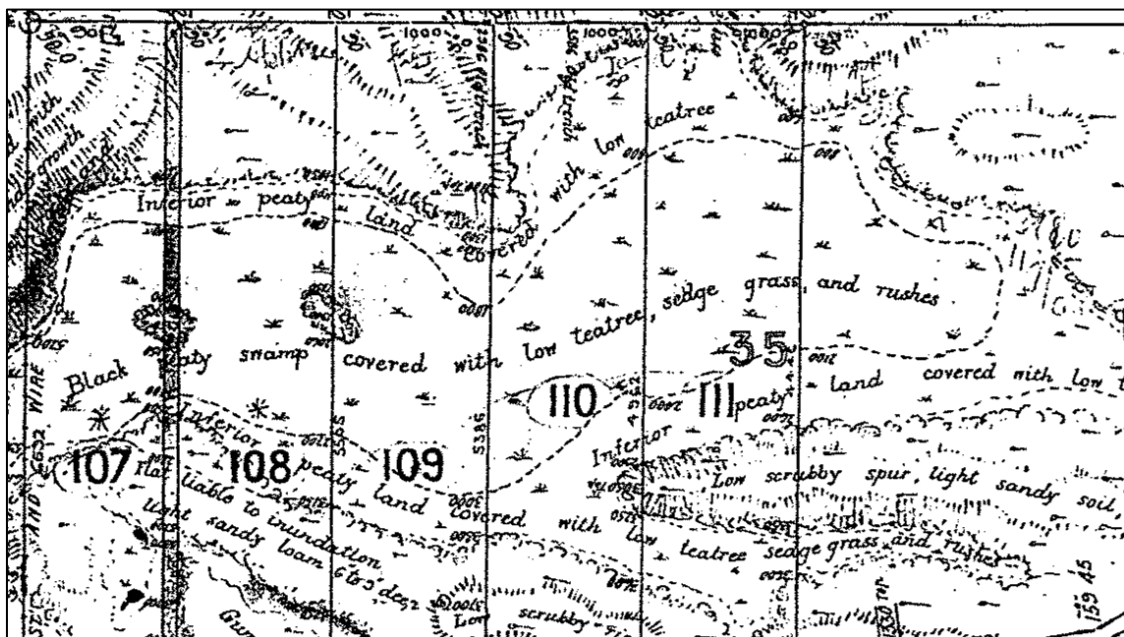


Restoring flows to Glenshera Swamp after 70 years of drainage

Mark Bachmann, Nature Glenelg Trust (NGT)

Introduction

Glenshera Swamp, situated six kilometres west of Mount Compass, was first mapped in detail when the area was surveyed in February 1899, and remained largely intact when the first aerial photograph was taken in April 1949. In addition to early clearance, the main change by that time was the diversion of surface flows.

