g. of erosion): The loosening of top soil through driving and constructing on slopes might result into soil erosion. Construction activities might lead to the transformation of landforms. Construction and vehicle movement on ploughed slopes might increase erosion and impact on the output of crops.

**Comments/mitigating measures:** Minimize vehicle movement and excavation on hill slopes. Existing access roads should be utilized throughout the lifespan of the line. No excessive movement on the cultivated sloping areas.

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Image 6: Valley and hills

#### **5 Natural environment**

**5.1 Flora:** indigenous protected exotic OTHER.........

**Potential impact** (e.g. permit applications): The excessive removal of trees can result in an increase in soil erosion. The loss of habitat for nesting birds. The trees might encroach on safety clearance of conductors. The removal of poplar trees can cause soil around it to become toxic. The loss of shelter for small mammals can occur due to the removal of trees. The removal of trees can lead to birds nesting on the pole structures.

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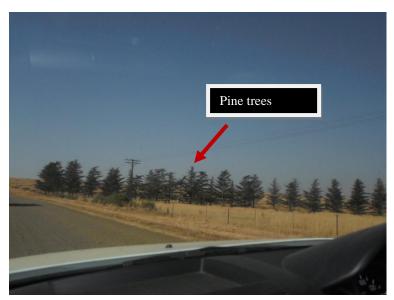


Image 7: Pine trees on farm Holpan 475

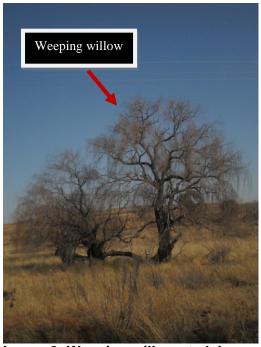


Image 8: Weeping willow at vlei

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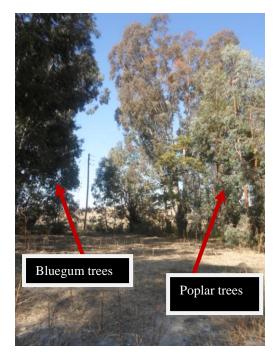


Image 9: Poplar - and Blue gumtrees

**5.2 Fauna:** mammals birds OTHER ......

#### **Brief description and conservation status:**

(e.g. rare, protected, etc., mention giraffe, elephants, eagles, vultures, etc., mention migratory paths)

There are ground squirrels that were observed between LMM3-5-7 and LMM3-5-10 (See image 10). Most of the area that the proposed route passes through farms where there is grazing land and there are cattle that were observed in these areas. Sheep grazing on farms Monika 797, Herbstspruit 346. Bird nests were observed next to pole number LMM3-5-10. Kiewit birds were observed numerous times along the route of the line and more of these birds were observed between poles BVS66-85-2 and BVS66-8 (See image 11), farm Beersheba 13, where they are attracted by the stream crossing and vleis. Guinea fowls were observed along the route of the proposed line on farm Dorothea 819 (See image 12). The Eupodotis caffra (Natalse Korhaan) was observed in the grassland on farm Tygerkloof 415 portion 1 (See image 13). Lewerik birds and geelborskoesters were observed on farm Elizabeth 479 in the grasslands with red grass.

#### **Potential impact** (e.g. threat of electrocution, collision, etc)

Birds might be electrocuted or collide with the powerline. Birds nest on pole structures and stream on the conductors. The disturbance or pouching of livestock. Removal of grazing land for livestock and the loss of habitat as grassland gets removed through site preparation. The disturbance of burrowing animals and small mammals during excavations.

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**Comments/mitigating measures:** Landowners should be informed regarding the commencement of construction so that they can relocate their livestock from the construction sites. Bird flappers should be installed at wet areas i.e. streams, river crossings, vleis and marshlands. Vegetation clearance should be kept to a minimum at dense grasslands. The Guinea fowls and other birds should not be disturbed. Vehicular movement through the grasslands should be prevented as far as possible.

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Image 10: Ground squirrel



Image 11: Kiewit bird

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Image 12: Guinea fowls



Image 13: Natalse Korhaan

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# 6 Social environment

areas:	nature/game reserves	hiking trails	tourism routes	parks	recreational areas
residential- areas	green belts	sacred/holy grounds			
Brief descriptio	n				
.N/A					
Potential impac	t e.g. threat of	encroachment,	etc		
N/A					
Comments/ Miti	igating measure	es:			
N/A					
6.2 Visual aesthetics:	easily	seen	hidden	Parti 	ally

**Brief description:** Most of the line goes along the route parallel to the gravel road, existing communication infrastructure and existing electricity infrastructure where it is partially seen from the road side.

