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UPDATED BASELINE BOTANICAL ASSESSMENT OF ERVEN 609/86 AND 609/74 PHILIPPI (LOTUS RIVER PONDS)

Compiled for: Bergstan South Africa (Pty.) Ltd., Cape Town

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CONTENTS

1. INTRODUCTION

A botanical survey of this site was undertaken by Helme in 2003. The City of Cape Town needs significant additional detention capacity in this area and to this end has commissioned Bergstan South Africa to investigate the options. One of the options would be to excavate detention ponds on this site, and as a preliminary step Bergstan South Africa wanted to identify and establish the botanical constraints on the site (see Figure 1), prior to any Impact Assessment process being undertaken.

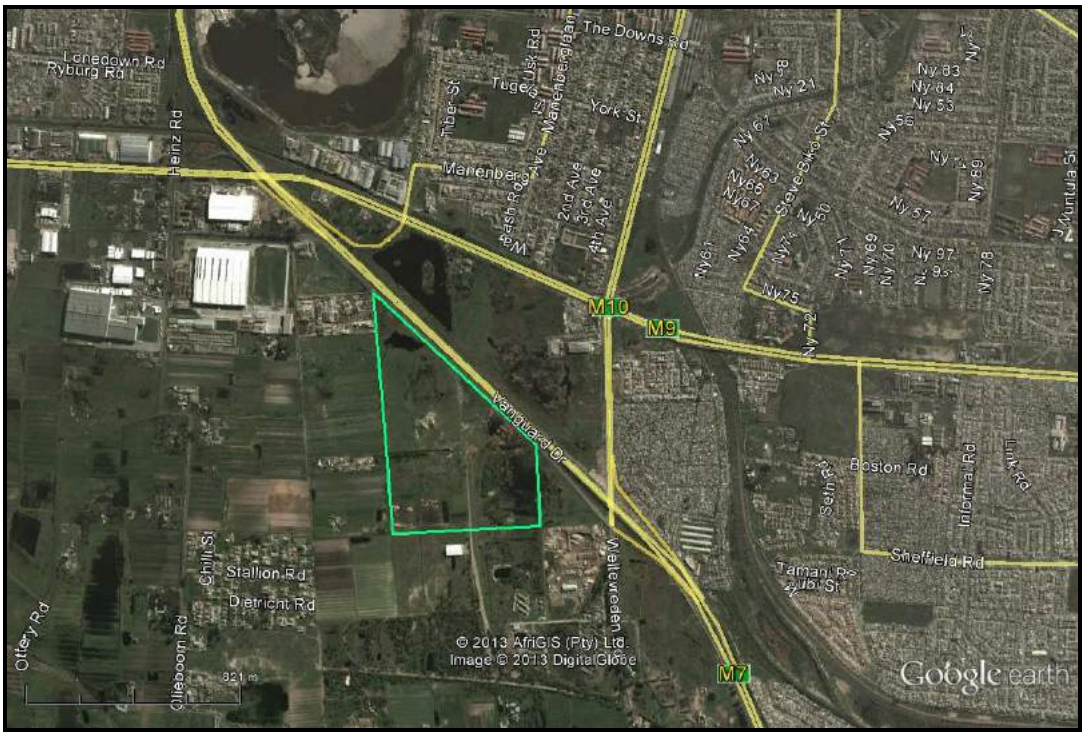

Figure 1: Satellite image showing position of the 35ha study area (green outline).

2. TERMS OF REFERENCE

The terms of reference for this study were as follows:

- Update the botanical study of Helme (2003), based on a site visit and best available knowledge, including reference to the City of Cape Town's Biodiversity Network (BioNet).
- Describe the vegetation on the site, and note the presence or likelihood of locally endemic or rare plant species.
- Assess the local (Cape Flats) and regional (Cape Metro, extreme SW Cape) conservation value of the area.
- Indicate the conservation value of the different areas on a map of the site.

- Provide recommendations regarding the suitability of the area for use as a as a stormwater detention pond.

3. LIMITATIONS, ASSUMPTIONS AND METHODOLOGY

The site was visited on 25 October 2013, which is late in the optimal spring flowering season in this winter rainfall region. On a site with more intact natural vegetation this would have been likely to have resulted in an underestimation of the total site flora, but is not considered to be relevant or a significant constraint in the case of this site, which is largely degraded. Most plant species were identifiable.

All plant species were noted in the field, and various digital photographs were taken. Conclusions were drawn based on the documentation noted in the report and based on professional experience in the area and the region.

