

Facing Island Weed Management Report

Gidarjil Development Corporation

Gladstone Ports Corporation

Contract No. CS19000160

Report 1: September 2020



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INTRODUCTION

In March 2020 Gidarjil Development Corporation was engaged to manage weed vegetation on Facing Island as per contract number: CS19000160. The project is aimed at meeting obligations pertaining to the Biodiversity Offset Strategy developed to address the EPBC approval conditions for the Western Basin Dredging and Disposal Project.

Facing Island is located approximately 12 km from the Gladstone mainland to the south of Curtis Island. It is accessible only by private boat or barge. The land tenures are mixed and range from freehold to crown to leasehold from short term to 99 years. An ecological assessment of the Facing Island by GPC revealed the presence of varieties of weeds deemed as restricted species under the Biosecurity Act 2014 requiring eradication and ongoing management. Gidarjil have been engaged to carry out the weed control activities for a period of two years.

Gidarjil development Corporation is a not for profit Indigenous owned and run organisation made up of a board of directors stemming from the local Traditional Owner groups Gooreng and Gurrang Gurrang. The Gidarjil Indigenous land and Sea rangers and Caring for Country rangers were tasked with the weed management program, upon this successful tender, on Facing Island. It has been a long-held desire for Traditional Owners to manage their own country in a fashion closer to the more holistic traditional ways and this tender has provided an opportunity to move towards this goal.

OBJECTIVES

The main objectives of this weed vegetation management program is to successfully undertake the control and monitoring of weeds categorised as restricted under the Biosecurity Act 2014 in identified areas (Figure 1.) over a two-year period. This will be undertaken whilst conserving and improving the value of the regional ecosystem on Facing Island. Whilst maintaining current vegetation structure, composition, this program aims to improve the health and diversity of degraded ecosystems by the facilitation of natural revegetation into what is currently weed dominated areas.

TARGET WEEDS

There have been five (5) Queensland restricted weeds identified for management on Facing Island.

- *Cryptostegia grandiflora* (Rubber Vine)
- *Parthenium hysterophorus* (Parthenium Weed)
- *Opuntia stricta* (Prickly Pear)
- *Baccharis halimifolia* (Groundsel Bush)
- *Agave* Sp (Agave)

It should be noted that there are another two Weeds of National Significance (WONS) and Queensland restricted weeds found on the Island. *Lantana camara* and *Sporobolus* sp. *pyramidalis/natalensis* – Giants Rat Tail grass (GRT). Whilst a full monitoring and mapping was not undertaken for these, anecdotally, it appears the *Lantana camara* is spread across a range of regional ecosystems on the Island. The *Sporobolus* sp. was sighted on the inland track at two points.

