HERITAGE IMPACT ASSESSMENT
(Archaeology and Cultural Heritage)

PROPOSED DRIFTSANDS HUMAN SETTLEMENT PROJECT

Prepared as part of an EIA for:

CCA Environmental Pty Ltd

Prepared by
Tim Hart

Archaeology Contracts Office
Department of Archaeology
University of Cape Town
Private Bag
Rondebosch
7701

Phone (021) 650 2357
Fax (021) 650 2352
Email Timothy.Hart@uct.ac.za

Expertise and Declaration of Independence

This report was prepared by Tim Hart of ACO (the Archaeology Contracts Office of the University of Cape Town), who has a BA (Hons) (Archaeology) UCT and a MA (Archaeology) UCT.

Tim has considerable experience in undertaking Heritage Impact Assessments (including archaeology). Tim has worked in the field of heritage since 1987 and has completed along with his colleagues at ACO more than 1 000 heritage studies.

This specialist report was compiled on behalf of CCA Environmental (Pty) Ltd for their use in preparing and Environmental Impact Assessment for the proposed Driftsands Human Settlement Project. We do hereby declare that we are financially and otherwise independent of the applicant and CCA Environmental (Pty) Ltd.

Tim Hart

Executive Summary

The Archaeology Contracts Office of the University of Cape Town (UCT) was appointed by CCA Environmental (Pty) Ltd to conduct a Heritage Impact Assessment as part of an Environmental Impact Assessment (EIA) for the proposed Driftsands Human Settlement Project at Driftsands Nature Reserve, which is located on the Cape Flats.

In recent years the area has become subject to both informal and formal development with the result that the nature reserve area has been encroached on by informal settlement (Los Angeles and Green Park) and other activities detrimental to conservation such as stock grazing.

The City of Cape Town (CoCT) has conducted a number of studies that have lead to the preparation of a development framework for the area, which would see upgrading of the informal settlements, upgrading and increasing the nature reserve as well as other social and educational benefits. The EIA involves the consideration of two development options, one of which is based on the development framework. These are the Alternative 1 (CoCT's preferred alternative) proposes the upgrading of the Green Park and Los Angeles settlements in-situ so that social balances are maintained, while Alternative 2, proposes the consolidation of the Green Park and Los Angeles communities into a single housing development. The No-Go alternative is also assessed.

This assessment has determined that overall the proposal (both development alternatives) is likely to be highly beneficial in that it would conserve a significant portion of highly threatened and historically significant dune and wetland landscape as well as conserve any archaeology and palaeontology that exists on this landscape.

Alternative 2 is marginally favoured over Alternative 1 from a heritage perspective, as it has the potential to create a larger visual expanse of dune landscape. However, this needs to be considered together with the potential social issues related to Alternative 2 (namely the consolidation of Green Park and Los Angeles leading to tension and conflict).

No protected built environment or traditional activities would be impacted.

There is a low possibility that impacts to graves, buried palaeontology and archaeology would occur during the construction of housing, roads and services. A monitoring regime during construction would provide some form of mitigation.

Impact summary table.

Impact	**Significance**	
	Without mitigation	**With mitigation**
Development alternatives		
Palaeontology	Low – High negative	Low – High (positive)
Archaeology	Low negative	Very low negative
Human remains	Low – high negative	Low – Medium negative
Cultural landscape	High positive	High positive
No-Go alternative		
Palaeontology	Insignificant (neutral)	-
Archaeology	Low negative	-
Human remains	N/A	-
Cultural landscape	High negative	-

Recommendations:

- Heritage Western Cape's APM committee (Archaeology, Palaeontology and Meteorites) is encouraged to support the proposal with the provision that monitoring of service trenches and earthworks is carried out according to the recommended specifications of the APM committee.
- Heritage Western Cape's BELCOM committee (Built Environment and Landscape) is encouraged to support the proposal as both options would enhance the conservation of a threatened landscape, and would not impact on any protected elements of the built environment.
- Trenches greater than 1m deep should be monitored by an archaeologist capable of recognising fossil bone and archaeological material. Monitoring should be continuous at first but decreased in frequency or discontinued in consultation with the Provincial archaeologist at Heritage Western Cape.
- In the event of human bones being found on site, the South African Police Services (SAPS) and South African Heritage Resources Agency (SAHRA) or Heritage Western Cape (HWC) must be informed immediately. The need for reburial and associated activities depends on the circumstances of the human remains – whether they are formally buried, identifiable and associated with a family or community (in which case reburial may be required), or victims of crime. Human remains older than AD 1500 as treated as archaeology.

Contents

Glossary

Archaeological material: *Remains resulting from human activity which are in a state of disuse and are in or on land and which are older than 100 years, including artefacts, human and hominid remains and artificial features and structures.*

Cultural landscape: *A landscape that has historical and/or scientific significance.*

Fossil: *Mineralised bones of animals, shellfish, plants and marine animals. A trace fossil is the track or footprint of a fossil animal that is preserved in stone or consolidated sediment.*

Heritage: *That which is inherited and forms part of the National Estate (Historical places, objects, fossils as defined by the National Heritage Resources Act of 2000).*

Palaeontological: *Any fossilised remains or fossil trace of animals or plants which lived in the geological past, other than fossil fuels or fossiliferous rock intended for industrial use, and any site which contains such fossilised remains or trace.*

Structure (historic): *Any building, works, device or other facility made by people and which is fixed to land, and includes any fixtures, fittings and equipment associated therewith. Protected structures are those which are over 60 years old.*

Acronyms

APM: Archaeology, Palaeontology and Meteorites

BELCOM: Built Environment and Landscape committee

CCA: *CCA Environmental (Pty) Ltd*

CoCT: *City of Cape Town*

EIA: *Environmental Impact Assessment*

HWC: *Heritage Western Cape*

SAHRA: *South African Heritage Resources Agency*

SAPS: *South African Police Services*

UCT: *University of Cape Town*

1. Introduction

The Archaeology Contracts Office (ACO) of the University of Cape Town was appointed by CCA Environmental (Pty) Ltd (CCA) to conduct a Heritage Impact Assessment in terms of Section 38.8 of the National Heritage Resources Act, 1999 (No. 25 of 1999) of the City of Cape Town (CoCT) proposed Driftsands Human Settlement Project at Driftsands Nature Reserve situated on the Cape Flats, Cape Town, Western Cape Province. The proposal involves two alternatives for the upgrading of informal settlements that have encroached on the reserve as well as improving infrastructure and enhancing the reserve itself. The loss of land to be used for the upgrading of informal settlements is to be offset by the addition of a substantial portion of the Kuils River floodplain.

The location of the study area is indicated on Figure 1.

