

EIAs & Biodiversity Offsets for Forests & Protected Trees

**Department of Agriculture,
Forestry & Fisheries**

2019

NATIONAL FORESTS ACT OF 1998

NATIONAL FORESTS ACT OF 1998



- **Section 3 – principles for sustainable natural forest and woodland management**
 - protects all natural forests
- **Section 7 – no destruction or damage of forest trees without a license**



- **Section 15 – no destruction or damage of listed protected tree species without a licence**



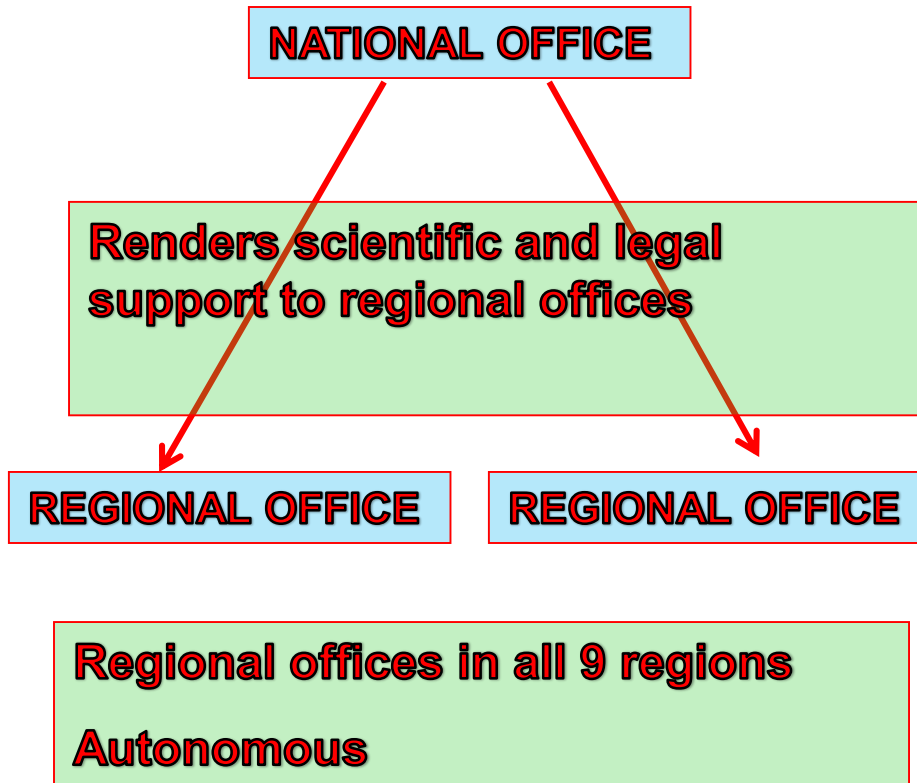
- **Section 23 – licence for activities on State forests**

NATURAL FOREST

**47 PROTECTED TREE
SPECIES**

NATIONAL FORESTS ACT OF 1998

ORGANISATIONAL MATRIX



REGIONAL OFFICES

- Licence applications
 - S7 trees in natural forests(felling etc)
 - S 15 protected tree species (felling etc)
 - S 23 Activities on State forests
- Inputs into EIAs & land use change processes affecting forests and protected trees
- Law enforcement – illegal felling of forest or protected trees

Protected Tree Species

KEYSTONE

VACHELLIA ERIOLOBA
CAMEL THORN

VULNERABLE

WARBURGIA SALUTARIS
PEPPERBARK TREE

Basically Two Categories Protected Trees

VULNERABLE

- **Rare & threatened**
- **Trees in very sensitive ecosystems**
- **Trees with very limited distribution range**

STRICT APPROACH

- No harvesting
- No sacrifice for development

KEYSTONE

- **Trees with wide range but important ecosystem role**
- **Trees with wide range but under use pressure**

LESS STRICT APPROACH

- Controlled harvesting under licence
- Removal or pruning allowed under licence – off-sets and conditions set for large numbers of trees affected

Roads, Powerlines & Pipelines

- **Densities of protected tree species can vary greatly**
- **Large trees should be left**
- **Sensitivity of the environment varies**
- **Impacts greatly vary according to the development types, size & length of servitudes & receiving environment**

Eskom Line Case - Northwest

- 3 Protected Tree species affected
- Affected veld types considered

- Number of affected protected trees, veld type threat status and conservation target shortfall considered for biodiversity offset

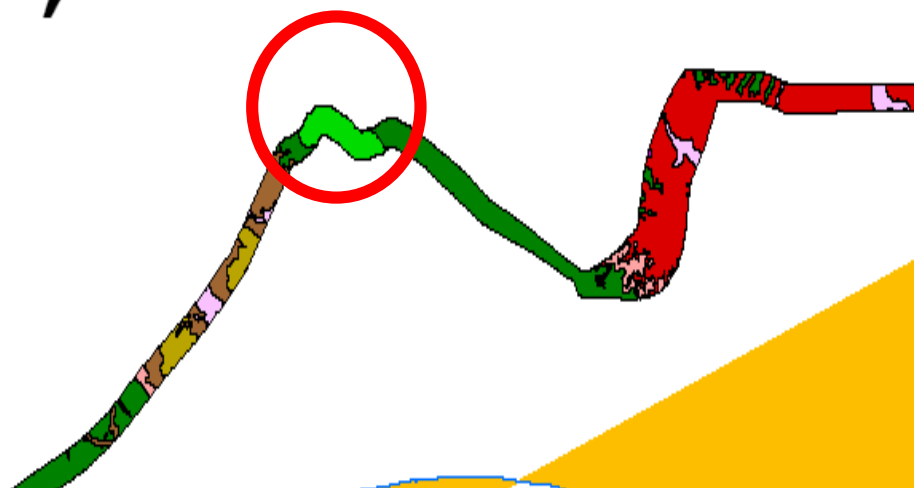
Woodland Types

Veg Code	Veg Type	Threat Status*	Cons Target (% of area)	% Formally Protected	% Transformed	Total Area (ha)	Degree of Erosion
SVcb 1	Dwaalboom Thornveld	LT	19	6	14	966 895	Very low-low
SVcb 2	Madikwe Dolomite Bushveld	LT	19	17	1	97 429	Low-very low
SVcb 3	Zeerust Thornveld	LT	19	<4	16	412 819	Very low-low
SVcb 4	Dwarsberg-Swartruggens Mountain Bushveld	LT	24	<2	7	264 720	Very low-low
SVcb 5	Pilanesburg Mountain Bushveld	LT	24	96	2	43 498	Very low
SVcb 6	Marikana Thornveld	EN	19	<1 (+ more in non-formal reserve)	48	252 870	Very low-moderate

