



NICK HELME BOTANICAL SURVEYS

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BOTANICAL BASIC ASSESSMENT OF PROPOSED PIPELINE ALTERNATIVES THROUGH KLAPMUTS AND MULDERSVLEI WATER TREATMENT PLANT AND RESERVOIR ALTERNATIVE SITE A1.

Compiled for : BKS (Pty) Ltd., Cape Town

Client: City of Cape Town

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1. INTRODUCTION

This botanical assessment was commissioned in order to help inform the application process for a new bulk water pipeline through the Klapmuts area, and a new water treatment plant (WTP) and reservoir alternative at Muldersvlei (Site A1). This study is in addition to various other studies undertaken over the last three years on the same pipeline, WTP and reservoir upgrade, which would link the new Muldersvlei WTP and Reservoir to the Berg River Dam and the City of Cape Town's existing bulk water supply system.

Two alternative pipeline routes through Klapmuts were investigated (KP1 and KP2), and these lie either side of the existing Wemmershoek line (see Figure 1).

2. STUDY AREA

The Klapmuts study area is depicted in Figure 1, and lies entirely within the Klapmuts urban and peri-urban area. The area is currently a mix of urban and agricultural land, and there is minimal natural vegetation.

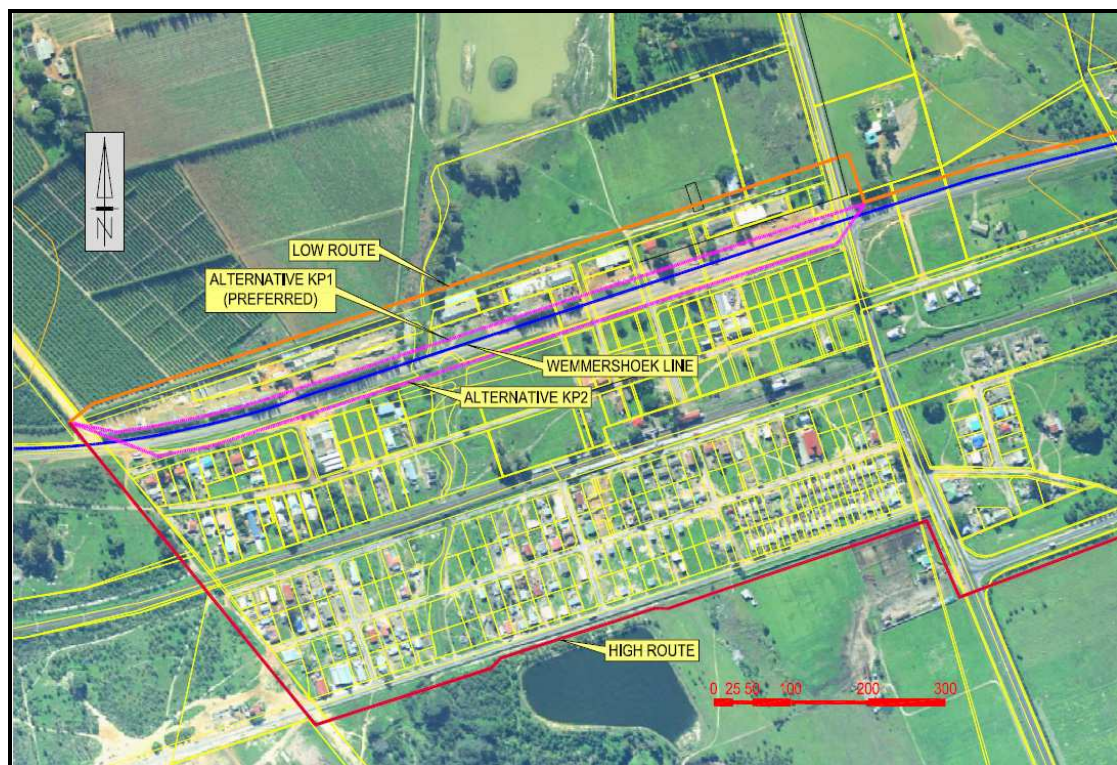


Figure 1: Aerial image of study area, showing alternative routes through Klapmuts.

The site lies within the Cape Lowlands Project Swartland study area, but the area in question was not selected as a priority site for 5 or 20 year conservation action, as

there are no important patches of natural vegetation in the area (Von Hase *et al*, 2003).

