



**CEN INTEGRATED ENVIRONMENTAL  
MANAGEMENT UNIT**

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**Environmental and Rural Development Specialist**

**Results of a forest survey on Erf 11305,  
Walmer, Port Elizabeth)**

July 2014

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**Project Title:**

Results of a forest survey on Erf 11305, Walmer, Port Elizabeth)

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## Introduction

CEN IEM Unit was appointed by SRK Consulting to do a survey of the remaining extent of forest (as defined by the National Forest Act No 84 of 1998 as amended (NFA)) on an area proposed for housing (Erf 11305 in Walmer, Port Elizabeth). The survey was requested by the Department of Agriculture, Forestry and Fisheries (DAFF). DAFF's mandate is to implement the provisions of the NFA and are therefore key role-players in the decision-making process for developments planned in areas where forest occurs.

Section 3(3) of the National Forest Act sets out principles to guide sustainable forest management. Section 3(3)(a) states that 'natural forests'<sup>1</sup> must not be destroyed save in exceptional circumstances where, in the opinion of the Minister, a proposed new land use is preferable in terms of its economic, social or environmental benefits. By inference, areas that are classified as forest on the site during the survey would be protected in terms of the NFA – the current position is that housing projects do not constitute exceptional circumstances.

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<sup>1</sup> The definition of forest in the NFA was used as a guiding principle in demarcating forest areas on the site:

The National Forest Act gives the following definition for forest: 'forest' includes-

- (a) A natural forest, a woodland and a plantation;
- (b) The forest produce in it, and
- (c) The ecosystem which makes it up

And 'natural forest' means a group of indigenous trees –

- (a) Whose crowns are largely contiguous; or
- (b) Which have been declared by the Minister to be a natural forest under section 7(2); (xxviii)

As a general guideline, where 3 or more forest species occur together in a 'clump', this is considered a forest community and is regarded as forest in terms of the above definition.

The terms of reference for the survey were as follows:

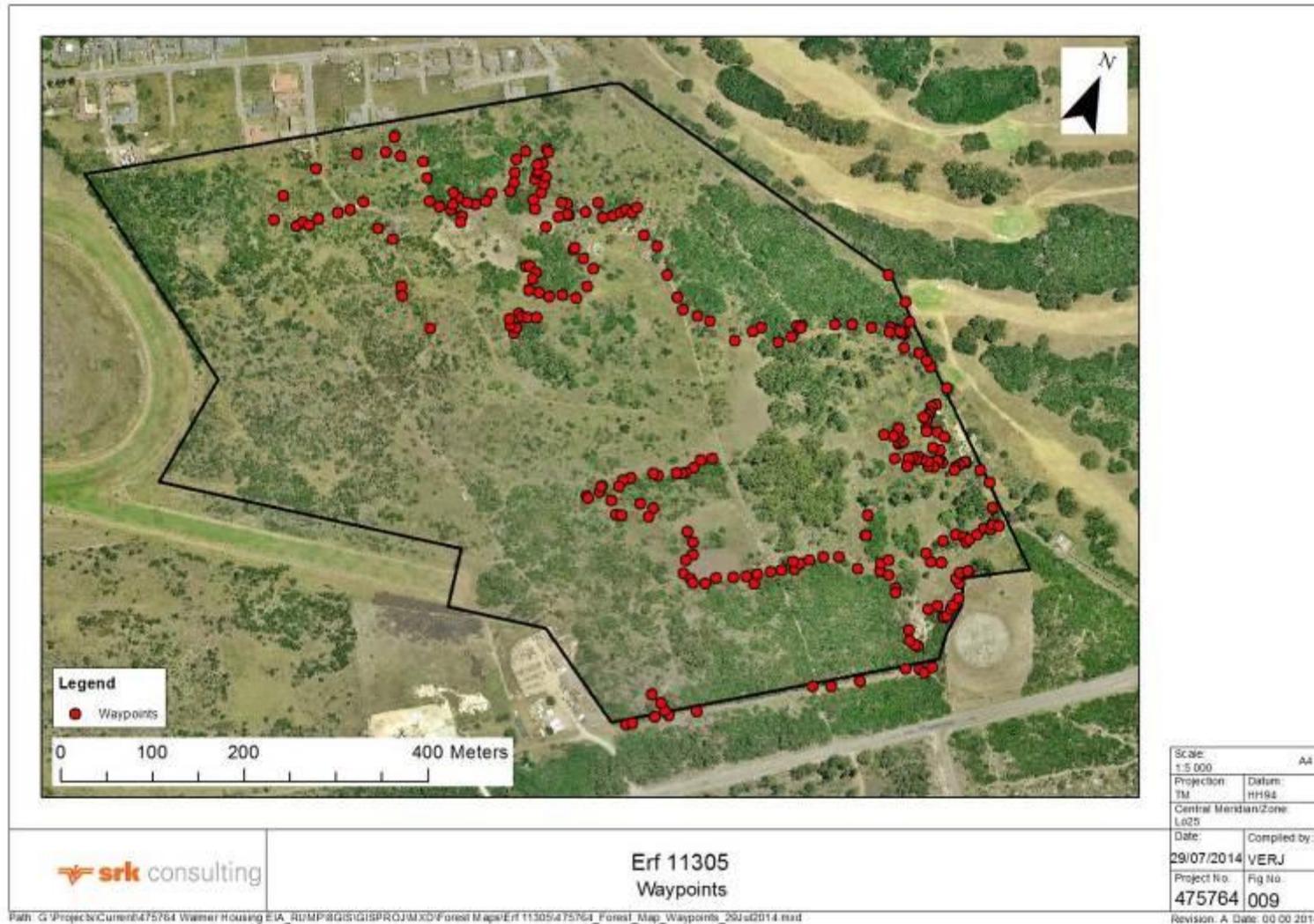
- ❖ Do an on-site assessment of the remaining extent of forest clumps and species
- ❖ Compile a list of dominant forest tree species observed
- ❖ Provide a map indicating where forest clumps and species occur on site
- ❖ Demarcate the location of protected species listed in terms of the National Forest Act (NFA)

