



Long Point and The Grange Wetland Restoration Field Day #2

11th May 2023

Field Day Handout

Overview of the 'Improving the Ecological Character of the Moulting Lagoon and Apsley Marshes Ramsar Sites' Project

Moulting Lagoon and Apsley Marshes are two of four internationally important Ramsar wetlands in the southern region of Tasmania. NRM South has been supporting restoration works at these sites for almost 20 years. Over the past two and a half years NRM South, landholders and project partners (NGT, TLC, University of Tasmania, Tasmanian Aboriginal Centre, Tasmanian Parks & Wildlife Service) have worked together to restore and reduce threats to these important wetlands through the implementation of priority actions. By the end of the project (June 2023), NRM South and project partners will have completed 67 ha of native revegetation; 12 km of fencing that will protect 598 ha from stock and vehicles; weed control work across 680 ha; realignment and strategic hardening of 1 km of existing foreshore track; and restoration of natural water flows to approximately 114 ha of existing and potential saltmarsh. Although the project is now in its final months, Moulting Lagoon and Apsley Marshes remain a priority for future action and investment, as identified in NRM South's 2030 Strategy.

Background to Hydrological Restoration at The Grange and Long Point

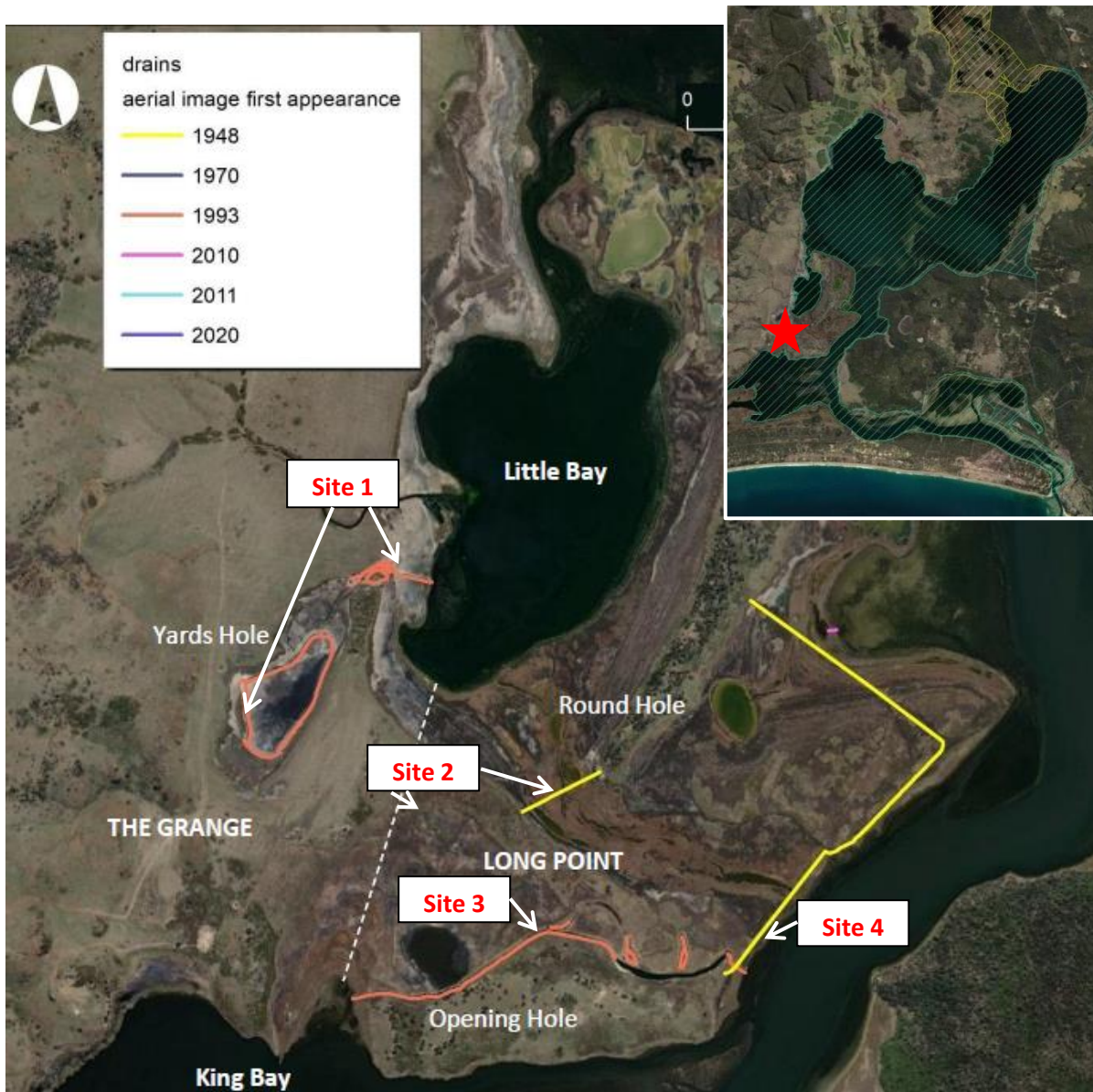
In 2021, NGT was engaged by NRM South to undertake an independent eco-hydrological assessment of Moulting Lagoon and adjacent saltmarsh, and commence restoration works at Long Point and The Grange.