Google Earth aerial imagery dated June 2013 (and earlier) was used to verify vegetation patterns, and for mapping purposes. Google Earth Pro was used to measure areas.

4. THE VEGETATION

4.1 Regional Context

The study area falls within the Cape Flats, an area that is now widely acknowledged as a mega-disaster area for plant and habitat conservation, on a national basis, given the very high levels of habitat loss and high numbers of severely threatened and localised plant species (Rebelo *et al* 2011).

As can be seen in Figure 2, the site is ecologically fairly isolated, although there are important habitat remnants nearby, notably in the form of Edith Stephens Wetland Park (ESWP), just across Vanguard Drive, some 200m to the northeast. ESWP is one of the very few formal conservation areas within the central Cape Flats, and is home to a number of rare plant species (Helme 2000), in addition to being a flagship urban conservation project.

About half the site has been mapped as a Critical Biodiversity Area (CBA) 2 in the City of Cape Town's Biodiversity Network (Holmes *et al* 2012), with a further 20% or so being mapped as Other Ecological Support Area (OESA). Areas mapped as CBA2 are of greater regional importance than areas mapped as OESA, and are regarded as being "Restorable, Irreplaceable sites, of degraded but restorable

habitat, needed for reaching national conservation targets" (Holmes *et al* 2012). There are about five sublevels of CBA1 that are regarded as being more important for conservation than the CBA2 category.

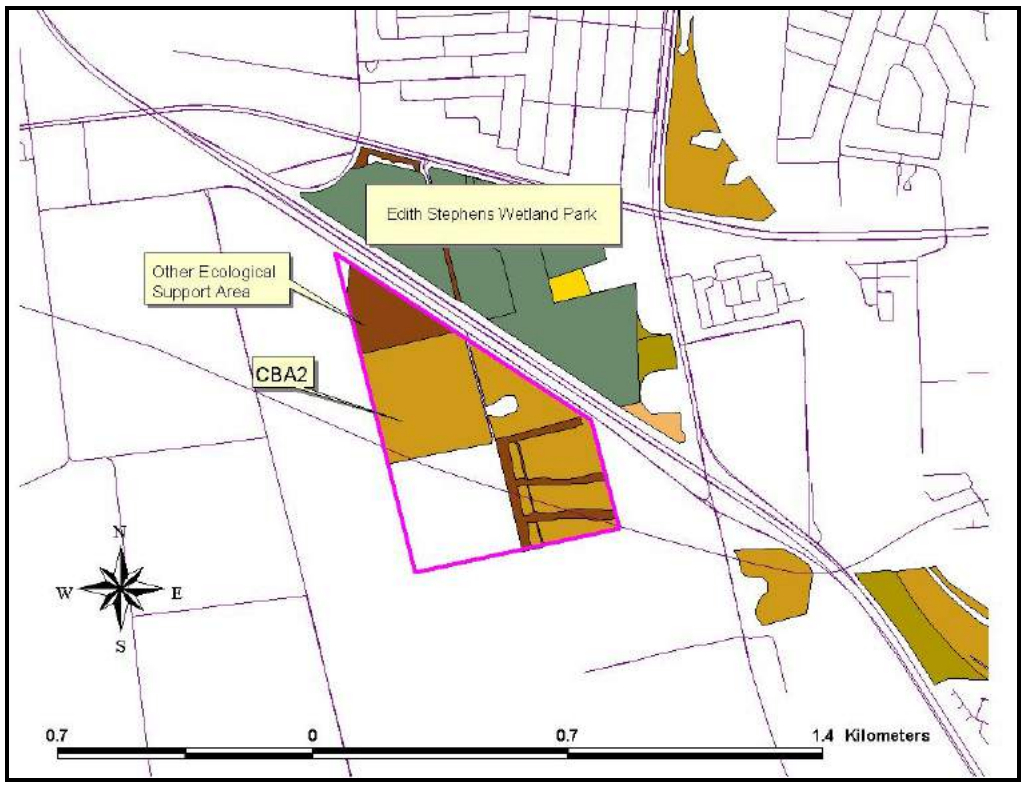

Figure 2: Extract from the latest City of Cape Town Biodiversity Network map, showing the site (pink outline) and its proximity to the formal Edith Stephens Wetland Park conservation area.

