

**TERRESTRIAL ECOLOGY COMPONENT  
CONTEXTUAL ANALYSIS  
OF ERF 212 AND ERF 242,  
BISHOPSCOURT**

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## **1) INTRODUCTION AND CONTEXT TO THE STUDY**

The Protea Village (Bishopscourt) land claim, for Erven 242 and 212 Bishopscourt, requires a broad contextual analysis to identify potential implications of resettlement, and thus a change in *de facto* land use of the area. The site in question is presently a publicly accessed park with large trees and an under-storey dominated by annual and perennial lawn grasses. Numerous drainage lines and water-courses traverse the site, draining from west to east.

Indigenous Vegetation Consultancy was contracted by Nisa Mammon Associates and CommonGround, on behalf of the City of Cape Town, to undertake a study of the terrestrial ecological systems on the site. This study and others will contribute to public information and decision-making regarding the potential for resettlement of the communities who were forcibly removed from this site and the neighbouring suburbs during the 1960's.

The brief for this study component may be summarised as follows:

- 1) Assess the baseline terrestrial ecosystem present on site identifying sensitive and less sensitive areas in association with the fresh water systems on site;
- 2) Identify potential ecological implications and issues that may arise from resettlement of Erven 242 and 212 Bishopscourt; and,
- 3) Identify and conceptualise broad design guidelines for redevelopment of the area, providing preferred location options and building densities for resettlement.

## **2) METHODS**

### **2.1) SITE SURVEY**

The site was surveyed on foot on 10 April and 7 May 2003. All plant species were identified in the field and all issues relating to wetland and riparian habitats were discussed on and off site with Kate Snaddon (Fresh Water Consulting Group).

### **2.2) LIMITATIONS**

The budget for this component of the project limited the scale of the survey and only broad information on the ecological site sensitivity is provided. It is understood that further studies will be commissioned to investigate exact boundaries and limited areas with a greater level of detail and precision.

## **3) DESCRIPTION OF ENVIRONMENT**

This part of Cape Town has been farmed and then urbanised over a period of several centuries. No significant natural vegetation remnants remain on this site, although some small clumps of locally indigenous vegetation persist along the stream banks. The area has been used for housing, market-gardening, and more recently purely as a recreation facility although various portions of the site, particularly Erf 242 on the north of Kirstenbosch Drive, were previously under housing.

The area is presently largely undeveloped although a landfill is present between the Protea and Window streams. The removal of housing and a school from the site during the mid 1960's left quantities of rubble on site, although most of this has been removed to leave what is now



effectively a meadow with scattered trees and tree clumps. The average canopy height is estimated at 25m.

Various drainage lines and two small streams intersect the site draining from west to east. These have been modified to various degrees and further information on the state of these habitats is provided in the Fresh Water component study. The smaller drainage lines are mostly severely impacted and are infested with various exotic plant species. The stream banks have eroded badly in places and various plantings have been undertaken previously in an attempt to stabilise the banks.

### 3.1) VEGETATION STATUS QUO

The site currently serves as a green belt with valuable water catchment functions (refer to Fresh Water component study). Predominantly used as a recreational area, the dominant under-story (lower canopy) vegetation comprises *Pennisetum clandestinum* (kikuyu grass) as well as a mix of sedges (predominantly *Juncus kraussii*) in the wetter areas. With the exception of a few *Kiggelaria africana* specimens, the upper canopy in the drier parts (terrestrial areas) of both erven comprises a mix of alien tree species.

While many of the larger tree specimens were planted at various stages since the early 1900's, numerous younger specimens<sup>1</sup> are seedlings or suckers of planted trees or are simply invading the site as weed species. This is particularly the case in the declared invasive horticultural hybrid *Populus X canescens* (grey poplar) (refer to Table 1).