**Potential impact:** The new proposed line will contribute towards the disturbance of the view in the area under study.

**Comments/ mitigating measures:** Make use of wooden pole structures of the same height where possible in order to camouflage in with existing structures

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6.3 Sensitive areas:

historical sites

archaeological

monuments

natural heritage

sites

<mark>graves</mark> landmarks ruins

OTHER...<mark>Old</mark> stone cattle kraal.....

#### Present condition:

Graves observed on farm Tygerkloof 415 portion 1 and on farm Groenvallei 54 in a small graveyard close to the yellow container at the main road (See image 14). Another graveyard was observed on Tygerkloof 415 portion 3 at the side of the main road (See image 15). Stones that were packed in a circular formation (old cattle kraal) were observed in the veld of farm Groenvallei 54 where the line crosses (See image 16)......

Potential impact: possible impact on heritage resources.

Graves might be altered on during excavation. The disturbance or damage of unmarked graves. Damage or removal of a heritage resource from the Senekal war or the Anglo-Boere wars ......

#### Comments/mitigating measures

Notify SAHRA before any commencement on the project takes place. Do not proceed with any activities if a grave or any heritage feature is disturbed. Excavation or any construction activity must be at least 50meters away from the graves and as far as possible from the identified stone kraals.



Image 14: Small graveyard

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Image 15: Marked graves on border of farms Tygerkloof 415 and Herbstspruit 348



Image 16: Old stone cattle kraal on farm Groenvallei 54

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#### Annex A

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#### 7 Economic environment

**7.1 Land use:** crops orchards grazing crop spraying

game farming forestry areas mining OTHER .....

**Brief description:** There are maize fields present along the proposed route. There are land ploughed for future cultivation on farm Vlakspruit 423, Holpan 475, Bastiaan 478 (See image 17). Most areas along the proposed route are being used for grazing land for livestock ........

**Potential impact:** Land pollution might result in the soil fertility for crops to grow. The destruction of crops through human activity in maize fields. The loss of fertile top soil due to excavation, construction and vehicular movement in the crop fields. Veld fires can break out if conductors or poles fall since the area is windy.



**Image 17: Land ploughed for future cultivation** 

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7.1.1 Commercial:	factories	:	shops	OTHER	
Brief description:	N/A				
Potential impact:	N/A				
7.1.2 Infrastructure:	<mark>roads</mark>	railways	communications	power lines	air fields
	ninelines	SOWAGE	OTHER		

**Brief description:** The line goes mainly along gravel roads and a part of it goes along the main road (R707). The proposed line is crossing the R707 at the four way intersection of farms Groenvallei 54 and Knapdaar 354 portion 3. The proposed line is crossing the R707 again at farm Stonehenge 264. The line crosses a railway on farms Stonehenge 264 portion 1 and Brandhoek 20. Telkom communications lines and existing powerlines was observed next to most of the same roads where proposed line is going to stand. The gravel road to which the proposed line is going to stand next to on farm Elizabeth 479 is highly eroded inside and on the road reserve.

**Potential impact**: Skew standing poles might encroach on safety clearances of existing infrastructure. The clearance of trains might be encroached on by the new powerline. The acceleration of erosion of the gravel roads due to vehicular movement during construction and maintenance of the line.

**Comments/mitigating measures:** Ensure clearance from other powerlines and communication lines. Research regarding servitudes and deeds is recommended before commencing on the project. Be alert for loose structures and hanging conductors. Remove old conductors and structures from the proposed route. Move the proposed line away from the road reserve on farm Elizabeth 479.

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7.1.3 In	<b>npact:</b> What	impact wi	Il this project ha	ve on eleme	ents 4 to 7?		
1.	Physical						
No imp	act (0)	Medium	n impact (2)	High	impact (0)		
2.	NaturaL						
No imp	act (0)	Medium	n impact (2)	High	impact (0)		
3.	Social						
No imp	act (0)	Medium	n impact (2)	High	impact (0)		
	ine the overa	all impact			and social) need to	20 00.	10100100 10
	No imp	act	2 Medium impa	ct Hi	gh impact		
<b>Alterna</b> Have alt Yes No	atives ternative routeX		·		ntal Practitioner or spowner/s or users?	oecialist	t.
	ed study	ooning rogu	uirod in tormo of r	ogulation F44	10		
Yes		, , ,	uired in terms of r	eguialion 544	+ f		
No	X	_					
Do we	have to not	ify SAHR	λ?				
Yes No	X						

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## Annex A

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# **Environmental Management Plan**

