Proposed Residential Development
Erf 438, Stanford

Overstrand Municipality
Western Cape

Environmental Site Analysis and Planning Indicators

December 2023
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Prepared for
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1 Environmental Site Analysis

1.1 Introduction

The purpose of the environmental analysis for Erf 438 is to provide a detailed site assessment, including a tree survey, to inform the layout of a proposed residential development, which entails a subdivision application.

Erf 438 Stanford (the site) is located on the R43 and covers an area of about 5,1 hectares. The site is located within the urban edge of Stanford and has single residential zoning. Part of the site, as well as the Municipal land to the north, is currently used as a buffalo grass farm. The Stanford industrial area lies to the south. (See Map 1, Site Location).

1.2 Geology and Soils

The site lies at the transition zone between the underlying Bokkeveld Group shales to the north and the Waenhuiskrans Formation of the Bredasdorp Group to the south, which consists of semi-consolidated dune sands and calcrete. The site itself lies within the zone of light grey sandy soils, which is at the northern extremity of the Stanford Aquifer, (Umvoto, 2022).

The stream emanating from the spring to the south forms a small wetland adjacent to the R43 Road, which is likely to have more organic hydromorphic soils. No soil survey has been carried out to date, however the wetland report by Delta Ecology (October 2023) mentions that the wetland soils were waterlogged and exhibited gleying.

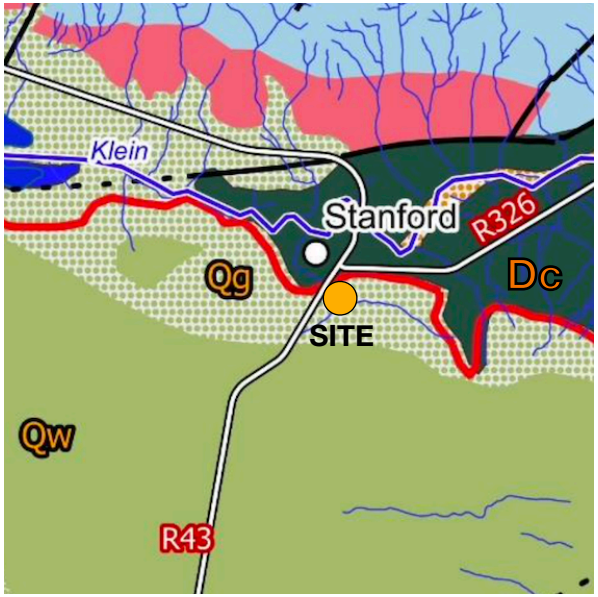
1.3 Topography and Hydrology

The site has a gentle slope which falls from a high point of 53m elevation in the NE corner to 47m elevation at the wetland to the west. Most of the site has a gentle slope gradient of about 1:33, and a slightly steeper gradient down to the wetland ranging from 1:13 to 1:20.

The Mill Stream wetland on the western part of the site has its source at the spring further south, which was once the main source of water for the village of Stanford, and is still used to supply the current irrigation, or *leiwater* system of the historical part of the village. The Mill Stream makes its way under the R43 via a number of culverts before flowing into the Willem Appel Dam further downstream. The culverts also facilitate movement of the threatened leopard toad and other fauna.

The only other drainage feature is the small ephemeral tributary at the southern end of the site, which drains into the wetland. There are no other surface water features, mainly because of the relatively porous sandy soils.

A separate wetland screening study has been carried out by Delta Ecology (October , 2023) for Lornay Environmental Consulting. The study contains aquatic biodiversity constraints and recommendations for development.

