PHOSPHATE RESOURCES LIMITED

Attachment D

Giant Gecko Management Plan

Mitigation strategies for UCL Exploration

September 2016

Report prepared by

Range to Reef ENVIRONMENTAL

Prepared for Phosphates Resources Limited

Name	Task	Version	Date
GGMP ver 0.1	Internal Draft	v0.1	26/07/2016
GGMP ver 0.2 to ver 0.4	Draft	v0.2-0.4	12/08/2016
GGMP ver 0.5 FINAL	Final for DER approval	V0.3	12/09/2016

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Prepared for Phosphate Resources Limited (trading as Christmas Island Phosphates)

Cover photo: Judy Dunlop (2016)

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1 Introduction

Phosphate Resources Limited (PRL trading as Christmas Island Phosphates) is seeking to complete a programme of exploratory drilling (the proposed action) across Unallocated Crown Land (UCL) located on the eastern seaboard of the island in accordance with Exploration Licence ECI 70/2.

PRL applied for two clearing permits under the *Environmental Protection Act (WA) (CI) 1986* to enable access tracks to be cleared to provide temporary access for a 4WD mounted drill rig (refer Figure 1). The Department of Environment Regulation (DER) have approved the applications and issued permits subject to a fauna condition to mitigate potential impacts on the Christmas Island giant gecko. The following permits have been issued: CPS6920/1 (5 May 2016); and CPS7040/1 (19 July 2016).

Native vegetation clearing permits CPS 6920/1 and CPS7040/1 include the following fauna condition:

> *(a) Prior to clearing any vegetation within a minimum buffer distance of 100 metres of known giant gecko (Cyrtodactylus sadleiri) locations the Permit Holder must prepare a giant gecko Management plan and submit it to the CEO for the CEO's approval.*
>
> *(b) If it is necessary to modify the giant gecko Management Plan under 7(a) then the Permit Holder must provide that modified giant gecko Management Plan to the CEO for the CEO's approval prior to implementing the modified giant gecko Management Plan.*
>
> *(c) The Permit Holder shall implement the latest version of the giant gecko Management Plan approved by the CEO.*

In this condition, ‘known giant gecko locations’ are those locations as identified either in the Island Wide Survey (IWS) completed by Parks Australia (2013 and 2015) and in recent surveys completed by Range to Reef Environmental (R2R) in 2016. R2R conducted comprehensive quantitative nocturnal surveys in UCL in the vicinity of the proposed exploration drill lines to provide accurate information on presence and relative abundance of giant geckos.

Figure 1. 4WD mounted Aircore Exploration Drill Rig

Based on the results of the R2R surveys clearing for exploration in some UCL areas will not now proceed due to the high numbers of giant geckos observed in these locations. This decision was taken to minimise impacts of the proposed action.

The objective of this Plan is to minimise the potential for injury or mortality to giant geckos during the clearing operation by moving individuals a safe distance away from the exploration lines whilst retaining individuals in the same general area and habitat (i.e. within a maximum of 100 m of capture). Based on the experiences of fauna staff with giant geckos and the low numbers likely (see Section 7.1), the proposed approach of capturing and moving geckos over three nights immediately prior to clearing should meet this objective.

Subsequent to the clearing permit approvals process, the Commonwealth Department of the Environment has directed PRL to obtain further approvals under the *Environmental Protection and Biodiversity Conservation Act 1999 (*refer Table 1). Processes to obtain these are now underway and this Plan will be provided as part of the EPBC Referral process.

Table 1. Exploration Approvals (as at 6 September 2016)

Legislation	Approval	Status
Environmental Protection and Biodiversity Conservation Act 1999	Assessment through referral (Pt 7 and Pt 9) Pt 13 Permit to take, move, injury and keep listed threatened species	In progress In progress
Environmental Protection and Biodiversity Conservation Regulations 2000	Pt 9 permit to kill, take, keep or move a member of a protected species	In progress
Environmental Protection Act (WA) (CI) 1986	Permit to clear native vegetation EPBC referral Attachment F EPBC referral Attachment F	Issued as follows: CPS6920/1: 5 May 2016 CPS7040/1: 19 July 2016

The implementation of this Plan will provide a valuable insight to the effectiveness of this mitigation strategy. This management plan has been developed for proposed track clearing (for exploration and other purposes). It may not be practical for use in broad scale native vegetation clearing or where giant geckos are present in high numbers due to the labour intensive nature of the capture and relocation operation.