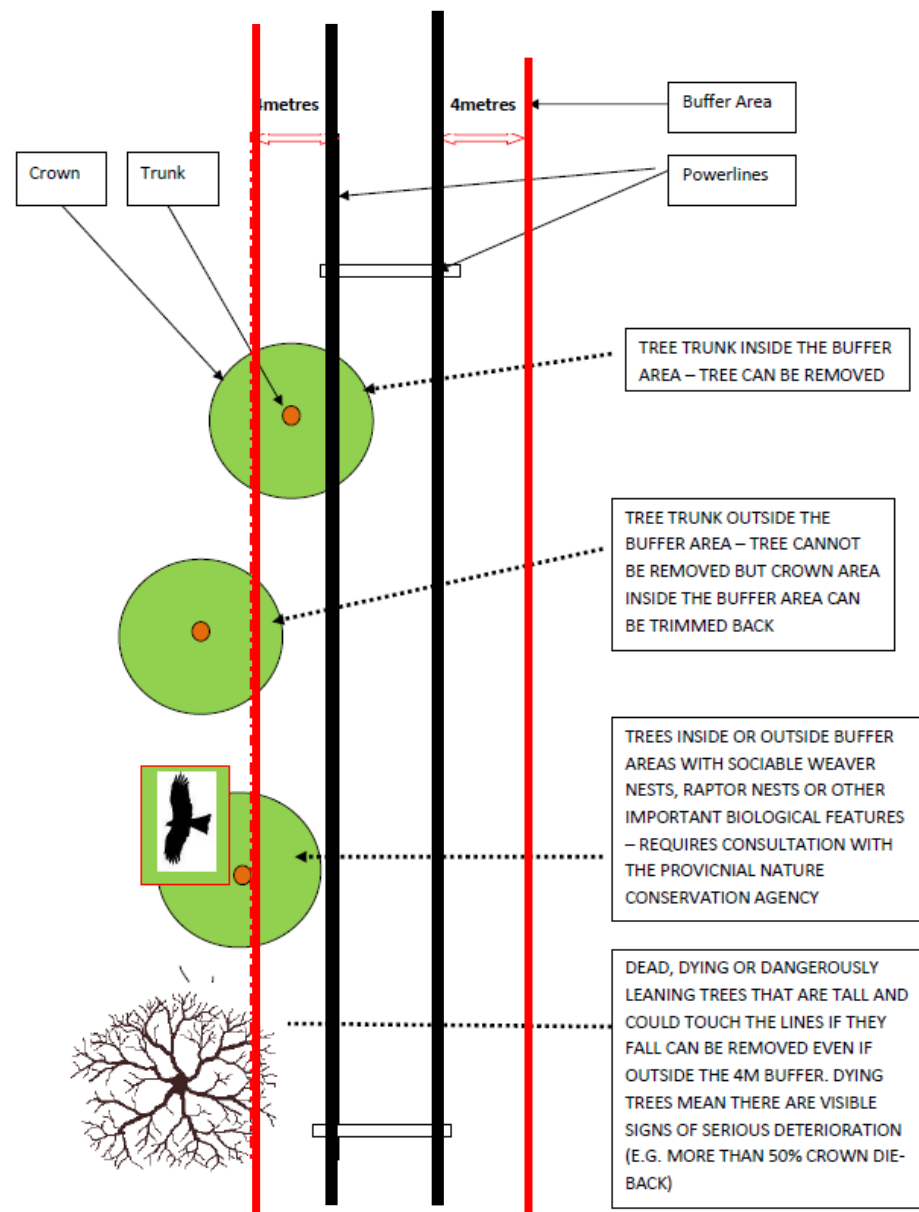
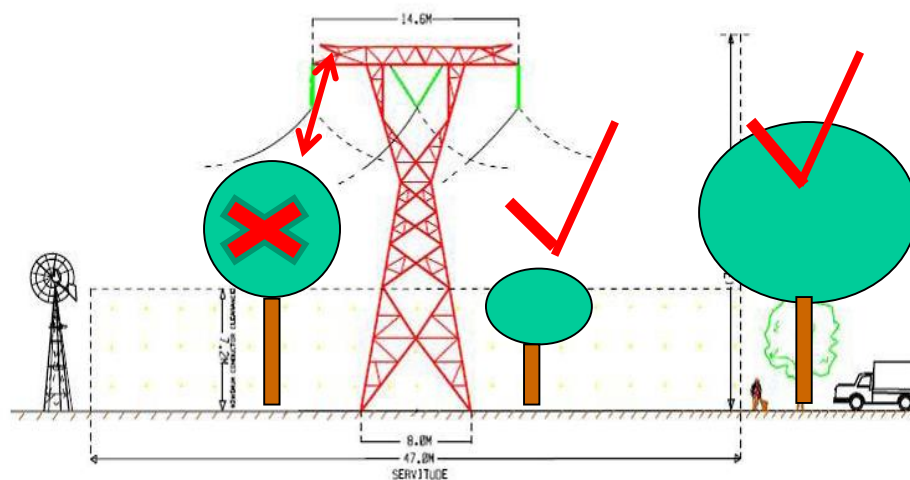
FACTORS CONSIDERED

- Number of protected trees affected
- Rarity, cons. target & threat status of veld types
- Level of transformation

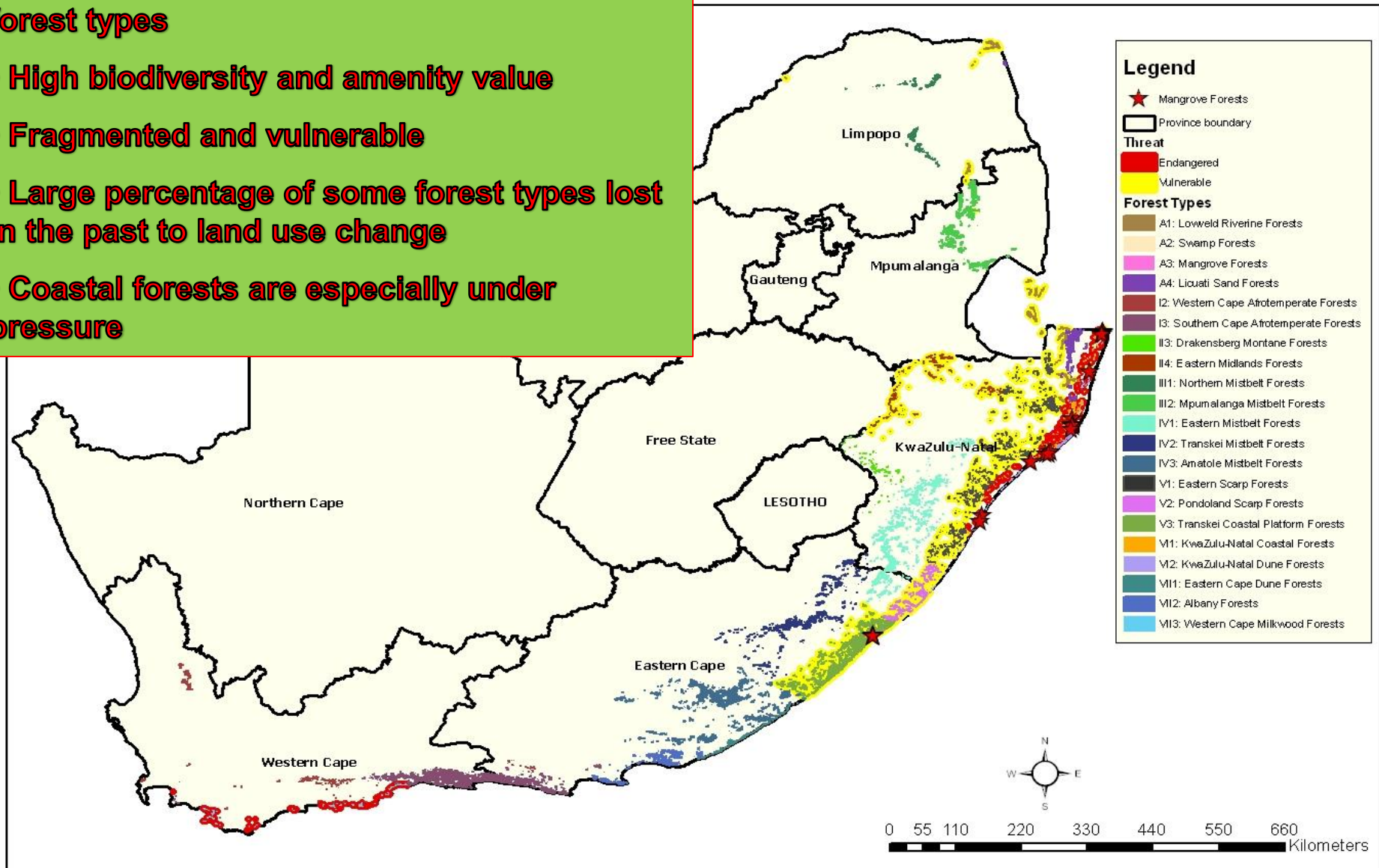
Powerlines



SERVITUDE AND CONDUCTOR CLEARANCE
275KV TRANSMISSION LINE
SELF-SUPPORTING TYPE



- Natural forest biome is rare – 0.5% of land
- Natural forests are diverse – 26 national forest types
- High biodiversity and amenity value
- Fragmented and vulnerable
- Large percentage of some forest types lost in the past to land use change
- Coastal forests are especially under pressure



