TOKAI RIVERINE SYSTEMS AND WETLANDS
Risks to the built environment

Prepared by Parkscape

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INTRODUCTION

The driving conservation mandate for Lower Tokai has been the restoration of Cape Sand Fynbos (CSP), which has included the seeding and planting of CSF species in the area. However, based on research of old survey maps (see Appendix 1) together with current observations, it would appear that Lower Tokai may not have been a CSF site in entirety, and that the wetland system may have been far greater than we currently see. Given historical information and current observations the questions are thus:
- How much wetland was there originally in both the Lower and Middle Tokai area?
- And if, as it seems, Lower and Middle Tokai historically comprised large areas of wetland how will a reversion towards this impact the surrounding built environment?

As far as we are able to ascertain, based on our observations and on-site inspections, including with a representative from the City of Cape Town's CSRM; Bulk Sevices; Water and Sanitation Directorate, the Tokai Section Ranger, and a representative of Munster Properties (representing the Western Cape Government regarding the Flandorp Flower Farm), the landscape is changing - likely reverting to a pre-forestry period and possibly a pre-farming (colonization) period. It may resultantly pose a growing risk of flooding to the built environment which has grown around it over the past 70 years.

HISTORICAL BACKGROUND

Historical evidence – including heritage maps (Appendix 1) - suggests that the post-settler greater Tokai area was a mix of forested kloofs[1], fynbos, farms and wetlands, while the middle and lower Tokai area seems to have been dominated by farmland – grazing and cultivated - and wetlands. Flowing through Upper, Middle and Lower Tokai, the Prinskasteel River is one of the major watercourses of the Constantia-Tokai Valley. It is a key river system in an area where watercourses are both natural and manmade and indicates significant water flow, and the area's potential for flooding.

Petrus Eksteen, who acquired Tokai Farm in 1803, was obliged to dig a canal linking the Prinskasteel River to Soetvlei to provide fresh water to Bergvliet, his father's farm, other farms in the area, and a VOC outspan, according to a water ordinance at the time. This would have been an unlikely obligation without sufficient water volume.

[1] "Reminiscences of Georgina Lister" – Johannesburg African Museum 1960

Figure 1: *A survey diagram of 1996 superimposed on SGD Diagram 113/1813, showing where the Prinskasteel canal ended in the Lower Tokai Park, according to the 1813 survey. The depiction of the watercourse is accurate, given the accuracy of the original survey diagram. Subsequent annotations include subdivision for the Porter Reformatory in 1918.*

The 1813 Surveyor General Diagram of Tokai Farm (Figure 1) shows that the Prinskasteel canal ending slightly north of the centre of the current Lower Tokai area. The channel would have delivered considerable volumes of water into Lower Tokai in 1813, given the amount of water flowing from the Constantiaberg into the Prinskasteel River further upstream. While the original course of the river skirted the northern boundary of Lower Tokai area, subsequent maps identified the canal as the primary course of the river. The canal's exit point shown on the map suggests that the wetland system may have been more extensive, given the volume of water entering this area at this point at the time. It is also likely that the local wetlands connected to a broader and more complex wetland system. (This is probably true of the broader Cape Flats wetlands – an historically complex and interconnected system, rather than the smaller vleis and wetlands we see today, separated by canalization and the built environment. The City, per its Ramsar status, is noted as having – at present - over 11 000 hectares of wetlands.)

A Map of the Cape Colony of the Cape of Good Hope dated 1880 shows the Prinskasteel canal flowing to the northeast through the centre of Lower Tokai into the Soetvlei/Sweet Valley wetland to converge ultimately with the Keyser's River. This points to the original intention of the canal to channel fresh water to farmers in the area and the VOC outspan at Baas Harmans Kraal. The original course of the Prinskasteel River flowed around the northern perimeter of Lower Tokai, providing water to vineyards and market gardens of the Tokai farm, known as the Ondertuine, and later the Porter Reformatory.

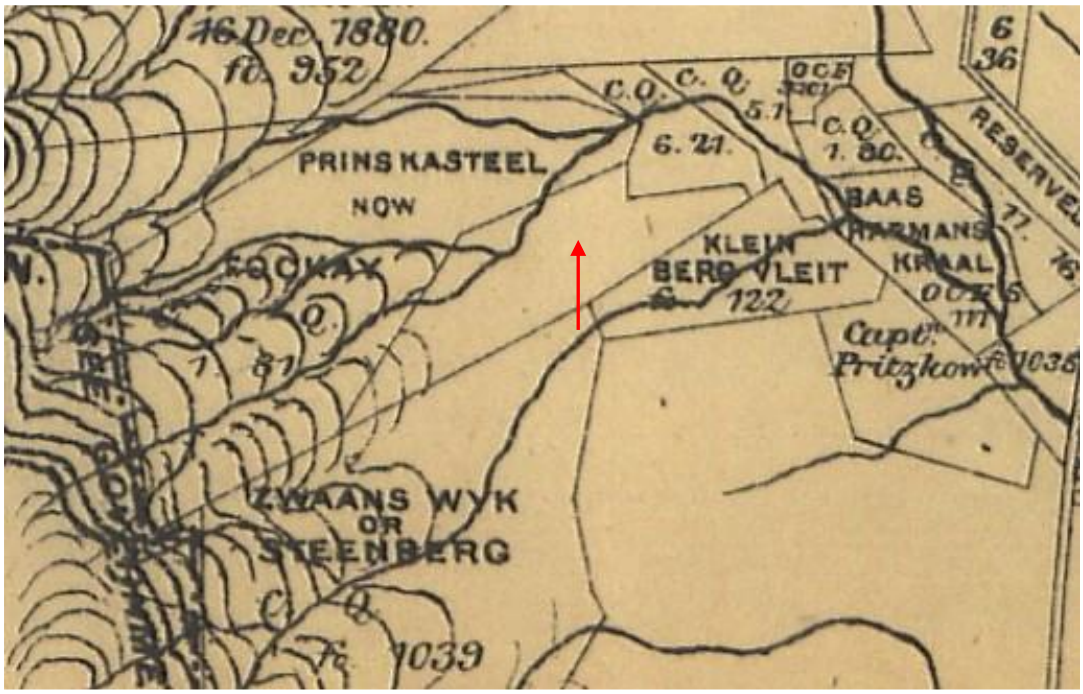

Figure 2: Prinskasteel canal 1880 (arrowed).

Figure 3: Lower Tokai showing a portion of the Tokai Forest Reserve 1887 indicating an extension of the canal between 1880 and 1887 (arrowed), possibly for forestry purposes.

The Crown Land shown as Lot E in Figures 3, 4 and 5 was originally reserved as a wood lot (houtveld) by the VOC authorities. The soil in the Crown Land was poor and unsuitable for farming, and this, together with timber shortages, would have driven the establishment of the Tokai Forest Reserve in 1883.

It is worth noting that authorities have recognised the strategic value of wood in this area since the earliest days of the Dutch settlement. The area marked Crown Land appears to have always been government land, ever since the VOC reserved the right to collect firewood here in 1692. The area has therefore been associated with wood and timber production as a strategic resource for more than 330 years. Further, the plantations and forested areas of Upper and Lower Tokai would have, by drying out the land, made urban development possible. Going forwardm appropriate afforestation may mitigate anticipated downstream flooding given current wetland development.

A map dated 1887 (Figure 3) shows that the Prinskasteel canal was extended further, possibly to drain the area for forestry. This extension is what we presently see in Lower Tokai.

The extract from the General Plan of Constantia of 1887 (see Figure 4) suggests that the wetland system extended deep into Lower Tokai, no doubt fed for much of the 19th century by the Prinskasteel canal. The map identifies the canal as the primary course of the river and shows the canal entering Lower Tokai Park to the east of Orpen Road. The map shows two extensions to the canal circling the centre of this area. The extensions to the north and the south converge at what is now the broad bridge near the “Dennendal” plantation, before entering the Sweet Valley (Soetvlei) wetland. The weight given in the diagram to the southern loop suggests that this was the primary watercourse. The northern extension, obscured by a tear in the diagram, no longer exists (see Figure 4). The extensions appear to date from the early 1880s. The apparent need to drain the area supports the possibility that the wetland system extended deep into Lower Tokai.

Figure 4 - Extract from the General Plan of Constantia of 1887 showing two extensions of the Prinskasteel canal circling the centre of Lower Tokai. The northern extension no longer exists. The southern extension still exists, once lined with eucalyptus trees.

The volume of flow in the river will have been greatly reduced by forestry thus causing wetlands in this lower section of Tokai to dry out. The state forests would also have played a key role in mitigating flooding, facilitating agriculture downstream and, later, urban development.

We note our own observations of Lower Tokai (2001) prior to the removal of the plantations; at that time the seasonal river flowed along a shallow and narrow channel within a eucalyptus grove. These trees, at the time of their felling were at least 100 years old, given the girth of the remaining stumps. Some of these trees may have been intended to stabilise the riverbank and to provide a fire-screen.

The extensions of the Prinskasteel canal in the early 1880s can also be seen in a map of 1901 showing the watercourses circling the centre of Lower Tokai (Figure 5).

