Regeneration Phase I Report
by **ReForest Now**
for **Aussie Ark**
November 8, 2021

Prepared by Maximo Bottaro, Kallen Marecic and Franzi Kinzel on behalf of ReForest Now

ReForest Now was registered with the Australian Government in January 2018. From then we began the work of establishing a not-for-profit with virtually no startup funds, seeking small grants and community donations.

Introduction

Aussie Ark is building a 1,500 hectare nature refuge in Upper Mongogarie, near Casino NSW. **ReForest Now** has been contracted to help bring their vision to life. Our first phase of works together involves **a) The regeneration** of rainforest areas that have been suppressed by weeds and also **b) The planting** of 22, 000 trees (*12, 000 in the rainforest area and 10, 000 as a koala food forest outside of the area of works shown in these images*).

With funding provided by **Aussie Ark** and our partner the **Joanne Parkinson Foundation**, we've been able to enact this project successfully.

As part of **Phase I** of this work, we were tasked with regenerating 9 rainforest areas. This was completed across 25th, 26th and 27th of October and 1st, 2nd and 3rd of November. With approximately 10 staff per day.

These areas will create a contiguous patch of regenerating forest once we plant 12, 000 rainforest trees in the cleared spaces between, which is planned for the end of **Phase I**. These areas are now completed to a primary works level and can be seen on the **map on page 4**. For best study of results, we recommend printing page 4 to compare with photos and descriptions on each of the 9 sections.

Our plan is to now plant the areas between most of these polygons with 12, 000 rainforest trees. This is due to be undertaken on the week of November 22, 2021. It will result in a considerably large total area of regenerating rainforest.

It is worthy to note that along the eastern side of the **reference map on p4 (*it is oriented with north in the top right corner*) that the snaky regen zones were completed alongside a large creek line (*hence their shape*). Therefore, we were able to rescue many natives along this creek line that at first glance appeared as only weeds. This is because the wet edges allow for high rainforest tree germination, despite the fact that all of those eastern edges were dominated by hectares of mixed; lantana, grass, wild tobacco, bracken and native raspberry. The natives along that whole side have been cleared and marked, so that our machine contractors can now clear these large open areas for replanting without harming the natives along the creek.

A) Map of planned rainforest regeneration areas

The aim of the **Regeneration Phase I** was to create one contiguous patch of regeneration by working in areas of regen and planting that are adjacent. These areas contained a number of larger rainforest trees that were being strangled by various weeds and some overgrowth vines (*vines that have arrived too soon in the regenerating forest*). The map below is adjusted to match the orientation of next page, which was hand-mapped using a GPS device and accurately shows where we were working.

The areas to be worked were chosen by Luke from RN in concert with Liz from AA*

B) Map of completed primary works in rainforest regeneration area - 2.44 hectares

The outlined areas show what has been completed in the six days of regeneration works. In addition, we worked outside of these areas to find and tag native trees before machine slashing/site prep begins in the planting zones. We will plant additional trees in these areas and they will be shown in the next report.

(Above) Lantana camara smothered much of the perimeter. Their roots are shallow and loose, so physical removal is often an effective technique. Here, RN staff can be seen connecting a winch to straps wrapped around the base of a Lantana stump. Lantana growing on the edges could be removed in this way without harming the natives growing underneath. The benefit of this approach is that sometimes it helps to open the forest floor for regeneration instead of leaving huge dead bundles of weeds in place.

(Above) Seen only by its leaves, a Red Kamala (*Mallotus philippensis*) is completely engulfed by Lantana. The Lantana has been curtained - a bush regeneration technique where climbing weeds (*typically vines*) are cut in two places, at ground and head height. Their stumps are poisoned to prevent regrowth, while the Lantana mass above is left to die off. This is a near immediate die off of the weed and allows the native to start recovering straight away.

(Left) Lantana curtained to save a larger tree. Most of the rainforest trees on the site are suffering from some degree of strangulation by lantana, cockspur vine, cissus vine or other competition. As such, much of the entire Mongogarie site needs fairly urgent regeneration to avoid death of established and younger trees.

