

East Point Reserve Biodiversity 5 Year Management Plan 2014 – 2018

1. Introduction

East Point Reserve (the Reserve) is located on Alec Fong Lim Drive, Fannie Bay, on the most easterly point of Darwin Harbour, 6 kilometres from the Darwin CBD. The Reserve is a recreational, environmental and educational resource that aims to balance ecological, cultural and historic values, whilst providing recreation opportunities.

The site covers almost 200 hectares of land, 30 hectares of which is maintained as natural forest as well as the large recreational Lake Alexander. The management and control of the Reserve was passed to the City of Darwin in 1984. Several private leases exist within the Reserve (see Figure 1: East Point Reserve vegetation type and leased areas).

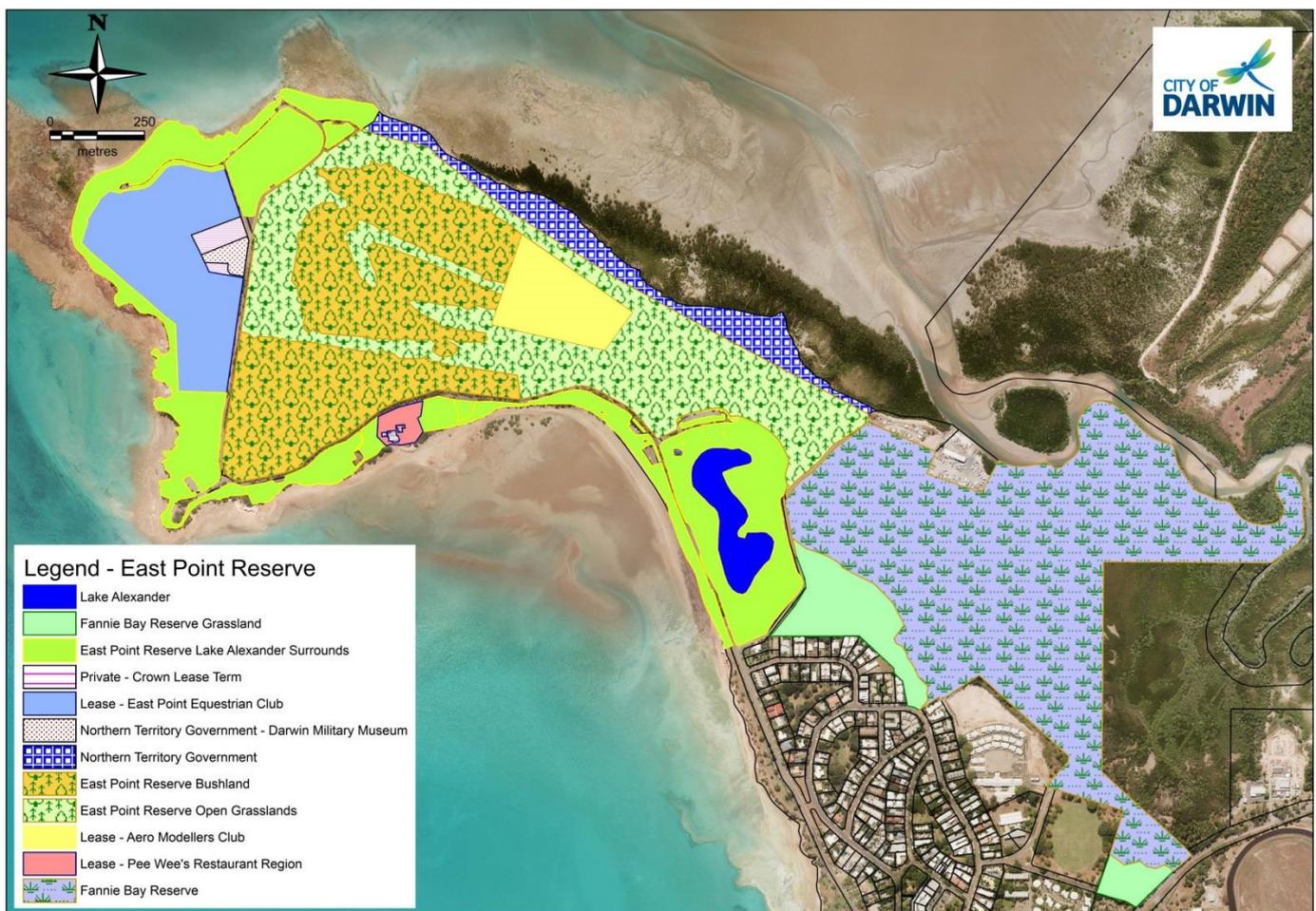


Figure 1: East Point Reserve vegetation type and leased areas.