4.2 The Vegetation on Site

The study area is about 35ha in extent, with approximately 860m of frontage along the southern edge of the old Lansdowne Road. There is no outcropping rock on the site, and the soils are deep, probably slightly alkaline sands of relatively recent Tertiary origin (Witzand formation). The site is very flat, with very small remnants of natural dunes rising to about 4m above the surrounding flats. Much of the site would appear to have been disturbed in the past, and it is possible, although unlikely, that all existing depressions are the result of excavation. It is clear (due to shape and profile) that some of the ponds were mechanically excavated, and there are also canals draining certain areas and feeding into various wetlands. Large amounts of building rubble have been dumped in various places, along with what may be ash from the now defunct Athlone power station. The site is grazed by livestock on a regular basis. The Philippi agricultural area abuts the southwestern edge, with heavy industry along

the northwestern and southern edges. About 8% of the site is used as an exercise track for horses. The site is probably regularly burned, although nothing seems to have been burnt in the last none months.

The natural vegetation on site is generally in very poor condition and so little vegetation remains that it is largely impossible to say what the exact nature of the original vegetation might have been like. It is probable that the area was much like the adjacent Edith Stephens Wetland Park (Helme 2000) and thus a mix of Cape Flats Sand Fynbos (on the more acid sands) and Cape Flats Dune Strandveld (on the more alkaline sands and dunes). The former is now regarded as Critically Endangered on a national basis (DEA 2011), and the latter as Endangered (DEA 2011).

There are only very small patches (<0.5ha in total) of what might be considered largely natural terrestrial vegetation on site, and the remainder of the terrestrial portions are secondary or heavily degraded. I am unsure about the two main (permanent) wetlands and whether they can be considered primary or secondary, although I suspect they are original, but modified.

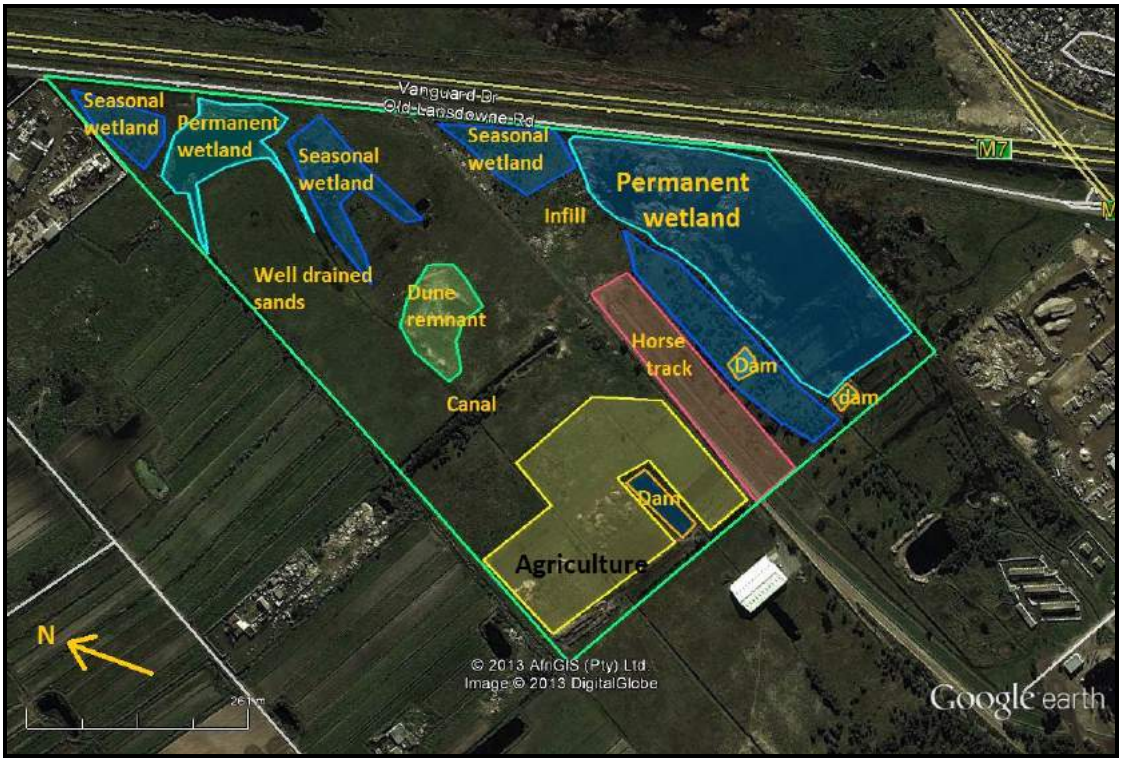

Figure 3: Combined habitat and landuse map of the site.