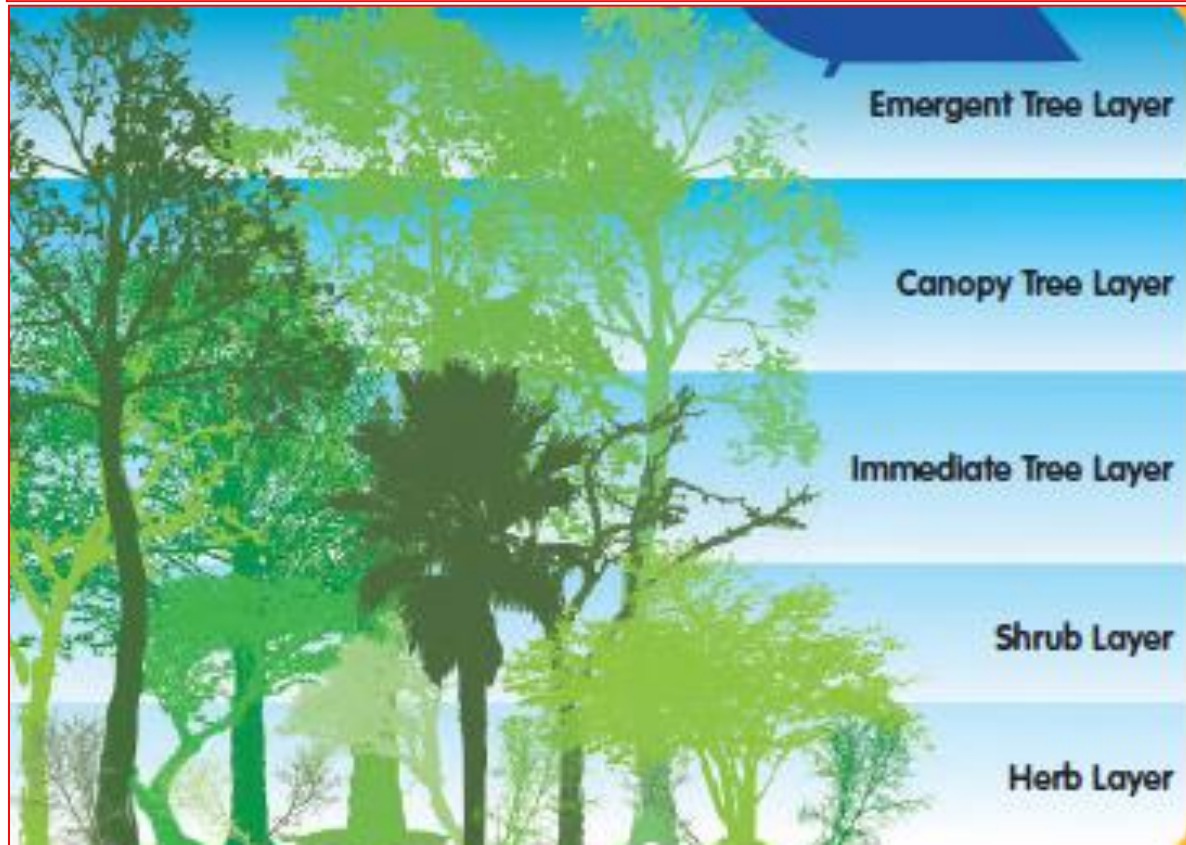
Natural Forests

What is a natural forest?

- **National Forests Act:**
 - **Group of indigenous trees**
 - **Crowns touching**
- **Ecosystem and forest produce within**
- **Scientific Definitions**
 - **Grow in layers**
 - **Grasses rare**
 - **Fires rare**

Section 7: Trees in a natural forest may not be destroyed without a licence (dead or alive)

Section 3 : Natural forest may not be destroyed save in exceptional circumstances



Natural Forests

What is a natural forest?

- Forest types
 - Forest type classification report
 - Minister declared all forest types to be natural forest
- Identify natural forest through indicator /diagnostic species, and vegetation structure
- Beware! - Not all botanists are clued up to identify natural forest

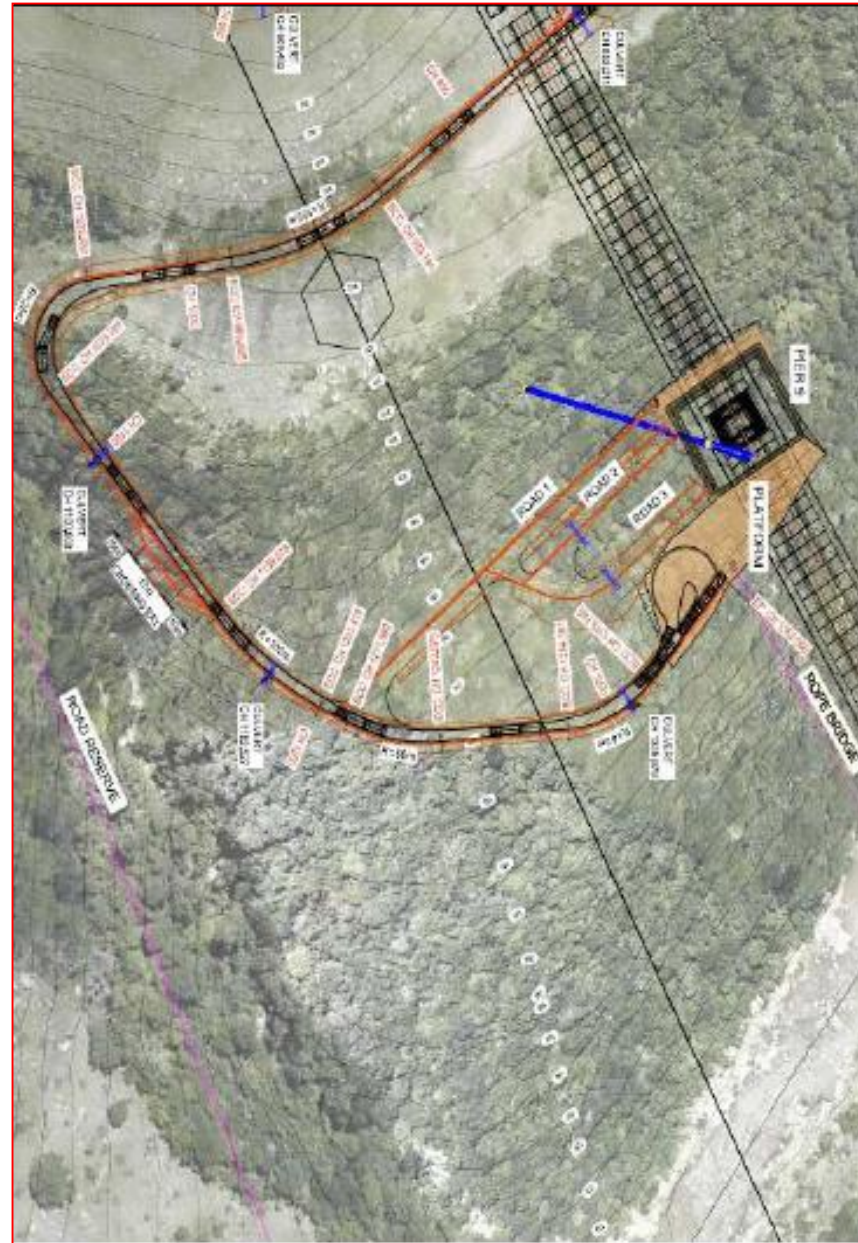
N2 Toll Road – near Wild Coast in Eastern Cape