A Hydrological Restoration Plan was developed for these properties in February 2022 and was used to guide the physical restoration works. The first phase of on-ground works commenced in March 2022 and the remainder took place in February-March 2023.

The goal of the remedial works was to reinstate the natural landform (i.e. to reinstate physical conditions more closely resembling the natural surface profile and elevation gradient where it had been artificially modified) to allow for:

- a) the recovery of the natural hydrological regime across the site, and
- b) the re-establishment and recovery of saltmarsh and fringing wetland communities on the remediated ground.

This handout contains background information on each of the sites we anticipate visiting during the field day. Whilst it focuses on NGT's eco-hydrological restoration activities, TLC will provide more informal content on the day regarding weed management, revegetation and the Wild Tracker program.



Site map – Long Point and The Grange. Greater Moulting Lagoon (inset).

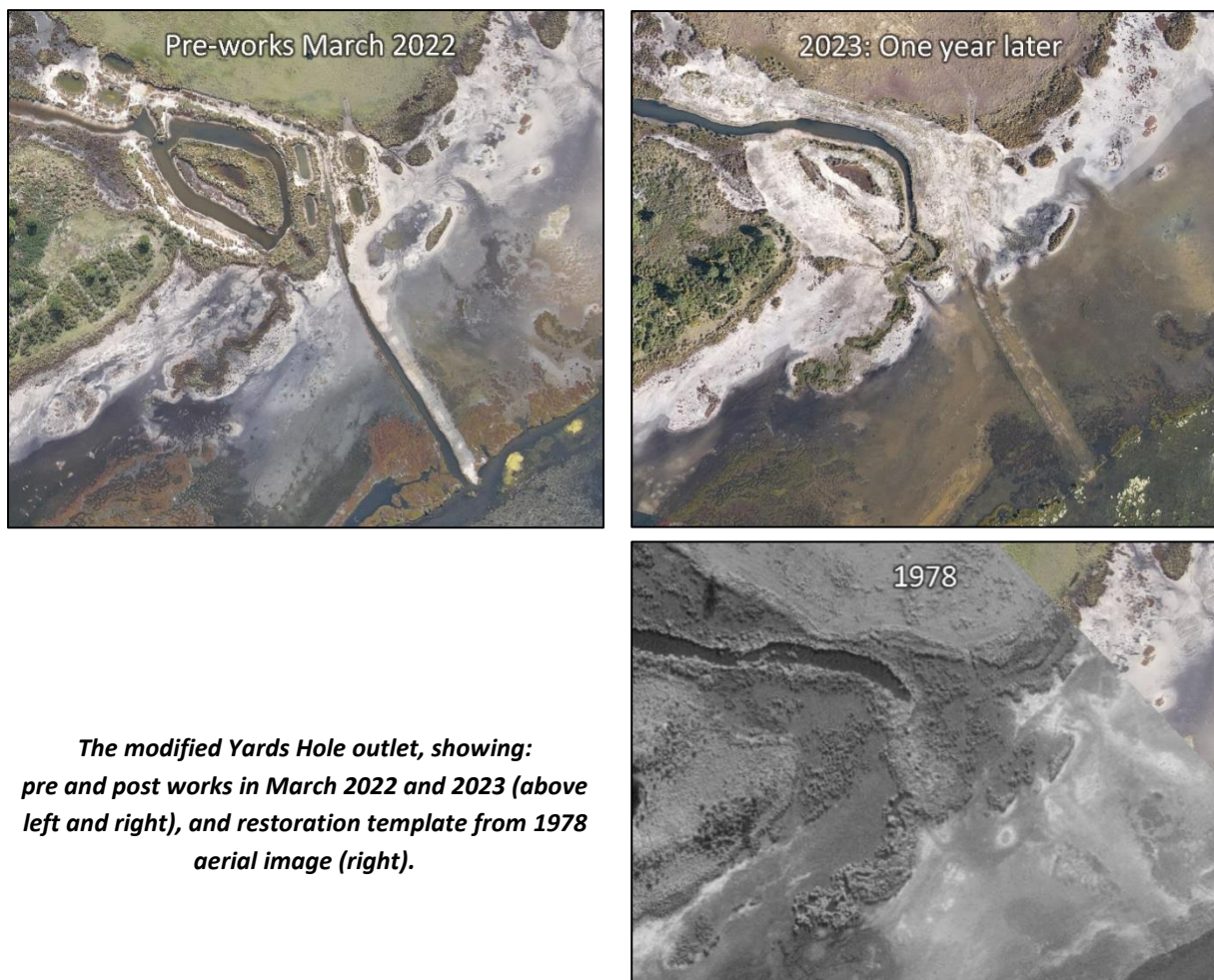
THE GRANGE

The Grange is a working farm (vineyards and grazing) with some areas set aside for conservation. Yards Hole, our focal area for works adjacent to Moulting Lagoon, had undergone changes to its water regime and physical form as a result of a failed aquaculture development by a company called Zotech Research, which occurred in the 1990s.

Zotech Research used sites on both properties in an attempt to develop techniques for the commercial production of zooplankton to culture whitebait, as a replacement for wild harvested fish meal. As part of this venture, a ‘moat’ was effectively constructed around Yards Hole, creating a zone of deeper permanent water within an artificial channel around the wetland margin and increasing the capacity of the wetland. Several small, deep ponds were also constructed to the north of the wetland and a deeper connecting channel was cut directly to Moulting Lagoon, to increase connectivity of tidal flows between Yards Hole and Little Bay.

Site 1a. Yards Hole Outlet Restoration

The natural outlet from Yards Hole to Moulting Lagoon and surrounding area was significantly modified in the 1990s during the development of the unrealised aquaculture project. As shown below, restoration works were undertaken at this site in March 2022. The aerial images from 1948 and 1978 were used as a template for restoration, which aimed to restore the natural geomorphology and therefore hydrology of the site.



Site 1b. Yards Hole Perimeter Restoration

The historic aquaculture works also resulted in the entire perimeter of Yards Hole being modified with the construction of a deep channel which, in turn, left a steep artificial bank and a large spoil heap the whole way around the wetland margin.

Bulk earthworks created this major change in the 1990s and were now also required to reverse that impact. The works undertaken in March 2022 redistributed the large spoil bank back into its former location within the artificial channel around the wetland edge, a zone where this material will slowly compact and settle to form a reinstated bank slope with a gentler gradient. This will provide fresh opportunities for fringing saltmarsh and sedgeland vegetation to re-establish in this ecotone (vegetation transition zone), as was already witnessed during March 2023 follow-up works.

The dark colour of the original surface level which has been re-exposed through the removal of the spoil heap provided a clear visual guide for the contractors to determine the natural contours and elevation of the surface during works.