Based on previous studies done on surrounding properties, as well as a review of aerial imagery and observations made during cursory site visits; it is reasonable to expect that forest occurs on the site. It was therefore deemed necessary to do a detailed survey to demonstrate the nature and extent of forest on site to assist the applicant and DAFF in land use decision planning.

## **Methodology**

Members of CEN IEM Unit visited the site on 16 July 2014. The extent of the study area was defined in an aerial image with the erf boundary provided by SRK Consulting. The site was traversed on foot using a hand-held GPS and an aerial image to demarcate the following (refer to Figure 1):

- ❖ Forest clumps – i.e. where 3 or more forest species occurred together.
- ❖ Clumps comprised of 2 or fewer forest species and/or individual trees.
- ❖ The occurrence of tree species that are protected under the NFA (2012 list of protected species)



➤ Figure 1: An indication of the area surveyed and waypoints recorded. The site boundary is in black.

A series of maps with a corresponding species list at various waypoints was produced to indicate the extent and nature of forest on the site<sup>2</sup>. It should be noted that the data provided in the series of maps below was compiled based on information collected in the field as well as interpretation from a high resolution aerial image (2011).

## Results of the survey

### 1.1 List of dominant forest/tree species

A list of dominant forest species recorded is shown in Table 1. Species protected under the NFA include *Pittosporum viridiflorum* and *Sideroxylon inerme*.

- **Table 1: List of dominant forest species recorded (alien species are denoted by a \*)**

<b>Anacardiaceae</b>
<i>Searsia crenata</i>
<i>Searsia glauca</i>
<i>Searsia pterota</i>
<i>Searsia tomentosa</i>
<b>Apocynaceae</b>
<i>Carissa bispinosa</i>
<b>Asphodelaceae</b>
<i>Aloe africana</i>
<b>Asteraceae</b>
<i>Brachylaena discolor</i>
<i>Osteospermum moniliferum</i>
<i>Tarchonanthus camphoratus</i>
<b>Bigoniaceae</b>
<i>Tecoma capensis</i>
<b>Celastraceae</b>
<i>Lauridia tetragona</i>
<i>Mystroxydon aethiopicum</i>
<i>Pterocelastrus tricuspidatus</i>
<i>Putterlickia pyracantha</i>
<b>Ebenaceae</b>

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<sup>2</sup> While we attempted to indicate the extent of most forest clumps and individuals on the site, it is likely that some may have been missed. However we are confident that majority of the site has been described and the maps can be used by the Department of Forestry and the applicant in land use planning.