2 Purpose and Objectives

- To reduce the risk of impact on the Christmas Island giant gecko of the proposed clearing operation by moving individuals from the clearing zone to a safe distance from the clearing footprint immediately prior to clearing.
- To comply with the fauna conditions of native vegetation clearing permits CPS6920/1 and CPS7040/1 and hence allow the clearing of native vegetation within 100m of a known Christmas Island giant gecko locations (based on the R2R 2016 environmental surveys and 2013 and 2015 IWS data).
- To provide an understandable and easy to implement work procedure for use by site operations staff.

3 Scope

The Giant Gecko Management Plan applies to any clearing for exploration drill lines in UCL that is proposed to occur within 100m of a known giant gecko location, where a 'known giant gecko locations' is defined and identified as a giant gecko record in the IWS completed by Parks Australia (2013 and 2015) and fauna surveys (diurnal searches, pit traps and nocturnal transects) completed by R2R in 2016.

4 External References and Standards

1. Department of The Environment, 2013a. EPBC Act Policy Statement - Translocation of Listed Threatened Species - Assessment under Chapter 4 of the EPBC Act, Department of Sustainability, Environment, Water, Population and Communities, Canberra. Available from: https://www.environment.gov.au/resource/epbc-act-policy-statement-translocation-listed-threatened-species-assessment-under-chapter. Accessed Fri, 6 May 2016.
2. Department of The Environment, 2013b. Compliance and Enforcement Policy: Environment Protection and Biodiversity Conservation Act 1999, Department of The Environment, Canberra. Available from: http://www.environment.gov.au/epbc/compliance-and-enforcement. Accessed Thur, 5 May 2016.
3. Department of The Environment, 2014. Threatened Species Scientific Committee (TSSC). *Commonwealth Conservation Advice for* Cyrtodactylus sadleiri *(Christmas Island Giant Gecko)*, Department of the Environment, Canberra. Available from: http://www.environment.gov.au/biodiversity/threatened/species/pubs/86865-conservation-advice.pdf. Accessed Thur, 5 May 2016.
4. Department of The Environment, 2016. Species Profile and Threats Database, *Cyrtodactylus sadleiri*, Department of the Environment, Canberra. Available from: http://www.environment.gov.au/sprat. Accessed Thur, 5 May 2016.
5. Wynn, M.L. Unpublished Data. The life history and population ecology of the Christmas Island giant gecko (*Cyrtodactylus sadleiri*), Manuscript in Progress.
6. Environment Australia, 2013. Conservation Advice *Cyrtodactylus sadleiri* (giant gecko), Department of the Environment. Available http://www.environment.gov.au/biodiversity/threatened/species/pubs/86865-conservation-advice.pdf. Accessed 15 August 2016.
7. Director of National Parks. 2014. DRAFT Christmas Island Biodiversity Conservation Plan. Department of the Environment, Canberra.
8. Range to Reef 2016 flora and fauna surveys

5 Definitions

CIP Christmas Island Phosphates

DER Department of Environment Regulation, Western Australia

DotE Department of the Environment and Energy, Canberra, ACT

EPBC Environmental Protection and Biodiversity Conservation Act 1999

IWS Island Wide Survey

MNES Matter of National Environmental Significance

PRL Phosphate Resources Limited (the parent company)

R2R Range to Reef Environmental

UCL Unallocated Crown Land

6 Responsibilities

Once approved by the DER this plan will be implemented and followed by all employees of PRL and appointed external consultants in relation to the proposed exploration works as detailed in the related referral (the proposed action) and as authorised by native vegetation clearing permits CPS6920/1 and CPS7040/1.