The Reserve has significant environmental value as it provides habitat for vulnerable fauna species identified by the Northern Territory's *Territory Parks and Wildlife Conservation Act 2000* such as the Mitchell's Water Monitor (*Varanus mitchelli*) and Floodplain Monitor (*Varanus panoptes*). The Reserve also forms part of the larger *Darwin Harbour Site of Conservation Significance* (SOCS). SOCS are sites that have been identified by the Northern Territory's Department of Land Resource Management as containing important biodiversity values which should be protected.

The central location of the Reserve means it is regularly used by residents and tourists. However its location has also led to its isolation and fragmentation from the few remaining dry monsoon rainforest vegetation in Darwin. Where once the Reserve was covered almost entirely by dry monsoon rainforest, it is estimated cover stands as 20% today.¹

City of Darwin recognises the importance of biodiversity, as well as the role East Point Reserve plays in providing habitat for fauna across Darwin, as demonstrated in its *Strategic Plan Evolving Darwin Towards 2020*. Outcome 3 in Goal 3 “An environmentally sustainable city” states Council will ‘conserve and protect the Darwin environment’. Council further recognises the importance of biodiversity in its *Climate Change Action Plan 2011-2020* under actions:

B1 Increase native endemic vegetation to ensure conservation of existing communities

B3 Continue to revegetate East Point Recreation Reserve.

2. Management Actions

The East Point Reserve Biodiversity 5 Year Management Plan (the Plan) provides Council with the direction required to meet its goals and outcomes as stated above in *Strategic Plan Evolving Darwin Towards 2020* and *Climate Change Action Plan 2011-2020*.

To support the development of the Plan, City of Darwin in 2013 commissioned EcOz Environmental Services (EcOz) to undertake a biodiversity survey of the Reserve, focusing on the dry monsoon forest (highlighted in Figure 2: Vegetation complexes and survey areas as Dense Monsoon Forest, Mid-dense Monsoon Forest and Dense Advanced Monsoon Forest Revegetation). Baseline fauna, flora and habitat surveys were conducted comprising of a desktop study and two field surveys (wet and dry season). Wallaby counts were also undertaken. Figure 2 shows the survey sites.

EcOz identified 79 native flora species from 40 different families within the Reserve, with surveyed sites averaging 20 – 27 species per site. This is greater than the surveyed mean number of species within dry monsoon forest in Northern Australia of 52 species.² 229 fauna species were also identified during both desktop and field surveys as inhabiting the Reserve. Of these, 49 were vertebrate fauna species, which is considered ecologically significant in such an isolated area.³

EcOz provided recommendations for future biodiversity management in the Reserve, many of which have been incorporated into this Plan through the Actions. For more information, see the full report *East Point Biodiversity Assessment, 2013* (common number 2415691).

The Plan outlines management actions jointly developed by the Parks & Reserves and Climate Change & Environment departments which guide biodiversity management of East Point Reserve to year 2018. The actions are outlined below.

Action 1 – Undertake annual wet season biodiversity monitoring.

Annual biodiversity monitoring will be undertaken to determine ecosystem changes and revegetation success. Monitoring will be undertaken during the wet season as survey results are more comprehensive during this period in comparison to the dry. Methods and key indicators will be replicated from the 2013 EcOz survey. The data collected will identify the health of the ecosystem and monitor progress of management actions.

¹ Franklin, D.C., Matthews, R., Lawes, M.J. (2010) History of the East Point monsoon forest. *Northern Territory Naturalist* 22: 2-16.

² Russell-Smith, J. (1991) Classification, species richness, and environmental relations of monsoon rain forest in Northern Australia. *Journal of Vegetation Science* 2(2).

³ Price, O., Woinarski, J.C.Z., Liddle, D.L., Russell-Smith, J. (1995) Patterns of species composition and reserve design for a fragmented estate: Monsoon rainforests in the Northern Territory Australia, *Biological Conservation* 74(1).



Figure 2: Vegetation complexes and survey areas (EcOz East Point Biodiversity Assessment, 2013).