Few patches of natural indigenous vegetation remain on the site and these are restricted to the riparian corridor along Window Stream and Protea Stream. Predominantly *Brabejum stellatifolium* / *Kiggelaria africana* riparian thicket, these patches are interspersed with larger areas of planted vegetation (or in some places weedy exotic species). Large mixed plantings which include some locally indigenous species as well as a variety of southern African indigenous species (not found naturally on the Cape Peninsula, e.g. *Agathosma ovata*, *Asparagus virgatus*, *Barleria repens*, *Euryops virgineus* and *Helichrysum petiolare*) dominate the banks of the riparian corridor, having been planted by Kirstenbosch and the Parks and Forests Division, of the then Cape Town City Council, during the 1990's.

Further patches of vegetation, indigenous to the Cape Peninsula, are found surrounding the lower reaches of the site on Erf 212 where three recent human-built dams, fed mainly by a natural but altered fresh water spring, slowly seep water into a semi-natural wetland area. The dominant indigenous species in these wetlands is *Juncus kraussii* although various other desirable naturally indigenous species including *Cyperus textilis* and *Zantedeschia aethiopica* are present in the seep area.

With the exception of this seep area, as well as the riparian corridor (to a width of roughly 30 metres from the stream banks), all indigenous vegetation has been effectively eradicated from the site over the past few centuries. The dominant function of the terrestrial ecosystem is thus as a green-belt parkland with water infiltration and catchment properties. No significant indigenous plants or natural habitats other than those associated with the water bodies (streams and seeps) remain on site.

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<sup>1</sup> Particularly of declared alien invasive and weed species *Populus x canescens* and *Pittosporum undulatum*, (refer to Table 1), as well as other non-listed weedy species such as *Quercus robur*.



TABLE 1: Declared invader and weed plants and other possible problem alien plant species identified as present on Erf 242 and Erf 212, Bishopscourt.

PLANT INFORMATION		TYPE	CATEGORY	ISSUES AND COMMENTS
BOTANICAL NAME	COMMON NAME			
<i>Acacia longifolia</i>	long – leaved wattle	Weed	1	
<i>Acacia mearnsii</i>	black wattle	Invader	2	
<i>Acanthus mollis</i>	bear's breeches	-	-	Spreads under shade
<i>Ageratina riparia</i>	mistflower	Weed	1	
<i>Ageratina</i> sp. (Closely related to <i>Chromolaena</i> = ( <i>Eupatorium adenophora</i> ))		Weed	1	Has significantly invaded the stream-courses
<i>Alnus glutinosa</i>	European alder / black alder	-	-	Invading in seeps
<i>Canna indica</i>	Indian shot	Weed	1	
<i>Cinnamomum camphora</i>	camphor tree	Weed	1	Category 1 plant only in N. Province, KwaZulu – Natal and Mpumalanga
<i>Eucalyptus</i> sp.	gum			Species uncertain – many of the gum species are declared weeds or invaders
<i>Hedychium flavescens</i>	yellow ginger lily	Weed	1	Particularly problematic in the streams
<i>Ipomoea purpurea</i>	morning glory	Invader	3	
<i>Lantana</i> spp.	lantana, tickberry, cherry pie	Weed	1	All non-South African <i>Lantana</i> species are declared weeds
<i>Lemna gibba</i>	damslyk / duck weed	-	-	Can contribute to water quality problems
<i>Myriophyllum aquaticum</i>	parrot's feather	Weed	1	
<i>Nicotiana glauca</i>	wild tobacco	Weed	1	
<i>Pennisetum clandestinum</i>	kikuyu grass	-	-	-
<i>Pinus</i> spp.	pine			Species uncertain – many of the pine species are declared weeds or invaders
<i>Pistia stratiotes</i>	water lettuce	Weed	1	
<i>Pittosporum undulatum</i>	Australian cheesewood	Weed	1	
<i>Plectranthus comosus</i>	woolly plectranthus	Invader	3	
<i>Populus x canescens</i>	grey poplar, matchwood poplar	Invader	2	H
<i>Pyracantha</i> sp.	fire thorn	-	-	Marked on surveyors map as "poplars"
<i>Quercus robur</i>	English oak	-	-	Spreads along stream courses if unchecked
<i>Rubus cuneifolius</i>	American bramble	Weed	1	
<i>Tipuana Tipu</i>	tipu tree	Invader	3	
<i>Vinca major</i>	periwinkle	-	-	Fast spreading ground cover in shade