7 Giant Gecko

Description: The Christmas Island giant gecko (*Cyrtodactylus sadleiri*) is an endemic species that was listed as Endangered in January 2014 under section 178 of the *Environment Protection and Biodiversity Conservation Act 1999* (Department of the Environment, 2016). The giant gecko is the last remaining native reptile species found commonly in the wild on Christmas Island. It is a large, arboreal, nocturnal gecko with a long snout and an average adult body length (excluding the tail) of 8 cm, reaching a total length of 17 cm and weighing between 10 and 20 g. Juvenile geckos hatch with an average total length of 4 cm, weighing less than 1g, (Wynn, Unpublished data). Colour and patterns vary, with most adults a pale grey-brown colour with mottled, black blotches along the back, and a pale, yellow-cream underside. Eyes are large, with a ridge of golden scales above the eye and the tail (original growth) is often long with alternating dark and pale bands, often curling up when the animal is still. Regenerated tail growth is plain in colouration and does not often curl up. The feet and claws of the giant gecko are long and bird-like in appearance; distinct from the short, rounded heavily-padded feet of the introduced house geckos.

Range: Adult giant geckos are very territorial, and found in pairs generally only when mating. Movement behaviours and home ranges are currently being researched but individuals are fairly habitual, often remaining in the same location for many days. However, adults have been known to travel up to 10 m distance in one night, particularly when searching for mates, (Wynn, Unpublished data).

Adaptability: Habitat preference of the giant gecko is highly dependent on the diversity of vegetation, and seems to be adaptable between contrasting forest types in primary forest areas of Christmas Island. In plateau rainforest areas, where soil is deep and trees are dense, giant geckos tend to primarily occupy trees and shrubs. However, on terrace scree slopes, where there is a relatively low density of trees due to reduced soil levels, giant geckos choose to

occupy a wider variety of substrates, such as limestone pinnacles, vines, and fig trees, (Wynn, Unpublished data).

Key habitat: The giant gecko is most commonly found perched on buttress trunks, branches of small trees, vines, leaves, and limestone pinnacles. Trees with large buttress roots, low branches, vines, epiphytes or flaky bark are the preferred choice of habitat for giant geckos, over those trees with thin, isolated trunks with little shelter. Example tree species that are preferred by the giant gecko include*: Syzygium nervosum, Baringtonia racemosa, Pisonia Umbellifera, Inocarpus fagifer* and *Ficus microcarpa,* as well as many understory species including *Leea angulata* and *Pandanus elatus*. Juvenile giant geckos occupy very different substrates to adults; perching on leaves and narrow branches of tree saplings and ferns up to 3m above the ground. This species is rarely found on the ground unless just hatched, or moving between trees, and is not commonly found higher than 5m off the ground (Wynn, Unpublished data).

7.1 Distribution and Abundance

Occurrence: Giant geckos are found right across Christmas Island, with densities found to be highest in the central plateau rainforest and along terrace scree slopes, however an island-wide population study has not yet been completed (Wynn, Unpublished data). Giant geckos have previously been recorded returning to cleared land and revegetated sites (Department of the Environment, 2014).

In June 2016, R2R undertook quantitative spotlight surveys to establish presence/absence and to generate abundance estimates for the giant gecko. A long term objective of these surveys was to inform an Island population estimate. The R2R giant gecko surveys involved:

- 39 survey sites in both primary closed evergreen/secondary and semi-deciduous forests;
- 3 replicates were undertaken (i.e. 3 nights sampled for each transect with a total of 95 transects) for the majority of sites;
- Transects were timed;
- For each gecko record a distance (from transect line) and height above ground level was recorded to enable the volume of space surveyed to be calculated; and
- An analysis of the results for observer bias (control charts) with the most proficient observer surveying every site.

The analysis of the giant gecko survey data showed that the abundance could be split into four zones across the eastern seaboard of Christmas Island (refer Figure 2). Surveys showed that there were very high densities in the north-east part of the Island (i.e. Phosphate Hill zone), with a reduction in density moving south. The South Point zone had very low abundance with many areas having no geckos recorded. The results of this assessment are presented in Table 2.

An analysis was also undertaken to see if there were any relationships between gecko abundance and habitat type: however, there were none. As habitat does not appear to influence distribution and abundance, other factors may be at play such as invasive species effects. Anecdotally, the presence of Yellow Crazy Ants (YCA) and Giant Centipedes appeared to broadly be associated with gecko absence or low abundance, however more detailed research would be needed to investigate this possible link. Other invasive species such as wolf snakes and rats may also be important.