Dead lantana masses on the ground must be maintained with follow up to ensure they don't resprout. They can resprout in wet conditions and may need spot spraying.

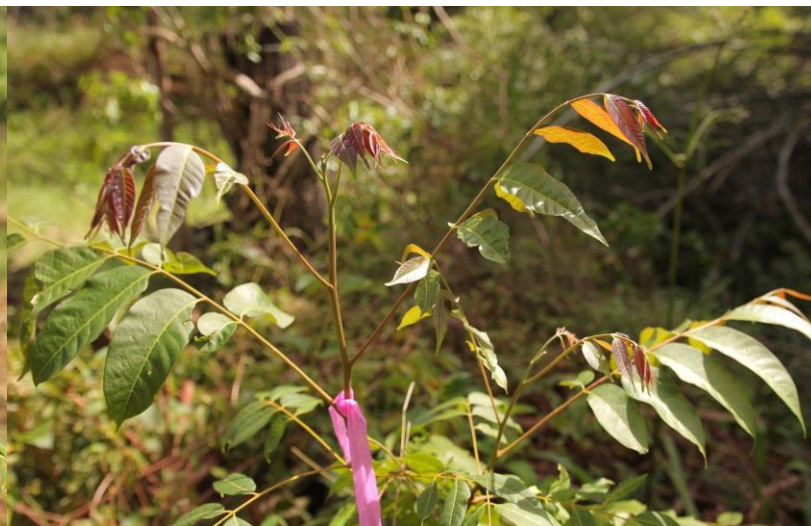
AREA 2

(Above) Where there seemed to be nothing but Lantana, we found many native trees. They can be seen tagged with pink tape. The most abundant species were Red Kamala (*Mallotus phillipensis*) and Foam Bark (*Jagera pseudorhus*).

(Above) Lantana was reduced by a machete team. All stumps were flagged and then drilled to ensure the Lantana is less likely to resprout. There were many stumps in the section seen above and well-established natives that were covered in 12 feet of Lantana are now free (*see how high the Lantana reaches above*).

(Above) Both sides of this worked area will be planted out, joining up with this strip of established trees and assisting with its regeneration to a more complex rainforest structure. (Below) New growth can already be seen days after weeds were removed from this Kamala.

(Above) A healthy Red Cedar (*Toona ciliata*) tagged after being relieved from Lantana, which suppressed the typically fast-growing rainforest tree. (Below) Almost immediate new growth!



AREA 3

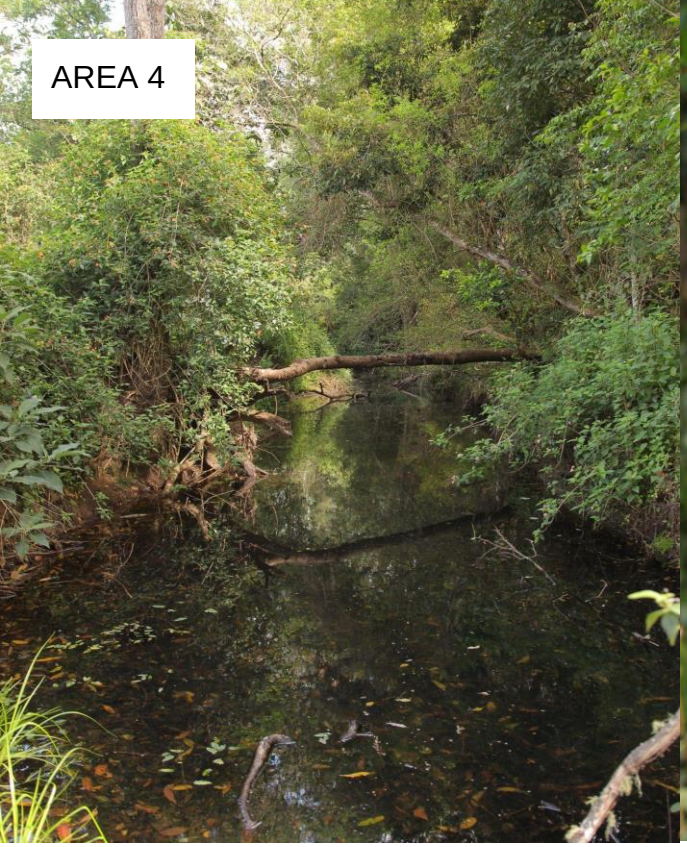
(Above) Maximo inspects one of a great number of rainforest seedlings we found, saved and marked along the extensive creek lines.

