

## MEMO

**SUBJECT:** Parkes SAP – Biodiversity Summary  
**OUR REF:** PS112886-ECO-MEM-001 RevB  
**DATE:** 28 October 2022

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### 1. Background

This memo summarises the additional field work completed in August 2019 supplementary to the Special Activation Precinct, Parkes; Biodiversity Assessment Report – Stage 1 (WSP, July 2019). It also provides a summary of the complete biodiversity data set.

The additional field surveys were required to as a result of changes to the Special Activation Precinct (SAP) investigation area in the north east corner and the need to undertake targeted winter surveys for the Sloane's Froglet.

### 2. Vegetation Surveys and Paddock Tree Assessment

The additional vegetation surveys and a paddock tree assessment were undertaken in the expanded investigation area in the north east corner on 13 and 14 August 2019. These surveys were undertaken in accordance with the methodology described in Sections 2.4 and 2.5 of the Biodiversity Assessment Report – Stage 1 (WSP, July 2019).

Survey methods included:

- field verification of vegetation mapping
- BAM vegetation integrity plots
- paddock tree assessment.

A review of additional BAM plots required for the expansion of the investigation area was completed based on area BAM plot sampling requirements outlined in Table 40f of the BAM 2017. The recorded vegetation comprised of four native vegetation types covering five vegetation zones. These native vegetation types and zones were consistent with the broad condition states recorded within the SAP investigation area previously assessed and as a result only an additional two plots were required.

These native vegetation types and zones were assigned to an associated biodiversity constraints tier as described in Section 7.1 of the Biodiversity Assessment Report – Stage 1 (WSP, July 2019). A summary of the recorded native vegetation and associated biodiversity constraints tier is presented below:

Tier 1 – High biodiversity constraint

- PCT267 White Box – White Cypress Pine – Western Grey Box shrub/grass/forb woodland in the NSW South Western Slopes Bioregion (poor condition).

Tier 2 – Medium biodiversity constraint

- PCT70 White Cypress Pine woodland on sandy loams in central NSW wheatbelt (moderate condition)
- PCT76 Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions (moderate condition)
- PCT76 Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions (poor condition)
- PCT250 Derived tussock grassland of the central western plains and lower slopes of NSW.

An additional two BAM vegetation integrity plots were completed during these surveys. The sampled vegetation type, location, and orientation of the plots is presented in Table 2.1.

*Table 2.1 Location and orientation of additional biobank quadrats and transects (August 2019)*

PLOT ID	VEGETATION TYPE AND CONDITION	EASTING	NORTHING	ORIENTATION
Q45	PCT 76 – Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions (poor)	605865	6333608	155
Q46	PCT 76 – Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions (moderate)	605778	6333675	130

In addition, 52 paddocked trees were also recorded during these surveys. The paddock tree data recorded including species, location, class, and associated PCT is presented in Table 2.2. All paddock tree data, for all trees located in Category 1 (exempt) land, were collected where land access had been granted. Scattered tree located within PCT mapped areas were not treated as paddock trees as they were captured in the broader PCT polygon. This approach is consistent with the definition of a paddock tree in accordance with Appendix 1 of the BAM 2017.

Table 2.2 Additional BAM paddock tree data

TITLE	DATE CREATED	LATITUDE	LONGITUDE	NORTHING	EASTING	TREE SPECIES	CLASS	HOLLOW	PCT
PT1	13-08-2019	-33.1295	148.1509	6333770	607361.6	<i>Callitris glaucophylla</i>	2	n	70
PT2	13-08-2019	-33.1319	148.1385	6333516	606194.7	<i>Callitris glaucophylla</i>	2	n	76
PT3	13-08-2019	-33.1317	148.1386	6333538	606204.7	<i>Callitris glaucophylla</i>	2	n	76
PT4	13-08-2019	-33.1318	148.1388	6333526	606222.1	<i>Callitris glaucophylla</i>	2	n	76
PT5	13-08-2019	-33.1321	148.1389	6333487	606236.9	<i>Eucalyptus albens</i>	3	n	267
PT6	13-08-2019	-33.1311	148.1392	6333602	606261	<i>Callitris glaucophylla</i>	2	n	70
PT7	13-08-2019	-33.1309	148.1392	6333621	606261.6	<i>Callitris glaucophylla</i>	2	n	70
PT8	13-08-2019	-33.1306	148.1392	6333652	606268.8	<i>Callitris glaucophylla</i>	2	n	70
PT9	13-08-2019	-33.1302	148.1393	6333696	606275	<i>Callitris glaucophylla</i>	2	n	70
PT10	13-08-2019	-33.1301	148.139	6333715	606246	<i>Callitris glaucophylla</i>	2	n	70
PT11	13-08-2019	-33.1298	148.1389	6333750	606235.3	<i>Callitris glaucophylla</i>	2	n	70
PT12	13-08-2019	-33.1303	148.1386	6333696	606212.2	<i>Callitris glaucophylla</i>	2	n	70
PT13	13-08-2019	-33.1304	148.1387	6333677	606217.2	<i>Callitris glaucophylla</i>	2	n	70
PT14	13-08-2019	-33.1305	148.1387	6333667	606217.1	<i>Callitris glaucophylla</i>	2	n	70
PT15	13-08-2019	-33.1305	148.1384	6333664	606195.2	<i>Callitris glaucophylla</i>	2	n	70
PT16	13-08-2019	-33.1305	148.1383	6333674	606180.1	<i>Callitris glaucophylla</i>	2	n	70
PT17	13-08-2019	-33.1303	148.138	6333691	606155.1	<i>Eucalyptus microcarpa</i>	3	y	70
PT18	13-08-2019	-33.1328	148.138	6333410	606147.2	<i>Eucalyptus albens</i>	3	n	267
PT19	13-08-2019	-33.1338	148.1377	6333305	606123.7	<i>Callitris glaucophylla</i>	3	n	267

