

Fact sheet | Urunga Wetlands

The Urunga Wetlands site is now a valuable community space following a \$10 million program of extensive remediation and parkland work. It has been transformed from a once barren wasteland to a lively wetland habitat.

Timber boardwalk over Urunga Wetlands

A great destination for locals and visitors to the region, the site has a 150 metre boardwalk allowing people to walk over the wetland and a 450 metre walking track surrounding the park.

The remediation effort has resulted in a significant improvement to the water quality of the wetland and a recovery in habitat for wildlife.

How it began

In 1969, Broken Hill Antimony Pty Ltd established an antimony processing plant on the site. It was located at Hillside Drive, Urunga between the Pacific Highway and a state significant wetland, now known as Urunga Wetlands.

The processing plant was used for extracting heavy metal antimony from its ore, stibnite.

Antimony trioxide is commonly used in flame retardants, metal alloys, plastics and increasingly electronics.

The ore was initially sourced from nearby Newry State Forest but later much of it came from Wild Cattle Creek in Dorrigo.

After the ore was delivered to the site, it was crushed and the antimony removed using complex chemical reagents and equipment.

Although the processing produced an estimated 400 tonnes of product, it generated 16,000 tonnes

of waste. The tailings were not properly managed, which resulted in the wetland being subjected to a spreading plume of waste.

The antimony processing plant employed local people to operate the machinery and bag the product but in 1974 the plant was abandoned.

No clean-up or remediation was done, and the site was eventually sold to a private owner.



The old antimony processing plant (circa 1980)

The effects of processing

The antimony processing required large volumes of water, which was released after use onto the adjoining wetland foreshore.

These waste tailings were rich in heavy metals including antimony, arsenic, lead and reagent residues of cyanide and cresylic acid.

A combination of soluble leachate and insoluble sediments impacted the wetland causing large-scale die back of the swamp paperbark (*Melaleuca quinquenervia*) and damage to the habitat of the wetland for birds, plants and fish.

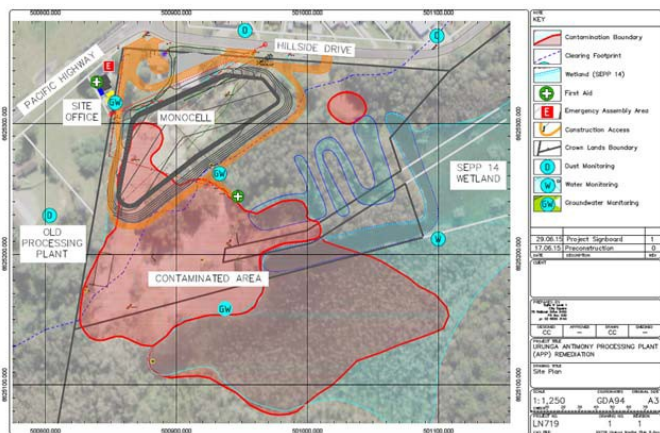
Following long-standing concern by the community, environmentalists and Bellingen Shire Council, the Environmental Protection Authority declared this a remediation site in 2002.

The owner was unable to fund the remediation work required so ownership of the site was transferred to the NSW Government as Crown land. In 2011 a remediation order was placed on the site.

The \$10 million remediation effort began with funding from the Derelict Mines Committee (\$2.3 million) and the Environmental Trust (\$700,000), with the balance coming from NSW Department of Industry, Lands & Forestry.

The NSW Soil Conservation Service was engaged by the Department to manage the remediation project.

Remediation options



Site plan showing the contaminated area

A two year investigation was undertaken with the assistance of GHD Pty Ltd. The investigation was required to understand the type of contamination affecting the site so that the best remediation options could be developed.

The recommended option approved by the Environmental Protection Authority involved excavating the site, treating the contaminated material and then placing it in a specially engineered containment cell that was to be covered and revegetated.

A remediation action plan and a supporting environmental impact statement provided the detailed steps needed to implement this option.

Approval for the remediation was granted by NSW Department of Planning & Environment in May 2015. The on-ground works began in July 2015.

Under the grassy mound

Managing the contaminated soils and sediment from the site was a critical component of the successful remediation.

Only a grassy mound now indicates where the containment cell is located, but beneath that surface is an engineered structure with 15 different layers.

The containment cell was designed for a 100 year life. It functions by separating the treated waste from all water streams, including surface waters and groundwater.

The structure is fitted with a leachate collection layer. It has an access pipe to facilitate monitoring and sampling and also allows for leachate removal if required.

The remediation work

The remediation required specialist machinery and equipment to undertake the complex work.

To clear the site special excavators were used to make sure that during removal and processing trees had no contact with the contaminated ground.

A water quality contractor used a pioneering method of treating and discharging large amounts of contaminated water so that it was clean enough to be discharged into the wetland before the excavation of the underlying sediments.



The base of the containment cell during construction (2016)

Around four hectares of land needed excavation. Half of the land was in the wetland and half on dry land. A total of 36,400 tonnes of contaminated soils and sediments was removed.

This material was stockpiled and then treated with chemicals to stabilise the waste before disposing of it in an engineered containment cell constructed on-site.

A total of 224 tonnes of antimony, arsenic, lead and mercury was removed from the environment.



Installing a sheet pile wall to hold back the wetland water

It took 16 months to complete this technically complex project.

The project's core team of 20 workers endured tough conditions, working in body suits and full face masks while continuing to wear typical construction personal protective equipment through all seasons.

In addition, this important project also used over 250 businesses and employed more than 150 local people.

The project team expertly managed significant technical challenges during the remediation works. This included two flood events, finding unexpected contaminants of asbestos and odorous cresylic acid, difficulties in accessing the wetland floor, and meeting the treatment requirements on the highly variable contaminated waste.

