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Cumner Road Subdivision, White Rock, Ripley Valley, Queensland

(EPBC 2014/7388)

Compliance report

Period: 03 December 2021 to 03 December 2022

17/02/2023

Bower Ecology
Survey | Planning | Strategy

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Executive Summary

Key points in this reporting period:

- The EPBC Act approved Action has commenced, with approximately 40% of the total approved urban development footprint cleared of vegetation.
- The project is mostly in compliance with the EPBC Act approval. The only exceptions are some elements of the Bushfire Mitigation Works Program listed in the Bushfire Management Plan (ELA 2020a), which couldn't be completed due to constraints caused by unsuitable weather conditions. Apart from this, no other incidents or non-conformances have occurred since project commencement.
- Baseline data have been collected and reported for the three key monitoring assets:
    - Koala (managed under the Koala Management Plan; reporting not required for this reporting period)
    - Native vegetation and weeds (managed under the Conservation Area Management Plan)
    - Pest Animals (managed under the Pest Management Plan)
- Initial works and preparation for further works in 2023 are also underway for:
    - Fire (managed under the Fire Management Plan)
    - Weed management
    - Revegetation
- The second, final baseline survey event was conducted for pest species within the offset area, establishing the baseline for the project. The results demonstrate that all four target pest species were observed in the baseline survey, with pigs being the most numerous and widespread.
- The first round of monitoring surveys within the offset area established for the project demonstrate that:
    - BioCondition sites score between 33% and 76% of the condition of the benchmark.
    - Target weeds *Lantana camara* and *L. montevidensis* are present in 50% and 20% of all rapid weed assessment sites respectively, with different patterns in weed abundance across management zones. Coverage has reduced for both lantana species since baseline surveys were undertaken.
    - Vegetation monitoring in 2022 found the overall condition of the vegetation has improved across the site. Trends in BioCondition scores were generally positive, including trends in increased species richness, increased or stable canopy cover, increased perennial grass cover, and decreased weed cover.

1 Introduction

On December 3, 2019, the Cumner Road subdivision, White Rock, Ripley Valley, Queensland (EPBC 2014/7388) was approved under sections 130(1) and 133(1) of *the Environment Protection and Biodiversity Conservation Act 1999* (Cwth) (EPBC Act). The approved action is the development of a mixed-use subdivision zone and associated infrastructure, and environmental protection on Cumner Road, White Rock, Queensland.

The action commenced on 3 December 2019. The following report details progress of the action for the period 3 December 2021 to 3 December 2022 (Year 3) and is provided to meet the annual compliance reporting requirement within condition 10 of the Approval Notice.

Condition 10 states:

"10. The approval holder must prepare a compliance report for each 12 month period following the date of commencement of the action, or as otherwise agreed to in writing by the Minister. The approval holder must:

a. publish each compliance report on the website within 60 business days following the relevant 12 month period;

b. notify the Department by email that a compliance report has been published on the website within five business days of the date of publication;

c. keep all compliance reports publicly available on the website until this approval expires;

d. exclude or redact sensitive ecological data from compliance reports published on the website;

and

e. where any sensitive ecological data has been excluded from the version published, submit the full compliance report to the department within 5 business days of publication. "

This report provides a summary to meet Condition 10 above. It also provides a summary of actions and compliance pertaining to the EPBC2014/7388 approval for Year 3.

2 Progress of the action (EPBC 2014/7388)

Progress is reported against the Approval Conditions and associated performance criteria within Tables 1, 2 and 3 below.

Table 1: Response to condition in Attachment A of the EPBC Act approval for EPBC 2014/7388

Part A - Conditions specific to the action	
Condition	**Comments**
1. For the protection of the Koala and the Grey-headed Flying-fox, the approval holder must not clear Koala habitat and Grey-headed Flying-fox foraging habitat outside the area marked as the Development Footprint, enclosed by the red lines, as shown on the map at Attachment A.	Compliant.
2. To compensate for the clearing of 146.02 hectares of Koala habitat and Grey-headed Flying-fox foraging habitat, the approval holder must: a. Legally secure the Conservation Management Area. b. Provide the Department with evidence of the registration of legal security of the Zone 1 of the Conservation Management Area, within 3 years of the date of this approval. (i.e. 6/2/2024) c. Provide the Department with evidence of the registration of legal security of Zone 2 of the Conservation Management Area within 5 years of the date of this approval. (i.e. 6/2/2026) d. Commence implementation of the Conservation Area Management Plan, within 30 days of the date of this approval. e. The performance and completion criteria set out in Tables 1 and 2, at Attachment B (of the approval) must be achieved.	a) Legal security in progress, dependency b, c held until legal security obtained d) Compliant. The department was notified of the commencement of the action on 11/12/2019 via email e) In progress
3. The approval holder must not commence the action until the approval holder has commenced implementation of the Conservation Area Management Plan.	The CAMP was commenced in September of 2019 with the undertaking of baseline Koala surveys per the KMP. The approval holder commenced the action on 4/12/2019 with the initial works related to the road corridor for the Cumner Road extension. The department was notified of the commencement of the action on 11/12/2019 via email.
4. The approval holder must implement the Koala management plan.	Plan implemented and monitoring has occurred as required. No monitoring was required in 2022 as the monitoring is biennial.
Part B - Standard administrative conditions	
Notification of date of commencement of the action 5. The approval holder must notify the Department in writing of the date of commencement of the action and the date of commencement of construction within 10 business days after the date of commencement of the action or commencement of construction respectively.	Achieved. The approval holder commenced the action on 4/12/2019 with the clearing of the road corridor for the Cumner Road extension. The department was notified of the commencement of the action on 11/12/2019 via email.
6. If the commencement of the action does not occur within 5 years from the date of this approval, then the approval holder must not commence the action without the prior written agreement of the Minister.	N/A. The action has commenced.

Compliance records 7. The approval holder must maintain accurate and complete compliance records.	Accurate and complete compliance records have been maintained.
8. If the Department makes a request in writing, the approval holder must provide electronic copies of compliance records to the Department within the timeframe specified in the request. Note: Compliance records may be subject to audit by the Department or an independent auditor in accordance with section 458 of the EPBC Act, and or used to verify compliance with the conditions. Summaries of the result of an audit may be published on the Department's website or through the general media.	No request has been received.
Preparation and publication of plans 9. The approval holder must: a. submit plans electronically to the Department for approval by the Minister; b. publish each plan on the website within 20 business days of the date of this approval or the date that the plan is approved by the Minister or of the date a revised action management plan is submitted to the Minister or the Department, unless otherwise agreed to in writing by the Minister; c. exclude or redact sensitive ecological data from plans published on the website or provided to a member of the public; and d. keep plans published on the website until the end date of this approval	All approved plans can be found at: https://intrapac.com.au/ripley/ No sensitive ecological data is contained within the plans.
Annual compliance reporting 10. The approval holder must prepare a compliance report for each 12 month period following the date of commencement of the action, or as otherwise agreed to in writing by the Minister. The approval holder must: a. publish each compliance report on the website within 60 business days following the relevant 12 month period; b. notify the Department by email that a compliance report has been published on the website within five business days of the date of publication; c. keep all compliance reports publicly available on the website until this approval expires; d. exclude or redact sensitive ecological data from compliance reports published on the website; and e. where any sensitive ecological data has been excluded from the version published, submit the full compliance report to the Department within 5 business days of publication. Note: Compliance reports may be published on the Department's website.	See above This document is the compliance report for the third 12-month period (Year 3) period following the commencement of the action.
Reporting non-compliance 11.The approval holder must notify the Department in writing of any: incident; non-compliance with the conditions; or non-compliance with the commitments made in plans. The notification must be given as soon as practicable, and no later than two business days after becoming aware of the incident or non-compliance. The notification must specify: a. the condition which is or may be in breach; and b. a short description of the incident and/or non-compliance	Bushfire access maintenance was completed across some areas of the site, due to constraints caused by unsuitable weather conditions and subsequent limited access Hazard mitigation (fuel reduction) was unable to be completed due to unsuitable weather conditions. No other incidents or occurrences of non-compliance occurred in this reporting year. It is also noted that insurance for bushfire works are impractically high, with premiums and excesses quoted

	both over $500,000 for this project. It is understood that issues like this also exist across the industry. We would welcome further discussion on this issue – with regards to the need for appropriate bushfire management regimes across Australia, and the excessive costs associated with insurance (from both a land management and approvals perspective). Despite the costs associated with this project, alternative options are available via the RFS.
12. The approval holder must provide to the Department the details of any incident or non-compliance with the conditions or commitments made in plans as soon as practicable and no later than 10 business days after becoming aware of the incident or non-compliance, specifying: a. any corrective action or investigation which the approval holder has already taken or intends to take in the immediate future; b. the potential impacts of the incident or non-compliance; and c. the method and timing of any remedial action that will be undertaken by the approval holder.	As above
Independent audit and independent Scientific Outcomes 13. The approval holder must ensure that independent audits of compliance with the conditions and/or Independent Scientific Verification of Outcomes are conducted as requested in writing by the Minister.	N/A. No independent audits were requested within the reporting year.
14. For each independent audit, the approval holder must: a. provide the name and qualifications of the independent auditor and the draft audit criteria to the Department; b. b. only commence the independent audit once the audit criteria have been approved in writing by the Department; and c. c. submit an audit report to the Department within the timeframe specified in the approved audit criteria.	N/A. No independent audits were conducted within the reporting year.
15. For each Independent Scientific Verification of Outcomes the approval holder must: a. provide the name and qualifications of the independent suitably qualified field ecologist and the draft brief to the Department; b. only commence the independent Scientific Verification of Outcomes once the independent suitably qualified field ecologist and the brief have been approved in writing by the Department; and c. submit an independent suitably qualified field ecologist's report to the Department within the timeframe specified in the approved brief.	N/A. No independent scientific verification of outcomes occurred within the reporting year.
16. The approval holder must publish the audit report on the website within 10 business days of receiving the Department's approval of the audit report and keep the audit report published on the website until the end date of this approval.	N/A. No independent audits were conducted within the reporting year.

Completion of the action 17. Within 30 days after the completion of the action, the approval holder must notify the Department in writing and provide completion data	N/A. The action has not been completed.

Table 2: Compliance criteria (Attachment B Table 1 of the EPBC approval)

Task	Establishment			Maintenance	Progress within Year 3 (03/12/2021 to 03/12/2022) * only progress toward preliminary management actions (highlighted green) are addressed within this compliance report as the reporting period (Year 3) is relevant to these only.
	Preliminary	Management			
	By end of year 3	Between end of year 3 and end of year 10	Year 11	Years 12-21	
Construction-related management actions					
Fencing/signage (and maintenance) relating to Koala and GHFF management	Infrastructure installed.	No more than 5% of fencing compromised at any time			Fencing/signage (and maintenance) relating to Koala and GHFF management has not yet commenced along the eastern edge of the mixed-use development area as the urban development works are yet to reach this far east. The infrastructure will be installed as development progresses to the boundary of the CAMP area. Nonetheless, all Koala fencing has been completed along Sandstone Boulevard (the new road constructed as part of the action).
Sediment and erosion control (and maintenance)	Sediment / erosion works installed	Sediment and erosion control devices checked and repaired annually in Quarter 1			Sediment and erosion work required in regard to the clearing of the Cumner Rd extension have been installed and maintained as part of the Construction Environmental Management Plan. Construction Contractor reporting on this is available upon request.
Bushland management actions					
Fire Management	Bush fire management plan (BFMP) completed. Fire management works undertaken as specified in the BFMP.	Fire management works undertaken as specified in the BFMP			In July and August 2022, clearing works were undertaken with machinery in some areas, to clear access in preparation for controlled burns. This partially met the BMFP requirement for access maintenance, however unsuitable weather conditions prevented access to all areas and thus this requirement wasn't fully met. Fuel load estimates were also conducted, and burn plans established. This met the BFMP planning requirement to annually review the mitigation works program. Due to unsuitable weather conditions, no controlled burns could be

				completed in the Year 3 period. While technically a non-conformance with the hazard mitigation requirement of the BFMP, unsuitable weather for conducting burns throughout the controlled burn season placed constraints upon the contractor to complete this.
Pest fauna management	Two survey events completed to determine the baseline of dogs / cats / foxes within the Conservation Management Area and reference sites within the adjacent White Rock Conservation Estate Area. Development of a pest management plan that specifies how feral dogs, cats and foxes will be reduced in the conservation Management Area Development of a survey methodology that is sufficient to demonstrate any reduction of feral dogs, cats and foxes in the Conservation Management Area, relative to the baseline and reference sites within the adjacent White Rock conservation Estate Area.	Between end of year 3 and end of year 6, no increase in pests against baseline, or, in the event of evidence of an increase of pests in the general area as measured at reference sites within the White Rock Conservation Estate Area, then demonstrated reduction in pests relative to the these reference sites, measured annually.	From beginning of year 7 to end of approval, maintain a reduction in pests relative to baseline, measured annually, or in the event of evidence of an increase of pests in the general area, as measured at reference sites within the White Rock Conservation Estate Area, then demonstrated reduction relative to these reference sites, measured annually.	Two survey events (Spring and Autumn) were undertaken to determine the baseline (see Section 3.4).
Bushfire/recreation trails (and maintenance)	Fire access tracks established	At a minimum, bushfire management trails drivable at least one month prior to fire season as determined in BFMP. No more than 10% of designated multipurpose trails unwalkable at any time.		Track works have commenced to establish fire trails and increase site accessibility for ongoing revegetation works.
Revegetation requirements assessed	Revegetation requirements assessed every year prior to planting season until Year 8		n/a	The revegetation contractor has been engaged and is aiming to have some areas of site ready for planting installation by winter 2023.

Table 3: Completion criteria (Attachment B, Table 2 of the EPBC Act approval).

Completion Criteria	Relevant to Year 11	Relevant to Year 21	Comments
1. Both Zones 1 and 2 of the conservation area have been legally secured, ensuring protection for conservation purposes, within 5 years of date of the approval (as varied).	✓	✓	N/A for the Year 3 period.
2. With exception of minor initial works, bushland management actions commenced within 3 years of the date of the approval (December 2022).	✓	✓	Commenced.
3. Documented increase in Koala and GHFF habitat value, as shown in an assessment against the management objectives of table 4 of the CAMP.	✓	✓	N/A for the Year 3 period.
4. All revegetation (planting works) completed by the end of year 11 (December 2031), with planted tree species comprising predominantly Koala food trees (including Forest Red Gum and Grey Gum) and winter foraging species for the GHFF (Broad-leaved Paperbark, Spotted Gum, Swamp Mahogany and Forest Red Gum).	✓	N/A	N/A for the Year 3 period.
5. Minimum 90% survival rate of revegetation or equivalent stem density (i.e., due to natural regeneration) by end of year 11 (December 2031).	✓	N/A	N/A for the Year 3 period.
6. All management zones contain primary Koala food trees and GHFF winter foraging trees in good health by end of year 11 (December 2031) and for the remaining duration of the approval.	✓	✓	N/A for the Year 3 period.
7. Across the planting area, tree canopy cover % within each management zone meets regional ecosystem benchmarks by end of year 11 (December 2031), 16 (December 2037) and 21 (December 2042), as defined by the Queensland Government's BioCondition Benchmarks for Regional Ecosystem Condition Assessment (2019). This includes: ● For RE 12.3.3: 53% ● For RE 12.9-10.7a: 58% ● For RE 12.9-10.2: 62% ● For RE 12.9-10.7: 40% ● For RE 12.8.17: 48% ● For RE 12.8.24: 53%	✓	✓	N/A for the Year 3 period.

Completion Criteria	Relevant to Year 11	Relevant to Year 21	Comments
8. By end of year 11 (December 2031), a density of at least 20 overstory trees (comprising Koala food trees and winter foraging resource trees for GHFF) and 250 mid or understory trees and/or shrubs per hectare will be present, and maintained for the duration of the approval.	✓	✓	N/A for the Year 3 period.
9. By end of year 11 (December 2031) rehabilitation and management results in vegetation communities that meet the descriptions of pre-existing and/or surrounding remnant regional ecosystem types and these are maintained for the duration of the approval.	✓	✓	N/A for the Year 3 period.
10. Bushfire management has been undertaken as specified in the Bushfire Management Plan (as current at time of assessment against completion criteria)	✓	✓	Not fully completed, due to constraints caused by unsuitable weather conditions. See Table 2.
11. Weed management and revegetation will be undertaken in at least 20% of the revegetation area per year between years 4 (2024) and end of year 8 (December 2028).	✓	✓	N/A for the Year 3 period.
12. Coverage of mature woody weeds in any zone is reduced to <5% of ground cover by end of year 11 (December 2031) and maintained at <5% for the duration of the approval.	✓	x	N/A for the Year 3 period.
13. Exotic groundcover in Management zone 1 and Management zone 2 is reduced to <25% by end of year 11 (December 2031) and maintained at <25% for the duration of the approval.	✓	✓	N/A for the Year 3 period.
14. Exotic groundcover in Management zone 3 is reduced to <10% by end of year 11 (December 2031) and maintained at <10% for the duration of the approval.	✓	✓	N/A for the Year 3 period.
15. No more than 5% of fencing is compromised.	✓	✓	✓

3 Actions within the CMA in this period

The Conservation Management Area Plan (CAMP) stipulates annual reporting on five key attributes:

- A summary of management actions,
- Results of any vegetation monitoring,
- Results of any koala monitoring (not relevant for year 3),
- Report on actions to support the bushfire management plan, and
- Actions to support the pest management plan.

Attached to this document are detailed reports from relevant contractors within each action, and a summary of actions and results (Sections 3.1 to 3.4).

3.1 Management action report

Evolve Environmental Solutions were contracted to begin weed treatment and bushfire management works. Areas where works were conducted in 2023 are mapped in Figure 1. They have occurred in:

- April: weed management works recommenced for 2023.
- July – August: bushfire management works commenced. These included track clearing with machinery, in preparation for controlled burning.
- July – August and November – December: machine-based works conducted, establishing vehicle accessible tracks, and clearing patches of lantana.
- August: ground staff conducted weed management works. These comprised follow-up spray treatment to some areas previously machine-cleared, and one area inaccessible to machinery.

Figure 1: Evolve weed and bushfire management works 2023 (mark up from Evolve)

3.2 Vegetation monitoring report

The CAMP stipulates that vegetation will be improved in three unique zones, each with their own actions:

- MZ1: Riparian restoration over a total of 30 ha along drainage lines,
- MZ2: Assisted regeneration of 91 ha through control of *Lantana camara* and other invasive species
- MZ3: Regeneration of the remaining 128 ha through minor weed works

Vegetation monitoring in 2022 found the overall condition of the vegetation has improved across the site.

BioCondition surveys were conducted within the CAMP Area in May 2022, with six plots established across the site (Figure 2). The vegetation in best condition is remnant RE12.9-10.2, with three sites falling into BioCondition class 2 and one into BioCondition class 3. All four remnant RE12.9-10.2 sites range between 54% and 76% of the benchmark condition (for details see ELA 2021c). Major trends in BioCondition were generally positive, including trends in increased species richness, increased or stable canopy cover, increased perennial grass cover, and decreased weed cover.

Target weed species - *Lantana camara* and *L. montevidensis* - were monitored across all management zones (Figure 3). Monitoring showed weed management has been successful in reducing the abundance of *L. camara*, with strong evidence found on site of high levels of successful treatment of thick stands of the weed. There is also a strong decline in *L. montividiensis.* Across the site, 50% of monitored locations across all management zones (MZ) had *L. camara* present, and 20% had *L. montevidensis.* Average coverage, where occupied by the species, were 23.2% and 12.25% respectively; of all the sites occupied by a species of *Lantana*, average coverage of the weeds was 25.5%.

Management zone 1 (riparian restoration area with high weed density) had *L. camara* at three of the six sites, and the highest average coverage of this species at these sites (40%). No sites in this management zone had *L. montevidensis* present.

Management zone 2 (low resilience remnant) had the highest number of sites with *L. camara* present (six out of seven sites), but the lowest average coverage of this species at these sites (14.7%). MZ2 also had *L. montevidensis* at three sites, with a low average coverage of 9.7%.

Management zone 3 (good condition remnant) had the lowest number of sites with *L. camara* cover (one out of seven sites); *L. camara* had a coverage of 24% at this site. MZ3 also had one site with *L. montevidensis*, and the coverage of this species was the highest of the four sites at which it was present (20%).

Examples of weed infestation on site can be seen in Figure 4, and all plots in the detailed report (Bower Ecology, 2022).