TITLE	DATE CREATED	LATITUDE	LONGITUDE	NORTHING	EASTING	TREE SPECIES	CLASS	HOLLOW	PCT
PT20	13-08-2019	-33.1324	148.1367	6333457	606031.3	<i>Eucalyptus albens</i>	2	n	267
PT21	13-08-2019	-33.1348	148.1393	6333189	606271.9	<i>Eucalyptus albens</i>	3	y	267
PT22	13-08-2019	-33.1349	148.1395	6333183	606284.9	<i>Eucalyptus albens</i>	3	y	267
PT23	14-08-2019	-33.1308	148.1502	6333626	607291.1	<i>Eucalyptus microcarpa</i>	3	n	76
PT24	14-08-2019	-33.1321	148.1497	6333484	607244.1	<i>Callitris glaucophylla</i>	2	n	76
PT25	14-08-2019	-33.1325	148.1498	6333430	607255.2	<i>Callitris glaucophylla</i>	2	n	76
PT26	14-08-2019	-33.1334	148.1507	6333330	607333	<i>Eucalyptus microcarpa</i>	3	n	76
PT27	14-08-2019	-33.1293	148.1507	6333790	607339.1	<i>Eucalyptus microcarpa</i>	3	n	76
PT28	14-08-2019	-33.1289	148.1509	6333833	607356.6	<i>Eucalyptus microcarpa</i>	3	n	76
PT29	14-08-2019	-33.1287	148.1501	6333859	607288.7	<i>Eucalyptus albens</i>	3	y	267
PT30	14-08-2019	-33.129	148.1484	6333821	607123.8	<i>Eucalyptus albens</i>	3	y	267
PT31	14-08-2019	-33.1279	148.1491	6333944	607191.2	<i>Eucalyptus microcarpa</i>	3	n	76
PT32	14-08-2019	-33.1275	148.1488	6333995	607163.5	<i>Eucalyptus microcarpa</i>	3	n	76
PT33	14-08-2019	-33.1261	148.1499	6334146	607271.9	<i>Eucalyptus microcarpa</i>	3	y	76
PT34	14-08-2019	-33.1259	148.1498	6334164	607256	<i>Eucalyptus microcarpa</i>	3	y	76
PT35	14-08-2019	-33.127	148.1487	6334047	607154.1	<i>Eucalyptus melliodora</i>	2	n	76
PT36	14-08-2019	-33.1269	148.1487	6334059	607152.9	<i>Eucalyptus microcarpa</i>	3	y	76
PT37	14-08-2019	-33.127	148.1474	6334042	607033.6	<i>Eucalyptus microcarpa</i>	3	y	76
PT38	14-08-2019	-33.1251	148.1475	6334263	607044.8	<i>Callitris glaucophylla</i>	2	n	76
PT39	14-08-2019	-33.1246	148.145	6334317	606812.4	<i>Eucalyptus microcarpa</i>	3	y	76