#### 1 General conditions

- 1.1 The Eskom project manager or co-ordinator shall be responsible for ensuring that the land owners have been informed before any work is carried out on site. Contractors shall find out if the land owners have been informed before moving onto site.
- **1.2** No fences, gates or locks shall be damaged to obtain access onto a line route. Arrangements shall be made in advance to obtain permission for access.
- 1.3 Use of private roads shall be arranged in advance. Any damage to private roads shall be repaired at the contractor's expense and to the satisfaction of the land owner. This shall be the responsibility of the project manager or co-ordinator.
- 1.4 Gates shall be left as they are found, i.e. closed gates shall be kept closed and open gates shall be left open. Gates to adjacent properties or onto public roads shall be closed at all times. Any Eskom gates installed on the line route shall be kept closed and locked except while stringing is taking place. Open gates shall be guarded to prevent animals straying and unauthorized persons and vehicles entering into adjacent camps or properties.
- **1.5** Permission shall be obtained from land owners before any water is used.
- **1.6** No fires shall be lit on private property. If fires are lit on Eskom's property or in the construction camp, provision shall be made that no accidental fires are started. No fire wood shall be collected in the yeld.
- **1.7** If activities that can cause a fire are carried out, fire extinguishers shall be available on site and in the construction camp.
- **1.8** No property may be accessed after normal working hours except with the permission of the land owner. Privacy shall be respected at all times.
- **1.9** Eskom, Eskom's contractors and their employees shall at all times be courteous towards land owners, tenants and the local community.
- **1.10** Eskom, Eskom's contractors and their employees shall not cause damage to property, crops or animals. Activities that may cause conflict with land owners, tenants, the local work force or the local community shall be avoided. Should conflict arise it shall be immediately reported to the Eskom project manager or co-ordiator.
- **1.11** Vehicles shall be driven at a moderate speed on private roads and stay within the statutory speed limit on public roads.
- **1.12** All movement of vehicles shall take place on the established Eskom servitude road or on private roads as agreed in advance. Keep to existing tracks. No movement shall take place through the veld. Special care shall be taken to prevent excess damage during wet weather.

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### Annex A

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- **1.13** If any vehicle should get stuck, the damage shall be repaired immediately so that no deep ruts remain.
- 1.14 Any damage to private property shall immediately be reported to Eskom and the owner. The damage shall be rectified immediately if possible and/or appropriate compensation shall be paid to the owner at the discretion of the project manager/co-ordinator in consultation with the property owner. A record of damages and rectifying action shall be kept. The land owner's satisfaction with the outcome of rectifying action shall be obtained in writing.
- 1.15 A proper system of waste management shall be instituted in the construction camp. This entails that sufficient waste bins are available on site and in the construction camp. The waste shall be dumped at an approved waste disposal site. No containers, scrap metal, conductor etc. shall be left on site.

All scrap shall be removed and taken to an appropriate disposal site. No oil, diesel or other chemicals shall be spilled or discarded anywhere. If an accidental spill occurs, it shall be reported immediately and cleaned to the satisfaction of Eskom and the land owner. No waste shall be left in the veld or on the line route.

- **1.16** Washing and toilet facilities shall be provided on site and in the construction camp. The facilities shall comply with Eskom standards and shall have the approval of the land owner.
- **1.17** No human excrement shall be left in the veld. If no toilet facilities are available such waste shall be buried *immediately*.
- **1.18** Herbicides shall only be applied with Eskom's permission and in accordance with the Eskom Policy on Herbicides ESKPBAAD4.
- **1.19** Camp and office sites shall be dismantled and removed after completion of the construction phase of the project. The site shall be rehabilitated to as close as possible to its original condition to the satisfaction of the land owner which shall be in writing.
- **1.20** All excavations shall be enclosed to prevent animals or people from accidentally falling into excavations.
- **1.21** No trees shall be cut or removed without prior permission from the landowner. Permits shall be obtained for the cutting and removal protected trees (protected trees shall be dealt with in 2, **Special conditions**).

#### 2 Special conditions

(Specific issues identified during the scoping as needing attention i.e. erosion berms, bird flappers, protected trees. etc.).

Bird fla	ppers	will be	need	where	line	is	crossing	the	farms	Elizabeth	479,	Maresrust	515
Beershe	eba 13	3 portio	ո 1, Dr	iekant 8	835 a	and	l between	BV	S 43-7-	-1 and BV	S 43-	7-4.	

