

Rehabilitation plan

East Cove - Deal Island

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1.0 Issue

Areas of the steep bank above East Cove on Deal Island are continuing to erode.

2.0 Objective

To stabilise mobile sand and soils on the East Cove bank through active rehabilitation works and re-establishing native vegetation cover. This aligns with the management objectives of the Island as identified in the Kent Group (Terrestrial Portion) National Park Management Plan (PWS 2005).

3.0 Contributing factors

There are a number of factors that are contributing to ongoing active erosion of parts of the East Cove bank. These include but are not limited to the following and or a combination of these factors.

- Damage caused by wallaby activity on susceptible parts of the slope.
- The site is steep, dry, exposed and west facing.
- Shallow highly erodible soils on steep calcarenite.
- The toe of the slope is actively eroding due to storm attack, potentially exacerbated by the impacts of sea level rise.
- The slope has in the past been heavily infested with the weed sea spurge (*Euphorbia paralias*), and active on-going weed work associated with removing the sea spurge, as part of a whole of island weed program, can cause physical damage to small sections of the steep slopes retarding native revegetation and contributing to erosion.

This Rehabilitation Plan prescribes a number of actions aimed at addressing, to some degree, these contributing factors.

4.0 Reasons why active rehabilitation works are required

Active rehabilitation works should be undertaken on sections of the slope for a number of reasons. As noted above, the objective of the works is to stabilise mobile sand and soils on the East Cove bank and to re-establish a native vegetation cover. Without active rehabilitation works the bank is most likely to continue to erode and become more unstable. Rehabilitation of degraded areas is an objective of the Management Plan (PWS 2005).

From historic photos, it is clear that the bank at East Cove has in the past had a healthy cover of native vegetation (dominated by an overstorey of Drooping she-oak (*Allocasuarina verticillata*) and the current erosion is a relatively recent event. See Figure 1.



Figure 1. Historic photograph (circa 1940) of East Cove titled “A healthy weed free native vegetation - 70 years ago – can it be restored?” in Tyson and Tyson (2010).

Stabilised slopes, with a good cover of native vegetation, will make it more difficult for sea spurge to reestablish or re invade the slope after weeding. A stabilised slope will also make it physically easier to weed or carry out weed monitoring work on the slope. These two factors will have a positive outcome on the work to remove sea spurge from the slope and contribute to the aim of removing sea spurge from the entire island, a management objective of the Management Plan (PWS 2005), by reducing the local weed seed source at East Cove and free up limited volunteer resources to undertake weed work on other priority areas of the island.

During the November 2024 FODI working bee, it was observed by both FODI members and the caretakers that the threatened plant Coast twinleaf (*Zygophyllum billardiarei*) is naturally regenerating in good numbers within the wallaby enclosure at East Cove especially towards the southern end. Coast twinleaf is listed as rare in the Tasmanian Threatened Species Protection Act 1995. In Tasmania, it only occurs on calcareous sands within the Furneaux Group, with the Kent Group National Park (including Deal Island) one of the few known Tasmanian reserves. The proposed works will improve the condition of habitat for this threatened plant and promote an increase in population size and density in this location.

Inevitably, storm action will cause the toe of the East Cove slope to be disturbed. Increased slope stability as a result of the works proposed in this plan and an increase in native vegetation cover on the upper slopes will help make the slope more resistant to a whole of slope collapse in the event of failure of the toe of the slope. It will also increase the resilience of the slope to cope with wind erosion and high intensity rain events.

As outlined in the section below, there has been a history of past rehabilitation works on the East Cove slope, and works prescribed in this current document will ensure that past efforts will not go to waste and will build on this significant earlier work.

5.0 History of past works

Friends of Deal Island (FODI), through Wildcare and in partnership with the Parks and Wildlife Service (PWS) has conducted rehabilitation works on the degraded slope at East Cove for many years.

Activities undertaken have been documented in past FODI Working Bee reports. The works have included:

- Significant weeding on the East Cove slope (primarily for sea spurge).
- Construction of trial fencing to demonstrate the adverse effect of wallabies on revegetation.
- Construction of a large fenced enclosure to reduce the impact of wallabies on the slope.
- Removal of wallabies from the fenced enclosure.
- Placement of erosion control structures on the slope comprising, log and timber barriers, installation of coir logs, placement of geotextile and laying of slash.
- Limited plantings and direct seeding of local native species.