Mtentu River Bridge

Development Control – the planned road and bridges of the toll road will destroy some forests



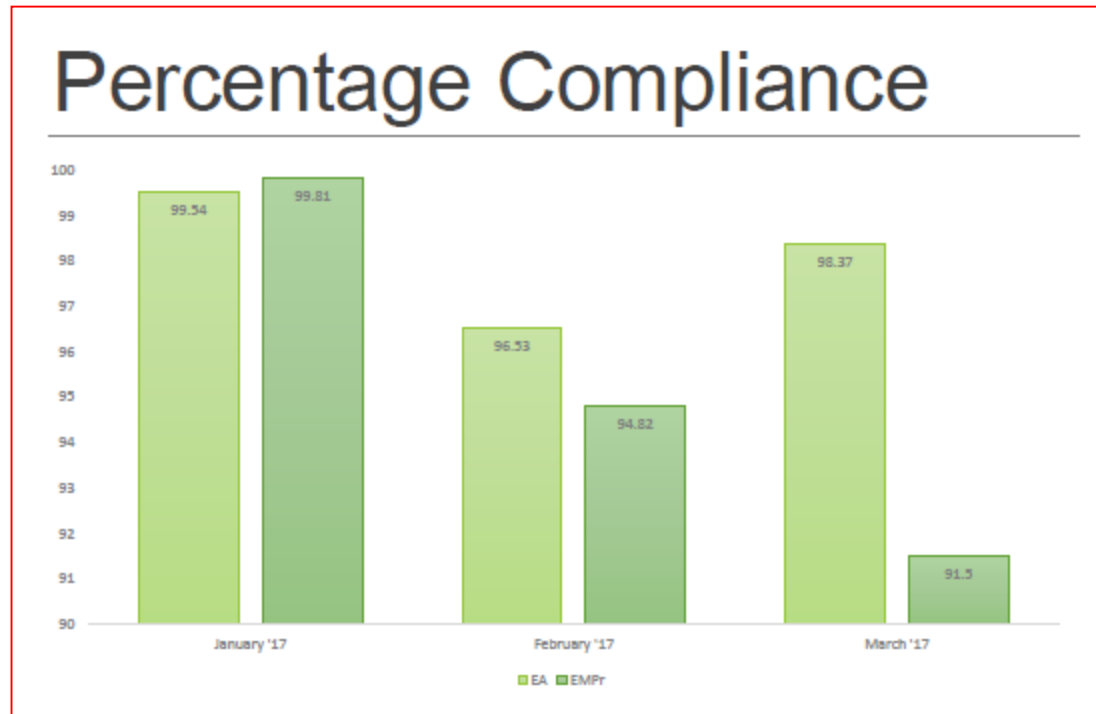
N2 Haul Road



N2 Toll Road – Search and Rescue

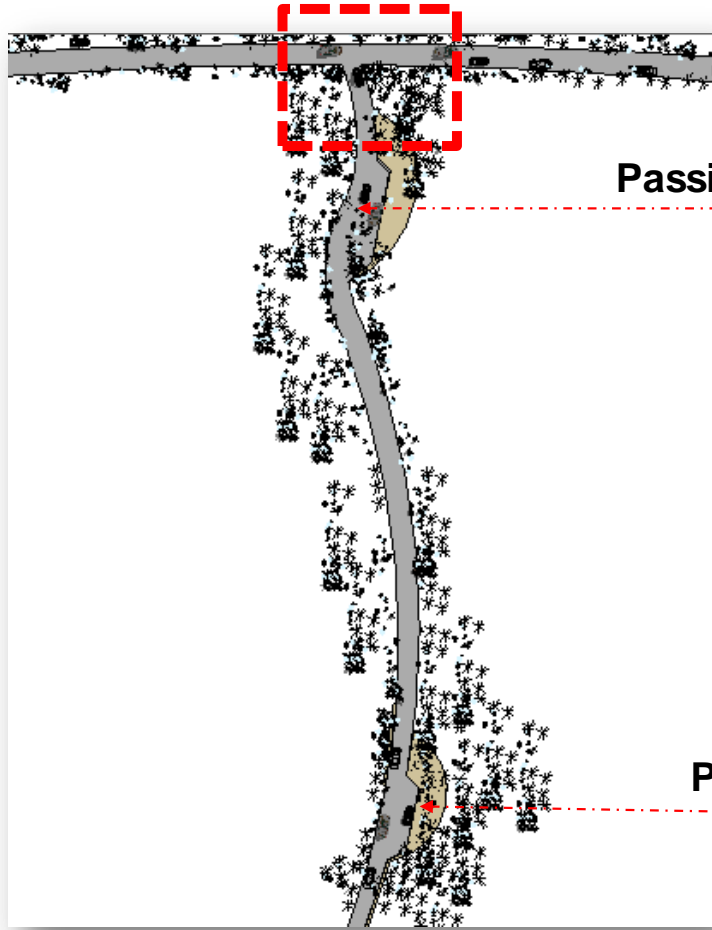


N2 Toll Road – Compliance Monitoring

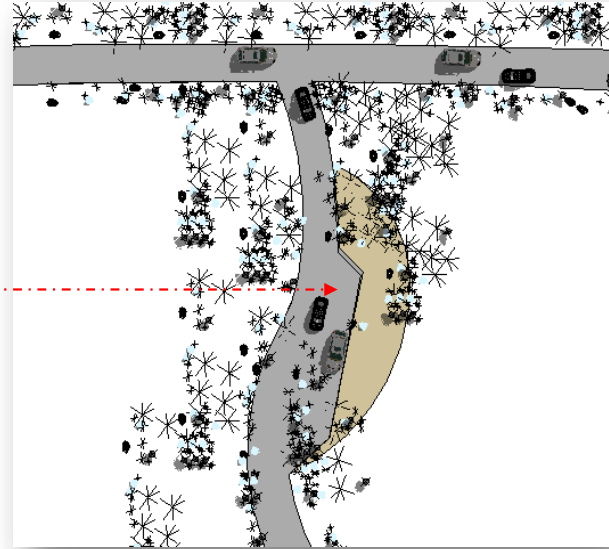


Mdzwini Road – E Cape

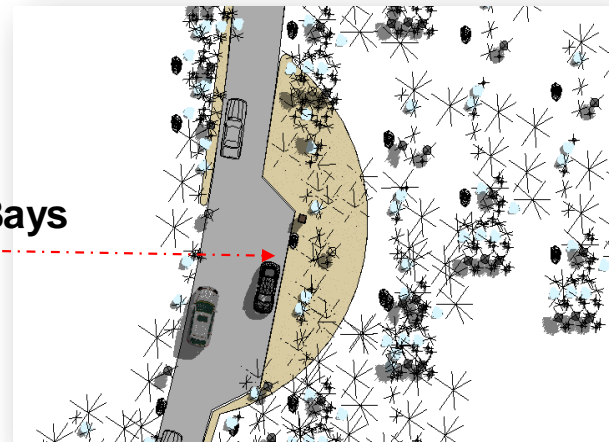
5m and 3m Wide Road
Intersection



Passing Bays



3m Wide Road



Passing Bays

URBAN ROADS - WALMER

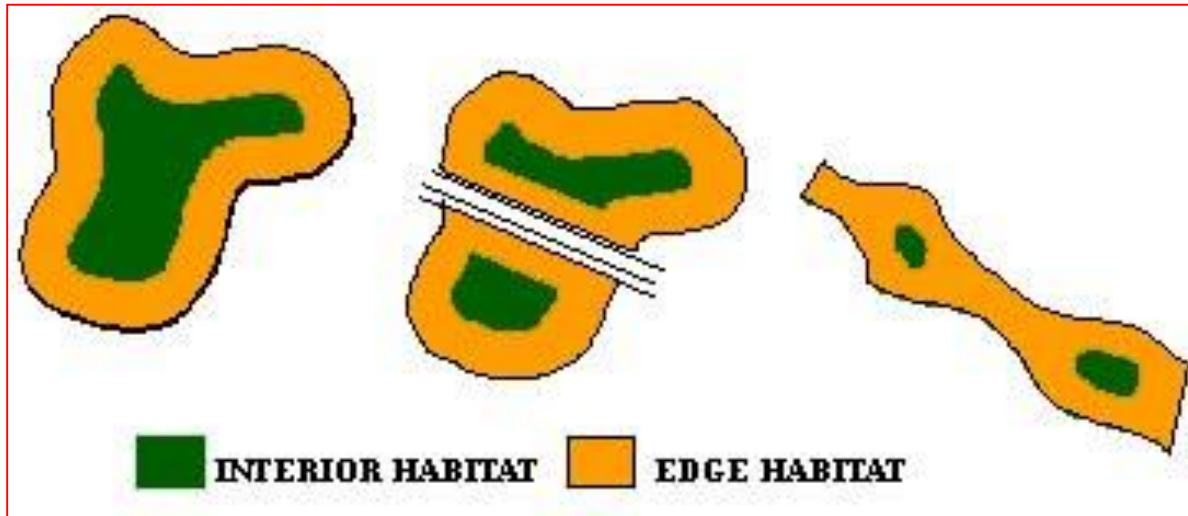


State Forests

If a linear development will cross State Forest Land:

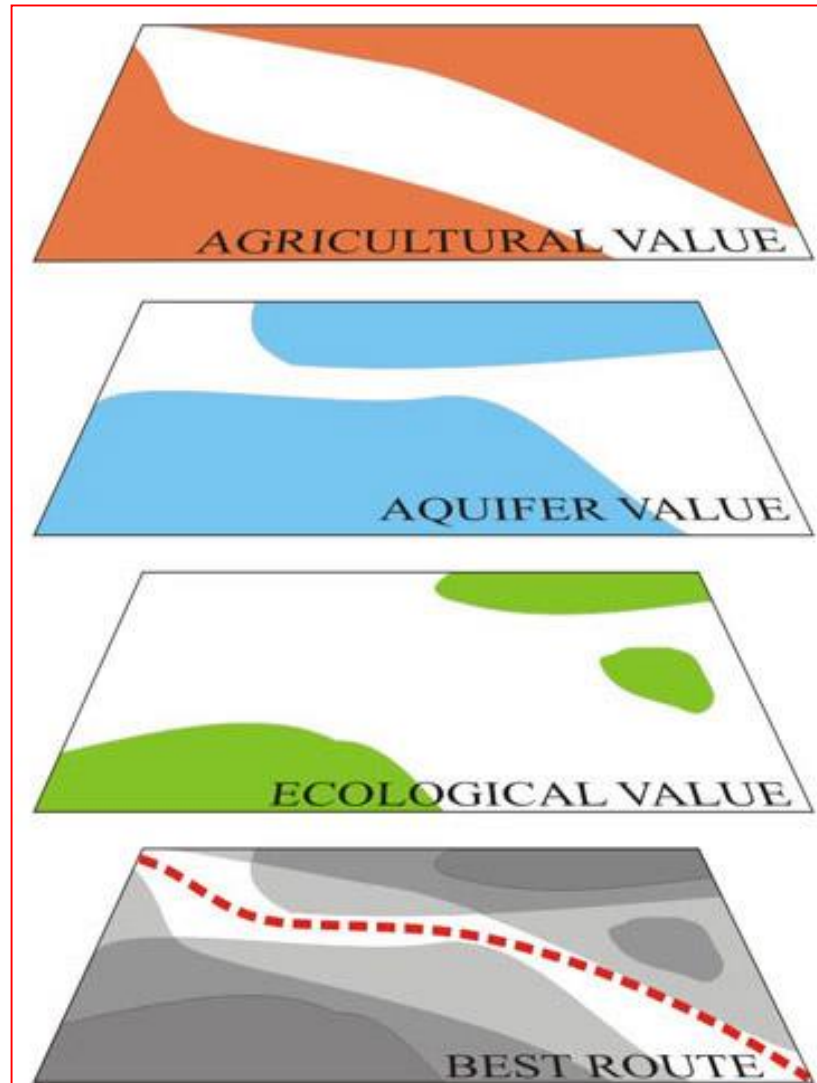
- It requires a Section 23 Licence from DAFF**
- It requires a land survey and registering of a servitude**
- It requires a tariff fee to be paid annually**
- It requires compensation for assets lost**

Fragmentation