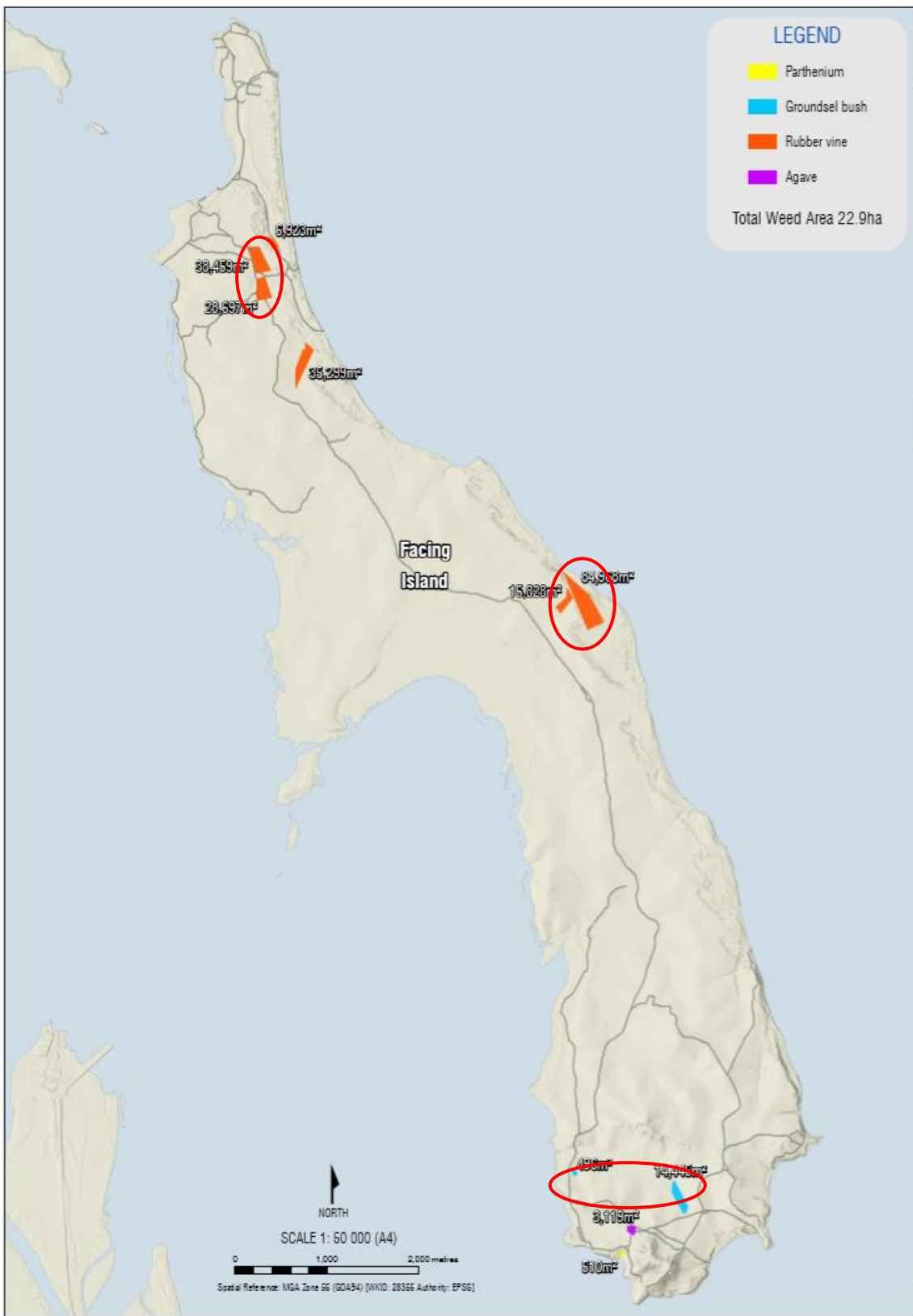


FIGURE 1. VEGETATION MANAGEMENT MAP
 weed control areas to be targeted as determined by GPC. Areas in red indicate the original designated burning areas for weed control pending approved fire permit. targeted control burning was undertaken only the southern end of the island this year (2020).

The management of weeds will be undertaken over a two-year period from 2020 to 2021 through two methods of control.

1. Traditional firestick burning
2. Contemporary application of herbicide.

To date the first-year management undertaking (2020) has been completed. The activities will be repeated in a similar time frame in 2021.

TRADITIONAL FIRE STICK (COOL BURN) METHOD

An area of approximately 30 ha of weeds on Facing Island was targeted to be burnt. Primarily *Cryptostegia grandiflora* and *Baccharis halimifolia* were targeted due to their denseness of infestation in specific sites on the Island as per the GPC map designated areas (Figure 1.).

The timing of fire management is critical and needs to happen at the right time of the year. To Aboriginal experts the country reveals when it is appropriate to use fire: indicators such as when trees flower and native grasses cure. The ideal time is the early dry season, between May and July, when fuel loads are low, temperatures are low and dew points are high. Night or early mornings are ideal for cool fires as during the day plants sweat out flammable oils, and a nightly dew helps cool down the fire.