The primary disturbances on site have probably been large scale earthmoving (creation of dams and canals; possibly including agriculture at some stage), in addition to regular wildfires, infilling, illegal dumping, agriculture and heavy livestock grazing, all of which have contributed to the invasion of alien shrubs, herbs, and grasses.

There is substantial variation in vegetation and habitat pattern across the site (see Figure 3). Some parts (such as the infilled areas, the horse track, the dams and agricultural areas) are heavily degraded and essentially totally transformed, with negligible botanical diversity or value. These areas are of Low botanical conservation value (Figure 4).

All other areas are deemed to be of Low to Medium botanical conservation value, although some of these areas may have a higher ecological value – such as for birds, wetlands or invertebrates.

Figure 4: Botanical conservation value map of the site.

Indigenous shrubs are almost totally absent from the site, with the exception of the resilient resprouter *Searsia laevigata* (dune taaibos), which is itself restricted to a few remnant patches. Grass species dominate the site, being a mix of alien and indigenous species. Damper areas are dominated by the indigenous *Stenotaphrum secundatum* (buffalo grass), *Paspalum vaginatum* and *Cynodon dactylon* (kweek), along with the alien *Pennisetum clandestinum* (kikuyu). Drier

areas are dominated by indigenous *Ehrharta villosa* (pypgras) and *Ehrharta calycina* (rooisaadgras), plus aliens *Bromus diandrus* (ripgut brome), *Lolium* sp (ryegrass) and *Avena* sp. (wild oats).

Plate 1: View looking north to Vanguard drive from remnant dune near centre of site. The darker green areas are seasonal wetlands dominated by alien kikuyu grass. Note the total lack of indigenous shrubs in the picture.

Plate 2: Seasonal wetland bordering one of the permanent wetlands, here dominated by indigenous *Cynodon dactylon* (kweekgras) and *Bolboschoenus maritimus* (sawgrass). Alien Port Jackson trees (*Acacia saligna*) are prominent behind.

Plate 3: Seasonally damp areas in foreground with *Zantedeschia aethiopica* (arum lily), well drained sands in middle distance, and infilled area beyond, with a wetland bordering onto Vanguard drive.

Plate 4: Lesser Flamingos in shallow, permanent wetland area near Vanguard Drive, with alien kikuyu grass in foreground, and bulrushes (*Typha capensis*) behind.

Very few indigenous bulb or herb species were noted, and these include: *Trachyandra divaricata* (duinekool), *Geranium incanum, Zantedeschia aethiopica* (arum lily), *Sparaxis bulbifera, Cotula coronopifolia, Pelargonium capitatum*, *Arctotheca calendula* (Cape weed), *Bolboschoenus maritimus* (sawgrass),

Sarcocornia natalensis (brakkoraal), *Carpobrotus edulis* (suurvy) and *Helichrysum niveum.* Species diversity is generally low.

Alien invasive herbs are common, including *Echium plantagineum* (Patterson's curse), *Raphanus rapistrum* (wild mustard) and *Plantago lanceolata* (ribwort).

No rare or locally endemic plant species (Species of Conservation Concern) were observed, and none are likely to occur here in viable numbers.

5. CONCLUSIONS

The vegetation on site is of Low or Low to Medium conservation value in a regional context. None of the areas on site are particularly worth conserving from a botanical point of view, although it must be noted that they may have ecological value – notably in terms of birds, frogs and general wetland ecology. The ecological context of the site (adjacent to Edith Stephen Wetland Park) is important, and it would be desirable to maintain some sort of green space here (rather than further industrial development) in order to increase the viability of the Wetland Park (a formal conservation area).

There are no significant constraints to the proposed development from a botanical perspective. In my opinion most of the habitats currently present on site could be recreated within or around the proposed development, and in fact the ecological value of the area could be enhanced by reintroduction of various appropriate plant species.

6. RECOMMENDATIONS

- I would strongly recommend input from an experienced freshwater biologist, as the real value of the various wetlands on site needs to be determined prior to any development planning. It may also be worthwhile getting input from a faunal expert, particularly in relation to birds and frogs. It is likely that minimising disturbance to the existing wetlands would be a recommendation arising from such studies.
- If this project proceeds to the Impact Assessment stage inputs should be made then in terms of how to minimise the botanical and overall ecological impacts.

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