Rediscovering Adelaide
Urban Biodiversity and Heritage

25th Annual Friends of Parks Forum
Sunnybrae Farm, South Australia
30 October – 1 November 2009

From the Lefevre Peninsula to the Patawalonga

a
Tour Guide
to the
Coastal Parks
with
Remnant Vegetation
of
Northern & Western Adelaide

Locations

Stop 1. Mutton Cove

Stop 2. Mangrove Cove

Stop 3. Tennyson Dunes

Stop 4. Patawalonga Creek

The Google Earth images at the end of each section show first, a view of the park in its regional context; and second, a close-up view of the park itself.

Environmental History of the Adelaide Coast

At the height of the last Ice Age around 20,000 years ago, global sea levels were around 120 metres lower than today. At that time the coastline was close to the edge of the continental shelf, south of Kangaroo Island. Apart from a large, shallow brackish lake to the south, most of the present day Gulf of St Vincent was a dry, limestone-floored plain where the Wakefield, Light, Torrens and Onkaparinga Rivers and other tributaries joined to form the River Vincent which flowed out through Backstairs Passage to join the River Murray, just before reaching the ocean.

By about 14,000 years ago, the rapidly melting Northern Hemisphere continental ice sheets were contributing to rising sea levels and starting to flood the Gulfs and isolating Kangaroo Island. As sea levels rose, coastal processes – driven by currents, waves and wind – concentrated sand-sized sediment at the interface between land and sea, forming coastal dune systems.

As sea levels rose further, reaching their present level around 7,000 years ago, so the coastal dunes migrated inland with them. The ancient valley of the River Torrens was blocked by dunes; its winter floodwaters pooling in a vast freshwater wetland rich in birdlife, known as the Reedbeds by the early settlers, that drained north to the Port River. To the south the Torrens overflow, swelled by the waters of the Sturt River and other smaller streams, cut the shifting Patawalonga passage through the barrier dunes.

In their lower reaches the Port River and the Patawalonga estuaries were tidal and saline; higher upstream, where the tidal salt water mingled with freshwater in a zone that moved with the seasons, the channels were lined with swamp paperbarks tolerant of these changing conditions

Wave action in the process of littoral drift also shifted sand along the beaches, over several thousand years forming a great spit that stretched ever further northwards– the Lefevre Peninsula. On its wave-washed seaward side, dunes accumulated; on its sheltered side, finer sediments were laid down as mudflats. Protected from strong wave action, mangrove forests flourished in the intertidal zone of these quieter waters. Landwards from the fringing mangroves, on the summer-baked saltflats reached by the occasional higher tides, only the salt-tolerant samphires could survive the harsh conditions.

The early settlers converted the rich alluvial soil and abundant water of the Reedbeds to fertile farmland. At first ditched and drained, the reclamation of the Reedbeds culminated during the mid-1930s with the construction of the artificial channel of Breakout Creek, to discharge the turbid winter floods directly to the sea.

The high ground of the coastal dunes provided a foundation for the settlement of the early coastal villages of Henley, Grange and Semaphore, and Brighton further south. In those early days, the winter floodwaters occasionally isolated these coastal villages from the city further inland