Traditional Fire Stick management applies a slow cool burn. This type of burns includes a number of benefits. It provides protection to fauna that can remove themselves from oncoming fire or seek protection in unburnt floral canopies. Traditional burning dictates a greater control over target species and *Cryptostegia grandiflora* is particularly responsive to fire. Additional benefits include an increase in biodiversity, sapling integrity remains in areas of new growth and native species incur a germination trigger event post cool burn. Moreover, cool burns preserve carbon sequestration in the landscape as they provide fuel reduction without the loss of canopy and old growth timber.

CHEMICAL CONTROL

Chemical control for all the weeds on this Island, areas defined in figure 1., consisted of two methods depending on the weed type and presentation and in accordance with DPIF Fact Sheets.

- Cut Stump – Where the weed in question is cut completely at the base (no higher than 15cm from the ground) and herbicide sprayed (from a knapsack) onto the exposed stump immediately, resulting in the stump and roots being killed.
- Foliar Spray – The herbicide is diluted with water and wetting agent (as per recommended levels) and die and sprayed on the foliage until all is wet but not dripping. This can be done with a knapsack for larger areas of infestation or spot spray isolated patches or individual weeds. For more expansive areas this may be delivered by a vehicle mounted spray rig (on a side by side vehicle) or with backpack sprayers depending on the environment and location of weeds.

GPC indicated mandatory use of Triclopyr (as butoxyethyl), Picloram and Aminopyralid (as hexyloxypropylamine salt). These were the herbicides that were used to undertake chemical control on Facing Island. All chemicals were used to recommended rates as per the manufacturer, dependant on weed species and control method.

Whilst deemed more time consuming, most of the weed control on Facing Island, was undertaken primarily through the cut stump method. The vast majority of *Cryptostegia grandiflora* was of a height that was deemed excessive for foliar spray to effectively cover the foliage in its entirety without drift or overspray occurrence. The vine was cut with chainsaw by one person and immediately followed by a second who sprayed the exposed stump cut area. Smaller seedling size and those under 1.5 meter in height were foliar sprayed.

The same process was undertaken for *Agave*, anything of substantial height was cut stump/sprayed and smaller individuals foliar sprayed. The *Opuntia stricta* and *Baccharis halimifolia* were foliar sprayed as in accordance with directed industry rates. Identifying dye was added to all spray applications.

No chemical control of *Parthenium hysterophorus* was undertaken as none of the weed was identified as present in the existing location or alternate offered sites where it had been sighted by residents in the past. Reports of occasional sightings at the bins at the Southern end of the Island were acted upon and visual inspection indicated no live weeds were found in the area. Note that this does not mean that the weed is not present as the seed can remain viable in the soil for extended periods of time until ideal germination conditions prevail

