GWR GROUP LIMITED

GOLDEN MONARCH PROJECT-

TARGETED MALLEEFOWL SURVEY

April 2019

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1.0 INTRODUCTION

1.1 BACKGROUND

GWR Group Limited (GWR) proposes to develop the Golden Monarch gold deposit at their Wiluna West Project which is located approximately 35 km southwest of the town of Wiluna (Figure 1). The Project comprises eight iron ore deposits over the two Banded Iron Formation (BIF) ridges (Ridges B and C as classified by GWR). Gold deposits are known to occur in the swales between the BIF ridges, with Golden Monarch located in between the B and C ridges (Figure 2).

Previous fauna surveys completed at the Wiluna West Project has identified the occurrence of Malleefowl (*Leipoa ocellata*) (Ninox 2006; KLA 2012). The Malleefowl (*Leipoa ocellata)* is classified as Vulnerable under the Commonwealth *Environment Protection and Biodiversity Conservation* (EPBC) *Act 1999* and Vulnerable under the State's *Biodiversity Conservation Act 2016*.

GWR's current clearing permits (CPS 4006/2 and CPS 6726/1) contain conditions requiring completion of targeted Malleefowl surveys prior to any clearing activities. Although no Malleefowl mounds have been recorded in proximity to the Golden Monarch Project area, GWR engaged the Indigenous Martu Women from Wiluna to undertake a targeted Malleefowl survey of the proposed Golden Monarch Project area.

1.2 OBJECTIVES

The objective of this targeted Malleefowl survey was to assess the occurrence of Malleefowl in the proposed Golden Monarch Project area, specifically to:

- assess the suitability of habitat for Malleefowl use;
- identify any nesting mounds – size, age and evidence of recent use; and
- identify secondary signs of Malleefowl or direct sightings i.e. tracks, recently moulted feathers and scats.

1.3 MALLEEFOWL

1.3.1 Description of the Species

Malleefowl (*Leipoa ocellata)* (Gould, 1840) are large ground dwelling birds belonging to the Megapodiidae family. This species belongs to a small group of mound builders where the mound is used as an external heat source to incubate their eggs (Clark 1964). The Malleefowl is a long-lived sedentary species with an average lifespan of roughly 15 years. Reaching approximately 60cm in height and 1.5 - 2kg in weight, they are roughly the size of a small turkey (Benshemesh 2005). They have a unique appearance with a distinctly barred upper body of grey, white, black, buff and pale chestnut feathers, with a crest extending from the front of the crown to the nape which is raised when the bird is alarmed (DEE 2018; Pizzey and Knight 1999) (Figure 3).

1.3.2 General Ecology

The Malleefowl is a species which occupies semi-arid to arid regions of Western Australia, inhabiting dense shrublands and thickets of Mallee (*Eucalyptus spp*.), Boree (*Melaleuca lanceolata*), Bowgada (*Acacia linophylla*), or areas which form dense leaf litter (Johnstone and Storr 1998). Malleefowl prefer habitat that is long unburnt for breeding and shelter. However Malleefowl will feed in recently burnt areas (Benshemesh 1992, Marchant and Higgins 1993).

The Malleefowl builds mounds that utilise heat from the sun and composting vegetation to incubate their eggs. Most heat is generated from the fermentation of vegetative

material used to create the mound, along with solar energy used later in the season as the leaf litter dries out (Johnstone and Storr, 1998). The size of Malleefowl mounds vary. However, an average mound spans 5 m in diameter and can be up to 1 m high (DEC 2010) (Figure 4).

Malleefowl are usually solitary and occupy a home rage of between 0.5 and 4.6 km (Benshemesh 1992). Established monogamous breeding pairs usually inhabit a similar area throughout the year and come together for breeding. While both sexes build the mound, once the female has laid the eggs, the male usually maintains the mound on his own. Birds generally breed annually (Marchant and Higgins 1993) with the breeding season lasting 11 months. Following mound preparation, eggs are laid from mid-August to late January and hatchlings appear from November and January (Johnstone and Storr 1998). The precocial chicks are independent from hatching having no contact with either their parents or siblings (van der Waag 2007). While fifty to eighty-five percent of eggs hatch (Firth 1959), generally more than 80% of chicks die within the first few weeks of life from predation and 'metabolic stress' (Priddel and Wheeler 1994).