The Muldersvlei WTP and reservoir Site A1 site is indicated in Figure 2.

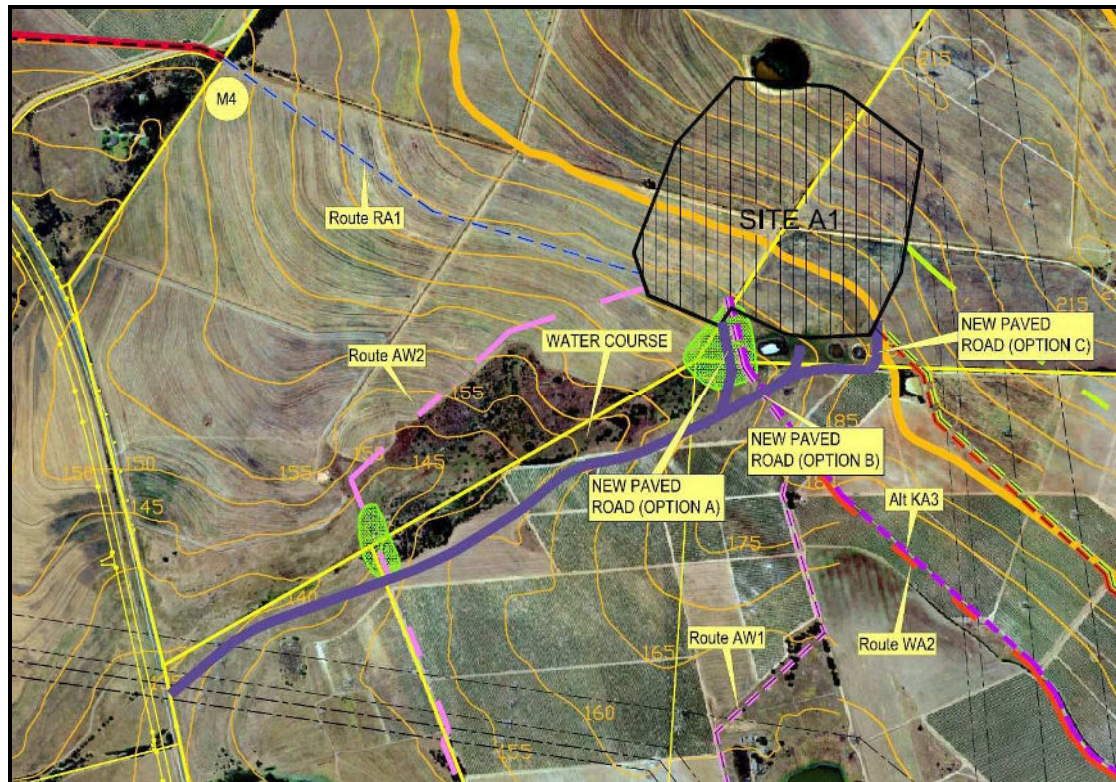


Figure 2: WTP and reservoir Site A1 and associated access road alternatives. Sensitive botanical areas that might be impacted are indicated in green hatching.

3. LIMITATIONS AND ASSUMPTIONS

The area was visited on 10 February 2009, which is at the peak of the summer dry season, and thus well outside the main spring flowering season. Various possible annuals and bulbs were thus not evident, and therefore a habitat based approach was used, drawing on experience in similar habitats in the region, and in the same study area (see Helme, 2006), using habitat quality instead of a strictly species based approach. Sufficient perennial species were present to act as indicator species, and there is reasonable confidence in the findings of the study.

4. TERMS OF REFERENCE

The Terms of Reference (ToR) for this study were as follows:

- Describe the vegetation on the site and note the presence or likelihood of locally and regionally endemic species, and plant Species of Conservation Concern.
- Assess the local (Klapmuts) and regional (Swartland - Boland) conservation value of the site, especially in light of the National Spatial Biodiversity Assessment (NSBA, Rouget *et al*, 2004) and the Fine Scale Conservation Plans for the area.
- Provide recommendations regarding the suitability of the area for the proposed activity, and suggest any mitigation measures that could reduce identified impacts, including recommendations for the EMPR and rehabilitation.
- Make reference to any relevant elements of the Cape Nature TOR for biodiversity specialists.