Sea spurge was first recorded at East Cove in 1988 (Tyson and Tyson 2010) and soon after dominated the slopes. Since then, FODI has undertaken significant weeding effort during its mostly twice-yearly working bees. It was recognised early on in the weeding campaign that encouraging native revegetation would play an important part in managing sea spurge at East Cove and fenced trial enclosures were constructed in 2009 to demonstrate the effectiveness of reducing wallaby browsing pressure (FODI 2010). A fence was erected over a large area of the East Cove slope that was badly eroding in 2011 (FODI 2011) and subsequently a significant increase in the revegetation within the enclosure was noted. The fenced area was further expanded in 2012, 2014 and 2015 (FODI 2012a, 2014 and 2015). Over the years wallabies took advantage of breaches in the fence and subsequently the damage to the slopes increased once again due to wallaby browsing and trampling. The fencing has been repaired in recent years and attempts to remove wallabies have been undertaken in recent FODI working bees (FODI 2024). A section of the mid-western side of the enclosure was raised some 300mm in November 2024. The seaward fence is in poor condition due to rust and slumping of soil and sand on the slope. It is still effective largely because of the treated pine log retaining wall below it. At some point the timber wall may fail and the fence will no longer be effective. The other fence boundaries are in reasonable condition however, it is possible, due to the slope and fence height that wallabies can gain access over some sections of the fence though it would appear that the fence is effective in keeping out the larger numbers of wallabies that have previously been observed on the slope.

In addition to the weeding work and construction of the fenced enclosure FODI have undertaken other rehabilitation activities on the slope including installation of erosion control structures, placement of slash and some direct plantings. Log water bars were placed in 2011 (FODI 2011) and coir logs installed in 2012 (FODI 2012b) with additional ones in 2016. These structures are still in place and many are still being effective in reducing water flow on the slopes (Figure 2).

It is clear that over the years that FODI has been involved in active rehabilitation works on the East Cove slope, significant progress has been made in stabilising and revegetating the slope. However, it is also clear that the slope is not at a stage where it will look after itself and continued work is required to achieve this aim. After the fenced enclosure was breached by wallabies and the fence integrity was broken, there was a noticeable decline in the condition of the slope and an increase in erosion. Recent working bees have shored up the fence and wallaby numbers inside the enclosure

reduced. Rehabilitation actions in this plan (Section 6.0) concentrate on erosion control measures and revegetation works to increase the stability and robustness of the slopes.



Figure 2. Current condition of erosion control structure that was installed probably about November 2012 on the East Cove slope. Photo M Comfort November 2024.

6.0 Proposed works

A number of rehabilitation works are outlined in this section of the plan to give guidance to FODI in partnership with PWS, for implementation on future working bees. FODI has recently been successful in obtaining funds (\$13,145) to undertake these works through Round 2 of the 2024 Wildcare Tasmanian Nature Conservation Fund Grants. It is intended to undertake these works during 2025 over two working bees with most on-ground works to be carried out during the March 2025 working bee. It is anticipated that FODI will continue monitoring and evaluating the works into the future and adopt an adaptive management approach in determining any further rehabilitation requirements for the site. The actions are as follows and are discussed in more detail below:

- Fence maintenance.
- Opportunistic removal of wallabies from the enclosure.
- Establishment of permanent photo monitoring sites.
- Installation of erosion control structures, placement of slash.
- Plant propagation, planting and direct seeding.
- Continued weed removal and weed monitoring across the slope.
- Continued monitoring of the site.

6.1 Fence maintenance

The existing large fenced enclosure on the East Cove slopes requires regular maintenance to ensure reduced numbers of wallabies on the slope and thereby reducing their adverse impacts on the soils and vegetation. During each FODI working bee, time should be allocated to walk and inspect the fence perimeter and repairs undertaken as required. Ad hoc fencing materials and tools are available on the island.