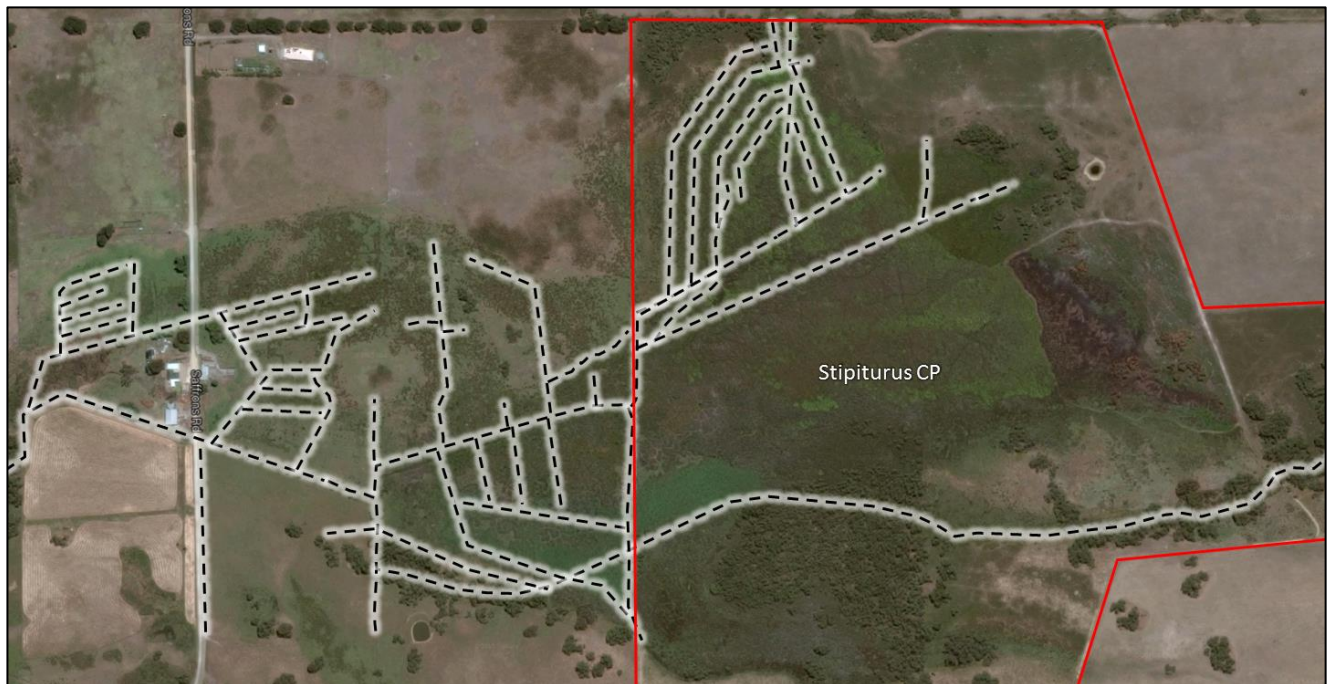


February 1899 survey diagram of Glenshera Swamp



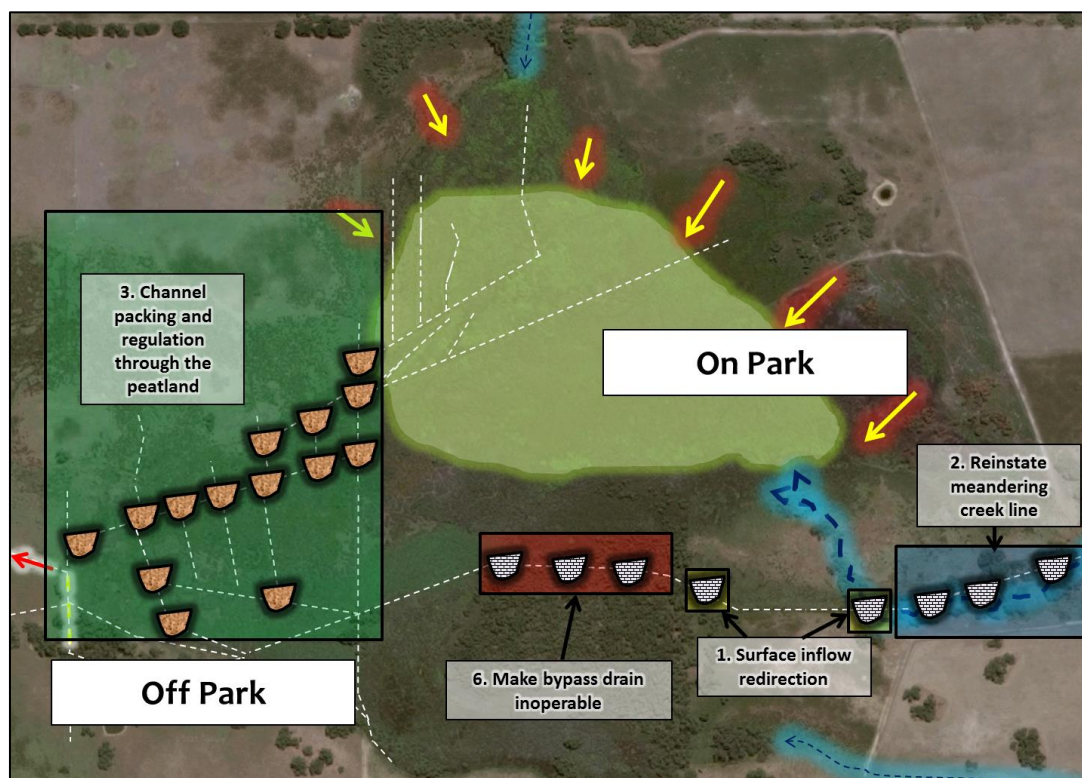
April 1949 aerial photograph of Glenshera Swamp