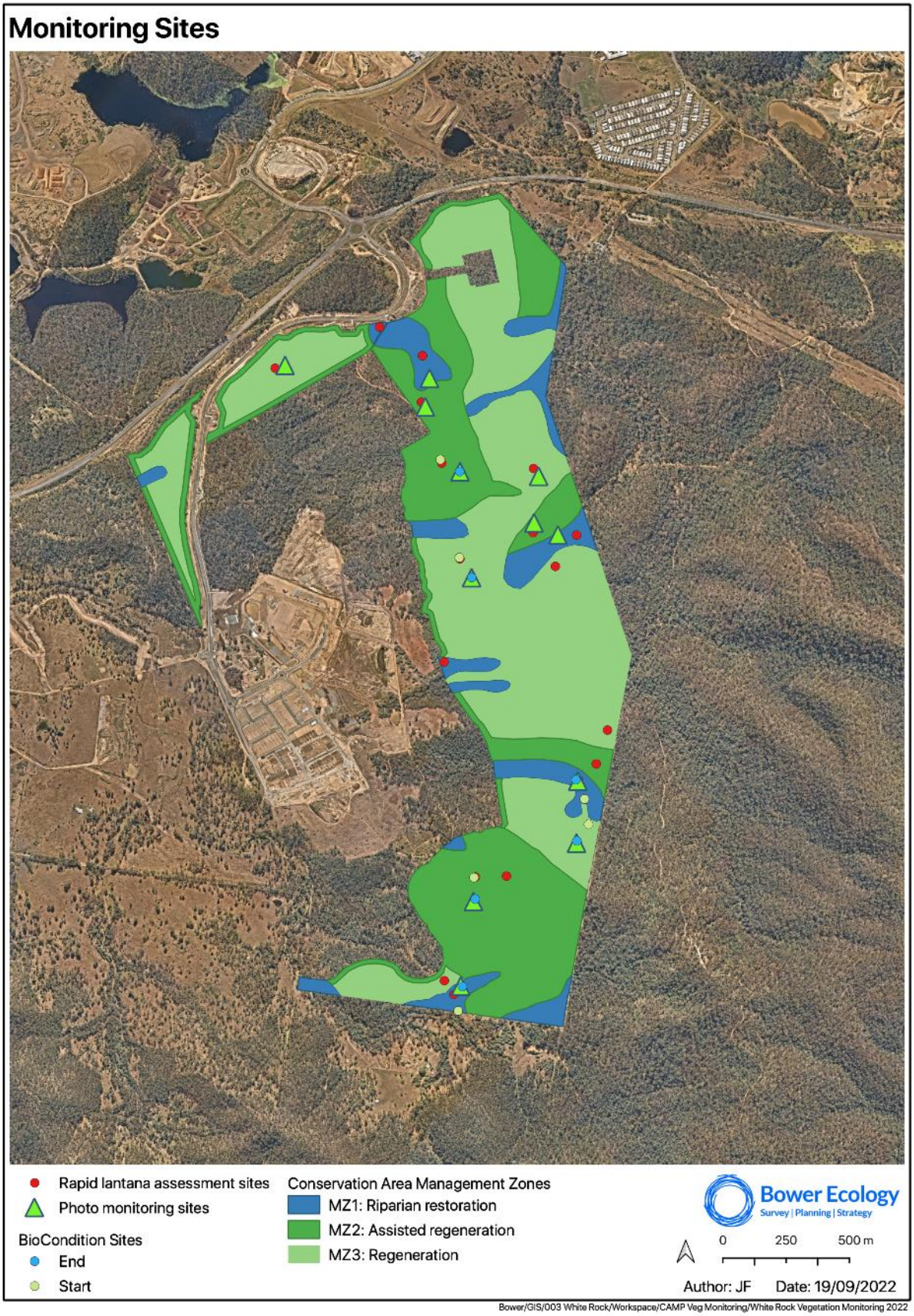

Figure 2: Location of the BioCondition plots, *Lantana camara* monitoring plots and photo monitoring plots within the CAMP Area and management zones.

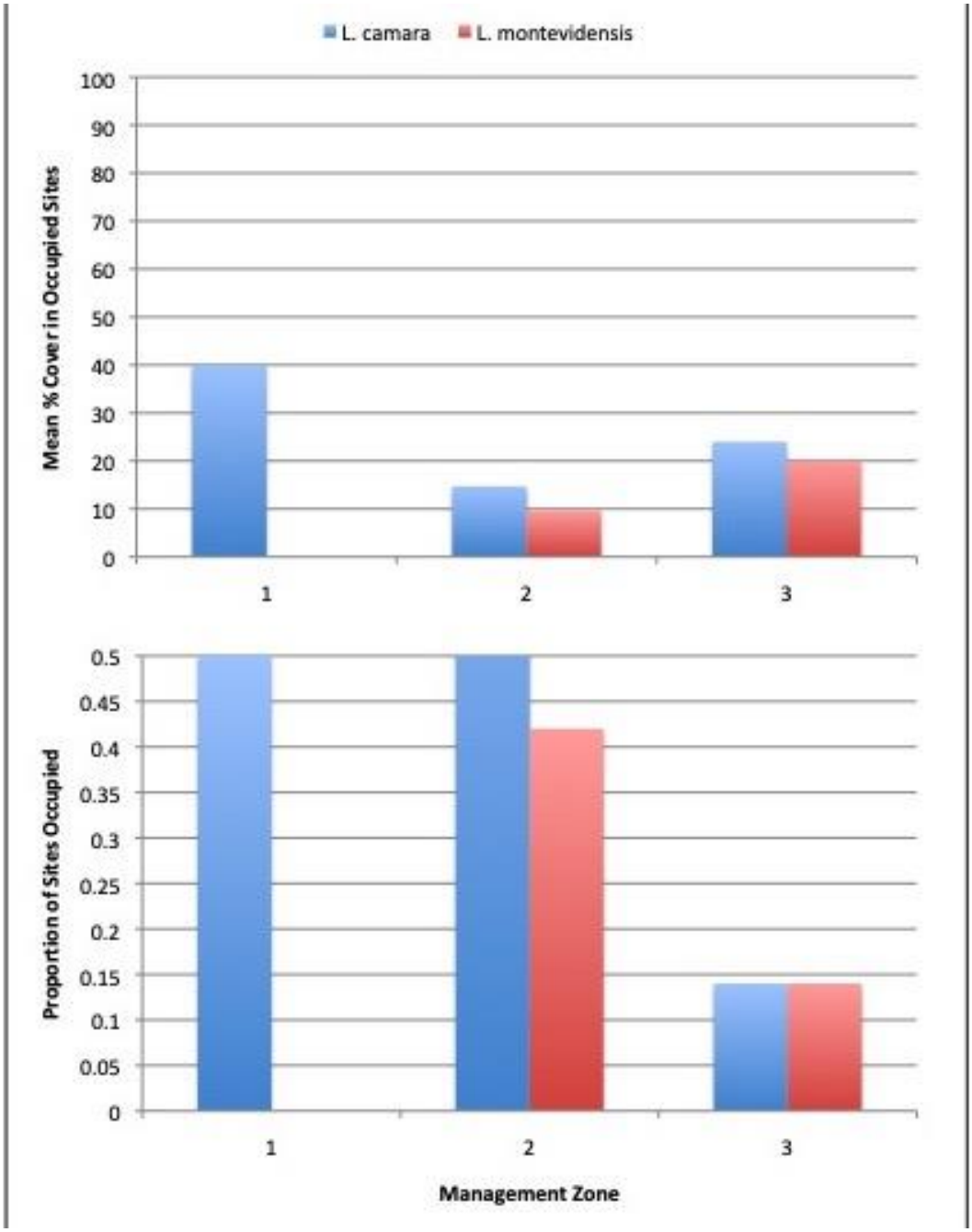

Figure 3: Summarised results of weed monitoring for *Lantana* spp. across 20 sites in each management zone.

Figure 4: Example photos from monitoring plots showing the range of *Lantana camara* and *Lantana montevidensis* coverage found in the CAMP Area. Photo monitoring site 6 (top, left and right), rapid *Lantana* monitoring plot 8 (centre left and right), and BioCondition 6 (bottom left and right).

3.3 Bushfire management report

The Conservation Management Area has three core fire management zones (Figure 6), each with their own strategy:

- Protection Zone
  - *Fine fuel layer not to exceed low to moderate risk or 5 tonnes/ha*
- Wildfire Mitigation Zone
  - *Maximum overall fuel hazard less than high or <8 tonnes/ha in ground and shrub layer,*
  - *Planned burns occur at lower end of recommended intervals, and area treated is 0-80% of the block (Table 4)*
  - *Fuel management by slashing, selective shrub clearing and trail construction*
- Conservation Zone
  - *Planned burns occur at lower end of recommended intervals, and area treated is 0-80% of the block (Table 4)*

Table 4: Recommended intervals for planned burns in wildfire mitigation and conservation zones

Regional Ecosystem	Recommended interval	Recommended season	% burnt in this reporting interval	% burnt in history of CAMP implementation
12.9-10.2	4-25y	Summer - Winter	0	0
12.9-10.7a	4-25y	Summer - Winter	0	0
12.8.24	4-25y	Summer - Winter	0	0
12.9-10.17	8-20y	Summer - Winter	0	0
12.8.17	3-6y	Summer - late Autumn	0	0
12.3.3	3-6y	Summer - late Autumn	0	0

In July and August 2022, fire tracks were cleared in the NE of the CAMP area (Figure 1) to allow access in preparation for controlled burns. Fuel load estimates were conducted, and burn plans established. Due to restricted accessibility, only three burn blocks (11, 12 and 14) in the north of the site were assessed for fuel load (Figure 5); these were assessed for surface and near surface fuels (Table 5).

As a result of unsuitable weather conditions, no controlled burns could be completed in the Year 3 period. Steps are being taken to enable controlled burns to be conducted in the winter months of 2023.

Table 5: Fuel load estimates

Burn Block	Average Fuel Load (t/ha)
11	21
12	21.3
14	17.6

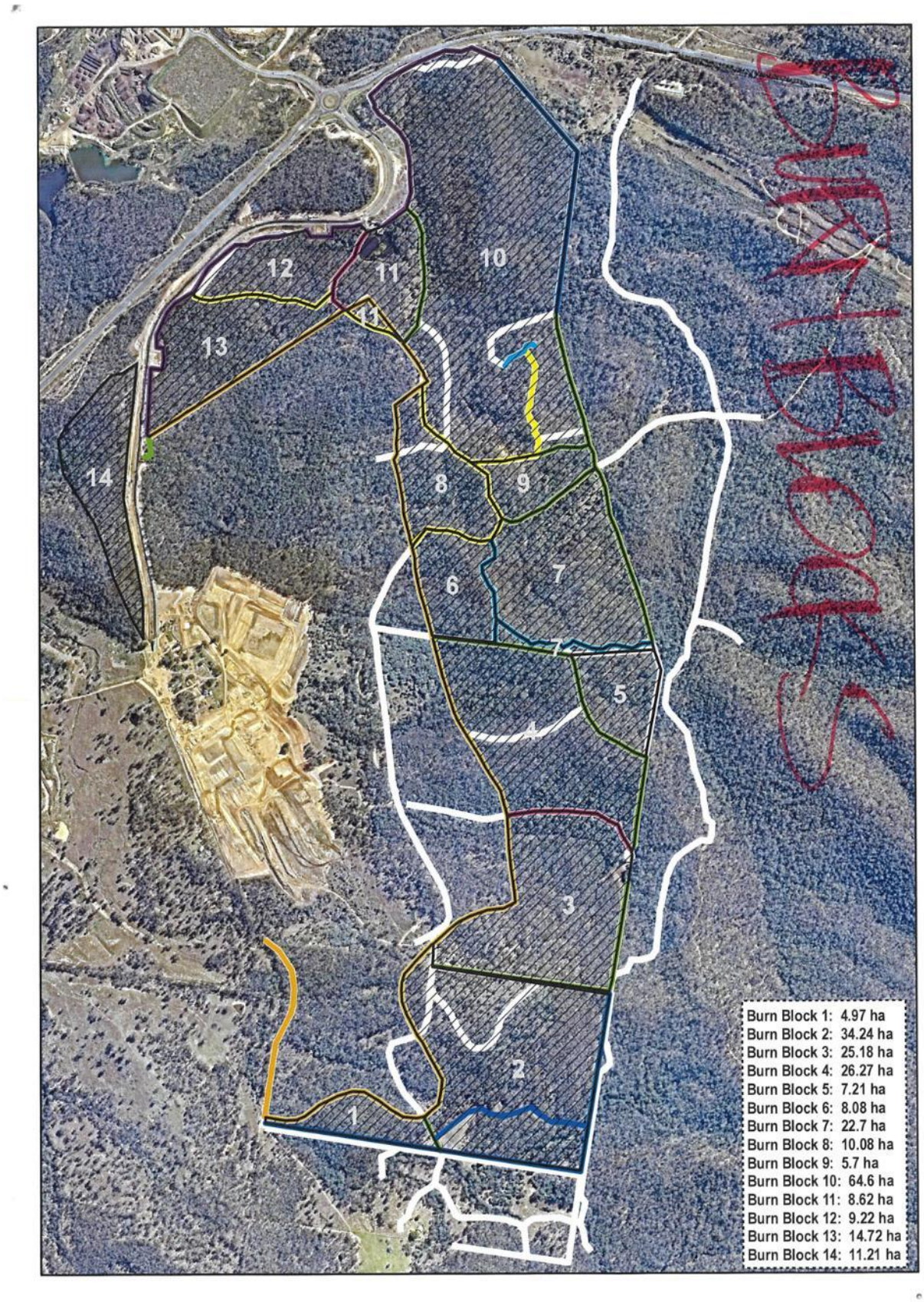

Figure 5: Bushfire management burn blocks (from Evolve)

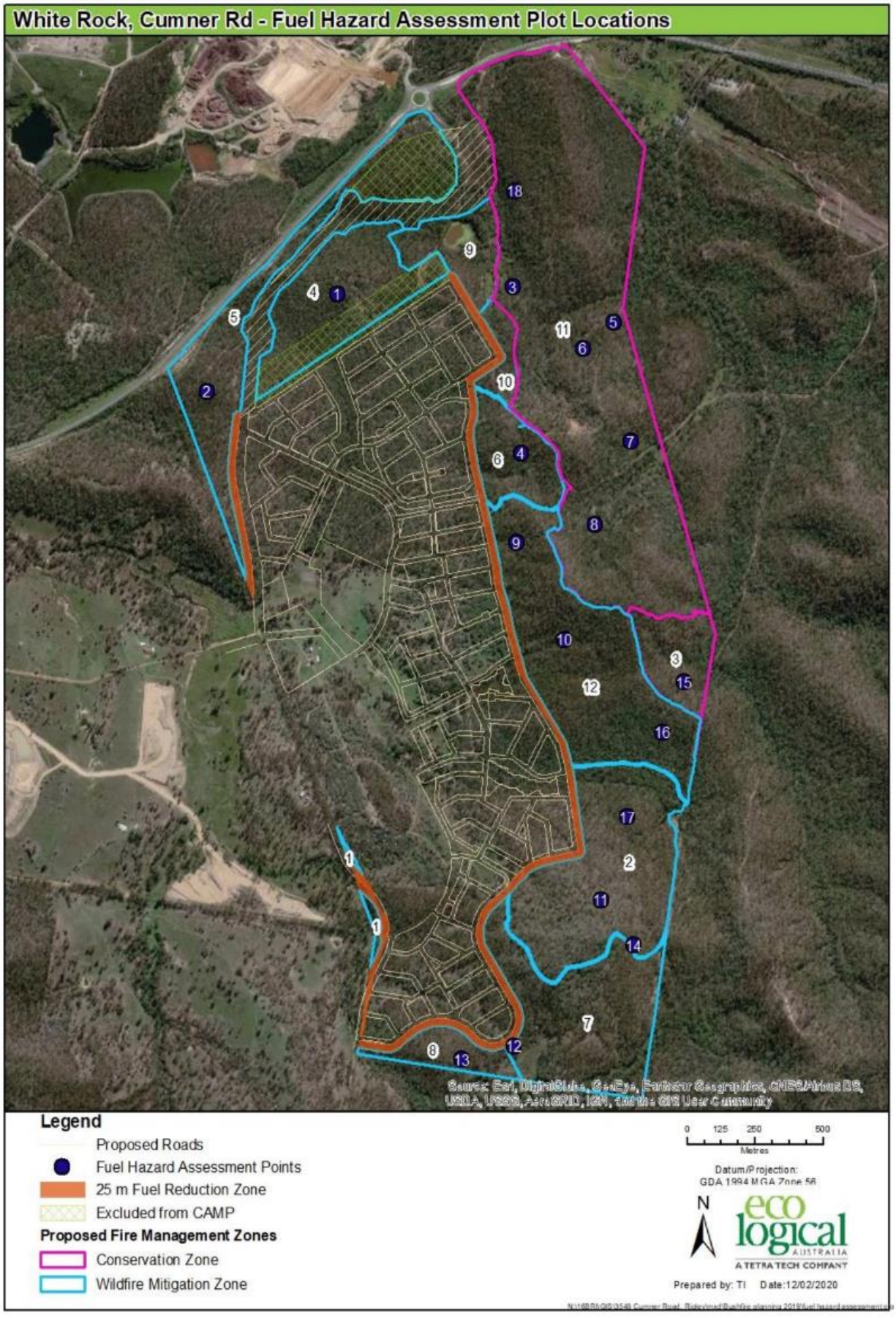

Figure 6: Fire management zones

3.4 Pest management report

The Conservation Management Area has a designated Pest Management Plan that outlines how management actions will achieve the aims of:

- No increase in fox, cat, or dog numbers within the first five years, or in the event of an increase within the site, no increase in comparison to reference sites in White Rock-Spring Mountain Conservation Estate,
- Maintenance of reduction in pest numbers relative to baseline from the fifth year to the 21st year

This report combines the data from two monitoring events in 2021 and two monitoring events in 2022 to establish a baseline of pest species numbers. Surveys were conducted in Spring and Autumn of each year, as required. All four target species (fox, feral cat, wild dog, and feral pig) were identified across the CAMP Area and adjacent Conservation Estate over the two year period, but not in all seasons (Figure 7 and 8).

Pigs were the most common species detected and were dispersed throughout the CAMP Area and adjacent Conservation Estate; highest concentrations of pigs were found in the southern areas in proximity to riparian zones and ephemeral lakes. Increased numbers of pigs were detected during Autumn 2022, associated with wet weather and subsequent availability of resources and habitat. Foxes were also determined to be prevalent across the both the CAMP Area and the Conservation Estate. It is expected that the high incidence of foxes across the site is influenced by an increase in resources and native prey species brought about by the wet weather associated with the 2020 and 2021 La Niña events.

Feral cats and wild dogs were observed, but not as frequently as feral pigs and foxes. Most cat evidence was located within 1 km of human settlement, suggesting possible edge effects and the presence of domestic cats. It is anticipated that the development will result in an increase of cats within the CAMP Area. Wild dogs were seen on camera in both the CAMP Area and the Conservation Estate. Incidental observations of paw prints and scats were the most prevalent evidence of dogs recorded. Most paw prints and scats were observed along animal tracks and vehicle access roads in the southern parts of both the CAMP Area and the Conservation Estate, with sets of two to four prints suggesting the possible presence of an active pack (Figure 7).

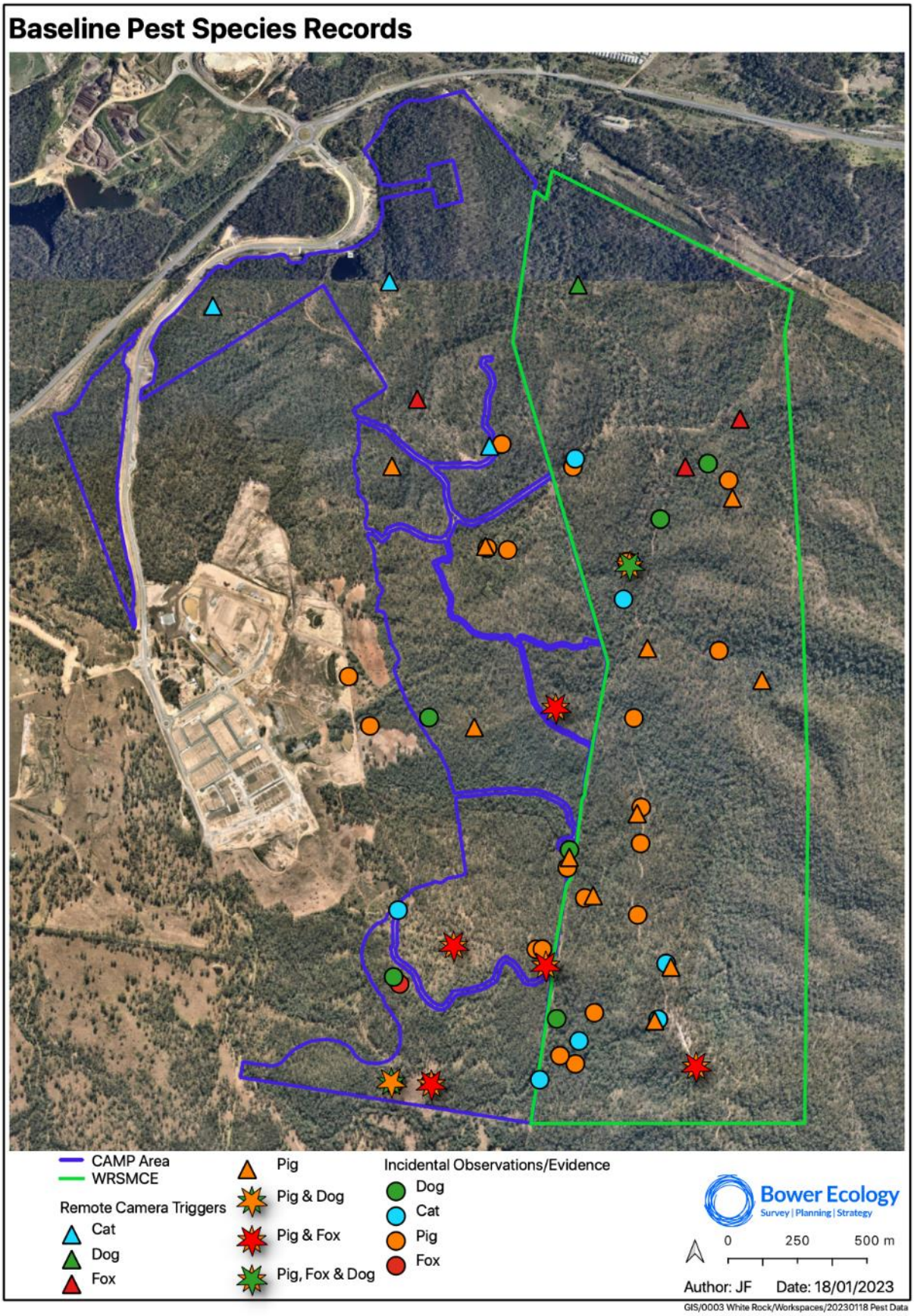

Figure 7: Baseline pest species records for the CAMP Area and WRSMC

Figure 8: Images from both camera trapping intervals across both CAMP Area and WRSM Conservation Estate. Pigs (top, left), cat (top, right), fox (bottom, left) and wild dog (bottom, right). (From ELA 2021a,b)

4 Conclusion

Baseline surveys for vegetation, weeds, koala and pest animals have all been completed. Weed management has occurred as per CAMP requirements. Due to unsuitable weather conditions, planned mosaic burns couldn't be completed in 2022. Burns are planned for winter 2023.