(Above) Lantana invasion along the creeks was dramatically thick and aggressively climbed into most of the trees there. These Lantana are entirely cut off, allowing for corridors of small natives like those tagged here to take over the creek line. They will grow fast from the wet environment and later shade it, retaining its riparian moisture and creating a microclimate for better germination conditions.

(Left) A view of some of the water courses that run along the eastern side of the regen zones. Our plantings will benefit enormously from the wetness and are sure to be rather spectacular in 2 or 3 years given these conditions.

(Left) Some areas contained very large water pools that will certainly be of use to a nature refuge, for not just habitat, but water supplies for your facility. These creeks are surely 30cms or so higher during the wet season.

AREA 4



(Above) The waterways continued into this area also.

(Above) Larger surviving native trees were found here, including increased species variety.

(Left) Maiden's hair ferns were a lucky find in several areas. These normally only occur in rocky wet areas around creeks. If we clear weed competition from the ground level, we can encourage them to take over as much as a quarter of a hectare of the 2.44 hectare area. We also found *Pollia crispata* along the creeks, which given time will certainly multiply to create even more ground covered areas. Pollia could also claim some half a hectare in the creek lines.

(Left) Maximo flanked with both ferns and native rainforest trees where lantana has been cut away from the creek line. These giant patches of Lantana are being removed at the time of writing (November 8, 2021) by our slashing/machinery sub-contractor.

(Above) On the left side one can see dead Lantana still hanging from several meters up into the trees, now cut down to nothing. On the right of this photo a Red Kamala can be seen covered in immediate new growth. This often happens as soon as weeds are removed.

(Above) This area contained several rainforest barrens where many species had survived and germinated behind a wall of Lantana - stuck on larger trees. The wall of Lantana provided perfect conditions for clusters of natives to germinate, however it also suppressed their growth.

(Far Left) A young Red Cedar at least 15 feet high that was mostly covered in Lantana, now freed. Maximo stands where 15 feet Lantana has now been removed! This can still be seen hanging down, dying from the Red Cedar's branches and trunk.

(Near Left) Hundreds of examples of immediate new growth can be found all over the site from our works over these two weeks! In some parts the new growth happened in just two days as total blanketing from sun by weeds was taken away. They may look small but many of these have well developed roots and have been waiting for their chance!

AREA 6

(Left) The curtaining technique can be clearly seen here - weeds cut from ground to head height.

Maximo stands where enormous Lantana once strangled a Red Kamala rainforest tree. The dead Lantana above his head shows how totally smothered this tree was, with weeds reaching well over 24 feet into the tree. Stumps were poisoned and weed mass above head height dies off immediately in the hot sun.

(Left) With some good luck we found rainforest tree ferns that had germinated in the valley! This is very exciting for the future potential of the site. Many wet dependent species have thrived here and this indicates an excellent future with assisted regeneration. We are hoping they spore into all of the recently opened creek areas.

AREA 7

(Left) Some of the best surviving natives we found across the site were in area 7.

When the curtains of vines and weeds were removed we also were able to carefully liberate the forest floor, which exposed to us many germinated native trees. This would be the thickest part of the site for recruitment.

(Left) Area 7 was crossed by one of the many waterways on the site at its northern terminal end.

AREA 8

(Above) Larger rainforest trees were saved from extensive weed invasion, like this foam bark. Dead lantana can be seen at 16 feet into the tree. Tobacco weed can be seen dying off on the forest floor.

(Above) Another example in this very central location along the dirt track; a large red cedar, freed of weeds.

(Above) A red cedar 6ft high, these can easily be accidently killed if lantana is machine removed or over sprayed without first sending in teams to find, tag and clear them. This tree is well established despite weeds and will certainly grow to a large size quickly.

