

Appendix G2 – Biodiversity Sensitivity Maps/Ground-truthing

STELLENBOSCH MEMORIAL PARK

PROPOSED ESTABLISHMENT OF A MEMORIAL PARK (CEMETERIES), STELLENBOSCH MUNICIPALITY

On Portion 10 of the Farm De Novo No. 727, Remainder of the Farm Louw's Bos No. 502 and Remainder of the Farm Calcutta No. 29.

BIODIVERSITY SENSITIVITY MAPS

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ENVIROAFRICA

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The findings, results, observations and recommendations given in this report are based on the author's best scientific and professional knowledge and available information. EnviroAfrica reserve the right to modify aspects of this report, including the recommendations if new information becomes available which may have a significant impact on the findings of this report.



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EXECUTIVE SUMMARY

De Novo: Even though the site is highly degraded, the southern portion of De Novo MUST be regarded as potentially very sensitive in terms of biodiversity. The primary concern on this site would be the presence of wetlands, particularly in the southern section. There is also a locality of a Critically Endangered species for this site (*Babiana regia*). Even if the site is highly degraded, this seasonal wetland habitat transitional between Cape Flats Sand Fynbos and Swartland Shale Renosterveld is extremely threatened and there are many species which are restricted to this habitat. It is considered imperative that a botanical assessment (at the right time of the year) and a wetland specialist study must be performed to inform potential development areas.

From a biodiversity perspective De Novo is potentially the most sensitive of the three sites investigated.

Louw's Bos: A number of potential options for development exist, in particular with regards to the cultivated and fallow lands. The pine infested area may have potential, but a botanical assessment will have to inform potential development areas. The proposed Western By-Pass must also be taken into consideration as it may pass through this site.

From a biodiversity perspective Louw's Bos have a number of potential development areas, especially to the west within the cultivated areas or fallow lands.

Calcutta: The whole of the property has been degraded as a result of dense stands of the alien infestation. Even though it is also identified as a potential critical biodiversity area, it is regarded as degraded, and of potentially lesser ecological importance than for instance De Novo. However, a botanical assessment is recommended in order to advise (ground-truth) potential significant vegetation.

From a biodiversity perspective Calcutta is a potentially viable development area and should be considered of lower significance than De Novo.

For all three sites, a spring botanical survey would be required, even though the habitat in all three cases is highly degraded, since there are often still remaining populations of **highly threatened spring flowering geophyte species** in these degraded remnants of Renosterveld (the shrub cover normally being lost).

Lastly: In cases where there is a threatened species population in very highly degraded/transformed habitat, the option of search and rescue can be considered, but *in situ* conservation is always preferred. Search and rescue would only be considered in exceptional cases where the species has a high chance of survival and suitable receptor site is available.

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1. INTRODUCTION

Stellenbosch Municipality is in urgent need to establishing additional communal cemeteries to service the larger Stellenbosch Municipal area. In order to meet expected demands, they require 3 sites approximately 30ha each. The cemeteries will take the form of memorial parks, which would allow significant leeway for walkways and landscaping (which could take the form of natural corridors).

EnviroAfrica was tasked to do a preliminary biodiversity scan on 3 potential sites of which 2 are likely to be used. The three sites are:

1. **De Novo (Northern District):** Portion 10 of the Farm De Novo, No. 727, approximately 192 ha in size.
2. **Louw's Bos (Central District):** Remainder of Farm 502, approximately 217 ha in size.
3. **Calcutta (as an alternative for De Novo):** Remainder of Farm Calcutta No. 29, approximately 39 ha in size.

1.1 ABBREVIATIONS USED

CBA	Critical Biodiversity Area
ESA	Ecological Support Area
WCBSP	Western Cape Biodiversity Spatial Plan (2017)

1.2 DESKTOP SCANS

The 2017 Western Cape Biodiversity Spatial Plan (WCBSP) includes a map of biodiversity importance for the entire province, covering both the terrestrial and freshwater realms, as well as major coastal and estuarine habitats.

CBA1 are critical biodiversity areas (CBA's) that are likely to be in a natural condition and CBA2 are ones that are potentially degraded or represent secondary vegetation. This distinction is based on best available land cover data, and therefore may not be an entirely accurate or current reflection of condition. Site visits are recommended to verify habitat condition. Similarly, a distinction is made between ecological support areas (ESA's) that are likely to be functional (i.e., in a natural, near-natural or moderately degraded condition; ESA 1), and Ecological Support Areas that are likely severely degraded or have no natural cover remaining and therefore require restoration where feasible (ESA 2).

Importantly, both CBAs and ESAs are further divided into sub-categories which recognise important inherent attributes of the site, allowing for greater specificity in applying land-use guidelines. The sub-categories should be used in conjunction with the WCBSP Handbook and its proposed land use guidelines.

The following are a short summary of the findings per site with regards to a desktop scan using the 2017 WCBSP as reference.

1.3 SITE VISIT

A physical site visit was performed on the 12 of July 2017 (middle of the winter). The site visit comprised of walking a driving the sites, whilst photographing and marking any feature of special significance in term biodiversity.

2. DE NOVO

De Novo is located just off the R101, about 16 km North of Stellenbosch.

Size: Approximately 192 ha

Land use: Slightly more than half of the property is occupied by small holdings and houses and other buildings (including a rehabilitation centre). The remainder of the property is used for grazing purposes. The lack of natural vegetation suggests that the property must have either been ploughed at some stage or was subjected to intensive grazing and regular burning over a long period of time.