The site has an amenity value to the present-day local communities, many of whom use the area as a large park for walking and running. Parts of Erf 242 are also used for secondary parking lots by the National Botanical Institute and Botanical Society of South Africa during commercial and entertainment events.

### **3.2) HABITAT AND ORIGINAL VEGETATION TYPE**

The site would originally have supported a mix of wetland, riverine forest / thicket and fynbos habitats. Only some of the wetland and riparian species remain and these are mainly of two types, trees (such as *Ilex mitis* (*Cape holly*) and *Brabejum stellatifolium* (wild almond)) and sedges (such as *Juncus kraussii*). Only minor remnants of the natural vegetation are present in small and isolated clumps along the Protea and Window streams. The largest of these clumps is dominated by *Brabejum stellatifolium*.

All remnant indigenous vegetation is relatively well protected within the set-back lines required for protection of the various water bodies on site.

## **4) EXISTING AND POTENTIAL IMPACTS**

Given that any development of this area would require by National<sup>2</sup> and Provincial<sup>3</sup> law and local level guidelines<sup>4</sup> that the wetland and riverine habitats be protected, and given that all other terrestrial habitats on site are already highly impacted and modified by vegetation removal and planting or invasion with exotic plant species, the primary impacts of any development on the site will be primarily of a cultural heritage nature.

Other than the aquatic and semi-aquatic (e.g. wetlands, stream banks and associated riparian thicket) habitats, no ecologically sensitive areas were identified on the site. Should the decision be taken to reinstate the former tenants on the site then, as part of the detailed planning and design phase, all desired plants and trees must be appropriately identified and marked by a specialist botanist. This specialist must undertake such an exercise in association and discussion with a stakeholder reference group.

### **4.1) LEGISLATION PERTAINING TO IMPACTS**

Legal requirements for the site with respect to the existing vegetation include the Regulations promulgated under the Conservation of Agricultural Resources Act<sup>5</sup> (CARA regulations). These regulations protect water-courses and wetlands from alien plant invasion through prohibiting the planting and even the presence of declared invasive and weedy species in these areas.

Section 21(g) of the National Water Act (NWA) defines water use to include the disposal “*of waste in a manner which may detrimentally impact on a water resource*”. The presence of the existing landfill on the site needs to be debated and addressed independent of the outcome of this process. The landfill has also altered the course of the Window and Protea streams. The alteration of a water-course is also defined as a water use in section 21(i) of the NWA.

Section 3 of the National Heritage Resources Act (Act 25 of 1999) includes “*places to which oral traditions are attached or which are associated with living heritage; historical settlements and*

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<sup>2</sup> National Water Act (Act 36 of 1998)

<sup>3</sup> Western Cape Planning and Development Act (Act 7 of 1999)

<sup>4</sup> Development Control Guidelines in Floodprone Areas (VKE Consulting Engineers, 2000)

<sup>5</sup> Act 43 of 1983



*townscapes; and, landscapes and natural features of cultural significance*” in the broad definition of the “National Estate”.

It is likely that conflict will arise at various stages during this process and in future processes relating to this site for a diversity of reasons. For the purposes of this Ecological Study the issues will be confined to a biophysical evaluation of cultural heritage. Some of the alien species on site are declared alien weeds or invasives under the CARA regulations. It is possible that individuals or groups may declare the same species part of the cultural heritage of the site. For this reason the perceived cultural heritage of the exotic trees, which are the defining feature of the existing terrestrial landscape, will need to be evaluated through a process of defining and attaching value to the landscape. This can only be achieved through a facilitated visioning process that actively seeks to engage and include all stakeholders in debate and conclusive agreement regarding the biophysical and cultural heritage resources on the site.