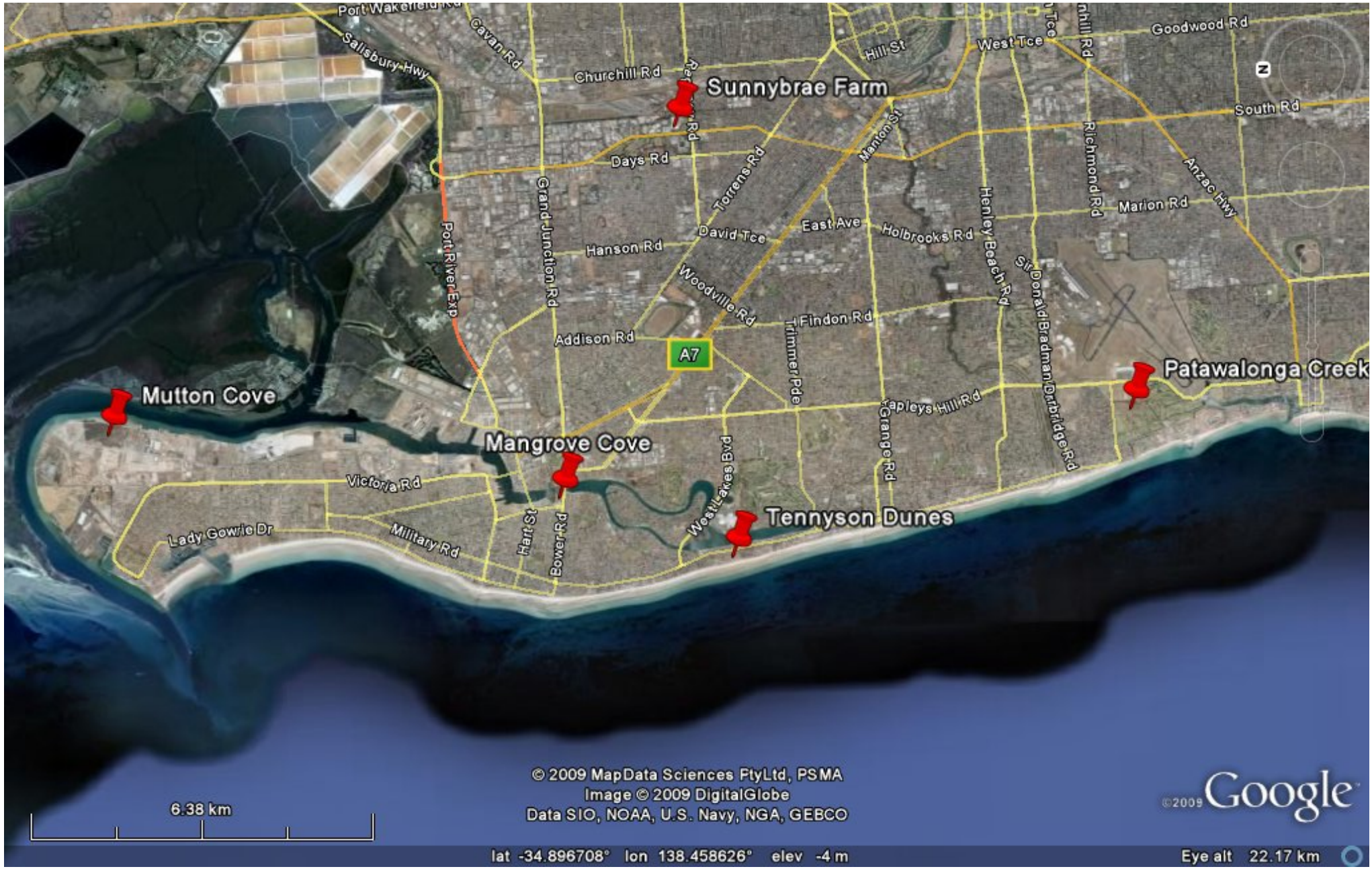
Over time, nearly all the farmland and market gardens have been converted to housing. In the 1970s a large engineering scheme transformed the upper reaches of the Port River into the West Lakes area of waterfront housing and a shopping mall.

The Port, its riverbanks and surrounding areas have long been used for heavy industry, with large areas cleared for salt pans and for rubbish dumps. The process of clearing continues with most of the remaining open land on the Lefevre Peninsula now being developed for defence-related maritime industries.

While much of the Port Estuary and its tidally inundated mangrove forests and soft mudflats is now protected and likely to remain undeveloped, in the metropolitan area there are only a few small remaining patches of land which have survived relatively unaltered, through the active lobbying, support and direct involvement of individuals and community groups.

Through their efforts these remnants survive, to tell a story of the processes that formed, and continue to form, these ever-changing lands. This tour will highlight and celebrate their efforts.

Andrew Winkler


Sunnybrae Farm
Mutton Cove
Mangrove Cove
Tennyson Dunes
Patawalonga Creek
Port Wakefield Rd
Salisbury Hwy
Cavan Rd
Churchill Rd
Hill St
West Tce
Goodwood Rd
South Rd
Days Rd
Torrens Rd
Marion St
Richmond Rd
Anzac Hwy
Marion Rd
Grand Junction Rd
Port River Expy
David Tce
East Ave
Holbrooks Rd
Henley Beach Rd
Hanson Rd
Woodville Rd
Findon Rd
Addison Rd
A7
Trimmer Pde
Sir Donald Bradman Dr
Tapleys Hill Rd
Grange Rd
Bridge Rd
Victoria Rd
Lady Gowrie Dr
Military Rd
Hart St
Bower Rd
West Lakes Blvd
6.38 km
© 2009 MapData Sciences PtyLtd, PSMA
Image © 2009 DigitalGlobe
Data SIO, NOAA, U.S. Navy, NGA, GEBCO
©2009 Google
lat -34.896708° lon 138.458626° elev -4 m
Eye alt 22.17 km

Stop 1

Mutton Cove Conservation Reserve

Text and photos adapted from notes supplied by Jason Quinn of the Coastal Management Branch of DEH.

In its early history, Mutton Cove was a deep tidal creek and some maritime industry was based there. The remains of a substantial vessel, the *Excelsior*, can still be seen at the northern extremity of the site.

An oblique aerial view of the Lefevre Peninsula in 1936, looking south.
Note the arcuate dunes on the Peninsula, indicating how it has been extending over a period of several thousand years as sand has moved northward through the process of littoral drift. Mutton Cove can just be seen, near the centre of the photograph.