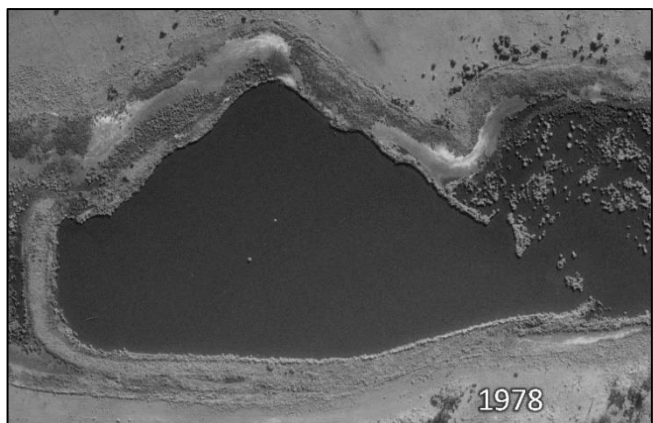
Modified perimeter of Yards Hole showing the eastern bank before (left) and after (right) remediation March 2022 and recovery one year on in March 2023.

Whilst we were unable to manually compact the remediated margin of redistributed spoil material effectively in 2022 or 2023 due to the water level, we expect this bank zone to continue to naturally settle and compact over time in response to rain and inundation events. As seen above, the wetland edges are gradually compacting over time and saltmarsh and fringing grassland communities have already started to recolonise the new surface.

There was a small section of bank on the northern margin of Yards Hole left in 2022 that was remediated in March 2023, which gave us time to assess a rare species of saltmarsh growing in that area, *Wilsonia rotundifolia*, before determining the best approach for continuing works.



Completed restoration works around the margins of Yards Hole (pre and post works) with 1978 image as a restoration template.



LONG POINT RESERVE

Long Point Reserve is a 386-hectare low-lying peninsula located east of The Grange, adjacent to the south-western portion of Moulting Lagoon. Long Point has been owned and managed as a protected area for nature conservation by the Tasmanian Land Conservancy (TLC) since 2005. Prior to that date, Long Point was part of the neighbouring pastoral property The Grange.

Wetlands on Long Point have also been impacted by the aquaculture works which were undertaken in the 1990s (see Site 3 information). However, Long Point had a legacy of extensive modification to natural drainage and inundation patterns prior to this. The significant (> 2 km) network of levees was built by convict labourers in the early to mid-1800s.

Site 2a. Small Dam near Entrance Gate

Based on discussions with TLC staff regarding the various artificial dams at Long Point, the decision was made to remediate the small brackish dam near the entrance gate. All other dams were left in their current condition to provide drinking water and habitat for fauna.



Looking south across the site where a small dam was situated by the TLC entry gate to the Long Point Reserve, before and after works in March 2023.

Site 2b. Western levee

The small (300m) western levee was likely built in the early to mid-1800s as part of the early colonial attempts to modify site drainage to benefit livestock grazing by reducing the area subject to inundation. The levee intersects a floodway connecting Little Bay to Moulting Lagoon, across the low-lying southern saltmarsh area of Long Point.

Whilst the bank of this levee had already been breached and/or washed away in some places, the opportunity to remove the residual bank entirely presented itself in March 2023, due to drier conditions to those experienced in March 2022. The remaining spoil material was arranged into a series of backfilled sections to achieve our hydrological objectives (removing any impediment to lateral flow across natural surface) while also providing areas for potential saltmarsh re-establishment, as shown over the page.



Looking north towards Long Point along the shorter (western) levee before and after the completion of remedial works in autumn 2023 (left). Right shows a close-up view of the way the spoil was arranged to prevent the channel from flowing in future and allow some saltmarsh re-establishment near natural surface.