## **5) MITIGATION AND “NO GO” AREAS**

### **5.1) FOOTPRINT OPTIONS**

There are parts of the site, which should not be developed under any circumstances other than possibly to upgrade the existing drainage lines and quality of the vegetation. These areas are readily described by contour lines supplied in the 2003 survey by DHALE (Hellig, Abrahamse and le Brun) undertaken for this conceptual analysis.

- On Erf 242 no development of any description should be allowed below (to the east of) the 86m contour.
- On Erf 212 between Kirstenbosch Drive and Window Stream, no development of any description should be allowed below (to the east of) the 87m contour.
- On Erf 212 between Window and Protea streams, no development to the east of the 98m contour should be allowed.

The first two setback lines listed above are based on water catchment and drainage concerns and issues (refer to the Fresh Water Study component), while the third setback line is based on the presence of the landfill between the two streams. This landfill<sup>6</sup> reduces the development potential of this part of Erf 212 since no buildings may be developed on top of a landfill.

### **5.2) DEVELOPMENT GUIDELINES**

There are a number of development guidelines that need to be structured should the restitution of land rights claim be successful. These include planning and design features such as erf size and the amount of open space allowed for stormwater infiltration; landscaping; and, building design.

In order to ensure the continued ecological function of the site as a water catchment and management area it is important to examine design options that include provisions for the following:

- Where possible all surfaces (roads and gardens) should be kept porous (or porous materials should be used as a design principle) to ensure water infiltration and drainage;

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<sup>6</sup> The landfill should be considered for removal and rehabilitation, based on the impacts to the stream course and potential contamination by leachates.



- Erf sizes should allow for drainage and adequate stormwater infiltration where possible. For example, the footprint of each dwelling (or clump of dwellings on each erf) should not cover more than approximately 60% of the erf, where possible, in order to facilitate such drainage;
- Rain-water tanks should be a design feature included with each unit in order to capture and slow down storm-water run-off;
- All stormwater management areas should be planted with locally indigenous species that are appropriate to seasonal wetland conditions (species such as are currently found in the wetter areas of Erf 212);
- Plant species used for landscaping should definitely not include any of the declared weedy or invasive exotic species listed in the CARA regulations. Preference should be given to locally indigenous plant species; and,
- All natural and other drainage lines identified in the Fresh Water Study component (including storm-water drainage and the Protea and Window streams) must be upgraded through careful landscaping and planting with appropriate locally indigenous plant species (and the removal of all weedy and invasive exotic (alien) plant species.

## **6) DEVELOPMENT OPTIONS**

All development options must take into account the “no-go” areas and riparian set-back lines described in section 5 above. It is also important to note that all options, considered in this Terrestrial ecology study, take into account that the natural environment has already been significantly modified and that cultural heritage issues (including right of access and amenity value) will be further evaluated within other components this larger study and in future studies and processes.

### **6.1) OPTION 1**

This option is described in more detail in the Fresh Water Study component. Erf 242 is proposed for almost total development with only the requisite set-back lines and storm-water drainage requirements attended to. Erf 212 should remain largely as it is with the exception of a single row of housing on Kirstenbosch Drive, extending from the 91m contour westwards to Winchester Drive to roughly the 98m contour; and another single row of housing along Winchester Drive between the Window and Protea streams to the west of the 98m contour. Both of these single rows of housing are envisaged as having direct access onto Kirstenbosch and Winchester Drive in order to reduce the need for increased infrastructure and surface hardening.