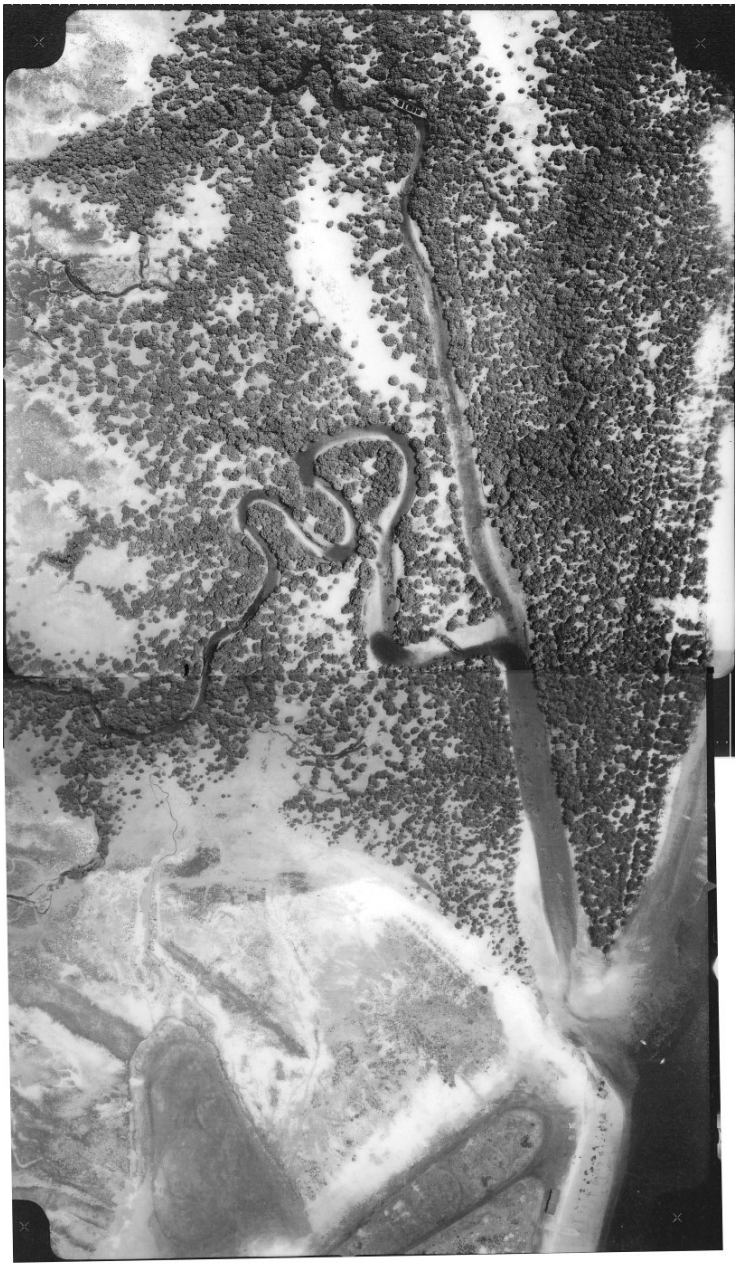
By the early 1960s, Mutton Cove and the surrounding areas had been earmarked for industrial development and work had begun on constructing the levee banks (seawalls) and raising the land height by bringing in fill. While the surrounding land continued to be raised in height through to the 1980s, Mutton Cove was luckily largely left untouched. However, the nature of the tidal creeks and vegetation had begun to change significantly as they became isolated from the Port River by the sea wall.

Local volunteers Vit and Cheryl Karnaitis became involved in caring for Mutton Cove during the 1990s, and their efforts eventually lead to major works to clean up the site and begin the process of restoration between 1998-2001.

During this period key community members together with the Port Adelaide-Enfield Council, Out Patch, Coastcare, Project Dolphin Safe, KESAB and DEH lobbied to promote the area for conservation purposes. In addition, on-ground works included rubbish removal; clearing the inlet pipes of debris and improving the tidal flow; establishing water quality monitoring sites and records; vegetation and other surveys; and the initial revegetation.

In 2002 the Coast and Marine Branch (now the Coastal Management Branch) of DEH assumed the coordinating role for environmental works at Mutton Cove. Under the supervision of Mr Sam Penney and his trusty side-kick Vit, various work took place involving earthworks, fencing, signage and vandalism repairs.

The Mutton Cove Conservation Reserve was officially opened on 24 April 2005.



1963 aerial photo of Mutton Cove

Purpose of Conservation Reserve

Mutton Cove is identified in the Commonwealth Government's *Environment Protection and Biodiversity Conservation Act* (1999), as an important migratory bird habit. The area known as Mutton Cove has been significantly degraded since European settlement. The purpose of the Mutton Cove Conservation Reserve' is to enrich, restore and conserve the last remaining biodiverse area of samphire and mangrove woodland on the Lefevre Peninsula, while encouraging ecologically sensitive uses of the area.

