



Aloe bowiea

Ground Truthing Report



ENVIRONMENTAL AND SOCIAL ADVISORY SERVICES

**UITSIG BOERDERY TRUST CITRUS DEVELOPMENT NEAR
KIRKWOOD, EASTERN CAPE PROVINCE.**

GROUND TRUTHING REPORT

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PROJECT TEAM

Ms Nicole Wienand (*Role: Junior Botanical Specialist and Report Writer*)

Nicole is an Environmental Consultant based in the Port Elizabeth branch. Nicole obtained her BSc Honours in Botany (Environmental Management) from Nelson Mandela University (NMU) in December 2018. She also holds a BSc Degree in Environmental Management (Cum Laude) from NMU. Nicole's honours project focused on the composition of subtidal marine benthic communities on warm temperate reefs off the coast of Port Elizabeth and for her undergraduate project she investigated dune movement in Sardinia Bay. Nicole's key interests include marine ecology, botanical specialist assessments, GIS Mapping, the general EIA process, Public Participation Process (PPP) and Ecological Impact Assessments. Since her appointment with CES in January 2019, Nicole has undertaken a number of Ecological Impact Assessments under the guidance of Dr Greer Hawley and Tarryn Martin.

Mr Justin Green (*Role: Field Assistant*)

Justin has a BSc. degree in Zoology and Entomology as well as a Post Graduate Diploma in Enterprise Management from Rhodes University. Justin has been an Environmental Consultant with CES for 8 years and has been involved in extensive work in Renewable Energy Projects and mining based projects. Justin has played an integral part in Basic Assessments and Environmental Impact Assessments. His work experience has been completed in South Africa, Lesotho, Mozambique, Zambia, Cameroon, Tanzania, Malawi, Madagascar and the DRC.

He specializes in Water Resources Management and Aquatic Biomonitoring and Assessment using the South African Scoring System (SASS5) methodology. SASS5 is based on the presence or absence of sensitive aquatic macroinvertebrates collected and analyzed according to the methods outlined in Dickens and Graham (2002). Justin has also received training in Wetland Assessment and Delineation and completed assessments both locally and internationally.

He has also formed part of the Geographical Information Systems (GIS) team for the past 7 years with his primary experience through ArcGIS 10 and Quantum GIS 3. He has been involved in producing mapping data for a multitude of international projects all up to African Bank, IFC and World Bank standards. Justin has also made a considerable difference using OruxMaps for the purpose of specialist fieldwork and mapping purposes. Experienced in training and managing field teams to collect field data and then incorporated into the GIS database. Tablet based questionnaires are also used by these field teams to conduct surveys to collect information on project affected persons that are capable of linking to the spatial data collect. All survey data can then efficiently and accurately be captured in a Microsoft Access database for evaluation.

Dr Greer Hawley-McMaster (*Role: Ecological Specialist and Report Review*)

Dr Greer Hawley has a BSc degree in Botany and Zoology and a BSc Honours in Botany from the University of Cape Town. She completed her PhD thesis (Microbiology) at Rhodes University. Greer has been involved in a number of diverse activities. The core academic focus has been in the field of taxonomy both in the plant and fungal kingdom. Greer's research ranges from fresh water and marine algae, estuarine diatoms, plant species classification in



the fynbos and forest vegetation and fungal species identification and ecology. Greer has been involved in environmental and biodiversity impact assessments and environmental and biodiversity management projects both in South Africa and other African countries. Greer has recently assisted with the completion of the Eastern Cape Biodiversity Conservation Plan (2019), the Eastern Cape Biodiversity Strategy and Action Plan and assisted with the generation of the Western Cape State of the Coast Report. She is currently involved with revising the City of Ekurhuleni Bioregional Plan.



1 INTRODUCTION

1.1 OVERVIEW

During the site survey undertaken for the Ecological Impact Assessment as part of the Basic Assessment (BA) Process for the proposed Uitsig Boerdery Trust Citrus Development, an individual *Aloe bowiea* specimen was identified on Portion 2 of Farm 683 (SG Code: C07600000000068300002) (Figure 1.1). *A. bowiea* is an extremely rare species (Smith and van Wyk, 1990) documented in only seven (7) localities within the Eastern Cape Province. Four (4) of the seven (7) documented populations have been declared locally extinct while the remaining three (3) extant populations are severely fragmented (SANBI Red List of South African Plants).