<i>Euclea racemosa</i>
<b>Fabaceae</b>
<i>Acacia</i> spp. *
<i>Acacia karroo</i>
<b>Lamiaceae</b>
<i>Leonotis leonurus</i>
<b>Meliaceae</b>
<i>Ekebergia capensis</i>
<b>Rhamnaceae</b>
<i>Rhamnus prinoides</i>
<b>Salicaceae</b>
<i>Dovyalis rhamnoides</i>
<b>Solanaceae</b>
<i>Lycium ferocissimum</i>
<b>Myrtaceae</b>
<i>Eucalyptus</i> sp. *
<b>Pittosporaceae</b>
<i>Pittosporum viridiflorum</i>
<b>Ranunculaceae</b>
<i>Clematis brachiata</i>
<b>Rhamnaceae</b>
<i>Scutia myrtina</i>
<b>Rutaceae</b>
<i>Clausena anisata</i>
<i>Zanthoxylum capense</i>
<b>Salvadoraceae</b>
<i>Azima tetracantha</i>
<b>Sapotaceae</b>
<i>Sideroxylon inerme</i>
<b>Tiliaceae</b>
<i>Grewia occidentalis</i>

## 1.2 Maps indicating the extent and nature of forest

Figure 2 indicates the location of forest clumps (i.e. 3 or more species) and clumps consisting of 2 or fewer species (i.e. individuals). Where a protected species was

observed within a forest clump, the clump is designated as 'protected'<sup>3</sup>. Similarly, individual trees that are protected are reflected accordingly in the map.

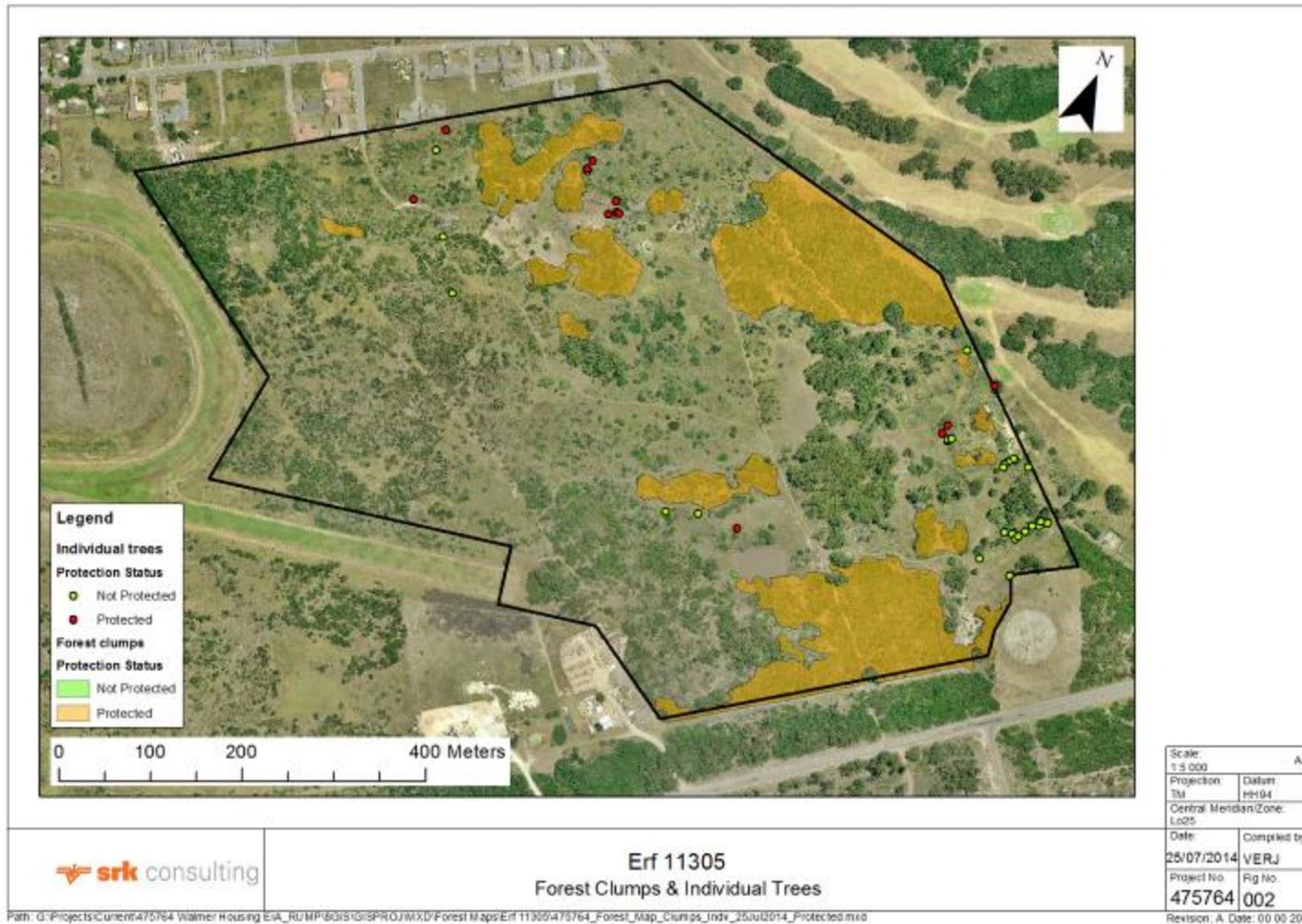
All forest clumps observed were fragmented/opened by some form of disturbance (e.g. fire, clearing, tracks). Some of the open areas between clumps were colonized by pioneer forest species, while others had alien vegetation or fynbos species. If the openings were small and believed not to impact on the functioning of the forest 'community', individual clumps were grouped into a single unit and classified as a matrix/interspersed clump versus a solid clump.