Land Suitability Analysis

Mc Harg Overlay Method

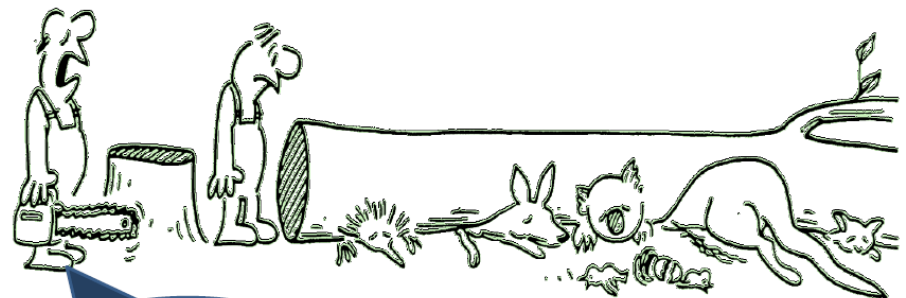


What is a Biodiversity Offset?

- Biodiversity off-set is:
 - A form of compensation for an activity that will cause significant loss of biodiversity and ecosystem services
 - a last resort measure if all options of alternatives or minimising impacts have been explored
 - only required if relatively high biodiversity impacts result from an activity

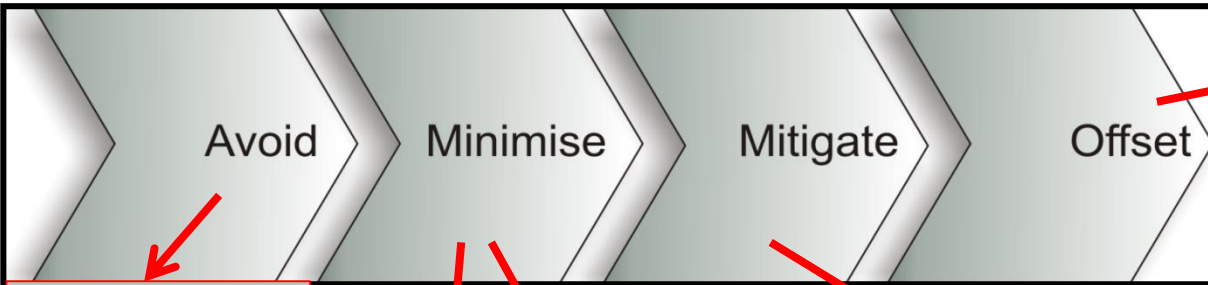
Broadly speaking, and in South Africa, biodiversity offsets are *measurable* conservation outcomes resulting from actions to compensate for *residual* negative impacts on biodiversity. Biodiversity offsets are designed to deliver remedial *measures commensurate with the significance of residual impacts*.

Offsets in the mitigation hierarchy?



Now let's think about a biodiversity offset...