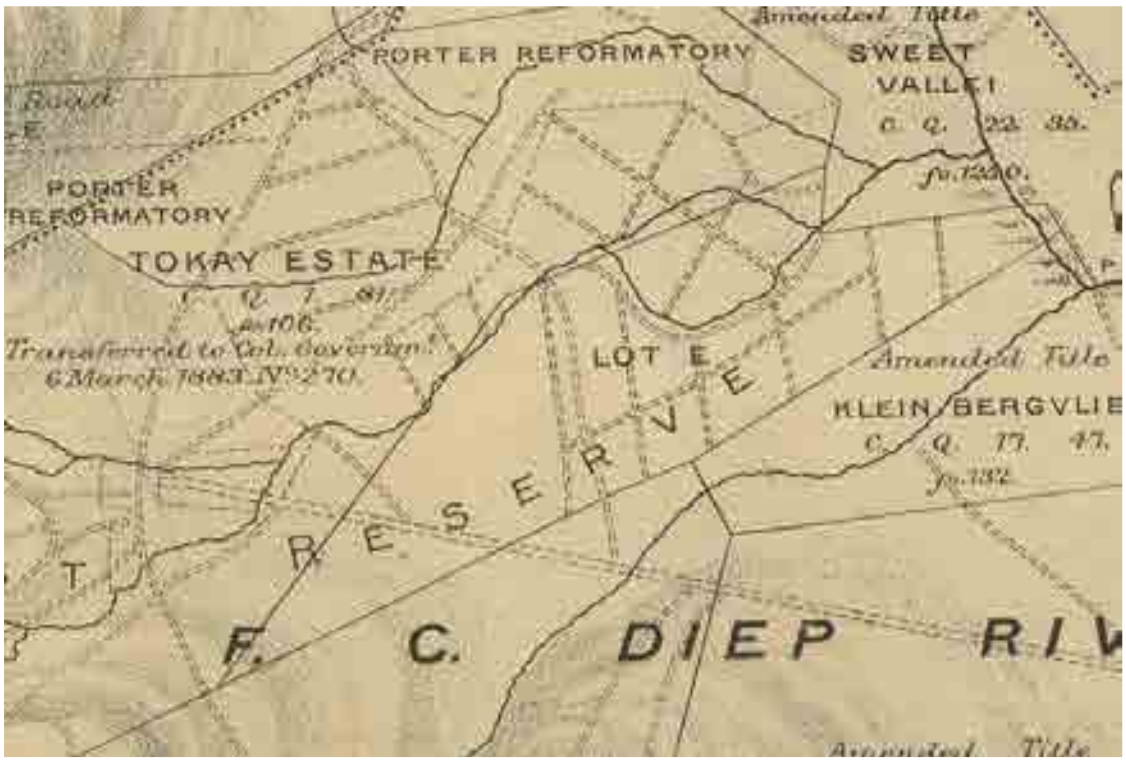

Figure 5: Tokai Forest Reserve 1901

A map of the Tokai Forest Reserve in 1931 indicates that the northern extension of the canal, probably excavated in the early 1880s, no longer existed, suggesting it was no longer needed. The southern course of the canal, seen in the map, still exists. The map shows the southern course flowing into the Sweet Valley/Soetvlei/Keyser's River wetland. (See Figures 12 and 13, Appendix 1).

A topocadastral map dated 1940 indicates that much of the surrounding area was rural, with a small urban area (Tokai Village – between Pine Street and Ivy Lane and Tokai Road and Bluegum Road) bordering the Klein Bergvliet farm (see Figure 14 in Appendix 1).

The historical change to the river and area is best noted in Figure 6 which is an overlay of the present mapping on the 1813 Surveyor General Diagram.

Figure 6: Prinskasteel canal 1813 – 2023. Blue – course in 1813, red – current course.

PRESENT

As part of the Tokai-Cecilia Management Framework public participation process, Dr Tony Rebelo prepared a Tokai Wetlands Document. In his document Dr Rebelo refers to the formation of the so-called “Lost Wetland” as a surprise and states that there was little evidence of it under the pine plantations.

We would note, based on regular observation, that this “Lost” wetland and the river per se, is increasing in size, and doing so rapidly (see Figure 7). At the current rate of erosion and river spread it seems likely that the river will broaden to include all or part of the current forestry track that runs between the plantation and the river in Lower Tokai. We would also note that the core CSF site of Lower Tokai is showing increased signs of marshiness in an ever-wider area, suggesting that new wetland areas will develop and connect with the growing existing wetlands. This is evidenced by increased sedges and buffalo grass in the area. This would seem to be in keeping with what may have existed in 1813 when the Prinskasteel River terminated in what is likely a wetland. Again, we note that in the period from 1883 to 2016 the Tokai Forest Reserve dried out the wetlands and helped to mitigate flood risks. However, increased water flow (particularly the heavy winter rains in 2023) have shown the emergence and re-emergence of wetlands in the area, and, critically, the potential for flooding in adjacent and downstream urban areas.

Figure 7: The developing river and wetland systems within Tokai. Approximately a third of the Lower Tokai conservation site (within the green circle), appears to be shifting towards a wetland system, with new and existing wetlands constantly expanding – this includes the proposed wetland development of the Liveable Urban Waterways Project.

Given observations, visually represented below, the landscape shows multiple signs of reverting to a wetland and broader wetland and river system.

These changes give rise to concerns which include:

- the lack of an holistic management plan that integrates upstream (SANParks) with downstream (City and Province),
- the impact of increased water flow on the surrounding built environment given the rapid urbanisation that has occurred in the area since the 1950s, and further intended urban densification,
- the impact of climate change and increased extreme weather events.

Figure 8: The "Lost" wetland, once under pines, is increasing noticeably in size. Buffalo grass and sedges have become increasingly prevalent in the wider Lower Tokai area.

Figure 9: Erosion and widening of the river below the gabions at the Labrador Pool. The bank in the foreground is in a constant state of erosion.

Figure 10a: This once deep and narrow section of river, to the east of the "big bridge", has widened into a pool and the boardwalk now overhangs a "cliff".

Figure 10b: the erosion (exacerbated by user activity) is clearly visible at the end of the boardwalk.

Figure 11: this section of river, east of the top (west) pool has widened considerably in the last few years and is at risk of eroding the forestry track to the south, and pushing to a broader wetland space to the north, evidenced by a growing body of wetland plants.

Figure 12 a and b: The river regularly overflows along this section (between the top pool and the Lookout Deck) and is gradually eroding both the riverbank and forestry track between the plantation and river course.

ORPEN ROAD FLOODING

Figure 13: Orpen Road, September 2023

With extreme weather events and the increasing volume of water coming off the mountain in the wake of the clear-felling of Upper Tokai, we have noted for the past few of years that Orpen Road (marked as a public road on historical maps), where it runs between the “Flandorp Flower Farm” and “The Eye” wetland in Middle Tokai has become prone to flooding (and has suffered a repeated sinkhole as a result). This flooding has subsequently damaged the equestrian and walking track on the northern perimeter of Lower Tokai by becoming a watercourse. There are, however, other notable changes.

Figure 14 a and b: The equestrian and laterite track on the north-eastern perimeter of Lower Tokai – in flood and draining from Orpen Road into the Soetvlei or "Palmiet" wetland.

As previously reported via email to the Section Ranger, Park Manager, City and Provincial representatives (see Appendix 3), and following site meetings with SANParks, City and Province, the picnic site has become prone to flooding. This appears to have as much to do with increased water flow off the mountain as well as blocked/unmaintained river courses, extensive rainfall and growing wetlands.

The Prinskasteel River - given blockages in the river system within the picnic site – instead of flowing from the picnic site through middle Tokai (to the south of the Thatch Cottage) flows to the north-south track within the picnic site, and diverts due north along the track (see Figure 7). It then encounters growing wetlands to the north, south and west of the Thatch Cottage[2] and a bulk of water, which forces the waterflow due east along the track leading to Chrysalis, and onto Orpen Road, where it pools – creating risk to traffic (see Figure 13). We note that the culvert a few meters north of this point appears to become repeatedly blocked and that the SANParks' land to the east of the road, through which the river attempts to flow, is heavily overgrown, primarily with invasive species. The water backs up at this point and together with the water seeking a path across Orpen Road, pools at the Flandorp Property where a large berm has been constructed to prevent flooding of the property. The waterflow on Orpen Road thus channels itself across the road and down the northern perimeter equestrian track until it is able to ultimately connect with the Soetvlei wetland (see Figure 14 a and b).

It is very likely that, historically, the Flandorp property was a wetland, likely part of the broader Soetvlei wetland, and that only canalization for farming purposes, forestry and the construction of berms around the property prevent it from currently being a wetland.

[2] The Thatch Cottage, "Orpen House", a heritage property, is at increasing risk of water and flood damage and ultimate destruction.

LOWER TOKAI EROSION

In part, it may be just as well that the Orpen Road flooding occurs, as if the full volume of water that we've seen in the last few years flowed down the Prinskasteel River, the erosion in Lower Tokai would be more significant than it currently is, and wetland development would be more extensive.