Upcoming weed and bushfire management works comprise:

- Plans are underway to conduct controlled burning in the winter months of 2023.
- Upcoming weed management works will focus on the mechanical removal of large lantana patches across the site, and follow up herbicide spraying in these cleared patches. Ground teams will target areas inaccessible by machine, hand pulling and spraying weeds.
- Plans are underway to have some revegetation areas ready for planting installation by winter 2023.

The project is mostly in compliance with the EPBC Act approval. The only exceptions are some elements of the Bushfire Mitigation Works Program listed in the Bushfire Management Plan (ELA 2020a), which couldn't be completed due to unsuitable weather conditions. While technically a non-conformance, the unsuitable weather conditions throughout the controlled burn season resulted in constraints, which prevented the enactment of this part of the Bushfire Management Plan.

No other incidents or non-conformances have occurred since project commencement.

5 References

Bower Ecology 2022. *White Rock Vegetation Monitoring Report*. Prepared for Intrapac Property Pty Ltd.

ELA 2020a. *White Rock Urban Development, Bushfire Management Plan for Conservation Area*. Prepared for Intrapac.

ELA 2020b. *White Rock Conservation Management Plan*. Prepared for Intrapac Property Pty Ltd.

ELA 2020c. *White Rock Koala Management Plan*. Prepared for Ripley Land Holdings Pty Ltd, Northrow (Qld) Pty Ltd and TDC (Qld) Pty Ltd (the proponents).

ELA 2020d. *White Rock Conservation Area Pest Management Plan*. Prepared for Intrapac Property Pty Ltd.

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White Rock Conservation Area Management Plan

Vegetation Monitoring Report 2022

Prepared for Intrapac Property Pty Ltd

September 2022

Bower Ecology
Survey | Planning | Strategy

Document Tracking

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Executive Summary

This report represents the first year of CAMP management for EPBC2014/7388. All methods employed were consistent with past monitoring, though relocation of two sites was necessary as the originals could not be located.

On average, sites have remained in the same condition (4 out of 6), increased in condition (site 4) or declined (site 6). Site 6 was relocated, and is not in the original position. This may account for the decline though may not represent a true decline in condition.

Major trends in BioCondition were generally positive, including trends in increased species richness, increased or stable canopy cover, increased perennial grass cover, and decreased weed cover. Higher than average rainfall preceded the surveys and likely accounts for improved tree health (regrowing leaves to create more canopy cover) and better ground cover. Weed management has been successful in reducing the abundance of *Lantana camara*, with strong evidence found on site of high levels of successful treatment of thick stands of the weed. There is also a strong decline in *Lantana montividiensis*.

We are on track for the goals for the first three years of the CAMP strategy for bushland management relevant to this report – primary weed treatment has occurred in target areas and has been successful.

1 Introduction

1.1. Project Background

In 2019, approval under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) was received by Intrapac Property QLD Pty Ltd (Intrapac) for the development of a mixed-use sub-division and associated infrastructure (the development) at White Rock in the Ripley Valley (EPBC 2014/7388). The development encompasses 473 ha (project area), including a 249 ha Conservation Area (Figure 1).

There are multiple environmental outcomes intended for the development's Conservation Area. These outcomes include in-situ biodiversity offsets aimed to reduce the impacts of the project. Specifically, the Conservation Area comprises dedicated offset areas to protect Koala and Grey-headed Flying Fox habitat values, as defined within the EPBC Act.

A Conservation Area Management Plan (CAMP) prescribes the monitoring and management of the Conservation Area. This document intends to ensure the offset area in the Conservation Area achieves the habitat targets for Koala and Grey-headed flying fox.

Annual monitoring reports are required under the conditions of the approval and under the CAMP, and these will inform the Annual EPBC Act Compliance Report. An adaptive management approach has been employed in the CAMP to ensure management practices in will be guided by monitoring results. Annual management, monitoring and reporting requirements are detailed in the CAMP for the following:

- Vegetation rehabilitation and management
- Koala population monitoring
- Bushfire management
- Pest monitoring and management

Implementation of the CAMP began in 2019, with Koala baseline monitoring. CAMP implementation will continue for the duration of the on-maintenance period of the project (the first 11 years), after which handover to the Ipswich City Council and integration into the adjacent White Rock – Spring Mountain Conservation Estate (WRSMCE) is planned. Baseline vegetation monitoring occurred in 2021 and this report addresses the results of the first round of annual vegetation monitoring for the on-maintenance period of the project. Vegetation monitoring inform the following areas of the CAMP performance criteria (Appendix E: CAMP Performance criteria

- Revegetation management requirements
- Weed control
- Bushfire management
- Native tree management

The general intention for the Conservation Area is to allow an improvement in habitat value for species listed as MNES – the Koala and the Grey-headed Flying Fox; as well as to meet the performance and completion criteria listed in the approval. Three distinct management zones (MZs) are defined within the Conservation Area under the CAMP. The categorisation of these zones details the type and degree of effort necessary to reach specific rehabilitation objectives. The zones are as follows (Figure 2)

- **MZ1: Riparian Restoration** - the portion of the Conservation Area adjacent to drainage lines and the property boundary, with a total area of approximately 30 ha. This zone includes areas of exotic pasture with no canopy present, and is characterised by higher amounts of water, nutrients, and disturbance, and as such, exotic species are present in higher densities than in the other zones.
- **MZ2: Assisted Regeneration** - the portion of the Conservation Area that has currently low resilience or is likely to have low resilience in the future, with a total area of approximately 91 ha. This zone includes areas of dense lantana towards the south of the site and a 20 m buffer on all development edges which will be subject to greater impacts in the future.
- **MZ3: Regeneration** - the remainder of the Conservation Area with a total area of approximately 128 ha. This zone is in good condition with low weed density throughout.

1.2. Objectives and scope of work

The objective of this report is to provide the results of the first round of vegetation monitoring, to report on any changes in the year since the baseline surveys were conducted in 2021. This addresses the CAMP performance criteria which requires annual monitoring and reporting (Table 11 in Appendix E). The next monitoring event (year 2) will occur in 2023. Ongoing monitoring by Intrapac will then occur on an annual basis for the first 11 years (on-maintenance period) of the CAMP program.

1.2.1. Monitoring requirements

This vegetation monitoring requires BioCondition assessments (Eyre *et al* 2015), a rapid assessment *Lantana camara* survey, and an assessment of the results of both against the objectives of the CAMP and the conditions of the EPBC Act approval.

Year 1 monitoring will survey established sites within the three management zones (MZ1, MZ2, MZ3) to assess any changes in the year since baseline monitoring was conducted. Parts of the Conservation Area are heavily impacted by lantana species. *Lantana camara* (bush lantana) and *L. montevidensis* (creeping lantana) are the dominant weed species across the site. To monitor improvement following weed removal works, a rapid lantana assessment is required to be undertaken.

1.3. Study site description

The development is located in the Ripley Valley, 8 km east of the Ripley urban core, 8 km west of the Springfield Town Centre, 15 km from the Ipswich CBD, and 35 km from the Brisbane CBD (Figure 1).

Positioned just south of the Centenary Highway, the northern boundary of the development is delimited by the highway. To the west of the development is an area cleared in lowland sections for agricultural purposes that is expected to transition into urban development in the future as part of the Ripley Valley Priority Development Area (PDA). Within the Conservation Area is a matrix of mature / maturing vegetation (Figure 2). This vegetation extends to the east of the development boundary into the WRSMCE, forming part of an extensive area of vegetation associated with the Flinders Karawatha Corridor (DEHP 2014).

1.3.1. Vegetation communities

Within the Conservation Area, eight broad vegetation communities were identified during initial ecological surveys (ELA 2017). These communities, and their areas, are listed in Table 1 and shown in Figure 3.

Table 1: Vegetation communities within the Conservation Area (ELA 2017)

Community	Area (ha)
Acacia +/- scattered Eucalypts (i.e. *Eucalyptus tereticornus, Eucalyptus crebra)*	3.8
Dam	1.1
Exotic Grassland +/- sparse Acacia and Eucalypts (i.e *E. tereticornus, E. crebra)*	5.5
E. tereticornis (Forest Red Gum) on alluvium	0.8
E. tereticornis, *Lophostemon suaveolens* (Swamp Box) and *E. crebra* (Narrow-leaved Ironbark).	8.1
E. crebra, *E. tereticornis*, *E. melanophloia* (Silver Leaved Ironbark)	15.6
Corymbia citriodora (Spotted gum)	9.8
C. citriodora, *E. crebra, E. melanophloia*, and other Eucalypts	183.1
E. acmenoides (White Mahogany), *E. major* (Grey Gum), *C. citriodora*	21.6
Total	**249.4**

The central part of the Conservation Area is dominated by *Corymbia citriodora* (spotted gum) forest and woodland on sandstone slopes.

The northern section of the Conservation Area is dominated by *Eucalyptus acmenoides* (White Mahogany), *Eucalyptus major* (Grey Gum) and Spotted Gum Forest. The lower elevations of the Conservation Area, particularly in the south, are dominated by *Eucalyptus tereticornis* (Forest Red Gum), *Lophostemon suaveolens* (Swamp Box) and *Eucalyptus crebra* (Narrow-leaved Ironbark).

A basalt hill in the south of the Conservation Area contains Narrow-leaved Ironbark, Forest Red Gum and *Eucalyptus melanophloia* (Silver Leaved Ironbark).

White Rock–Spring Mountain Conservation Estate to the east of the Conservation Area consists of over 2,500 ha of mostly intact and generally remnant vegetation.

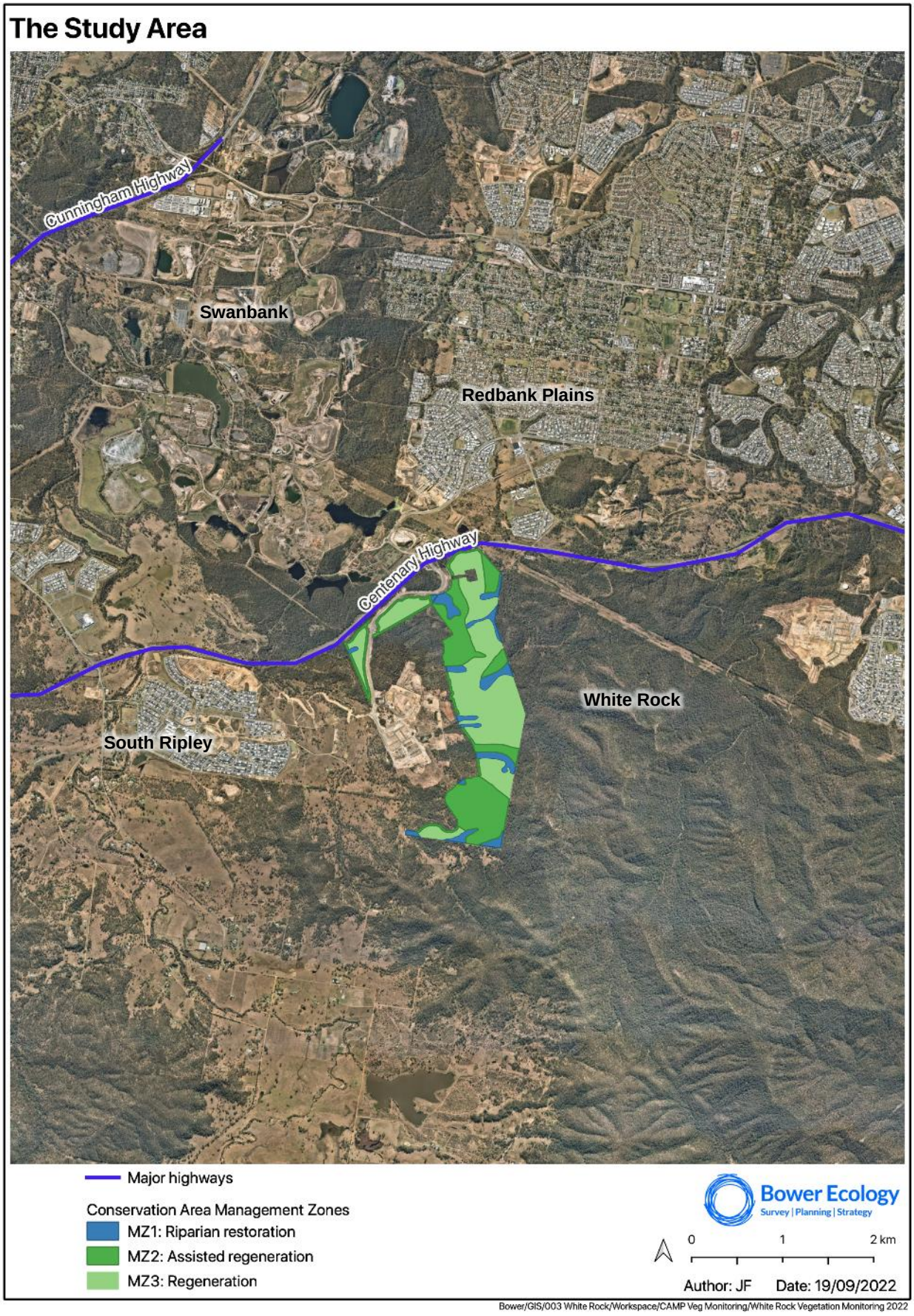

Figure 1: Local context

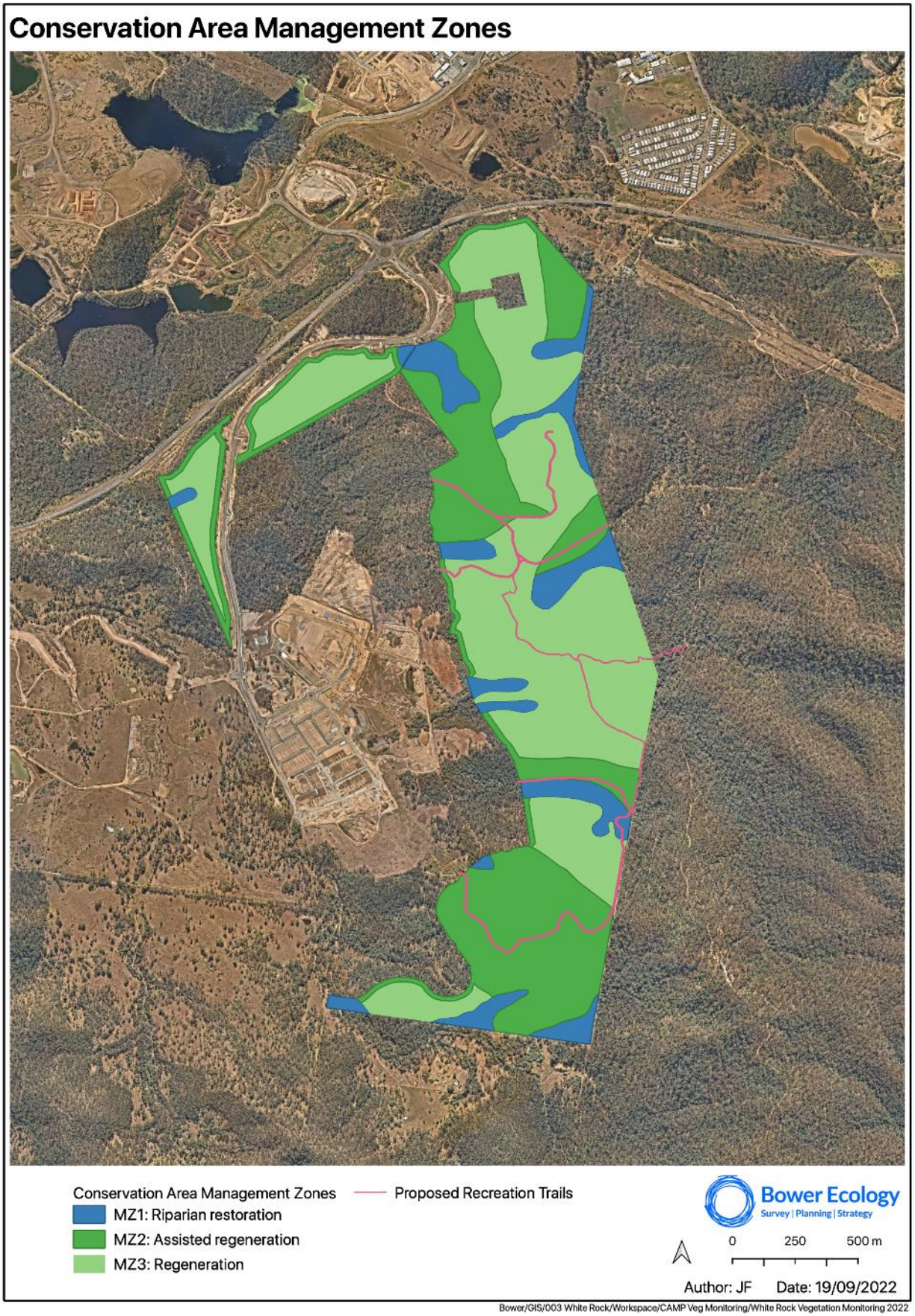

Figure 2: White Rock conservation area management zones

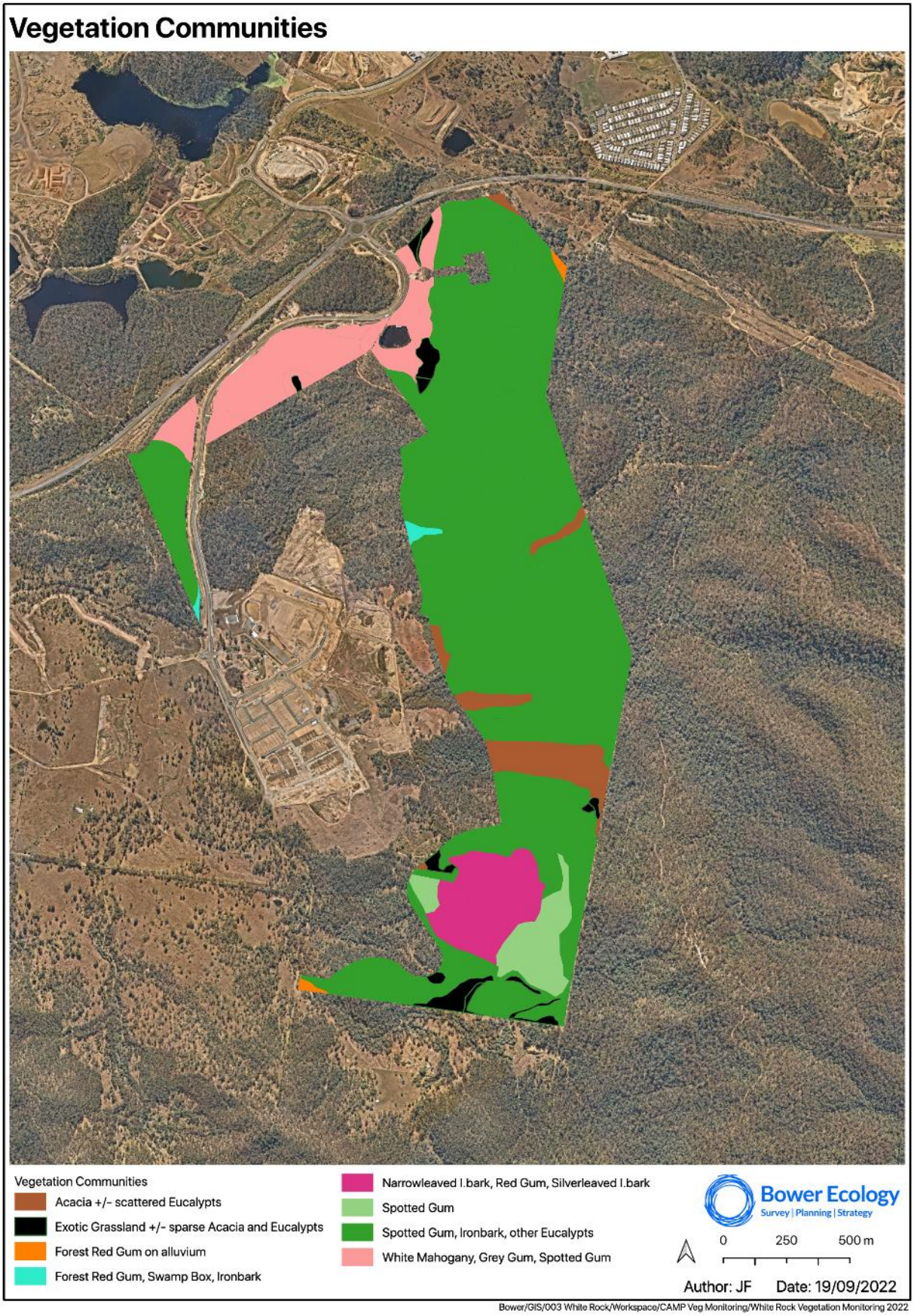

Figure 3: Vegetation communities within the CAMP area

2 Methodology

2.1. Ecological Monitoring Methodology

Field surveys were conducted as per the requirements of the CAMP (ELA 2020), as detailed in the 2021 baseline report (ELA 2021). Two suitably qualified ecologists completed the monitoring over three days, between the 18th and 20th of May 2022. Field surveys undertaken were BioCondition assessments, rapid lantana assessments, and the monitoring of 12 established photo monitoring points. As detailed in section 2.3, relocation of several monitoring plots was necessary as the originals weren't able to be located. All plots have been clearly marked so they can be found again.

2.2. Data analysis

Site and landscape attribute data were analysed as per the BioCondition Assessment Manual Version 2.2 (Eyre *et. al* 2015), as detailed in the 2021 baseline report (ELA 2021).

2.3. Survey limitations

The same limitations continue to apply regarding the detection success for flora however the excellent rainfall that occurred prior to these surveys means that most species that are present will have detectable above ground biomass, and for many, fruits and flowers.

The inability to use star pickets as permanent markers at this site (due to unexploded ordinances, see 2021 report) has meant that some locations of past monitoring plots were not able to be completed in exactly the same location. Due to this, some trends may be a result of the changed location rather than changed conditions. Where a plot was relocated, the new plots were always within 100m of the original location and within the same management zone and regional ecosystem.