Clumps recorded in the survey are numbered as shown in Figure 3. Table 2 gives species information for each clump and an indication is given as to whether the clump is solid or a matrix.

To illustrate the occurrence of individual tree species and/or clumps with 2 or fewer species, the aerial image was divided into two; each indicating waypoints where these were recorded during the survey (refer to Figures 4 to 5). A corresponding species list is given in Table 3.

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<sup>3</sup> Note that a clump that consists of 3 or more forest species is considered a forest community/ecosystem and is protected in terms of the NFA irrespective of whether it has protected species (listed in terms of the NFA) in it or not.



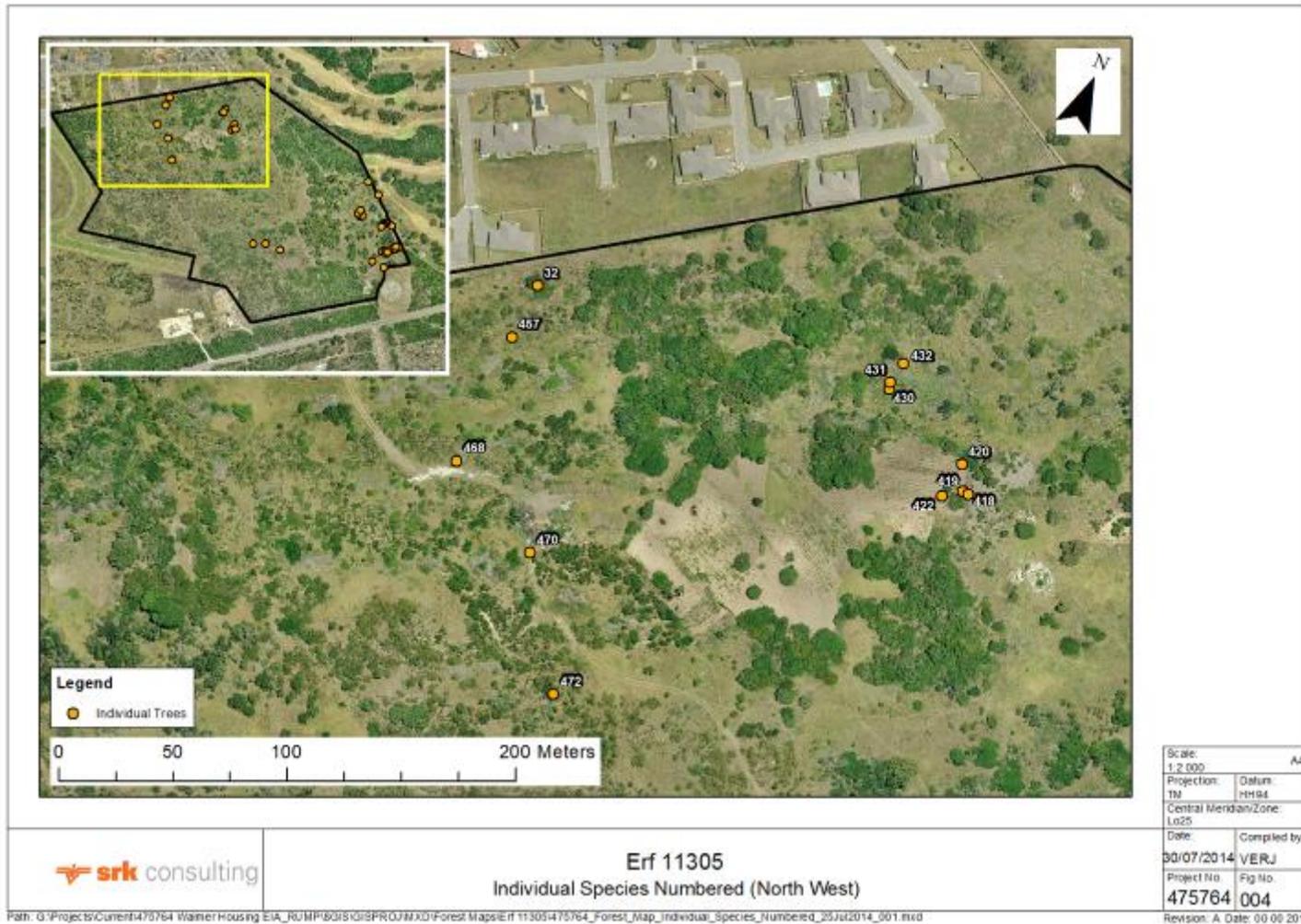
➤ **Figure 2: An indication of the location of forest clumps (3 or more species) and individual clumps/species and their protection status (in terms of the list of protected species under the National Forest Act).**