Today a sizeable portion of the former extent of Glenshera Swamp is situated within Stipiturus Conservation Park and is widely considered one of the most important remaining swamps of the Fleurieu Peninsula, a nationally threatened ecological community. The site retains a suite of important biodiversity values, despite efforts over several decades (up to its reservation in 2003) to make the area more suitable for agricultural production, through attempts at comprehensive drainage, as well as clearance and grazing activities.



September 2014 aerial image of Glenshera Swamp, showing drains (black dashed lines) and Stipiturus Conservation Park boundary (red line)

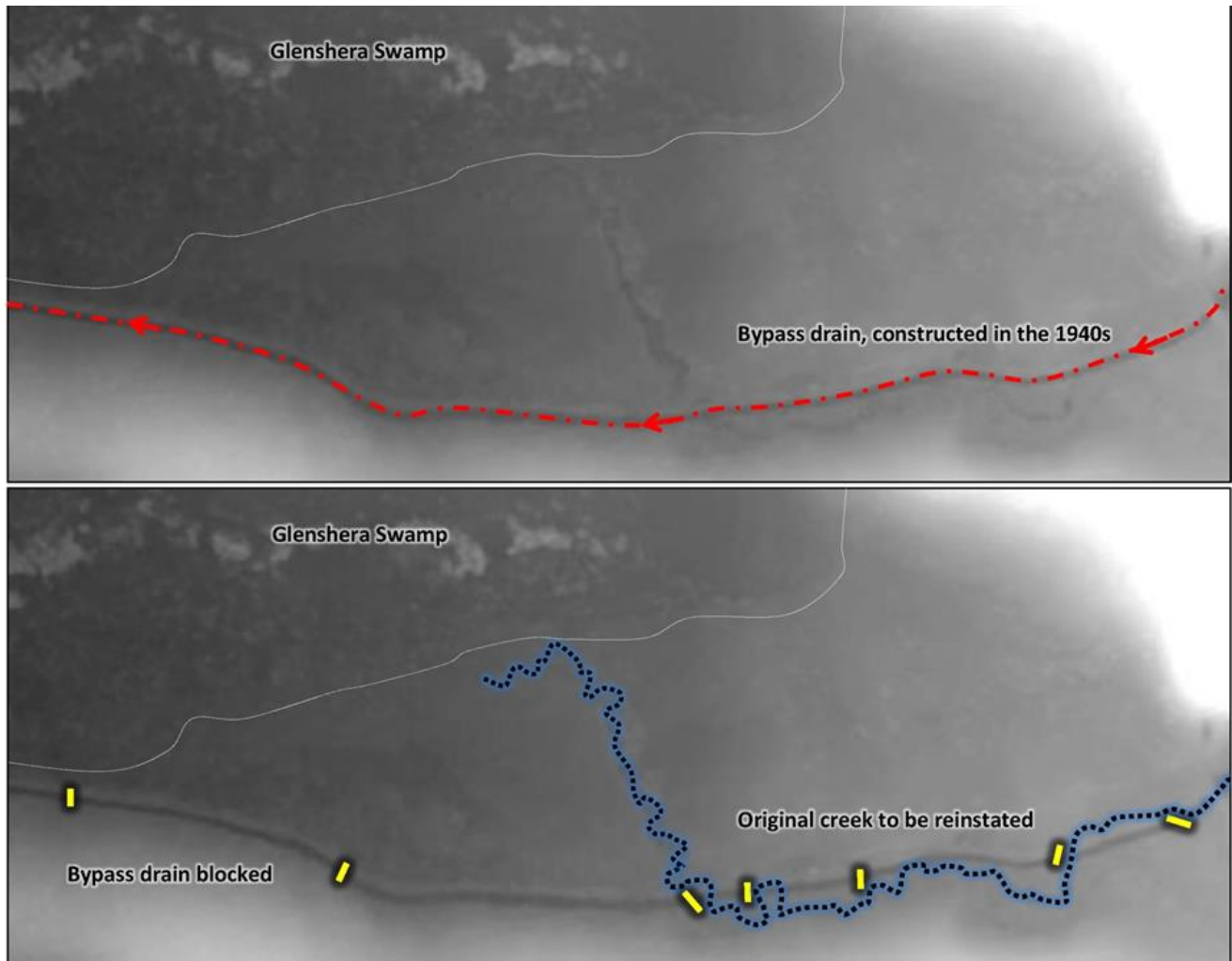
A restoration options report, completed by Nature Glenelg Trust in March 2016 (see [Bachmann and Farrington, 2016](#)), comprehensively described the history of change that led to the current modified condition of the site; by defining the location, past purpose and impact of the artificial drains across the entire wetland for the first time. In the report, six proposed actions were suggested to address key elements of the hydrological regime, and four of these were implemented in autumn 2017.