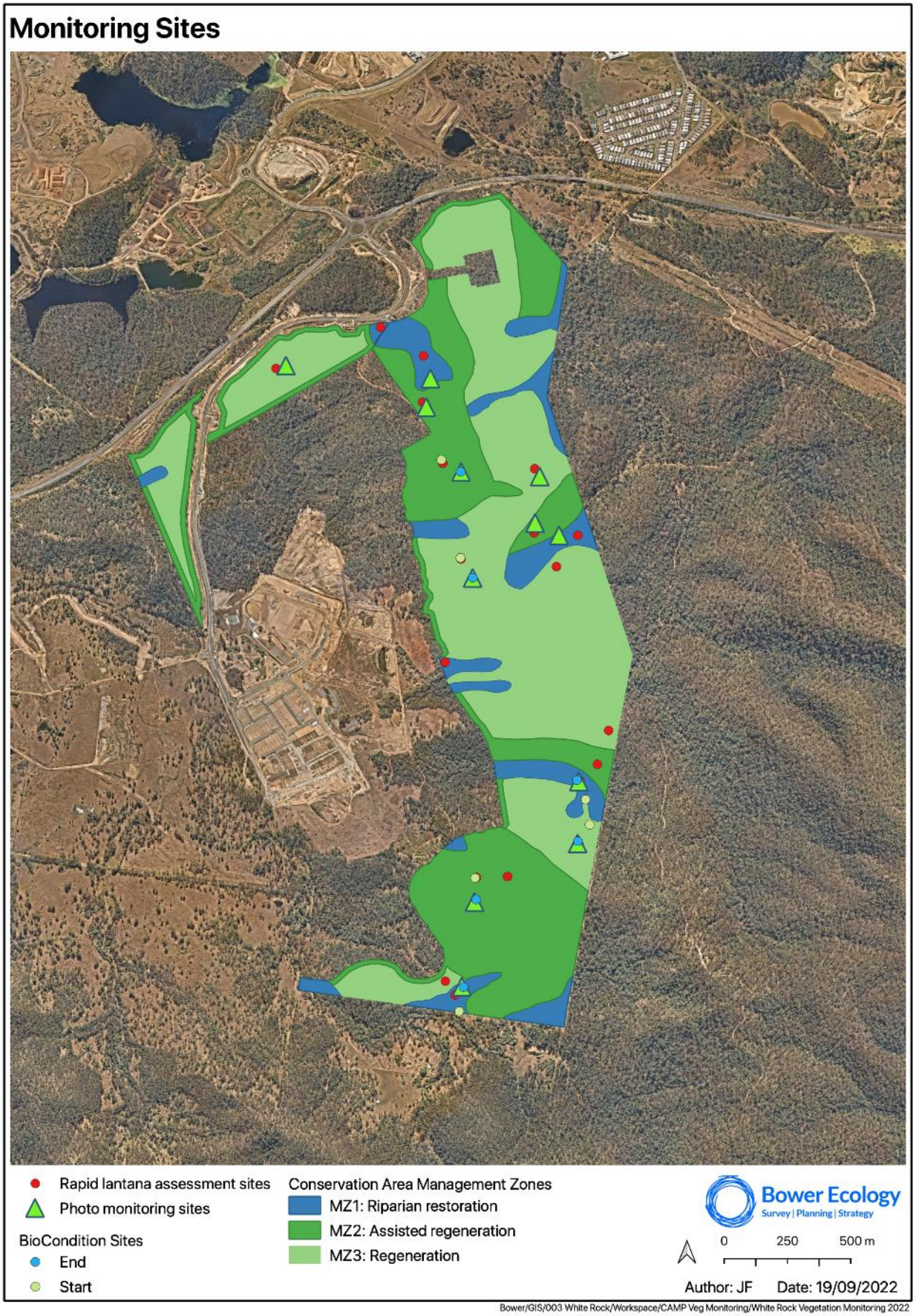

Figure 4: White Rock vegetation monitoring sites

3 Results

3.1. Survey timing and conditions

This year represents the second year of vegetation monitoring on this site. To match delays in the baseline surveys, and to reflect the rainfall that occurred throughout summer this year (Table 2), all BioCondition, weed and photopoints were completed between the 18th and 20th of May.

Weather conditions for the six months preceding the 2022 monitoring event are presented in Table 3. At 1008.2 mm in total, rainfall in the three months immediately prior to the 2022 survey period (February to April) was dramatically higher than the monthly average rainfall, as a result of the La Niña climate phase. Climate data was obtained from recordings taken at the Greenbank (Defence) weather station, approximately 14 km east of the development site (BOM 2022).

Table 2: February to April rainfall (mm) for 2019 to 2022 (BOM 2022).

Date	2019	2020	2021	2022
February	40.4	320	150	792.2
March	131.6	82.2	248.8	171
April	75.6	3	88.8	45
Total Rainfall (mm)	**247.6**	**405.2**	**487.6**	**1008.2**

Table 3: Weather conditions for the six months preceding the May 2022 monitoring event (BOM 2022).

Date	Nov 2021	Dec 2021	Jan 2022	Feb 202	Mar 2022	Apr 2022
Mean Minimum Temperature (°C)	16.8	17.8	20.0	18.2	17.9	15.3
Mean Maximum Temperature (°C)	27.7	30.4	29.6	29.5	29.4	27.0
Total Rainfall (mm)	207.8	208.0	129.6	792.2	171.0	45.0

3.2. BioCondition assessments

As per the requirements of the CAMP, six permanent BioCondition assessment sites were established inrepresentative sites of vegetation communities and MZs (Figure 5). Two sites were established in each of the MZs (MZ1, MZ2, and MZ3) and occurred in two regional ecosystems in remnant condition and one non-remnant area. Assessment sites are detailed in Appendix A: BioCondition scores**,** Table 7: BioCondition analysis and scoring

We were unable to relocate the exact start and finish position of two plots. BC4 we were unable to locate the original end point and have re-set one based on our best guess of the original trajectory and the previously recorded GPS location by Eco Logical Australia Pty Ltd. BC6 has been relocated completely as the bank on which it was originally has collapsed. In both cases the new location is within the same management zone and within 100m of the original plot location. See Figure 5 for new plot locations.

The average score for MZ1 was 3.5, for MZ2 was 2 and for MZ3 was 2. The majority of sites (1, 2, 5 and 6) scored a class of 2, representing vegetation approaching functional biodiversity condition. One site, site 4 received a lower score of class 3, representing vegetation approaching dysfunctional biodiversity condition. Site 3 is in a non-remnant condition, and consequently scored the lowest BioCondition class of 4 (Table 4).

We would expect little change in overall scores between 2021 and 2022 given the short amount of time that has elapsed. Only two sites had different overall scores in 2022 in comparison to the 2021 baseline:

- Site 4 had a baseline score of 0.59, therefore BioCondition class 3; between the 2021 and 2022 monitoring events , the overall score for this site increased to 0.65, and the BioCondition class reduced to 2 (Table 4).
- Site 6 had a baseline score of 0.61, therefore BioCondition class 2; between the 2021 and 2022 monitoring events, the overall score for this site decreased to 0.54, therefore BioCondition class 3 (Table 4).

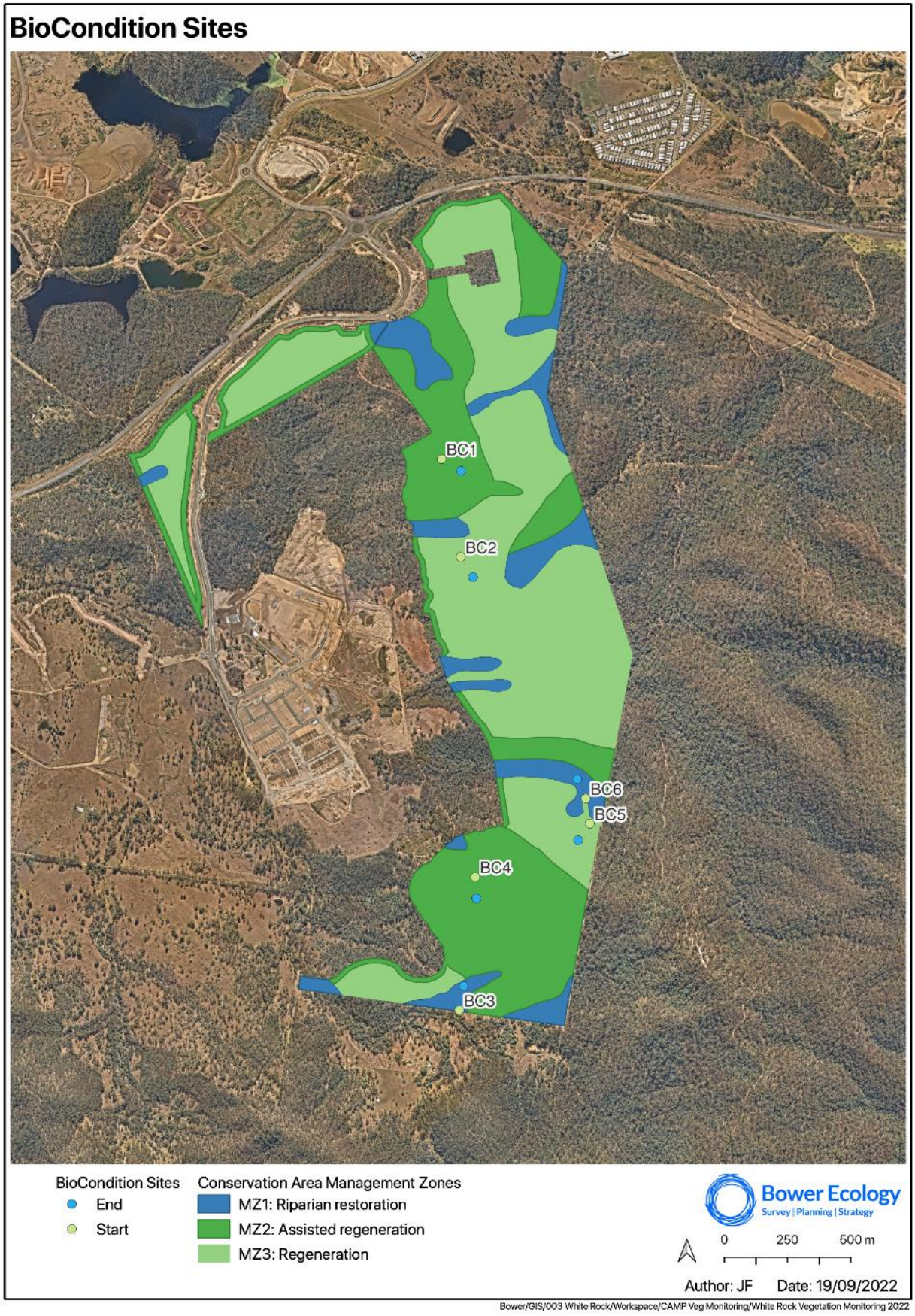

Figure 5: White Rock BioCondition assessment sites

Table 4: Summary of BioCondition results for 2021 and 2022

Site ID	MZ	RE	Condition	Benchmark used	Overall BioCondition score 2021	Overall BioCondition score 2022	BioCondition class 2021	BioCondition class 2022
1	2	12.9-10.2	Remnant	12.9-10.2	0.61	**0.61**	**2**	**2**
2	3	12.9-10.2	Remnant	12.9-10.2	0.76	**0.76**	**2**	**2**
3	1	12.9-10.7 (pre-clear)	Non-remnant	12.9-10.7	0.33	**0.33**	**4**	**4**
4	2	12.8.17	Remnant	12.8.17	0.59	**0.65**	**3**	**2**
5	3	12.9-10.2	Remnant	12.9-10.2	0.67	**0.67**	**2**	**2**
6	1	12.9-10.2	Remnant	12.9-10.2	0.61	**0.54**	**2**	**3**

Table 5: Site-based vegetation condition attributes contributing to BioCondition results for 2021 and 2022

Site ID / RE	BC1 / RE12.9-10.2		BC2 / RE12.9-10.2		BC3 / RE12.9-10.7		BC4 / RE12.8.17		BC5 / RE12.9-10.2		BC6 / RE12.9-10.2	
Management zone	**2**		**3**		**1**		**2**		**3**		**1**	
Value Type	**2021**	**2022**	**2021**	**2022**	**2021**	**2022**	**2021**	**2022**	**2021**	**2022**	**2021**	**2022**
Field based attributes												
Recruitment (% dominant canopy spp. regenerating)	100	100	60	75	100	100	25	100	50	86	25	0
Native tree sp. richness (no. native tree spp. in 100 x 50 m plot)	3	8	5	4	1	1	4	4	4	7	4	6
Native shrub sp. richness (no. native shrub spp. in 50 x 10 m plot)	3	6	7	5	1	2	3	4	6	5	3	5
Native grass sp. richness (no. native grass spp. in 50 x 10 m plot)	6	9	5	4	2	5	7	9	8	6	7	7
Native forb sp. richness (no. native forb spp. in 50 x 10 m plot)	10	6	7	5	3	11	10	4	8	11	10	6
Tree Canopy Height (median height of canopy layer in 100 x 50 m plot)	14	15	20	14	5	5	22	22	17	17	22	10
Tree Canopy Cover (% native canopy cover along 100 m transect)	40.5	74	36	71	1	1	32	32	80	59	32	44
Shrub canopy cover (% native shrub cover along 100 m transect)	58	25	0.5	22	2.5	0	25.5	14	9	40	25.5	0
Native perennial grass cover (average % cover of five 1 x 1 m quadrats)	0	29	23	69	2.4	96	0.6	10	5	6	0.6	1
Organic litter cover (average % cover of five 1 x 1 m quadrats)	89.6	56	60	28	17.6	0	48.4	15	78.4	79	48.4	94.8
Large trees (no. living trees / ha with DBH greater than benchmark DBH)	6	16	6	16	0	0	2	3	8	8	2	10
Coarse woody debris (total length / ha (m))	222	24	255	150	0	0	340	0	30	5	340	0
Weed cover (% total vegetation cover within 50 x 10 m plot comprised of exotic spp.)	35	26	2	0	90	6	80	72	10	24	80	100

3.3. Photo monitoring

A total of 12 photo monitoring sites were established across the three different MZ, four in each zone in the Conservation Area (Figure 6), six of which are co-located with the six BioCondition survey sites (Figure 4). Photo monitoring sites are designed to deliver comparative results over the course of the CAMP. In the short time that elapsed between the baseline and the 2022 monitoring events, little change is evident at the photo monitoring sites. Digital photos taken at each site are available in Appendix C: Photo monitoring sites.

3.4. Rapid assessments of lantana infestations

A total of 20 rapid lantana assessment sites monitored across the Project Area: six sites in MZ1, seven sites in MZ2, and seven sites in MZ3 (Figure 7). *Lantana camara* (lantana shrub) was recorded at 10 sites (reduced from 20 sites in 2021), and *Lantana montevidensis* at four of the sites (reduced from 10 sites in 2021). The average (mean) percentage cover of lantana across all rapid assessment sites was 14.05% (Table 6). This is a significant decrease from the 2021 average of 51%.

For bush lantana (*Lantana camara*), two sites have seen an increase in coverage (RL7 and RL17) but most have decreased. Both RL7 and RL17 are beyond the area treated for weeds thus far (Figure 8). For creeping lantana (*L. montividiensis*) two sites have increased in cover (RL13 and RL19) but most have decreased. RL13 is yet to receive weed treatment; however, RL19 is on the edge of an area that has received primary lantana treatment, so it is surprising that cover has increased here (Figure 8). Sites RL7, RL11, RL12, RL13, RL14, RL15, RL16, RL17 and RL20 have not yet received primary weed treatment (Figure 8), however most of these (except RL7, RL13 and RL14) show a reduction in lantana coverage since baseline monitoring in 2021. In-field observations noted that while weed treatment had not yet been mapped for these areas, evidence of spraying was clear from the abundance of dead lantana.

Photos taken at each site are available in Appendix D: Lantana rapid assessment photos

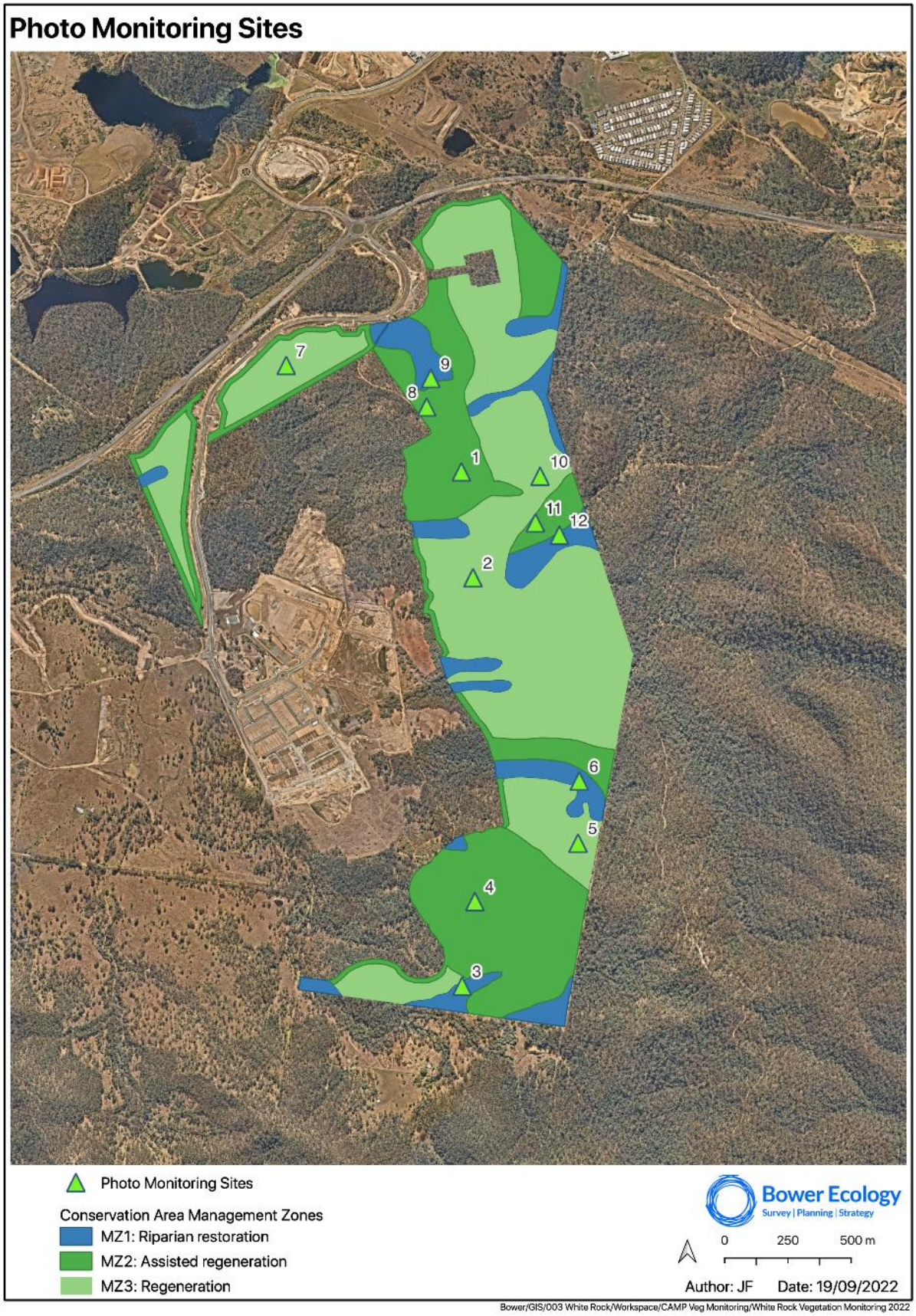

Figure 6: White Rock photo monitoring sites

Table 6: Lantana Rapid Assessment results

Site ID	MZ	Percent Cover Shrub 2021	Percent Cover Shrub 2022	Percent Cover Creeping 2021	Percent Cover Creeping 2022	Percentage Cover Total 2021	Percentage Cover Total 2022
RL1	2	35	**26**	0	**0**	35	**26**
RL2	3	10	**0**	10	**0**	10	**0**
RL3	1	80	**5**	0	**0**	80	**5**
RL4	1	10	**0**	0	**0**	10	**0**
RL5	2	35	**0**	50	**0**	85	**0**
RL6	2	30	**5**	30	**0**	60	**5**
RL7	3	5	**24**	0	**0**	5	**24**
RL8	1	80	**0**	0	**0**	80	**0**
RL9	3	35	**0**	0	**0**	35	**0**
RL10	2	50	**6**	0	**0**	50	**6**
RL11	1	30	**15**	5	**0**	35	**15**
RL12	3	35	**0**	35	**20**	35	**20**
RL13	2	40	**20**	5	**15**	45	**35**
RL14	2	80	**11**	15	**11**	95	**22**
RL15	1	80	**0**	0	**0**	80	**0**
RL16	3	1	**0**	55	**0**	56	**0**
RL17	1	55	**100**	40	**0**	85	**100**
RL18	3	70	**0**	0	**0**	70	**0**
RL19	2	65	**20**	0	**3**	65	**23**
RL20	3	10	**0**	0	**0**	10	**0**
Site Mean		**41.8**	**11.6**	**12.3**	**2.45**	**52.1**	**14.05**