Some areas of the submerged wetland area were not completely remediated due to access difficulties and to avoid disrupting naturally recovering habitat areas. These areas are subjected to regular monitoring and restricted aquatic access.

The professionalism and expertise of the team was confirmed by post-remediation validation conducted by consultants in October 2016 to determine the suitability for open space recreation.

The validation for public open space was successful and allowed the site to be developed into parkland with infrastructure that includes a 450 metre sealed footpath and 150 metre boardwalk out over the wetland.

The site was opened to the public in May 2017. The wetlands is managed in perpetuity under an Environmental Management Plan (EMP) by the Department of Planning Industry & Environment, Crown Lands.

Swimming and canoeing

Although the Urunga Wetlands are open to the public for recreation, visitors are encouraged to stay on the paths to avoid disturbing wildlife and allow the vegetation to establish.

As the water in the wetland will be monitored over the coming years to assess improvements since remediation, visitors are advised to refrain from swimming and boating in the wetland.



A view of Urunga Wetland

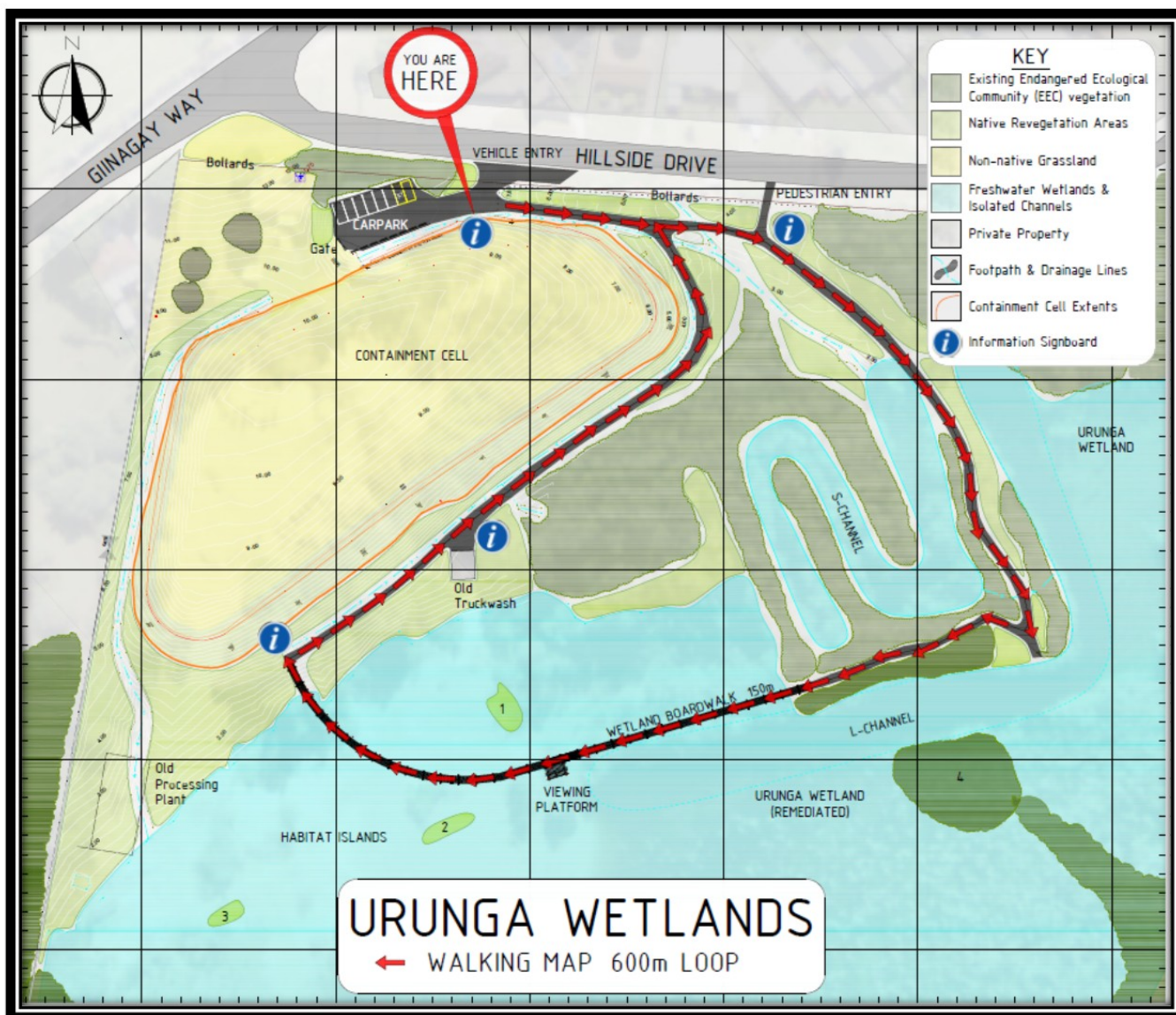
More information

For general enquiries:

- contact Department of Planning Industry & Environment, on 1300 886 235 or www.crownland.nsw.gov.au

For health-related questions:

- contact North Coast Public Health on 1300 066 055



Walking trail around Urunga Wetlands

The walking trail around Urunga Wetlands takes you in a 600 metre circuit from the carpark, down to the water's edge and across the boardwalk back up past the containment cell, which looks like a grassy mound.

The wetland is increasingly becoming a destination for bird watchers. Some of the birds you can expect to see are shown below.



A Purple Swamp Hen
(photo by Lew Witten)



A Black-necked Stork
(photo by Terry Evans)



Black Swans
(photo by Lew Witten)

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