Table 2. Giant gecko population density estimates*

Zone (see Figure 2)	Drill Lines	Density estimate / geckos per ha*	S.E.*	95% Confidence Interval*
Phosphate Hill	33, 36, 64 to 66, 71	31.7	7.9	21.2 – 53.7
Western sites	11 to 15, 58	19.2	10.5	5.8 – 63.6
Eastern sites	25, 26	3.5	2.1	0.99 – 12.7
South Point	3 to 5	4.5	3.8	3.8 - 32

*From *Christmas Island Giant Gecko Surveys, June 2016. Survey Data Analysis and Gecko Density Estimates* (Solais Geoinformatics Pty Ltd, unpublished)

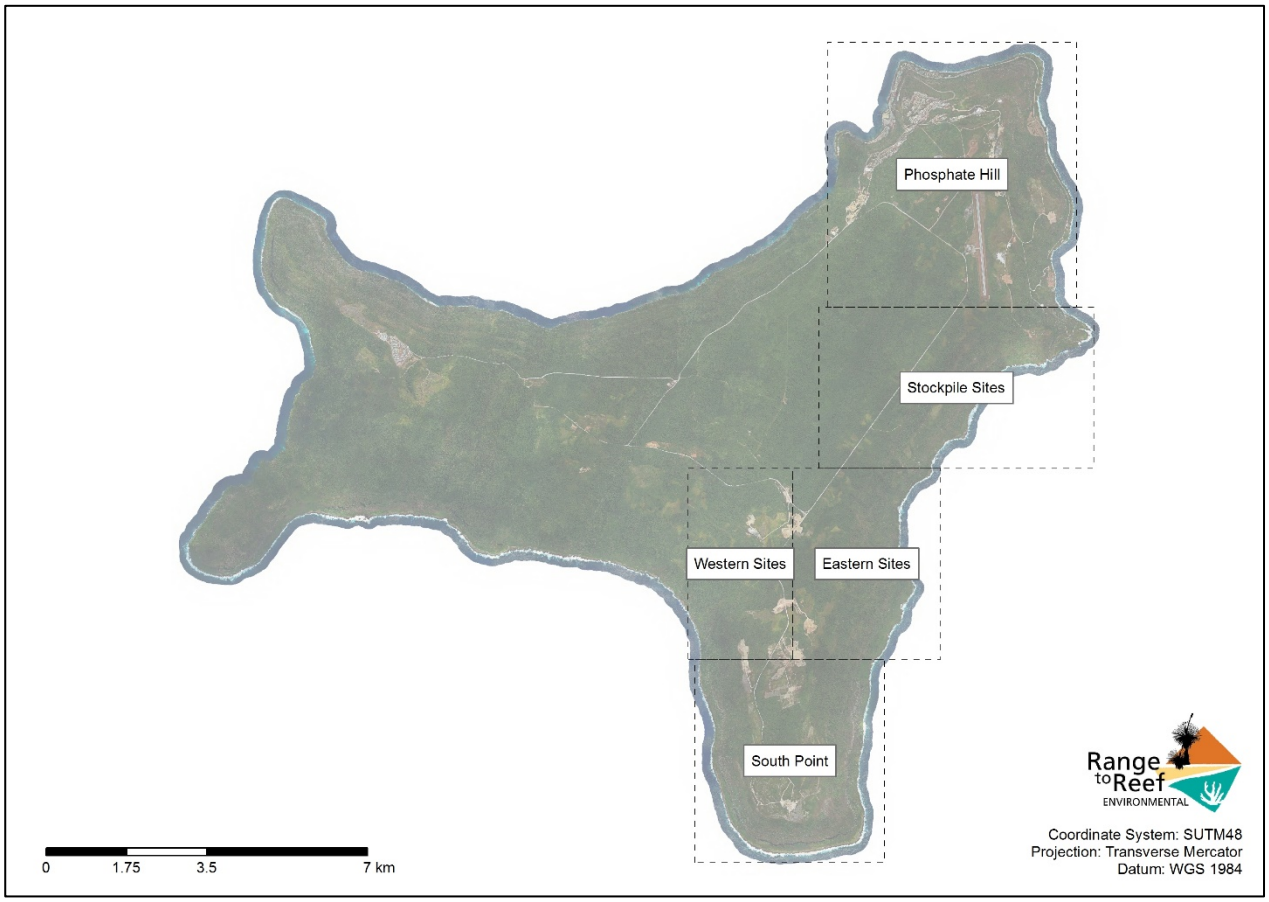

Figure 2. Stratified zones for giant gecko abundance estimates for the giant gecko surveys

In relation to the proposed exploration drill lines, giant geckos were observed along, or in the vicinity of, 17 of the 44 drill lines (equivalent to 20% by area and length).