6.2 Opportunistic removal of wallabies from the enclosure

A number of wallabies still remain within the fenced enclosure at East Cove and attempts to remove wallabies from the enclosure should be undertaken on an opportunistic basis. Experience from the November 2024 FODI Working Bee demonstrated that one of the most effective means to remove wallabies was by opening the “gates” at the north east and south east corners of the enclosure. There is a natural water spring near the north east corner adjacent to the road to East Cove and often one or two wallabies gather in this corner in the afternoons. By leaving the “gate” open in the afternoon wallabies can be encouraged to exit the enclosure (see Figure 3). In the south east corner, near the main gate at the top of the road leading down to East Cove a water container can be placed here to encourage wallabies and by using the temporary fence and opening the “gate” wallabies can be encouraged to leave the enclosure. FODI working bees should allow time to undertake this and it may be possible via PWS to encourage island caretakers to also help reduce the numbers of wallabies in the enclosure in this way.



Figure 3. Cassie Strain (FODI Working Bee November 2024) encouraging a wallaby to leave the East Cove enclosure through an opened “gate” in the north east corner near a natural spring. Photo M Comfort November 2024.

6.3 Establishment of permanent photo monitoring sites

It is recommended that a series of permanent photo monitoring sites be established on the East Cove slope to be used as a means of measuring the effectiveness of the current proposed works. The monitoring sites should be located in positions that cover the main work sites. At each monitoring point a steel dropper post should be used to mark the point. There are sufficient droppers available on the Island for the monitoring sites. Each monitoring point must be given a reference number and its GPS location recorded. Photos should be taken with the camera/phone located over the post and direction of the photos recorded. On subsequent visits copies of the previous photos taken should be available to help repeat the photos. The digital photos should be labelled and filed electronically in a secure location. Guidelines for establishing photo monitoring points can be found at <https://nrmsouth.org.au/wp-content/uploads/2014/08/Photo-Monitoring-Fact-Sheet-NRM-South.pdf> (NRM 2014).

In addition to the photo monitoring, observations of the effectiveness of the works should be noted during working bees and used in combination with the results of the photo monitoring, to evaluate the effectiveness and longevity of the rehabilitation works. This can be used to determine any future rehabilitation actions to assist in achieving the objective of achieving a stable revegetated slope, that is to say, employing an *Adaptive Management* approach.

6.4 Installation of erosion control structures and placement of slash

It is proposed to install a number of erosion control structures during the March 2025 FODI working bee to slow down erosion rates on the slope and further encourage revegetation. During the November 2024 FODI working bee the East Cove slope was surveyed and an initial site was determined to conduct these works (Figures 4 and 5). The site is at the upper end of the steeper slope with vegetated ground above and the area below has previously had some erosion control works installed. The GPS location for the site is: Easting 526790 / Northing 5630481. If time and resources allow additional nearby eroding areas could also be targeted.

In undertaking the erosion control works it is essential that disturbance to historic heritage remains on the slope, including the haulage way, is avoided.



Figure 4. Proposed site for active rehabilitation erosion control works. The site is above the East Cove Jetty. The slope above this site is vegetated and work here will extend the area of stable revegetated ground on the East Cove slope. Photo M Comfort November 2024.