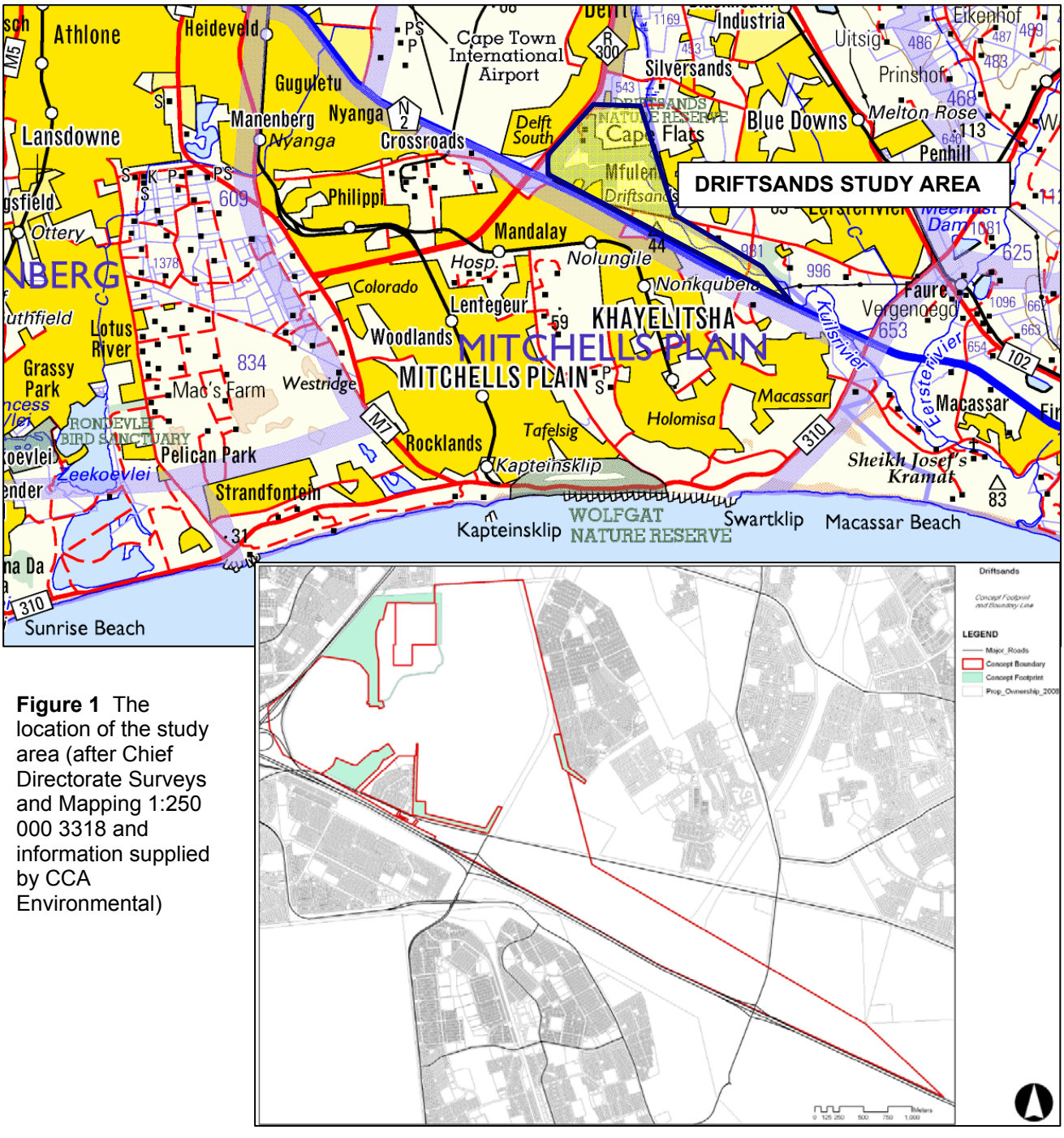

Figure 1 The location of the study area (after Chief Directorate Surveys and Mapping 1:250 000 3318 and information supplied by CCA Environmental)

1.1 Terms of Reference

The specific terms of reference for the archaeology and cultural heritage assessment as provided by CCA are as follows:

1. Provide a description of the archaeology and cultural heritage of the study area, identify and map any archaeological or cultural heritage resources within the affected areas of the Driftsands Nature Reserve.
2. Assess the sensitivity and conservation significance of the identified archaeological or cultural heritage resources in the affected areas.
3. Assess the significance of any impacts on archaeological or cultural heritage resources resulting from the two proposed development alternatives.
4. Make recommendations on the protection and maintenance of any significant archaeological or cultural heritage resources in the affected areas.
5. Provide guidance on the requirement of any permits from the South African Heritage Resources Agency or Heritage Western Cape that might become necessary.

1.2 The development proposals

The proponent, CoCT, commissioned a series of studies on the condition of the Driftsands Nature Reserve and the spatial planning issues that have arisen with respect to managing the reserve within the context of intense population pressure. Marlene Laros and Associates produced a report, the *Driftsands Potential Study* (2005), which provided CoCT with 5 potential development options (detailed in the revised final scoping report, April 2009) for the spatial development and future management of the reserve. ARG Design in response to the *Driftsands Potential Study* was commissioned by the CoCT to compile an urban design framework based on the *Driftsands Potential Study.* . This has resulted in the formulation of a preferred development proposal (Alternative 1), which is based on the in situ upgrading of Green Park and Los Angeles. For comparative purposes, a second alternative, which is based on the consolidation of the Green Park and Los Angeles communities, is also assessed together with the no-go alternative.

Alternative 1: The basis of the preferred proposal is to manage the *status quo* in that the Los Angeles and Green Park informal settlements would be upgraded *in-situ*. The proposal involves setting out activity zones that would formalise the various attributes and activities that are taking place on the site. The informal settlements would be replaced with housing that would accommodate more families than are living on site at present, and takes into account factors such as flooding (Los Angeles) and the sensitive dune environment. Zonings would be corrected and nature areas set aside, fenced and managed along with additional visitor, tourism and educational infrastructure. Land would be set aside for agriculture and grazing purposes and traditional activities such as initiation. Importantly, the proposal includes an offset of 206 hectares which would increase the size of the nature reserve area to include the Kuils River corridor to the south of the site.

The various land uses contained in the proposal are as follows (CCA Environmental 2009). The proposed layout of the site with the different zonings is indicated in Figure 2.

1. Settlement zones

- *Los Angeles settlement (Zone C1):* The proposed footprint for the Los Angeles Settlement. This zone would occupy approximately 12.8 ha.
- *Green Park Settlement 1 (Zone C2):* The footprint of the western portion of the development of Green Park. This zone would occupy approximately 28.9 ha.

- *Green Park Settlement 2 (Zone C3):* The northern portion of the settlement at Green Park, which would also act as the roll-over area for resettlement. This zone would occupy approximately 4.7 ha.
- *Driftsands Park Human Settlement (Zone C4):* An extension to Sikhumbule aimed at the gap housing market. It would be a mixed use precinct with a residential component. There would also be opportunities for commercial/hospitality uses taking advantage of the view onto the wetlands. The residential component would be located along Old Faure Road in order to develop a secure edge that would prevent further land invasion. This zone would occupy approximately 7.7 ha.
- *Bridge Precinct Mixed Use (Zone C5):* This would be a mixed-use precinct benefiting from the strong desire lines across the N2 to Khayelitsha. It would include a residential component as well as opportunities for commercial land uses aimed specifically at the tourism market. This zone would occupy approximately 0.5 ha.
- *Mfuleni Park Human Settlement (Zone C6):* A new residential precinct is proposed adjacent to Mfuleni. This proposed settlement would be located partly outside the existing reserve boundary. Only the portion located within the reserve boundary forms part of the current application. This zone would occupy approximately 1.5 ha.
- *Road and movement systems (Zone C7):* This zone would include a road for non-motorised transport (pedestrians and bicycles). The proposed road would be located adjacent to the proposed Saxdowne Road servitude, which is a future proposed link road between Mew Way and Hindle Road. This zone would occupy approximately 2.5 ha.