The population density estimates for these zones have been used to calculate a mean and a range (i.e. upper and lower at the 95% Confidence Interval) of giant geckos that would be expected to be present along these 17 proposed exploration drill lines (lines 3 to 5, 11 to 15, 25, 26, 33, 36, 58, 64 to 66 and 71). Using these density estimates, it is predicted that the number of giant geckos that may be present along the footprint of the proposed exploration drill lines will vary between 0 and 4 geckos /line (based on the mean). Full details with respect to each exploration drill line are presented in Table 3.

Whilst there are some limitations to undertaking an Island wide giant gecko population estimate, the R2R surveys provide valuable quantitative data on giant gecko abundance that can inform an initial estimate. Based on the abundance data and on the area of the Island that is vegetated (i.e. excluding 'coastal fringe' and 'not vegetated'), an estimate of the Island wide population is put between 202,000 and 455,000 with a mean of 303,000 individuals (Solais Geoinformatics, unpublished 2016). The main limitations to the above estimate are:

- Surveys have been along the eastern side of the Island and no sampling was undertaken in the western side of the Island; and
- Some areas had a high variability in abundance between replicates which reduces confidence levels.

To improve the confidence of this Island wide population estimate further surveys in un-sampled geographical areas (i.e. western and central part of the Island) and further replicates of the existing sample sites are recommended. Assessment of invasive species densities in these sites is also recommended to determine if these are driving gecko abundance (i.e. YCAs, centipedes, wolf snakes, rats, cats).

Table 3. Giant gecko Population Estimates for the Proposed Exploration Drill Line

Drill Line no.	Gecko abundance/ha from Island zone*			Length of line	Proposed clearing Width	Disturbance Area	No of geckos predicted on clearing footprint for each exploration line		
	Mean	Lower	Upper	(m)	(m)	(ha)	Based on mean	Lower	Upper
3	4.5	3.8	32.0	84	5	0.042	0.19	0.16	1.34
4	4.5	3.8	32.0	199	5	0.100	0.45	0.38	3.19
5	4.5	3.8	32.0	178	5	0.089	0.40	0.34	2.85
11	19.2	5.8	63.6	192	5	0.096	1.84	0.56	6.09
12	19.2	5.8	63.6	146	5	0.073	1.40	0.42	4.65
13	19.2	5.8	63.6	41	5	0.021	0.40	0.12	1.31
14	19.2	5.8	63.6	33	5	0.017	0.32	0.10	1.06
15	19.2	5.8	63.6	170	5	0.085	1.63	0.49	5.40
25	3.5	1.0	12.7	150	5	0.075	0.26	0.07	0.95
26	3.5	1.0	12.7	182	5	0.091	0.32	0.09	1.15
33	31.7	21.2	53.7	199	5	0.100	3.16	2.11	5.35
36	31.7	21.2	53.7	102	5	0.051	1.61	1.08	2.73
58	19.2	5.8	63.6	175	5	0.087	1.68	0.51	5.56
64	31.7	21.2	53.7	109	5	0.054	1.72	1.15	2.92
65	31.7	21.2	53.7	253	5	0.126	4.00	2.68	6.78
66	31.7	21.2	53.7	127	5	0.063	2.01	1.35	3.41
71	31.7	21.2	53.7	202	5	0.101	3.20	2.14	5.42
TOTALS						**1.270**	**24.6**	**13.7**	**60.2**

*Based on estimates from *Christmas Island Giant Gecko Surveys, June 2016. Survey Data Analysis and Gecko Density Estimates* (Solais Geoinformatics Pty Ltd, unpublished)

8 Approvals Required

The proposed mitigation strategy will require a EPBC Act Part 13 Permit: This regulates actions or activities affecting members of listed threatened, migratory and marine species (and listed ecological communities), whales and other cetaceans and listed marine species in Commonwealth areas (Christmas and Cocos Keeling Islands, including CINP and Pulau Keeling National Park).

Forms to be completed include:

- General application form for listed species / ecological community permits;
- Supplementary Form C for listed species / ecological community.