Available area: Figure 1, shows the property boundaries in blue and the potential available land for development in orange. The most suitable location for the proposed memorial park would be the southern extent of the property (away from the existing small holdings, in order to minimise impact).

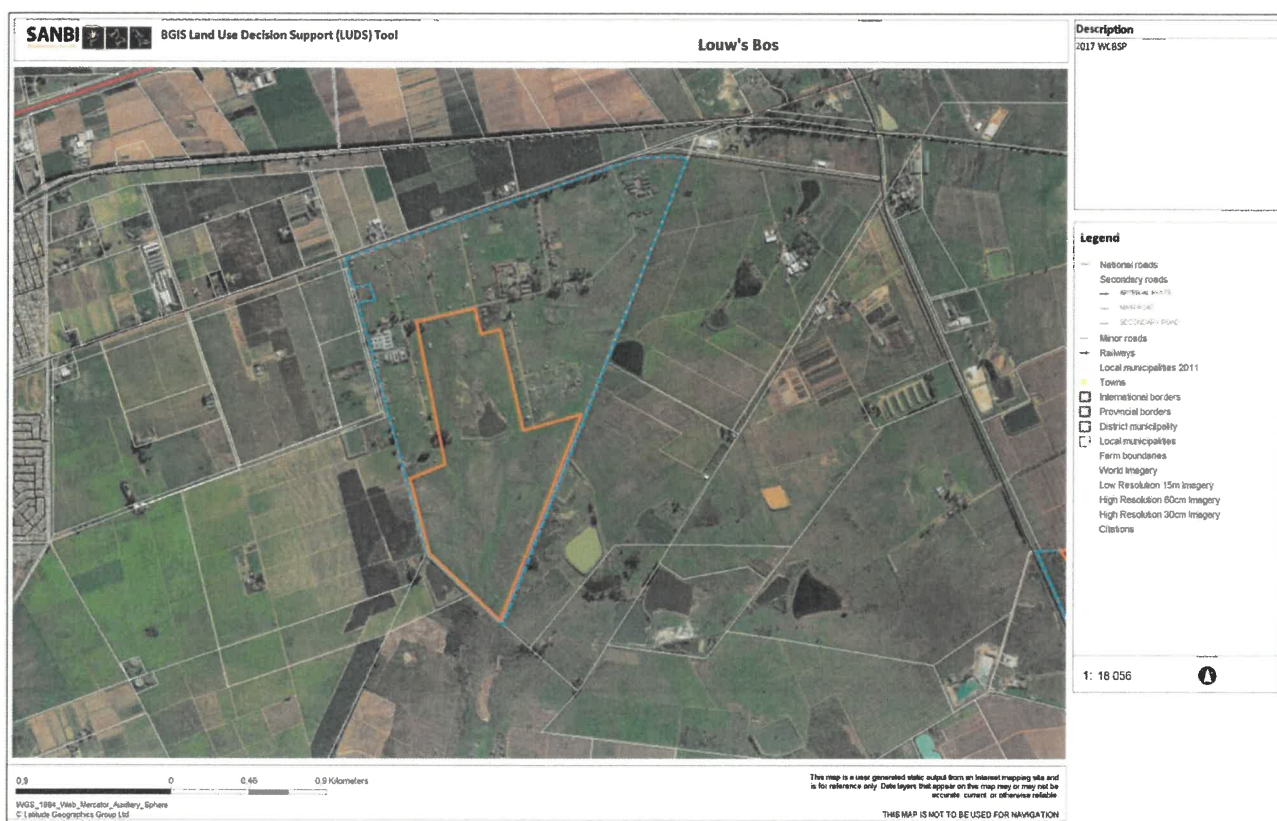


Figure 1: De Novo farm (blue) with the potential larger area for placement of the 30 ha memorial park in orange

Potential restrictions: Figure 2 shows that according to the Western Cape Biodiversity Spatial Plan, most of the area proposed for the development are within potential critical biodiversity-, or ecological support areas, which includes:

CBA 1 (Green) – terrestrial critical biodiversity areas (potentially supporting critically endangered vegetation of very high importance especially transitional vegetation between Cape Flats Sand Fynbos and Swartland Shale Renosterveld. Transitional vegetation is always regarded as of high importance as it is often the areas were rare and endangered species may be found – areas of speciation)

CBA 1 (Blue) – aquatic critical biodiversity areas (potential wetlands). The potential wetlands in combination with transitional vegetation can give the site even higher

importance.

ESA 2 (Yellow) – aquatic ecological support areas (potential watercourses)