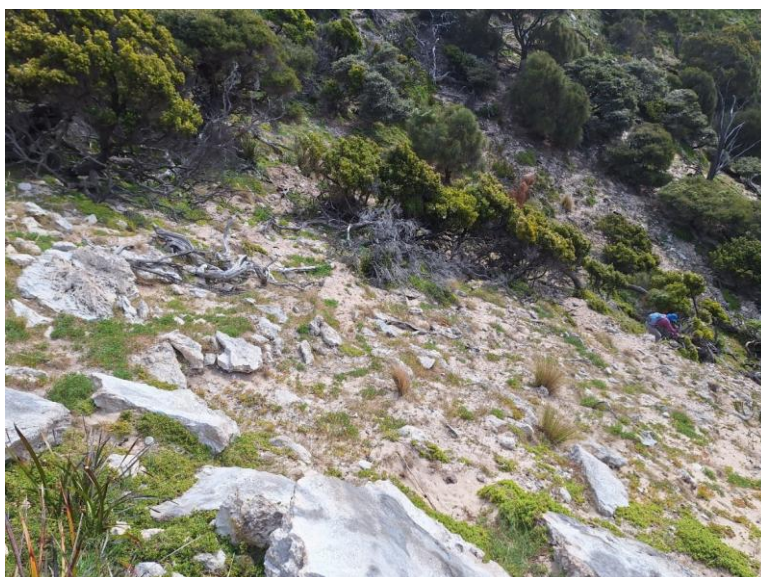


Figure 5. Another view of the proposed site for active rehabilitation erosion control works on the East Cove slope. Note person mid picture right hand side for scale. Photo M Comfort November 2024.

Earlier works utilised coir logs for erosion control structures at East Cove and these proved to be effective and long lasting. However, they are expensive to transport due to their weight and bulk and as the East Cove wharf has now been condemned transport to the island for FODI work is restricted to air transport. For this reason, Jute matting has been selected for use in the March 2025 FODI working bee. (see Appendix 1 for materials comparison).

It is proposed to use the jute matting to make a number of jute/slash “sausages” to be placed in a similar way to the coir logs targeting bare areas as identified above (Figures 4 and 5). Jute matting comes in tightly packed bales and is available through a rural supplier on Flinders Island. A jute bale comprises open weave matting 1.2m wide and 550m long. A single bale weighs approximately 340kg. Back loading of flights to Deal Island should be utilised to transport it and this will require liaison with PWS and the aviation company.

The jute bale will need to be opened up prior to air transport and care is required to separate the often quite compressed jute matting into manageable parcels. Each bale consists of approximately ten leaves and these can be separated from the bale and placed into bags for air transport. It is important to keep the jute dry for ease of using it on the island, and to keep the leaves together and not tangled up.

The steps involved in installing the erosion control structures at East Cove can be summarised as follows:

- Establishment of pre work photo monitoring points.
- Collection of slash and or tussock material for the jute/slash “sausages”.
- Construction of the jute/slash “sausages”.
- Placement of the jute/slash “sausages”.
- Placement of additional slash.
- Post work photo monitoring of the site.

Materials required for the work includes:

- Steel droppers for permanent photo monitoring points.
- Jute matting.
- Slash or tussock material.
- New/sharp reciprocal saw blades for slash collection to fit saws on the Island, and sharp hedge trimmers to collect tussock material.
- A large pair of sharp scissors to cut the jute matting.
- Biodegradable twine to tie “sausages”.
- Timber garden stakes to hold “sausages” in place.

The East Cove site (Figures 4 and 5) is best approached from above from near the whim. Photo monitoring sites (see 6.3 above) need to be established and photographed prior to any on-ground works are undertaken.

The process of making the jute/slash “sausages” is to first collect plant material for the “filling”. This can be either woody slash (preferably with intact seed) or tussock grass material. This needs to be collected carefully and preferably from sites that require some vegetation management such as for track clearing, drainage works or maintenance of fire breaks. The material should be transported to the slope above the rehabilitation site where the “sausages” can be made. It is important in

transporting the material to retain as much of the leaves and seeds on the slash as practicable to increase that volume of plant material going into the “sausages”. To this end cut slash should be transported and used soon after cutting.

The jute/slash “sausages” are made by simply rolling up plant material inside the jute matting to produce a “sausage” and tying together with twine. The finished product should contain several layers of jute on the outside, be 200 to 400mm in diameter and approximately 2000-3000mm long. Some experimentation will be required in making the “sausages”. The “filling” should be fairly tightly packed and some slash may require some trimming to enable the slash to be formed into a compact bundle.

The “sausages” can then be placed across the slope at actively eroding locations. They can be held in place by at least two garden hardwood stakes hammered through the “sausage” or put on the downhill side. Stakes less than 1000mm in length should be adequate. The aim of the “sausages” is to act as water bars to slow down waterflow and soil movement and aid water infiltration rather than water runoff. To be effective they need to be tightly bundled and placed so that the base of the “sausage” is in contact with the ground to prevent water flow below it. The “sausages” will also act as low wind breaks.