9 Methodology

9.1 Clearing

Based on fauna conditions in CPS 6920/1 and CPS7040/1 as issued by the DER, the maximum length of track from which giant geckos may have to be removed is 205m (for 100m radius buffer).

The site for giant gecko removal should be setup and marked prior to removal surveys. The centreline of the proposed clearing will be marked by reflective flagging tape by PRL technical services staff to assist with night navigation. Reflective tape should be positioned at 10m intervals or as required to ensure visibility from point to point within the vegetation.

Giant geckos will be removed from a buffer zone of 2.5 m bordering either side of the proposed cleared area, for example for a 5 m wide track the fauna removal site will be 10 m wide. Removal will be done over 3 consecutive nights immediately prior to the clearing operation (i.e. clearing to be undertaken on Day 4).

The clearing process as described in the two clearing permits (CPS6920/1 and CPS7040/1 EPBC Referral Attachment F) and endorsed by PRL is as follows.

- Clearing will be along previous drill lines;
- Clearing will be undertaken during the dry season to minimise impacts on red crabs (i.e. avoiding months when crabs are active or migrating), as well as minimising potential for erosion;
- An observer will remove robber crabs from the line immediately prior to clearing;
- Machinery will be supervised by Technical Services staff, with 2-way radio communication, flagging and GPS operators;
- Where possible the drill rig will reverse down the track to minimise the need for a turning areas at the end of the drill line. If required turning areas will be provided and have been included in the clearing footprint for the exploration works;
- Existing tracks will be used where available for access and drilling works;
- Significant vegetation (e.g. large habitat and other trees) will be avoided by diverting equipment around them;
- Where any large fallen tree crosses the drill line, the portion of the trunk blocking the line will be removed by chainsaw to minimise disturbance outside the drill line;
- Where possible, cut vegetation cleared from the tracks will be returned to the drill line tracks following exploration. If this is not possible, the cleared vegetation will be brushed to the side of the 5m exploration track within the historical clearing footprint (roughly 8m). Vegetation quickly breaks down in a tropical environment and is consumed by red crabs and rots quickly;
- Exposed rocks i.e. limestone will be pushed to side of tracks;
- Drill holes will be secured immediately after survey by capping with rocks/debris;

- Surface water runoff channels will be incorporated into clearing at 150 m intervals in sloping areas to encourage water flow into nearby undisturbed area and minimise track erosion;
- Traffic will be minimised to limit soil compaction (1 x 960 FEL, 1 x drill rig). All support vehicles (2 x light vehicles, air compressor) will remain where possible external to the proposed exploration drill lines;
- Vehicle hygiene will be maintained to prevent the spread of invasive species (machinery washed down before first pass clearing);
- Refuelling will be completed in areas external to the exploration drill lines with access by service/fuel truck during operating hours which includes own spill kit;
- A procedure is in place for any hydrocarbon spills (ENV-SOP-004 Fuel and Oil Spill Management);
- Daily removal of rubbish and sample bags; and
- Access to tracks will be blocked to vehicles following clearing and exploration activities;

The following additional measures should be implemented as part of this management plan:

- Any injured fauna will not be further harmed or killed unless a decision to euthanize (kill) any injured fauna is made by Parks Australia and/or a consulting expert.
- The contact number for the local Parks Australia office and a consulting expert will be displayed in the site offices and in site vehicles.

9.2 Giant Gecko Removal

A six-step procedure is outlined below for the training, search, capture, removal, keeping and relocation of giant geckos:

STEP 1. Training:
All staff undertaking this work will require pre-removal training. Staff will be trained by an expert with knowledge of effective search strategies and the safe and humane protocols used during capture, handling and release of giant geckos. A minimum of 3 hours training at night, between 19:00 and 24:00 will be undertaken. An ideal location is at the Territory Day Park circuit track where giant geckos are known to be found in high densities.

STEP 2. Search:

Three staff members will be used to search and capture giant geckos between 19:00 and 23:00 within a 10m wide strip of vegetation. This should be adequate given that this management plan will be implemented in areas with low giant gecko abundance so very few animals are likely to be encountered (see Section 7.1). A record will be made during the searching of all giant geckos seen for use in future population assessments. However, giant gecko capture which will only take place within the 10m clearance zone.