What we have observed along the Prinskasteel River in Lower Tokai is increased erosion (see Figures 8 to 12), to the extent that the river has both widened – up to two meters in some places – and is forming growing wetlands. Most of this has nothing to do with user activity as some have suggested, but everything to do with increased water flow. Some of the erosion occurs in areas where users are unable to access and where the banks are breaking away given the scouring effect of the water, flooding, and the high water table.

The developing erosion is creating a landscape which may be similar to what pre-forestry – and possibly pre-colonization - Tokai may have looked like.

As noted, historical maps show that the Prinskasteel River, which contained a fork in the Lower Tokai area, originally ended in north-central section of Lower Tokai. Again, this would only have been likely if the river drained into a wetland.

The marshiness of much of Middle and Lower Tokai following on the winter rains, the clear erosion of areas to the north of the river, the widening of the river in several places, and the growing swathes of Buffalo grass and sedges in Lower Tokai would seem to confirm our thinking that rather than being a purely CSF site, Lower (and Middle) Tokai was likely a wetland system connected to or part of the Soetvlei wetland and the Tokai greenbelt, with pockets of CSF on higher lying ground.

It seems likely that the area would equally seem to be part of a broader and more complex wetland system incorporating the many rivers, streams and springs that flow off the Constantiaberg and into Zandvlei and the sea, and likely originally connected more broadly to Princess Vlei, Rondevlei and Zeekoevlei (see Figures 15 and 16).

Figure 15: Zandvlei Catchment 2023

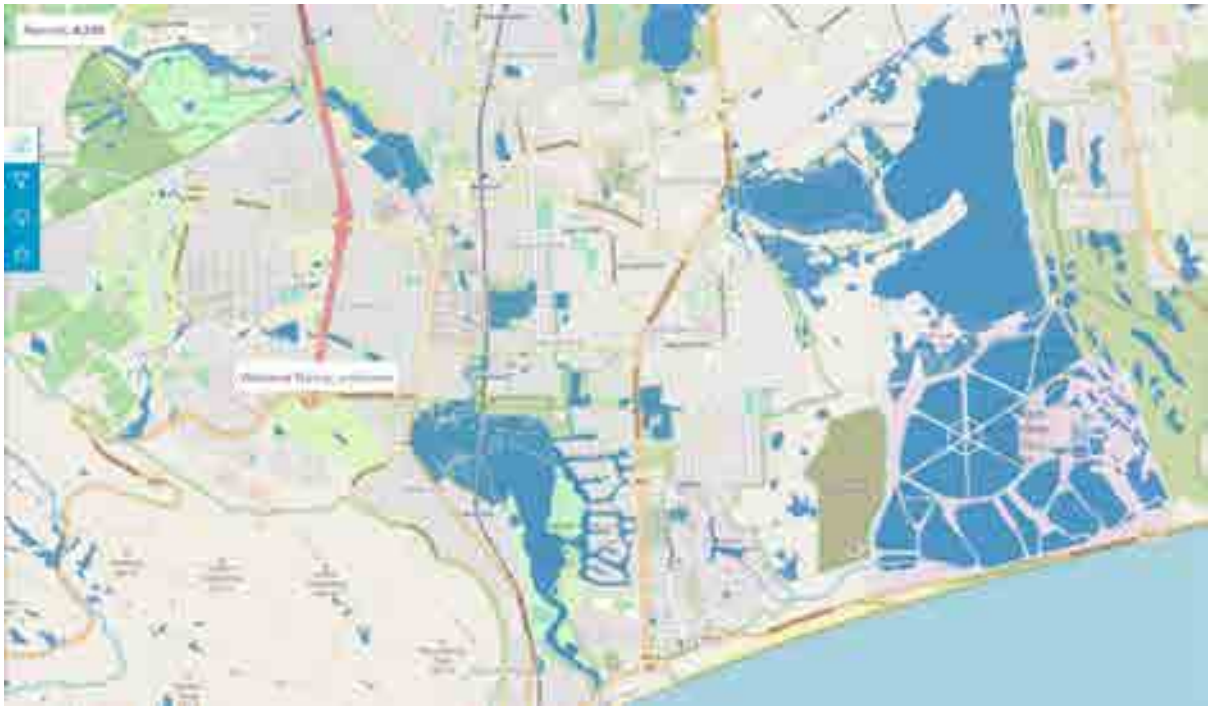

Figure 16: Broader Zandvlei and Zeekoevlei wetland systems

CONCLUSION: LOOKING BACK, GOING FORWARD

Prior to the advent of forestry in 1883, farmers would have used whatever available land they could to farm, often extending the land originally granted to them. What was unfarmable, was left as is, and the maps – dating back to 1813 - indicate that areas in Tokai may have been deemed too boggy for farming efforts. It is worth nothing that the water table in Tokai is generally high and that sandy soil lies atop *koffieklip*/ferricrete and/or a podzolized layer, which is indicative of the historical geology of a once greater wetland system.

As previously noted, with the start of forestry, the Prinskasteel canal was diverted to accommodate forestry (Figure 3). Plantation forestry would have limited water flow from the mountain and the landscape would have been altered and become drier. This drying enabled, ultimately, the development of the suburbs of Tokai and Kirstenhof and the broader urban infrastructure that runs between the Constantiaberg and Zandvlei. Given this urban development will increase in the next two decades, more holistic and effective management of water systems is imperative.

With the exit from forestry and the removal of the plantations in Upper and Middle Tokai, water flow has increased. With climate change, rising sea levels, increased extreme weather events, the narrowing of the Zandvlei estuary, and the possible removal of the "Dennendal Plantation" and other treed landscapes – particularly on greenbelts – the built urban environment could be put at grave risk of flooding. We already know that the Sweet Valley Vineyard Development on the northern boundary of the eastern compartment of Lower Tokai struggles with excess water and flooding, the property at the east end of Almora Circle now stands - despite sandbags - with its foundations in the widened river (see Figure 17), Orpen House is at risk, and the Flandorp Flower Farm relies on heavy berms to prevent flooding.

In addition, the Tokai greenbelt has flooded increasingly in the past decade, making it impassable to local residents and their staff, despite a raised path, and City land access between the "Dennendal Plantation" and the greenbelt has been severely damaged by erosion and flooding.

Figure 17: The path to the Tokai greenbelt is repeatedly flooded and has been extensively damaged, and the water course is increasingly widening. Note the levels of sediment in the river. The river has widened to encroach on private property to the right of the photo.

Figure 18: The Tokai greenbelt floods repeatedly so that even the raised tar path is underwater. (This greenbelt currently forms part of the City of Cape Town's Liveable Urban Waterways Project.)

It would seem that no one thought through the impact of the removal of the plantations, and if they did, on the basis of conservation, they failed to take into account the potential risks posed to the built environment.

Climate change and increased urban densification aside, at issue are the disconnects between authorities and a lack of holistic thinking. The upper river systems, managed by SANParks, cannot be seen in isolation from the lower systems, managed by City and Province – and vice versa (See Figure 19). There is a connected whole rather than separate pieces, which need to be managed as one given the changed, and changing, landscape. This landscape needs to accommodate the built environment and multiple associated human needs, as much as it needs to accommodate conservation (See Appendix 4). There is no room for single-discipline conservation-only thinking, unless the intent is to put the built environment and the people in that environment at risk.

Figure 19 – Land responsibility by authority entity.

APPENDICES

Appendix 1 - Prinskasteel River, Tokai 1792 – 2023 – Paddy Attwell

Appendix 2 – Email exchange – Nicky Schmidt with City, SANParks and Provincial representatives

Appendix 3 - Comments on the Zandvlei Estuarine Management Plan – Eugene Moll

Prinskasteel River, Tokai
1792 – 2023

Introduction

The Prinskasteel River is one of the major watercourses of the Constantia-Tokai Valley, flowing through upper and lower Tokai. The following maps and diagrams indicate the volume of water flowing through this riverine system during the period 1792 to 2023.

The watercourses are both natural and manmade and indicate the area's potential for flooding. The Tokai Forest Reserve helped to mitigate this potential. Heavy winter rains in 2023 have shown the emergence and re-emergence of wetlands in the area, and the potential for flooding in urban areas downstream.