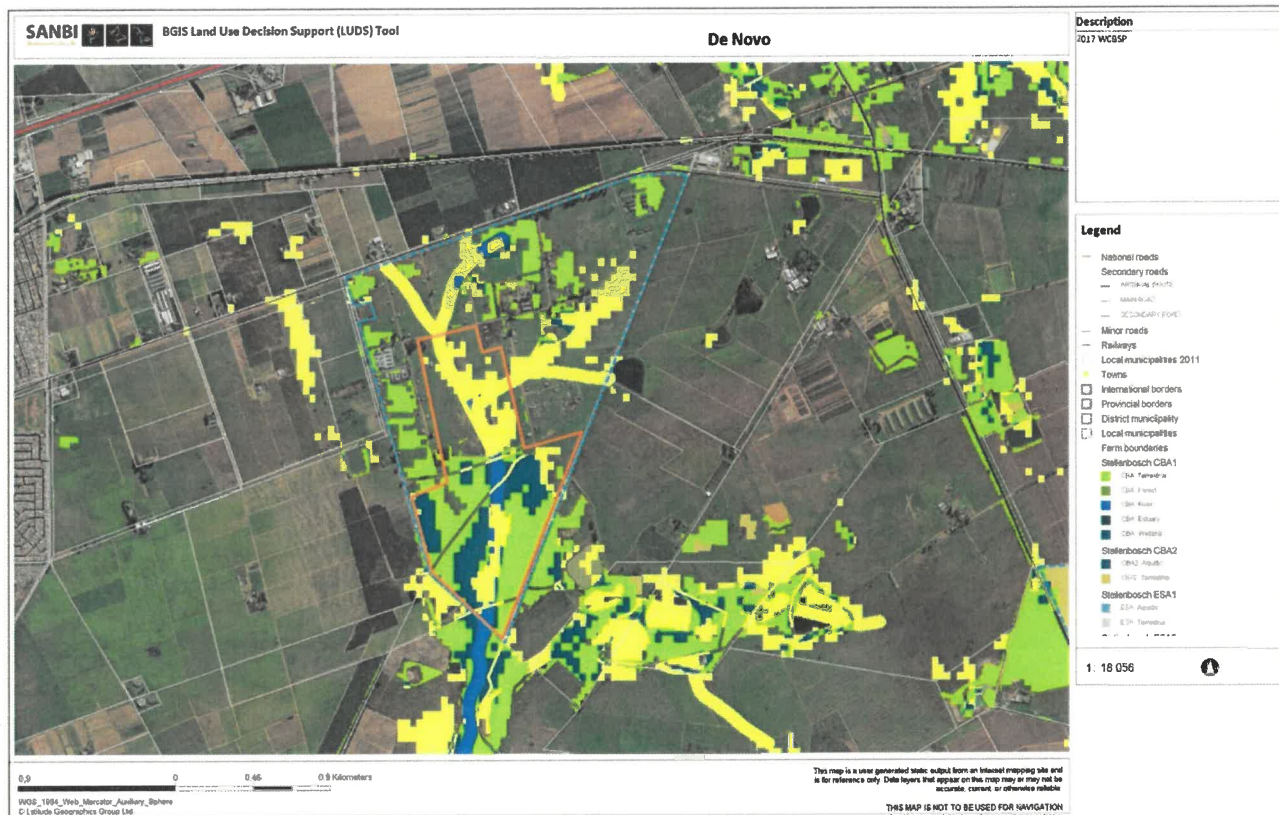


Figure 2: Western Cape Biodiversity Spatial Plan overlaid onto the property

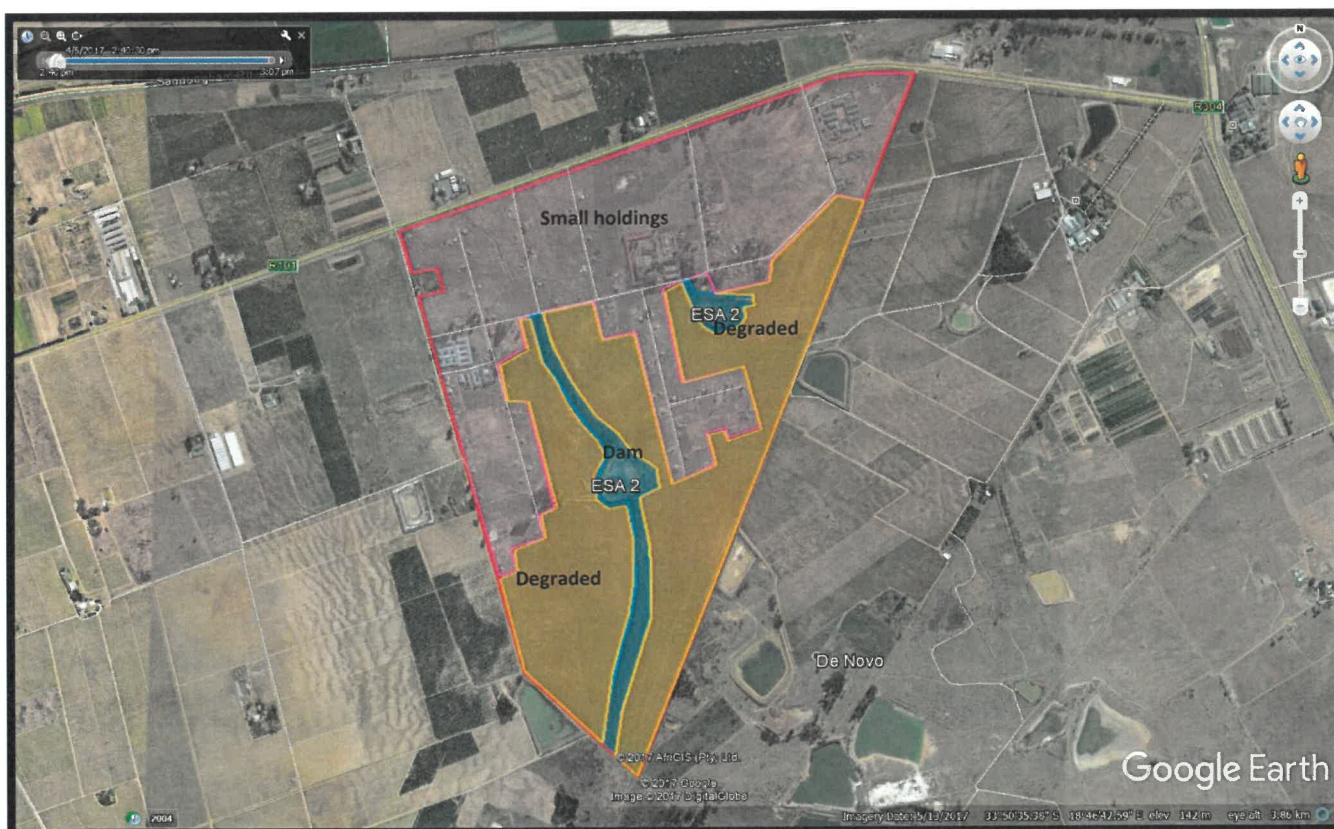


Figure 3: Google image showing potential remaining sensitive areas, based on a physical site visit (preliminary scan)