TIMELINE

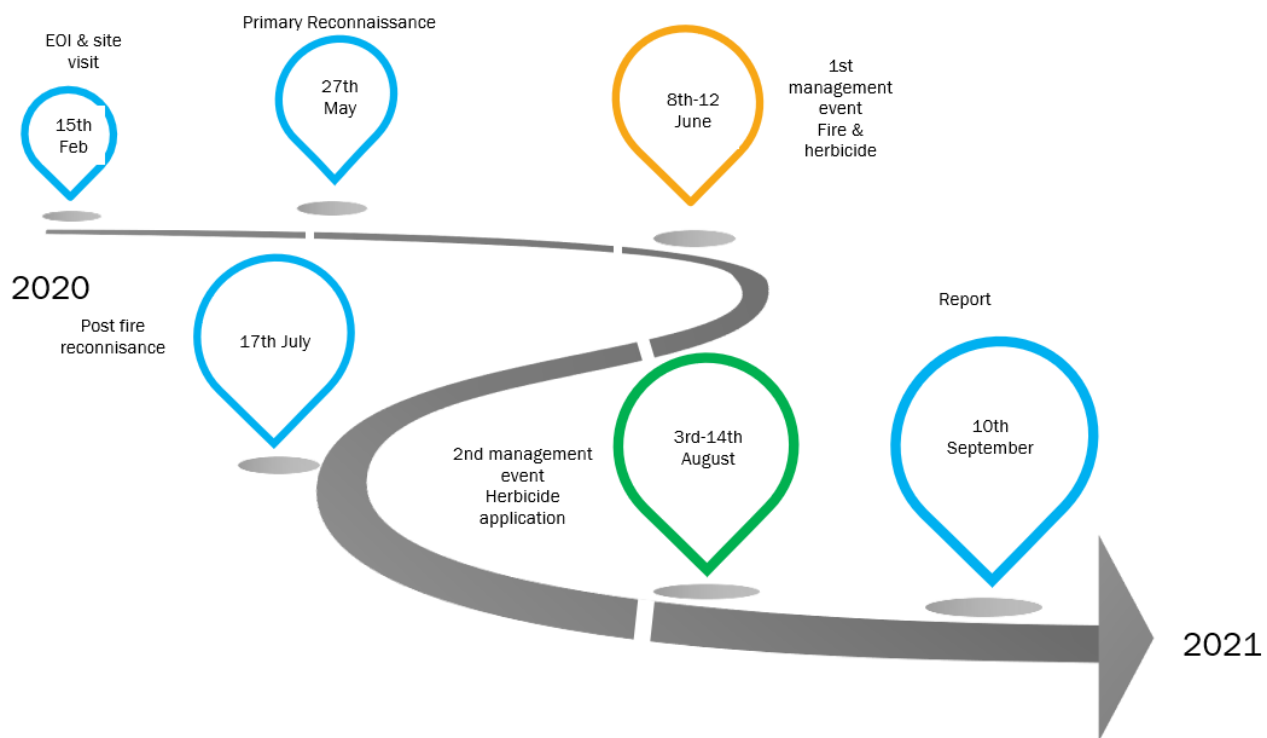


FIGURE 2. TIMELINE OF EVENTS

PRIMARY RECONNAISSANCE

Prior to submission of the expression of interest (EOI) for the tender a reconnaissance was undertaken by a Gidarjil representative to develop an appreciation of project (15th February 2020) for quoting purposes. Upon presenting the EOI and subsequent tender Gidarjil proposed to implement traditional cool burning as a weed control measure in conjunction with the tender package request of herbicide control.

Prior to deployment for burning (27th May 2020) a secondary reconnaissance trip was undertaken with Gidarjil lead staff, those managing the respective tasks, to the Island to undertake scoping of the project for the traditional burns and herbicide application. Photo-point positioning sites and drone footage sites were identified that will be used as comparison evidence over the two years of management.



FIGURE 3 . EXISTING WEEDS

Weeds (outlined in red) left: *Baccharis halimifolia* right: *Cryptostegia grandiflora* were easily sighted on reconnaissance and GPS points noted for reference against future maintenance activities.

Fire brigade commanders from the Rural Fire Brigade units for both the North and South of the Island were consulted during the visit. A permit was granted by the Southern Facing Island Rural Fire Brigade unit to undertake burns for the Southern end of the Island. Hazard reduction burning was not yet completed by the Northern Facing Island Fire Brigade; hence a cool burn could not be conducted in the northern sections in 2020.

FIRST WEED MANAGEMENT EVENT

From the 8-12th of June the fieldwork team for fire stick burns that included 10 personnel were deployed to the Island. Activities as they were undertaken are described chronologically below.

8TH JUNE 2020

A reconnaissance for fire at the Southern end of Island was undertaken for the proposed fire on the 9th June. One photo-point, Photo Point 1 (PP1), was established (Table 1.). Signs were installed across the Island at entry and exit points across the Island as well as at sites where the activities were being undertaken as per the GPC Communication plans.

TABLE 1. PHOTO POINTS

Gidarjil ranger establishing photo point positions on Facing Island for future monitoring.