2. Nature reserve zones:

- *CapeNature Visitors Centre Precinct (Zone N1):* This precinct would include an administrative facility, offices, visitor's centre and educational facility, and conservation area main entrance. This zone would occupy approximately 0.3 ha.
- *Dam Wall Gateway Square (Zone N2):* This square would mark an arrival point from the different communities and would provide monitored access to Zones N4, N7, N8, N6 and N9, river weir, entrance kiosk to the conservation area (Zone N4) and dam wall. This zone would occupy approximately 0.3 ha.
- *Urban Park (Zone N3):* The Urban Park is proposed to have an active recreational function. This portion could be used for picnics and other outdoor compatible activities, as well as limited access boardwalks and routes. The Urban Park would be subject to a separate approval process, as appropriate. This zone would occupy approximately 88.1 ha.
- *Conservation Area with educational function (Zone N4):* This would be the core conservation and educational component of the reserve. This zone would essentially conserve the Cape Flats Dune Strandveld Vegetation on the site. This portion of the reserve would host a limited number of visitors under supervision from CapeNature. Limited walking / cycling trails would be provided to key areas of interest within this zone. These trails would be subject to a separate approval process, as appropriate. This zone, together with Zones N9 and N10, would occupy approximately 187.6 ha.
- *Settlement wetlands (Zone N5):* Wetland area between Sikhumbule and the proposed Los Angeles settlement area (Zone C1). This zone would occupy approximately 2.1 ha.
- *Park wetlands (Zone N6):* Wetland area to the east of Sikhumbule. This zone would occupy approximately 24.0 ha.
- *Kuils River floodplain wetlands (Zone N7):* Wetlands in the floodplain below the proposed Dam Wall Gateway Square (Zone N2). This zone would occupy approximately 53.7 ha.
- *Urban agriculture (Zone N8):* This area is currently being used for urban agriculture in the form of cattle grazing and some vegetable gardening. It is proposed that this area continue to be utilized for urban agricultural purposes. This zone would occupy approximately 6.3 ha.
- *Park Dam Precinct (Zone N9):* This portion of the reserve would host a limited number of visitors under supervision from CapeNature. Limited walking / cycling trails would be provided to key areas of interest within this zone. These trails would be subject to a separate approval process, as appropriate. No modifications are proposed to the existing weir height.

- *Initiation site (Zone N10):* A proposed initiation site would be located in the north-eastern portion of the site. The initiation site will be subject to a separate approval process, as appropriate. The size of this zone is, therefore, unknown at this stage.
- *Residential/camping precinct (Zone N11):* This precinct could cater for a range of accommodation from camping to chalets and "Youth Hostel" accommodation. This precinct will be subject to a separate approval process, as appropriate. This zone would occupy approximately 1.6 ha.
- *Pedestrian route to Mfuleni/North Saxdowne Non-Motorised Transport Gateway (Zone N12):* This zone would be the eastern gateway to the reserve abutting Saxdowne Road for pedestrians and bicycles. This zone would occupy approximately 0.1 ha.
- *South Saxdowne Non-Motorised Transport Gateway (Zone N13):* This zone would be approximately 28.8 ha and would be the southern gateway to the reserve for pedestrians and bicycles. This zone would included the South Non-Motorised Transport Gateway, which would be approximately 0.3 ha in extent.

3. Offset areas:

It is proposed to incorporate Zone I3 (approximately 206 ha) in the reserve to offset the permanent loss of indigenous vegetation within the proposed footprint, as well as to facilitate the functioning of the Kuils River Corridor.

Alternative 2: This development proposal is similar in all aspects to Alternative 1, except that it includes the consolidation of the Green Park and Los Angeles communities (Figure 3) into a single formal development close to the north western edge of the property. There is concern however that the amalgamation of the Los Angeles and Green Park communities could cause undesirable socio-political tension. It is for this reason that Alternative 2 is not favoured by the proponent.

No-Go Alternative: The alternative assumes that the existing situation be allowed to continue with no proactive planning decisions or implementation of sustainable spatial planning.

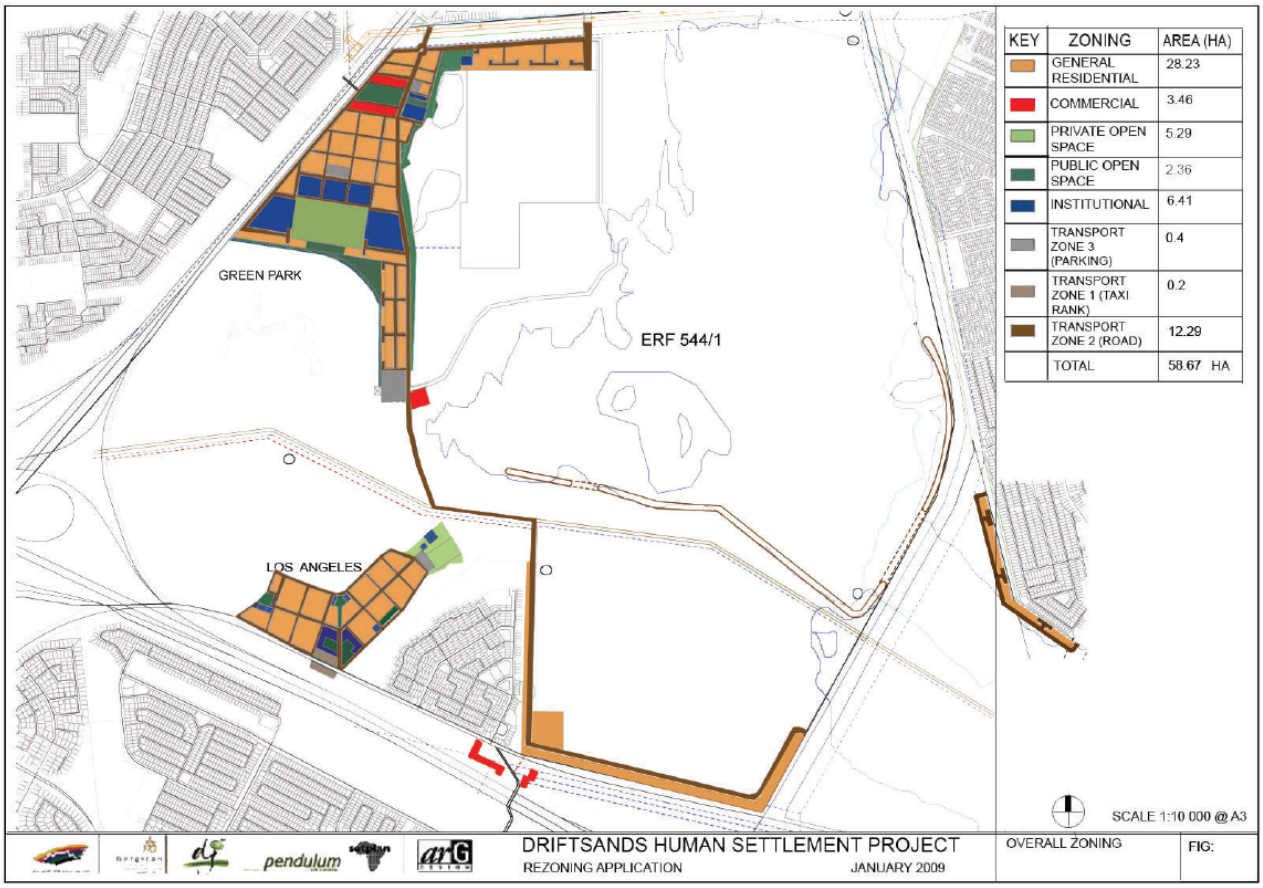

Figure 2 The proposed zoning of areas for Alternative 1.