A preliminary site inspection, however, showed that basically the whole property has been degraded over time to such an extent that very little natural veld remains on the property. The site visit also did not show any physical evidence of wetlands and also indicated that the original watercourse has been degraded and has lost almost all of its riparian vegetation. The lack of natural vegetation suggest that the property was either subjected to intensive grazing coupled by frequent burning or more likely must have been ploughed at some stage. Figure 3 illustrates the preliminary findings of the site visit, indicating the area affected by smallholdings and buildings in pink, potential ecological support areas associated with the remaining watercourses in blue and the degraded areas in orange.



Photo 1: Vegetation to the north of the small farm dam (E-W)



Photo 2: Watercourse leading to the small farm dam (N-S)



Photo 3: Small farm dam on the property (looking from N-S)



Photo 4: Degraded vegetation to the south of the small dam (N-S)

2.1 CAPENATURE COMMENTS – DE NOVO

The following preliminary comments were received from CapeNature (Mr. Rhett Smart) with regards to De Novo:

"I am aware that there are issues on this site with the community residing there wanting housing. There was an application for an Eskom Substation and connecting power line on the site that we assessed. We can provide you with the terrestrial and freshwater ecology studies for this project, although we did have concerns with the studies. The primary concern on this site would be the presence of wetlands, particularly in the southern section. There is also a locality of a Critically Endangered species for this site (Babiana regia). Even if the site is highly degraded, this seasonal wetland habitat transitional between Cape Flats Sand Fynbos and Swartland Shale Renosterveld is extremely threatened and there are many species which are restricted to this habitat. In terms of the power line alternatives we recommended the northern option near the residences but the southern option was authorised. Cemeteries would be of particular concern in

wetlands due to impacts on groundwater. There may however be opportunities for development in the north of the site, but that depends on the proposals for the community."

2.2 RECOMMENDATIONS – DE NOVO

Although the site visit clearly showed that property is more likely to be described as degraded (Refer to Photo 1 to Photo 4), than pristine natural vegetation (or even degraded natural vegetation) it may still support geophyte and annuals of potential ecological value. Since the proposed development footprint will impact on potential critical vegetation and wetlands, especially potential critically endangered transitional vegetation in combination with wetlands, the precautionary approach must be applied. It is also possible that seasonal wetlands may occur and according to CapeNature a substation has been approved on the site. As a result the following is recommended:

- The southern portion of De Novo should be regarded as very sensitive (even though it seems degraded). The northern portions of De Novo would be more suitable from an ecological point of view (although this is likely not a practical solution).
- The areas marked in blue in Figure 3 should be regarded as ecological support areas and should be protected or even rehabilitated if possible.
- The degraded (orange areas) can be investigated for potential development, but a botanical scan/assessment done during spring, should be commissioned in order to evaluate potential remaining geophytes and annuals.
- A freshwater specialist should be appointed to investigate potential wetland areas on site.
- The outcome of the specialist studies should be presented and discussed with CapeNature.

From a biodiversity perspective, Calcutta would be a much more appropriate option for the location of the proposed cemeteries.

3. LOUW'S BOS

Louw's Bos is located just south (approximately 8 km) of Stellenbosch on the same property which where the Stellenbosch Airfield is located.

Size:	Approximately 217 ha
Land use:	The Stellenbosch Air field occupies approximately 40 ha of this property, while a further 50 – 60 ha are still covered under old Pine plantations. Smallholdings occupies roughly a further 10ha, while the remainder (>100 ha) is ploughed agricultural land (under cultivation).
Available area:	Figure 4 shows the property boundaries in orange and the potential available land for development in blue.
Potential restrictions:	Figure 5 shows that according to the Western Cape Biodiversity Spatial Plan, the property includes areas of potential ecological significance, but large areas of known degraded land is available for the proposed development. The ecological important areas includes: <ul style="list-style-type: none"> CBA 1 (Green) – terrestrial critical biodiversity areas (potentially supporting critically endangered vegetation – Swartland Granite Renosterveld) CBA 2 (Brown) – degraded areas but with potential for rehabilitation ESA 2 (Yellow) – aquatic ecological support areas (potential watercourses)