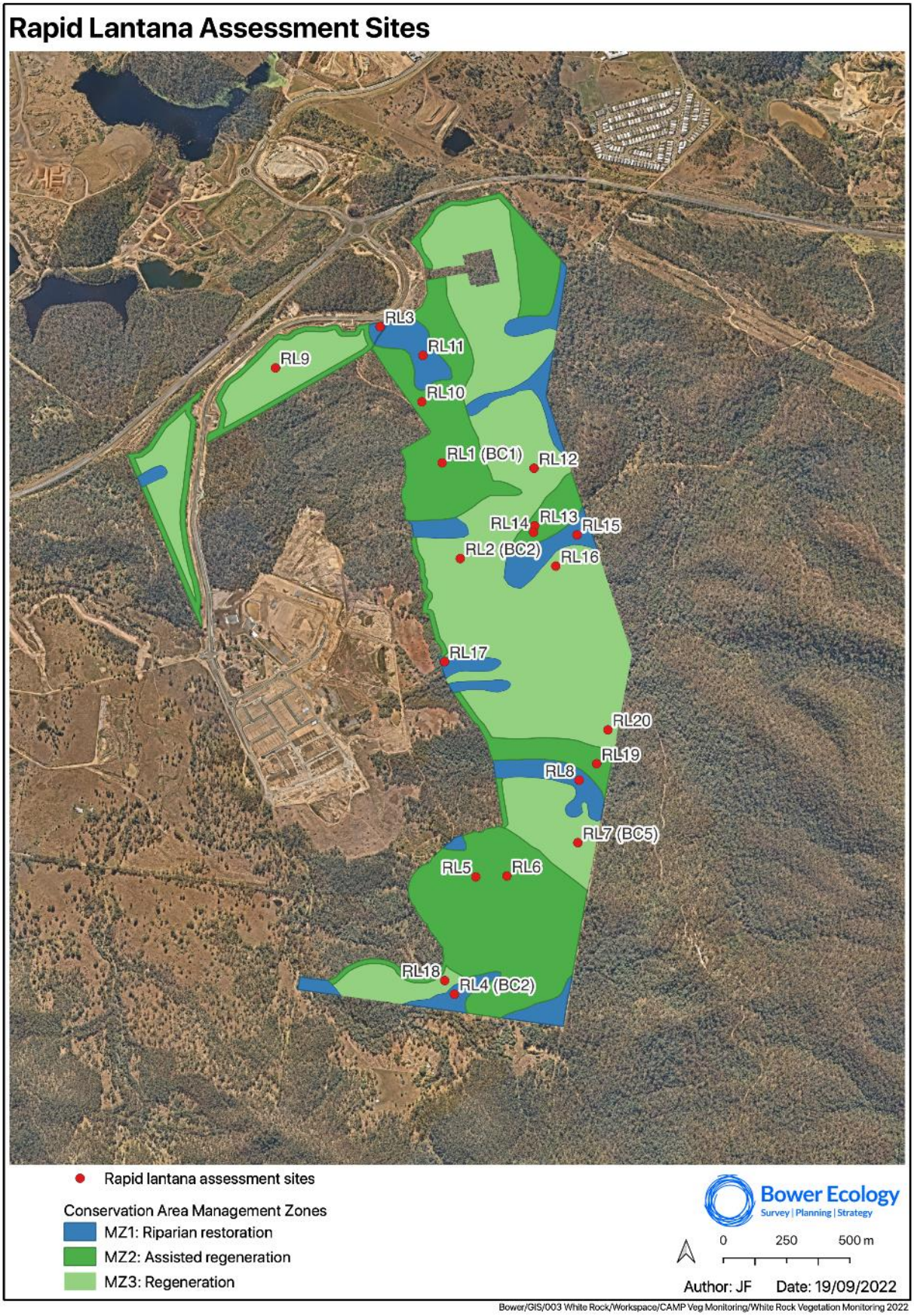

Figure 7: White Rock rapid lantana assessment sites

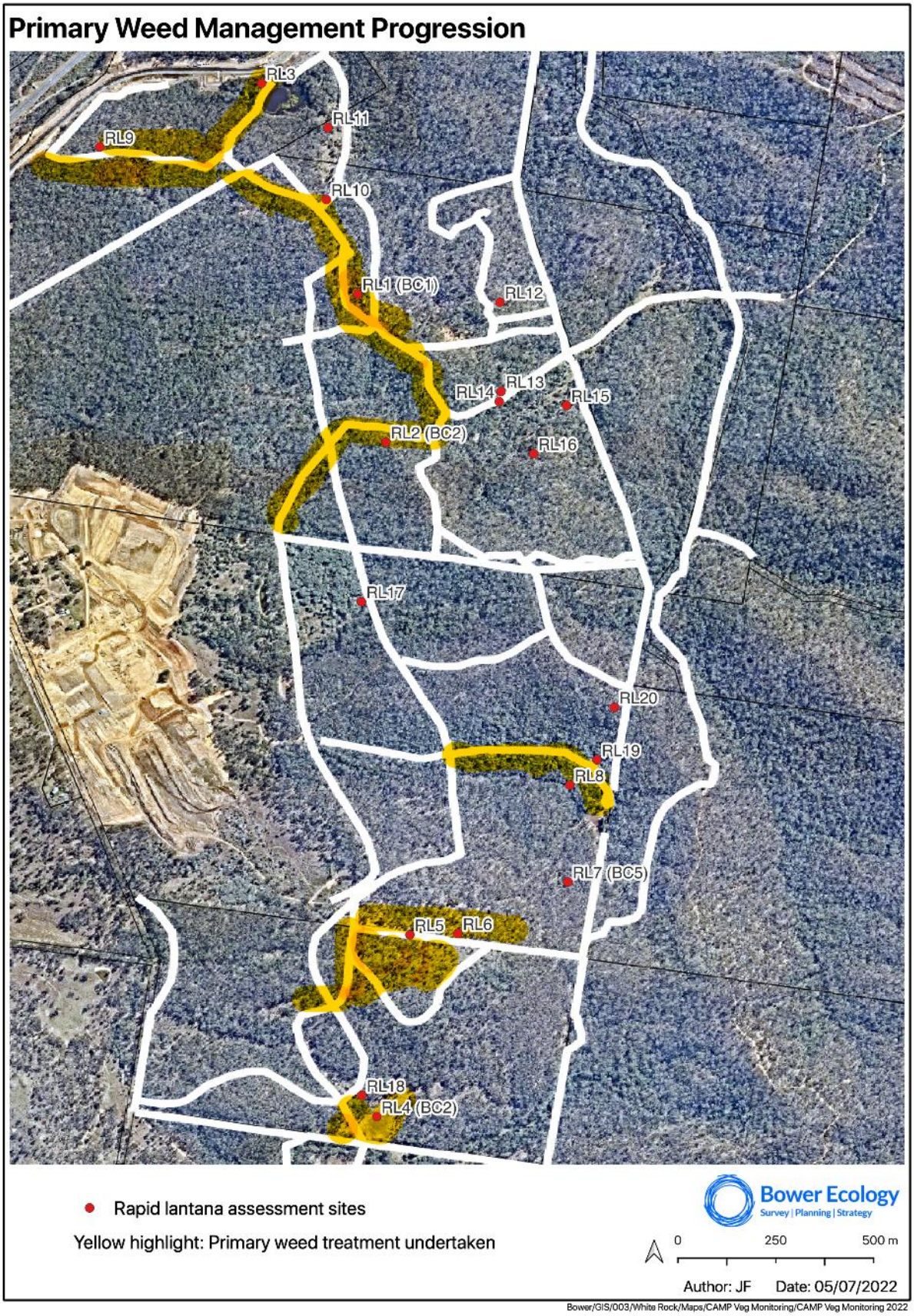

Figure 8: Progression of primary weed treatment in relation to rapid lantana assessment sites. Yellow highlighted sections indicated where primary weed treatment was conducted by June 2022 (Mapping from Evolve)

4 Discussion

Overall there has been improvement in the key trait we would expect to respond in such a short timeframe – the coverage of lantana has declined (Table 6). This can be largely attributed to weed management works.

Other attributes with shorter response times, for example native forb and grass diversity, and perennial grass cover, have shown varied patterns. Native forb species richness has decreased at four BioCondition assessment sites, and increased at two (Table 5). Native grass species richness has increased at three BioCondition assessment sites, decreased at two, and remained the same at one (Table 5). Perennial grass cover has increased at all six BioCondition assessment sites, with significant increases noted at sites 1, 2, 3 and 4 (Table 5). Ecosystem condition traits that will take longer to mature will need more time, and we cannot expect to see trends emerging within a single year – for example canopy cover, tree species richness and the number of large trees.

Recommendations for management for the next annual cycle emerging from this report are:

- Lock in reduction in bush lantana in sites where there have been strong reductions – focus on follow up treatments especially where abundance has been reduced to zero. Once bush lantana is removed, it can open new niches for other invasive species to proliferate. The condition of control sites will be continued to be monitored and, if other weeds of concern emerge, they will be added to the weed monitoring schedule.
- As management begins to focus on other methods of restoration such as ecological burns, works may consider focussing burn effort on areas where creeping lantana is worst.
- Considerable efforts to control lantana were seen on site, and have resulted in declines in the weed. Nonetheless, the species persists sometimes in very high abundance. Future monitoring could employ a more generalised, qualitative assessment of lantana abundance outside of the monitoring plots to guide the deployment of future weed control efforts; however it is acknowledged that the rehabilitation contractor will be well across this.

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Appendix A: BioCondition scores

Table 7: BioCondition analysis and scoring for Year 1 2022 monitoring

Management zone	2		3		1		2		3		1	
Site ID / RE	BC1 / RE12.9-10.2		BC2 / RE12.9-10.2		BC3 / RE12.9-10.7		BC4 / RE12.8.17		BC5 / RE12.9-10.2		BC6 / RE12.9-10.2	
Value Type	**Field value**	**Score**	**Field value**	**Score**	**Field value**	**Score**	**Field value**	**Score**	**Field value**	**Score**	**Field value**	**Score**
Field based attributes												
Recruitment	100	5	75	5	100	5	100	5	86	5	0	0
Native tree sp. richness	8	3	4	3	1	0	4	4	7	5	6	5
Native shrub sp. richness	6	3	5	3	2	3	4	3	5	3	5	3
Native grass sp. richness	9	5	4	3	5	3	9	3	6	3	7	5
Native forb sp. richness	6	3	5	3	11	3	4	3	11	3	6	3
Tree Canopy Height	15	5	14	3	5	0	22	5	17	5	10	3
Tree Canopy Cover	74	5	71	5	1	0	32	5	59	5	44	5
Shrub canopy cover	25	5	22	3	0	0	14	3	40	3	0	0
Native perennial grass cover	29	5	69	5	96	5	10	1	6	1	1	0
Organic litter cover	56	5	28	5	0	0	15	5	79	5	94.8	5
Large trees	16	5	16	5	0	0	3	5	8	5	10	5
Coarse woody debris	24	2	150	2	0	0	0	0	5	0	0	0
Weed cover	26	0	0	10	6	0	72	3	24	0	100	0
Total Field based attributes		**51.0**		**55**		**19.0**		**45**		**43**		**34**
GIS based attributes												
Fragmented - Patch size		10		10		5		10		10		10
Fragmented - Connectivity		5		5		4		5		5		5
Fragmented - Context		5		5		4		5		5		5
Total GIS attributes		**20**		**20**		**13**		**20**		**20**		**20**
Total BioCondition Score		**71.0**		**75**		**32.0**		**65**		**63**		**54**
Weighted Ecosystem Score		**0.71**		**0.75**		**0.32**		**0.65**		**0.63**		**0.54**
Final Classification		**2**		**2**		**4**		**2**		**2**		**3**

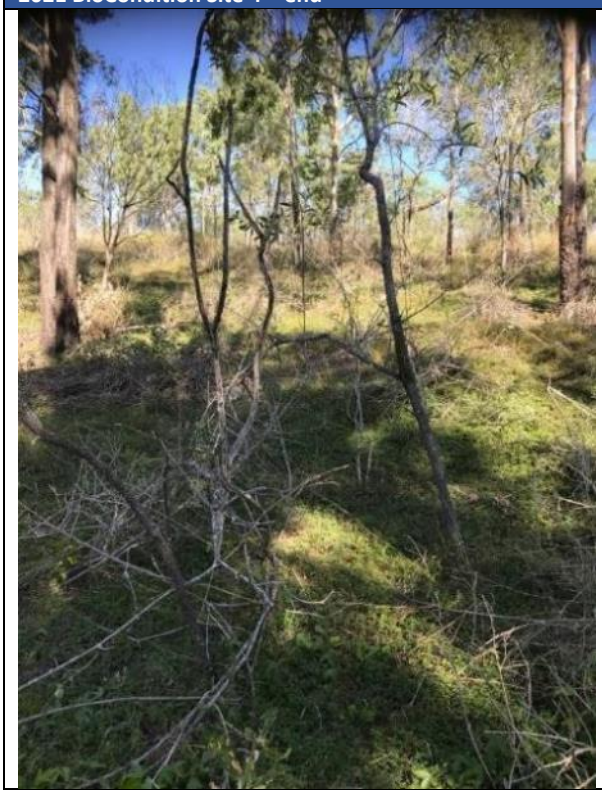
Appendix B: BioCondition site photos

Table 8: BioCondition site photos

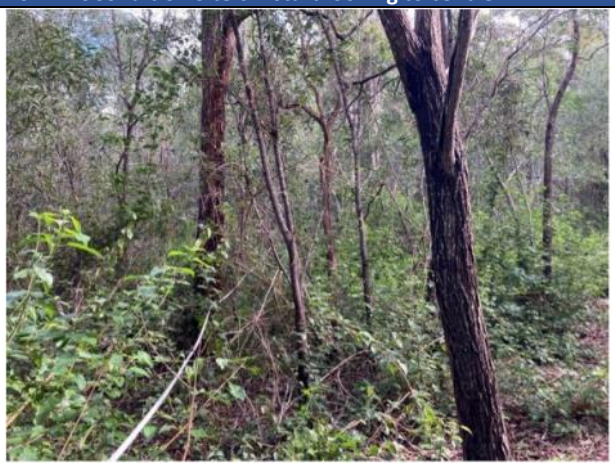
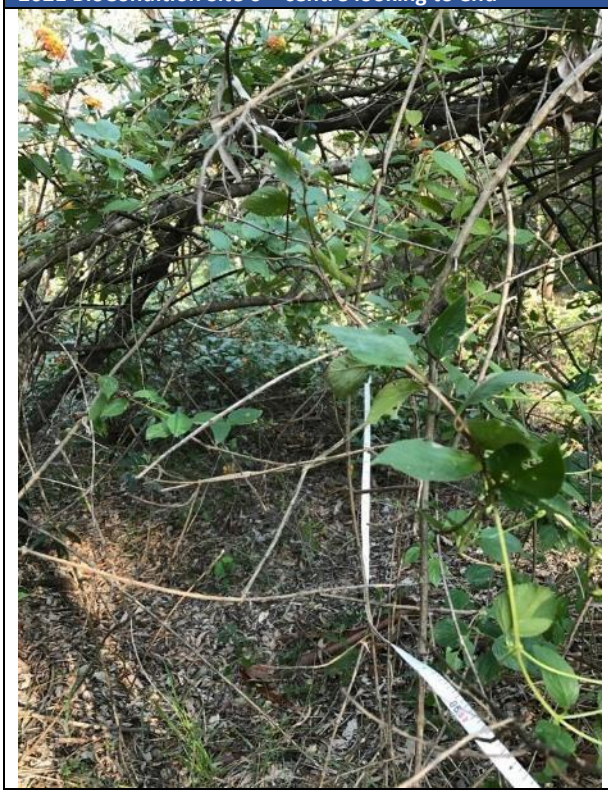
2021 BioCondition Site 1 – centre looking to start	2022 BioCondition Site 1 – start looking to centre
	
2021 BioCondition Site 1 – centre looking to end	**2022 BioCondition Site 1 – end looking to centre**
	

2021 BioCondition Site 2 – centre looking to start	2022 BioCondition Site 2 – start looking to centre
	
2021 BioCondition Site 2 – centre looking to end	**2022 BioCondition Site 2 – end looking to centre**
	

2021 BioCondition Site 3 – start	2022 BioCondition Site 3 – start looking to centre
	
2021 BioCondition Site 3 – end	**2022 BioCondition Site 3 – end looking to centre**
	

2021 BioCondition Site 4 – start	2022 BioCondition Site 4 – start looking to centre
	
2021 BioCondition Site 4 – end	**2022 BioCondition Site 4 – end looking to centre**
	

2021 BioCondition Site 5 – centre looking to start	2022 BioCondition Site 5 – end looking to centre
	No photo available
2021 BioCondition Site 5 – centre looking to end	**2022 BioCondition Site 5 – end looking to centre**
	

2021 BioCondition Site 6 – centre looking to start	2022 BioCondition Site 6 – start looking to centre
	
2021 BioCondition Site 6 – centre looking to end	**2022 BioCondition Site 6 – end looking to centre**
	

Appendix C: Photo monitoring sites

Table 9: Photo monitoring digital images

Photo monitoring site 1 - 2021	Photo monitoring site 1 - 2022
 (N)	
 (S)	
 (E)	
 (W)	

Photo monitoring site 2 - 2021	Photo monitoring site 2 - 2022
 (N)	
 (S)	
 (E)	
 (W)	

Photo monitoring site 3 - 2021	Photo monitoring site 3 - 2022
 (N)	
 (S)	
 (E)	
 (W)	

Photo monitoring site 4 - 2021	Photo monitoring site 4 - 2022
 (N)	
 (S)	
 (E)	
 (W)	

Photo monitoring site 5 - 2021	Photo monitoring site 5 - 2022
 (N)	
 (S)	
 (E)	
 (W)	

Photo monitoring site 6 - 2021	Photo monitoring site 6 - 2022
 (N)	
 (S)	
 (E)	
 (W)	

Photo monitoring site 7 – 2021	Photo monitoring site 7 – 2022
 (N)	

Photo monitoring site 8 - 2021	Photo monitoring site 8 - 2022
 (N)	

Photo monitoring site 9 - 2021	Photo monitoring site 9 - 2022
 (N)	

Photo monitoring site 10 – 2021	Photo monitoring site 10 – 2022

(N)

Photo monitoring site 11 - 2021	Photo monitoring site 11 - 2022

(N)

Photo monitoring site 12 - 2021	Photo monitoring site 12 - 2022

(N)

Appendix D: Lantana rapid assessment photos

Table 10: Rapid lantana assessment digital images

2021 RL 1 - 0 m centre point	2022 RL 1 – 0 m centre point
	

2021 RL 2 - 0 m centre point	2022 RL 2 – 0 m centre point
	

2021 RL 3 - 0 m centre point	2022 RL 3 – 0 m centre point
	

2021 RL 4 - 0 m centre point	2022 RL 4 – 0 m centre point
	

2021 RL 5 - 0 m centre point	2022 RL 5 – 0 m centre point
	

2021 RL 6 - 0 m centre point	2022 RL 6 – 0 m centre point
	

2021 RL 7 - 0 m centre point	2022 RL 7 – 0 m centre point
	

2021 RL 8 - 0 m centre point	2022 RL 8 – 0 m centre point
	

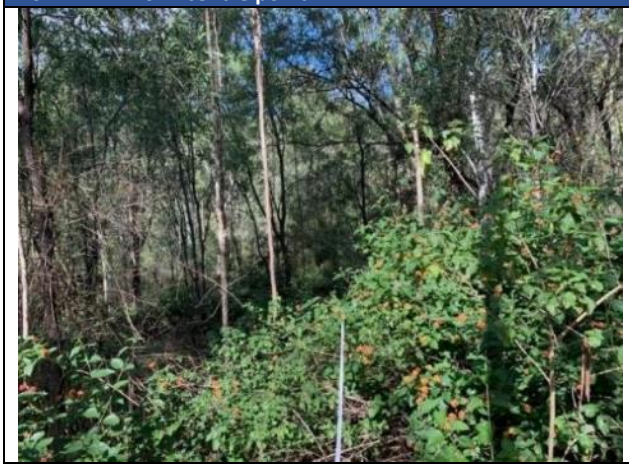
2021 RL 9 - 0 m centre point	2022 RL 9 – 0 m centre point
	

2021 RL 10 - 0 m centre point	2022 RL 10 – 0 m centre point
	

2021 RL 11 - 0 m centre point	2022 RL 11 – 0 m centre point
	

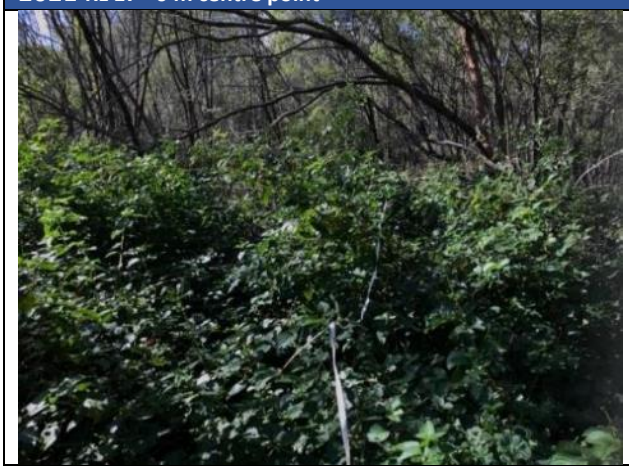
2021 RL 12 - 0 m centre point	2022 RL 12 – 0 m centre point
	

2021 RL 13 - 0 m centre point	2022 RL 13 – 0 m centre point
	

2021 RL 14 - 0 m centre point	2022 RL 14 – 0 m centre point
	Photo missing

2021 RL 15 - 0 m centre point	2022 RL 15 – 0 m centre point
	

2021 RL 16 - 0 m centre point	2022 RL 16 – 0 m centre point
	

2021 RL 17 - 0 m centre point	2022 RL 17 – 0 m centre point
	

2021 RL 18 - 0 m centre point	2022 RL 18 – 0 m centre point
	

2021 RL 19 - 0 m centre point	2022 RL 19 – 0 m centre point
	

2021 RL 20 - 0 m centre point	2022 RL 20 – 0 m centre point
	

Appendix E: CAMP Performance criteria

The performance criteria required for the site have been identified in Table 11 and are consistent with the EPBC Act approval. Performance criteria specifically related to the current monitoring event are highlighted orange in Table 11 below. Performance criteria are considered as interim targets, which will guide works towards the completion criteria stated in the CAMP. If monitoring indicates that the management actions are not resulting in achievement of the performance criteria, the program may require revision in consultation with ICC and all other relevant authorities.