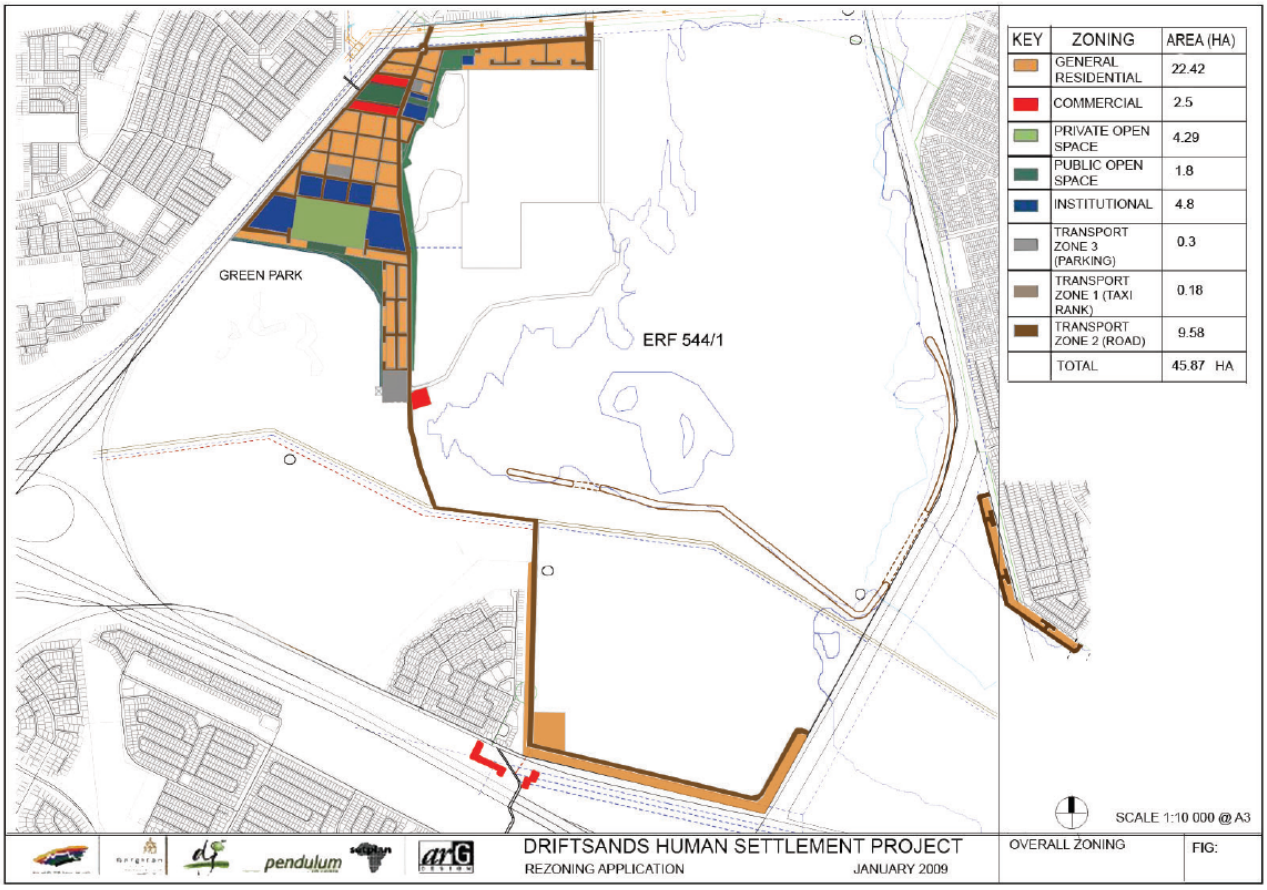

Figure 3 The proposed zoning of areas for Alternative 2

2. Study methodology and limitations

2.1 Method of study

The primary sources of information for this project has involved the perusal of written records. However, specific mention of the study area does not occur in any of the written sources, apart from references that were made to the bleakness of the area and the difficulty that travellers experienced in crossing from the Peninsula to the hinterland. The plight of the early German Settlers of the Phillipi farmlands has been researched (Blumer 1959). The best source of information has been of historical maps from the Cape Archives, Surveyor Generals Office and an historic sequence of maps and aerial photographs obtained from the Chief Directorate of Surveys and Mapping in Mowbray, Cape Town.

The study area has been subject to a site inspection by archaeologists Tim Hart, Lita Webley and Jayson Orton. Representative portions of the landscape were physically searched for archaeological material, palaeontological bone accumulations and historic structures and graves. In addition, the aesthetic quality of the environment, the uniqueness of the site as well as its typicality in terms of past environments has contributed to the overall assessment of heritage significance.)

The assessment of heritage significance of Driftsands is based on the aesthetic quality of the environment, but more importantly as a unique example of the natural landscape of the Cape Flats which no longer exists.

The significance of impacts is based upon the way in which heritage sites are assessed for significance in terms of Section 38 of the National Heritage Resources Act 25 of 1999 and applied to the standard evaluation format as provided by CCA Environmental (Pty) Ltd for EIA purposes.

2.2 Limitations

Security concerns on site meant that team members had to work within sight of the vehicle and each other. This meant that survey work was limited to a 200 m wide corridor on either side of tracks in the study area accessible by off-road vehicle. GPS track logs were not retained as the survey was carried out in February 2009 before it was agreed to implement the Heritage Western Cape guideline requiring submission of track logs to the Heritage Western Cape.

3. Description of Affected Environment

Driftsands Nature Reserve (approximately 658 ha in extent) is situated between the R300 to the west, the N2 to the south, Mfuleni to the east and Hindle Road to the north (Figure 1) The land was proclaimed as a Provincial Nature Reserve in 1983 and is currently managed as a nature reserve by CapeNature. In recent years formal and informal human settlement has occurred within and around the reserve. Sikhumbule township, a formal settlement established in 1994 and comprising some 20 ha, has not been de-proclaimed or subdivided from the Driftsands Nature Reserve (i.e. Portion 1 of the Farm Driftsands No. 544). The Green Park and Los Angeles informal settlements which also lie within the boundaries of the reserve have not been formalised but have received limited services. Green Park and Los Angeles have reduced the size of the nature reserve area by approximately 25 to 30 ha. Also within Driftsands (but zoned separately) is a medical research facility and waste incinerator. Development and population pressure (including informal settlements, proliferation of footpaths, grazing by livestock, illegal dumping, etc.) has resulted in encroachment into the nature area with the result that the reserve and associated biodiversity are under threat.

Although a nature reserve, the study area has been subject to change in the past. Much of the central area consists of a large detention dam which is apparently very seldom filled to capacity. The dam forms a series of permanent water bodies with reed beds and associated fauna (e.g. reptiles and birds). Livestock (both cattle and goats) were noted grazing around the detention pond (Plate 2). People are ever present in the reserve, either attending to their stock or using the network of informal paths to access the various residential areas around the reserve. Evidence of illegal activities such as sand mining and dumping of builders and domestic waste is evident along roads that cross or fringe the reserve (Plate 1). Despite the fact that Driftsands is surrounded by some of the most dense and poorest settlements in the metropolitan area (Plate 4), it remains a unique place. It contains endangered communities of *Cape Flats Dune Fynbos and* the dunes and associated dune slack wetlands (Plate 3). The Kuils River meanders through the study area. Unlike many of Cape Town's sub-urban rivers it remains un-canalised. In the more remote parts of the reserve it is still possible to experience a sense of wilderness, and the kind of environment that was characteristic of the Cape Flats during historic times.

Plate 1 (left) Neglected, littered and disturbed landscape along a power line servitude.
Plate 2 (right) Goats being herded in the reserve with retention dam in the background.

Plate 3 An expanse of intact dune and wetland landscape.
Plate 4 Low cost housing developments (e.g. Mfuleni) adjacent to the reserve.

3.1 The environmental history of Driftsands

Numerous historic records attest to the bleakness of the Cape Flats – miles of undulating sandy dunes interspersed with wetlands. The physical characteristics of this area made the Cape Peninsula an isolated enclave separated from the hinterland of the country by a landscape that was very difficult to cross on foot, horseback or by wagon. Numerous archaeological and cultural heritage impact assessments have now been completed for development and sand mining operations on the Cape Flats. The findings of these studies indicate that even in pre-colonial times the area was sparsely inhabited.