Additional slash can be placed over the site. Due to the strong winds that predominate on the site the slash may need to be anchored by stakes, rocks or interwoven. Again, where possible seed-bearing slash should be used to increase seed supply. The slash can: provide a seed source; act as a wind break; provide protection to soil and seedlings from wallaby browsing and trampling; reduce rain drop erosion; slow water flow; and trap soil and organic material. It is not recommended to source slash direct from the East Cove slope as any living or standing vegetation currently on the slope is playing an important role in helping stabilise the slope and reducing wind erosion.

In the past, steel droppers were often used to anchor coir logs and timber water bars (Figure 2). Where these are no longer performing that role, the steel droppers could be removed from the slope. Hardwood garden stakes are recommended for any newly installed erosion control structures as they will break down over time.

As for the weeding recommendations (Section 6.6 below) care while working on the site is required to minimise damage to the soils and revegetation during the installation of the erosion control structures.

There is a small length of hessian (1.8m x 10m) in the workshop (back left corner on top of shelving) on the island and if it can be determined from PWS that this is not earmarked for any specific use could usefully be used in the making of the jute/ slash “sausages”. There is also a 20m or so length of jute closed weave matting 700mm wide and similarly this could be considered for use.

Photo monitoring of the site should be conducted once the above works are completed.

6.5 Plant propagation, planting and direct seeding

In addition to erosion control structures, active revegetation is recommended to increase the natural vegetation cover on the slope. The 2024 November FODI working bee collected plant material for propagation (FODI 2024). A collecting permit to cover this was issued by NRE (Authority No. FL

24243) and general guidelines on collecting seed for revegetation works can be found at: https://www.greeningaustralia.org.au/wp-content/uploads/2017/11/FLORABANK-GUIDELINES_collection-methods.pdf (Flora Bank 2017).

245 plants were propagated. Seed collection was carried out on Barn Hill and the eastern slope of East Cove. Species collected included Coast teatree, Common teatree, Drooping she-oak and Coast groundsel. Cuttings were collected from East Cove of Grey saltbush, Coastal saltbush and Bower spinach. Tillering was also carried out using Coastal tussockgrass and Coast speargrass.

Table 1 provides a selected list of suitable plants for propagation and or direct seeding for revegetation works at East Cove.

Species Name	Common name
<i>Allocasuarina verticillata</i>	drooping sheoak
<i>Atriplex cinerea</i>	grey saltbush
<i>Austrostipa stipoides</i>	coast speargrass
<i>Callitris rhomboidea</i>	oyster bay pine
<i>Leptecophylla juniperina</i>	pinkberry
<i>Leptospermum laevigatum</i>	coast teatree
<i>Leptospermum scoparium</i>	common teatree
<i>Poa poiformis</i>	coastal tussockgrass
<i>Rhagodia candolleana</i> subsp. <i>candolleana</i>	coast saltbush
<i>Senecio pinnatifolius</i> var. <i>pinnatifolius</i>	coast groundsel
<i>Tetragonia implexicoma</i>	bower spinach

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Table 1. List of suitable plants for propagation and or direct seeding for revegetation works at East Cove.

The propagated plants will require watering, they are currently located in the caretaker's vegetable garden and in partnership with PWS, the island caretakers will need to undertake regular watering till the plants are planted out. It is also likely that the caretakers will need to be involved with the planting out as the soils on the slopes will most likely be too dry for planting at the March 2025 FODI working bee. Given the East Cove slope is often dry, timing for planting out propagated material will need to be carefully considered and manual follow up watering may be required. Again, this task may have to fall to the island caretakers.

Consideration for additional collecting of seed during the March FODI 2025 working bee should be given to increase the amount of material available for propagation or direct seeding. Large quantities of some suitable species for revegetation, for example the Drooping she-oak, can be relatively easily collected and it is recommended that some time in future FODI working bees is dedicated to this task and the seed broadcast directly over the site.