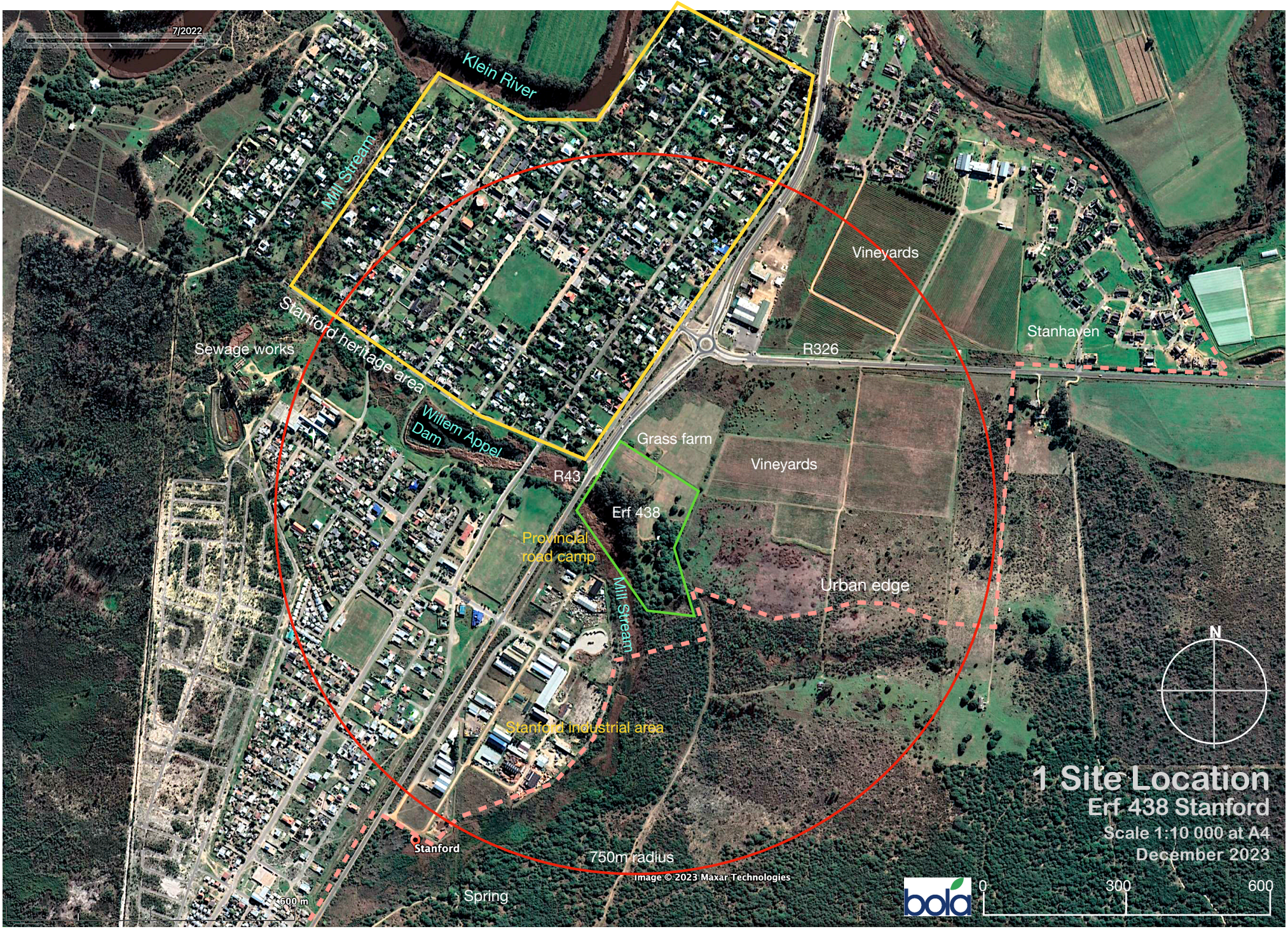


Geology of the Site environs
Source: Umvoto, 2022

Qg Sandy soil and loam

Qw Semi-consolidated dune sand and calcrete (Waenhuis F.)

Dc Shale, mudstone and sandstone (Bokkeveld G.)