(Above) In the center here is a red kamala that was well on the way to dying from being totally covered by the extensive lantana here, it is flanked on either side by foam barks that are ready to drive straight up to the canopy (*straight trunks*).

AREA 9

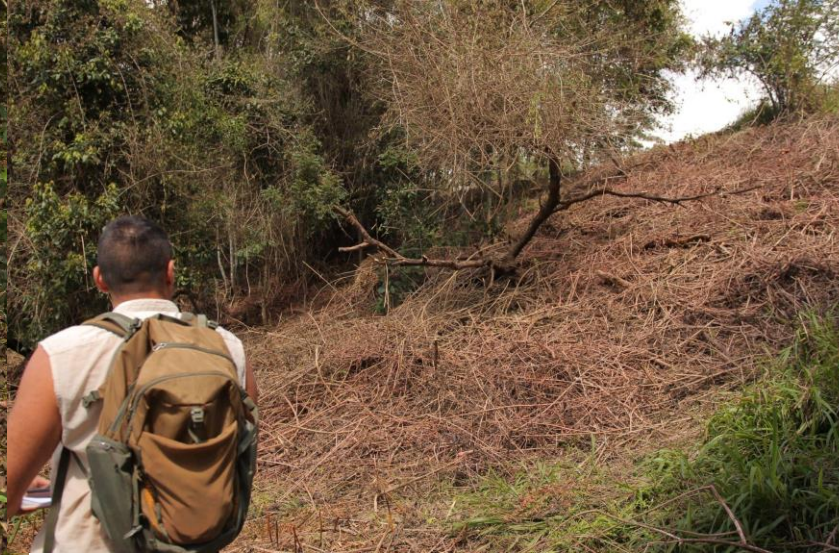
(Above) A barren of rainforest seedlings that will now grow rapidly.

(Above) This hill was almost entirely lantana, note how high it is in the trees and thick on the ground. This photo was taken **after** winching out the larger ones that dominated the area.

(Above) Much lantana has been winched or machine dragged out of regen areas. These have made enormous piles that will die off and reduce over the wet season.

(Above) What was very messy with weeds is clearing up to be garden-like. At first it will be like this, then we expect thousands of natives to germinate in the open spaces. Upper Mongogarie has few species of weeds to contend with and, with care, has an easy path to regeneration. *Camphor laurel* is yet to dominate at the site and our intervention now can prevent it from doing so.

AREA 10



(Above) Larger trees along the central track have supported the germination of many natives. This was suppressed by some giant cockspur vines that have been treated to save the trees and allow the small natives through.

(Above) Enormously thick lantana eradicated on hill sides along the dirt track through the center of the area.

Additional imagery showing some of the boundaries that are now open, allowing sunlight in. These will need to be maintained for some years before they are self-sustaining.

Budget

The works proposal provided larger areas than we could achieve off our initial budget *(which also had to include additional machinery works),* so instead of doing some of the areas available, we decided to increase the total budget and cover it through RN's own avenues to complete the whole regen vision of **Phase I**.

Aussie Ark Budget Phase I RN

Labour	Rate	Per diems	Date	Times	Hours	Spent	Agreed Budget
Week 1 John Stevenson slashing			23/24-10-21			***$2,560.00***	$4,000.00
Regen Week 1 Clydesdale Inn			25/26/27-10-21			$1,850.00	
Staff Regen Week 1 - Day 1 Franzi, Lola, Maximo, Josh, Matt, Nathan M, Kallen, Stan, Chris, Luke	$336.00	$500.00	25-10-21	08:00 to 17:30	9.50	$3,692.00	
Staff Regen Week 1 - Day 2 Franzi, Lola, Maximo, Josh, Matt, Nathan M, Kallen, Stan, Chris, Luke	$336.00	$500.00	26-10-21	08:00 to 17:25	9.25	$3,608.00	
Staff Regen Week 1 - Day 3 Franzi, Lola, Maximo, Josh, Matt, Nathan M, Kallen, Stan, Chris	$296.00	$450.00	27-10-21	08:00 to 15:25	7.50	$2,670.00	
Regen WEEK 1 Total						***$11,820.00***	$8,500.00
Regen Week 2 Clydesdale Inn			01/02/03-11-21			$1,915.00	
Staff Regen Week 2 - Day 1 Josh, Matt, Ren, Lola, Romey, Brad, Luka, Tashi, Maximo	$310.00	$450.00	01-11-21	08:30 to 17:00	8.50	$3,085.00	
Staff Regen Week 2 - Day 2 Josh, Matt, Ren, Lola, Romey, Brad, Luka, Tashi, Maximo, Luke	$350.00	$500.00	02-11-21	08:00 to 17:00	9.00	$3,650.00	
Staff Regen Week 2 - Day 3 Josh, Matt, Ren, Lola, Romey, Brad, Luka, Tashi, Maximo, Luke	$350.00	$500.00	03-11-21	08:00 to 15:00	7.00	$2,950.00	
Regen WEEK 2 Total						***$11,600.00***	$8,500.00
Total Expenditure						**$25,980.00**	