6.6 Continued weed removal and weed monitoring across the slope

Ongoing weed work will be required to achieve the weed management objectives for the island (PWS 2005). As the actual process of weeding and weed monitoring has the potential to physically add to slope erosion it must be done in a way that minimises ground disturbance and impacts on revegetation. This is not easy on such a steep slope with mobile soils. It is recommended that the primary weeding activities on the slope are undertaken during the Spring working bees before the

sea spurge has set seed to reduce subsequent Autumn weeding requirements and therefore lessen number of passes over the steep slopes. For the same reasons, the weeding should be conducted very thoroughly once on the slopes to reduce the number of weeding passes required on the slope.

It is recommended that the weeding be undertaken with weeders working in a line either contouring across the slope or working up the slope, to minimise movement down slope which has a tendency to disturb more of the soil/sands. If working up the slope walkers should access the bottom of the slope for the next weeding run by walking back down around the edges of the fenced perimeter on stable soils. Working bee teams should be well briefed to ensure that they concentrate on their movements on the slope to minimise their physical disturbance of the soil/sands. Flagging tape should be used to mark the extent of weeding passes on the slope to minimise overlapping of passes to again reduce the impact of walking on the slopes. Weeders should travel slowly and carefully on the slope.

7.0 Further work

It is clear from past rehabilitation works that have been conducted on the island, it will take many years to achieve stability and revegetation across the East Cove bank. FODI has demonstrated its commitment to the Island over several decades and will continue to work to achieve environmental benefits for the island. FODI will need to lobby, in partnership with PWS as the land manager, for continued and new funding in order to meet rehabilitation objectives as outlined in this document.

As noted in 6.3 above, monitoring and evaluating of the East Cove bank will be required to determine and direct the need for any future rehabilitation works on the bank with an adaptive management approach required.

If other rehabilitation techniques and or use of other materials (for example using coir logs for soil erosion control as undertaken previously) are determined to be more effective for future works, additional funding to cover transport costs will be required or alternative transport options will need to be explored. As an example, in November 2024 some propagation material was transported to the island by yacht at no cost to FODI or PWS (FODI 2024).

In undertaking revegetation works the variability and vagrancies of seasons need to be considered and it is recommended that seed collection, propagation, planting out and direct seeding, be conducted over a number of years to increase the chance of aligning with a favourable season when adequate rainfall or seed set occur to achieve good revegetation outcomes.

8.0 References

- Flora Bank (2017.) *Guidelines native seed collection methods*, Australian National Botanical Gardens, Natural Heritage Trust, Bushcare, Greening Australia and CSIRO, Canberra.
- FODI (2010). *Deal Island Working Bee April 20th – May 4th 2010 Report*, Friends of Deal Island, Hobart.
- FODI (2011). *Deal Island Working Bee April 5th – April 25th 2011 Report*, Friends of Deal Island, Hobart.
- FODI (2012a). *Deal Island Working Bee April 1st – April 18th 2012 Report*, Friends of Deal Island, Hobart.

FODI (2012b). *Deal Island Working Bee November 5th – November 21st 2012 Report*, Friends of Deal Island, Hobart.

FODI (2014). *Deal Island Working Bee November 3rd – November 21st 2014 Report*, Friends of Deal Island, Hobart.

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FODI (2024). *Deal Island Working Bee November 2nd – November 12th 2024 Report*, Friends of Deal Island, Hobart.

NRM (2014). *Photopoint monitoring*, Natural Management Resources South, Hobart.

PWS (2005.). *Kent Group (Terrestrial Portion) National Park Management Plan*, Parks and Wildlife Service, Hobart.

Tyson, P and Tyson, B. (2010). *Weed Management on Deal Island Kent Group National Park*. Report to Caring for our Country program, Friends of Deal Island, Hobart.

Appendix 1 Materials comparison

Jute bale specifications:

Open weave erosion control jute mat

1.2m x 550m weight 340kg \$1500.00 approx.

Available on Flinders Island

Specifications at: <https://www.geofabrics.co/products/jute-mesh-biodegradable-erosion-control-mat>

Coir log specifications:

1.5m x 200mm diameter 8kg \$46.00 approx.

3.0m x 200mm diameter 14kg \$75.00 approx.

3.0m x 300mm diameter 23kg \$105.00 approx.

Requires freighting to Flinders Island

Specifications at: <https://www.geofabrics.co/products/coir-log>