There are three branches of the Mutton Cove creek as shown in the aerial photos above and below. The extent of these branches obviously extended beyond the Mutton Cove Conservation Reserve boundary as it can be seen now. However, the outer limits of these branches have been blocked with earth levee banks and landfill. Currently no stormwater runoff actually enters Mutton Cove proper from the surrounding land.

Current zoning

The City of Port Adelaide-Enfield has zoned Mutton Cove as MOSS (Conservation). MOSS (Conservation) is an appropriate zoning for a conservation reserve.

Current land management

The Coastal Management Branch of the Department for Environment and Heritage is currently managing the land locally referred to as Mutton Cove, on the Lefevre Peninsula on behalf of the Minister for Environment and Conservation. The area also falls within the Adelaide Dolphin Sanctuary and thus the conservation purposes of the *Adelaide Dolphin Sanctuary Act 2005*.

A Working Group has recently been formed to coordinate future on-ground works at the site, with membership consisting of: the Department for Environment and Heritage, Coastal Management Branch and Adelaide Dolphin Sanctuary; Adelaide & Mount Lofty Ranges NRM Board; Adelaide Submarine Corp.; Friends of Mutton Cove; Defence SA and Project Dolphin Safe.

Historic vegetation

The contribution of even a small block of land (such as Mutton Cove) to conservation may be significant, particularly if the site contains rare or endangered species or habitat types. Small pockets of land often form important 'stepping-stones' for both native flora and fauna if maintained in an appropriate manner.

Aerial photography dating from 1963 (above) shows the historic vegetation of the area. In this photograph the area of the Cove appears to be an ecotone between the main mangrove forest along the foreshore and the intertidal saltmarsh and dune areas backing the mangroves. In 1963 the site contained 44–49% mangroves, 5-6% tidal creeks with the remainder of the site comprising both intertidal saltmarsh and dune ridges (45-50%). The mangroves occurred in scattered clumps, containing only a few trees interspersed with samphires and saltbush.

Shipwrecks in Mutton Cove

In the 1940s, two unwanted vessels were abandoned here in the Mutton Cove creek. While the remains of the *Excelsior* still feature prominently, the wreck of the *Jupiter* is now mostly buried in mud on the western bank. The *Excelsior* initially worked in New South Wales and Tahiti before arriving in South Australia in the early 1900s. It was owned by flour millers John Darling and Sons, and later the SA Farmers Union Cooperative. In 1933 the steamer was purchased by the SA Harbours Board and converted to a coal hulk to service the steamer dredges working in Port Adelaide. When diesel powered ships replaced coal-fired vessels, the Excelsior was laid up, and later abandoned here at Mutton Cove.


Outer Harbor
Pelican Point Rd
Victoria Rd
North Haven
Taperoo
Largs North
Osborne
Lady Gowrie Dr
Oliver Rogers Rd
Strathfield Tce
Jetty Rd
Grand Tkwy
2003 m
© 2009 MapData Sciences PtyLtd, PSMA
Image © 2009 DigitalGlobe
Data SIO, NOAA, U.S. Navy, NGA, GEBCO
©2009 Google
lat -34.795639° lon 138.494062° elev 5 m
Eye alt 6.97 km


N
Mersey Rd
© 2009 MapData Sciences Pty Ltd, PSMA
Image © 2009 DigitalGlobe
© 2009 Google
300 m
Imagery Date: Feb 10, 2008
lat -34.777444° lon 138.510193° elev 0 m
Eye alt 1.05 km

Stop 2

Mangrove Cove

From: *LMC brochure: Port Adelaide Waterfront Redevelopment Community Update, August 2008*

The boardwalk at Mangrove Cove *Photo: Lee Grigg*

Mangrove Cove may have a rich biodiversity to protect, but it also has a rich social history to share.

Before European settlement, the entire Port Adelaide region was covered with a forest of mangroves. However, the mangroves were gradually destroyed over time to make way for the Port's industrialisation and the increasing demand for an import and export centre in SA.

Today, only a small patch of mangroves remain on the upper reach of the Port River, recently named by the City of Port Adelaide Enfield as Mangrove Cove or *Patangga* (the Aboriginal word for mangrove).

The residents of Port Adelaide have played a vital role in the protection and conservation of this unique area. Some key highlights of its history are:

In 1960, the ketch *Alert* was broken up and beached in the water near Mangrove Cove. The *Alert* was built in 1872 by J & D McKay and was registered in Port Adelaide a year later by J Evans and J McLeod. This sunken ship joined other shipwrecks, including the *Trafalgar*, in the vicinity known as the Ships Graveyard.
• The *Trafalgar*, built in 1877, was brought to Port Adelaide in the 1940s by Reginald Crouch with the intention of converting it into a ketch. However, the ships weak iron frame prevented this conversion and left it beached in the Log Milling Company Area. At low tide the *Trafalgar's* remains can be seen near the Ethelton mudbank.