Initial works funded by Natural Resources – AMLR in autumn 2017

On Park Restoration Works

Addressing alternations to hydrology caused by the bypass drain constructed in the 1940s was the initial primary focus of work in the Conservation Park, as shown below. These works, funded by the Department for Environment, Water and Natural Resources, were primarily intended to reinstate inflows to the swamp. Additional works included three weirs downstream of the original creek, which were intenintalled to slow flows and/or prevent lateral drawdown of water from the swamp margin.



Before and after: proposed reinstatement of the meanders in the creek, and bypass drain decommissioning

With the support of a range of volunteers, including the CCSA supported CVA Green Army Team, the YACCA group and a range of other helpers, NGT completed the construction of a series of 7 restoration structures along the drain in the Park. The works took place over several days in April 2017.



Green Army Team and NGT staff (left) and YACCA group (right)

Despite a dry June, the works have been fully operational since July 2017, when the catchment started to generate sufficient runoff to reactivate the former creek channel, a narrow band of adjacent floodplain and restore all low-moderate creek flows towards the main swamp for the first time in seven decades.



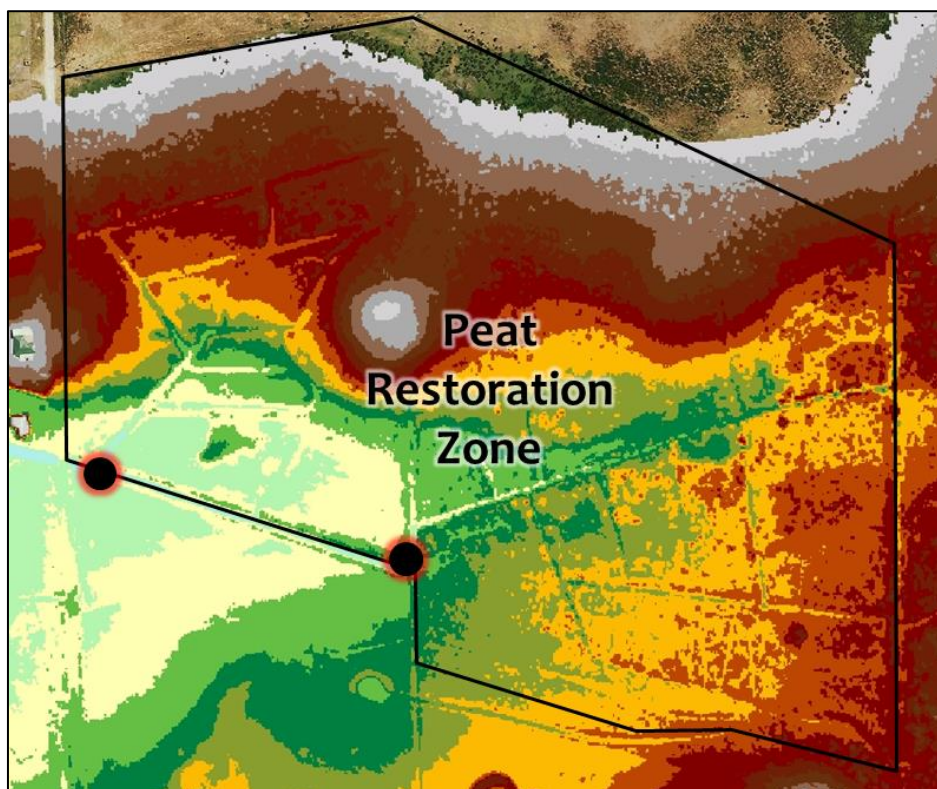
Location of the Structure #1: March 2017 (left), April 2017 (middle) and August 2017 (right)



Structure #5: The point where flows are now diverted northwards, back towards the swamp

Off Park Restoration Works

Thanks to the fantastic support of the downstream neighbours and funding provided by Natural Resources – AMLR, a significant amount of restoration work also occurred on the more heavily drained and degraded portion of the former Glenshera Swamp outside the reserve boundary. After discussion about the range of ways in which the objective of rehydrating this area of deeply drained peat might best be achieved, it was decided to attempt continuous drain backfilling to pack the channels, to counteract the continuous fall in gradient across the peat bed, utilising former spoil material left on-site from when the network of drains was first constructed.