Photo point No	latitude	longitude	
PP1	23 52.091	151 22.057	
PP2	23 46 669	151 20 .083	
PP3	23 47 204	151 20 .394	
PP4	23 48.663	151 2 .092	
PP5	23 46.763	151 20.104	



FIGURE 4. HERBICIDE AND CONTROLLED BURN COMMUNICATIONS
Herbicide and controlled burn communication supplied by GPC and installed by Gidarjil Ranges.

9TH JUNE 2020

Wind was high in the morning so initially burns were postponed until a lightening of wind conditions (anticipated to occur on BOM by the afternoon). The inland track to the north was cleared of debris to the 'Swan Lake' region to allow for better access to the areas where future burns and chemical weed spray was anticipated.

Photo points 2,3 and 4 were established (Table 1.)

After contacting the Southern Facing Island Rural Fire Brigade, the afternoon of the 9th was deemed appropriate to burn and an ignition time was proposed for 3:30 pm. All Gidarjil staff were present along with the Rural Fire Brigade (five in total) led by Frank Daley. A prestart meeting and JSEA and toolbox talk was undertaken prior to the burn by lead senior rangers from Gidarjil.



FIGURE 5. CONTROLLED BURN SOUTH FACING ISLAND

Gidarjil Rangers and the South Facing Island Rural Fire Brigade undertaking JSEA and toolbox prior to ignition and Ignition starting point.



FIGURE 6. AERIAL FOOTAGE OF COOL CONTROLLED BURN SOUTH FACING ISLAND

Drone footage was taken of the fire upon ignition where it travelled downhill against prevailing winds allowing for a controlled burn.

The burn progressed well despite a large fuel load as the Island had not undertaken any prior burn for at least eight years (up to fifteen years in some areas). The traditional cool burn methodology has been practiced as a land management tool in this region for tens of thousands of years, it needs to be noted that this requires consistent and ongoing practice to establish mosaic burning as the sole method of weed control on the Island without the back up of chemical control.

Half of the Gidarjil team travelled east along the fire front and half travelled west. A two team member runner unit moved between the two larger teams. There was good communication between the teams during the fire. Upon completion of the Gidarjil led burn the Rural Fire Brigade established an additional burn under their control and jurisdiction with which the Gidarjil team assisted. This fire travelled from west to east behind the Gidarjil lit fire. This fire burnt till the desired finite point delineated by swamp and salt marsh to the East and a creek line to the West. The fire continued into the evening and was completed by about 8-9 pm with mop up continuing into the early hours of the following morning. A rain event in the evening assisted in cool burn and mop up overnight.





FIGURE 7. COOL BURN IMAGES SOUTH FACING ISLAND

Desirable cool burns remove the fuel build up on the ground including weed seeds but leave the canopy and habitat logs and trees intact for faunal refuge.

Figure 6. (below) shows the Gidarjil burn and the Rural Fire Brigade burn, their overlap points and the overall scope of area that was burnt. In total the Gidarjil burn comprised of approximately 70 ha and the total burn area was approximately 242 ha. The burn made for a considerable fuel load reduction allowing for more consistent mosaic burning to occur on the Island in accordance with traditional burning techniques into the future. The local Rural Fire Brigade were very happy with the control of the burn and the result and expressed a desire to work with

Gidarjil in future to continue with annual fire burns to a final outcome of mosaic burning across the Island as a permanent ongoing activity.



FIGURE 8. FACING ISLAND BURN AREA MAP

The red shaded area indicates the Gidarjil directed burn. The yellow shaded area indicates the South Facing Island Rural Fire Brigade burn. The green shaded area indicates the back burn behind the Gidarjil burn from the South Facing Island Rural Fire Brigade burn (wind blowing in a North easterly direction moved the fire from east to west).

It is strongly recommended that GPC actively prescribes to more regular burning to ensure and preserve the safety of their assets, lead lights at the Southern end of the Island had very established fuel loads surrounding them. This was taken into account at the pre burn evaluations and it was ensured that there was a well-established work force present to account for burn control around said assets.