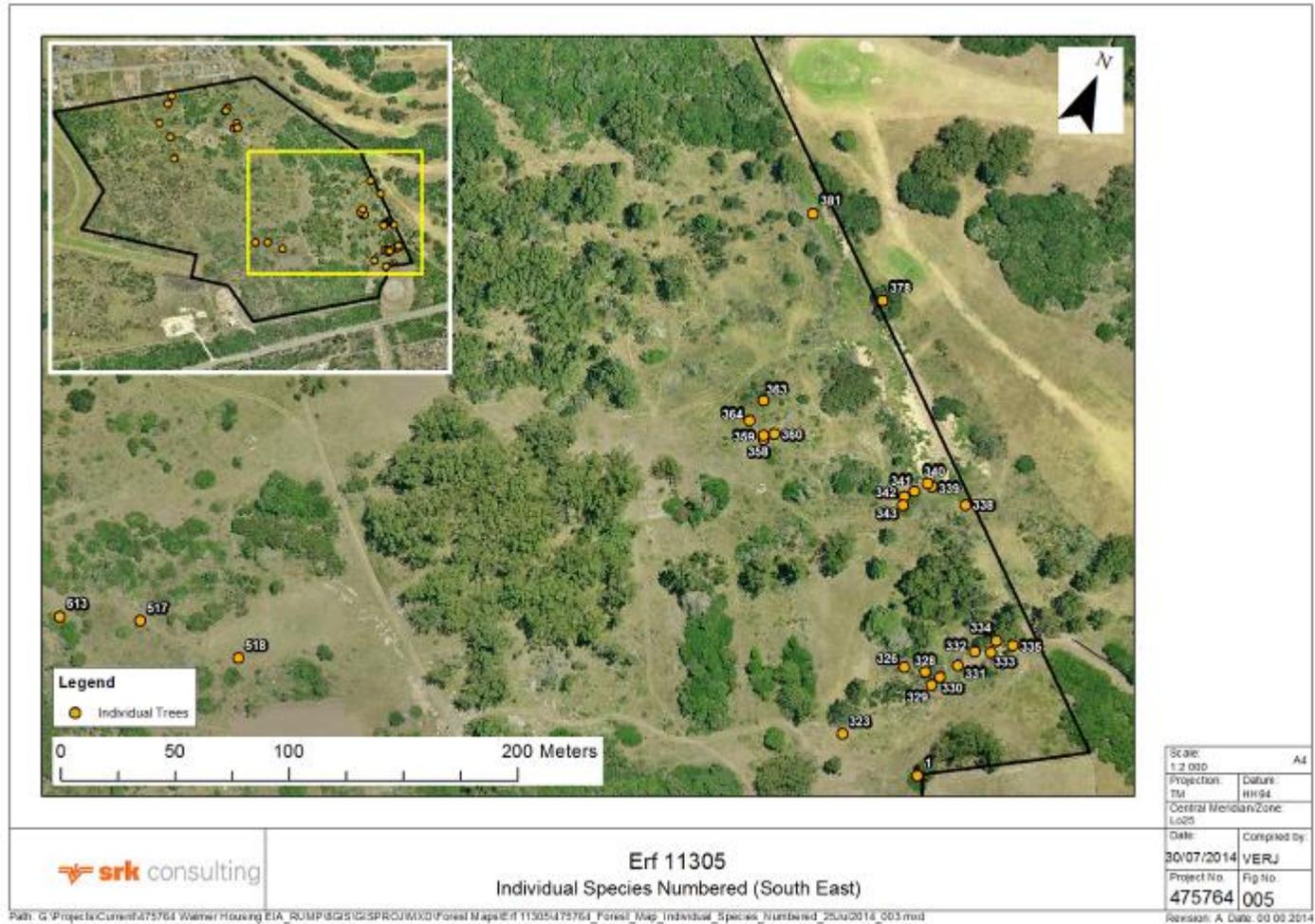
➤ Figure 3: Forest clump numbers as referenced in Table 2.