2.1 Flora

Maintaining the diversity of the flora within the Reserve is an integral part of conserving the areas overall biodiversity richness as well as contributing to a healthy, functioning ecosystem.

Action 2 – Increase the current extent of monsoon forest strategic revegetation and reduce edge effects.

Revegetation will be undertaken in key areas in particular degraded areas or where weeds have been removed, either by physical or natural means. Reducing edge effects in turn reduces weed growth and joining corridors provides safe refuge for species such as the elusive Rainbow Pitta (*Pitta iris*).

Priority revegetation over the next 5 years is highlighted in Figure 3: Future revegetation plan. Priority revegetation areas include grassed areas such as the corridor adjacent to the Aero-modellers Club lease. However, revegetation activities will take into consideration preservation of adequate open areas for wallaby foraging. Wallaby monitoring outlined in Action 11 will provide more information on the open area foraging habits identifying areas to be revegetated.



Figure 3: Future revegetation plan.

Action 3 – Continue regular vegetation management such as controlled thinning of the upper stratum tree species.

Regular controlled thinning of the upper stratum tree species, in particular pioneer species such as (*Acacia auriculiformis*), has helped to accelerate the vegetation community towards a more advanced, uneven-aged growth. This results in a more varied habitat for fauna species and allows understorey plant species to emerge. Vegetation modification such as this will continue as part of ongoing maintenance.

Action 4 – Plant Atlas Moth larvae food plants *Croton habrophyllus* and *Litsea glutinosa* in revegetation works.

Action 12 sees Council investigate the reintroduction of the Atlas Moth (*Attacus wardi*) into the Reserve. As a result, revegetation works over the next 5 years will include *C. habrophyllus* and *L. glutinosa* (and other species deemed suitable) to provide suitable habitat for the Atlas Moth.

In 2013 EcOz identified the suitability and maximum stocking rate of Atlas Moth preferred species:

*'The survey identified the potential for between 498 and 994 *C. habrophyllus* and between 3217 and 5327 *L. glutinosa* plants to inhabit both the dense monsoon forest and the mid-dense monsoon forest within the East Point Reserve remnant monsoon forest. Habitat surveys determined that within East Point Reserve monsoon forest there are approximately 14.5 ha of Atlas Moth habitat, of which 2.1 ha is Highly Suitable habitat.'*

C. habrophyllus and *L. glutinosa* will be added to the preferred revegetation species list for the Reserve, and will feature heavily in future revegetation activities (Action 2) in order to build habitat for the Atlas Moth over the next 5 years.

Action 5 – Continue to use locally-sourced seed to propagate nursery stock for revegetation.

Council will continue to use local nurseries such as Greening Australia who propagate native plants for revegetation ensuring provenance where ever possible. Local nurseries source seed from seed collectors who gather seed stock from the Reserve.

2.1.1 Weeds

EcOz identified 15 introduced flora species during their 2013 survey (see Figure 5: Significant weed species locations within East Point Reserve). Of these, one is a Weed of National Significance (*Jatropha gossypifolia*) and two are Class B weeds in the Northern Territory (*Senna obtusifolia* and *Hyptis suaveolens*) (see Figure 4).



Figure 4: Weed of National Significance *Jatropha gossypifolia* (left), Class B *Hyptis suaveolens* (centre) and *Senna obtusifolia*⁴ (right).

Action 6 – Continued control of all weed species.

Council will continue to control the growth and spread of weed species in line with its *Weed Management Guide 2012*. Methods may include spraying and slashing of grasses including Gamba (*Andropogon gayanus*) and Mission Grass (*Pennisetum polystachion*).

Action 7 – a) Engage interested parties with the intention of developing an integrated approach to biodiversity management at the Reserve including a coordinated approach to weed management.

b) Host quarterly meetings.

Although Council is responsible for managing the Reserve, lessees are expected, as part of their lease agreements to control pests and weeds.

Council will consult with interested parties through quarterly meetings. The aim of the meetings are to open communication lines, increasing knowledge sharing and ownership, further strengthening relationships, and developing a joint, integrated approach to biodiversity management at the Reserve. Council will draft terms of reference which will be presented to the group at the first meeting. Council will coordinate the meetings, however all members can contribute to agendas.

⁴ Images sourced from Northern Territory Government Weed Management Branch, 2012.