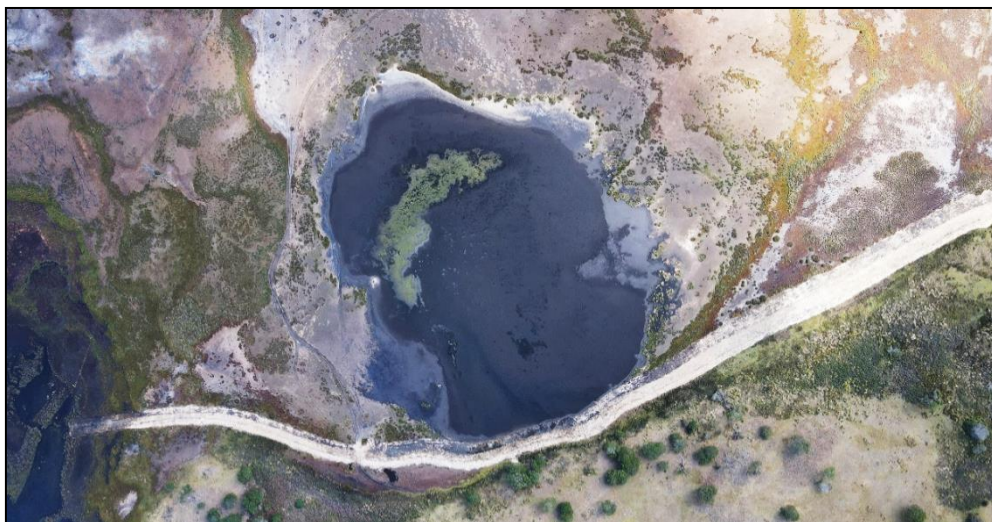
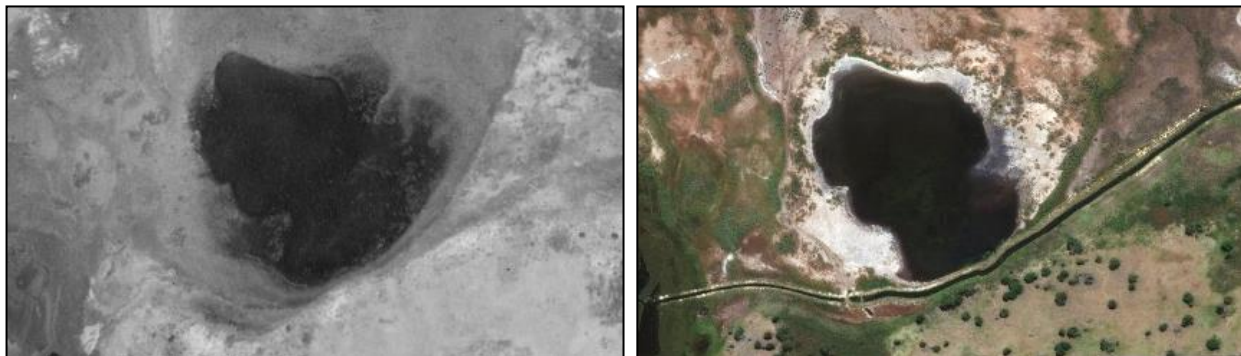
Site 3. Barkstand Channel and Drainage Features

Barkstand gets its name from an industrial phase when black wattle bark was harvested for the Swansea bark mill in the late 1800s, through until the 1930s. This elevated area of dolerite is now completely cut-off from the rest of the property by a channel which was constructed as part of the aquaculture works undertaken in the 1990s.

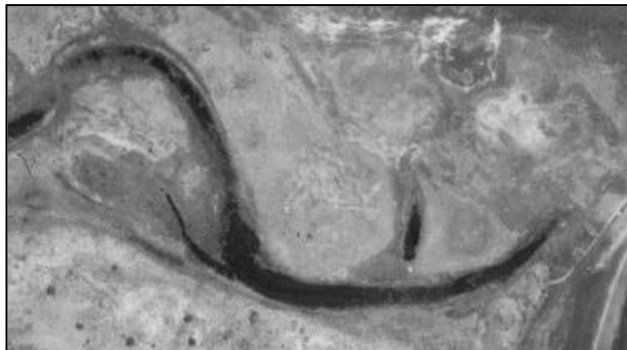
This artificial channel has extended and deepened a natural shallow watercourse and several other smaller depressions were connected to it via the aquaculture works. The water regime of all of these features had been artificially altered. It is likely that the channel is also intercepting shallow groundwater flow or seepage from the higher Barkstand Point onto the lower saltmarsh areas.