During the 17th and 18th centuries the Cape Flats was largely avoided by the colonists. Until the early 20th century what is now known as Voortrekker Road served as the historic route by which one could cross the Cape Flats as it followed a shallow spine of high hard ground between Cape Town and Bellville.

During the 19th century most of the arable agricultural land that fringed the peninsula was cultivated and becoming increasingly urbanised. Due to the ever increasing demand for agricultural land, areas of the Cape Flats were used for grazing which further de-stabilised the dune systems. By 1870 the colonial government had loaned or sold portions of the Cape Flats for farming purposes. However, in every instance the land reverted back to the crown as successions of would-be farmers failed to achieve a viable result (Bloomer 1959). John X Merriman, the then minister of Crown Land, believed that the Cape Flats could be stabilised by introducing vegetation that could be used for growing windbreaks, and various Australian species were introduced with great effect. In 1877 a number of families of poor German immigrants were deposited on the Cape Flats equipped with tents, two weeks rations and instructed to start farming. Initially they endured severe hardship but by 1883 (Cape of Good Hope General Directory) many of these families had enjoyed some measure of success by creating fields between Port Jackson and willow windbreaks. Descendents of these German settlers continue to farm in the Phillippi vegetable growing areas of the Cape Flats to this day.

The historic record attests to the difficulty of managing land on the Cape Flats. In the late 19th century the government declared certain areas “forest reserves”. The motivation for these declarations was to exclude livestock that were overgrazing dune vegetation exacerbating sand mobility that threatened the newly formed farming areas (Cape Archives 1/468). By the beginning of the 20th century agriculture had become established around the fringes of the Cape Flats, however, the bulk of the area was largely undeveloped. Stabilising of the Cape Flats was a local issue for many years to the extent that in the late 19th century a series of temporary railways were built out onto the flats towards what is now the Airport Industria area. The cities domestic waste was transported by train and dumped in the dune slacks (or inter-dune area) as a means of stabilising the shifting sands (Lastovica 1974)

The earliest accurate map depicting the Cape Flats is an 1890 map of the South Western Districts. Despite the fact that this map is highly detailed, the Driftsands nature reserve area is indicated as being “drift sands” (see Appendix A for historic maps). The Kuils River appears to have followed an irregular course, however, this is to be expected in a landscape characterised by seasonal flooding. In 1941 the Driftsands area was bounded by the Bellville Forest Reserve to the east and the Eerste River Forest Reserve to the West and the Strandfontein Forest Reserve to the south (1941 Chief Director Surveys and Mapping). The Kuils River flowed through the area in a course again different to that of today entering a large inland delta known as the “Buffelsvlei” to the south. According to the first title deed diagrams of the area (S.G. No 205/1948) the Kuils River never exited to the sea at this time but sank away into the sands of the Cape Flats, perhaps breaking through to the Eerste River in times of flood. By 1958-1959 (1959 Chief Director Surveys and Mapping) Driftsands had hardly changed, however, the Buffelsvlei to the south was beginning to be transformed with the establishment of the Eerste River Aerodrome and a work colony. By 1979 the beginnings of the Mfuleni Township had been established, however, the Driftsands area was relatively unchanged. Aerial photographs taken

in 1988 show that it was at this time that the first major transformation took place within what is now the reserve itself – a large sand mine had been opened in the central area and the Medical Research Facility was in place. In the ensuing years the retention dam was built and the sand mine has reverted to a small lake and wetland inhabited by birds and amphibians. The massive transformations that saw informal settlements encroach on Driftsands occurred after 1994, while the Buffelsvlei delta has been impacted by the development of Khayalitsha. The Kuils River has become permanent tributary of the Eerste River. The environmental history of the site points to a dynamic landscape of dunes and wetlands, the Kuils River meandering through following a course that best suited the prevailing volume of water according to seasons and the movements of mobile dunes.

Apart from the 20th century dam, the Medical Research Facility and deductions for housing purposes (Namely Sikhumbule), the Driftsands Nature Reserve has never been subject to any formal development nor been owned by any private person or organisation. The history of deeds transfer indicates that it was initially owned by the Union of South Africa (first deed 1942) and the "Division of the Cape". In recent years portions have been subtracted for the use of the hospital facility (1972) while the whole remaining portion was transferred to the Municipality of Cape Town in 1985 (Deeds Transfers SG Folio 544/1-5). It is currently owned by the Provincial Government.

The dense sub-urban development that characterises "The Flats" today largely took place after 1960, when as a result of South Africa's apartheid policies whereby persons of colour were forcibly re-settled in a series of new townships. A massive influx of people to urban areas after 1994 resulted in the rise of informal settlements to the extent that today there is very little left of the original Cape Flats landscape. Driftsands Nature Reserve is the last enclave, which although transformed in places, imparts a sense of the ancient dune landscape.

Indications are that the Driftsands Nature Reserve was never formally settled (apart from Sikhumbule). – its existence is an accident of history in that it was a piece of land that no-body wanted or valued. In terms of current values, its significance as a natural heritage place is exceptional.

3.2 Heritage resources at Driftsands

Palaeontology: The Cape Flats geology is conducive for the preservation of fossil bone accumulations due to the calcium carbonate rich sands that characterise the area. Calcretes and calcareous sands provide a basic chemical environment which preserves animal bone and shell remains extremely well. These sediments have produced both fossil and archaeological material of great age and international importance in several localities in the Western Cape. On the Cape Flats finds have been made at Swartklip on the False Fay coast and at the sand mines close to Maccassar. Unfortunately there is no way of predicting where deposits of fossil material may occur as they are normally associated with widely dispersed events in the past such as hyena lair accumulations or archaeological occupations. Experience has taught that the incidence of occurrences is not particularly common occurring sporadically at unpredictable locations within the Cape Flats geology.

Archaeology: No archaeological material was identified in those areas searched within the study area. This finding is consistent with the findings of other studies that have taken place on the Cape Flats dune areas. The reasons why there are so few archaeological sites on the Cape Flats is unclear. One may hypothesise that it was a resource depleted environment, very exposed and lacking the materials for building windbreaks or making artefacts. Game which would have frequented the water bodies in the dune slacks, were probably hunted from time to time from encampments on the fringes of the flats.

Graves: No graves were located within the study area during the site visit, however there is always a low possibly that there are unmarked illegal or historic graves could occur.

Setting and landscape: It is as a cultural landscape that Driftsands Nature Reserve is important. The nature reserve is not only a place of high natural significance, but it is also a natural area that represents a landscape that was for many years highly characteristic of the environs of Cape Town and gave it a particular character, and influenced the way the metropolitan areas has developed since the earliest days of the colony. Although this natural area is but a fraction of the original extent of the Cape Flats wetland and dune system and is largely a natural heritage resource, the reserve symbolises the once feared desolate wilderness landscape that separated the city from the hinterland. It was a natural barrier that enabled the Dutch East India Company to control access to the Cape Peninsula. Driftsands Nature Reserve is the last unique, yet typical vestige of a landscape that was dominant and ever-present aspect of the cities identity, yet within living memory it has irrevocably changed.

4. Impact description and assessment

The following evaluation of impacts along with procedures for mitigation is appropriate to both Alternative 1 & 2. Where it is necessary to evaluate the options in heritage terms, the two options are compared along with evaluation of the no-go option.