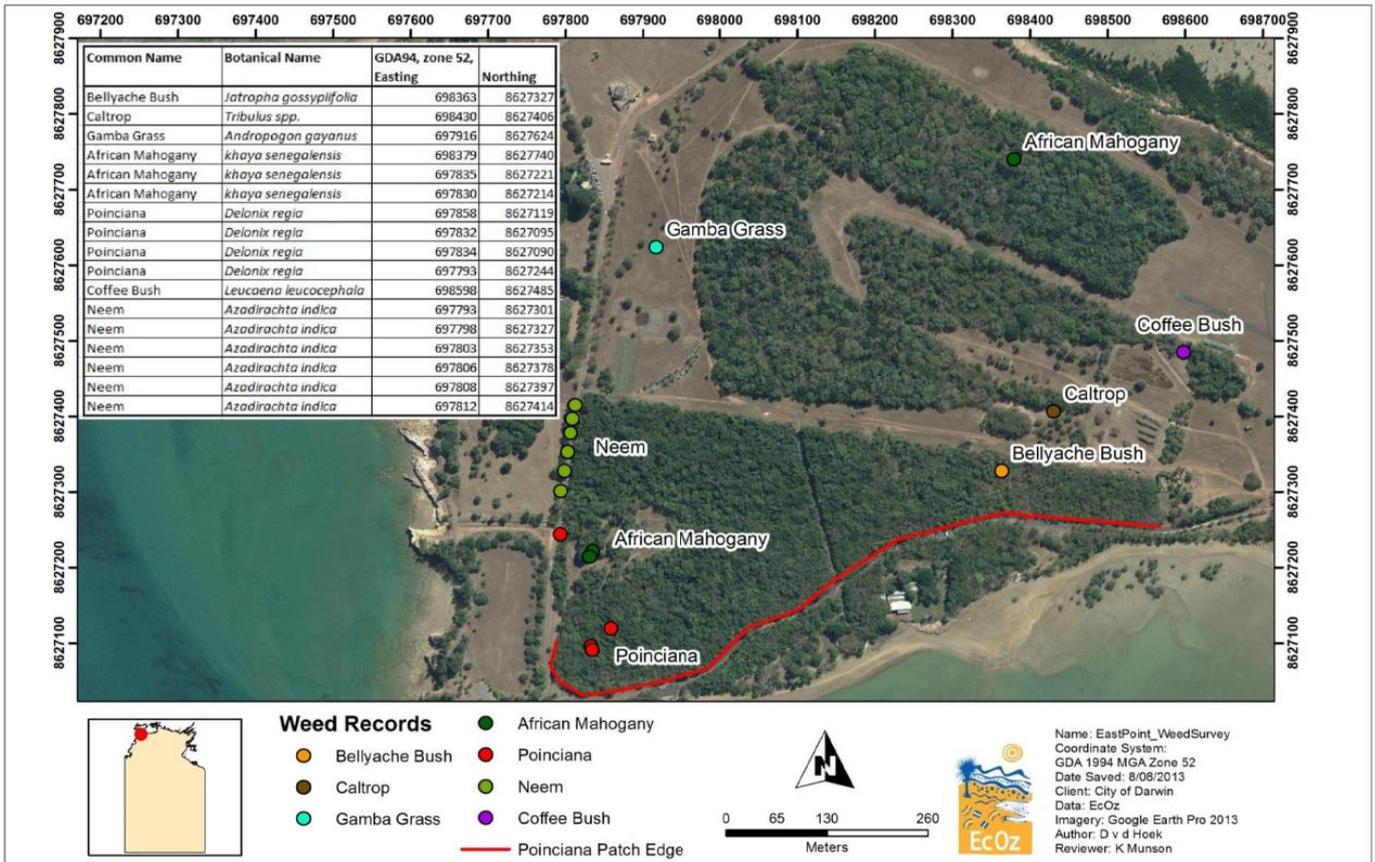


Figure 5: Significant Weed species locations within East Point Reserve (EcOz East Point Biodiversity Assessment, 2013).

2.2 Fauna

Fauna play a vital role in a healthy, functioning ecosystem. The Reserve is home to a range of fauna species including the vulnerable Floodplain Monitor (*Varanus panoptes*) and Mitchell's Water Monitor (*Varanus mitchelli*) (see Figure 6).



Figure 6: Floodplain Monitor *Varanus panoptes*⁵ (left), Mitchell's Water Monitor *Varanus mitchelli*⁶ (right).