Table 11: CAMP performance criteria

Task	Establishment			Maintenance
	Preliminary	Management		
	By end of year 3*	Between end of year 3 and end of year 10*	Year 11*	Years 12-21*
Construction-related management actions				
Translocation of habitat / logs	Translocation undertaken, minimal damage to CA vegetation.	N/A		
Fencing / signage / (and maintenance)	Infrastructure installed.	No more than 5% of fencing compromised at any time		
Sediment and erosion control (and maintenance)	Sediment / erosion works installed	Sediment and erosion control devices checked and repaired annually in Quarter 1		
Waste	Initial waste removal undertaken, ongoing waste removed quarterly / as required	Waste removed Quarterly and as required		
Bushland management actions				
Fire management	Bush fire management plan (BFMP) completed. Fire management works undertaken as specified in the BFMP.	Fire management works undertaken as specified in the BFMP.		
Significant flora management	Undertaken as per specifications in Section 7.3. After works are complete, monitoring of planted / seeded individuals must be undertaken			N/A

Pest fauna management	Two survey events completed to determine baseline of dogs/cats/foxes within the Conservation Management Area and reference sites within the adjacent White Rock Conservation Estate Area. Development of a pest management plan that specifies how feral dogs, cats and foxes will be reduced in the Conservation Management Area. Development of a survey methodology that is sufficient to demonstrate any reduction of feral dogs, cats and foxes in the Conservation Management Area, relative to the baseline and reference sites within the adjacent White Rock Conservation Estate Area.	Between end of year 3 and the end of year 6, no increase in pests against baseline, or in the event of evidence of an increase in pests in the general area as measured at reference sites within the White Rock Conservation Estate Area, then demonstrated reduction in pests relative to the reference sites, measured annually.	From the beginning of year 7 to end of approval, maintain a reduction in pests relative to baseline, measured annually, or in the event of evidence of an increase of pests in the general area, measured at reference sites within the White Rock Conservation Estate Area, then demonstrated reduction relative to these reference sites, measured annually.
Bushfire/recreation trails (and maintenance)	Fire access tracks established	At a minimum, bushfire management trails drivable at least one month prior to fire season as determined in BFMP. No more than 10% of designated multipurpose trails unwalkable at any time.	
Revegetation requirements assessed	Revegetation requirements assessed every year prior to planting season until Year 8		N/A
Revegetation works	N/A	Revegetation is undertaken to planting specifications and consistent with the Regional Ecosystem type. All revegetation to be completed by the end of Year 8 (at least 20% of works will be completed by the end of each year [years 4 to 8]). Minimum 90% survival rate of revegetation or equivalent stem density (i.e. through natural regen) at the end of each year and by the end of Year 11.	N/A
Weed control	Targeted primary treatment over approximately 10% of area.	Primary and secondary works undertaken in all areas by the end of Year 8 (at least 20% of	A minimum of three years of maintenance undertaken in all areas

	Targeted primary treatment within all mosaic burn areas (post burn), estimated to be 10% pending preparation of BFMP	works will be completed by the end of each year [years 4 to 8]). Targeted primary treatment within all mosaic burn areas (post burn).	<5% coverage of mature woody weeds in any zone <25% exotic groundcover in Management Zone 1 and Management Zone 2 <10% exotic groundcover in each zone in Management Zone 3 Targeted primary treatment within all mosaic burn areas (post burn).
Native tree management	Identification of tree thinning areas	All thinning activities undertaken as specified in Section 7.7 by the end of Year 8	All management zones and portions thereof have koala food trees present consistent with the associated Regional Ecosystem type.
Monitoring and reporting			
Monitoring and annual reporting	Monitoring points installed / baseline established prior to works	Annual and final monitoring undertaken in as specified in **Section 9** of the CAMP	
CAMP Review, aiming to minimise threatening processes to koalas and GHFF	N/A	CAMP reviewed and updated at Year 6, 11, 16 and 21	

White Rock - Baseline Pest Surveys for 2021/2022

Intrapac White Rock Pty ltd

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Template 2.8.1

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Abbreviations

Abbreviation	Description
Abbreviation	Description
CAMP	Conservation Area Management Plan
EPBC Act	*Commonwealth Environment Protection and Biodiversity Conservation Act 1999*
ha	Hectare
ICC	Ipswich City Council
KSAT	Koala Spot Assessment Technique
PDA	Priority Development Area
PMP	Pest Management Plan
Qld	Queensland
TSC	Temporary sales centre
WRSMCE	White Rock - Spring Mountain Conservation Estate

1. Introduction

1.1. Project Background

Approval under the *Environment Protection and Biodiversity Conservation Act 199* (EPBC Act) was given to Intrapac Property QLD Pty Ltd (Intrapac) (the proponent) for the development of a mixed-use subdivision and associated infrastructure (the development) at White Rock in the Ripley Valley (EPBC Act referral 2014/738, December 2019). The development, illustrated in **Figure 1**, covers 223 ha of the available 472 ha within five subject lots, listed below:

- 189SP199797
- 230SP196913
- 2SP130834
- 181S31342
- 174S31238)

The White Rock Pest Management Plan (PMP) defines the remaining 249 ha as the Conservation Area (Eco Logical Australia, 2020), which will be managed for conservation in perpetuity. The Conservation Area will be managed by the proponent during the on-maintenance period (10 years). The proponent is required to manage the Conservation Area to meet the requirements of the PMP and the relevant overarching Conservation Area Management Plan (CAMP) (Eco Logical Australia, 2020). Upon achievement of completion criteria and performance targets of the PMP and the CAMP, the Conservation Area is intended to be handed over for administration and management by Ipswich City Council (ICC).

The Conservation Area provides the environmental offsets required under Queensland's *Environmental Offsets Act 2014* and the EPBC Act for impacts to koala (*Phascolarctos cinereus*) and grey-headed flying fox (*Pteropus poliocephalus*) habitat (GHFF), as defined by the EPBC Act. The CAMP requires the improvement of koala and GHFF habitat values and overall bushland health.

Pest species including the fox (*Vulpes vulpes*), feral cat (*Felis catus*) have been identified as serious threats to native wildlife and are key threatening processes (Department of the Environment and Energy, 2014). According to the *Nature Conservation (Koala) Conservation Plan 2017* (NCKCP) the wild dog (*Canis lupus familiaris/ Canis lupus dingo*) has been identified as a threat to the survival of koala populations and requires strategic management. The PMP and CAMP identifies these pest species as threats to local koalas and other wildlife and recognises a potential increase in the impact of these species due to fragmentation of wildlife habitat and introduction of pest animals associated with the urban development.

An objective of the PMP and CAMP is therefore to manage pest fauna that are potential predators to koalas within the conservation area and eventually integrate into ICC's existing and adjacent White Rock - Spring Mountain Conservation Estate (WRSMCE).

Approval has been granted under Part 9 of the EPBC Act for the development as detailed in referral 2014/7388 and the variations to the proposal (24 October 2016, 15 October 2018 and 5 March 2019). The Conditions of Approval requires the development to comply with performance and completion criteria relating to pest fauna management detailed in **Table 1**.

1.2. Objectives and Scope

The purpose of this report is to present the results of the baseline survey, and to detail the size and distribution of the target species, foxes, feral cat, wild dogs. The PMP requires two targeted surveys comprised of an autumn and spring event each within the Conservation Area and WRSMCE.

Specifically, the scope of this work is to:

- Use remote cameras to monitor and identify changes in feral animal populations listed under the EPBC Act, in and accordance with *the Queensland Biosecurity Act 2014*
- undertake targeted pest fauna baseline surveys, including incidental observations, area searches, and remote cameras. Pest species include:
    - fox
    - feral cat
    - wild dog
    - feral pig (*Sus scrofa*) (refer to **Section 3.2**)
- identifying additional feral/pest species to inform the adaptive management strategies within the PMP
- compile a report (this document) describing the baseline findings for the PMP
- addresses the pest fauna management actions to be taken (guided by the CAMP) to achieve the criteria set out in **Table 1.**

Table 1 Bushland management actions relating to pest fauna management (from Table 1, Attachment B of the EPBC Act Approval)

Task	Establishment	Management	Maintenance
	By end of year 3*	End of year 3 to end of year 6	Beginning of year 7 to end of approval (end of year 21)
Pest fauna management	Two survey events completed to determine baseline of dogs/cats/foxes within the Conservation Management Area and reference sites within the adjacent White Rock - Spring Mountain Conservation Estate Development of a pest management plan that specifies how feral dogs, cats and foxes will be reduced in the Conservation Management Area	Between end of year 2 and end of year 6, no increase in pests against baseline, or, in the event of evidence on an increase of pests in the general area as measured at the reference sites within the White Rock - Spring Mountain Conservation Estate, then demonstrated reduction in pests relative to these reference sites, measured annually.	From beginning of year 6 to end of approval, maintain a reduction in pests relative to baseline, measured annually, or in the event of evidence of an increase of pests in the general area, as measured at reference sites within the White Rock - Spring Mountain Conservation Estate, then demonstrated reduction relative to these reference sites, measured annually.

* Year 1 of the CAMP commenced upon approval of the project under the EPBC Act (3 December 2019).

1.3. Study area description

White Rock is located in Ripley Valley south of Centenary Highway. It is located 35km from the Brisbane CBD, 15km from the Ipswich CBD, 4km east of the Ripley urban core and 8 km west from the Springfield Town Centre (refer to **Figure 1**).

The Conservation Area is bounded to the north by the Centenary Highway. The area to the west of the study area has been cleared for agricultural purposes in lowland areas and expected to transition into urban development in the coming years as part of the Ripley Valley Priority Development Area (PDA). The Conservation Area totals 249.4 ha and includes a matrix of maturing / mature vegetation that continues to the east of the boundary into WRSMCE totals approximately 2,500 ha, which is part of a large contiguous area of vegetation associated with the Flinders Karawatha Corridor (Department of Environment and Heritage Protection, 2014). The portion of the WRSMCE used in this study is not representative of the entire WRSMCE and is relative to the Conservation Area in size and vegetation community composition.

The vegetation communities within the Conservation Area consist of eight broad vegetation communities identified in the initial ecological surveys (Eco Logical Australia, 2017) and are summarised in **Table 2.**

Table 2: Vegetation communities within the Conservation Area (ELA, 2017)

Vegetation Community	Area (ha)
Acacia +/- scattered Eucalypts (i.e. *Eucalyptus tereticornus, Eucalyptus crebra*)	3.8
Dam	1.1
Exotic Grassland +/- sparse Acacia and Eucalypts (i.e E. *tereticornus, E. crebra*)	5.5
E. tereticornis (Forest Red Gum) on alluvium	0.8
E. tereticornis, Lophostemon suaveolens (Swamp Box) and *E. crebra* (Narrow-leaved Ironbark).	8.1
E. crebra, E. tereticornis, E. melanophloia (Silver Leaved Ironbark)	15.6
Corymbia citriodora (Spotted gum)	9.8
C. citriodora, E. crebra, E. melanophloia, and other Eucalypts	183.1
E. acmenoides (White Mahogany), *E. major* (Grey Gum), *C. citriodora*	21.6
Total	**249.4**

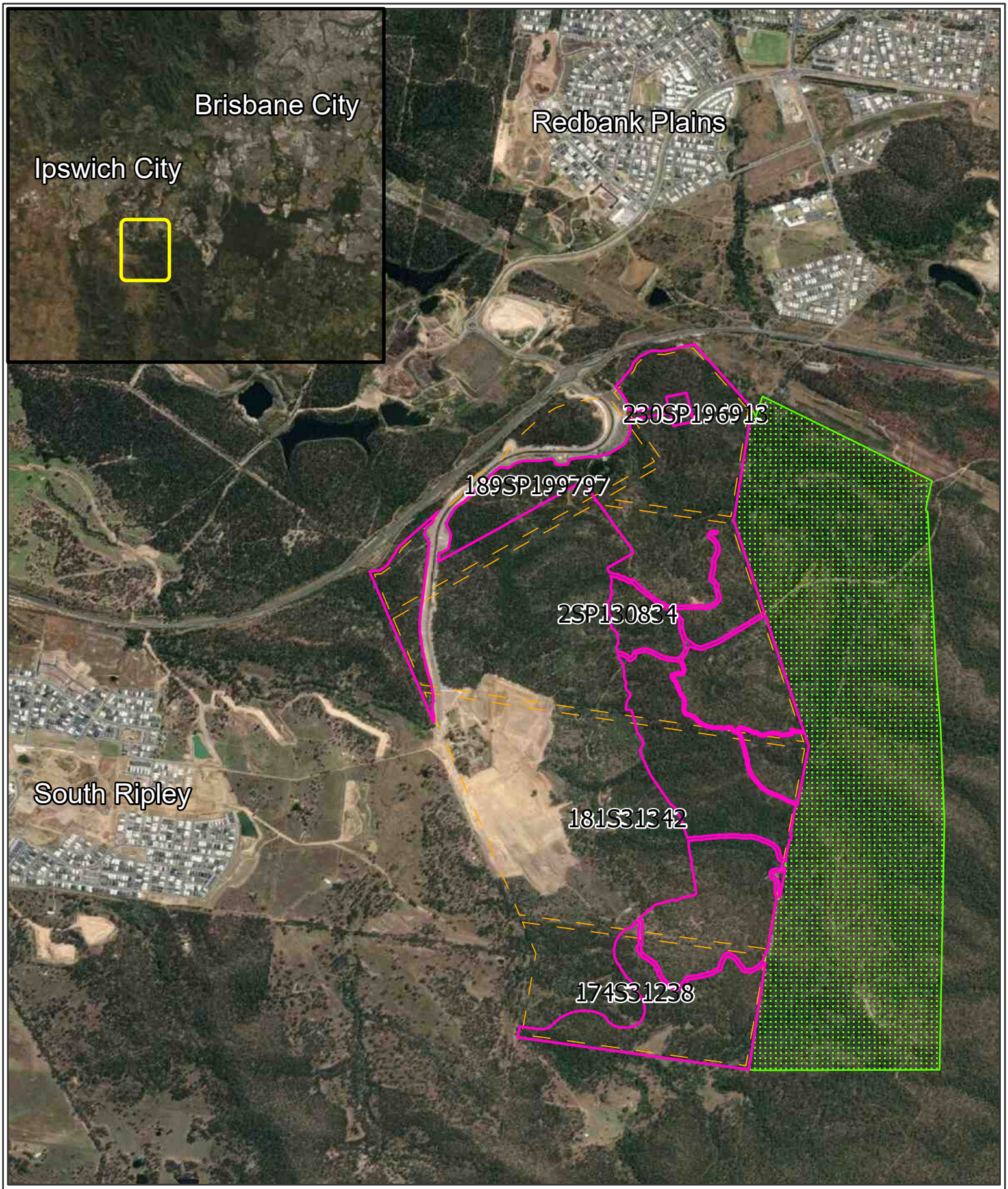

Figure 1 Study site overview

CAMP area

WRSMCE area

Cadastral boundary

0 500 1,000

Metres

Datum/Projection:
GCS GDA 1994

Project: 1771-MD Date: 11/4/2022

N

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2. Methods

2.1. Field survey

Two survey events of the Conservation Area and WRSMCE was undertaken during spring and Autumn 2021 and 2022 by a team of two ELA ecologists, detailed in **Table 4**. The purpose of the field surveys was to collect baseline data on the targeted pest species. This included targeted surveys to identify and map the species distribution and population. A detailed description of each field method is provided in the sections below.

2.1.1. Remote camera

A total of 30 remote infra-red motion sensitive cameras were deployed for minimum of 14 nights during each the spring and Autumn 2021 and 2022 surveys. Remote monitoring targeted 15 locations within the Conservation Area and 15 reference sites within the WRSMCE, see **Figure 2**. Camera site locations were drafted, prior to round one surveys at a desktop level using a 250 m x 250 m grid over the Conservation Area and WRSMCE to distribute survey sites as evenly as possible. These draft sites were then micro-sited during the field survey to target preferred habitat for target species e.g., drainage lines, den areas (rocky outcrops) for photos see **Appendix C**.

To ensure camera accuracy ESRI Field Maps was used to record the coordinates, description (camera height, angle, orientation) and photograph of each location was recorded during round one of surveys to establish consistent monitoring locations for the PMP, see **Photo 1** and **Table 3**.

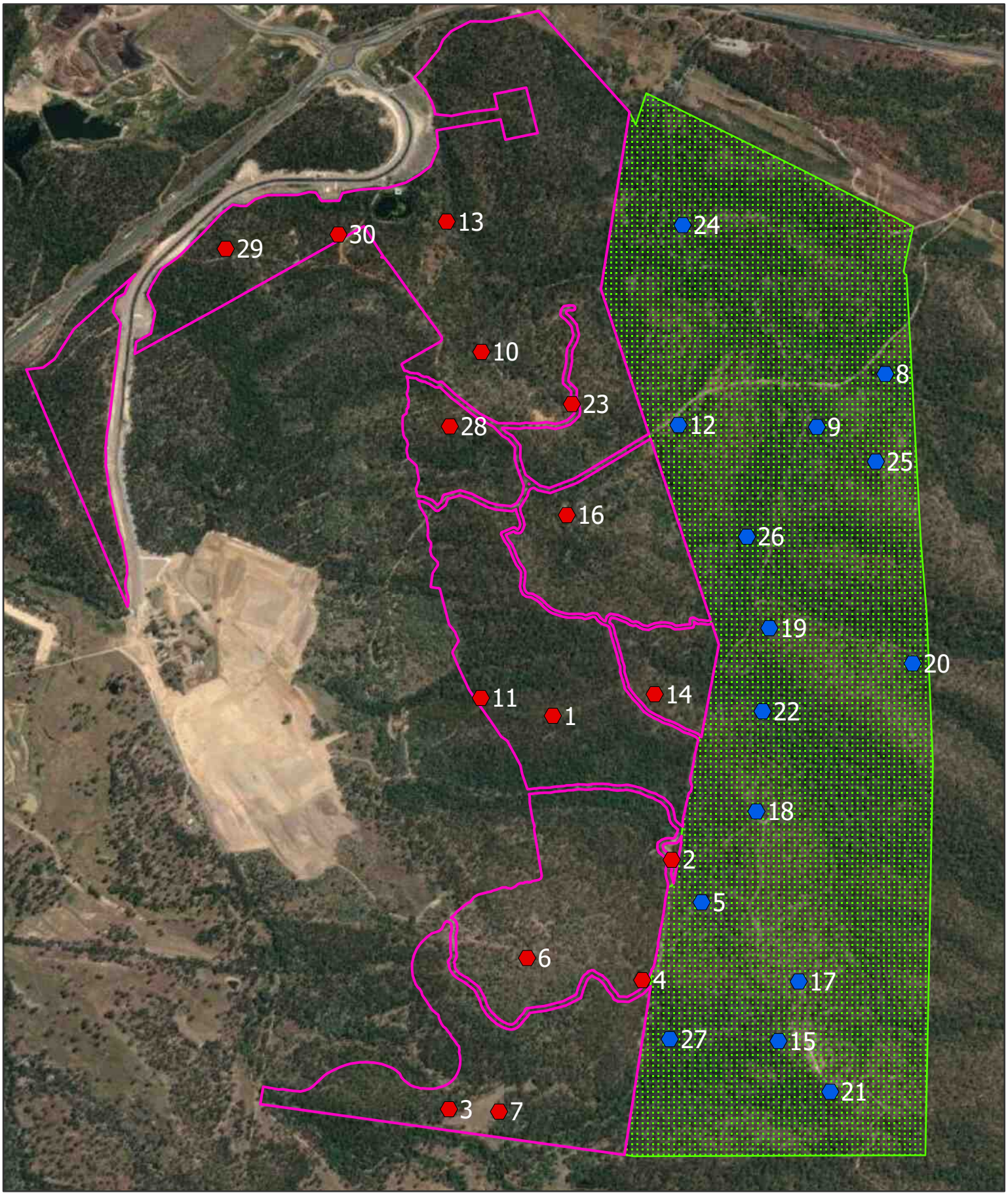

Figure 2 Remote camera locations

CAMP area
WRSMCE area

Remote camera
CAMP area cameras
WRSMCE cameras

0 250 500
Metres

Datum/Projection:
GCS GDA 1994

Project: 1771-MD Date: 12/1/2022

N

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Photo 1: Camera set up in riparian zone facing down towers bait station

Bait stations were set opposite to the cameras to lure the target species (refer to **Photo 1**). Following the PMP, the bait type and volume remained consistent throughout the study. A golf ball sized bait ball designed to attract foxes, cats and wild dogs was placed in each station. The bait consisted of wet cat food mixed with dry oats, peanut butter, and honey.

Table 3 Baseline survey locations and habitat type for the Conservation Area and WRSMCE

Camera Id	Habitat type	Latitude	Longitude
Conservation Area			
1	Open woodlands	-27.695324	152.845646
2	Ephemeral lake	-27.699531	152.849118
3	Riparian	-27.706814	152.842612
4	Open woodlands	-27.703044	152.848258
6	Open woodlands	-27.702399	152.844895
7	Fringing woodlands	-27.706884	152.844075
10	Open woodlands	-27.684696	152.84356
11	Open woodlands	-27.694804	152.843544
13	Fringing woodlands	-27.680888	152.842545
14	Open woodlands	-27.694694	152.848621
16	Open woodlands	-27.689462	152.846056
23	Open woodlands	-27.686219	152.846201
28	Open woodlands	-27.686871	152.842637
29	Open woodlands	-27.681684	152.836091
30	Open woodlands	-27.681265	152.839382

Camera Id	Habitat type	Latitude	Longitude
White Rock - Spring Mountain Conservation Estate			
5	Riparian	-27.700771	152.849993
8	Ephemeral lake	-27.685341	152.855358
9	Open woodlands	-27.686888	152.85336
12	Riparian	-27.686831	152.849316
15	Open woodlands	-27.704824	152.852238
17	Open woodlands	-27.703084	152.85283
18	Open woodlands	-27.698117	152.851595
19	Open woodlands	-27.692763	152.851973
20	Riparian	-27.693796	152.856158
21	Open woodlands	-27.706305	152.853749
22	Open woodlands	-27.695192	152.851773
24	Open woodlands	-27.680993	152.849438
25	Open woodlands	-27.6879	152.855082
26	Riparian	-27.690093	152.851318
27	Riparian	-27.704739	152.848695

* Latitude and longitude are displayed in GDA 1994.