Malleefowl feed opportunistically and will often feed on whatever food sources are abundant in the area (van der Waag 2007). Their omnivorous diet can consist of seeds, native herbs, flower buds, fruits and foliage of different plant species, as well as invertebrates. This species will drink water and can easily survive during summer when surface water is unavailable (DBCA 2018).

1.3.3 Distribution

Originally, Malleefowl were widespread and common across the southern arid and semiarid zone, however the species has now become patchily distributed due to the effects of habitat clearing and fox predation (Johnstone and Storr 1998). Unlike other megapods that prefer damp forest, the Malleefowl does not inhabit the higher rainfall area of the Swan Coastal Plain and south coast of Western Australia (Figure 5).

1.3.4 Conservation Status

The Malleefowl is protected under Federal and State legislation - it is classified as Vulnerable: "Taxa facing a high risk of extinction in the wild in the medium-term future" under the Federal *Environmental Protection and Biodiversity Conservation (EPBC) Act 1999* and is listed as Vulnerable "species considered to be facing a high risk of extinction in the wild in the medium term future" under the Western Australian *Biodiversity Conservation Act 2016*.

The Malleefowl is also listed as Vulnerable on the 2019 IUCN Red List of Threatened Species.

Figure 1: Location of Wiluna West Project (regional)

Figure 2: Location of the Golden Monarch Deposit at Wiluna West

Figure 3: Adult Malleefowl (*Leipoa ocellata)*

Figure 4: Malleefowl Mound (South-west WA)
(source: Jiri Lochman/Lochman Transparencies)

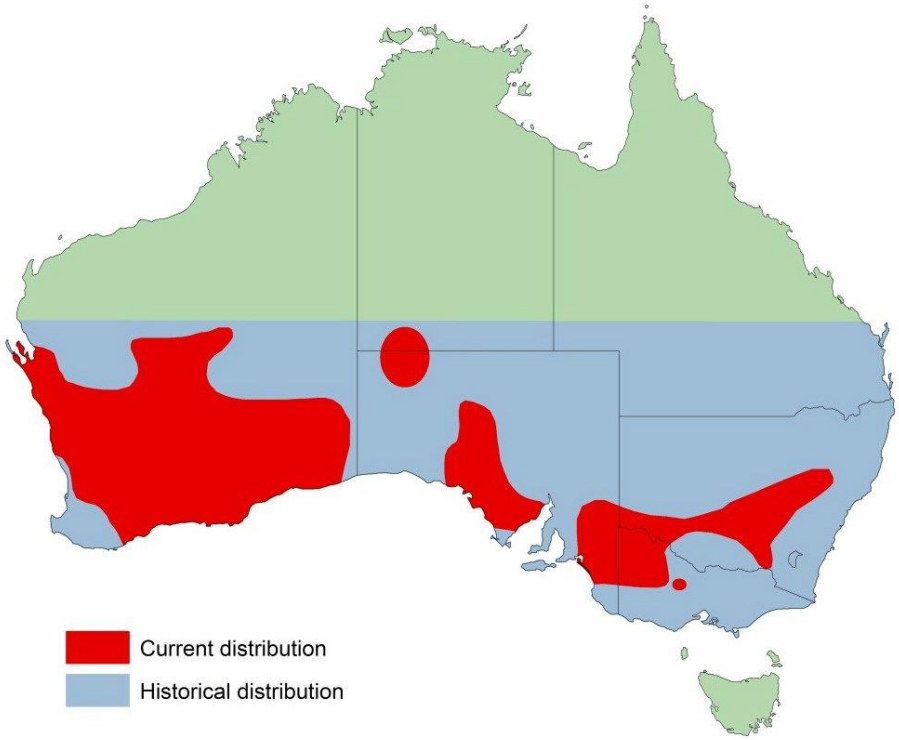

Figure 5: Distribution of Malleefowl

2.0 PROJECT CONTEXT

2.1 REGIONAL VEGETATION

The Interim Biogeographic Regionalisation for Australia (IBRA) divides the Australian continent into 89 bioregions and 419 subregions (DEE, 2017). The project is located within the Murchison Region and is characterised by undulating hills, with occasional ranges of low hills and extensive sand plains in the eastern half. The principal soil type is shallow earthy loam overlying red-brown hardpan, shallow stony loams on hills and red earthy sands on sand plains (Beard, 1990).

The Wiluna West Project Area is located within the Austin Botanical District in the Eremaean Province and lies within the East Murchison IBRA sub-region which covers an area of 211,350 ha (Beard, 1990). Vegetation throughout this area is Mulga woodlands often rich in ephemerals, hummock grasslands, saltbush shrublands and *Halosarcia* shrublands.