➤ **Table 2: List of floral species recorded at forest clumps**

Clump No.	Waypoint	Species	Solid/Matrix
1	294-305, 310-317, 524-534, 536-538542- 548, 549	<i>Tecoma capensis</i> , <i>Searsia glauca</i> , <i>Zanthoxylum capense</i> , <i>Mystroxydon aethiopicum</i> , <i>Acacia karroo</i> , <i>Euclea racemosa</i> , <i>Dovyalis rhamnoides</i> , <i>Sideroxylon inerme</i> , <i>Scutia myrtina</i> , <i>Clausena anisata</i> , <i>Putterlickia pyracantha</i> , <i>Clematis brachiata</i> , <i>Brachylaena discolor</i> , <i>Azima tetraacantha</i> ,	Matrix
2	344-354	<i>Rhamnus prinoides</i> , <i>E. racemosa</i> , <i>S. inerme</i> , <i>Searsia glauca</i> , <i>C. anisata</i> , <i>Searsia crenata</i> , <i>A. karroo</i> , <i>Grewia occidentalis</i> , <i>M. aethiopicum</i>	Matrix
3	366-374	<i>G. occidentalis</i> , <i>Z. capense</i> , <i>Acacia cyclops</i> , <i>R. prinoides</i> , <i>Pittosporum viridiflorum</i> , <i>S. myrtina</i> , <i>P. pyracantha</i> , <i>S. inerme</i>	Matrix
4	379-380	<i>Acacia</i> spp., <i>Carissa bispinosa</i> , <i>Searsia</i> sp., <i>S. myrtina</i> , <i>S. inerme</i> , <i>C. anisata</i>	Matrix
5	383-389, 403-408	<i>Z. capense</i> , <i>A. karroo</i> , <i>S. inerme</i> , <i>S. crenata</i> , <i>G. occidentalis</i> , <i>C. bispinosa</i> , <i>S. myrtina</i> , <i>Eucalyptus</i> sp.	Matrix
6	410-414	<i>S. myrtina</i> , <i>S. inerme</i> , <i>A. tetraacantha</i> , <i>P. pyracantha</i> , <i>A. karroo</i>	Matrix
7	424-426, 437-440	<i>G. occidentalis</i> , <i>S. inerme</i> , <i>Leonotis leonurus</i> , <i>S. myrtina</i> , <i>C. brachiata</i> , <i>A. karroo</i> , <i>Acacia</i> spp.	Matrix
8	433-437, 441-454	<i>S. inerme</i> , <i>G. occidentalis</i> , <i>Ekebergia capensis</i> , <i>A. karroo</i> , <i>S. inerme</i> , <i>P. viridifolium</i> , <i>Aloe Africana</i> , <i>Searsia tomentosa</i> , <i>Searsia pterota</i> , <i>Acacia</i> spp.	Matrix
9	461-464,469	<i>S. inerme</i> , <i>A. karroo</i> , <i>Acacia</i> spp.	Matrix
10	474-481	<i>A. karroo</i> , <i>Z. capense</i> , <i>P. pyracantha</i> , <i>E. racemosa</i> , <i>S. inerme</i> , <i>C. brachiata</i> , <i>S. myrtina</i> , <i>Acacia</i> sp.	Matrix
11	482-493	<i>S. inerme</i> , <i>Z. capense</i> , <i>A. karroo</i> , <i>L. leonurus</i> , <i>G. occidentalis</i> , <i>Hypoestes</i> sp., <i>P. pyracantha</i> , <i>Acacia</i> spp., <i>S. tomentosa</i> , <i>S. glauca</i> , <i>S. crenata</i>	Matrix
12	496-510, 512	<i>S. inerme</i> , <i>L. leonurus</i> , <i>Z. capense</i> , <i>C. brachiata</i> , <i>C. anisata</i> , <i>A. karroo</i> , <i>S. glauca</i> , <i>Acacia</i> spp.	Matrix
13	522-523	<i>S. myrtina</i> , <i>S. crenata</i> , <i>Z. capense</i>	Matrix
14	540-542	<i>S. myrtina</i> , <i>S. inerme</i>	