Structures not to be	used anymore sh	nould be removed	 

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# **TYPICAL MITIGATION MEASURES**

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AGRICULTURE		
Loss of standing crop due to access road and tower work site.	<ul> <li>limit width of access and size of tower site.</li> <li>avoidance of crop areas.</li> <li>monetary compensation for crop loss.</li> <li>time construction to avoid growing season.</li> </ul>	
Soil Compaction	<ul> <li>scheduling activities to times of the year when soils are least susceptible to compaction.</li> <li>stop activities when ground conditions are poor.</li> <li>use of equipment with low bearing capacity.</li> <li>chisel ploughing.</li> </ul>	
Construction of new lines	locate access roads along     existing traffic routs.	
Topsoil – subsoil mixing/soil rutting	<ul> <li>scheduling activities.</li> <li>stop activity when ground conditions are poor.</li> <li>use of equipment with low bearing capacity.</li> <li>use of gravel roads.</li> <li>addition of manures to offset fertility loss.</li> <li>compensation for reduced soil productivity.</li> <li>removal of spoil and/or bentonite from foundation operations.</li> <li>Segregation of topsoil and subsoil.</li> </ul>	
Disturbance to farm operations	<ul> <li>maintain contact with landowner/tenant regarding preferences.</li> </ul>	
Loss of livestock	<ul> <li>employ noise control measures near sensitive livestock.</li> <li>Construction of farm gates.</li> <li>Securing farm gates.</li> <li>Clean-up construction materials which could be ingested.</li> <li>Compensation for lost, injured livestock.</li> </ul>	
SOCIAL IMPACTS		
Noise and Vibration	<ul> <li>limit this type of work to daylight hours.</li> <li>observe protocol or applicable municipal by-laws.</li> <li>use of appropriate methods where available.</li> </ul>	
Mud and Dust	- wetting down dry soils.	

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	- chemical control of dust.
	- cleaning roads to remove mud.
	- temporary planting of grasses.
Aesthetics	- screen with natural of planted vegetation
71001101100	restoration.
	<ul> <li>avoid linear access down the right-of-way.</li> </ul>
	<ul> <li>addition of topsoil to gravel access roads.</li> </ul>
	<ul> <li>hoarding construction sites.</li> </ul>
	- installation of landscaping in advance of
	site completion.
Inconvenience	
Inconvenience	- select route and method of installation to suit landowners' conditions.
	suit landowners conditions.
	a cleat timing of activity
Haritana na annana	- select timing of activity.
Heritage resources	- avoidance/isolation.
	- design measures to make facility less
	obtrusive.
	- screening.
	<ul> <li>alternate methods of equipment.</li> </ul>
	- protection by use of enclosures, barrier
	fencing, covering.
	<ul> <li>salvage in conjunction with SAHRA.</li> </ul>
	- relocation in conjunction with SAHRA.
Tourism and recreation resources	- design measures to make facility less
	obtrusive of disruptive.
	- screening and restoration.
	- minimise noise and dust.
	- safety precautions to protect the public.
	- scheduling to avoid peak use periods.
WATER QUALITY	constanting to avoid pour dos ponedo.
Sedimentation of streams due to erosion	- minimise use of slopes adjacent to
from the right-of way.	streams during soils testing, construction
nom the right of way.	and maintenance.
	- maintain a cover crop.
	- retain buffers.
Stream bank erosion.	- mechanical erosion control.
Sucam Dank Ciusiun.	
	- retain shrubby stream bank vegetation and
	selectively cut or prune trees during line
	clearing/maintenance.
	- selective spraying of herbicides.
	- Mechanical erosion control.
Impedance of natural flow streams/others	- use and maintenance of appropriate
surface waters.	stream crossing device.
Ponding or channelization of surface waters	- timing activities to stable ground
due to rutting.	conditions.
	- use of gravel roads.
Contamination of surface or ground waters	<ul> <li>spill control material and procedures</li> </ul>
through spills or leaks of toxic substances.	readily available.
	- site selection where possible.
Soil compaction/topsoil-subsoil mixing.	- avoidance of rutting by vehicles where
	possible.
	- construction timing.
	<ul><li>construction timing.</li><li>use of gravel roads.</li></ul>

PROCEDURE FOR
ENVIRONMENTAL

ASSESSMENT OF RETICULATION AND SUBTRANSMISSION PROJECTS:
ANNEX Q OF CAPITAL INVESTMENT IN THE
DISTRIBUTION BUSINESS

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	stop activities when ground conditions are poor.
Wind/water erosion.	<ul> <li>avoidance of areas with high erosion potential.</li> <li>timing activities to the most stable ground conditions.</li> <li>slope stabilisation.</li> <li>mechanical erosion control.</li> <li>vegetation erosion control.</li> <li>recompaction of trenches.</li> <li>avoid trenching parallel to the fall of a slope.</li> </ul>
Contamination by petrochemicals.	<ul> <li>spill control material and procedures made readily available.</li> <li>restoration methods investigated.</li> </ul>