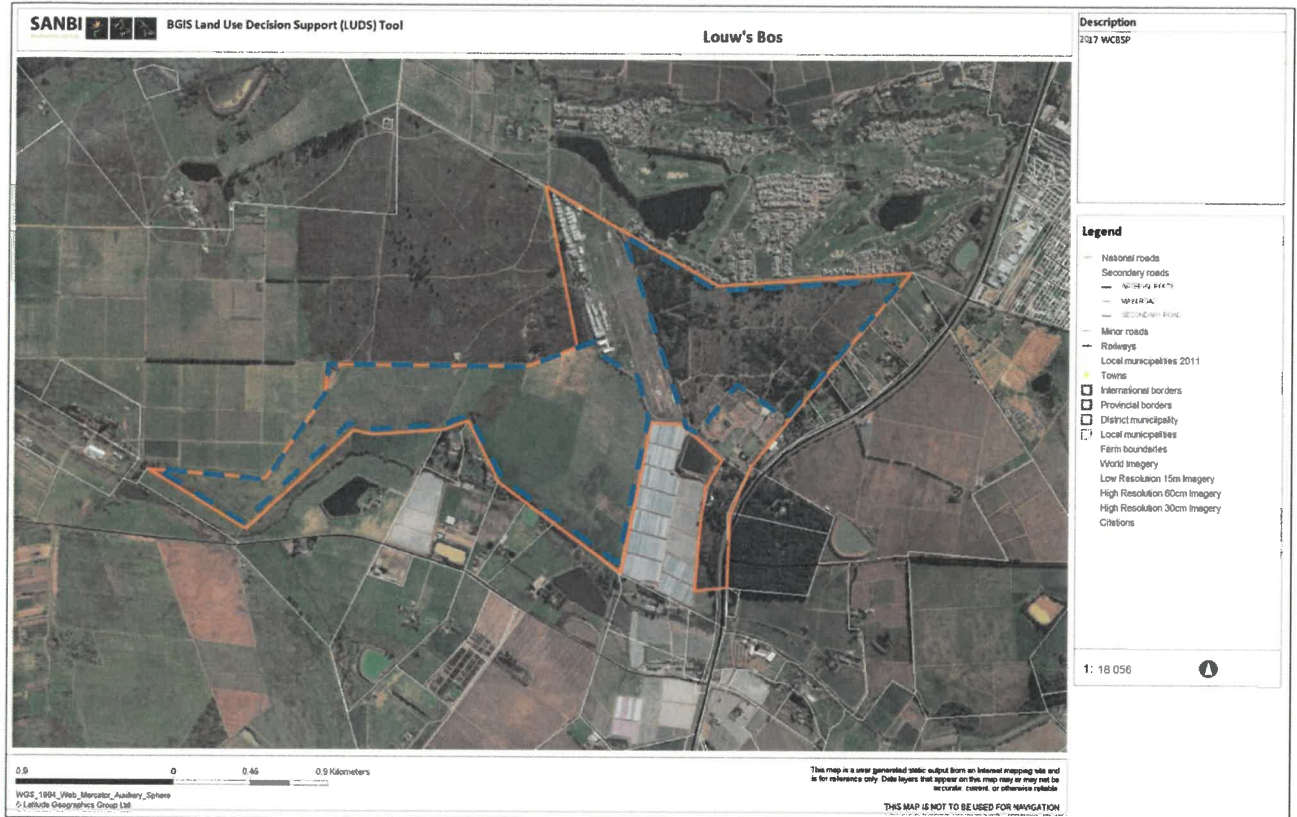


Figure 4: Louw's Bos farm (Orange) with the potential larger area for placement of the 30 ha memorial park in blue