TITLE	DATE CREATED	LATITUDE	LONGITUDE	NORTHING	EASTING	TREE SPECIES	CLASS	HOLLOW	PCT
PT40	14-08-2019	-33.1244	148.1459	6334338	606895.9	<i>Eucalyptus microcarpa</i>	3	n	76
PT41	14-08-2019	-33.1233	148.1456	6334463	606868.4	<i>Callitris glaucophylla</i>	2	n	76
PT42	14-08-2019	-33.1278	148.1327	6333972	605665	<i>Eucalyptus microcarpa</i>	3	y	76
PT43	14-08-2019	-33.129	148.1378	6333831	606137.8	<i>Eucalyptus microcarpa</i>	3	y	76
PT44	14-08-2019	-33.1266	148.1391	6334098	606260.9	<i>Callitris glaucophylla</i>	3	n	70
PT45	14-08-2019	-33.1262	148.1392	6334146	606274.5	<i>Eucalyptus microcarpa</i>	3	y	76
PT46	14-08-2019	-33.1302	148.1427	6333702	606591	<i>Callitris glaucophylla</i>	3	n	70
PT47	14-08-2019	-33.1305	148.1425	6333669	606577.4	<i>Callitris glaucophylla</i>	3	n	70
PT48	14-08-2019	-33.1302	148.141	6333702	606435.5	<i>Callitris glaucophylla</i>	3	n	70
PT49	14-08-2019	-33.1221	148.1249	6334615	604940.3	<i>Eucalyptus microcarpa</i>	3	y	76
PT50	14-08-2019	-33.1207	148.1245	6334773	604909.1	<i>Eucalyptus microcarpa</i>	3	y	76
PT51	14-08-2019	-33.1376	148.15	6332867	607263	<i>Eucalyptus albens</i>	3	n	267
PT52	14-08-2019	-33.136	148.1372	6333056	606073.4	<i>Eucalyptus microcarpa</i>	3	y	267

### 3. Candidate fauna species surveys: Sloane's Froglet

Targeted seasonal surveys were completed over four days and nights in August 2019 for Sloane's Froglet *Crinia sloanei* as it was identified as having a moderate to high likelihood of occurring within the investigation area in the Stage 1 report (WSP, July 2019). Threatened fauna surveys completed within the investigation area were carried out as described below and where applicable, considering the methodology detailed in the *NSW Threatened Biodiversity Survey and Assessment: Guidelines for Developments and Activities (Working Draft)* (Department of Environment and Conservation, 2004), the *Threatened Species survey and assessment guidelines: field survey and methods for fauna-Amphibians* (Department of Environment and Climate Change, 2009) and the *Survey guidelines for Australia's threatened frogs* (Department of Environment, Water, Heritage and the Arts, 2010b).

This section outlines the survey for targeted threatened species identified in the Stage 1 report. Survey methods were designed based on the species identified as potentially occurring (candidate species) within the investigation area.

#### 3.1 Weather conditions

During the survey period conditions were particularly cold with a minimum temperature of -4°C and a maximum of 18.2°C. Some rainfall was experienced on the morning of the first survey (Table 3.1).

Weather conditions immediately leading up and during the WSP survey period were relatively dry with the Parkes area receiving only 10 mm over four days and continuing to experience an abnormally low amount of rainfall and drought conditions.

**Table 3.1** Weather condition during survey period

DATE	TEMPERATURE (°C)		RAIN (mm)
	Minimum	Maximum	
12.08.19	-0.7	10.3	7.4
13.08.19	-2.3	12.5	0.2
14.08.19	-4	14.2	0
15.08.19	-2.2	18.2	0.2

Source: Climate data obtained from Bureau of Meteorology (2019), AWS 065068

#### 3.2 Field methodology

##### 3.2.1 Spotlighting

Spotlighting was used to target Sloane's Froglet (*Crinia sloanei*). Spotlighting was completed for an hour after dusk in targeted areas such as table drains and farm dams. Surveys were completed on foot using headtorches (1000 lumens). Any animals sighted were identified to species level.

##### 3.2.2 Call playback

Call playback was used to survey for Sloane's Froglet using standard methods. Call playback was completed after dusk, after dawn and around midday within a number of sites in the investigation area.

For each survey, an initial listening period of 5 minutes was undertaken. The call of Sloane's Froglet was then played for 1 minute, followed by a 5-minute listening period. Nocturnal call playback surveys were followed by a spotlight search for 10 minutes to detect any frogs present but not calling. Calls from the Australian Museum FrogID App were broadcast using a portable media player and bluetooth speaker.

### 3.2.3 Herpetofauna active searches

Herpetofauna active searches during the day and at night, were undertaken and involved looking for active specimens, tadpoles and eye shine, turning over suitable ground shelter, such as fallen timber, deep cracks in mud, sheets of iron and exposed rocks

Herpetofauna active searches were completed by two persons over a 20-minute period with all ground shelter returned to their original positions. Herpetofauna active searches were completed in conjunction with diurnal and nocturnal surveys. Frogs were surveyed opportunistically during all other surveys in the investigation area. opportunistic sightings

Opportunistic sightings of animals were recorded including diurnal birds and reptiles. Evidence of animal activity, such as scats, diggings, scratch marks, nests/dreys, burrows etc., was also noted. This provided indirect information on animal presence and activity.