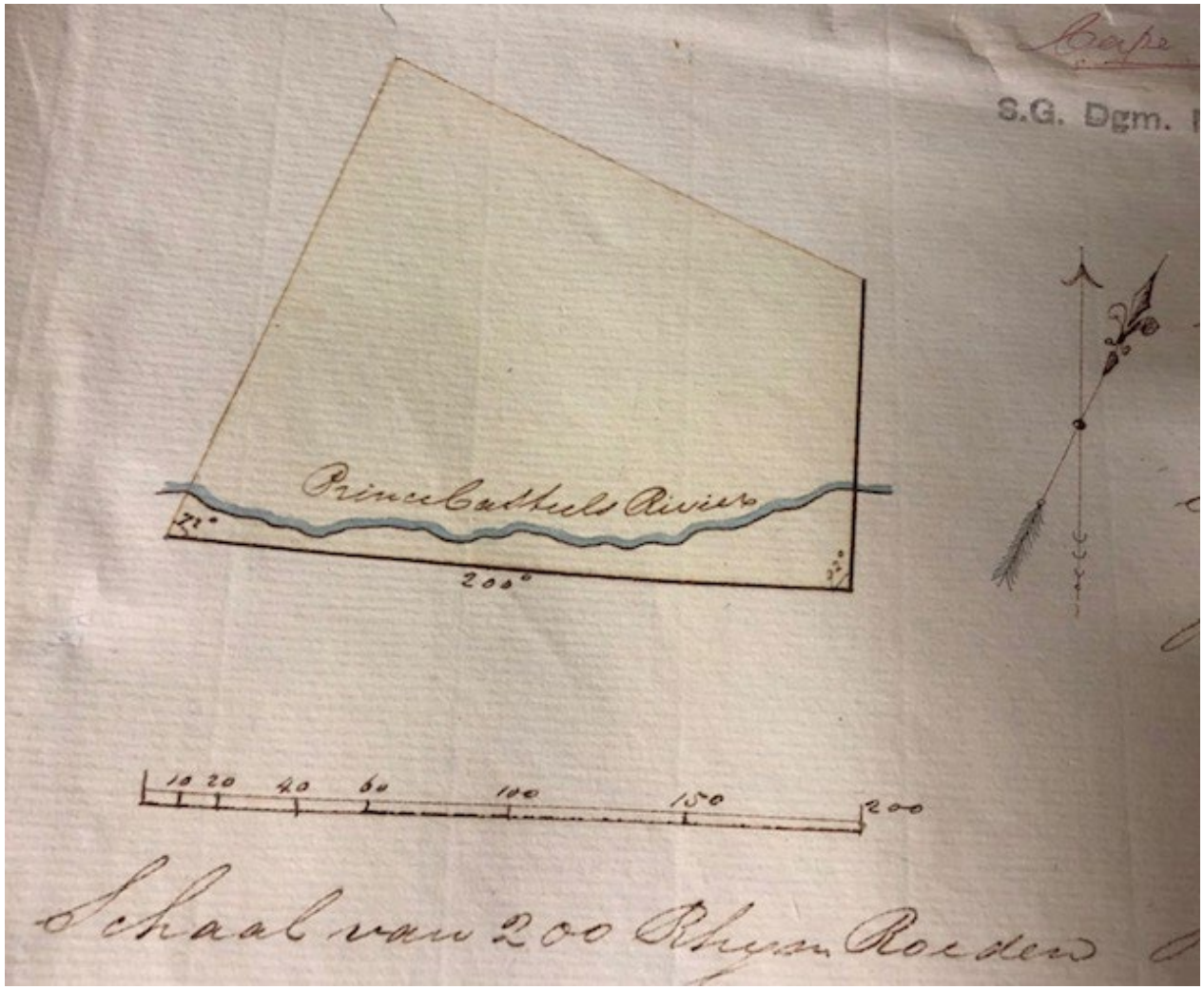

Figure 1: The Prinskasteel River was the primary water source for the Tokai farm, shown here in the original survey diagram dated 1792. The VOC authorities granted the farm to Jan Andries Rauch on 6 January 1792.

Petrus Eksteen acquired the Tokai farm in 1803, including quitrent (leasehold) land surrounding two freehold properties. He was obliged to dig a canal linking the Prinskasteel River to Soetvlei, according to a water ordinance at the time, to provide fresh water to farmers in the area, including Bergvliet, his father's farm and a VOC outspan. The canal was a major undertaking, most probably dug by slaves on the farm around 1803.

The Tokai farm was previously known as Prinskasteel, the name given to the Constantiaberg by Dutch cartographers during the VOC period.

The British authorities introduced perpetual quitrent, a new form of land tenure in 1813, after occupying the Cape for the second time in 1806. Requirements included surveying and registering quitrent land. Eksteen's land was therefore surveyed and granted to him on 4 April 1814 under perpetual quitrent. The freehold portions remained freehold.

Figure 2: The original survey diagram for Tokai farm, dated 1813, shows the water channel excavated across Tokai farm and along the farm boundary, linking the Prinskasteel River to slightly north of the centre of Lower Tokai. The diagram includes the freehold portions, the position of the Tokai homestead and the origins of Orpen Road, shown as a "public weg".

Figure 3: Surveyor General Diagram 135/1813 of Tokai farm, held by the Surveyor General's Office, with subsequent annotations. These include subdivisions for the Porter Reformatory in 1918 and portions deducted in 1996. The northern extent of Lower Tokai Park now occupies the section marked Portion 5. The rest of the fynbos section and the Dennendal Plantation are situated south of Portion 5. The diagram shows the watercourse terminating in what became Portion 5.

Figure 4: A survey diagram of 1996 superimposed on SGD Diagram 113/1813, showing where the Prinskasteel canal ended in the Lower Tokai Park, according to the 1813 survey. The diagram shows the canal ending on relatively high ground where it would have discharged large volumes of water into the northern and northeastern portions of Lower Tokai. It is possible that the Soetvlei wetland extended further to the west, given the canal's exit point indicated on the diagram of 1813.

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Figure 5: This is an extract from Figure 4 superimposed on a current map of wetlands surrounding Tokai Park (City of Cape Town Map Viewer). It shows the Prinskasteel canal of c1803 terminating west of the current Soetvlei wetland. The compilation suggests that the wetland system was much larger, covering much of Lower Tokai. Subsequent maps support this assumption, showing extensions to the canal, probably to drain the area for forestry in the early 1880s.

Figure 6: The Surveyor General's Office compiled a Map of the Cape Colony of the Cape of Good Hope in 1880, from plans and diagrams held by the office at the time. The map therefore reflects the cadastral boundaries and topographical features of the Western Cape before 1880, including watercourses. The map shows the Prinskasteel watercourse flowing across the northern section of Lower Tokai Park into the Soetvlei/Sweet Valley wetland, converging eventually with the Keysers River.

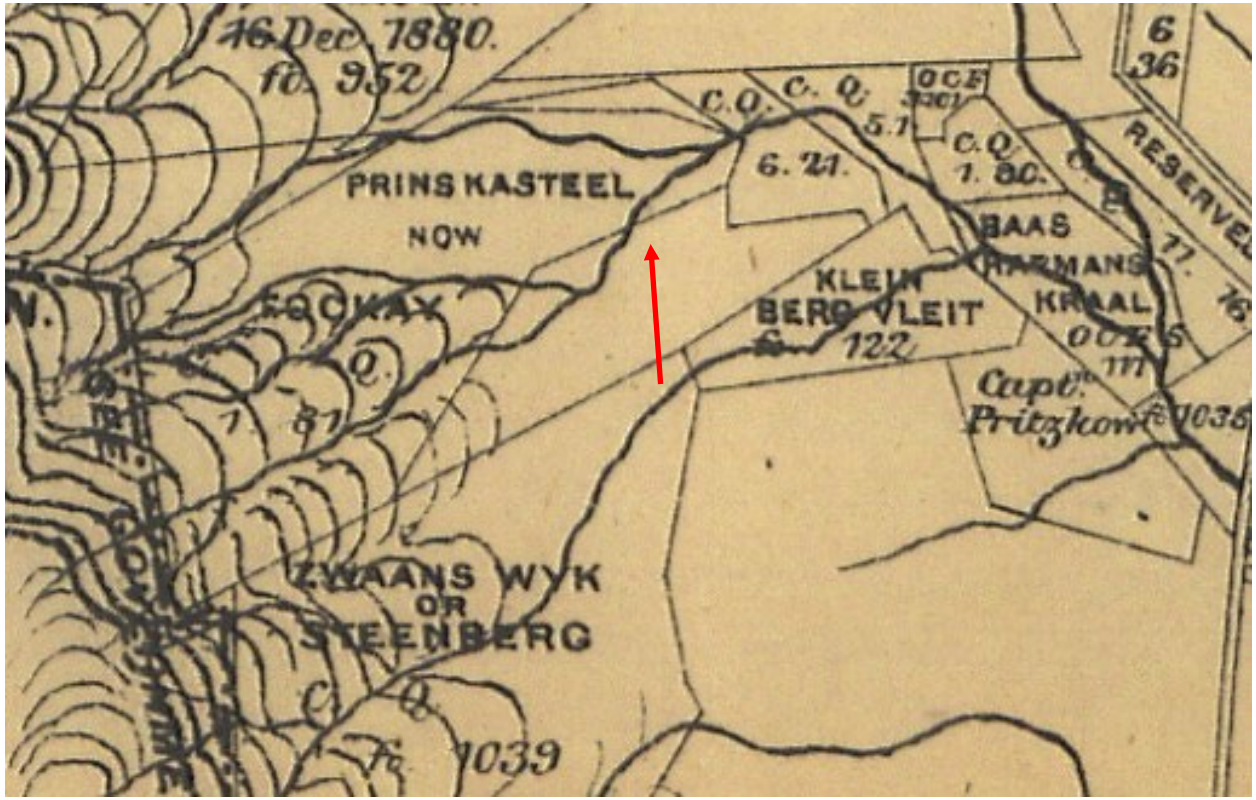


Figure 7: This General Plan of Constantia, held by the Surveyor General's Office, was compiled in 1887. The plan includes the Tokai farm and surrounding wetlands in Sweet Valley (Soetvlei), Bergvliet farm (to the northeast), Dreyersdal and Klein Bergvliet. The plan shows further extensions to the Prinskasteel canal in lower Tokai, the most prominent being a diversion to the southeast (arrowed). The Crown Land shown as Lot E was originally reserved as a wood lot (houtveld) by the VOC authorities. The soil in the Crown Land was poor and unsuitable for farming. The Tokai Forest Reserve was established in 1883. The reserve included the Crown Land shown on the diagram.