2.1.2. Incidental finds

All incidental finds were recorded on ESRI Field Maps in an ad hoc basis over the course of the two survey events. Incidental finds included breeding places, vegetation disturbance, digging/foraging sites, scat counts, sightings, tracks (paw and hoof prints), and wallowing holes, see **Photo 2**.

Photo 2: Wallowing hole in mud under lantana

2.1.3. Data analysis

A kernel density statistic was used to produce a density heat map of the combined incidental finds and remote camera detections. The kernel density was calculated using pest species count (individual observations) at a cell size of 10m2 to provide higher resolution. The search radius was set at 500m to smooth the gradients and allow for a more generalized density raster across the site.

2.1.4. Survey limitations

The extreme wet weather in late 2021 and 2022 impacted the access to Conservation Area and WRSMCE during the baseline surveys. This resulted in surveys timing been postponed by several weeks to ensure the safety of the field personal. Additionally, riparian sites had limited access due to the flooding and eroded gullies. Nevertheless, in locations where cameras couldn't be deployed, a new location was chosen within 50m from the initial monitoring site. Site 22 was completely inaccessible due to flooding in the Autumn 2022 surveys, therefore only 29 cameras were deployed.

3. Results

3.1. Survey time and condition

Table 4 details the four monitoring events each comprised of a minimum 14-day remote survey in accordance with the PMP during Autumn and Spring 2021 and 2022. A total of 73 days of remote camera data was recorded for the baseline study.

Table 4 Survey timing and survey effort required to meet the PMP

Survey round	Date start	Date end	Survey effort (days)	Total survey (hours)
Autumn 2021	2 May 2021	6 June 2021	29	870

Survey round	Date start	Date end	Survey effort (days)	Total survey (hours)
Spring 2022	19 October 2021	2 November 2021	14	420
Autumn 2022	15 March 2022	29 March 2022	14	406
Spring 2022	11 October 2022	27 October 2022	16	480
Total			**73**	**2,176**

Weather conditions leading up to and at the time of the survey are presented in **Table 5** and **Figure 3**. Weather data was obtained from recordings at Greenbank (Defence) weather station (station number 140009), located approximately 14km east of the Conservation Area (BOM), 2022). Weather conditions prior to the 2021 surveys received well above average rainfall and continued through until the end of the baseline survey in October 2022. Temperature during the survey periods were constant with historical averages.

Table 5 Climate data from the Greenbank (Defence) weather station (BOM, 2022) depicting temperature and rainfall one month prior to and on the survey days

Date	Survey round	Temperature (°C) mean		Total Rainfall (mm)
		Minimum	Maximum	
April-21		12.5	26.2	248.8
May-21	1	9.7	23.9	88.8
June-21	1	6.6	21.6	121.8
Sept-21		8.8	26.1	15.2
Oct-21	2	14.1	29.0	176.2
Nov-21	2	16.8	27.7	207.8
Feb-22		18.2	29.5	792.2
Mar-22	3	17.9	29.4	171.0
Sept-22		10.4	24.3	113.6
Oct-22	4	14.2	26.3	122.4

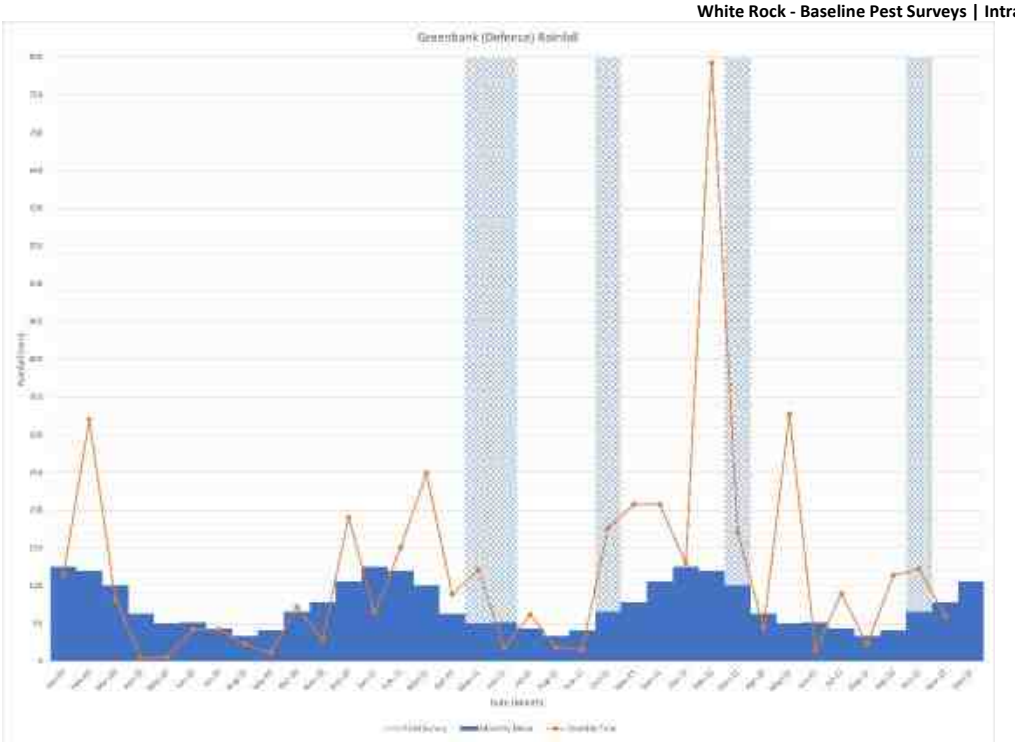

Figure 3: Average monthly rainfall (bars graph), monthly rainfall from 2020-2022 (line graph) and survey period

3.2. Additional pest species

The PMP lists feral cats, foxes, and wild dogs as the primary target for the baseline survey. Feral pigs were identified on the Autumn 2021 survey within the Conservation Area as an additional species to monitor. Feral pigs are a restricted species under the Queensland *Biosecurity Act 2014*. Both incidental observation and remote camera of feral pigs have been including within this document.

3.3. Remote camera observations

Ninety-three individuals from four pest species were identified with 89 remote cameras over 73 total trapping days as detailed in **Table 6**. The central and southern areas of the CAMP and WRSMCE recorded the most activity with emphasis on camera 5, 7, 14, and 26 located on or adjacent to riparian creek areas, as illustrated in **Figure 4** and **Figure 5**. Autumn surveys had the most camera triggers with 36 different native species detected and all four of the target pest species, detailed in **Appendix B**.

Table 6 Total pest species detected by remote camera across the four monitoring events

Survey Area	Number of individuals identified for each target pest species*				
	Pig	Cat	Fox	Wild Dog	Total
Conservation Area	59	4	6	1	71
WRSMCE	16	-	5	2	22
Total	**75**	**4**	**11**	**3**	**93**

Within the Conservation Area 71 individual pest were observed, comprised of 59 pigs, four cats, six foxes, and one wild dog. The Conservation Area saw the most activity in Autumn 2021 and 2022 with 55 pest species observed respectively (refer to **Table 7**). An in-depth break down of each cameras find can be found in **Appendix A**.

The highest concentration of pest species detected was during Autumn 2022 at Camera 7 and 14 located along riparian areas, with 26 individual pigs within seven days. Five foxes and one wild dog were observed along the southern boundary of the CAMP are WRSMCE with one fox observation near the temporary sales centre (TSC) in the north. Four cats were detected in the north of the Conservation Area within 800m of the TSC.

Within WRSMCE, 22 individual pest were observed comprised of 16 pigs, five foxes, and two wild dogs. The WRSMCE saw the most activity in Spring 2021 and 2022 with 17 pest species observed, as shown in **Table 7.** The highest concentration was during Spring 2021 at camera 26 with six individual pigs observed within two days. Five foxes were observed across the WRSMCE all during the Spring 2021 and 2022 surveys. Two wild dogs were observed in the north of the WRSMCE, and no cats were observed during the survey period.

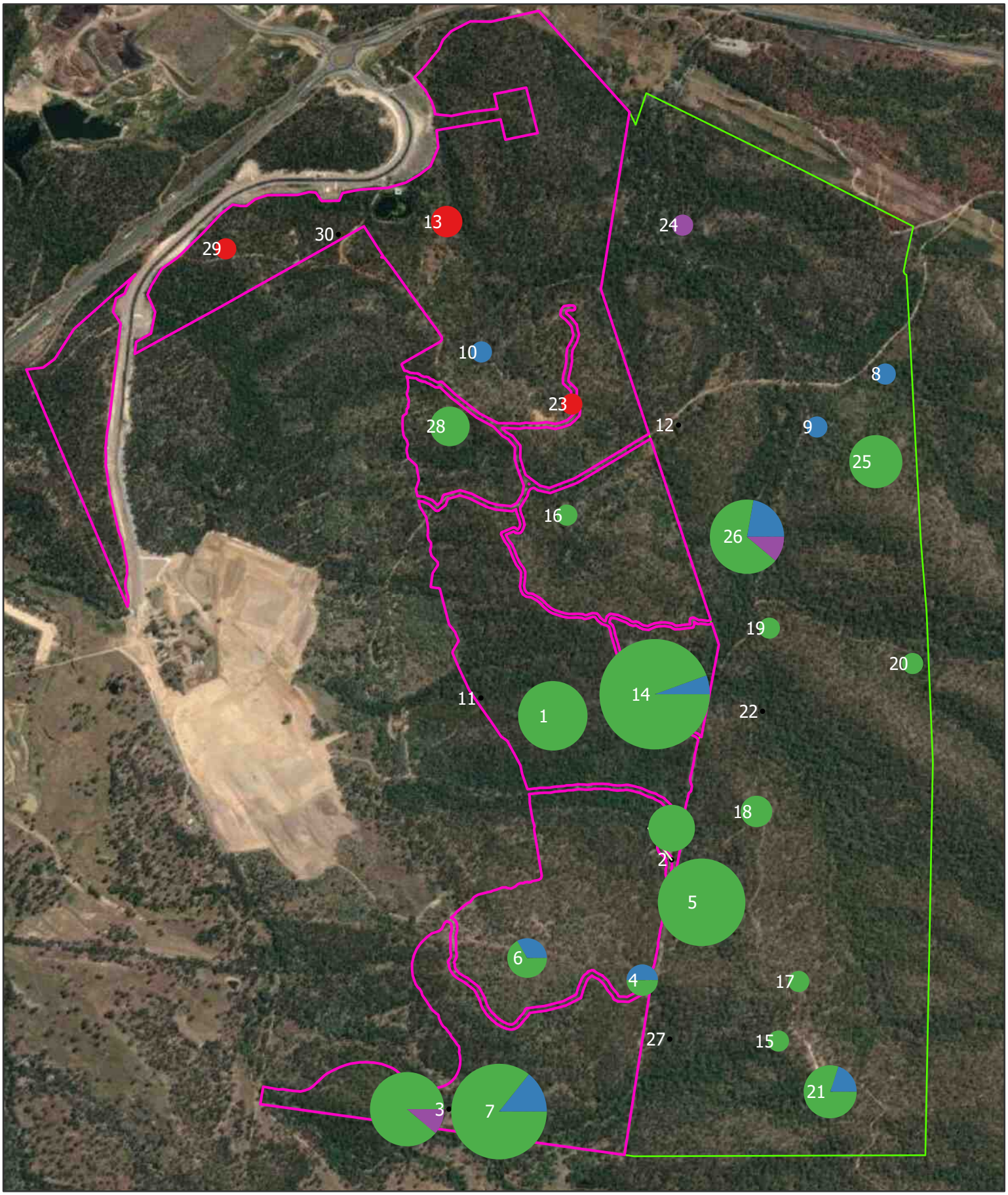

Figure 4 Pest species locations

CAMP area
WRSMCE area
• Camera locations

Pest species location
Feral cats
Fox
Pig
Wild dog

Total pest species
27
9.5
1

0 250 500
Metres

Datum/Projection:
GCS GDA 1994

Project: 1771-MD Date: 12/1/2022

N

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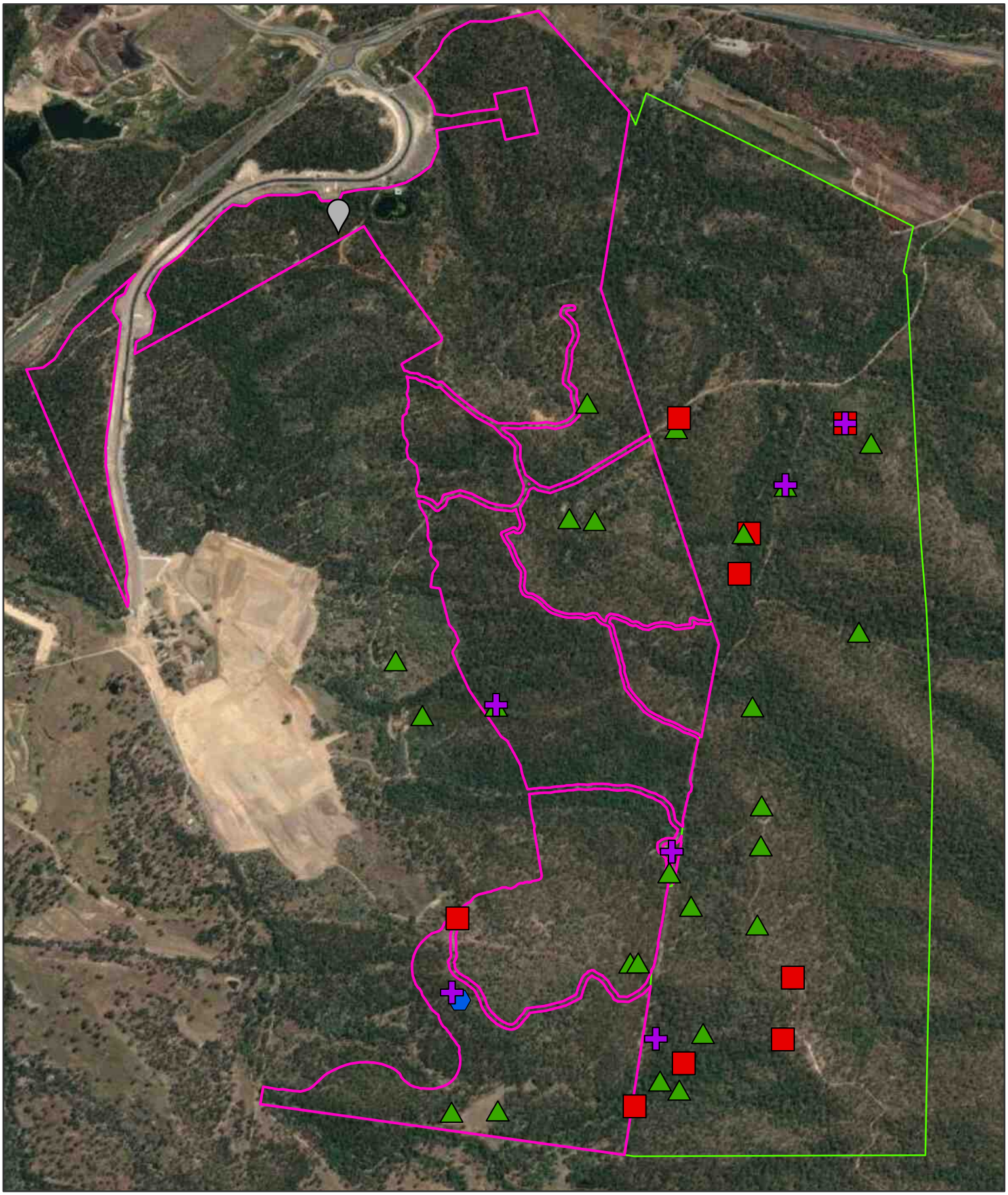

Figure 5 Incidental finds and Koala location

CAMP area
WRSMCE area
Known koala location

Common Name
Feral Cat
Fox
Pig
Wild Dog

0 250 500
Metres

Datum/Projection:
GCS GDA 1994

Project: 1771-MD Date: 12/1/2022

N

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Table 7 Pest species detected by survey event and remote camera ID within each study area

Pest Species	Survey period	Camera ID																												
		CAMP Area															White Rock - Spring Mountain Conservation Estate														
		1	2	3	4	6	7	10	11	13	14	16	23	28	29	30	5	8	9	12	15	17	18	19	20	21	22	24	25	26	27
Cat	Autumn - 21												Y																		
	Spring - 21		Y																												
	Autumn - 22																														
	Spring - 22														Y																
Pig	Autumn - 21	Y	Y	Y	Y		Y																								
	Spring - 21			Y												Y		Y				Y					Y				
	Autumn - 22				Y		Y					Y		Y		Y			Y	Y	Y		Y								
	Spring - 22	Y																						Y		Y					
Red Fox	Autumn - 21				Y			Y										Y								Y					
	Spring - 21			Y																											
	Autumn - 22						Y									Y															
	Spring - 22					Y													Y											Y	
Dog	Autumn - 21																											Y			
	Spring - 21																														
	Autumn - 22																														
	Spring - 22			Y																											Y

3.4. Incidental finds

A total of 43 incidental observations were made during the 2021 and 2022 surveys, see **Table 8** and **Figure 5.**

A total of 17 pest incidental observations were made within the Conservation Area. Four wild dog tracks were identified in the south along riparian vegetation and water holes. Pig tracks were observed across the Conservation Area primarily in the valleys and muddy areas. One feral cat scat and fox were observed along an access road in the southern area.

A total of 26 pest observations were made within the WRSMCE. Observations were spread evenly across the monitoring area. Eight observations of feral cat pug marks or scats were observed along the ridge lines and valleys. Six separate observations of wild dog were observed along the paths and vehicle access routes and pig evidence was found frequently within the valleys, riparian, and ephemeral lakes.

Table 8 Incidental find during the two survey events with field comments

Survey period	Species	Observation type	Comments
Conservation Area			
Autumn 2021	Pig	Seen	Two adult individuals
Autumn 2022	Pig	Tracks	Seven different pig tracks
	Wild dog	Tracks	One set of tracks
	Pig	Scats	
Spring 2022	Pig	Tracks	Three different pig tracks
	Dog	Tracks	4 different dog tracks
	Feral cat	Scats	
	Fox	Seen	Seen in open woodland forest in the southern Conservation Area
White Rock - Spring Mountain Conservation Estate			
Autumn 2021	Wild dog	Tracks	Two set of different tracks
	Wild dog	Scats	Two different scats
	Feral cat	Tracks	Three set of cat tracks
	Feral cat	Scats	
Autumn 2022	Pig	Tracks	Eight different pig tracks
	Wild dog	Tracks	Two set of tracks
	Feral cat	Scats	Two different scats
Spring 2022	Pig	Scats	Three different pig scats
	Pig	Wallowing	Wallow hole along creek with heavy use
	Pig	Tracks	Seven different pig tracks
	Feral cat	Tracks	One set of tracks
	Feral cat	Scats	

4. Conclusion

A total of 136 pest observations comprised the baseline survey, of which 88 were inside the Conservation Area and 48 inside the WRSMCE. Both incidental finds and remote camera observation demonstrated a higher concentration of pest species in the southern areas, as illustrated in **Figure 4**, **Figure 5** and **Figure 6**. Species had clear habitat preferences, summarised below:

- feral pigs preferred valleys, gullies and waterways
- feral cats, foxes, and wild dogs favoured ridgelines and open woodlands, however utilised the entire landscape.

FERAL PIGS

Pigs were the most common pest species detected, with a total of 72 observations in the Conservation Area and 35 inside WRSMCE. Larger number of pigs were detected in autumn in both the CAMP and WRSMCE. Ongoing and increased wet weather associated with the La Niña events of 2020 and 2021 (refer to **Table 5**) likely increased the availability of suitable feral pig resources and habitat within the CAMP and WRSMCE. This is supported by the frequency of which feral pigs were recorded after autumn surveys (after wet periods, see **Table 5**). Detection in both the CAMP and WRSMCE was often around riparian zones and ephemeral lakes across the sites. However, the largest concentrations were in the southern area in close proximity to fresh water and man-man lakes. Feral pigs are likely degrading the landscape and aiding the dispersal of weeds as these areas coincided with the highest level of *lantana camara* infestations (Bower Ecology, 2022).

FOXES

Foxes were recorded a total of 12 times throughout the study, seven times within the Conservation Area and five times in the WRSMCE. Generally, foxes were detected in open woodlands along the hill slopes with low ground cover. In ideal conditions foxes have a home range of 23-135 ha, (Meek and Saunders, 2000). Subsequently, it was predicted that 2 -10 foxes would be recorded across the 249.4 ha Conservation Area.

The relatively high rate of fox detection is likely a result of ongoing wet weather associated with La Niña events of 2020 and 2021. This significant increase of weather has resulted in a high abundance of resources and native prey species for foxes.

This high detection rate across both management areas highlights the importance of concurrent management strategies.