In July 1986, in response to a letter from the Port Adelaide Residents Environment Protection Group (PAREPG), Mangrove Cove was recognised by the National Trust of South Australia in the Significant Trees of South Australia booklet.

In the same year the PAREPG also organised a residents Working Bee to clean up the area surrounding the mangroves.

In April 1996, Chester Shultz released his CD of ambient sound recordings, titled '*Within Our Reach: A Symphony of the Port River*'. The CD was inspired by the areas surrounding the Old Port Reach, with the pelican being a key symbol.

Also in 1996, the Portside Christian School formed the Mangrove Cove Care Team, lead by School Teacher Jenny Stevens. The students were encouraged to become involved with the national water monitoring program, Waterwatch. The SA Urban Forest Biodiversity Program awarded the Portside Christian School Mangrove Cove Care Team, now under the direction of Portside School Teacher Lee Grigg, a special commendation in 1999 for its conservation work at Mangrove Cove.

It was also discovered that the area was being destroyed by bait diggers looking for worms and crabs. The students of Portside Christian School showed true passion for the area and sent a letter to both council and the Department of Environment raising the issue. It is now a prosecutable offence to dig for bait at Mangrove Cove.

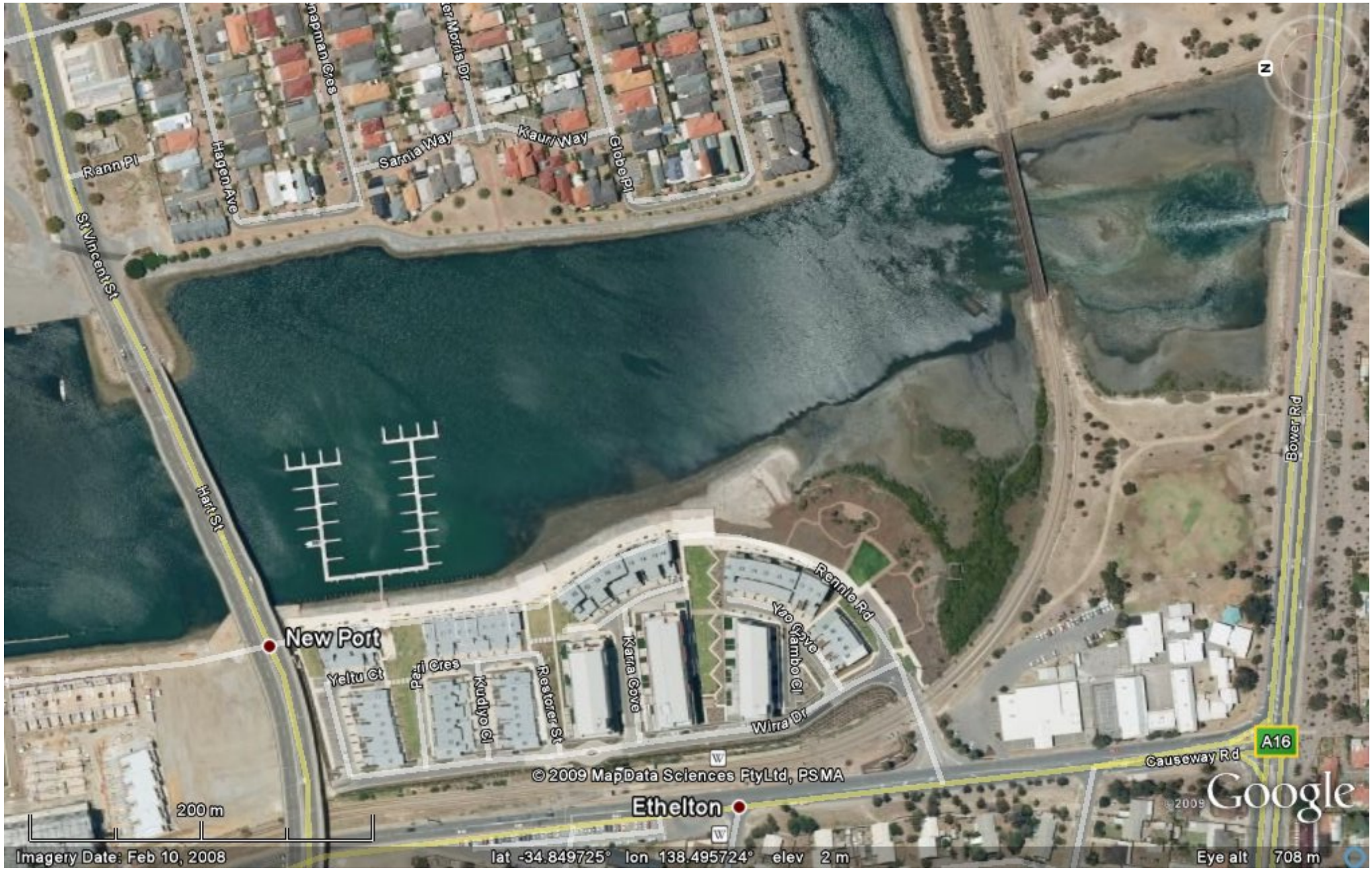
In 2003, the Kaurna Heritage Trail was launched. The trail, which consists of six sites along both sides of the Port River, contained two markers within Mangrove Cove. These markers will be upgraded and replaced in line with the upgrade of the park. The markers highlighted the Kaurna people's use of the area as a food source and also the use of nearby reeds for weaving.