7/2022
Klein River
Mill Stream
Stanford heritage area
Sewage works
Willem Appel Dam
R326
Vineyards
Stanhaven
Grass farm
Vineyards
R43
Erf 438
Provincial road camp
Mill Stream
Urban edge
Stanford industrial area
Stanford
750m radius
Spring
600 m
Image © 2023 Maxar Technologies
N
1 Site Location
Erf 438 Stanford
Scale 1:10 000 at A4
December 2023
0
300
600

1.4 Vegetation

The vegetation can be divided into roughly four zones within the site:

1. A disturbed area of buffalo grass (*Stenotaphrum secundatum*) on the northern portion, the grass being commercially sold as roll-on lawn.
2. A milkwood grove in the middle portion, which besides the milkwoods (*Sideroxylon inerme*), includes wild olive trees (*Olea europea subsp. africana*), and a number of exotic trees near the existing homestead.
3. An indigenous patch on the southern portion near the tributary consisting mainly of low shrubs and small trees typically found on the moist sandy soils.
4. A wooded portion of blue gums (*Eucalyptus* sp.) between the existing access road and the wetland.

The mature milkwoods, with their wide canopies, are a major feature and asset of the site, and have protection status. Care needs to be taken to minimise disturbance within their canopy zone.

A small portion of land on the R43, between Erf 438 and the industrial area, which is currently used by the Provincial Roads Department as a roads maintenance camp, also has a clump of mature milkwood trees. These milkwoods are being adversely affected through stockpiling of road materials and compaction by heavy machinery. These activities are clearly unsuitable for that particular portion of land and should be relocated.

The adjacent properties to the east (Farm13/644, owned by Birkenhead) and to the south (RE/294, owned by Overstrand Municipality), contain dense thickets of Port Jackson, which besides being highly invasive to the surroundings, are also a major fire hazard with a large fuel load. A request should be put to the owners of these properties to clear the alien invasive thickets. As a minimum, a 30m wide firebreak should be created on these farm portions because of potential liability if a wildfire spreads from these properties.

An annotated list of plant species occurring on the site is given in the table below. None of the species listed are considered endangered, while several alien species are potentially invasive and need to be managed.

1.5 Microclimate and Noise

Being located on a broad open plain, the site is exposed to strong prevailing winds, predominantly from the east or SE in summer, and NW in winter. The site is, however, relatively sheltered from wind by large trees. The mature milkwoods in particular provide a shady habitat with its own cool microclimate. (See also Site Informants, Map 2 below).

The R43 is a Provincial Main Road (currently under reconstruction) which carries large transport vehicles as well as normal commuter and visitor traffic. It is also an important tourist route forming part of the whale, shark and fynbos route network. In terms of residential development, traffic noise and air pollution would be greatest at close proximity to the road.

Map symbol	Botanical name	Description
Northern and eastern parts of the site, partly disturbed by grass farming:		
Sc	*Stenotaphrum secundatum*	Buffalo grass. Cultivated grass farm on the northern and middle parts of the site.
Si	*Sideroxylon inerme*	Milkwood. Indigenous mature specimens forming a grove in the middle part of the site.
Oa	*Olea europaea subsp.africana*	Wild olive. Indigenous mature specimens often growing with the milkwoods.
Middle part of the site around the homestead, mainly exotic trees planted for shade or wind shelter:		
Sp	*Syzigium paniculatum*	Brush cherry. Exotic bushy tree.
Qr	*Quercus robur*	English oak. Medium size deciduous shade tree.
Ah	*Araucaria heterophylla*	Norfolk pine. Tall slender feature tree.
St	*Schinus terebinthifolius*	Brazilian pepper. Exotic shade tree. Locally, a Category 3 invader tree, i.e.existing trees can be retained.
Sn	*Strelitzia Nicolai*	Wild banana. Indigenous to KwaZulu-Natal.
Cu	*Cupressus macrocarpa*	Monterey cypress. Planted in rows to the east and west of the homestead for wind shelter.
Ce	*Casuarina equisetifolia*	Beefwood. Category 2 invasive tree planted as a wind break.
Southern low-lying area of the tributary. Indigenous flora typical of lowland sandy soils:		
Er	*Euclea racemosa*	Sea Guarri. Indigenous coastal tree.
Rs	*Rhus spp.*	Taaibos. Various indigenous species.
Cm	*Chrysanthemoides monilifera*	Bitou. Large bushy shrub with yellow flowers, typical of coastal sandy soils.
Pc	*Passerina corymbosa*	Gonnabos. Medium shrub found in disturbed sandy areas.
Of	*Orphium frutescens*	Medium shrub with showy pink flowers typical of sandy soils.
Hp	*Helichrysum patulum*	Kooigoed. Medium shrub with soft silvery leaves and small yellow flowers.
Ad	*Athanasia dentata*	Medium shrub with small yellow flowers.
Gs	*Gnidia squarrosa*	Medium shrub of calcareaos sandy soils
Sb	*Senecio burchellii*	Geelgifbossie. Low shrub with small yellow flowers of disturbed sandy areas.
Tb	*Tetraria brachyphylla*	Sedge. Reedy shrub with reddish-brown flower bracts.