The Golden Monarch project area is located within Beard (1979) vegetation group, Shrublands; mulga and *Acacia quadrimarginea* scrub (Vegetation association 202).

2.2 PROJECT VEGETATION

A number of vegetation and flora surveys have been undertaken at the Wiluna West Project between 2005 and 2018. These include:

- Vegetation & flora survey undertaken on M53/1016 and L53/148 – Jims Seeds, Weeds & Trees (now Botanica Consulting), September 2005.
- Vegetation and flora survey of the haul road from the project site to the Northern Goldfields Highway – Jims Seeds, Weeds & Trees (now Botanica Consulting), December 2006.
- Vegetation & flora survey of 92 20m x 20m quadrats on Units A, B & C – Botanica Consulting, July 2006.
- Vegetation & flora survey of 50 20m x 20m quadrats on Units A, B & C – DEC, August 2006. Survey focused more on ridges and uplands in the area than the plains between the ridges.
- Vegetation and flora survey of the Bowerbird project and related haul road – Botanica Consulting, March-April 2007.
- Flora and Vegetation Survey of Four Proposed Gravel Pits (no longer to be utilised) – on M53/1087 and at intersection of L53/148 and Ullala Road - Botanica Consulting, April 2007.
- Flora survey and mapping of vegetation on Ridges A, B & C – Botanica Consulting, 24 February- 1 March 2008.
- Vegetation survey of Wiluna West Project (including mapping native vegetation communities of project area -12,647 ha) – Recon Environmental, March-June 2009.
- Targeted regional searches for *Sida picklesiana* (formerly *Sida* sp. Wiluna (A Markey and S Dillon 4126)) - Keith Lindbeck & Associates (in conjunction with WA Herbarium), August 2010.
- Variety of targeted Priority flora surveys for proposed exploration within E53/1114, E53/1116, E53/1173, M53/1016, M53/1017, M53/1018, M53/1078) – Botanica Consulting, Keith Lindbeck & Associates, Recon Environmental 2007 to 2011.

- Targeted Priority flora survey of the three deposits that will be mined in the first 10 years of operations (Bowerbird, C3 and C4) - Native Vegetation Solutions, November 2011.
- Targeted Priority flora survey of the proposed Golden Monarch disturbance footprint – Native Vegetation Solutions, August 2018.

Recon (2010) identified 29 vegetation communities within the entire Wiluna West Project area (Table 1, Figure 6). These vegetation communities on the BIF were grouped into six main types following Markey and Dillon's (2009) descriptions of the communities (based on floristic composition) at the project (Table 1).

Previous assessments of the occurrence of active and inactive Malleefowl mounds with vegetation communities recorded at the Wiluna West Project suggest that preferred habitat are the MSET (Mulga Shrubland over *Eremophila forrestii* and *Triodia* on lateritic soils) and ASET (Acacia shrubland over *Eremophila* and *Triodia*) vegetation communities as defined by Recon (2009).