FIGURE 9. GPC LEAD LIGHT ASSETS
GPC leadlight shown during and post burn

10TH JUNE 2020

Continued mop up of fire occurred as Rural Fire Brigade asked for assistance in back burning, which Gidarjil rangers undertook, to ensure all fire was extinguished at Southern end of the Island

11TH JUNE 2020

The Gidarjil team split up into teams of two teams and cut and spray *Cryptostegia grandiflora* at the edge of salt pan to the north of the Island as per prescribed methods.



FIGURE 10. NORTH FACING ISLAND HERBICIDE APPLICATION AREA
Area in red indicating *Cryptostegia grandiflora* herbicide-controlled area.

12TH JUNE

Deploy back to mainland

SECONDARY RECONNAISSANCE (POST BURN)

A short reconnaissance post burn visit was made to the Island on the 17th July to investigate the post burn weed status on the Southern end of the Island, in particular the *Baccharis halimifolia*. Hazard reduction-controlled burning was yet to be conducted by the North facing Island Rural fire Brigade so a burn permit for the second deployment event was unable to be obtained during this visit.

A final photo point (PP5) was established (Table 1) in the salt pan area opposite the population of *Cryptostegia grandiflora* that had previously been cut and sprayed on the 11th June 2020. The area that had previously received herbicide treatment was apparent.



FIGURE 11. CUT AND SPRAY HERBICIDE APPLICATION
Evidence of successful management of *Cryptostegia grandiflora*.



FIGURE 12. FLORAL PROMOTION SOUTH FACING ISLAND
Vegetation on the Southern end of the Island had an, as anticipated, germination trigger effect from both smoke and fire. This promotion of flowering on *Melaleuca* sp and *Dodonaea* sp occurred in areas that were not burn but received smoke on the Southern end of the Island, similar flowering was not present to the north of the Island.

The *Baccharis halimifolia* on the Southern end of the Island that had been successfully burnt during the works in June. The visit in August (after six weeks) showed some basal regrowth (reshooting). This was controlled by herbicide spraying in August.



FIGURE 13. BACCHARIS HALIMIFOLIA BASAL REGROWTH

SECOND WEED MANAGEMENT EVENT

The North Facing Island Rural Fire Brigade were disappointed they could not manage burns prior to the second scheduled vegetating management control that was undertaken. However, the Rural Fire Brigade undertook burns while the Gidarjil rangers were present during the 10 days of management undertakings. The rangers however were unable to attend as they were committed to herbicide application activities.

As the Northern Rural Fire Brigade had not completed backburning as per requirements for a permit to be submitted, the Gidarjil work force was unable to undertake burns as a weed control method in the designated areas as per original plan. Therefore, the second deployment to the Island from the 3rd-14th August consisted entirely of herbicide application for weed control. A team of six was deployed to the Island who worked in three teams of two. The majority of the application consisted of the cut and spay methodology however some foliar spray occurred, in particular on the *Baccharis halimifolia* and *Opuntia stricta*. The majority of the weed populations had been mapped out by GPC however the *Opuntia stricta* was dispersed in discrete populations that occurred trackside across the Island and in inter-dunal areas.

Whilst there was an overall attempt to move systematically from the North of the Island Southward herbicide application of areas were ultimately dictated by the tides. Traffic movement was predominantly beach side as the mid Island road was not highly traversable and road conditions worsened due to rain events over the weekend of the 7th - 8th of August. The activities that were conducted in the second field visit are described chronologically below:

3RD AUGUST 2020

Deploy to Island of the Gidarjil ranger team. Replicated re-establishment of signage as per GPS communication requirements.

4TH AUGUST 2020

The rangers split into 3 teams of 2. This remained the status quo for the entire duration of the undertakings during this field activity. Weed target eradication on this date was exclusively *Cryptostegia grandiflora*. One ranger was cutting and another stump spraying. These activities were rotated over the course of the day to reduce fatigue.