Map symbol	Botanical name	Description
Southern and western parts of the site. Wetland, gum trees and road entrance.		
Pa	*Phramites australis*	Fluitjiesriet. Prolific reed growing in the Mill Stream wetland.
Tc	*Typha capensis*	Bulrush. Grows in the Mill Stream wetland.
Eu	*Eucalyptus sp.*	Blue gum. Category 2 invasive tree. Would be harvested for timber and replaced with indigenous vegetation.
Op	*Opuntia sp.*	Prickly pear. Large specimen. Category 1 invasive plant which should be removed.
Gb	*Gymnosporia buxifolia (Maytenus heterophylla)*	Common spike-thorn. Indigenous thorny tree of forest margins.
Oa	*Olea europaea subsp. africana*	Wild olive. Indigenous bushy tree at the entrance.
Er	*Euclea racemosa*	Dune guarri. Indigenous tree found on sandy soils. Berries attract birds.
Mt	*Myoporum tenuifolium (M. insulare)*	Manatoka. Category 3 invasive alien tree near the entrance road.
As	*Acacia Saligna*	Port Jackson willow. Category 2 invasive plant, seeded from neighbouring properties.

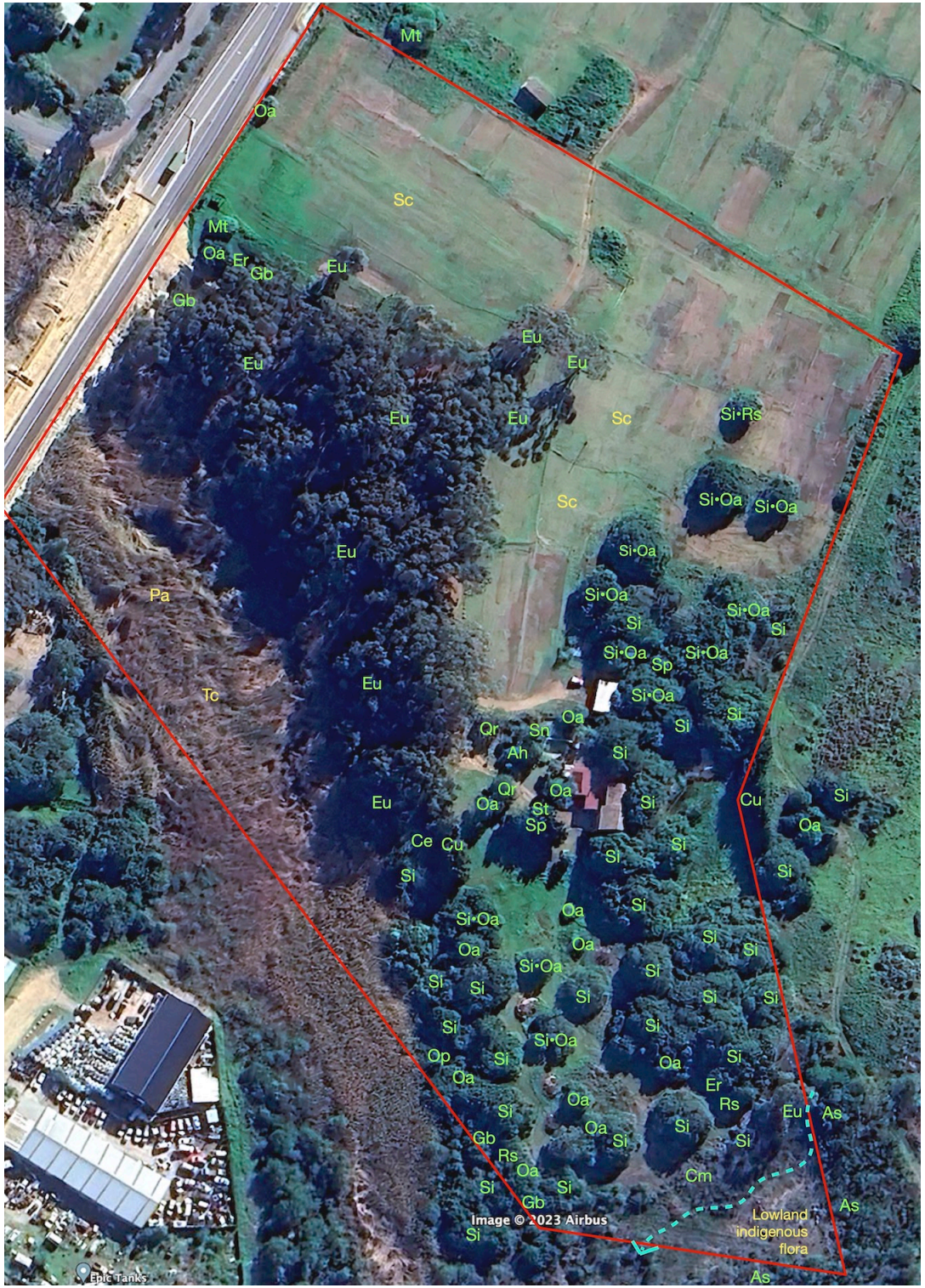
See also map below.