Table 1: Vegetation units identified at the project

Vegetation Unit (Recon 2010)		Vegetation Unit Description (Recon 2010)	Vegetation Unit Description (DBCA- Markey & Dillon 2009)
SIMS-B	Stony Ironstone Mulga Shrublands on rocky slopes and crests, frequently on BIF	SIMS-B can be described as an *Acacia aneura* var. *microcarpa* shrubland with *Grevillea berryana* occurring on rocky outcrops usually on banded iron formation (BIF).	**TYPE 1:** found on crests and steeper upper slopes; described as a sparse open tall shrubland of *Acacia aneura cf. var. microcarpa*, *Grevillea berryana* and less commonly, *Acacia quadrimarginea* over *Eremophila latrobei* subsp. *latrobei*, *Prostanthera campbellii*, above *Ptilotus obovatus*, *Sida* sp. Golden *calyces glabrous*, *Sida* sp. *Excedentifolia*, *Ptilotus schwartzii, Cheilanthes brownii*, with *Eriachne helmsii*, *E. mucronata*, and *Monachather paradoxus*.
ASET*	Acacia shrubland over Eremophila and Triodia	ASET is a mixed Acacia shrubland generally comprised of *Acacia aneura* over mid to low shrubs including *Eremophila punctata*, *E. latrobei*, *E. forrestii*, over *Triodia melvillei*.	**TYPE 2:** located on flat summit surfaces on ridge tops, and on the undulating pediments and valley floors off the main ridges. It encompasses mosaics of *Acacia* over *Triodia* grasslands or low myrtaceous-*Eremophila* shrublands, with isolated mallees of *Eucalyptus kingsmillii* subsp. *kingsmillii*.
LOMS	Low Open Myrtaceae Shrubland	LOMS is a low open shrubland, usually dominated by *Aluta maisonneuvei* subsp. *auriculata*, and tending to have very sharp boundaries with the surrounding Acacia shrublands.	
SIMS-C	Stony Ironstone Mulga Shrublands on rocky slopes and crests	SIMS-C is a commonly occurring upland habitat associated with ironstone or laterite; dominated by *Acacia aneura* var. *microcarpa*.	
UAET	Undulating lateritic slopes of Acacia over low Eremophila and Triodia	Low shrubland occurring on undulating lateritic low hills dominated by *Eremophila jucunda* subsp. *jucunda* and *Triodia melvillei* with scattered tall shrubs of Acacia aneura.	
SUAE	Stony undulating slopes of *Acacia rhodophloia* over Eremophila and low shrubs	Shrubland dominated by *Acacia rhodophloia* frequently over *Eremophila jucunda* subsp. *jucunda* with *E. latrobei* subsp. *latrobei* and *E. punctata*, and also *Aluta maisonneuvei* subsp. *auriculata*	
SAEC	Stony *Acacia rhodophloia* and *Eremophila congesta* (P1) Shrubland occurring on crests	It is a shrubland dominated by *Acacia rhodophloia* over *Eremophila congesta* (P1) with *E. latrobei* subsp. *latrobei* and *E. punctata*, and on occasion *Triodia melvillei* only occurring on the crests of hills	
OALS	Open Acacia Shrubland on ironstone or laterite over low scattered shrubs	OALS is a varying habitat generally dominated by *Acacia quadrimarginea* and/or *A. balsamea* (P4) and frequently occurs on lateritic low rises; low outcrops of weathered BIF; rough quartz slopes; and upper breakaway surfaces.	**TYPE 3**: usually found on pediments, lower slopes and slightly low outcrops of weathered BIF and other metasediments, quartz and ultramafic lithologies, usually obscured by colluvium. It consists of *Acacia aneura*, and less frequently *Acacia balsamea* and *A. cuthbertsonii* subsp. cuthbertsonii tall open shrublands over shrubs including *Scaevola spinescens*, *Senna artemisioides* subsp. *helmsii*, *Eremophila flabellata*, and scattered *Maireana convexa, M. georgei*, and *Ptilotus obovatus*.
OALS-S	Open Acacia Shrubland on ironstone or laterite over low scattered shrubs – southern C Ridge	Generally dominated by *Acacia quadrimarginea* with *Acacia aneura* over *Scaevola spinescens*, *Eremophila latrobei* subsp. *latrobei*, *Ptilotus obovatus* and *E. flabellata*	
AXSI	Acacia Mixed Shrubland on Stony Ironstone Slopes	Generally dominated by *A. balsamea* (P4) with *Acacia cuthbertsonii* subsp. *cuthbertsonii* and *A. aneura* above *Scaevola spinescens*, E*remophila latrobei* subsp. *latrobei*, *Ptilotus obovatus* and *Senna artemisioides* subsp. *helmsii*	
SXSS	Scattered Mixed Shrubland on Low Stony Rises	SXSS is an open, scattered shrubland dominated by Acacia species occurring on stony ironstone.	
SAES	Stony Acacia Eremophila Shrubland	An open *Acacia aneura* shrubland on stony red earth over scattered *Eremophila* spp., *Sida ectogama*, *Ptilotus obovatus*, and *P. schwartzii*	**TYPE 4:** consists of a tall open shrubland of *Acacia aneura* and *A. tetragonophylla*, occasionally with isolated emergent trees of *Acacia pruinocarpa*, over a mosaic of shrubland and chenopods.
DRAS	Drainage Tract Acacia Shrubland	Scattered to close tall shrubland, sometimes woodland with understorey development inversely related to upper storey cover	
USCS	Upland Small Chenopod Species Shrubland	Open Acacia aneura shrubland on stony red earth over scattered *Ptilotus obovatus*, *Maireana* spp., *Sclerolaena* spp., and *Tecticornia* spp.	
SIME	Stony Ironstone Mulga with *Eremophila forrestii* Shrubland	Commonly occurring mulga shrubland dominated by *Acacia aneura* var. *microcarpa*, above *Eremophila forrestii* often with *E. punctata*, *E. flabellata* and *E. jucunda* subsp. *jucunda*	**TYPE 5:** found on lower slopes, pediments and valley flats. It is a tall *Acacia aneura* shrubland often with a canopy of *A. pruinocarpa* over *Eremophila forrestii*, *E. latrobei*, *Senna* spp., *Eremophila flabellata*, *Rhagodia eremaea*, *Sida ectogama*, *Ptilotus obovatus*, with *P. schwartzi*i, *Sida* sp. *Excedentifolia* and *Monachather paradoxa*.
SMEC	Stony Slopes Mulga *Eremophila congesta* (P1) Shrubland	Occurs along the lower slopes of hills in the north and east of the survey area and is dominated by *Acacia aneura* var. *microcarpa* above *Eremophila congesta* (P1), often with emergent *Acacia pruinocarpa*	
MSET*	Mulga Shrubland over *Eremophila forrestii* and Triodia	MSET occurs on the lateritic soils, it is dominated by *Acacia aneura* var. *microcarpa*, above *Eremophila forrestii* often with *E. jucunda* subsp. *jucunda* over *Triodia melvillei*	
SIMS-M	Stony Ironstone Mid-slope Mulga Shrubland	A mid-slope habitat associated with iron rich outcrops dominated by *Acacia aneura* var. *microcarpa*, with scattered *A. pruinocarpa*	**TYPE 6:** generally located mid-slope, associated with massive haematite-enriched outcrops; it can be summarized as consisting of *Acacia aneura* cf. var. *microcarpa* and occasionally *A. pruinocarpa* over *Eremophila latrobei* subsp. *latrobei*, *Dodonaea petiolaris*, *Eremophila flabellata*, *Sida* sp. Wiluna, (Markey and Dillon 4126) [*Sida picklesiana* (ms) (Markey *et al.* 2011) and less frequently *Ptilotus rotundifolius*, *Eremophila jucunda* subsp. *jucunda, Harnieria kempeana* subsp. *muelleri*.
BCLS	Breakaway Footslope Chenopod Low Shrubland	Generally comprised of a low scattered shrubland generally dominated by chenopod species	NS