Action 8 – Continue to support external stakeholders undertaking research at the Reserve.

Council will continue to solidify its relationships with current stakeholders such as Charles Darwin University and FrogWatch who utilise the Reserve for research purposes. Liaising with these groups to assist with data collection will not only help strengthen relationships but also provide an opportunity for knowledge and data sharing.

⁵ Image sourced from ReptileWatch, 2012.

⁶ Image sourced from Griffiths, A. *Threatened species of the Northern Territory*, Compiled by Simon Ward, 2012. Retrieved September 17 2013, from http://lrn.nt.gov.au/_data/assets/pdf_file/0020/143129/Varanus_Mitchelli_VU_FINAL.pdf

Parks & Reserves officers will continue to report reptile observations to FrogWatch including any carcasses found. FrogWatch collect these animals for information and research purposes.

2.2.1 Birds

Bird life is in abundance at the Reserve and EcOz identified 189 different species during their 2013 desktop and field surveys. The Reserve is also considered an important habitat for migratory shorebirds under the Australian Government's *Environment Protection and Biodiversity Conservation Act, 1999*.

Action 9 – Support the protection of shorebird roosting areas within and adjacent to the Reserve.

Although the land where the shorebird roosting occurs is under Northern Territory Government jurisdiction, Council will continue to support relevant stakeholders to ensure the protection of shorebird roosting areas on land within and adjacent to the Reserve.

Action 10 – Install an artificial Osprey nesting platform.

Although eight raptor species including the Eastern Osprey (*Haliaeetus cristatus*) are known to frequent the Reserve, the foreshore currently lacks any appropriate roosting or nesting areas. To encourage these birds to nest, an artificial Osprey nesting platform will be constructed within the first 12 months. If considered successful, an additional platform will be constructed to further encourage nesting.

2.2.2 Wallabies

The Reserve is home to a population of Agile Wallabies (*Macropus agilis*). A maximum count of 114 wallabies was made in May 2013 by EcOz. The surveys provide information on the stability of the population and assist in identifying the important and preferred foraging areas.

Action 11 – a) Train Council officers to undertake wallaby population surveys.

b) Undertake wallaby population surveys each month for 12 months to allow adequate on-the-job training and baseline data collection.

c) Continue wallaby population surveys on a quarterly basis.

Within six months, five Parks & Reserves officers will be trained to undertake wallaby population surveys, allowing Council to undertake its own surveys.

Monthly wallaby surveys will be conducted for the first twelve months creating a baseline dataset, which will build on historical data. Data will be recorded using a survey record template and will be input into a spreadsheet accessible to the Team Coordinator Parks & Reserves for reporting purposes.

After twelve months of monthly surveys, surveys will be conducted quarterly.

2.2.3 Atlas Moth

In their *East Point Biodiversity Assessment 2013* EcOz comments:

'The Atlas Moth (Attacus wardi) was first discovered within the Port Darwin area in 1908 at a time when large patches of monsoon rainforest and monsoon vine thicket were present, thus providing the habitat necessary to support the Atlas Moth population. Over time much of this habitat, including the plant species that the Atlas Moth larvae depend on for a food source, have been cleared to make way for the development. The Atlas Moth has since become extinct from the Darwin area.'

EcOz identified opportunities to reintroduce the Atlas Moth (*A. wardi*) (Figure 7) back into the Reserve which included the planting of larvae food plants species *C. habrophyllus* and *L. glutinosa* (see Action 4 for more information on species inclusion in revegetation work).



Figure 7: Atlas Moth *Attacus wardi*⁷.

Action 12 – a) Liaise with Atlas Moth expert and breeder on appropriate timing for reintroduction of the Atlas Moth to the Reserve.

b) Reintroduce the Atlas Moth to the Reserve.

As outlined in Action 4, *C. habrophyllus* and *L. glutinosa* will be added to the preferred revegetation species list for the Reserve, and a focus will be placed on planting these species in order to build habitat for the Atlas Moth over the next five years.

Council will liaise with Atlas Moth expert and breeder Geoff Martin in raising 15-20 Atlas Moths for reintroduction and release at the Reserve. Release will occur once the larvae and host food plants have matured to a suitable age and density to support the moths through life stages.