One person will walk along the marked centreline (with a handheld GPS and/or compass) with a person positioned on either side of the flagged centreline track. Teams will walk slowly and quietly along the track, stopping every two metres to search for giant geckos on every surface, within the marked site searching in front, above, and behind. Head torches are required to be worn low, at eye-brow level to ensure optimal searching. Giant gecko records (ie. number, distance from centre line, height above ground level) will be recorded for the line searched.

The most efficient searching method is as follows:

- First, scan the entire track area for gecko **eye-shine**: the reflective membrane in the giant gecko eyes can be seen at a range of 6-20 metres (depending on head torch brightness);

- Second, begin searching for geckos on **distant substrates** such as large tree trunks, look for gecko shapes, but also look for unusual changes in substrate pattern or shape, as geckos may be camouflaged or silhouetted; and
- Third, repeat the above step for all **other substrate types**, starting with distant ones: Small tree trunks, branches, fallen down logs, tree leaves, epiphytes, vines, saplings, ferns, rocks, leaf litter, ground.

Do not attempt to search whilst moving, and the quieter people search, the more chance they will have of seeing something before it is disturbed: avoid breaking or rustling of vegetation as far as possible.

STEP 3.

Capture:

Giant geckos will only be captured for relocation if they are within the 10m wide clearance zone. When a giant gecko is observed in this zone, the closest team member must catch it by hand. If the gecko is out of reach, a long stick will be used by one team member to encourage the animal down within reach, while the other team member catches it. Communication between team members is essential during capture of animals in tricky locations.

Geckos that escape before capture, or are seen out of reach, but within the marked site, must be recorded in a tally each night to measure capture success. The most efficient catching methods are as follows:

Approach

- Identify where exactly the gecko is positioned, how far away it is, and take note of **landmarks**. This ensures you knew exactly where the animal is when you move;
- Approach the gecko as **quickly and quietly** as possible (take care to move carefully over uneven ground);
- Do not keep your **torch beam** on the gecko as you approach, this will frighten it. Instead aim it downwards and use it to guide your steps; and
- Where possible, **approach the gecko from behind** the object it is on so it does not see you. This will reduce the chance of it escaping.

Capture

- **Do not hesitate** when catching the animal; you will generally only have one chance;
- **To catch a gecko on a tree or soft surface**, use an open palm with pressure on the fingers and edge of the palm. Once the animal is under your palm, gently use your thumb or your free hand to reach under and get hold of the animal. Be very careful not to press or squeeze hard as this will injure the animal (use the same pressure as you do to hold a pen);
- **To catch a gecko on a rock or other sharp surface**, you will have to move fast as they tend to escape easier. Aim to pin the animal down gently around the gecko's shoulder / chest region using your fingertips (not an open palm). Once the animal is under your fingers, gently use your free hand to reach under and get hold of the animal. Be very careful not to press or squeeze hard as this will injure the animal;
- Never aim for, or apply pressure on the **tail region** as the tail will break off with the slightest pressure. This will not kill the animal but it may impact their health, and will place unnecessary stress on the animal; and
- If the animal escapes your first attempt, **do not give up**; try to catch the animal again immediately, remembering not to hesitate.

Once an animal is successfully captured, the animal must be placed carefully inside an individually numbered linen bag, and the bag tightly tied. The following data must then be recorded:

1) Bag number;
2) GPS waypoint of exact location;
3) Distance along Track;
4) Substrate type (and species if known); and
5) A detailed report of any issues with capture (tail loss, injury etc).

STEP 4. Removal:

Giant geckos in tightly tied individually numbered linen bags are required to be placed carefully together in a carry bag, carried by one team member (central member preferred) and padded with a towel underneath for protection. Giant geckos will remain in this bag until they are successfully relocated (see below). No more than 15 geckos are to be kept in one carry bag at any one time.

STEP 5. Relocation:

1) **Action 1:** translocation to a nearby site

All potential impacts of translocation are to be considered as per the EPBC Act Policy Statement - Translocation of Listed Threatened Species - Assessment under Chapter 4 of the EPBC Act, prior to (Department of The Environment, 2013).

Requirements for release site:

- Releases will occur within the 100 metre buffer zone surrounding the proposed access track;
- Release areas must be assessed prior to surveys to ensure suitability;
- Habitat must be similar (vegetation types, canopy cover, understory amount, topography, elevation) to that of the cleared habitat; and
- No presence of yellow crazy ant or carpenter ant (visible at night) super colonies.