Figure 8: This is an extract from the General Plan of Constantia of 1887 showing the Tokai farm homestead surrounded by orchards, trees and local roads. The government nursery, where Lister and his team experimented with suitable trees for the forest reserve, can be seen to the southwest. The plan shows about five streams entering the Prinskasteel River from the Constantiaberg, indicating the volume of water that made its way into the river, to upper and Lower Tokai and the Sweet Valley/Soetvlei wetland.

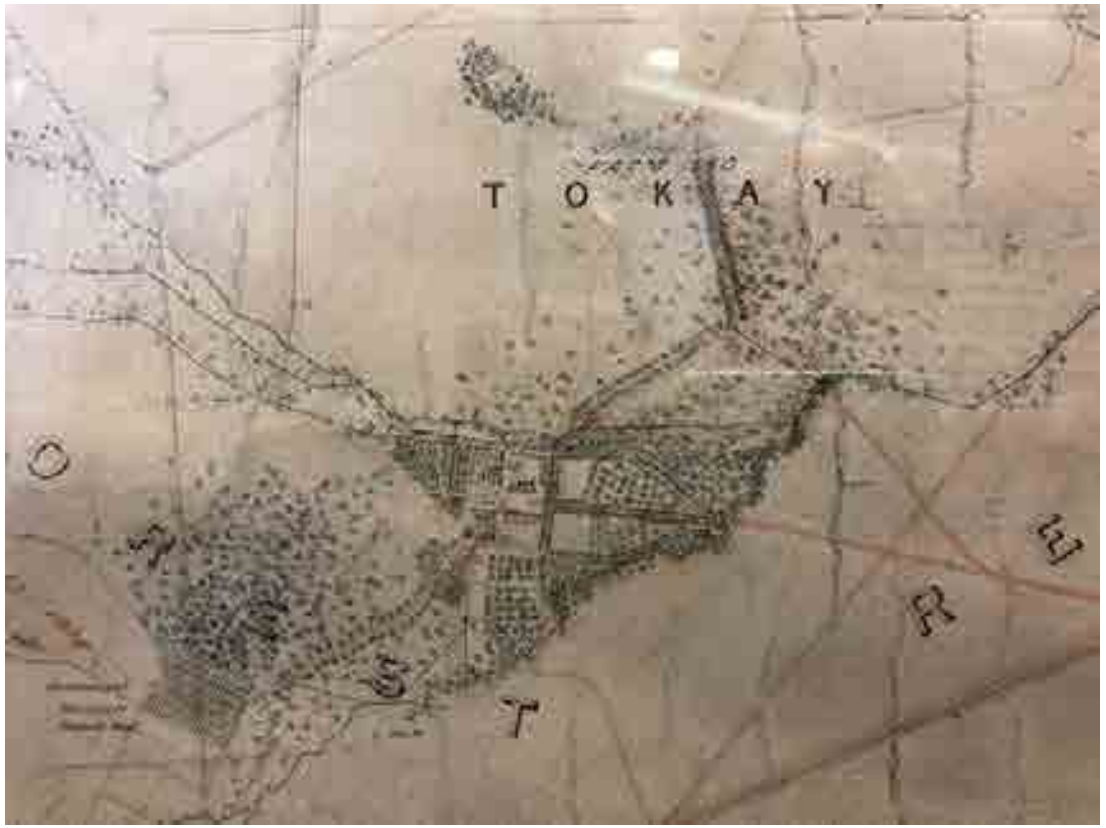


Figure 9: This extract from the General Plan of Constantia of 1887 shows the Prinskasteel canal entering Lower Tokai Park to the east of Orpen Road. The map shows two extensions to the canal circling the centre of this area. The extensions to the north and the south converge at what is now the broad bridge near the Dennendal forest, before entering the Sweet Valley (Soetvlei) wetland. The weight given in the diagram to the southern extension suggests that this was the primary watercourse. The northern extension, obscured by a tear in the diagram, no longer exists. The extensions appear to date from the early 1880s, probably to drain the area for forestry. This suggests that the wetland system extended deep into Lower Tokai before forestry, no doubt fed for much of the 19th century by the Prinskasteel canal. The original course of the Prinskasteel River flowed around the northern perimeter of Lower Tokai, providing water to vineyards and market gardens of the Tokai farm, known as the "Ondertuine", followed by the Porter Reformatory. The map identifies the canal as the primary course of the river.

Figure 10: This map, compiled by the Surveyor General's Office in 1901, shows the extensions to the Prinskasteel canal circling the centre of what is now Lower Tokai Park, before converging near the broad bridge to flow into the Sweet Valley/Soetvlei wetland. The map shows the basic grid pattern of the Tokai Forest Reserve. The imprint of the grid is still evident in the paths and trails crossing Lower Tokai Park today.

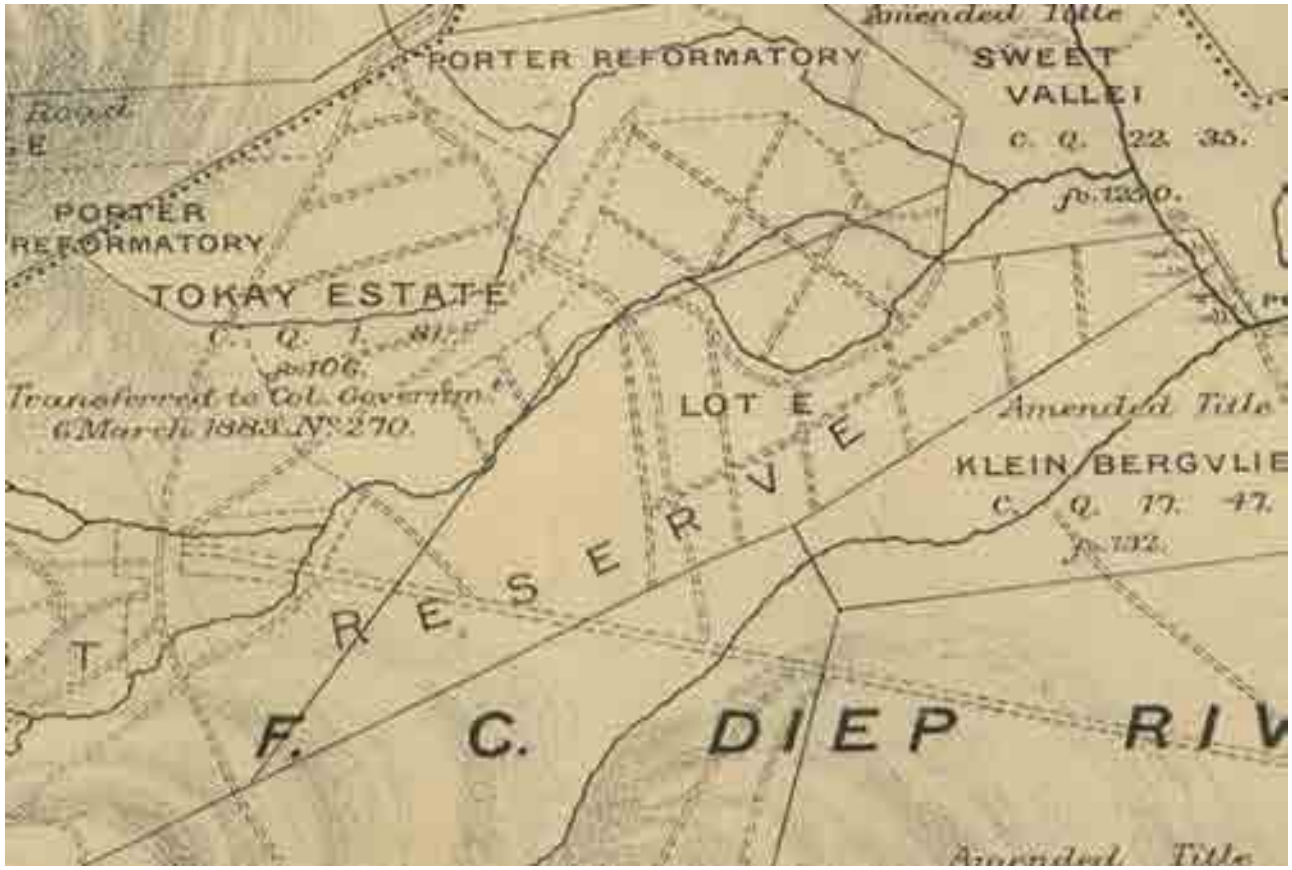


Figure 11: The Surveyor General published this map of Tokai and its environs in 1931, showing the extent of the tree cover in the Tokai Forest Reserve. The state forests played a key role in mitigating flooding, facilitating agriculture downstream and later urban development. The forests became a defining feature of the cultural landscape of the Constantia-Tokai Valley, along with watercourses, historic farms and tree-lined avenues, all set against the magnificent backdrop of the Constantiaberg and wilderness areas.