5. THE VEGETATION

5.1 Klapmuts Pipeline

The original natural vegetation in the study area has been mapped as Swartland Alluvium Fynbos (Mucina & Rutherford, 2006). The vegetation type is regarded as Critically Endangered on a national basis, with less than 26% of its original extent still remaining, and less than 8.5% conserved, and national conservation target of 30% (Rouget *et al*, 2004). Numerous plant Species of Conservation Concern may occur within this vegetation type, and many are rather localised. The vegetation type occurs mostly between Hermon, Darling and Stellenbosch.

Given the long history of agriculture (grazing, cultivation, and eutrophication) and urbanization in the study area it is not surprising that there is essentially no natural vegetation remaining within the area. The open areas are now dominated by weedy species, most of which are alien grasses and herbs. The few remaining indigenous species are common, widespread and resilient species of no conservation significance, such as renosterbos (*Elytropappus rhinocerotis*) and klaaslouwsbos (*Athanasia trifurcata*). Overall indigenous species diversity is very low, being less than 5% of what would be expected in an undisturbed, similar environment. Invasive alien kikuyu grass (*Pennisetum clandestinum*) is dominant in many areas, especially where there is moisture.

No plant Species of Conservation Concern are likely to occur in viable numbers within the study area.

The conservation value of the vegetation within the routes of KP1 and KP2 is deemed to be Very Low on a local and regional basis.

5.2 Site Alternative A1

The original natural vegetation in the study area has been mapped as Swartland Shale Renosterveld (Mucina & Rutherford, 2006). The vegetation type is regarded as Critically Endangered on a national basis, with less than 10% of its original extent still remaining, and less than 1% conserved, and national conservation target of 26% (Rouget *et al*, 2004). Numerous plant Species of Conservation Concern may occur within this vegetation type, and many are rather localised. As its name suggest this vegetation type is restricted to the Swartland region, from the Cape Flats north to Piketberg.

Site A1 potentially impacts on the northern edges of a patch of Renosterveld (see Figure 2), and this may result in the loss of a limited area of partly disturbed natural vegetation (<1ha), and possibly in the loss of rare species in this area. This patch of Renosterveld has been disturbed by relatively heavy grazing and trampling by cattle, and has consequently lost about 20% of its expected potential plant diversity, but is still of High conservation value and sensitivity, as this is a Critically Endangered vegetation type. Thus any further disturbance should be minimised. Potential rare species in this area include *Athanasia capitata* (Endangered; Raimondo *et al* – in press) and various bulbs, not visible at the time of the site visit.

6. CONCLUSIONS

6.1 Klapmuts Pipeline

- The two alternative routes (KP1 and KP2) present no botanical constraints to the proposed pipeline installation, and impacts are similar for the two alternatives.
- Given the heavily disturbed nature of the study area, and the consequent lack of natural vegetation, development impacts are likely to be Negligible from a botanical point of view, and no specific mitigation is required in order to mitigate impacts in this area.

6.2 Site A1

- Site A1 is slightly closer to the Renosterveld patch and is thus less preferred than Site A, with correspondingly slightly higher potential negative botanical impact. Site A is deemed to have a Low negative impact on a regional basis, whilst Alternative A1 would have a Low – Medium negative impact (before and after mitigation).
- The proposed new paved access road Alternative A would also go through a sensitive Renosterveld area, whilst Alternatives B and C avoid it. Alternatives B and C are thus the preferred alternatives, with C being slightly preferred ahead of B. Alternative A is likely to have a Medium negative impact (local scale), and B and C would have Low negative impacts.
- Ideally site Site A1 should be moved 20m north, away from the Renosterveld area. This puts it closer to the position of Site A.
- In any event, the entire Renosterveld area should be fenced off before construction, and the fence should remain during the operational phase, in order to protect the Renosterveld area from grazing.
- The Contractor and ECO must ensure that no siltation or dumping occurs within or into the downstream Renosterveld area.
- Basic botanical Search and Rescue should be conducted in the footprints of any development (A1 and access roads) prior to development. This Search and Rescue should be undertaken in spring, when bulbs are visible, and should focus on any bulbs and succulents, and any Species of Conservation Concern. The rescued material should be translocated to similar habitat within the fenced off Renosterveld area that will not be impacted by development.
- Further mitigation should be to remove all invasive alien vegetation within the areas of natural vegetation, on an annual basis.

7. REFERENCES

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