➤ **Figure 4: An aerial image of the northern section of the site with waypoints where individual trees and/or clumps with 2 or fewer trees were recorded during the survey.**



➤ **Figure 5: An aerial image of the eastern section of the site with waypoints where individual trees and/or clumps with 2 or fewer trees were recorded during the survey.**

➤ **Table 3: List of floral species recorded as ‘individuals’ during the survey**

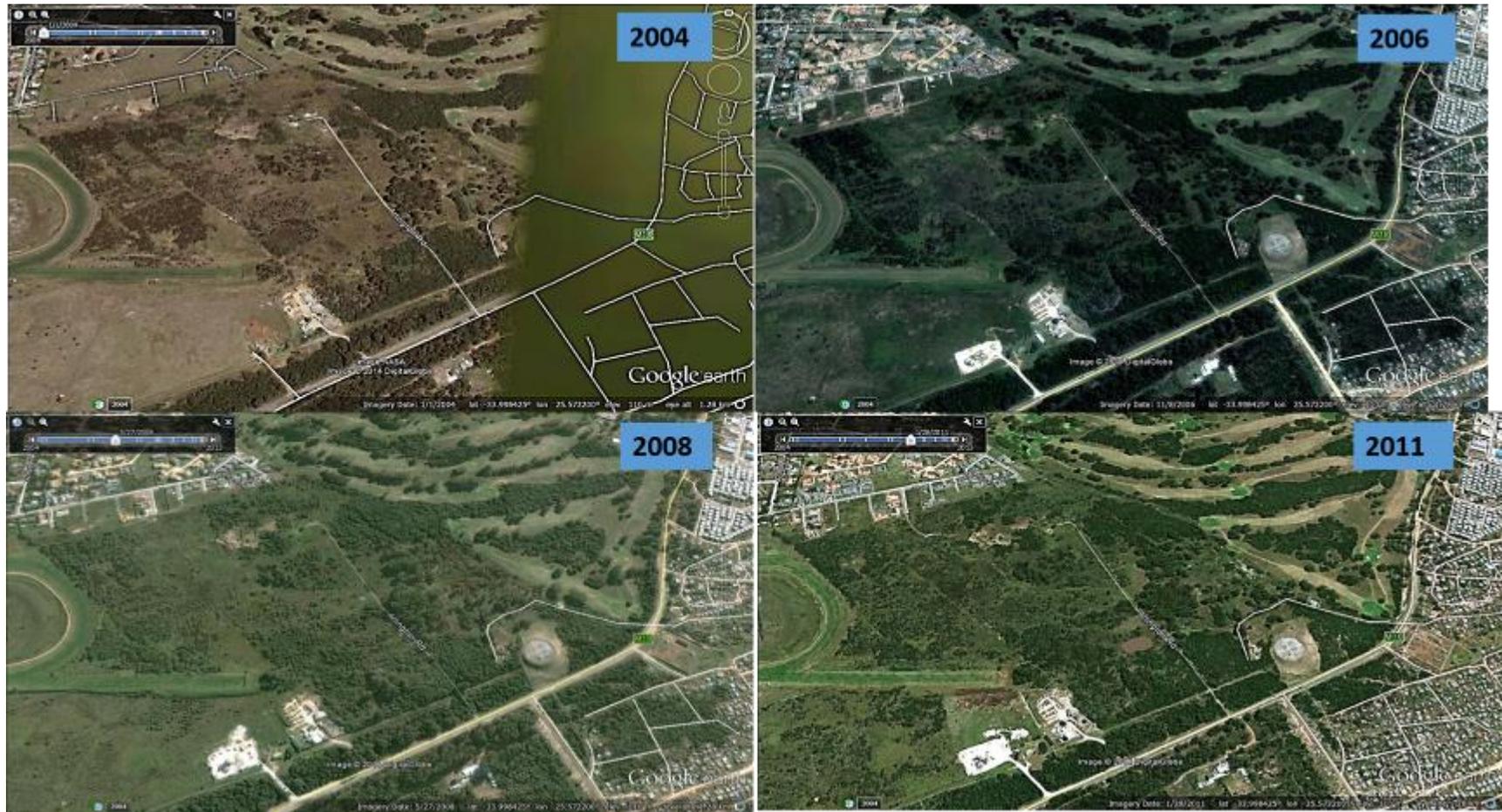
Waypoint Number	Species
<b>Figure 4</b>	
418	Sideroxylon inerme
419	S. inerme
420	S. inerme
422	S. inerme
430	Clausena anisata
431	Pittosporum viridiflorum
432	P. viridiflorum
457	Zanthoxylum capense
468	S. inerme
470	Acacia karroo, Z. capense, Scutia myrtina
472	Tarchonanthus camphoratus
<b>Figure 5</b>	
323	Lycium ferocissimum
326	Scutia myrtina
328	Searsia tomentosa
329	Searsia glauca
330, 331	S. glauca, A. karroo
332	Z. capense
333	S. glauca
335	S. glauca
338	S. myrtina
339	Z. capense
340	S. myrtina
341	S. myrtina, Z. capense
342	S. glauca
343	S. tomentosa
358	S. myrtina
359	S. glauca
360	S. myrtina
363	S. inerme
364	S. inerme
378	S. inerme
381	Pterocelastrus tricuspidatus
513	Rhamnus prinoides, Searsia crenata
517	T. camphoratus
518	S. glauca, S. inerme