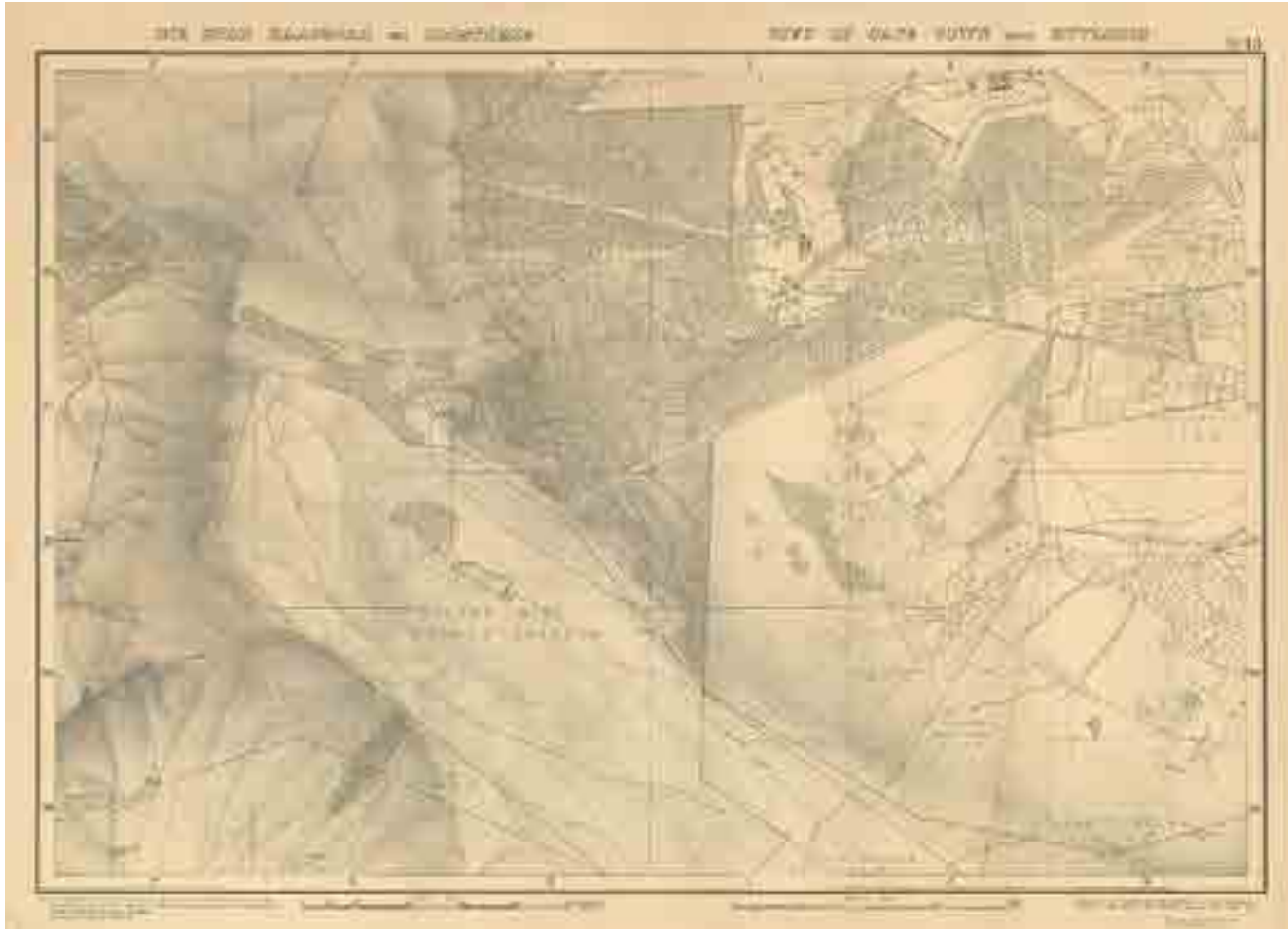


Figure 12: This extract from Figure 11 shows the Tokai Forest Reserve in Lower Tokai and the extension of the Prinskasteel canal to the southeast in 1931. There is no sign of the northern extension shown in the maps of 1887 and 1901. The path taken by the northern extension is now blocked by a gabion constructed in 2017 that forces the water to take the southern course. The map shows the extent of wetlands in Sweet Valley and Klein Bergvliet in 1931.

Figure 13: This survey dated 1932 provides another view of the course of Prinskasteel canal through the Tokai Forest Reserve along the diversion to the southeast, to the Soetvlei/Sweet Valley wetland. Other watercourses flowing into the area include the Spaanschemat and Keyser rivers.

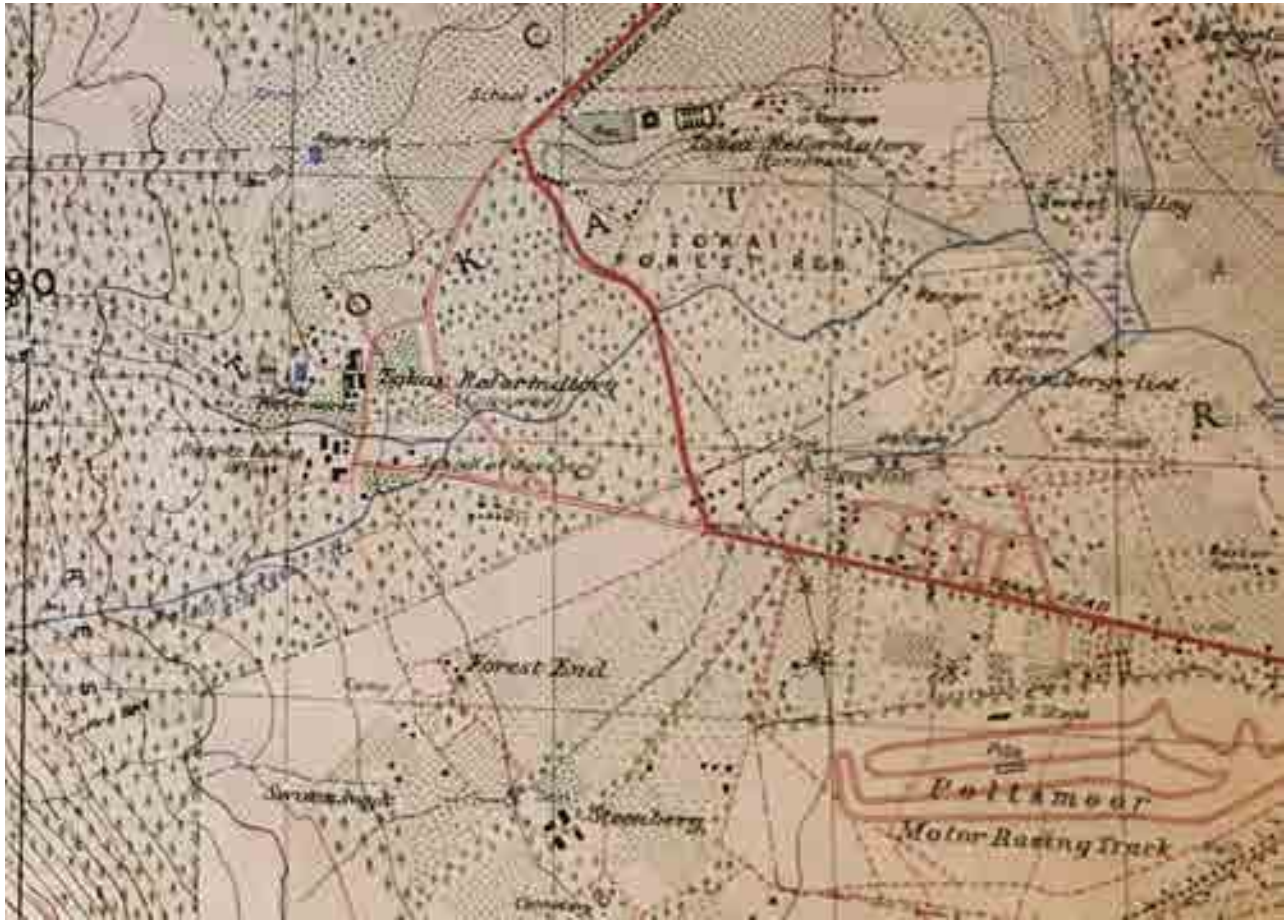
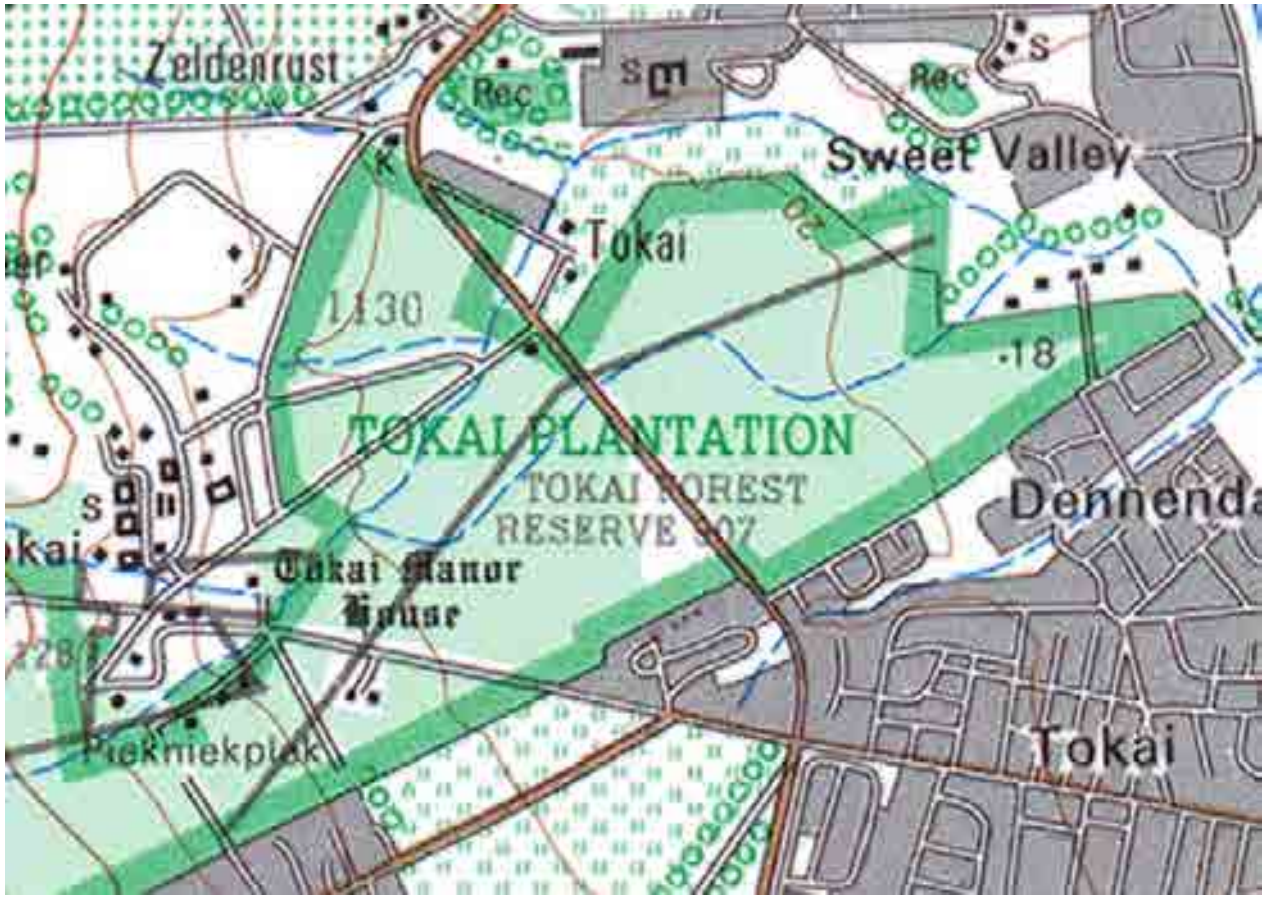