The water regime of Opening Hole may now align more closely with the tidal regime within the greater Moulting Lagoon than previously. Preliminary hydrological analysis also suggests that this wetland is now regulated at 0.4 m AHD until it dries internally from seepage and/or evaporation.

Bulk earthworks, similar to those undertaken at Yards Hole, were undertaken at this site in March 2023 and aimed to restore the channel and associated drainage areas to their original topographic form. The 1948 aerial image was used to guide on-ground works as a remediation template. Remediation of this site involved disconnecting the channel from Moulting Lagoon and remediating the adjacent saltmarsh surface.



The western end of the Barkstand channel: unaltered in 1948 (top left), with aquaculture works in place in 2020 (top right) and after saltmarsh remediation works in 2023 (below).



The eastern end of the Barkstand channel: unaltered in 1948 (top left), with aquaculture works in place in 2020 (top right) and after saltmarsh remediation works in 2023 (below).

Site 4. Main Eastern (L-shaped) Levee Restoration

The main L-shaped (eastern) levee and adjacent drain have not only compromised the saltmarsh habitat along its length by creating a disturbance footprint with an altered elevation profile, but the levee system appears to be having an ongoing impact on contemporary hydrology and saltmarsh condition, including flood flows, attenuation, and natural drainage across the saltmarsh.

We collected evidence that indicates the levees were still impeding the movement of water (north-eastern arm) and altering the mixing of fresh and saline water (south-eastern arm) across the eastern area of Long Point, despite these banks being breached in many places. This is due to the substantial impact that any barriers to flow can have in tidal saltmarsh communities, where the extremely flat terrain, combined with the low-energy and temporary nature of tides, prevents efficient equalisation of water levels either side of such barriers, even if breached at some locations.

The entire 'L-shaped' levee and associated drains were backfilled in March 2023. Due to wet conditions experienced in March 2022, restoration works were only completed at the southern end of the eastern levee, south of the floodway in that first year of works.



Long Point drainage/levee disturbance footprints (marked in pink). Hatched area represents an additional 80-hectare zone that was hydrologically impacted by the construction of the western levee and longer eastern (L-shaped) levee in the 1800s.

The work required along this levee bank was more sensitive in nature than the bulk earthworks at Yards Hole and Barkstand and needed to occur within a narrower disturbance footprint due to the smaller scale of these hand-excavated banks and voids. As a result, earthwork was undertaken with a much smaller and lighter excavator, with rubber tracks, to minimise disturbance. Note that the present-day disturbance, as part of the remediation process, is limited to the narrow, original disturbance footprint.



Looking east from Long Point along the main L-shaped (eastern) levee in 2021 (above) and after the completion of remedial works in autumn 2023 (right).