The individual *A. bowiea* specimen identified during the site survey undertaken for the Ecological Impact Assessment was located along the edge of an existing gravel road (Figure 1.3). The specimen was solitary and appeared wilted, most likely due to persistent drought in the region (Figure 1.2 (b)). Although only one (1) individual of *A. bowiea* was observed, it was assumed that other individuals were present onsite and were not detected as only a representative sample of the vegetation was surveyed due to the limited time available for the site survey, the size of development site, and the impenetrable nature of the Sundays Valley Thicket vegetation.

In line with the recommendations specified in the Ecological Impact Assessment for the proposed Uitsig Boerdery Trust Citrus Development, a comprehensive ground truthing survey was undertaken to establish whether the individual *A. bowiea* specimen formed part of a larger population, and if so, the extent of the population on Portion 2 of Farm 683, or whether the identified *A. bowiea* was a sporadic and isolated individual. This report summarises the findings of the ground truthing survey conducted on the 29th of June to the 3rd of July 2020.

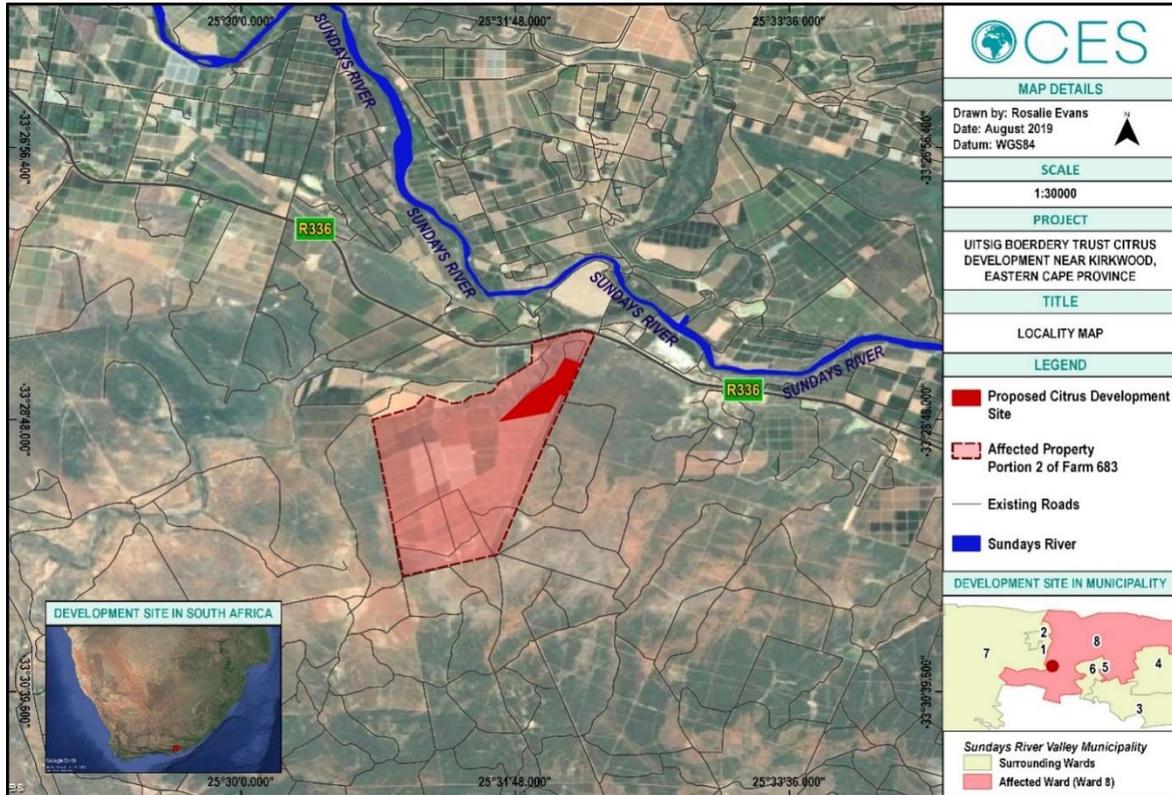


Figure 1.1 Locality Map of the proposed Uitsig Boerdery Trust Citrus Development on Portion 2 of Farm 683.