2.2.4 Introduced Species

Feral animal numbers within the Reserve are considered low for an ecosystem in such close proximity to urbanisation (EcOz 2013) however they still pose a significant risk to the biodiversity in the Reserve. Introduced species identified during EcOz's survey included the dingo (*Canis lupus*), wild dog (*Canis familiaris*), cat (*Felis catus*), Asian house gecko (*Hemidactylus frenatus*), blind snake (*Ramphotyphlops braminus*), cane toad (*Rhinella marina*) and the common house mice (*Mus musculus*).

Action 13 – Monitor and control introduced fauna species where appropriate.

If dingoes (*Canis lupus*) and wild dogs (*Canis familiaris*) are observed within the Reserve or in surrounding areas, appropriate trapping will be implemented.

Council will continue to assist FrogWatch in conducting 'Toad Busts' which monitor and reduce the cane toad population (*Rhinella marina*⁸). Assistance will also be provided to ensure the toad fence is maintained.

3. Roles and Responsibilities

The review, implementation and reporting of the East Point Biodiversity 5 Year Management Plan is the joint responsibility of the Parks & Reserves and Climate Change & Environment departments.

⁷ Image Len Willan. and CSIRO Entomology. *Threatened species of the Northern Territory*, Compiled by Michael Braby, Colin Wilson, Simon Ward, updated 2012. Retrived September 2013, from http://irm.nt.gov.au/__data/assets/pdf_file/0014/10904/Atlas_Moth_VU_FINAL.pdf

⁸ Also known as *Bufo marinus* but has been updated to *Rhinella marina*

The Team Coordinator Parks & Reserves is responsible for the implementation of actions, while the Manager Climate Change & Environment is responsible for annual reviews of the Plan, and the reporting to the Environment & Infrastructure Committee against the *Climate Change Action Plan 2011-2020*.

4. Review

This plan will be reviewed annually. A comprehensive assessment of actions completed will be undertaken in 2018 when the plan will be updated.

5. Timeframe for Management Action Implementation

Management Actions		Start Date	Finish Date	Notes	2014				2015				2016				2017				2018			
					Q1	Q2	Q3	Q4																
Action 1	Undertake annual wet season biodiversity monitoring	01/01/14	31/12/18	Once annually																				
Action 2	Increase the current extent of rainforest through strategic revegetation and reduce edge effects.	01/01/14	31/12/18	Ongoing management																				
Action 3	Continue regular vegetation management such as controlled thinning of the upper stratum tree species.	01/01/14	31/12/18	Ongoing management																				
Action 4	Plant Atlas Moth larvae food plants <i>Croton habrophyllus</i> and <i>Litsea glutinosa</i> in revegetation works.	01/01/14	31/12/18	Ongoing management																				
Action 5	Continue to use locally-sourced seed to propagate nursery stock for revegetation.	01/01/14	31/12/18	Ongoing management																				
Action 6	Continued control of all weed species.	01/01/14	31/12/18	Ongoing management																				
Action 7	a) Engage interested parties with the intention of developing an integrated approach to biodiversity management at the Reserve including a coordinated approach to weed management.	01/01/14	30/03/14	First meeting to be held in 1st quarter 2014.																				
	b) Host quarterly meetings.	01/01/14	31/12/18	Ongoing on a quarterly basis																				
Action 8	Continue to support external stakeholders undertaking research at the Reserve.	01/01/14	31/12/18	Ongoing as required																				
Action 9	Support the protection of shorebird roosting areas within and adjacent to the Reserve.	01/01/14	31/12/18	Ongoing as required																				
Action 10	Install an artificial Osprey nesting platform.	01/01/14	30/12/14	Install first platform																				
Action 11	a) Train staff to undertake wallaby population surveys.	01/01/14	01/07/14	Engage consultant and undertake training																				
	b) Undertake monthly wallaby population surveys.	01/01/14	31/12/14	On a monthly basis during 2014																				
	c) Continue wallaby population surveys on a quarterly basis.	01/01/15	31/12/18	Ongoing on a quarterly basis																				
Action 12	a) Liaise with Atlas Moth expert and breeder on reintroduction of the Atlas Moth to the Reserve.	01/01/14	01/07/14	Initiate discussions with breeder within 1st quarter of 2014																				
	b) Reintroduce the Atlas Moth to the Reserve	01/01/14	31/12/18	Dependant on successful increase of plants to support the population																				
Action 13	Monitor and control introduced fauna species where appropriate.	01/01/14	31/12/18	Ongoing as required																				