Giant geckos will be released under the following conditions:

- Transported in individual clean linen cloth bags numbered with original bag number;
- Individual releases are to be no more than 100 m away from capture point and at least 50 m from any part of the track area (that is to be cleared). This is to prevent return pre-clearing;
- Individuals should be released within 60 minutes of capture (ie. at night to avoid heat stress and / or predation);
- Released at a suitable intact-forest location;
- Where possible, released on a substrate similar to where it was captured (i.e.: large tree, rock, pandanus, etc);
- Released at a minimum distance of 5 m from other observed giant geckos or predators (eg. wolf snake and giant centipede); and
- Husbandry will not be required as geckos will be released within 60 minutes to a location near their capture site.

9.3 Criteria for success

- At least 70% of all geckos observed are captured each night;
- 100% of geckos captured are successfully released unharmed;
- Progressive reduction in geckos seen within clearance zone on second and third nights;
- None or very few giant geckos are observed within the removal site on the third night;
- Fauna removal and clearing works will be completed within the recommended time frames; and
- Success will be determined as per the 'Factors critical to successful translocation' section of the EPBC Act Policy Statement - Translocation of Listed Threatened Species - Assessment under Chapter 4 of the EPBC Act (Department of The Environment, 2013).

9.4 Resource Requirements

Staff

A minimum of three staff will be required

- 1 Navigator (walking the centre marked line + GPS + recorder) and releaser; and
- 2 Searchers and collectors (walking either side of the navigator).

Training

An experienced fauna scientist with sufficient knowledge of giant gecko ecology is required to train staff in the capture process. An experienced fauna scientist is also required to be part of the team for the removal procedure.

Equipment required

- Flagging tape;
- Reflective tape/markers to mark track and road entrance;
- PPE for each staff member;
- First aid kit;
- Mobile weather meter (eg. Kestrel 3000 or similar);
- Laser distance meter (or similar);
- 1 x Remote communication device (Sat phone/Spot-me or similar);
- Head torches + adequate sets of spare batteries;
- 2 x handheld GPS units;
- Data sheets/notebooks, pencils;
- 20 x Small, numbered, linen cloth catch bags with tie; and
- 1 x carry bag (i.e. green bag).

9.5 Timing

- Fauna removal and clearing works to occur in the dry season (generally March – Nov);
- Fauna removal must occur over at least three consecutive nights between 19:00 and 24:00 to successfully remove a large proportion of the animals in the area;
- If there is heavy rain or a storm, works are to be postponed until the weather clears, as detectability of fauna is significantly lower during these conditions;
- If vegetation clearing work is delayed or prevented (i.e. due to rain), the gecko removal works must, if possible, delayed/rescheduled or at worst repeated; and
- Vegetation clearing ideally will occur during the day immediately following the third night gecko removal and must be completed must be completed within 2 consecutive working days after the third night of fauna removal.

10 Review

A continuous improvement approach will apply to this implementation of this Plan. R2R will continuously review the effectiveness of the approach and implement revised techniques if these are warranted to improve the effectiveness of this operation. For major change to the approach, a revised Plan will be forwarded to DER for approval.

11 Limitations of the Approach

This Plan outlines a common sense and practical mitigation strategy aimed at minimising the impacts of clearing on giant geckos which are potentially located in the vegetation which will be cleared for the proposed exploration access tracks. This approach is intended to reduce impacts but cannot guarantee that all impacts will be mitigated. In this context the limitations are duly noted.

- Locations where the giant gecko management plan is to be implemented locations are based on available data from the IWS 2013 and 2015 plus 2016 survey data;
- The recommended number of nights (three) is recommended to capture a significant proportion of the giant geckos in the removal area. It may not be possible to capture every individual present. (Note-implementing this Plan will provide useful data to assess the effectiveness of this approach for future mitigation works);
- The restricted translocation distance of 100 metres from initial capture is judged as adequate based on given expert knowledge of gecko movement and behaviours. However, it is possible (although unlikely) that individuals could return within the three-day period to their original location; and
- The success of this approach relies on clearing being undertaken immediately after completion of the removal process to minimise time for the return of individual geckos. This may be delayed by local weather conditions. If delays are excessive the capture and relocation work may have to be repeated to ensure the plan has been appropriately implemented prior to clearing.