### 3.2.4 Opportunistic sightings

Opportunistic sightings of animals were recorded including diurnal birds and reptiles. Evidence of animal activity, such as scats, diggings, scratch marks, nests/dreys, burrows etc., was also noted. This provided indirect information on animal presence and activity.

### 3.2.5 Sloane's Froglet survey effort

Sloane's Froglet was identified as having a moderate likelihood of occurrence and was identified by the BAM calculator as a species credit species in the Stage 1 report. It was subject to targeted threatened surveys in August 2019. The BAM calculator prescribes surveying for Sloane's Froglet in July-August (during their peak calling period) and WSP survey effort described above exceeds that required to detect this species.

## 3.3 Results

No Sloane's Froglets were recorded during the targeted field surveys. Most of the farm dams that were holding water in March were dry. No frog species were heard or recorded calling within the investigation area.

Given the lack of water across the entire investigation area, larger wetlands outside the investigation area were used as reference sites to determine frog activity levels. Only one frog species, the Beeping Froglet was recorded in four days. Overall, herpetofauna activity was extremely low. This is due to both the prolonged drought conditions and the extremely cold temperatures experienced during the survey period.

Further to this, advice from BCS David Hunter (accountable officer for Sloane's froglet) considers that the likelihood of Sloane's froglet occurring within the investigation area is very low due to:

- Sloane's froglet typically occurs where there is extensive suitable wetland habitat. The presence of a small amount of potential habitat is unlikely to support a population, particularly not if it is vulnerable to drought conditions
- There is uncertainty as to whether Sloane's froglet historically occurred in that area.

- Weather conditions wouldn't have been too cold for surveys, particularly not early in the evening. Sloane's froglet is a winter specialist.

Based on the above, it is unlikely that Sloane's froglet occurs in the investigation area and no further assessment is required.

#### 4. Biodiversity data set

Below is a list of the final GIS data set for the Parkes SAP final investigation area (August 2019).

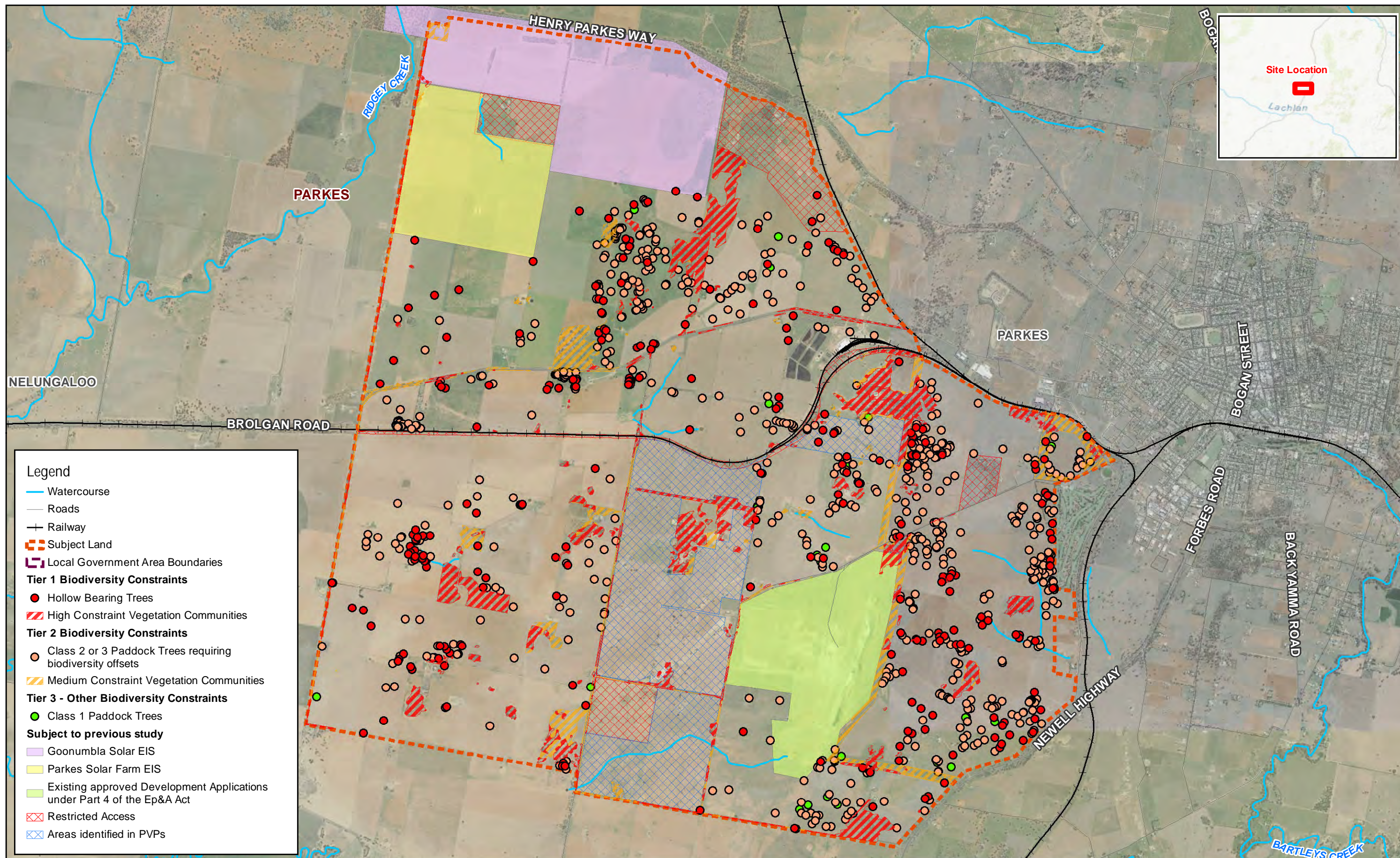
- Paddock\_Trees
- QuadratsSurveyPoint
- SpotlightTransects
- Subject\_to\_existing\_PaddockTreeAssessment
- Threatened\_Fauna\_WSP\_20190326
- ThreatenedFaunaSurveyEffort
- Tracks August 2019 – additional areas
- Vegetation\_Communities.

