



## WAIUAU TOA/CLARENCE RIVER BLACK-FRONTED TERN RESTORATION PROJECT: MARCH 2022 ISLAND ENHANCEMENT WORK

### Background

The Department of Conservation (DOC) and Environment Canterbury (eCan) embarked on a five-year project to test a new black-fronted tern (*Chlidonias albostratus*) conservation management regime on the upper Waiau Toa/Clarence River. This involved carrying out localised predator control in the vicinity of three islands on which black-fronted terns nested, as well as improving habitat quality on each island by removing woody weeds and 'engineering' islands to be both more resistant to flooding and less accessible to predators.

Upon the completion of this five-year project, the successful results of black-fronted terns breeding on enhanced islands has highlighted the importance of engineering more islands along the Waiau Toa/Clarence River to become more suitable in deterring threats to nesting black-fronted terns.

A survey was carried out along the Waiau Toa/Clarence River on 4 March 2022 to locate potential islands that could benefit from bulldozer construction and/or weed clearance. Five islands were located and prioritised in order of enhancement importance.

From 28 March to 1 April 2022, Matt (Lott Contractors Ltd) and Baylee Connor-McClean (Wildlife Management International Ltd; WMIL) carried out some mechanical excavation work at five different island sites to achieve habitat improvements described above. This work was carried out under Resource Consent CRC160509 granted to DOC under Section 104 of the Resource Management Act (1991).

This is the second year a series of islands have been enhanced in the renewed five year project, ready for the following black-fronted tern breeding season (2022/2023).

### Site Location

Five islands were located along the Waiau Toa/Clarence River situated along the 20 km stretch of river that is managed by predator control operations (Figure 1). The coordinates for each island are given in Table 1.

**Table 1.** Coordinates of the enhanced island locations on the Waiau Toa/Clarence River.

River	Code	Site	Easting	Northing
Waiau Toa/Clarence River	C1	Upper Swimming Hole	E1594957	N5305985
	C2	Cow Island	E1589716	N5298708
	C3	Eddy's Inlet	E1593387	N5302867
	C4	Upper Bush Gully	E1594597	N5305816
	C5	Bridge Island	E1596531	N5305946



**Figure 1.** Map of the five island sites along the Waiau Toa/Clarence River which were surveyed and required enhancement [Note: Site 5a was added later and is located alongside site 5].

## Description of works

### Site 1: Upper Swimming Hole

Location: Upper Swimming Hole, E1594957 N5305985 (Figures 2 and 3)

Works:

- Channel was cleared and opened up to allow river flow through previously dried up channel (Figures 2 and 3).
- Material from the channel was used to raise the height of the island slightly and stabilise the bank on the opposite side.
- Channel was then opened from the top of the island.
- Construction mostly occurred in dry areas until channel was opened which required no fish recovery.





**Figure 2.** Before (upper) and after (lower) images of Upper Swimming Hole. Channel cut through river gravels and opened up allowing river flow to surround the island.



**Figure 3.** Before (left) and after (right) shots of river gravels blocking channel (left) and channel after being cleared by bulldozer (right).



## Site 2: Cow Island

Location: Cow Island, E1589716 N5298708 (Figures 4 and 5)

Works:

- Dry, filled in pre-existing channel was cleared and widened.
- Material from channel was pushed onto island to raise height.
- River channel was diverted further upstream to allow river flow to travel around true left side again.
- No fish recovery was required.



**Figure 4.** Before (upper) and after (lower) images of Cow Island. River flow was diverted upstream to allow river flow down true left side and along newly cleared and widened channel (true left side of Cow Island).





**Figure 5.** Before (left) and after (right) images of dried up channel along the true left side of Cow Island (left) and bulldozer enhancement works to reopen and clear channel (right).

### Site 3 (Eddy's Inlet)

Location: Eddy's Inlet, E1593387 N5302867 (Figures 6 and 7)

Works:

- Large natural channel dried up around true left side of “island” was deepened, widened, and opened to allow water flow to surround the island.
- No fish recovery was required.



**Figure 6.** Before (upper) and after (lower) images of island enhancement work on Eddy's Inlet.





**Figure 7.** Before (left) and after (right) images of the bulldozer works to deepen and clear channel around the true left side of Eddy's Inlet.

### Site 4 (Upper Bush Gully)

Location: Upper Bush Gully, E1594597 N5305816 (Figures 8 and 9)

Works:

- Channel around true right side of "island" to be cleared, widened and deepened to allow river flow around island.
- River was directed down true right side of island.
- Gravels from the channel were pushed onto island to slightly raise the island height.
- No fish recovery was required.



**Figure 8.** Before (upper) and after (lower) images of island enhancement work on upper Bush Gully Island.





**Figure 9.** Before (left) and after (right) images of clearing, deepening and opening the river channel down the true right side of upper Bush Gully.



**Figure 10.** Bulldozer working to open up the newly cleared and deepened channel at upper Bush Gully.

### Site 5 (Bridge Island)

Location: Bridge Island, E1596531 N5305946 (Figures 11 and 12)

Works:

- Island was mostly cleared of broom and other vegetation.
- Small pockets of vegetation was left at edges of the island to provide a level of shade.
- Natural riverbed vegetation present on the island edges was left untouched.
- No fish recovery was required.



Note: Bridge enhancement works was being undertaken the following week which focused on rediverting the river around the true right side of the island allowing suitable separation from the mainland. This was not carried out under this contract but will benefit the overall suitability for nesting black-fronted terns.



**Figure 11.** Before (upper) and after (lower) images of bulldozer weed clearance on Bridge Island.





**Figure 12.** Bulldozer clearing broom and other vegetation to reveal river gravels underneath suitable for black-fronted tern nesting on Bridge Island.

**Signed:**

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