

Salt Creek Remediation Working Party



The Salt Creek Remediation Working Party was formed in May 2013 as a result of a resolution of Council. The resolution was passed following requests from a group of community members to address recreational boat access in and out of Salt Creek.

The purpose of the Working Party is to:

- Consider and discuss options and proposals that will remediate and enhance the recreational use of Salt Creek between the Middle Beach boat ramp and western edge of the Middle Beach lagoon, a distance of approximately 400 metres.
- Develop concept plans and general cost estimates of a preferred solution.
- Consider projects that will utilise materials made available during the remediation process.
- Develop grant applications that can capitalise on future funding opportunities.
- Coordinate key stakeholder input into the preferred solution.
- Identify potential funding sources that minimise community and Council funds.

Membership of the working party consist of:

- Two representatives of the Two Wells Regional Action Team
- Two representatives of the Mallala Foreshore Advisory Committee
- Two representatives of the District Council of Mallala, which must include one Elected Member
- One representative from an industry/educational institution

A presentation on the background to the project has been prepared by a member of the working party. A copy of the presentation is available [here](#).

SALT CREEK REMEDIATION PROPOSED PROJECTS

Middle Beach Student Project 1 - Remediation of part of Salt Creek

Background

Salt Creek at Middle Beach, ~40 km north of Adelaide, has become choked with up to 2 m of shellgrit and other sediments over the past 50 years. What was once the local swimming and fishing beach for the northern Adelaide Plains community can now be walked across at low tide.

The creek fills with water during high tide, and several times during the fortnightly tidal cycle it spills over and fills the adjacent 6 ha lagoon. This provides a large, shallow-water recreational area protected from Gulf St Vincent waters by a dense mangrove forest to the west.

Two community-based volunteer groups have formed a partnership with Mallala Council to determine options for deepening and remediating a 400 m length of the creek to allow all-tidal swimming, fishing and boating.

A recent survey has prepared a detailed topographic plan of the site, and determined that ~4000 m³ of loose sediment needs to be removed from the creek bed to return its former amenity. Cutter-suction dredging from a floating barge and land-based long-reach excavation are the methods being considered. A suitable site for dewatering and re-use of the dredged material is available in a disused shellgrit pit ~1 km north of the creek.

Aim

An optimum channel profile needs to be determined before dredging can take place. The design needs to take into account any armouring or terracing of creek bank that may be required to limit tidal erosion. The armouring or terracing must provide for easy, safe access to the water by children, while not presenting a hazard to boating when the bank is completely submerged by shallow water.

It is desirable to place a sump at a strategic location along the remediated portion of the creek to trap future loose sediment and allow easy cleanout by land-based excavation.

A 50 m length of creek bank between the old and new boat ramp will need specialty terracing to allow temporary boat mooring and public access. This area is currently covered in mud and slime by rainwater captured and seeping out of the adjacent shellgrit dune.

Literature Review

Drexel, J.F., 2014. *Background to proposed remediation of Salt Creek, Middle Beach.* www.mallala.sa.gov.au/services_and_facilities/salt_creek_working_party/here.

Giles, R., 2002. *Proposed Middle Beach boat ramp and channel dredging — potential environmental impacts*, for District Council of Mallala (unpublished).

Magryn, T., 2002a. *Proposed Middle Beach dredging of a boat access channel*, for District Council of Mallala (unpublished).

Magryn, T., 2002b. *Proposed boat ramp access channel, for District Council of Mallala, concept plan, 1:2500 scale* (unpublished).

Laboratory or Field Component

Two cores of sediment taken from the creek bed in 2014 are being examined for acid-sulphate and heavy metal content. These results will be made available to the students. The two cores, along with several others, are stored on-site at Middle Beach and are available for examination or further testing if required.

Middle Beach Student Project 2 - Realignment of the Salt Creek boat ramp

Background

A twin-lane concrete boat ramp with a central floating pontoon was built in 2010 on the northern bank of Salt Creek at Middle Beach, ~40 km north of Adelaide. Salt Creek is a tidal estuary and does not provide boat access to the adjacent waters of Gulf St Vincent unless the tide is ~1.8 m or higher.

The original design for the ramp was to have it constructed well inside the creek bank to allow the incoming current to flow past unimpeded. However, the final approved design was flawed, and did not take into account the unusual condition of having strong tidal action at right angles to the structure. Most other boat ramps are built inside an estuary where the water level simply rises and falls gently, or waves impact head-on to the structure, providing a natural cleaning action.