Mitigation Hierarchy



Only if significant impacts cannot be minimised and mitigated sufficiently

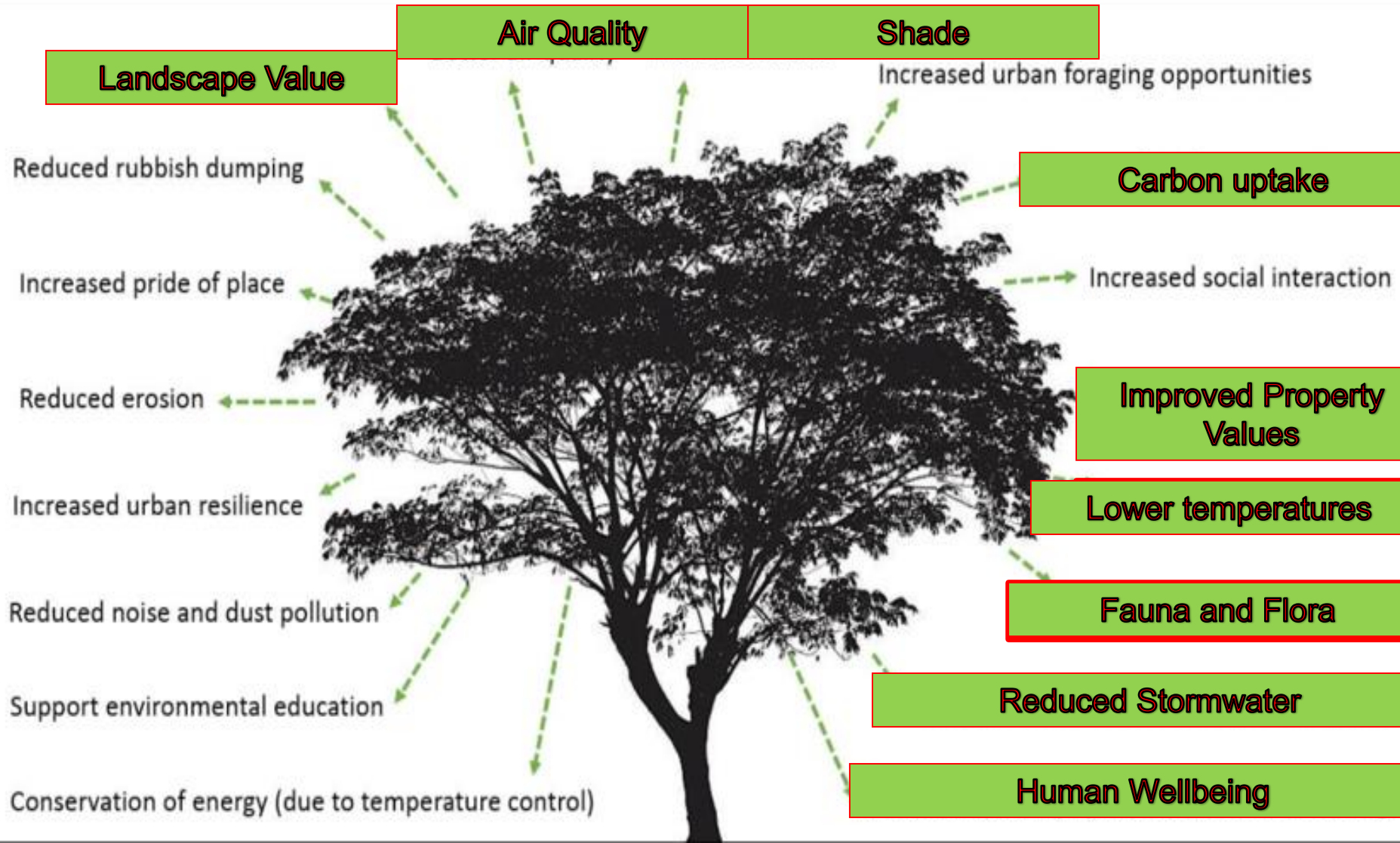
No feasible alternative route possible

Road over forest – impact limited to pillars

Rescue plants and use in rehabilitation

Shorter road curve destroy less forest

Tree values (Ecosystem Services)



Ecosystem Services

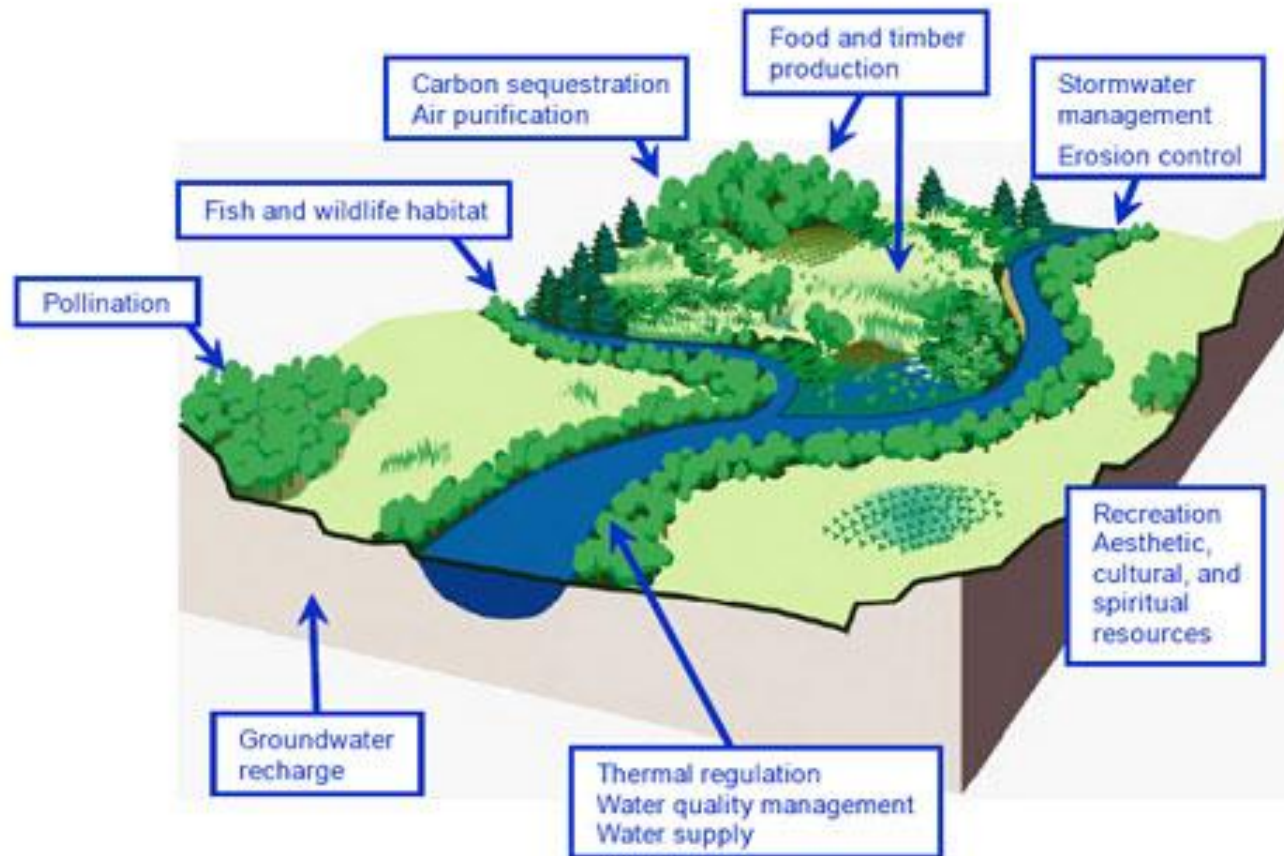


FIGURE 4-1
Examples of Ecosystem Services
City of Damascus Public Facilities Plan

CH2M HILL

OFF-SET POLICY & GUIDELINES

What's Expected of a Biodiversity Offset In SA?