4.1 Palaeontological material/fossil bone accumulations

There is a very low possibility that building foundation, access roads and services may impact buried palaeontological material, however, it is anticipated that preservation would be poor or non-existent in the lower lying areas due to seasonal flooding. Bone preservation is much more likely in the cores of ancient dunes. Most of the dunes on site, however, would be conserved in the nature areas. It is possible that fossil bone may be encountered in any deep service trenches that needs to be dug. Unreported destruction of fossil material constitutes an irrevocable loss of knowledge and a permanent loss of heritage which constitutes a negative heritage impact.

The improbable impact on palaeontological material is considered to be local, permanent and of low to high intensity (depends on the find impacted). The significance of this impact is, therefore, assessed to be **low** to **high** without mitigation (see Table 1) and of **LOW** to **HIGH (positive)** significance with mitigation.

The no-go option will result in the retention of the status quo which will have a largely insignificant (neutral) impact.

Mitigation: Trenches greater than 1m deep should be monitored by an archaeologist capable of recognising fossil bone and archaeological material. Monitoring should be continuous at first but decreased in frequency or discontinued in consultation with the Provincial archaeologist at Heritage Western Cape. Reporting of any finds to a professional palaeontologist can result in a positive impact in that should the find be significant, new knowledge is contributed.

Table 1 Potential palaeontological impact

Environmental aspect and impact description	Extent	Duration	Intensity	Probability	Confidence	Significance (before mitigation)	Proposed mitigation	Significance (after mitigation)
Palaeontology Destruction caused by excavation machinery and earthmoving	Local	Permanent	Low to High depending on the find impacted	Improbable	High	Low-high (negative)	Monitoring of excavation of services trenches or cuttings more than 1 m deep, reporting of finds to palaeontologist.	Low–high (positive)

4.2 Archaeology

Impacts to archaeology are typically caused by damage to context and physical destruction of material which in the instances is likely to be a result of excavations for roads, services and foundations. Given what is known of the area, the chances of impacts are very low (improbable). Indications are that such impacts would be localised, permanent of low intensity and, thus of **low** significance before mitigation, and **VERY LOW** significance after mitigation.

The no-go option would result in short term retention of the status-quo, however increasing uncontrolled use of the area could result in future negative impacts (**LOW** significance).

Mitigation: Trenches greater than 1m deep should be monitored by an archaeologist capable of recognising fossil bone and archaeological material. Monitoring should be continuous at first but decreased in frequency or discontinued in consultation with the Provincial archaeologist at Heritage Western Cape. The reporting of finds would contribute to the pool of knowledge known about the area.

Table 2 Potential archaeological impact

Environmental aspect and impact description	Extent	Duration	Intensity	Probability	Confidence	Significance (before mitigation)	Proposed mitigation	Significance (after mitigation)
Archaeology Destruction caused by excavation machinery and earthmoving	Local	Permanent	Low	Improbable	High	Low (negative)	Monitoring of excavation of services trenches or cuttings more than 1 m deep, reporting of finds to archaeologist.	Very low (negative)

4.3 Structures

No structures were identified in the study area that fall under the general or specific protection of the National Heritage Resources Act. No impacts are expected.

Mitigation: No mitigation is required

4.4 Traditional activities

The specialist social study relating to the project has not found any indications that the area has been used for traditional activities such as rights of passage and seclusion. Harvesting of herbs within the conservancy has taken place (Barbour, T. pers comm.), however this is arguably not an ancestral right given the recent settlement of the area and its reserve status, therefore it is not strictly a heritage issue. Therefore, no cultural heritage impacts are expected.

All alternatives could have a possible negative impact on the vegetation due to the harvesting of plants for medicinal purposes (and other).

Mitigation: While this issue does not require mitigation in heritage terms, the establishment and cultivation of medicinal plants may have a botanical benefit and allow the community to exercise cultural rights.

4.5 Human graves

Human remains can occur at any place on the landscape. They are regularly exposed during construction activities, either through the disturbance of lost grave yards, prehistoric burials or illegal burials. Such remains are protected by a plethora of legislation including the Human Tissues Act (Act No 65 of 1983), the Exhumation Ordinance of 1980 and the National Heritage Resources Act (Act No 25 of 1999) which applies to graves and their contents which are greater than 60 years of age. Indications are that there are no recent or formal graves in the study area which relate to the present inhabitants (Barbour, T pers. comm). The destruction of a human grave is a local impact of permanent duration, and under certain circumstances may have intense social consequences (low to high intensity), and can be a significant impact for families or communities (**low** to **high** significance before mitigation). With mitigation the impact is considered to be **LOW** to **MEDIUM** significance.

Implementation of the no-go option would result in retention of the status quo with no impacts.

Mitigation: In the event of human bones being found on site, the South African Police Services (SAPS) and South African Heritage Resources Agency (SAHRA) or Heritage Western Cape (HWC) must be informed immediately. If it is apparent that the remains are an illegal burial and foul play is suspected, the police will need to open a murder docket and the remains placed within the chain of custody. If the remains appear to be very old or are from a legal burial greater than 60 years of old, they must be removed by an archaeologist under an emergency permit.

- Remains of unidentified persons will need to undergo a forensic process, and a case docket opened by the police if need be.

- The exhumation of formal cemeteries under 60 years of age is normally done by undertakers once the required permits are obtained from the local authority. Such remains are either cremated or reburied in another cemetery depending on wishes of next of kin.

- Formal cemeteries greater than 60 years old fall within the jurisdiction of SAHRA.

- Human remains greater than AD1500 are treated as archaeological material and handled through normal archaeological process.

This process will incur some expense as removal of human remains from an archaeological or other context as well as reburial (if need be) is at the cost of the developer. Time delays may result while application is made to the authorities and an archaeologist is appointed to do the work. There are positive consequences to proper mitigation in terms of crime solving, closure for family members and where appropriate, advance of knowledge.

Table 3 Potential impact on graves

Environmental aspect and impact description	Extent	Duration	Intensity	Probability	Confidence	Significance (before mitigation)	Proposed mitigation	Significance (after mitigation)
Human remains Destruction caused by excavation machinery and earthmoving	Local	Permanent	Low to High (depending on social context)	Improbable	High	Low-high (negative)	Report find to SAHRA/HWC, SAPS and archaeologist. Do not disturb find scene until removal of remains is complete. Abide by the specifications as set out by SAHRA or HWC	Low – Medium (negative)

4.6 Cultural landscape

Overall the proposal would have a positive impact on cultural landscape and setting. The extent of this will be local, of permanent duration and high intensity. The significance of the impact would be **HIGH** (positive) in heritage terms for both alternatives 1 and 2 before and after mitigation.

The sense of landscape created by Alternative 2 is considered to be preferable to Alternative 1, as Los Angeles would be consolidated with Green Park and the current site rehabilitated. Alternative 2 offers the possibility of greater expanses of landscape and a superior visual experience as opposed to Alternative 1 which would result in some fragmentation of the site and loss of potential visual amenity value.

The no-go option would result in incremental negative impacts on local scale, the results of which would be permanent and if high intensity as in time the nature reserve would be lost to land invasion. In heritage terms this is an impact of **HIGH** significance.

Mitigation: Ensure long-term sustained management of the remainder of the Driftsands Nature Reserve. The development proposal is deemed to be a progressive and constructive solution to the needs of conservation balanced against the demand for land in an increasingly urbanised part of the Cape Town metropolitan area. Its success would depend on rigorous management and the fostering of a sense of benefit within the local community. Overall the impact of the proposal on issues of cultural landscape is considered to be positive and beneficial in that not only the landscape, but all the possible heritage elements it contains would be largely conserved. The development proposals provided that it is carefully implemented would serve as mitigation in itself to the undesirable prevailing situation (i.e. No-Go). If in the long-term management of the reserve and associated development breaks down further negative impacts would result.