In 2005, LMC commissioned Peri Coleman and Renae Eden of Delta Environmental Consulting, and, in consultation with key stakeholders, researched and developed an Environmental Management Plan designed to protect Mangrove Cove's rich and unique biodiversity. The implementation and ongoing review of the Management Plan will ensure the area maintains its biodiversity and is managed sustainably into the future.

Dr Peter McQuillan, Senior Lecturer at the University of Tasmania, discovered that some moths living in amongst the mangroves had not been seen on the Lefevre Peninsula for the past 40 years, and several were undiscovered species.

The area was declared an Aboriginal Site pursuant to the *Aboriginal Heritage Act* in December 2006, in recognition of the Kaurna people's strong connection with this land.

Students from Portside Christian School at Mangrove Cove. *Photo: Lee Grigg*


Rann Pl
Hagen Ave
Chapman Cres
Sarnia Way
Kauri Way
Globe Pl
St Vincent St
Hart St
Bower Rd
Rennie Rd
Yao Cove
Yambo Cl
Karra Cove
Restorer St
Kurdiyo Cl
Yeltu Ct
Wirra Dr
Causeway Rd
A16
New Port
Ethelton
© 2009 MapData Sciences PtyLtd, PSMA
200 m
Google
Imagery Date: Feb 10, 2008
lat -34.849725° lon 138.495724° elev 2 m
Eye alt 708 m


N
Rennie Rd
Yao Cove
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80 m
© 2009 MapData Sciences PtyLtd, PSMA
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Stop 3

Tennyson Dunes - *Yaitya Worra*

Text adapted from brochure: *Tennyson Dunes - Yaitya Worra: too good to lose*, by Mel Rees

Looking southwest from the viewing platform at Tennyson Dunes *Photo: Andrew Winkler*

The eleven hectare remnant Tennyson Dunes span almost a kilometre of the foreshore, and are the highest along the metropolitan coast.

Given the name "*Yaitya Worra*" ("original sand") by the Kaurna Warra Pintyandi the dunes would once have provided food and resources for the Kaurna people, but little of this indigenous history has been documented.

The dunes are now in public ownership as a result of a concerted public campaign in the mid 1970s to retain a section of the coastal dune system that once existed along the 30 kilometres of the coastline of the Adelaide Plains.

The Tennyson Dunes surround Estcourt House, built in the 1880s by Frederick Estcourt Bucknall, who had an impractical and unrealised vision for a harbour and canal to link the sea and Port Creek at this locality. From the 1890s to 1995 this locally historic building was owned by the State Government and used as a respite for incapacitated children; it is now in private ownership.

Most of Adelaide's original dune system has been extensively developed and modified and now the Tennyson Dunes are the only remaining intact example of the coastal system that once spanned the Adelaide Plains coastline.

They provide an open space and an opportunity for community enjoyment of the natural diversity and the sandy beaches in a sustainable manner. With the onset of climate change, the wide vegetated dunes will provide a natural buffer to protect the Adelaide Plains and our beaches during storm surges.

They are also significant biologically, providing an essential refuge for wildlife. The site contains several floristic groups and three distinct vegetation zones parallel to the coast. About 49 native species of plants can be found here, thirteen of which have a conservation status for the Southern Lofty Region. Several other plants, once common along the Adelaide coastline, now only exist at Tennyson.

The dunes provide habitat for Painted Dragons, Bearded Dragons, Sleepy Lizards, Marbled Geckos, Legless Lizards, while the birdlife includes Nankeen Kestrels, Singing Honeyeaters, Willie Wagtails and Welcome Swallows. On the foreshore, Stints, Terns, Hooded Plovers, Pacific Gulls, and Silvereyes can often be seen.

The Tennyson Dunes exist as an island amidst urban development and consequently face many human- induced threats. These include weeds (often as a result of garden escapes), feral rabbits, cats and foxes, and disturbance by uncontrolled domestic dogs. Humans also impact the dunes directly through straying from established paths and littering.