FERAL CATS

Cats were mostly observed through scats and tracks with five observations in the Conservation Area and seven in the WRSMCE. Most detections were along worn animal tracks and on rocky outcrops. Prior to the development feral cats were likely dispersed evenly throughout the both the Conservation Area and the WRSMCE. However, this baseline survey identified most observations in the Conservation Area where within 1 km of human settlement possibly indicating edge effects and domestic house cats. Domestic cats living next to natural areas have larger home ranges and will actively utilise natural areas when compared to domestic cats that have no access to natural areas (Pirie, Thomas, Fellowes,

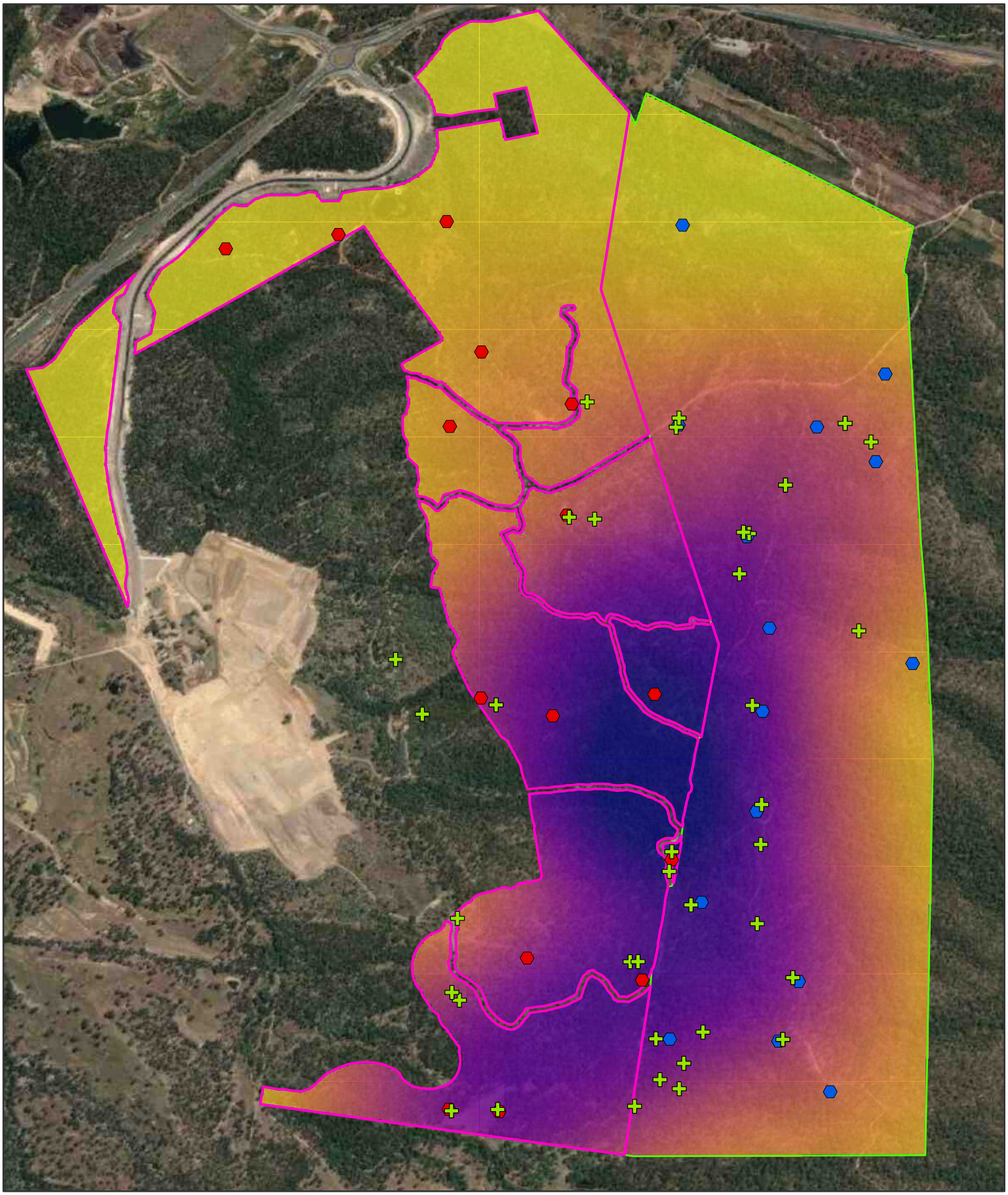

Figure 6 Density map of all pest species records

CAMP area
WRSMCE area
Remote camera
CAMP area cameras
WRSMCE cameras
Incidental finds
Incidental finds

Pest species density
Value
Highest density of pest species > 20 per km2
Lowest density of pest species <1 per km2

0 250 500
Metres

Datum/Projection:
GCS GDA 1994

Project: 1771-MD Date: 12/21/2022

N

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2022). Subsequently, the development is likely to increase the overall amount cats within the Conservation Area.

WILD DOGS

Wild dogs had the lowest detection rate out of all pest species. Most detections were incidental paw print or scat records.

A limitation with incidental canine detection within the WRSMCE, is that whilst dogs are prohibited in the management area, members of public were observed walking their dog inside during the Spring 2021 survey. Subsequently, this study cannot determine with certainty that canine prints found in the WRSMCE originate from wild dogs. However, these records have been included in the analysis.

Wild dogs were detected six and eight times in the Conservation Area and the WRSMCE, respectively. Prints, were most prevalent in the southern areas of both management areas

With a total of six detections in the Conservation Area and eight in the WRSMCE. Paw prints were most prevalent in the southern areas within both management areas along animal tacks and vehicle access, with sets of two to four prints possibly indicating an active pack.

SUMMARY

Based on these results, pest species utilise riparian areas and concentrate around ephemeral lakes during the autumn period. Predatory species such as foxes, wild dogs and feral cats tend to use the whole landscape whist pigs inhabit wetter areas. Neighbouring communities may be having an impact on pest species population such as feral cats.

The distribution of pest species indicates a clear preference for the southern areas of the Conservation Area and WRSMCE where open woodland is periodically intersected by riparian areas.

Additionally, one koala was detected on camera 30, in the Spring survey 2022, **Appendix B** and **Figure 5**. This location is within 300m of White Rock Koala Monitoring Report KSAT-2 site and located in secondary habitat values containing *E. acmenoides*, *E. major*, and *C. citriodora vegetation* (Bower Ecology Pty Ltd, 2021). The individual was seen on the ground at 7:40am on the 13th of October 2022. The area immediately around the koala's location detected no wild dog and fox population within 500m despite 5 cameras in various habitats over four seasons of surveys been present.

5. Recommendations

Targeted pest control actions would likely have most impact focusing on the southern Conservation Area, with emphasis on riparian area and man-made lakes due to the large concentration for all pest species. A known koala population in the North and central Conservation Area (Bower Ecology Pty Ltd, 2021) coincides with limited wild dog and fox populations, however effort should be made to restrict and monitor pest populations to allow koala populations to recover.

Due to the location of the Conservation Area, lethal firearm management is not recommended.

PIGS

To optimise results the management of feral pigs should be concentrated close or next to permanent water sources or gullies. As the pest species is dispersed throughout both the Conservation Area and WRSMCE, any feral pig management should be actioned by both the ICC and Intrapac concurrently to ensure full coverage.

A coordinate pig baiting program is recommended using Hoggone. Hoggone is a sodium nitrate based humane pig bait that is actively used in Queensland. The pig baiting program should have the framework below:

- Bait sites should be concentrated at permanently wet areas including gullies and dams
- A three day period of “free-feed”, consisting of corn, fresh or fermented grain mixed with carasweet or molasses should be implemented to cluster feral pigs into suitable baiting sites.
- After day three, introduce a bait box and fill with the same non-poisoned baited described above.
- After day six / seven introduce placebo Hoggone (non-toxic Hoggone).
- When the majority of the placebo bait is eaten, replace immediately with toxic Hoggone.
- Continue for two more days to ensure high intake.

The feral pig baiting program should be scheduled after the wet season, when ephemeral creeks and water ways are dry. Feral pig populations will likely concentrate to areas of permeant water in drier parts of the year.

FOXES AND WILD DOGS

The results of this baseline study indicate that fox control is a priority. A coordinated fox baiting program between ICC and Intrapac is recommended.

The regulated poison 1080 is a standard method for fox baiting programs. Fox baiting will also manage wild dog populations:

The baiting program should have the framework below:

- Baits should be throughout both management areas and concentrated near areas of high detection (refer to **Figure 4**), suitable habitat and high traffic areas. Including, fences and tracks near open woodlands along the hill slopes with low ground cover.
- Baits are to be buried at 200 – 500 m intervals at 50 baits per 400 ha

- Baits are to be buried 50 mm deep, allowing the scent to carry
- Bait sites should be clearly marked, to indicate take up but also as a safety precaution
- Bait sites without poison may be set up in sensitive areas to monitor the activity of non-target species.
- Baiting programs should preference autumn when high fox activity has been detected.

Considerations include:

- Carnivorous species including the lace monitor (*Varanus* varius) and threatened mammals including the spotted-tail quoll (*Dasyurus maculatus*) and brush-tail phascogale (*Phascogale tapoatafa*).
- The poison 1080 has been shown to impact native carnivorous mammals, however the spotted-tail quoll has a low likelihood of occurrence within both management areas. Impacts to brush-tail phascogales can be mitigated by correct dosage and baiting outside of the winter breeding period when young are dependent on females.

FERAL CATS

As the feral cat population was likely evenly dispersed throughout both management areas prior to the development, any increased cat activity is likely a direct result of the development. Subsequently, it is recommended that feral cat control, including trapping and cat baits, should be continued and intensity increased.

6. Compliance

Table 9 provides an audit of each monitoring objective listed in the PMP and how it was archived in this baseline survey.

Table 9 Monitoring objectives as per the PMP

Monitoring objectives	Survey results
Two survey events completed to determine baseline of dogs/cats/foxes distribution and population within the Conservation Management Area and reference sites within the adjacent White Rock - Spring Mountain Conservation Estate	Two survey events comprised of 2 survey rounds each year were completed in Spring and Autumn 2021 and 2022 within the Conservation Area and WRSMCE. Baseline surveys used 30 remote camera locations that were routinely monitored in junction with incidental finds such as tracks, scats, and pest other evidence. A baseline population and distribution were established. It has been determined that pest distribution is similar across the Conservation Area and the WRSMCE. However, cats were identified close to human settlement indicating that spill over from the development. Continuous wet weather has likely resulted in the high abundance of pigs concentrated in gullies, ephemeral creeks and dams, and foxes throughout the landscape.
Produce a report detailing the findings and recommendations on targeted pest species.	This report has detailed evidence of the findings in accordance with the PMP. An additional species was added (pigs) due their large population size and restricted status under the *Biosecurity Act 2014*. Recommendations are detailed in **Section 5.**

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Appendix A Total pest species detected on remote camera

Camera ID	Species Common Name	Species Scientific Name	Date	Comments
		Autumn 2021		
1	Pig	*Sus scrofa*	6/06/2021	2 adult; 2 juvenile
	Pig	*Sus scrofa*	6/06/2021	1 adult
2	Pig	*Sus scrofa*	28/05/2021	3 adult
	Pig	*Sus scrofa*	2/06/2021	1 adult
3	Pig	*Sus scrofa*	6/06/2021	1 adult; 1 juvenile
4	Red Fox	*Vulpes vulpes*	29/05/2021	1 adult
	Pig	*Sus scrofa*	4/06/2021	1 adult
7	Pig	*Sus scrofa*	24/05/2021	1 adult; 3 juvenile
	Pig	*Sus scrofa*	2/06/2021	1 adult
8	Red Fox	*Vulpes vulpes*	20/05/2021	1 adult
10	Red Fox	*Vulpes vulpes*	25/05/2021	1 adult
21	Red Fox	*Vulpes vulpes*	27/05/2021	1 adult
23	Cat	*Felis catus*	20/05/2021	1 adult
24	Dog	*Canis familiaris*	7/06/2021	1 adult
		Spring 2021		
5	Pig	*Sus scrofa*	23/10/2021	1 adult
7	Pig	*Sus scrofa*	21/10/2021	2 adult
	Pig	*Sus scrofa*	22/10/2021	1 adult
	Red Fox	*Vulpes vulpes*	26/10/2021	1 adult
13	Cat	*Canis familiaris*	27/10/2021	1 adult
18	Pig	*Sus scrofa*	27/10/2021	2 adult
21	Pig	*Sus scrofa*	1/11/2021	1 adult; 1 juvenile
26	Pig	*Sus scrofa*	30/10/2021	4 adult; 2 juvenile
		Autumn 2022		
3	Pig	*Sus scrofa*	17/03/2022	2 adults
	Pig	*Sus scrofa*	24/03/2022	3 adults; 1 juvenile
6	Pig	*Sus scrofa*	16/03/2022	2 adults
	Red Fox	*Vulpes vulpes*	25/03/2022	1 adult
7	Pig	*Sus scrofa*	16/03/2022	3 adults; 1 juvenile
14	Pig	*Sus scrofa*	20/03/2022	3 adults; 1 juvenile
	Pig	*Sus scrofa*	22/03/2022	3 adults; 1 juvenile
	Pig	*Sus scrofa*	23/03/2022	5 adults; 1 juvenile
	Red Fox	*Vulpes vulpes*	23/03/2022	1 adult

Camera ID	Species Common Name	Species Scientific Name	Date	Comments
	Pig	*Sus scrofa*	27/03/2022	1 adult
	Pig	*Sus scrofa*	28/03/2022	1 adult
	Pig	*Sus scrofa*	29/03/2022	1 adult
15	Pig	*Sus scrofa*	23/03/2022	1 adult
16	Pig	*Sus scrofa*	18/03/2022	1 adult
17	Pig	*Sus scrofa*	28/03/2022	1 adult
25	Pig	*Sus scrofa*	18/03/2022	1 adult
28	Pig	*Sus scrofa*	18/03/2022	1 adult
	Pig	*Sus scrofa*	24/03/2022	2 adult
		Spring 2022		
1	Pig	*Sus scrofa*	17/10/22	3 adult
3	Dog	*Canis familiaris*	15/10/22	1 adult
9	Red Fox	*Vulpes vulpes*	12/10/22	1 adult
19	Pig	*Sus scrofa*	11/11/22	1 adult
21	Pig	*Sus scrofa*	15/10/22	1 adult
26	Dog	*Canis familiaris*	13/10/22	1 adult
	Red Fox	*Vulpes vulpes*	14/10/22	1 adult
	Red Fox	*Vulpes vulpes*	18/10/22	1 adult
29	Cat	*Canis familiaris*	12/10/22	1 adult

Appendix B ALL species detected by survey event and remote camera ID within each study area

Species	Survey period	Camera ID																												
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
European Hare	Autumn - 21																				Y										
	Spring - 21			Y																											
	Autumn - 22																														Y
	Spring - 22			Y			Y																								
Cane toad	Autumn - 21																														
	Spring - 21																														
	Autumn - 22																	Y	Y												Y
	Spring - 22																														
Australian Brush Turkey	Autumn - 21	Y								Y		Y											Y	Y		Y					
	Spring - 21		Y	Y					Y			Y					Y		Y		Y		Y			Y					
	Autumn - 22	Y								Y					Y				Y							Y	Y				
	Spring - 22	Y	Y	Y					Y	Y			Y				Y	Y			Y			Y		Y	Y				Y
Australian Magpie	Autumn - 21				Y												Y	Y						Y							
	Spring - 21		Y		Y	Y	Y																	Y							
	Autumn - 22			Y																				Y							
	Spring - 22																					Y		Y		Y					
Bar-shouldered Dove	Autumn - 21			Y																					Y						

Species	Survey	Camera ID																												
Brushtail Possum	Spring - 21																													
	Autumn - 22																													
	Spring - 22																													
	Autumn - 21			Y		Y					Y	Y	Y		Y		Y	Y	Y			Y	Y								
	Spring - 21		Y	Y	Y	Y			Y		Y	Y		Y			Y		Y				Y		Y	Y		Y		Y	Y
	Autumn - 22	Y		Y	Y		Y	Y			Y		Y	Y	Y	Y		Y	Y					Y	Y	Y	Y		Y		
	Spring - 22	Y	Y	Y							Y	Y	Y		Y		Y	Y				Y				Y		Y	Y		
Brush-tailed Phascogale	Autumn - 21	Y	Y	Y	Y			Y	Y	Y	Y				Y			Y	Y		Y		Y		Y	Y					
	Spring - 21			Y	Y	Y					Y				Y		Y	Y	Y			Y	Y		Y			Y			Y
	Autumn - 22	Y			Y		Y		Y		Y				Y		Y	Y	Y		Y			Y	Y	Y				Y	
	Spring - 22					Y				Y					Y				Y	Y		Y	Y	Y					Y		Y
Bush rat	Autumn - 21																													
	Spring - 21																													
	Autumn - 22																													
	Spring - 22		Y									Y									Y							Y			
Butcher bird	Autumn - 21																													
	Spring - 21																													
	Autumn - 22																												Y	
	Spring - 22																						Y							
Common bronzewing	Autumn - 21														Y															
	Spring - 21								Y						Y															

Species	Survey	Camera ID																												
	Autumn - 22							Y															Y		Y				
	Spring - 22		Y													Y														
Dunnart sp.	Autumn - 21																													
	Spring - 21																													
	Autumn - 22																													
	Spring - 22	Y																												
Eastern Grey Kangaroo	Autumn - 21	Y					Y					Y					Y					Y									
	Spring - 21						Y	Y				Y									Y										
	Autumn - 22			Y			Y	Y																							
	Spring - 22		Y				Y				Y							Y													Y
Eastern Yellow Robin	Autumn - 21			Y															Y							Y				
	Spring - 21																								Y					
	Autumn - 22									Y															Y					
	Spring - 22																													
Eastern Water Dragon	Autumn - 21																													
	Spring - 21	Y																												
	Autumn - 22																													
	Spring - 22																													
Eastern Whipbird	Autumn - 21																													
	Spring - 21																													
	Autumn - 22																													

Species	Survey	Camera ID																													
	Spring - 22								Y																						
Echidna	Autumn - 21									Y								Y								Y					
	Spring - 21																			Y	Y										
	Autumn - 22							Y																							
	Spring - 22								Y										Y												
Frog (Unidentified)	Autumn - 21																														
	Spring - 21																							Y							
	Autumn - 22																														
	Spring - 22																														
Grey Shrike-thrush	Autumn - 21			Y				Y																	Y						
	Spring - 21																								Y						
	Autumn - 22																														
	Spring - 22			Y																											
Koala	Autumn - 21																														
	Spring - 21																														
	Autumn - 22																														
	Spring - 22																														Y
Kookaburra	Autumn - 21																									Y					
	Spring - 21					Y																				Y					
	Autumn - 22																														
	Spring - 22															Y															
Lace Monitor	Autumn - 21																														

Species	Survey	Camera ID																												
	Spring - 21										Y		Y		Y									Y	Y						
	Autumn - 22														Y										Y						
	Spring - 22																Y					Y				Y					
Misc. Macropod	Autumn - 21																														
	Spring - 21		Y			Y					Y					Y												Y	Y	Y	
	Autumn - 22	Y			Y		Y	Y		Y										Y									Y		
	Spring - 22		Y			Y	Y			Y							Y									Y	Y				Y
Mouse (Unidentified)	Autumn - 21			Y				Y								Y	Y	Y				Y	Y		Y						
	Spring - 21				Y				Y			Y		Y			Y						Y		Y		Y	Y		Y		
	Autumn - 22	Y									Y							Y	Y					Y	Y						
	Spring - 22	Y																											Y		
Noisy Friarbird	Autumn - 21				Y																										
	Spring - 21																														
	Autumn - 22																														
	Spring - 22																														
Northern Brown Bandicoot	Autumn - 21			Y				Y																							
	Spring - 21																														
	Autumn - 22			Y				Y																	Y						
	Spring - 22			Y		Y						Y																Y		Y	
Noisy Miner	Autumn - 21																														
	Spring - 21				Y										Y																

Species	Survey	Camera ID																													
	Autumn - 22																														
	Spring - 22														Y																
Pale-headed Rosella	Autumn - 21																														
	Spring - 21																Y														
	Autumn - 22																														
	Spring - 22																														
Painted Button-quail	Autumn - 21																														
	Spring - 21																														
	Autumn - 22																														
	Spring - 22			Y					Y							Y															
Pied Currawong	Autumn - 21																														
	Spring - 21																														
	Autumn - 22																														
	Spring - 22														Y								Y								
Pheasant coucal	Autumn - 21																														
	Spring - 21																														
	Autumn - 22																Y														
	Spring - 22																														
Rat (unidentified)	Autumn - 21																														
	Spring - 21																														
	Autumn - 22			Y		Y			Y	Y	Y														Y						

Species	Survey	Camera ID																													
	Spring - 22		Y					Y	Y	Y	Y							Y		Y		Y					Y				
Red-necked Pademelon	Autumn - 21																														
	Spring - 21																										Y				
	Autumn - 22																														
	Spring - 22																														
Red Necked Wallaby	Autumn - 21	Y	Y	Y	Y		Y		Y	Y	Y	Y	Y	Y	Y		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y					
	Spring - 21	Y	Y	Y							Y	Y			Y			Y	Y	Y				Y	Y	Y			Y		Y
	Autumn - 22			Y					Y		Y		Y	Y			Y		Y		Y			Y		Y	Y			Y	Y
	Spring - 22									Y						Y												Y			
Spotted Quail-thrush	Autumn - 21														Y																
	Spring - 21																														
	Autumn - 22																														
	Spring - 22																														
Tawny frogmouth	Autumn - 21																														
	Spring - 21																														
	Autumn - 22								Y																						
	Spring - 22																														
Torresian Crow	Autumn - 21		Y		Y	Y			Y		Y	Y	Y						Y												
	Spring - 21		Y		Y		Y		Y	Y		Y		Y		Y									Y	Y			Y		Y
	Autumn - 22							Y	Y				Y												Y	Y				Y	

Species	Survey	Camera ID																												
	Spring - 22		Y			Y				Y				Y						Y				Y						Y
Whiptail Wallaby	Autumn - 21															Y														
	Spring - 21																													
	Autumn - 22																													
	Spring - 22																													
White-browed Babbler	Autumn - 21																													
	Spring - 21																													
	Autumn - 22																													
	Spring - 22		Y													Y						Y								Y
White-Faced Heron	Autumn - 21		Y																											
	Spring - 21																													
	Autumn - 22																													
	Spring - 22							Y																						

Appendix C Remote camera observations

Plate 1 Echidna foraging at camera 17 in Autumn 2021

Plate 2 Fox seen at camera 4 in Autumn 2021

Plate 3 Fox seen at camera 10 in Autumn 2021

Plate 4 Pig seen at camera 7 in Autumn 2021

Plate 5 Cat seen at camera 23 in Autumn 2021

Plate 6 Young wild dog seen at camera 3 spring 2022

Plate 7 Brush tailed phascogale at camera 23 spring 2022

Plate 8 Lace monitor at camera 16 spring 2022

Plate 9 Norther brown bandicoot at camera 27 spring 2022

Plate 10 Koala at camera 30 spring 2022

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