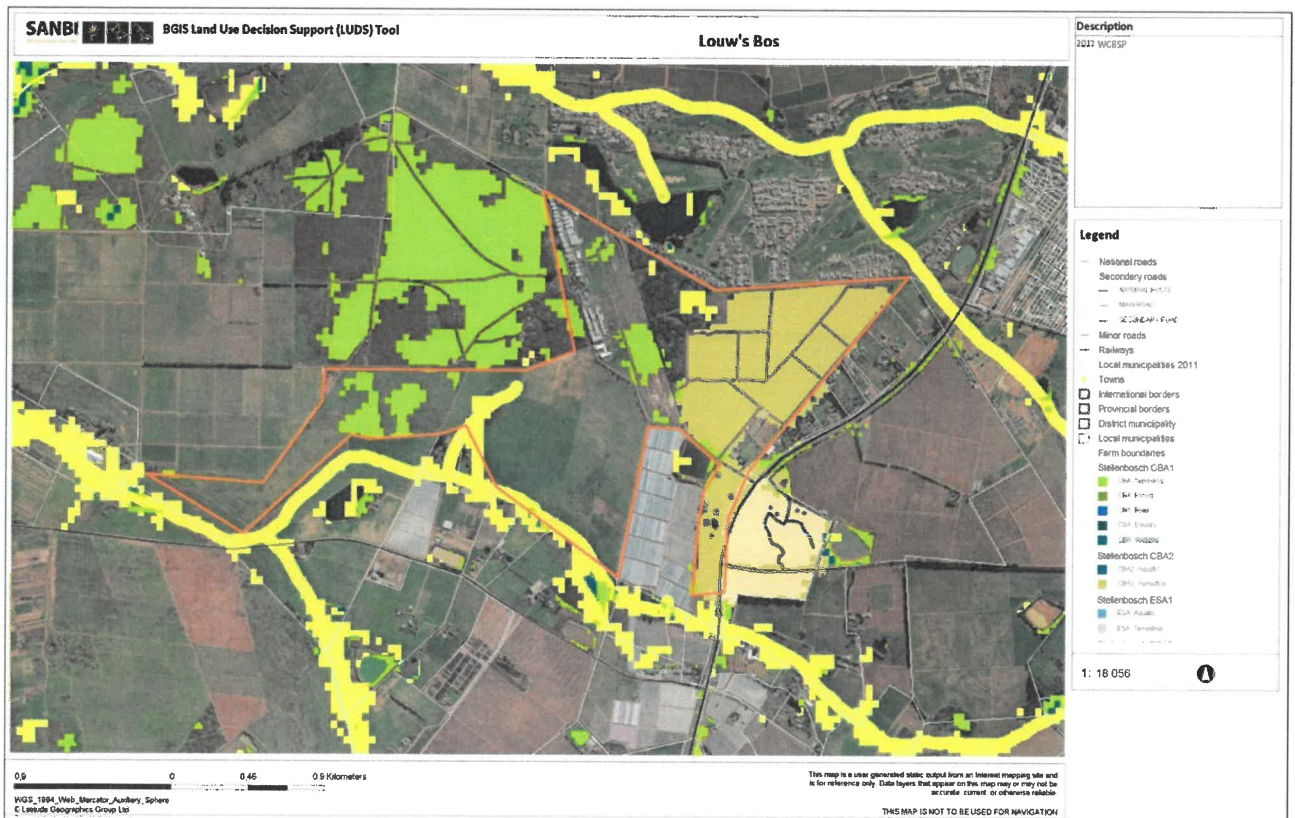


Figure 5: Western Cape Biodiversity Spatial Plan overlaid onto the property

A site inspection, however, showed that apart from the airfield, other build-up areas (Pink in Figure 6) and the old Pine Forest (Green in Figure 6) almost all of the property south of the airfield has been transformed as a result of agriculture (Orange in Figure 6) (Photo 5 to Photo 7). Please note that it was not possible to access

the Pine Forest portion of the property and as a result no comments can be made on the status of any remaining natural veld in this area. However, the fringes of the Airfield and the Pine Forest still supported some natural vegetation (Photo 8) and it is to be expected that natural vegetation may still be found in open areas within the Pine Forest area.

A small watercourse (with an associated seepage area) was observed within the site as well as some remaining riparian vegetation to the far west of the property (Blue areas in Figure 6).



Figure 6: Google image showing potential remaining sensitive areas, based on a physical site visit (preliminary scan)

3.1 CAPENATURE COMMENTS: LOUW'S BOS

The following preliminary comments were received from CapeNature (Mr. Rhett Smart) with regards to De Novo:

"This is quite a large site and therefore there may be opportunities. In particular the cultivated and fallow lands would present an opportunity. The pine infested area in the east could be considered restorable but is definitely degraded. The proposed Western By-Pass must be taken into consideration as the alignment I have seen passes through this site. We do have concerns regarding that alignment, but not on this property, more on the adjacent Spier property."



Photo 5: Agricultural land to the west of the property (E-W)



Photo 6: Watercourse and seepage area – also degraded (W-E)



Photo 7: Agricultural land adjacent to the strawberry farm (N-S)



Photo 8: Remaining natural veld on the fringes of the airfield (N-S)

3.2 RECOMMENDATIONS – LOUW'S BOS

Since the proposed development footprint will impact on potential CBA and ESA areas, the precautionary approach must be applied. As a result the following is recommended:

- The areas marked in blue in Figure 6 should be regarded as ecological support areas and should be protected or even rehabilitated if possible.
- The transformed agricultural land (orange areas in Figure 6) should be regarded as first option for development.
- As a precautionary approach the Pine Forest area (green in Figure 6) should be excluded unless a botanical assessment ascertain that the area is not of ecological importance.
- The outcome of the specialist studies should be presented and discussed with CapeNature.

4. CALCUTTA

Calcutta is considered a potential alternative for De Novo and is located approximately 10 km north of Stellenbosch, directly off the R304.

Size: Approximately 39 ha

Land use: The property is not used for any specific purpose, but can be described as a *Eucalyptus* plantation (with *Acacia saligna* also prominent) and is densely covered by these alien plant species.

Available area: Figure 7 shows the property boundaries in blue and the potential available land for development in orange. The proposed development should aim to miss the ecological support area associated with the small watercourse (a tributary to the Plankenburg River) crossing the property to its western boundary.