1.2 ALOE BOWIEA

Published literature concerning *A. bowiea* is limited and mostly dates back to pre-2000 (Smith, 1989; Smith and van Wyk, 1989; Smith and van Wyk, 1990; Smith, 1991; Smith and van Wyk, 1993; Smith *et al.*, 1994; Smith *et al.*, 2000). *A. bowiea* (Family: Asphodelaceae) is classified as Critically Endangered (SANBI Red List of South African Plants) and is only known from a restricted area in the Eastern Cape Province of South Africa. It appears as a dwarf rosulate leaf succulent reaching an average height of approximately 300 mm during flowering under conditions of normal rainfall (Newton, 1974 cited in Smith and van Wyk, 1990). *A. bowiea* has been recorded in Motherwell Karroid Thicket, Sundays Valley Thicket and Baviaans Valley Thicket, and typically occurs in rocky soils on southwest-facing slopes. The climate characteristic of these vegetation types is classified as warm temperate (van Staden *et al.*, 2019).

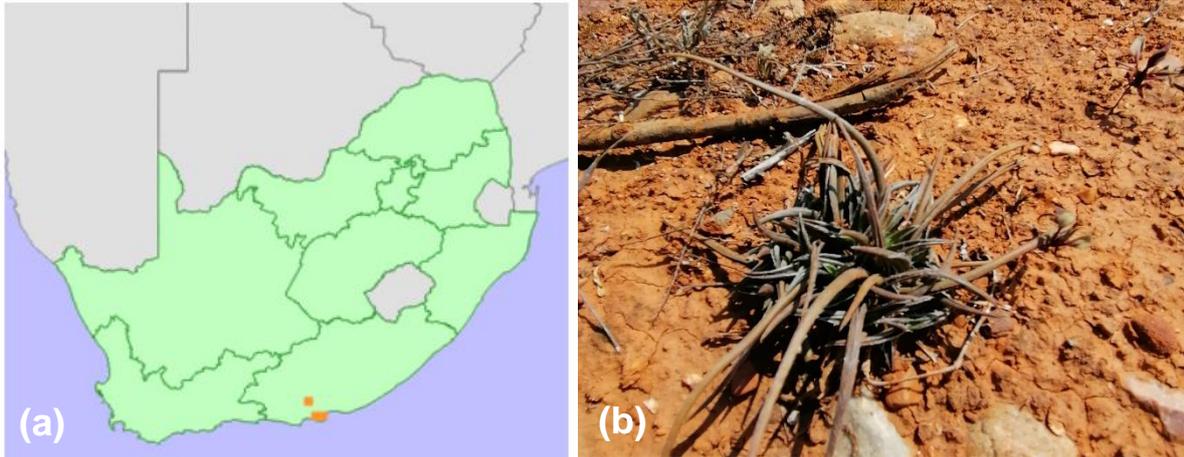


Figure 1.2 (a) Known population of *A. bowiea* in the Eastern Cape Province (source: <http://redlist.sanbi.org>) (b) *A. bowiea* specimen observed on Portion 2 of Farm 683.

The current population of the species is uncertain. However, only three (3) remaining populations are known with previous records reporting the largest subpopulation of *A. bowiea* (more than 90% of the population) documented around Uitenage and Coega Kop, with a smaller subpopulation recorded near Kirkwood. Recently, between 190-2550 individuals were recorded in an area east of Motherwell township in an area of the Coega Special Economic Zone (SEZ) earmarked for development. However, over-grazing, illegal dumping and the proposed development in this area led to an initiative which saw the relocation and transplant of over 100 individuals from the impacted area to a new home at the Dedisa Peaking Power Plant where the individuals are protected (Rogers, 2016). Another large population of approximately 721-1610 individuals were recorded near Uitenage in 2018, at a location where *A. bowiea* was thought to be extinct. The population extent of a smaller isolated subpopulation recorded on a private farm near Kirkwood is currently unknown. Should habitat loss and degradation continue, an estimated 80% population reduction within three generations of *A. bowiea* is predicted over the next 10 to 15 years (van Staden *et al.*, 2019).

The Population Trend of this species is considered to be **decreasing** (van Staden *et al.*, 2019).



Figure 1.3: Locality of the *A. bowiea* specimen identified on Portion 2 of Farm 683 (Coordinates: 33°28'46.41"S; 25°31'44.25"E).