### **6.2) OPTION 2**

This option is also described in more detail in the Fresh Water Study component. Erf 242 is again proposed for almost full development (excluding set-back lines) while Erf 212 between Kirstenbosch Drive and Window stream, between the 98m and 87m contours may be considered for nearly total development. Such development might include market-gardening areas, sport facilities or similar infrastructure as well as housing.

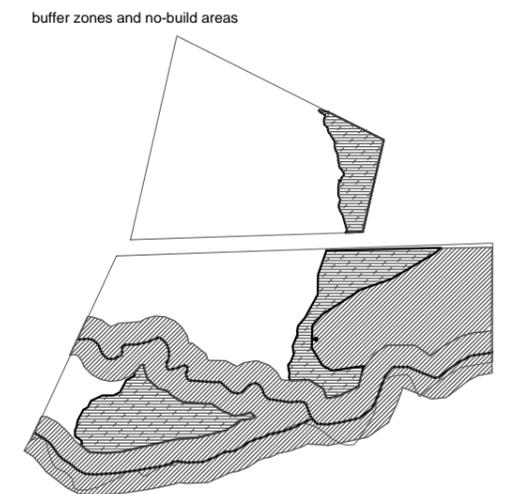
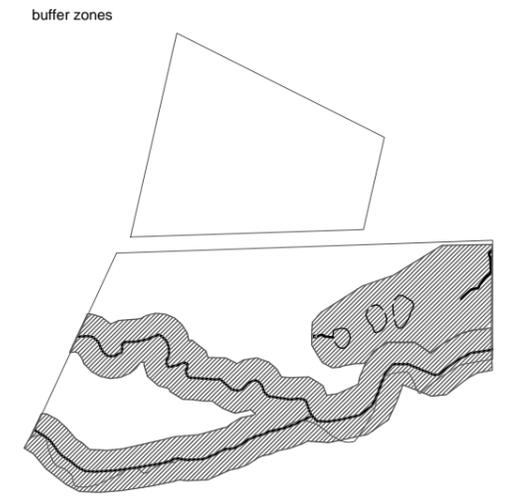


## **7) RECOMMENDATIONS**

- Should any development take place on either Erf 242 or Erf 212 (or both erven) at any point, then it is strongly recommended that desired plants and trees be appropriately identified and marked by a specialist. This specialist must undertake such an exercise in association and discussion with a reference group comprising at least representative/s of the former residents (Protea Village Action Committee); the local residents; the City of Cape Town; and, the relevant personnel at the National Botanical Institute. All plants identified as having cultural heritage value (e.g. trees planted to commemorate an event or person, or those which simply are “special”) must be treated in the same manner as those with natural heritage value (e.g. all indigenous vegetation on the site).
- It is further strongly recommended that whether a decision is taken to develop the area or to leave the area as a green-belt, all declared invader and declared weed species (trees, shrubs and herbaceous species) should be removed. This may possibly conflict in some instances with cultural heritage requests and it may be necessary to undertake a visioning exercise for the site, which includes an investigation of the long-term management of alien invasive vegetation.
- It is not the purpose of this report to recommend which development options should be followed nor whether the site should be left as it currently stands. However, it is strongly recommended that a substantial portion of Erf 212 be retained as a publicly accessible green-belt in order to ensure local residents (including potential returned residents) of a continued green heritage in this sylvan environment.
- It is strongly recommended that any further planting of vegetation be in keeping with the current trends of returning (or restoring) areas to locally indigenous vegetation. A list of appropriate plant species can be provided that will enhance the area, improve ecosystem functioning while at the same time retaining the green-belt environment.

## **8) REFERENCES**

VKE Consulting Engineers (2000). Development Control Guidelines in Flood Prone Areas.  
Report prepared for Cape Metropolitan Council: Catchment Management Department.



Environmental constraints and Development options

KEY:

- Buffer zones
- Development Footprint: Option 1
- Rivers
- No-build Area
- Development Footprint: Option 2
- 1:100 Year floodline

Scale 1: 2500 at A3