COOPERATIVE GOVERNANCE

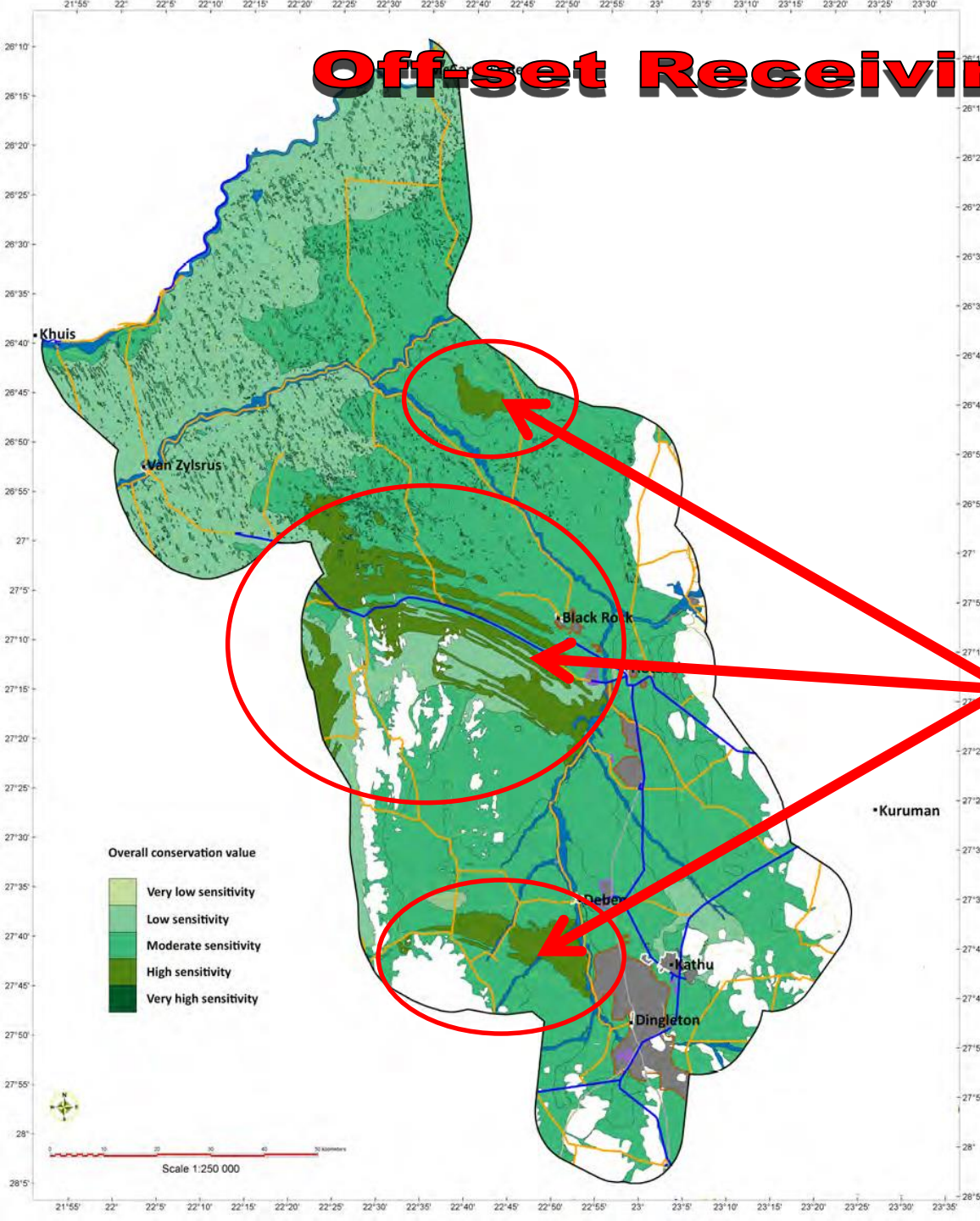
- Even if an impact will mainly affect DAFF mandate under the National Forests Act - always consult with the relevant environmental agencies

Off-set Receiving Areas

STUDY ON THE KATHU BUSHVELD

Vegetation surveys – mapped veld sub-types and assessed veld condition

Main Value = Provides Useful Information on Where the High Sensitivity Areas and High Biodiversity Areas are, to be Considered for Future Protected Areas / Off-set Receiving Areas