Digital elevation data on private land to the west of Stipiturus CP, with showing the elevation gradient (grey to red to green = high to low) and location of drains (deeper lines). Dots are points where flows from the restored peatland would be regulated back into the artificial drainage infrastructure, which flows west.

The vast majority of drains in the network across the area of private peatland, including those situated upslope to extract seepage from the saturated bank, were successfully backfilled, enabling the immediate rehydration of the peat (from groundwater discharges and seepage) to commence.



High resolution aerial imagery before and after the completion of peat channel packing (backfilling) in April 2017. Note the surface water visible (black) in the second image, from permanent groundwater discharges.

At the location of the regulating structures, installed to manage flows back down into the main arterial drain that still fringes the restored peatland, the results were both immediate and visually dramatic.



Flow Regulation Point #1: during and a short time after works were completed



Upstream of Flow Regulation Point #2: before and a short time after works were completed

The Future

This project is now shifting into its next phase, with a focus on monitoring the impact of works on the native flora of the restored creek line, floodplain, swamp and the portion of previously drained peatland downstream. When the opportunity arises, we are also hopeful of seeing the final actions in the restoration plan implemented, to further enhance the eco-hydrology of this important remnant Fleurieu Swamp.

Based on the extent of artificial drainage activities across the valleys of the Fleurieu Peninsula, there is significant potential for this proactive approach to water management be adopted elsewhere in the region. In fact, as a result of the early success at Glenshera Swamp, NGT has recently assessed the restoration feasibility of Fleurieu Swamps in the nearby Tookayerta Catchment (SA MDB NRM region, south and east of Mount Compass), looking at opportunities to initiate similar projects there, including at Hesperilla Conservation Park.

For more information on the progress of Fleurieu Swamps eco-hydrology or our other projects, please visit the NGT website: www.natureglenelg.org.au, or contact us by emailing info@natureglenelg.org.au.



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