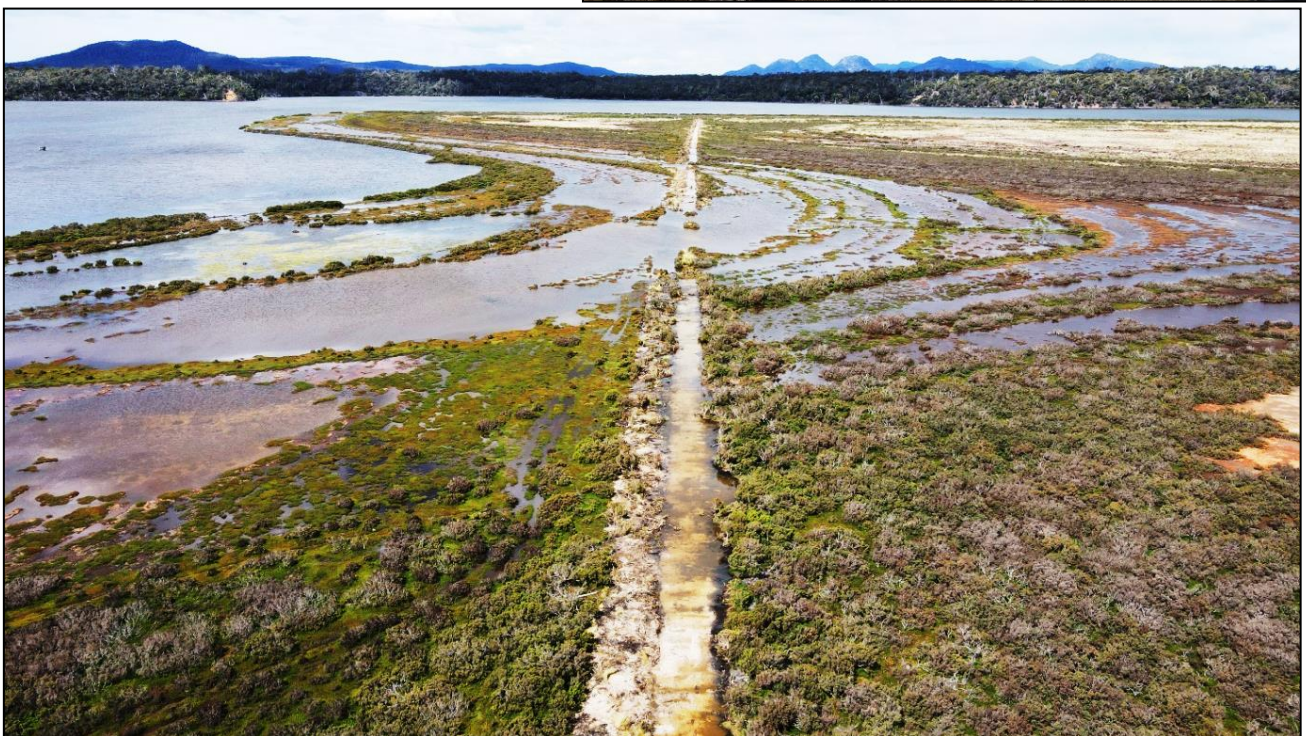
As we were finishing off the works in early March 2023 and preparing to leave the site, recent, flood flows in the Apsley River, pushed up water levels in Moulting Lagoon – inundating ground upon which we had excavators working only days earlier.

This was an incredibly interesting thing to witness so soon after the works, as we could see the rising water level beginning to seamlessly equalise, pushing flows through the saltmarsh in places where the levee bank had been in place only a few days earlier, validating the efficacy of the works.



Looking south at two points along the main (eastern) levee on the 9th March 2023.

Above is an area which was remediated only a few days earlier, with Moulting Lagoon floodwaters breaching the position of the former levee bank for the first time at this location. Right shows the same process underway at a site where a portion of the levee was removed a year earlier.



Looking east along the main (eastern) levee on the 8th March 2023, which was remediated only a few days earlier, with Moulting Lagoon floodwaters equalising in the saltmarsh area north of Round Hole.

SUMMARY

In addition to the large existing saltmarsh areas that will benefit from an improved hydrological regime (through restored connectivity of flows with Moulting Lagoon), a further **9.35 hectares** of land (the remediation works footprint) is now available for saltmarsh regeneration.

To see the breakdown of this total area by works location, please refer to the table right and the image below.

Remediation Works	Area (Ha)
Barkstand artificial channel	4.62
Eastern (long) levee	1.30
Yards Hole	3.10
TLC Gate Dam	0.10
Eastern (short) levee	0.22
1990s drain cutting	0.01
TOTAL	9.35



Thank you for your ongoing interest in this project and attendance at the field day(s). If you have any questions, further information to share, or an interest in similar eco-hydrological restoration works being implemented elsewhere in Tasmania, please send us an email, or give one of us a call.

NGT (Wetland Restoration Specialists):

Bec Sheldon: 0407 471 453
bec.sheldon@natureglenelg.org.au

Mark Bachmann: 0421 97 8181
mark.bachmann@natureglenelg.org.au

TLC (Long Point Reserve owner):

Elise Jeffery: 0404 800 345
EJeffery@tasland.org.au

NRM South (Project Administration):

Laurel McGinnity: 0447 241 941
lmcginnity@nrmsouth.org.au

This important work is supported by NRM South, with funding provided via the Australian Government's National Landcare Program.



National
Landcare
Program