Orphium frutescens

Athanasia dentata

Helichrysum petulum

Sedges in the tributary area



Tree Species Survey, December 2023.
See Table for Map symbols.

(B. Oberholzer, Dec. 2023).

View of the site from the NW corner next to the R43. Cultivated buffalo grass in the foreground and gums in the background.
(B. Oberholzer, Dec. 2023).

View from of the site from the NE corner. Irrigated buffalo grass in foreground and milkwoods in the middle background.
(B. Oberholzer, Dec. 2023).

View of the southern part of the site in the low-lying tributary area with indigenous flora on moist sandy soils. Invasive Port Jackson willow in the background on neighbouring properties.
(B. Oberholzer, Dec. 2023).

View of the central part of the site with the existing homestead and various ornamental and shade trees.
(B. Oberholzer, Dec. 2023).

Invasive prickly pear near the Mill Stream wetland.
(B. Oberholzer, Dec. 2023).

The shady milkwood grove in the central part of the site.
(B. Oberholzer, Dec. 2023).


Erf 594
Willem Appel Dam
Mountain Views
optimum sun orientation
Road noise
Grass farm
Access
R43
Vineyards
25m Setback
Gums
Site high point
prevailing winter winds
prevailing summer winds
Wetland
32m buffer
Prov. road camp milkwoods
Homestead
Farm 13/644
Milkwoods
Mill Stream
Tributary
Port Jackson thicket
RE 294
Stanford industrial area
Image © 2023 Airbus
200m
N
2 Site Informants
Erf 438 Stanford
December 2023
0
100
200

1.6 Visual and Heritage Aspects

Proposed residential development on the site would be visible from the R43 Route and from a small section of Daneel Street on the opposite side of the R43. Daneel Street falls within the proclaimed Stanford Heritage Area. Land to the north and east of the site is vacant, while the Provincial road camp and the Stanford industrial area lie to the south.

The site is currently used as a commercial grass farm and has a single homestead with a number of small storage sheds, none of the buildings having heritage value. The only feature of heritage value is the milkwood grove, given its stature, age and strong sense of place.