Table 4 Potential impact on the cultural landscape

Environmental aspect and impact description	Extent	Duration	Intensity	Probability	Confidence	Significance (before mitigation)	Proposed mitigation	Significance (after mitigation)
Cultural landscape Destruction caused by incremental increase in land invasion and activities detrimental to the landscape if poor management continues or if no-go alternative is implemented.	Local	Permanent	High	Probable	High	High (positive)	Implement development proposal, ensure that management of the Drift Sands Nature Reserve is sustained	High (positive)

4.7 Evaluation of options

Alternative 2 is considered to be preferable to Alternative 1 in that a greater expanse of landscape is created and the visual experience of the site would be enhanced. Both options offer impacts of high positive significance, however in terms of visual heritage Alternative 2 is preferable. However, this needs to be considered together with the potential social issues related to Alternative 2 (namely the consolidation of Green Park and Los Angeles leading to tension and conflict).

The no-go option, if implemented, would result in progressive degradation of landscape and natural qualities of the site. In addition, the community would loose potential benefits in terms of housing, services, education and economic opportunity.

5. Conclusion and Recommendations

The proposal seeks to provide an all-round solution to pressing development issues and the need to conserve a highly threatened landscape. In overall balance, the proposal (both alternatives) if implemented successfully would result in the conservation of what has become a unique fragment of landscape that is typical (in places) of a colonial and pre-colonial Cape Flats landscape, most of which was destroyed in the Late 20th century. In so doing, the activity would preserve any buried archaeology and palaeontology as a natural archive for the future. This is considered to be a positive impact and overall benefit to heritage when balanced against the comparatively low possibility of impacts occurring during the course of construction of housing, ancillary buildings, roads and services.

The following general recommendations are offered:

- Heritage Western Cape's APM committee (Archaeology, Palaeontology and Meteorites) is encouraged to support the proposal with the provision that monitoring of service trenches and earthworks is carried out according to the recommended specifications of the APM committee.
- Heritage Western Cape's BELCOM committee (Built Environment and Landscape) is encouraged to support the proposal as both options will enhance the conservation of a threatened landscape, and will not impact on any protected elements of the built environment.

5.1 Specific recommendations

Palaeontology and archaeology: Trenches greater than 1m deep should be monitored by an archaeologist capable of recognising fossil bone and archaeological material. Monitoring should be continuous at first but decreased in frequency or discontinued in consultation with the Provincial archaeologist at Heritage Western Cape.

Human remains: In the event of human bones being found on site, the South African Police Services (SAPS) and South African Heritage Resources Agency (SAHRA) or Heritage Western Cape (HWC) must be informed immediately. The treatment of any human remains is dependent on the circumstances of the finds, and will need to be judged at the time of such an event occurring.

6. Sources

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Sources from the Cape Archives

Chief directorate surveys and mapping, aerial photographs 1935-1996, topographic maps 1890-present.

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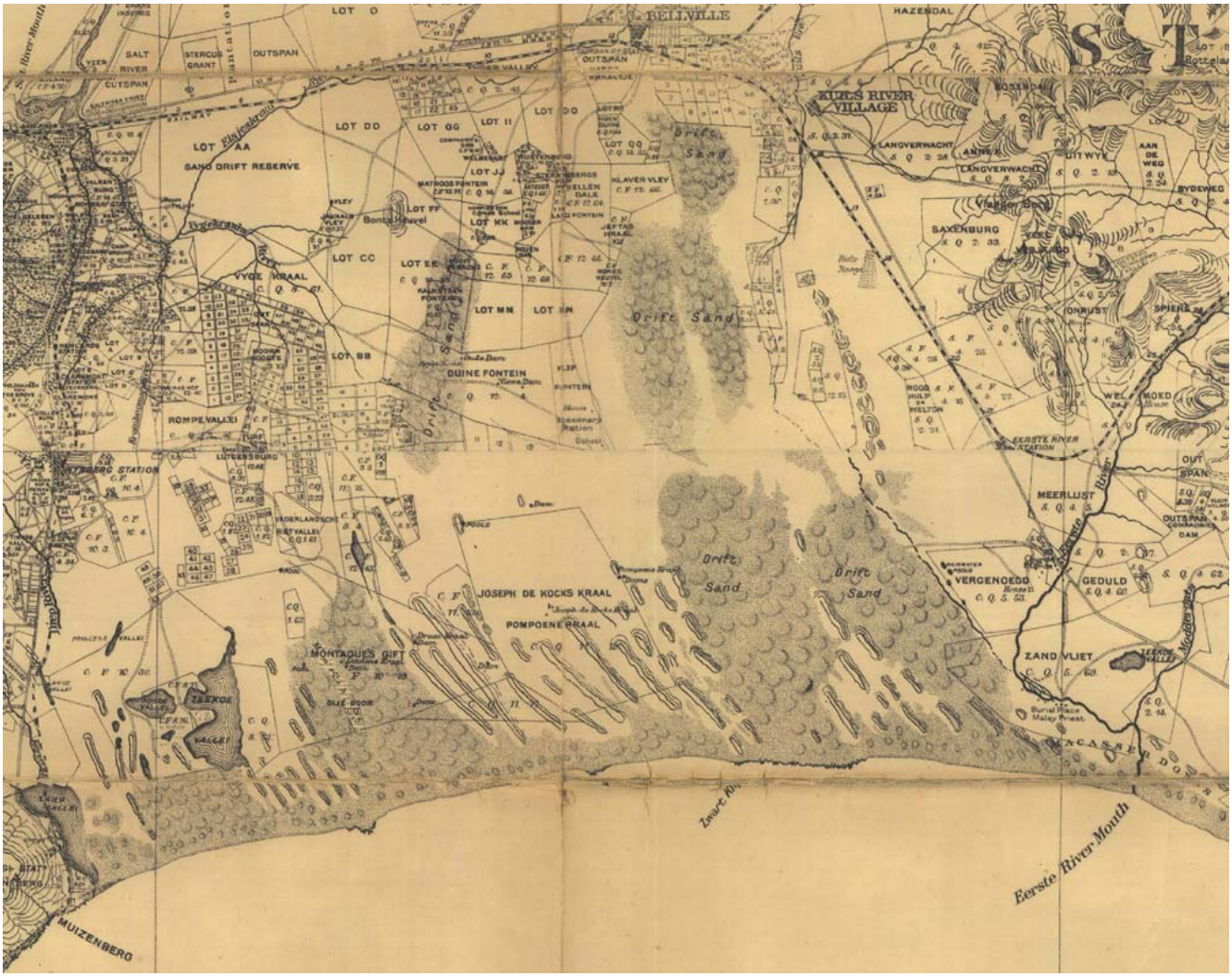
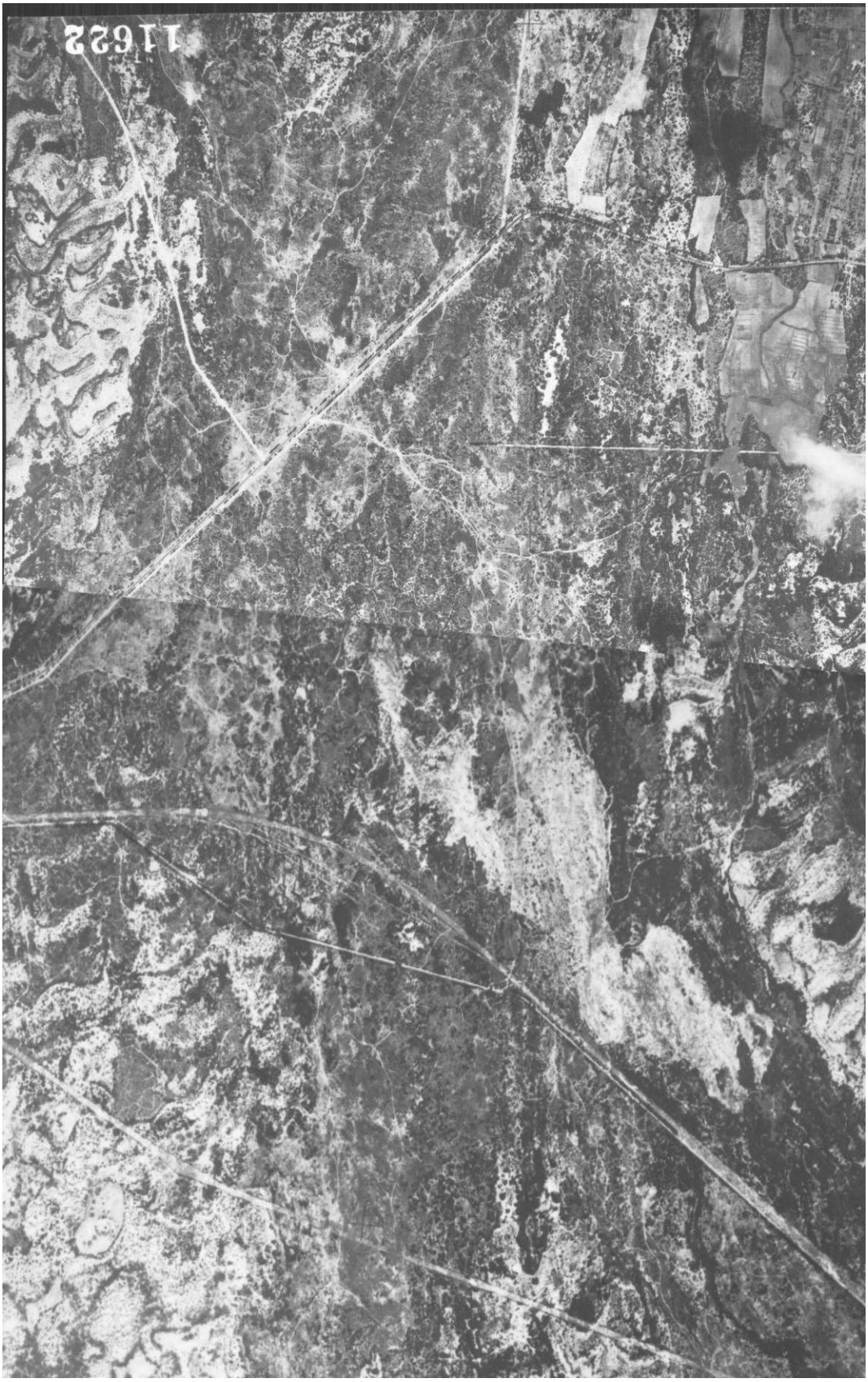
Surveys Generals Office title deed diagrams.