2 METHODOLOGY

Ground truthing surveys are undertaken to establish the presence or absence and/or the extent of a population of rare or endangered plants within a particular area. Before conducting a survey, it is important to establish an appropriate methodology which will ensure the greatest confidence with the least overlap, thus ensuring the time and costs associated with the survey are minimised. For larger areas, the use of transects are the most helpful as it ensures adequate coverage of an area with the least duplication (Nelson, 1985). However, for rare plant species surveys, gaining an understanding of the habitat type and requirements of a species will assist with identifying key areas of focus for assessment during the site survey. Therefore, the use of transects should be used only as a guideline with focus on the identified key areas of interest (Nelson, 1985).

The survey was undertaken over a period of five (5) days from the 29th of June to the 3rd of July 2020. The aim was to cover approximately four (4) hectares (ha) a day. Several transects were established within the boundaries of the study site (Figure 2.1) and loaded onto Orux Maps to serve as a guideline when surveying in the field. In the field, transects were visually surveyed on foot. Particular attention was afforded to the area surrounding the original identified specimen and to open areas within the thicket, because although *A. bowiea* naturally occurs in dense thickets, according to Smith and van Wyk (1990), plants of this species do not occur in the shade of surrounding vegetation and are generally restricted to ecological niches where the valley bush opens up naturally to form a less dense karroid/grass community. Any specimen of *A. bowiea* discovered on site would be georeferenced using GPS coordinates and photo waypoints. In the field, tracks surveyed were recorded using Orux Maps (Figure 2.2).

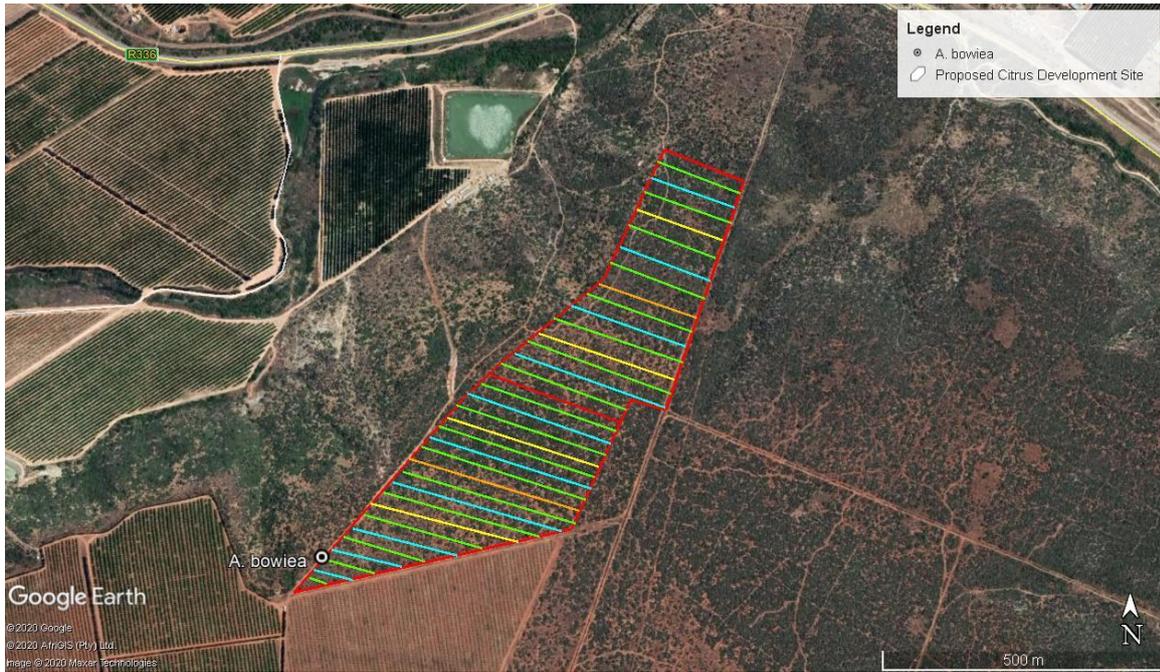


Figure 2.1: Transects delineated within the boundaries of the study site.