Aussie Ark Contribution	***$19,560.00***
Joanne Parkinson Foundation Contribution	***$5,000.00***
ReForest Now In-kind Contribution	***$1,420.00***

Note: left over budget for slashing is going to be spend in the next report

Pay direct to our accounts at

ReForest Now
Westpac Bank
BSB : 032-573
ACC : 354136

or

Make all checks payable to ReForest Now Incorporated

ou hav e any questions concerning this inv oice, use the following contact information:
Contact Name: Maximo Bottaro, Phone Number : 0415 134 941
Email : info@reforestnow.org.au
Thank you for your business!

Outcome and aftercare

Our outcome: Completing 2.5 hectares of primary rainforest regeneration in just 6 days is fairly hard going and has resulted in a very clear, accessible and visually beautiful outcome. Most of the canopy weeds are already dried and dead, those that take longer (*particularly cockspur)* will follow suit in around 2-3 weeks.

Industry standards: In many regenerators approaches, the weeds would've been left in place and over sprayed with considerable amounts of chemicals. This approach could not be used in the creation of a wildlife sanctuary and would have killed many of the small natives that we found, tagged and saved. We put their survival first. Additionally, that chemical heavy approach leaves standing weed skeletons, these could sit in place for years and this leaves the site inaccessible and ugly.

Maintenance: What we have done has resulted in an immediately cleared site that will need regular but light follow up, to ensure lantana roots or stems on the ground don't reshoot. We have directly poisoned many roots, but there are always some reshoots with this technique.

This will take minimal labour, but should be performed every few months. It'll take about 1 day for 1 person with a backpack 6 times per year for a perfect finish, or half that for a decent job.

New life: With minimal chemical use and tremendous new light levels on the saved natives, we have already seen hundreds of the small and large rainforest trees shoot up new leaves. This is to be expected as suppressed rainforest trees usually have more life in them than they appear to and grow aggressively once freed. In several cases, we saw young trees shoot bright new red tips overnight/2 days. The extensive ground cover species we've found and cleared around will make for a wonderful widespread understory given another 2 years of careful tending (*always ensuring their boundaries are cleared of non-native grasses so they can expand freely and constantly*).

Final words

There's plenty of positive talk around RN about having met the most amazing conservation team we've ever come across. That's you guys. Our crew say Aussie Ark is the real deal and the people they've been waiting to work with.
The vision of Liz, the passion of Tim, the love of Dean, the nature connection of Rory - we're wrapped to be able to support your team. You deserve the best efforts we can muster and we couldn't be more grateful to have come across a project of such worthiness and magnitude. A 1, 500 hectare sanctuary is as worthy a project to support as any we've heard of.

We're looking forward to providing you with a second report on planting 22, 000 trees in two weeks time as well. That will conclude **Phase I**.

We'd like to thank **Aussie Ark** for providing funding for this project and to our ongoing ReForest Now supporter, the **Joanne Parkinson Foundation**, for stepping up once again to support large scale rainforest regeneration with us.

If you'd like to discuss anything further, please contact the CEO at info@reforestnow.org.au or +61415 134 941*(direct Australian number)*.

Yours Sincerely,

Signed: Maximo Bottaro - CEO & Cofounder