Community involvement with the site occurs through the Tennyson Dunes Group, which is committed to the protection of the area through environmental rehabilitation, plant propagation, ecological research, monitoring and community education. The local Kiwani volunteers also provide invaluable assistance in maintaining walkways and fences, and litter removal.

Due to their unique and diverse wildlife the Tennyson Dunes are often used as an educational resource for schools and a focal point for the wider community. More information on the dunes' protection, ecology and upcoming events is available on the Tennyson Dunes website.

www.tennyson.org.au

An Open Day at Tennyson Dunes *Photo: Andrew Winkler*


Frederick Rd
West Lakes
West Lakes Blvd
Trimmer Pde
Tennyson
Lakeside Ct
Sunlake Pl
Military Rd
Bartley Tce
West Lakes Shore
© 2009 MapData Sciences PtyLtd, PSMA
Image © 2009 DigitalGlobe
1000 m
©2009 Google
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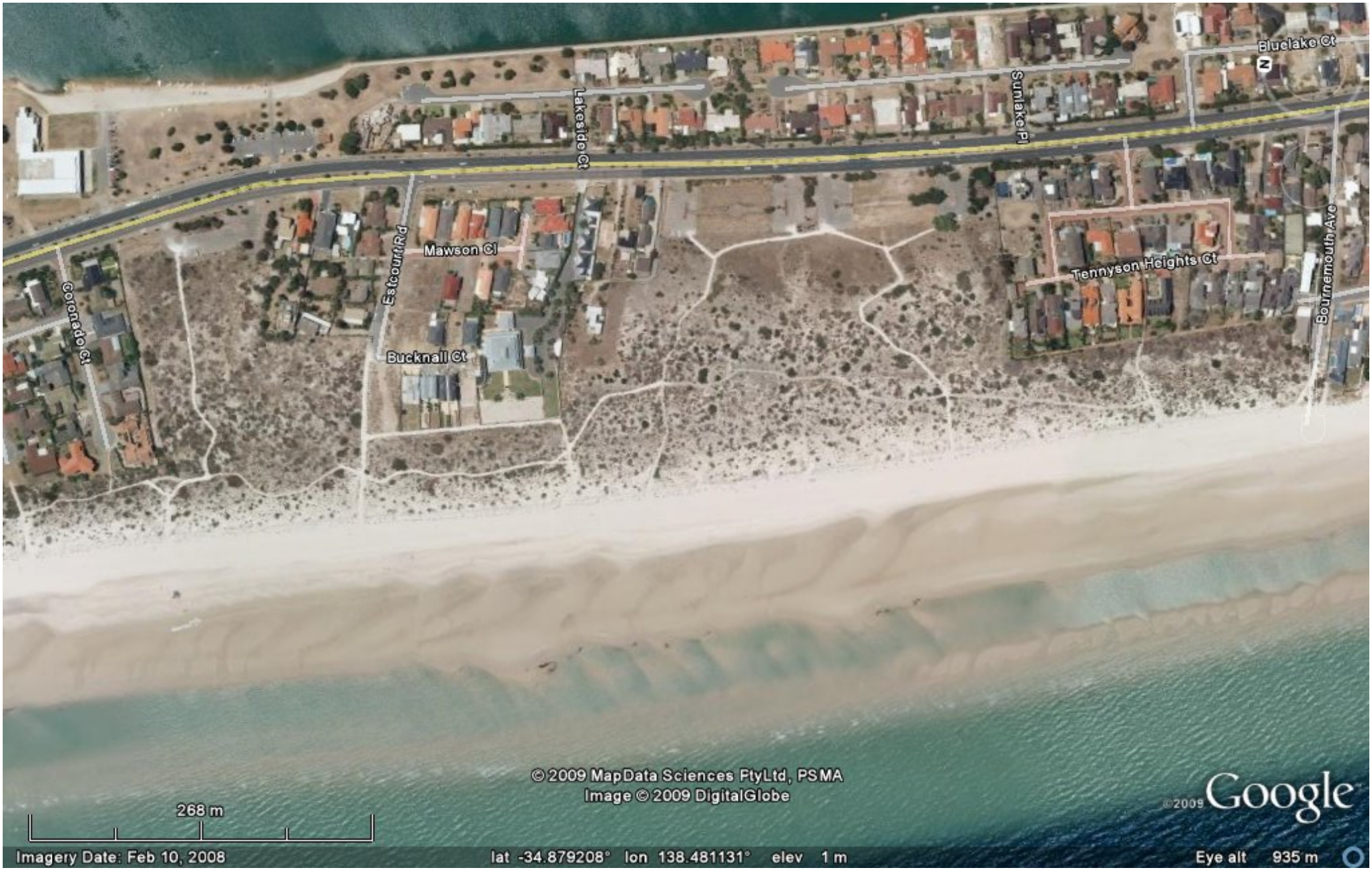
Eye alt 3.49 km