2 Site Context and Planning Indicators

2.1 Stanford East Context

Erf 438 has good accessibility by road and is within 5 to 10 minutes walking distance of Stanford's shops and restaurants, (see Site Location Map 1). The site lies within the urban edge at the interface between the Stanford urban area and the surrounding rural area.

There is currently no Local Spatial Development Framework (LSDF) for the Stanford East area and it is therefore important that development on the site forms part of a coherent framework, and is not merely seen in isolation. Some of these aspects are touched on below.

2.2 Linked Open Space Corridors

The wetland within Erf 438, and its buffer zone, are seen as part of the Mill Stream ecological corridor that would extend from the spring (*Oog*), all the way past the Willem Appel Dam to the Klein River. Proposals have already been made in the Mill Stream Village Park and Greenway (2018) for this corridor, which would provide not only natural habitats but also nature trails and recreational opportunities for the larger Stanford area.

2.3 Stormwater Management

Besides recreational use, the Mill Stream open space corridor could act as a stormwater attenuation system. Sustainable urban drainage systems (SUDS) would make use of grassed swales and detention / retention ponds to attenuate the runoff from the proposed development on Erf 438 as well as surrounding areas. This would take cognisance of the Stanford aquifer, by means of recharging groundwater rather than conventional stormwater drains that exacerbate stormwater runoff. The following recommendation from the wetland study (Delta, 2023) would apply: "Allowance must be made for stormwater to be treated in a vegetated detention pond and/or a substantial vegetated swale before release into any wetland".

Use can be made of porous gravel or reinforced grass visitor parking areas in the proposed development to improve infiltration. Rainwater tanks would help to minimise stormwater runoff and provide backup water storage.

2.4 Environmental Buffers

The wetland study recommends a 32m NEMA regulated zone around the wetland in the western part of the site. The intention is that the buffer would constitute private open space as part of the development, and would consist of managed indigenous planting. The managed buffer could be seen as an offset for the development of the hillslope seep degraded by grass farming in the northern part of the site.

A 25m setback from the R43 Route is recommended in response to the Overstrand Heritage Survey Guidelines for scenic routes. This would have the added benefit of creating a noise buffer along the R43, aided by a planted earth berm, which would provide wind protection and visual screening, as well as help to filter air pollution from vehicular traffic. The current road works on the R43 would require major rehabilitation as part of the upgrade contract.

2.5 Urban Open Space and Pedestrian Routes

Internal roads within the proposed development would be designed to be shared with pedestrians, and include hard play spaces, using attractive paved surfaces. Kerbless roads would widen into small squares where street trees and benches could be provided. A *leiwater* channel could be considered along road edges for stormwater, reflecting the historic character of some of Stanford's streets.

Safe pedestrian and cycling routes need to be considered, especially the crossing of the busy R43, to provide access to shops, schools and other facilities in the town. This could take the form of a well-marked zebra crossing with a flashing amber pedestrian light near the road access to Erf 438.

The Municipality could be approached to provide a pedestrian / cycle lane along Daneel Street to enable safe access to the Stanford central area. Some of these concepts are contained in the preliminary Site Development Plan (SDP) below (Map 3).

2.6 Residential Design

It is important that the siting and design of the individual houses within the proposed Erf 438 development contribute to a 'street architecture' in which the houses relate positively to the internal streets by, for example, avoiding high walls and relentless rows of garage doors. Front stoeps and recessed garages could be considered to create a friendly pedestrian environment.

To this end, urban design, architectural and landscaping guidelines are being submitted with the formal Site Development Plan as part of the subdivision application.

The Milkwood grove on Erf 438 is of high conservation value, and requires special design guidelines to minimise damage to these protected trees.

3 Preliminary Site Development Plan

Erf 438 Stanford

December 2023

References

Delta Ecology, Oct. 2023. Aquatic Biodiversity Screening: Erf 438 and 594 Stanford, Western Cape prepared for Lornay Environmental Consulting.

Umvoto, 2022. Water sourceDevelopment and Management Plan for the Stanford Area. Final draft prepared for the Overstrand Municipality.

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