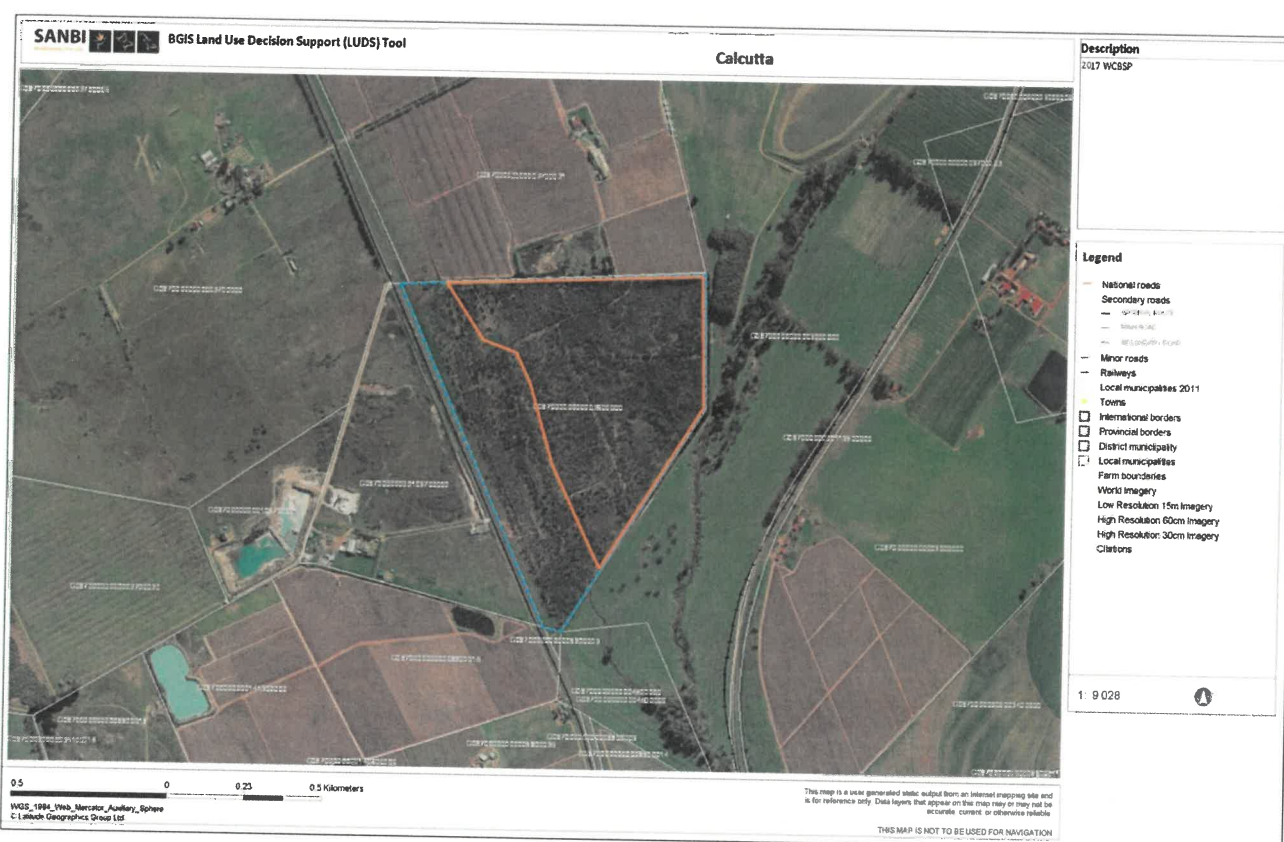


Figure 7: Calcutta farm (Blue) with the potential area for placement of the 30 ha memorial park in orange

Potential restrictions: Figure 8 shows that according to the Western Cape Biodiversity Spatial Plan, most of the area proposed for the development are within potential critical biodiversity-, or ecological support areas, which includes:

CBA 2 (Brown) – degraded areas but with potential for rehabilitation.

ESA 2 (Yellow) – ecological support areas (associated with watercourses or plantations)