The pontoon at Middle Beach, which juts out almost one-third the creek width, now acts like a groyne on a beach and traps large amounts of sediment and seaweed during the incoming tide. Seaweed is pushed up the western concrete ramp by the strong current, preventing boat trailer access and usage. Thick sediment has inundated and buried the western rock abutment, and has accumulated under the ramp, preventing it from floating at certain times. The outgoing tide is usually much weaker, and unable to remove the accumulated material.

A recent survey has prepared a detailed topographic plan of the site, and determined that ~4000 m³ of loose sediment needs to be removed from the creek bed to return its former amenity. Removal of this material and design of an optimum creek profile is the subject of another possible student project. Provision of deeper water will lessen the amount of detritus impeding use of the ramp, but is not the complete solution.

Aim

Increasing the length, height and orientation of the east and west rock abutments alongside the Salt Creek ramp may provide for some self-cleaning action to take place.

The project aim is to design an optimum ramp precinct profile to allow most of the seaweed and sediment load to by-pass the structure. The design needs to take into account any further restriction of the creek channel, including the possibility of sculpting a boat turning basin into the opposite bank. The finished structure must not present a submerged hazard to boating when the tides are high.

A deeper water sump placed at a strategic location along the remediated portion of the creek to trap future loose sediment and allow easy cleanout by land-based excavation may be the subject of a separate student project. Any proposed redesign of the ramp abutments must take into account this deeper water if the ideal sump location is at the base of the ramp.

Literature Review

Drexel, J.F., 2014. *Background to proposed remediation of Salt Creek, Middle Beach.* [www.mallala.sa.gov.au/services and facilities/salt creek working party/here](http://www.mallala.sa.gov.au/services_and_facilities/salt_creek_working_party/here).

Giles, R., 2002. *Proposed Middle Beach boat ramp and channel dredging — potential environmental impacts*, for District Council of Mallala (unpublished).

Magryn, T., 2002a. *Proposed Middle Beach dredging of a boat access channel*, for District Council of Mallala (unpublished).

Magryn, T., 2002b. *Proposed boat ramp access channel, for District Council of Mallala, concept plan, 1:2500 scale* (unpublished).

Laboratory or Field Component

It may be desirable to construct a model of the Salt Creek ramp precinct to examine possible design options. Two cores of sediment taken from the creek bed in 2014 are being examined for acid-sulphate and heavy metal content. These results will be made available to the students. The two cores, along with several others, are stored on-site at Middle Beach and are available for examination or further testing if required.

Middle Beach Student Project 3 - Design of the Stage 2 car park environs for the Salt Creek boat ramp

Background

A twin-lane concrete boat ramp with a central floating pontoon was built in 2010 on the northern bank of Salt Creek at Middle Beach, ~40 km north of Adelaide. Salt Creek is a tidal estuary, and the adjacent 6 ha lagoon floods with shallow water at certain tidal heights, providing a natural recreational amenity for the Northern Plains community.

A large residential development accommodating many thousands of people over the coming decades has been approved for Two Wells, directly opposite the Middle Beach – Pt Wakefield Road intersection. These new residents, as well as the current community, will view the beach as a prime recreational amenity, and use of the boat ramp is predicted to increase dramatically.

The present carpark of ~0.2 ha adjacent to the ramp will allow up to 20 vehicles and boat trailers to be parked, well short of what will be required into the future. An immediately adjacent area of ~0.35 ha may be available for an extension to the carpark. This area includes the present toilet block maintained by Mallala Council, a repository for shellgrit and seaweed scraped off the ramp by the council, and a degraded area of saltbush scrub.

A recent survey has prepared a detailed topographic plan of the site, and Google Earth and NearMap images are available.

Aim

This project is to design options for an extension to the existing vehicle and boat-trailer park, taking into account the slightly undulating natural terrain, and possibility of flooding at times of high tide and storm surge. It will be necessary to incorporate the current toilet amenity and adjacent fresh-water storage tanks, along with the desirability of electric BBQ facilities and shelters, and landscaping of the environment.

Literature Review

Drexel, J.F., 2014. *Background to proposed remediation of Salt Creek, Middle Beach.* [www.mallala.sa.gov.au/services and facilities/salt creek working party/here](http://www.mallala.sa.gov.au/services_and_facilities/salt_creek_working_party/here).

Giles, R., 2002. *Proposed Middle Beach boat ramp and channel dredging — potential environmental impacts*, for District Council of Mallala (unpublished).

Laboratory or Field Component

An inventory of natural flora and fauna may be necessary to provide a baseline for any development.