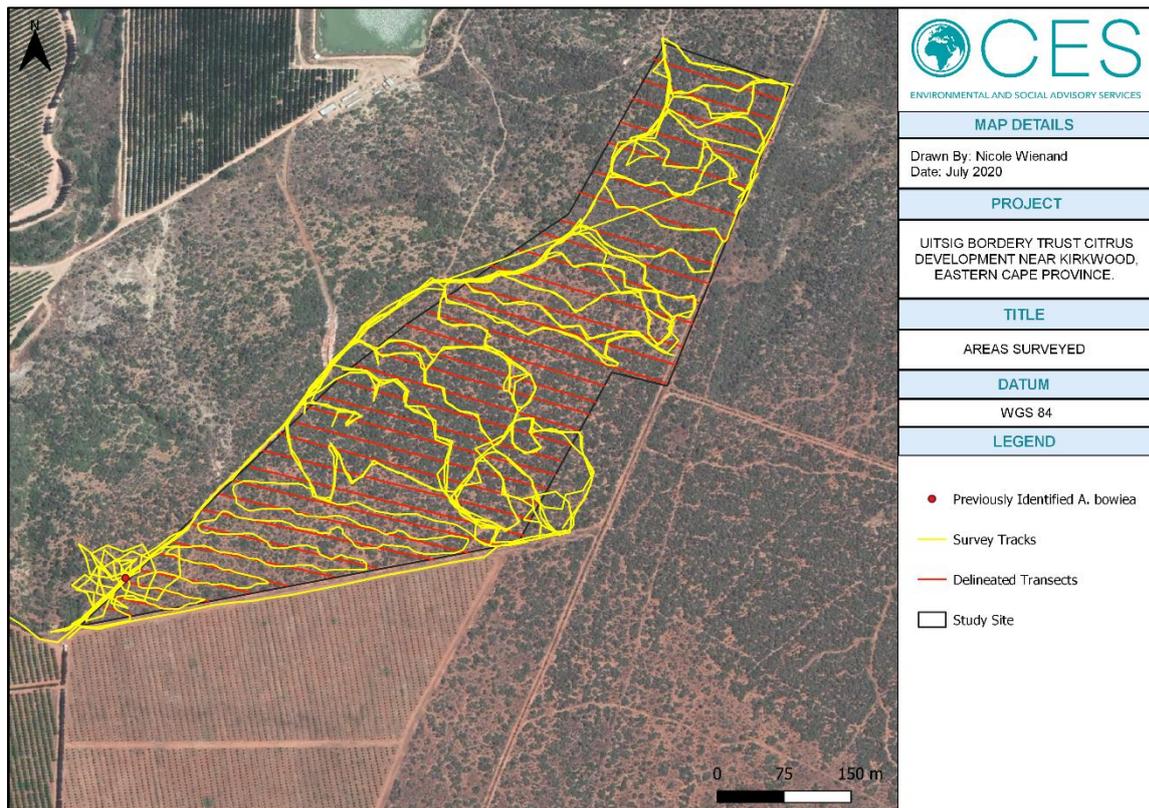


Figure 2.2: Actual tracks surveyed.



3 RESULTS AND CONCLUSION

No individuals of *Aloe bowiea* were recorded during the ground truthing survey conducted on the 29th of June to the 3rd of July 2020, including the original specimen located at 33°28'46.41"S; 25°31'44.25"E. It should be noted that the original specimen identified during the ecological survey conducted on the 18th of September 2019 appeared to be wilted (Figure 1.2 (b)) and it is possible that due to the persistent drought in the region, the specimen has died. The effects of the drought on the surrounding vegetation is also evident (please refer to site photographs in Figure 1.3 below). In addition, it should be noted that poaching is a serious issue in the area and various snares and other tools were observed in various localities throughout the site. The persistent drought, coupled with the foot traffic from poachers and surrounding farm workers, has resulted in the damage and degradation of the Sundays Valley Thicket vegetation of the site (Figure 1.3).



Figure 3.1: Sundays Valley Thicket vegetation of the site.

Based on the findings of the comprehensive ground truthing survey, it can be concluded that there is no population of *A. bowiea* located on the Portion 2 of Farm 683 and it is more likely that the specimen observed during the site survey conducted for the Ecological Impact Assessment was a sporadic occurrence. However, should the proposed development be authorised, it is recommended that a qualified botanist be appointed and present on site during



vegetation clearing. Furthermore, the clearance of vegetation for the proposed development must be strictly limited to that which is required for the cultivation of the proposed citrus orchards. Should any *A. bowiea* specimen be identified during site clearance, the necessary permits must be obtained for the translocation of these specimen to the nearest appropriate habitat which will secure its indefinite protection.



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