Figure 14: This map dated 1940 shows the extent of wetlands at the confluence of the Prinskasteel, Prinseskasteel, Spaanschemat and Keysers watercourses and rivers in 1940. The map illustrates the rural nature of the valley at the time.

Figure 15: Aerial photograph taken in 1958 showing farming activity in Soetvlei/Sweet Valley and a portion of the Tokai Forestry Reserve. The forest facilitated agriculture by mitigating flooding.

Figure 16: This map dated 1990 shows the course of the Prinskasteel River from east of the Tokai Manor House around the northern perimeter of Lower Tokai Park, and the Prinskasteel canal flowing into the centre of the park. The diagram shows the extent of urban development around Lower Tokai by 1990.



Figures 17 and 18: Above: Tokai Forest in Lower Tokai in March 2004. A dense stand of eucalyptus trees can be seen lining the southern extension of the Prinskasteel canal. Many were more than 100 years old. They served to stabilise the banks and prevent erosion. Below: The same area in November 2011, following the felling of trees in the area, including the eucalyptus trees (Google Earth).

Figure 19: This gabion, constructed in 2017, is situated close to where the Prinskasteel canal ended c1803. It directs water into southern extension of the canal excavated in the early 1880s, while blocking the route once taken by the northern extension (see Figure 9). The canal no longer feeds the seasonal wetland that might have existed to the east of the gabion during the 1800s.

Figure 20: Large tree stumps now line both sides of the southern extension of the Prinskasteel canal excavated in Lower Tokai. The tree in the foreground was at least 100 years old, based on the diameter of the stump (about one metre). The age of these trees corresponds to the establishment of the Tokai Forest Reserve in the 1880s and the approach of the foresters to land management at the time.

Figure 21: The survey diagram of 1813 is seen here overlaid onto a map of 2023, showing the course of the Prinskasteel canal c1803 and its subsequent extension in the early 1880s. The purpose of the extension was probably to drain the area for forestry. The canal follows the same course today.

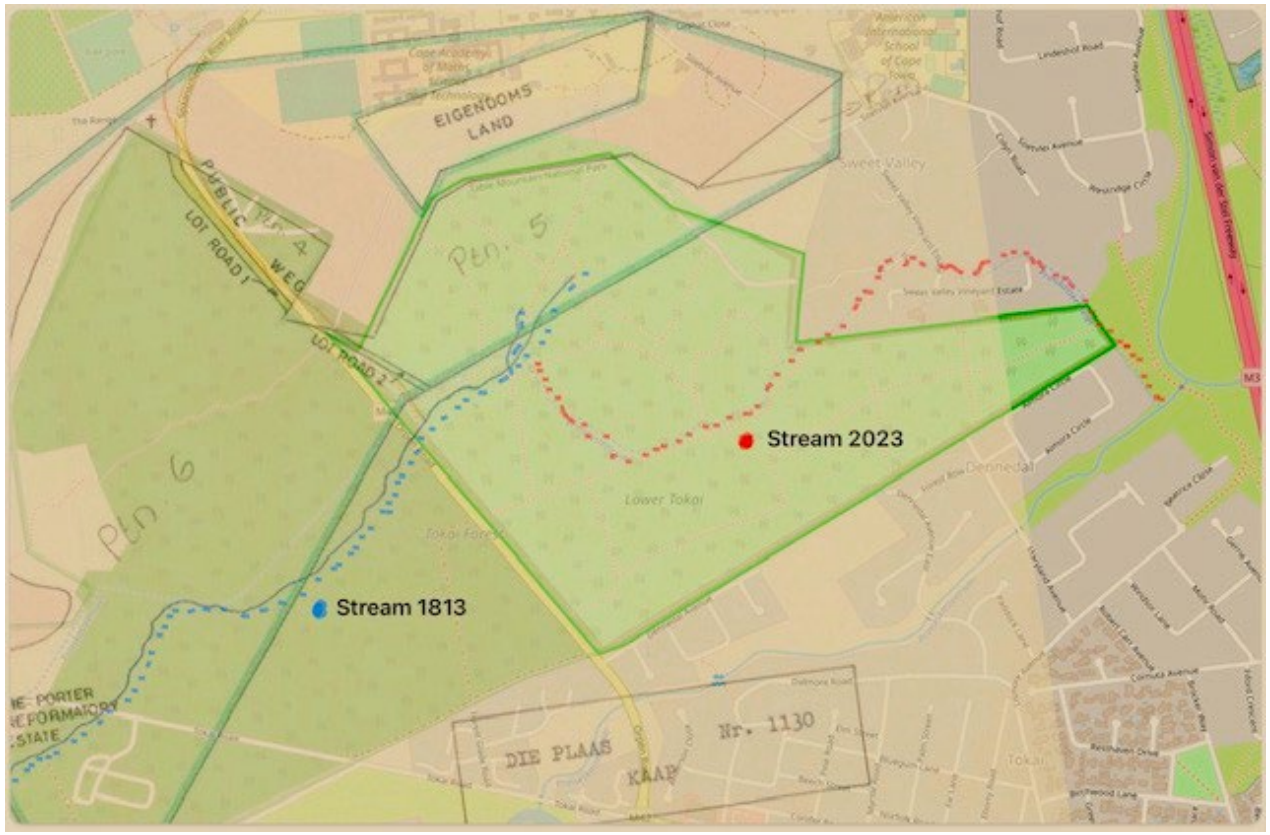


Figure 22: This map shows the extent of the wetland system from Lower Tokai to Zandvlei. The Tokai Park zone forms a core component of the watershed. Urban development has filled in many of the spaces along the course of the system. The Tokai State Forest helped to control flooding in the past. Felling of the trees may now contribute to flooding of these urban areas, especially those closest to Lower Tokai Park.

Paddy Attwell
October 2023

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A.H.J. van Rooyen, *Die geskiedenis van Tokai-park, 1792 tot 1910, as record vir 'n bewaringstrategie*, PhD thesis, North-West University, Potchefstroom campus, November 2015
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Western Cape Department of Agriculture: Cape Farm Mapper
Surveyor General's Office
City of Cape Town: City Map Viewer
Google Earth

APPENDIX 2

Emails to SANParks, City and Province

EMAIL 1

From: Nicky Schmidt
Sent: Friday, June 23, 2023 2:50 PM
To: 'Alistair Lee'; 'Abdulla Parker'; 'Megan Taplin'; 'Elmonique Petersen'
Cc: 'Cllr Carolynne Franklin (DA)'
Subject: Watercourses Tokai Area

Dear Colleagues

Alistair and Elmonique, many thanks for your time on site this morning, it is much appreciated, and I am hopeful that moving forward we can look to a more holistic approach to managing the Prinskasteel river system and other related tributaries that flow from the Park and through both City and Provincial property.