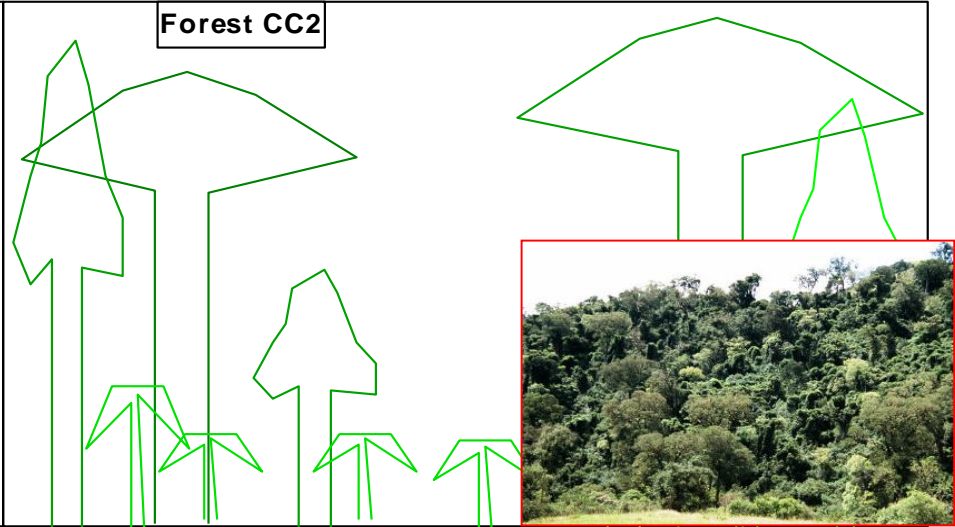
Natural Forests

FOREST CANOPY CONDITION

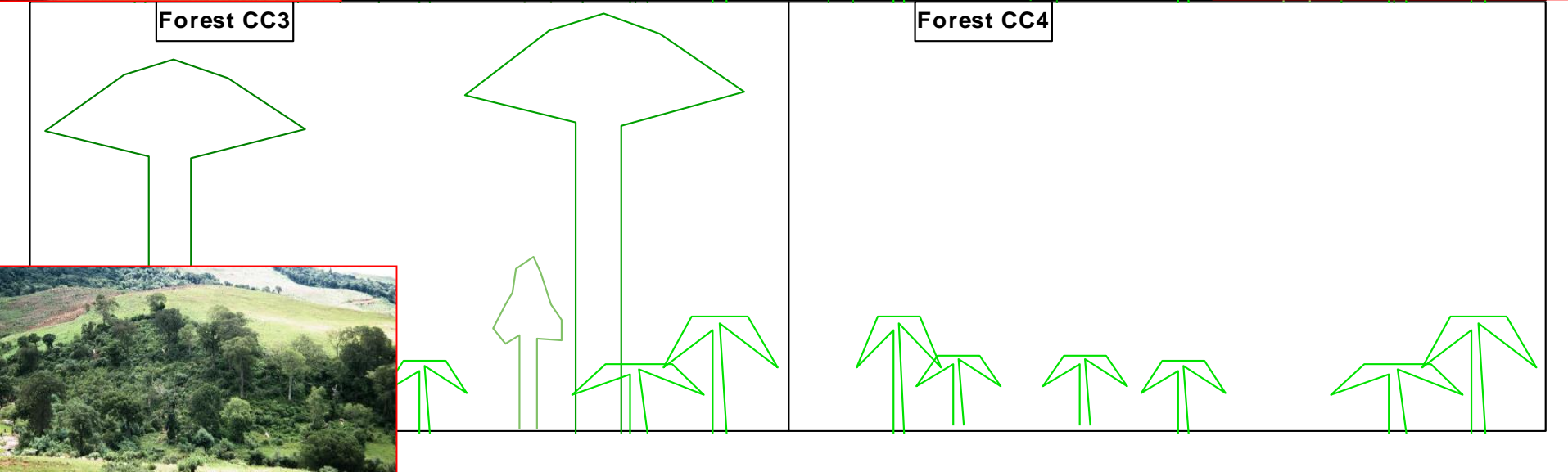
Forest CC1



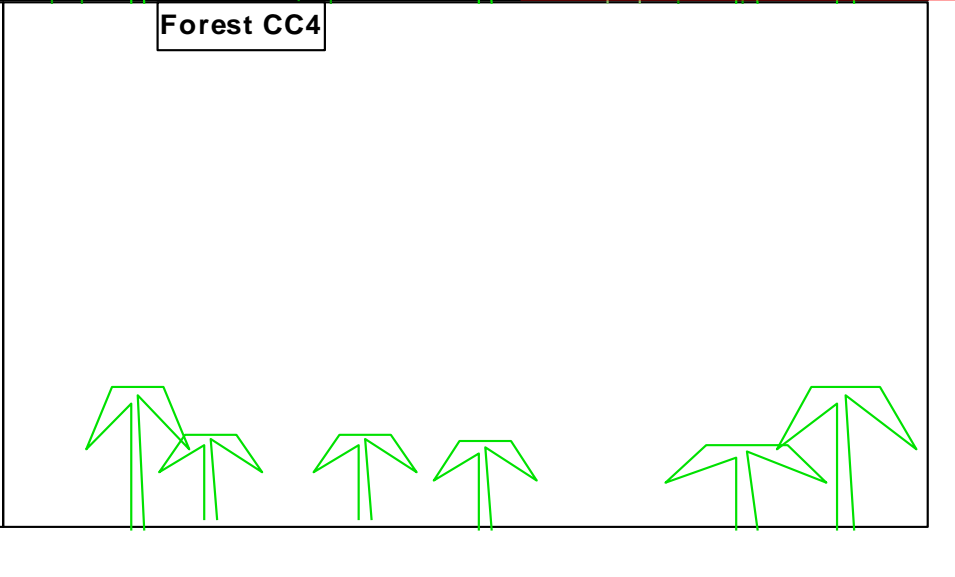
Forest CC2




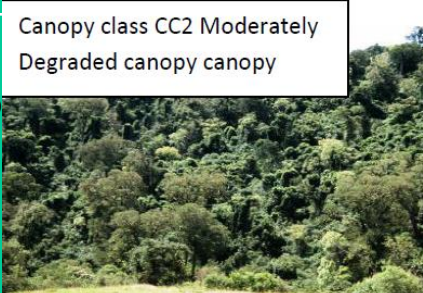
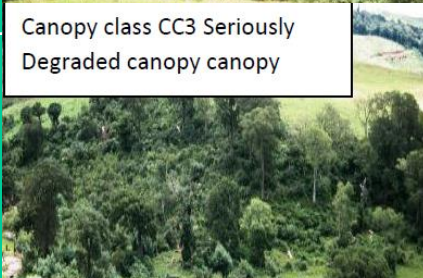
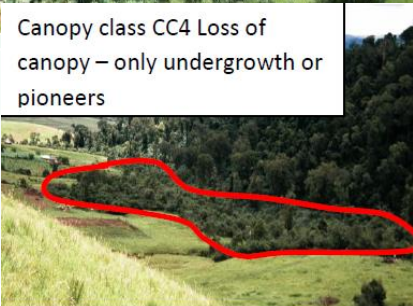
Forest CC3



Forest CC4



Ratios

FOREST CONDITION	DESCRIPTION	RATIOS IMPLICATIONS
Class cc1: Very good (pristine)	<div>Canopy class CC1 Closed</div> 	1:30
Class cc2: Good to moderate	<div>Canopy class CC2 Moderately Degraded canopy canopy</div> 	Reduce ratio by multiplying with 0.8 (1:30 x 0.8)
Class cc3: Poor	<div>Canopy class CC3 Seriously Degraded canopy canopy</div> 	Reduce ratio by multiplying with 0.6 (1:30 x 0.6)
Class cc4: Very poor	<div>Canopy class CC4 Loss of canopy – only undergrowth or pioneers</div> 	No off-set

Off-Set calculations

Ecosy- stem/ Veg type and size	Relative Condition (PES) Canopy class cc3	Basic off- set ratio (Conserva- tion Target)	Final off- set Ratio	Off-set Area
KZN Dune Forest 2.64ha	0.6 X	30 X	18 X	47.52 ha

Off-Set calculations

Gates	N/A	R 300 000	R 700 000	R 0	R 0
Signage	10	R 5 400	R 12 600	R 0	R 0
Vehicles	10	R 1 285 500	R 2 999 500	R 0	R 0
Office set up (e.g. PCs, furn, equip, etc)	8	R 60 000	R 140 000	R 0	R 0
Sub-total		R 2 837 400	R 6 620 600	R 0	R 0
Rehabilitation					
Rehabilitation mangement plan, Biocontrol & set up		R 1 083 333	R 483 333	R 483 333	R 400 000
Alien eradication		R 6 179 670	R 7 724 588	R 8 828 100	R 6 866 300
Erosion control		R 6 000 000	R 6 000 000	R 6 000 000	R 6 000 000
Forest rehabilitation		R 1 026 667	R 1 026 667	R 1 026 667	R 1 026 667
Fire belts		R 155 340	R 155 340	R 155 340	R 155 340
Sub-total		R 14 445 010	R 15 389 928	R 16 493 440	R 14 448 307
Total establishment and capital costs		R 18 332 410	R 23 060 528	R 17 093 440	R 14 448 307
Operational costs					
Staff costs					
Salaries		R 2 641 253	R 6 162 925	R 8 804 178	R 8 804 178
Orientation and training		R 18 900	R 44 100	R 63 000	R 63 000
Uniforms		R 44 100	R 102 900	R 147 000	R 147 000
Staff travel		R 24 000	R 56 000	R 80 000	R 80 000
Sub-total		R 2 728 253	R 6 365 925	R 9 094 178	R 9 094 178
Other operating and maintenance costs					
Office operations and admin (elec, tel, audit, etc.)		R 131 400	R 306 600	R 438 000	R 438 000
Maintenance supplies and services		R 28 800	R 67 200	R 96 000	R 96 000
Building rentals (offices and staff accom)		R 266 400	R 621 600	R 888 000	R 888 000
Vehicles operation and maintenance		R 129 056	R 301 131	R 430 187	R 430 187
Independent audit of offset performance	3	R 0	R 0	R 0	R 150 000
Sub-total		R 555 656	R 1 296 531	R 1 852 187	R 2 002 187
Total operational costs		R 3 283 909	R 7 662 455	R 10 946 365	R 11 096 365
Contingency	15%	R 3 242 448	R 4 608 447	R 4 205 971	R 3 831 701
TOTAL COSTS		R 24 858 767	R 35 331 430	R 32 245 775	R 29 376 372

CONCLUSION

- About 21% of all licence applications for land use change received by DAFF to destroy natural forest or protected trees are for linear infrastructure
 - Mostly Powerlines, roads and pipelines
- Biodiversity offsets are seldom set as a condition – in less than 5% of the cases
- Route planning and mitigation measures can prevent the requirement for offsets
- DAFF is currently dealing with 18 biodiversity offsets in various stages
 - 4 completed offsets include declaration of 3 nature reserves
- Only 3 of these 18 offsets are for linear infrastructure with servitudes
- Calculating biodiversity offsets is very technical and may require specialists
- Finding offset options can be difficult due to availability of land
- Negotiating an offset can be lengthy
- A signed offset agreement with time lines is essential