Marlene Laros & Ass (2005)
ARG Design (2008)

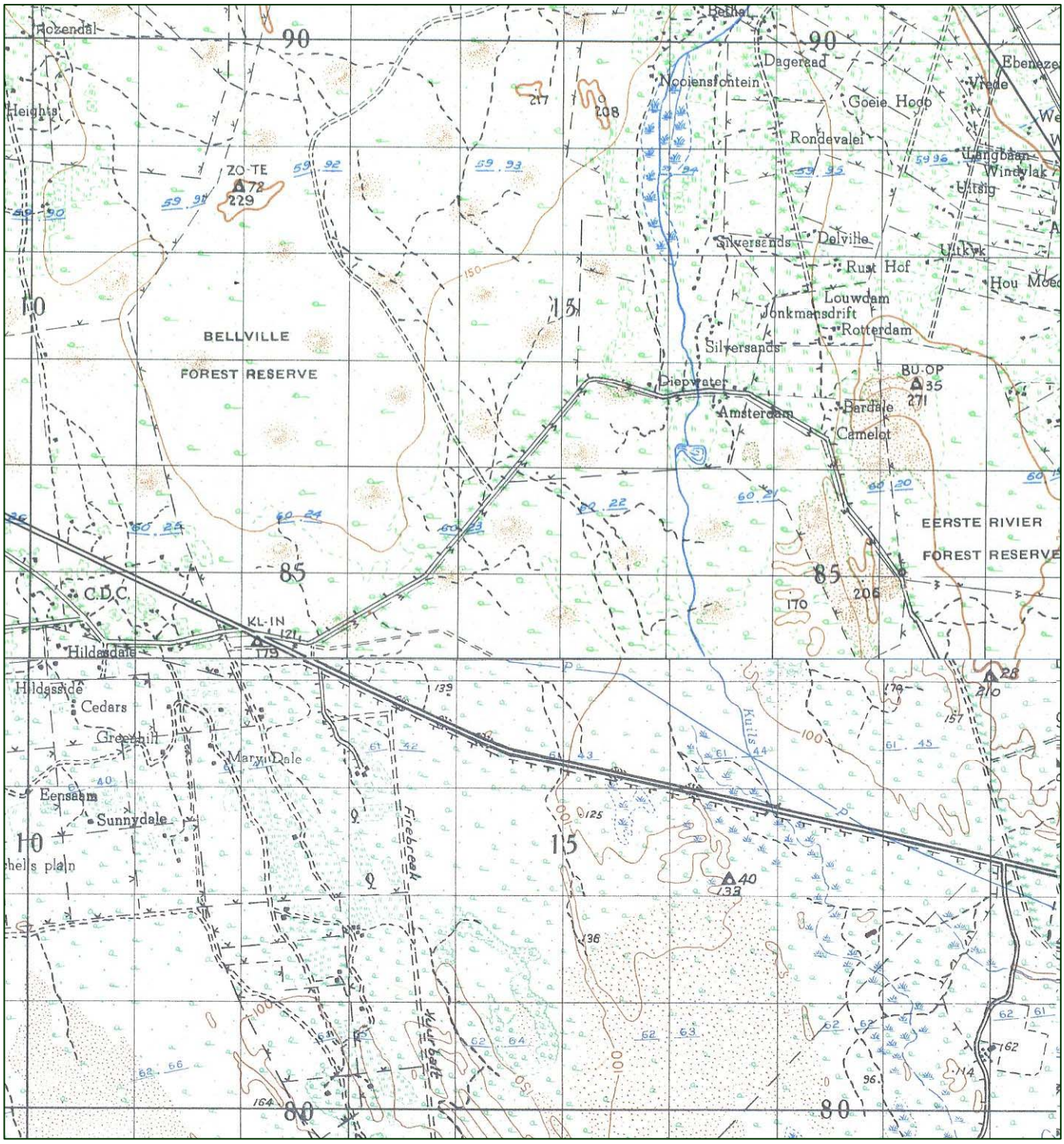
Appendix A: Excerpts from a sequence of maps and aerial photographs obtained from the Chief Director, Surveys and Mapping, Cape Town



A survey of 1813 indicates the extent of settlement of the Cape Flats at that time. (after Cape & Malmesbury 1&13 False Bay and Flats)



A 1938 aerial photograph of the study area with the Kuils River floodplain on the right hand side of the image.



1941 Topograhic map showing the Cape Flats. The study area lies roughly between the two roads. The large wetland (draining the Kuils Rivier) referred to as the Buffelsvlei in old deeds is clearly visible to the south east.

By 1968 when this aerial photograph was taken the study area was largely undeveloped and consisted of semi-vegetated dunes.

This aerial photograph of the study area was taken in 1988. The illegal sand mine (now a wetland) is clearly visible in the middle of the reserve, the medical waste facility is visible as is urban development to the south.