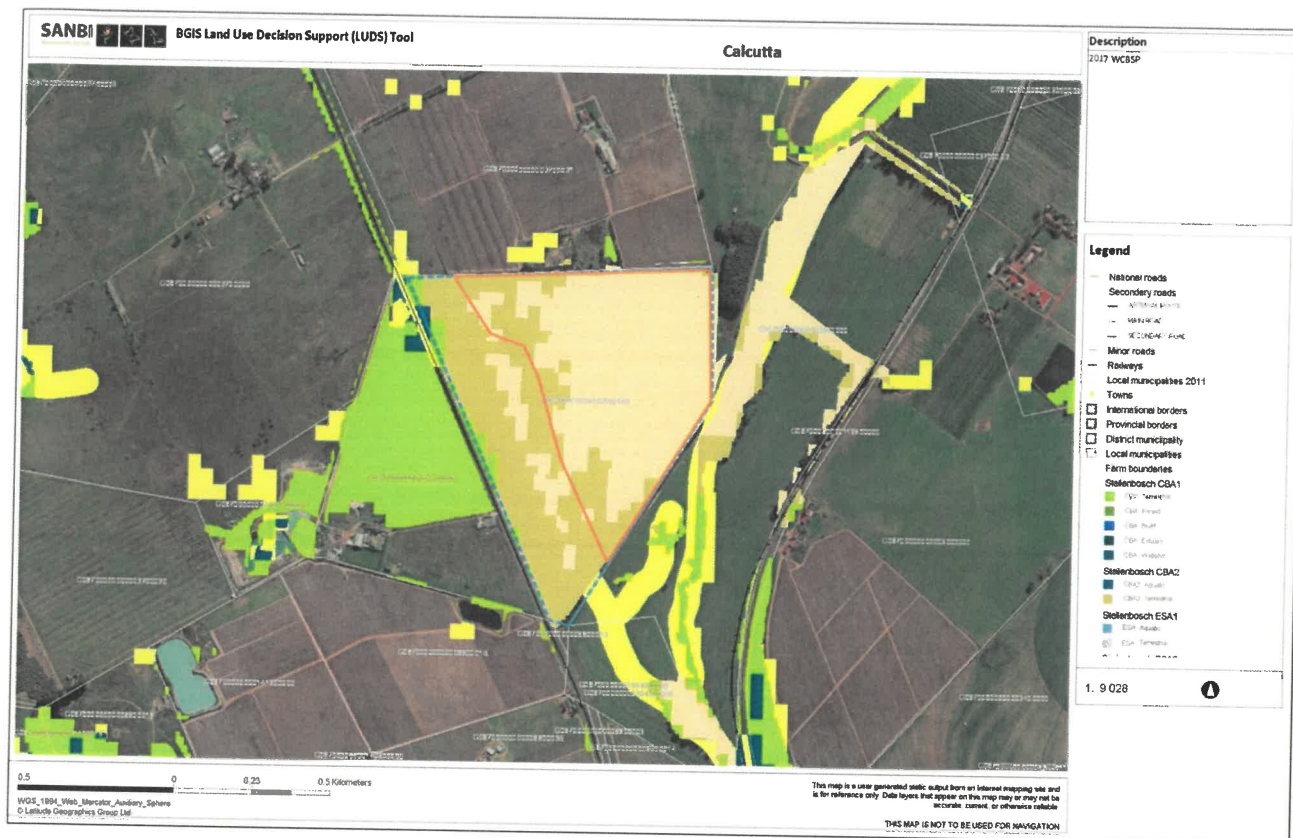


Figure 8: Western Cape Biodiversity Spatial Plan overlaid onto the property

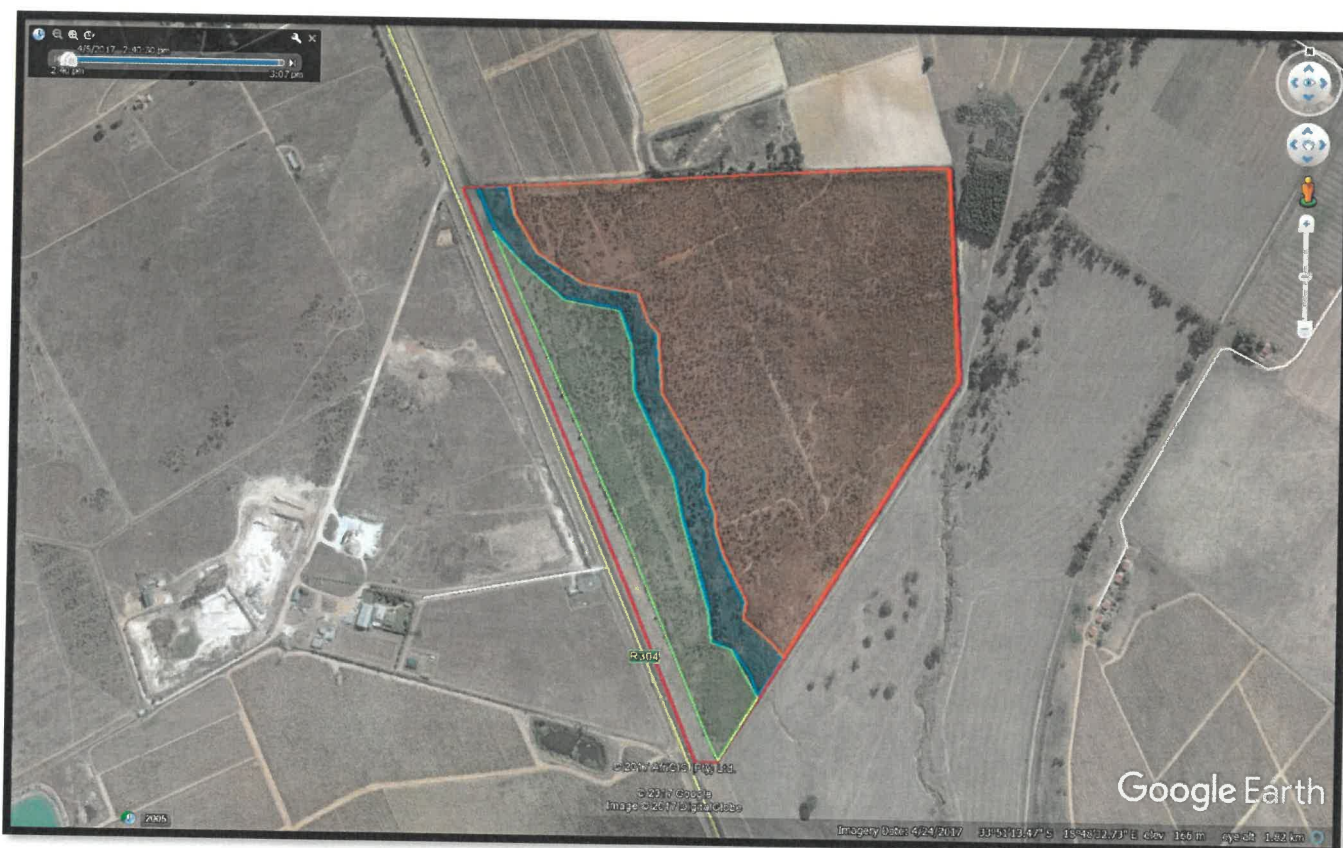


Figure 9: Google image showing potential remaining sensitive areas, based on a physical site visit (preliminary scan)

A physical site inspection showed that the whole of the property has been degraded as a result of dense stands of the alien tree *Eucalyptus*, but with *Acacia saligna* also prominent (Photo 9 to Photo 12). Very few remaining natural plant species was observed, but a small watercourse cross the property from north to south

along its western boundary (Photo 11, blue in Figure 9). The area mark in green in Figure 9 is also degraded as a result of dense alien plant infestation (Photo 12), but was marked separately because of its potential CBA status.



Photo 9: Alien infestation to the south of the property (W-E)



Photo 10: A view of the property along its eastern boundary (S-N)



Photo 11: Small stream crossing the property (N-S)



Photo 12: Eucalyptus infested fringes next to the R304 (W-E)

4.1 CAPENATURE COMMENTS: CALCUTTA

The following preliminary comments were received from CapeNature (Mr. Rhett Smart) with regards to De Novo:

"This site does seem heavily infested with aliens from the road and would need ground-truthing to check if there is any natural vegetation in the understory. However based on your inputs below there isn't really anything else left."

4.2 RECOMMENDATIONS – CALCUTTA

Since the proposed development footprint will impact on potential CBA and ESA areas, the precautionary approach must be applied. As a result the following is recommended:

- The areas marked in blue in Figure 9 should be regarded as ecological support areas and should be protected or even rehabilitated if possible.
- The area marked in green in Figure 9, should be retained (if possible) and rehabilitated with the ecological support area.

- The areas marked in orange in Figure 9, can potentially be investigated for development, but a botanical scan should be performed before such development is approved.
- The outcome of the specialist studies should be presented and discussed with CapeNature.