## General comments on the status of forest on the site

Forest on Erf 11305 occurs predominantly in two major clumps on the northern and south-eastern borders. These clumps are representative of forest that would have occurred in the area prior to transformation. All forest clumps demarcated in this survey were a matrix of forest species interspersed with alien vegetation and pioneer species, and all have protected species in terms of the NFA (predominantly *Sideroxylon inerme*). In terms of structure and species composition, forest seems to be more mature than that found on Erf 1948, which is most likely related to soil type and depth.

Forest has been impacted by clearing (historic and current), fires, and alien vegetation encroachment. Large parts of the site are infested with alien vegetation, and remaining forest clumps are largely interspersed with alien tree species. In some areas, *Acacia karroo* occurred either on the fringes of forest clumps or in disturbed areas close to clumps; indicating potential regeneration of forest. Regeneration is inhibited by fires (as noted by burnt *A. karroo*) and competition with alien species. Current activities that were observed during the survey which impact on remaining forest and forest regeneration include clearing for planting of crops, fires, dumping (especially in the north-western section of the site which is accessible via Walmer Heights) and alien vegetation encroachment. When comparing the high resolution aerial image (2011) with the Google Earth image (2014), no obvious changes in vegetation cover were observed indicating that transformation of the site occurred at an earlier date. In an attempt to determine when impacts on forest vegetation occurred, historical imagery of the site from 2004 to 2011 was reviewed using Google Earth imagery (refer to Figure 6). Based on this, it appears that these impacts have been occurring for some time. The two significant forest clumps demarcated in this survey are visible in 2004 and in general, it does not seem that there were any additional significant forest areas at that time. While

alien vegetation has increased in density since 2004, the change is not as significant as what was observed on Erf 1948.



➤ **Figure 6: A series of Google Earth images of Erf 13305 from 2004 to 2011.**

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Document Printed July 2014