5TH AUGUST 2020

The ranger team predominantly cut and sprayed *Cryptostegia grandiflora* with some foliar spray of smaller individuals in the Swan Lake area. Note that a large brown snake was spotted during spraying. The rangers stood down from the work until the snake was observed to have moved out of the vicinity. Weed control activities were further impeded by inaccessible terrain and the presence of long grass and dodder vine. The ranger team moved to the air strip area and foliar sprayed *Opuntia stricta* in the later part of the working day.

6TH AUGUST 2020

The ranger team predominantly cut and sprayed *Cryptostegia grandiflora* with some foliar spray of smaller individuals. The terrain posed some difficulty while working on foot. Large *Agave* individuals were cut and sprayed at the Southern end of the Island in the later part of the working day.

7-8TH AUGUST 2020

Down time due to rain

9TH AUGUST 2020

At the Southern end of the Island one team foliar sprayed the *Baccharis halimifolia* from an ATV. The other two teams foliar sprayed the smaller *Agave* individual specimens and spot sprayed *Baccharis halimifolia*.

10TH AUGUST

The Northern track to Farmers Point was cut and sprayed for *Cryptostegia grandiflora* and foliar sprayed *Opuntia stricta*

11TH AUGUST 2020

Opuntia stricta was foliar sprayed all along roadside from edge of road out to 100m either side. Where individual plants were sighted outside of this loose grid pattern, these were singled out to be sprayed.

12TH AUGUST 2020

Teams continued to travel along roads as per the previous days and sprayed *Cryptostegia grandiflora* and *Opuntia stricta*.

13TH AUGUST 2020

A final reconnaissance was undertaken over Island to identify any missed outbreaks. Washdown of vehicles and units occurred.

14TH AUGUST 2020

Return to mainland



FIGURE 14. IDENTIFIED COMPLETED SPRAYED WEED AREAS ON NORTHERN FACING ISLAND:

Cryptostegia grandiflora in red, *Opuntia stricta* in purple, *Baccharis halimifolia* in blue and combined *Cryptostegia grandiflora* & *Opuntia stricta* in green.



FIGURE 15. COMPLETED SPRAYED WEED AREAS CENTRAL FACING ISLAND:
Completed sprayed weed areas central Facing Island: *Cryptostegia grandiflora* in red



FIGURE 16. COMPLETED SPRAYED WEED AREAS UNDERTAKEN ON THE SOUTHERN FACING ISLAND:
Completed sprayed weed areas undertaken on the Southern end of Facing Island: *Agave Sp* in pink, *Opuntioia stricta* in purple, *Baccharis halimifolia* in blue.



FIGURE 17. CUT AND SPAY HERBICIDE APPLICATION



FIGURE 18. OPUNTIA CONTROL
Foliar spraying of *Opuntia stricta* by the Girarjil rangers.

It was noted by all the rangers that the terrain for weed control to the North of the Island was made much more difficult due to no prior vegetation burn of unlike South Facing Island. The vegetation effectively doubled the work time to get access to basal stem area of vine and cut through with machete and chain saw. High stepping was required, this is not a stable activity to undertake with backpacks so the decision to move to smaller hand-held units extended both labour time and increased chemical mix times.

CONCLUSION

The weed monitoring and eradication program for 2020 has been successful and far more weed has been monitored and controlled than indicated in figure 1. Comparison monitoring of photo points should occur late in 2020 to determine verify long term control success. This data will be submitted in the final report and future management plan in 2021. Gidarjil believes there should be an assessment made by GPC to amend the 2021 contract to manage the currently small populations of GRT that have been sighted along the inland tracts before it spreads across the Island. Additionally, Gidarjil would highly recommend a burning event prior to a follow up and final herbicide application in 2021. It would be highly desirable that fire breaks be established, and a burn occur to the north of the Island prior to next year’s activities. The rangers, all of whom are Traditional Owners, felt a connectedness and value in their work towards a return to sustainable land management on their country and expressed a desire to be involved in long term management of the Islands ecosystems.



FIGURE 19. TRADITIONAL COOL BURN
Gidarjil Rangers, Traditional Owners using traditional methods working on their country.