Lakeside Ct
Sunlake Pl
Bluelake Ct
Mawson Ct
Estcourt Rd
Tennyson Heights Ct
Bournemouth Ave
Coronado Ct
Bucknall Ct
© 2009 MapData Sciences PtyLtd, PSMA
Image © 2009 DigitalGlobe
268 m
©2009 Google
Imagery Date: Feb 10, 2008
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Eye alt 935 m

Stop 4

Patawalonga Creek

Text and photos: Andrew Winkler

'The Reedbeds' **c. 1890 watercolour by James Ashton, from the White collection**

The original Patawalonga Creek was an overflow channel from the former Reedbeds through which winter floodwaters passed into the Patawalonga estuary. It remained under tidal influence until the installation of the lock gates at the mouth of the Patawalonga Lake in about 1960. The Creek is still an important channel for urban stormwater, draining a large part of the City of West Torrens.

Much of the surrounding land was originally held by the prominent pioneer settler, pastoralist and politician W.H. Grey, who drained the area and established a large farm. On his death the land was divided amongst his four sons and later gradually subdivided and developed for housing.

Uses of the land adjacent to the Creek included a small golf course and a rubbish dump. When construction of the Adelaide Airport began in the late 1940s, land was set aside for a third runway, parallel to the main NE-SW runway, giving a *defacto* form of protection for the remnant Creek area, although a channel was cut through the Creek's meanders to speed stormwater flow in about 1990.

When the Holdfast Shores development at Glenelg was being carried out in the early-mid-1990s, a series of large silt ponds was created adjacent to the Creek on its eastern side to accommodate silt and sludge pumped from the bottom of the Patawalonga Lake. At the same time, for public safety, a chain link fence was erected on the western side of the Creek. Thus the combination of the western bund of the silt ponds on its eastern side, and the fence to the west, created an enclosed area, which was later to become the Patawalonga Creek Conservation Zone

I first came across the area in the mid-1990s while working on an Honours thesis, finding a reference which indicated the presence of acid sulphate soils in the Creek area. Seeing the remnant vegetation, in 1998 I set about drawing together a group of like-minded people which became the Friends of Patawalonga Creek, a group set up under the *Our Patch* scheme of the then Patawalonga Catchment Water Management Board.

This occurred as the Airport was becoming privatised, coming under the management of Adelaide Airport Ltd. AAL's Environment Manager chairs the Patawalonga Creek Steering Committee, which meets biannually to coordinate the activities of the various groups now involved with the site.

The stand of Swamp Paperbarks at Patawalonga Creek.

These meetings include project officers from KESAB '*Waterwatch*' '*Our Patch*', the Urban Forest Biodiversity Program, the City of West Torrens, Community Volunteers Australia and the West Beach Trust. The main public activity is National Tree Day, which has seen through corporate volunteering, upwards of 120 people undertaking planting activities. Through KESAB, a number of schools also take part in the School Tree Day event, under the supervision of students from Immanuel College's Gifted and Talented program, who also created a brochure to publicise the site.

In 2006 the remnant stand of Swamp Paperbarks (*Melaleuca halmaturorum*) was given the highest (*Classified*) rating on the National Trust of SA's *Register of Significant Trees.*

Through the activities of FoPC and CVA some of the most troublesome weeds (thistles, boxthorns and currently salvation jane) are being eradicated over the whole site, while selective weeding is carried out on revegetated areas.

The silt ponds were finally removed over a year ago and this year's National Tree Day saw the start of a program which eventually saw the establishment of around 12,000 plants in an extension to the Conservation Zone on the eastern side of the Creek.

FoPC members also carry out the annual Clean Up Australia Day activity on the site; carried out a Fauna Survey; undertaken educational activities through holding Curry Nights with guest speakers. One of these lead to the formation of the Friends of Gulf St Vincent group. In 2009, FoPC was recognised with an Environment Day Award by the City of West Torrens.

Through the funds raised by the Curry Nights, FoPC made a substantial contribution to the erection of a signage shelter earlier this year, while AAL has recognised the 10th anniversary of the group by laying on a water supply. Signage to be installed in the shelter is currently being designed through AAL.

Another resource created by AAL is a herbarium covering Adelaide and Parafield Airports as well as Patawalonga Creek which is available as a PDF file on CD-ROM (together with a copy of FoPC's Fauna Survey).

The FoPC website can be found at:

http://www.chariot.net.au/~littoral/pat-ck/fopc/index.htm


Glenelg North
Anzac Hwy
Tapleys Hill Rd
Military Rd
West Beach
West Beach Rd
1200 m
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Image © 2009 DigitalGlobe
©2009 Google
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Eye alt 4.19 km


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©2009 Google
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Kraehenbuehl, D.N. (1996): *Pre-European Vegetation of Adelaide: a survey from the Gawler River to Hallett Cove*, Nature Conservation Society of SA Inc., Adelaide.