Also included is the excel BAM vegetation integrity plot data for the 46 quadrats.

The vegetation communities layer is the data which has been queried to determine the tiered biodiversity approach/mapping. It should also be noted that over the life of the project there has been different versions on the vegetation community layer. The mapping of the actual vegetation communities has always been correct but there was an error identified in the allocation of the Tiers in the February 2020 data which was corrected in the May 2020 data. Further explanation is given below:

- July 2019 – This was the dataset that accompanied the Biodiversity Assessment Report – Stage 1 (refer to Figure 4.1). It includes the original investigation area.
- February 2020 – This dataset was created to include the revised investigation area with additional areas in the north east which were surveyed in August 2019. Figure 4.2 shows all the vegetation communities, including miscellaneous vegetation. It was subsequently identified that this data had an error with the allocation of the vegetation tiers and miscellaneous vegetation had been included in the Tier 1 and 2 vegetation.
- May 2020 – This dataset was produced to correct the misallocation of miscellaneous vegetation; it also includes the expanded investigation area to the north east. Figure 4.3 identifies Tier 1 (dark green) and 2 (light green) vegetation.







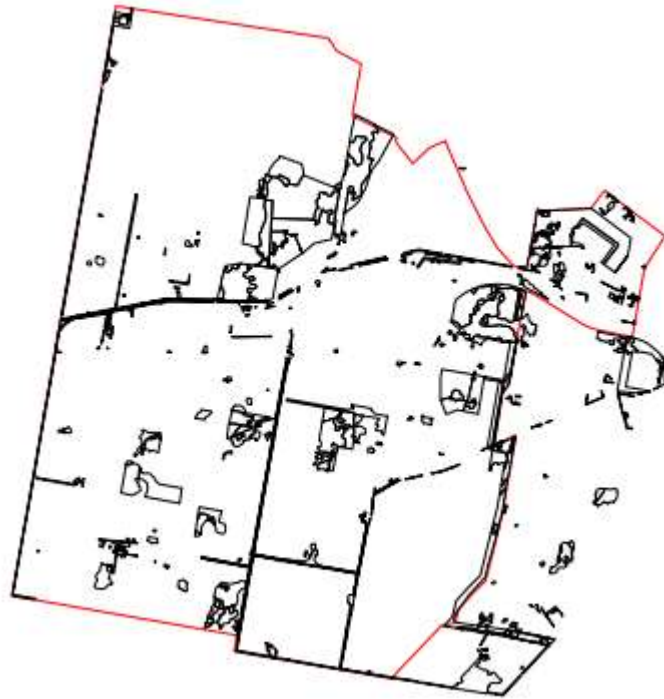


Figure 4.2 February 2020 vegetation communities showing the additional survey area in the north east. All mapped vegetation communities are shown



Figure 4.3 May 2020 biodiversity – Tier 1(dark green) and 2 (light green)