At primary issue is the damage done to Orpen Road and resultant damage to several vehicles. This is a situation that occurs most winters, though this winter has seen far more damage to both Park and City infrastructure than usual.

The problem would seem to arise from the river flowing out of the river course in the Tokai picnic area, diverting north along a track behind Orpen House (the Thatch Cottage), then east along the sand track that leads to Chrysalis, and over Orpen Road onto the bridle path on the northern perimeter of the conservation site.

There is also an issue of blockages in the culvert slightly further north where another stream flows from another wetland area into what may be Provincial property (Elmonique to ascertain from ordnance maps), but where the water, which would naturally have flowed into a wetland, is now obstructed by a large berm constructed around the erf rented by Flandorp Flower Farm (Alistair, I will pass on Provincial contacts.)

There are also issues of increased – and rather rapid – and potentially hazardous - erosion in the Lower Tokai area - and pooling and flooding in middle Tokai. There appear to be a number of small wetlands in the middle and lower Tokai areas.

A key point seems to be blockages in the river and drainage systems, including blockages in the culverts that flow under Orpen Road.

The erosion in Lower Tokai may relate to the river having been effectively “canalised”, and where it travels through sections of koffieklip, it is eroding at a worryingly rapid rate. This erosion and related sediment then washes downstream.

As a side note, the flooding onto Orpen probably saved the forestry track between the plantation and river, from more severe erosion than usual – the trade off is the damage done to the northern perimeter paths – and here it may be worth considering seasonal trails that enable riders, in

particular, to use the perimeter path in summer, while providing them with a drier – higher - track in winter through the Lower Tokai conservation site.

My objective this morning, was to facilitate the start conversation between SANParks and City, so as to find ways forward.

It is clear that funding will be required to clear river courses within the Park and also to remediate current erosion issues.

This could possibly be an EPWP project dependent on what SANParks is able to facilitate.

Ideally, the primary target would seem to be clearing and maintaining the watercourse where it runs through the picnic area and middle Tokai south of Orpen House. This would hopefully enable a more ready flow of water, within the existing river bed, rather than having the river go behind Orpen House and flood Orpen Road – and then do damage to both the road and the recreational tracks in Lower. The drainage channel running adjacent to the laterite path and bridle path will also need clearing as it is now higher than the paths. The next target should be erosion mitigation measures in Lower Tokai.

Hopefully the various authorities are able to find holistic solutions to water and catchment management in the greater Tokai area, so avoiding any future issues.

Kind regards

Nicky

Nicky Schmidt

Chair: Parkscape

EMAIL 2:

From: Nicky Schmidt
Sent: Monday, 18 September 2023 14:03
To: 'Johan Stassen'; 'Brian Scheepers' 'Elmonique Petersen'; Alistair Lee
Cc: 'Shane Hindley'; 'Chrisheila Arendse'; Cllr Carolynne Franklin (DA); 'Tracy Davids'; 'Jerome R Harry'; 'Gavin Bell'; 'Megan Taplin'; Abdulla Parker
Subject: RE: Flandorp Flower Farm, Orpen Road 3346-RE - water and fire concerns

Dear Johan, Brian, Elmonique and Alistair

First off, Johan thank you for facilitating the meeting with Brian, and Brian thank you for meeting with me.

Elmonique, I have requested that all slash – some of which is now overgrown with fresh vegetation - be removed from the Flandorp boundary with Lower Tokai to prevent fire risk. I have also asked if it is possible to have an 8m fire break along the Flandorp's southern perimeter to limit fire risk from the farm's activities.

I have also raised concerns about the flooding issues that arise from the heavy rains and flooding experienced this winter, particularly the heavy berm that prevents water flow onto the Flandorp

Farm, which appears to have originally been a wetland. Water that flows from the wetland in Middle Tokai pools around this berm on the western and southern side, and a watercourse flows via a culvert, under Orpen Road into what appears to be a very blocked “river made” drainage channel and, presumably, drains into the Soetvlei wetland which variously seems to fall under both TMNP and the Province.

It seems to me that all three spheres of government have a role to play – SANParks, Province and City – and I think now that the some of the relevant role players are aware of some of the issues, it will be necessary to determine a way forward that reduces flood risk, sewerage overflow (a number of the sewerage lines appear to be within the river systems), blockages in the water system etc – and that also looks at the broader hydrological issues (including earth slippage) that have arisen with increased waterflow from the mountain given the removal of both plantations and ongoing removal of invasive species. I note that the downstream erosion along the Prinskasteel river within Lower Tokai is extreme and appears to be increasing at a rapid rate - this obviously has knock-on effects still further downstream on City land.
See the attached landownership map as provided by Alistair and my previous email following on the original site meeting between Elmonique, Alistair and myself on 26/06/2023.

Elmonique, it perhaps makes sense for you to facilitate a conversation with the various role players? I leave that with you.

Kind regards

Nicky

Nicky Schmidt

Chair: Parkscape

Attachments: SANParks/City/Province land map (Figure 19)

Email 1

APPENDIX 3

Comments by Eugene Moll on the Zandvlei Estuarine Management Plan

Zandvlei

Estuarine Management Plan

2023

I am submitting my inputs, but I am not sure they will carry much weight. This because past experience with the CoCT and its treed landscape policy (or rather lack thereof), the LUW Project, and attempts to get the City into the present regarding "reed-bed" technology to treat sewage, have been nothing short of a failure. For some reason "we" are still promoting Eurocentric ideas, yet we are essentially an African city. To succeed, and make Cape Town one of the best African cities, there needs to be a huge shift away from the past and Western means.

Cities are URBAN areas where peoples' **health and well-being** must certainly trump biodiversity and traditional Town-and-Regional-Planning designs. Just to highlight this point I quote two examples.

1. Why I say "trumping biodiversity" - this is simply because of the failure by a vociferous minority to comprehend fynbos is a heathland, and that healthy heathlands only occur where plant-available nutrients are such that soil-available phosphorus is less that one part per million. In Cape Town soils are historically compromised such that conditions for healthy, self-sustaining heathlands no longer exist (aerial nutrient inputs are an additional compromising and on-going factor). Here an excellent example is the Tokai area where the rational voice of Parkscape are seemingly totally ignored by both the City and SANParks.
2. Why I say town planning designs are failing an African city is that I am aware of a survey of all spaza shops in Delft (*pers comm* Dr Leif Petersen, Sustainable Livelihoods Foundation) that showed them scattered throughout the community. But the City in its wisdom wanted a Eurocentric high-street model. Thus, stamping their Western ideas on an African community!

Now back to Zandvlei, I submit that the "estuary" **is a product of the whole catchment area** – so from the top of the mountains, through the Cape Flats, to the open waterbody of the vlei itself, that then flows out into False Bay from time to time (do please remember that historically the British fleet sought shelter from the French armada by sailing into Zandvlei).

I, therefore, submit that this exercise should mesh with the LUW project and also include TMNP, and any other stakeholders. Managing the estuary effectively means dealing with all run-off that has increased significantly with the hardened urban infrastructure, **AND with the increasing likelihood of epic evens like the recent flooding**.

What SHOULD and MUST be factored in are MUCH MORE EXTENSIVE wetland areas to slow down extreme flows and release water slowly thereafter - **AND trap slit and other rubbish that gets into the system**. (Additionally, "sumps and/or bins" need to be built into the drainage system so that silt and other accumulated rubbish can be easily removed as and when necessary).

What the City does not seem to embrace is that there are extensive, though narrow areas of land close to drainage ways, that would be ideal for growing vegetables, and/or providing shaded walkways, as is the case that is increasingly being implemented in cities globally. Then the reed beds, that clean the water, could ideally be harvested annually or biannually for the fibre - that could provide a locally, sustainable industry.

To me this is all simple, ECOLOGICAL, logic. BUT will the current leadership in the Council, and the way many of the Councillors have been brain-washed into think "biodiversity within the City", the people making the final decisions do not have that ecological knowledge/foresight? This is where politics and biodiversity brainwashing are major factors that will hamper your suggested solutions.

This is no reflection on your abilities to make radical changes, but rather "the system" is already broken so nothing much will change. Very sad!

Unless Cape Town, **an Africa city**, adopts policies that are people-centric **within the urban confines** we will be relegated to a failed city. We have a bright future only if we make radical changes now. Can this Zandvlei Estuarian Management Plan be a catalyst for such changes?

P.S. A colleague of mine, who has a passion for Cape Town's historical and cultural heritage, has looked at historical maps, that include the Westlake and Princess Kraal catchments, that show there was once a vast wetland area where today Tokai and Kirstenhof are situation.

Below my own Kirstenhof property there is a layer of sticky, clayey, podzolised soil that is probably a remnant of an old *Prionium serratum* bed. Exactly like the one indicated in Dr Clive McDowell's Houtbay River study of several decades ago.