Vegetation Unit (Recon 2010)		Vegetation Unit Description (Recon 2010)	Vegetation Unit Description (DBCA- Markey & Dillon 2009)
BRXS	Breakaway Mixed Shrublands	Generally a scattered *Acacia* spp. shrubland above *Eremophila* spp., *Ptilotus obovatus*, with *Scaevola spinescens*, and often with emergent *Eucalyptus carnei* near the footslope edges of the breakaway scarp	NS
CBKW	Creek Bank Woodland or Shrubland	Creek beds are characteristically between 20 and 50m wide and up to 4m deep, incised into hardpan. The vegetation fringing the creeklines often consists of a moderately close mulga woodland or tall shrubland	NS
MUWA	Mulga Wanderrie Grassy Shrubland	MUWA is generally a scattered mulga shrubland over wanderrie grasses	NS
HPMD	Hardpan Plain Mulga Woodland - Drainage	Mulga woodland with a poorly developed low and mid shrub strata occupying the lowest part of the landscape	NS
HPMS	Hardpan Plain Mulga Shrubland	Usually a scattered to moderately close tall mulga shrubland with a well-developed low and mid shrub strata	NS
MUBW	Hardpan Plain Mulga & Bowgada Shrubland	Scattered to moderately close tall shrubland (*Acacia 113 ramulosa*), but it is occasionally dominated by mid shrub (*Acacia 113 ramulosa*, with *Eremophila forrestii*) or tree strata	NS
GRMU	Hardpan Plain Mulga Grove	Mulga groves are often moderately close to closed tall shrublands, or less frequently low woodlands	NS
SAMA	Sandplain Mallee Spinifex Hummock Grasslands	SAMA occurs on deep red sandy soils and consists of Triodia grasslands interspersed with mallee	NS
SAMU	Sandplain Mulga Spinifex Hummock Grassland	SAMU occurs as a scattered tall mulga shrubland over a hummock grass (Triodia) stratum	NS
SASP	Sandplain Spinifex Hummock Grassland	SASP consists of a Triodia grassland, where the hummock grass layer generally dominates in terms of projected foliar cover and biomass	NS

NS – community not surveyed by the DBCA
*Preferred Malleefowl habitat

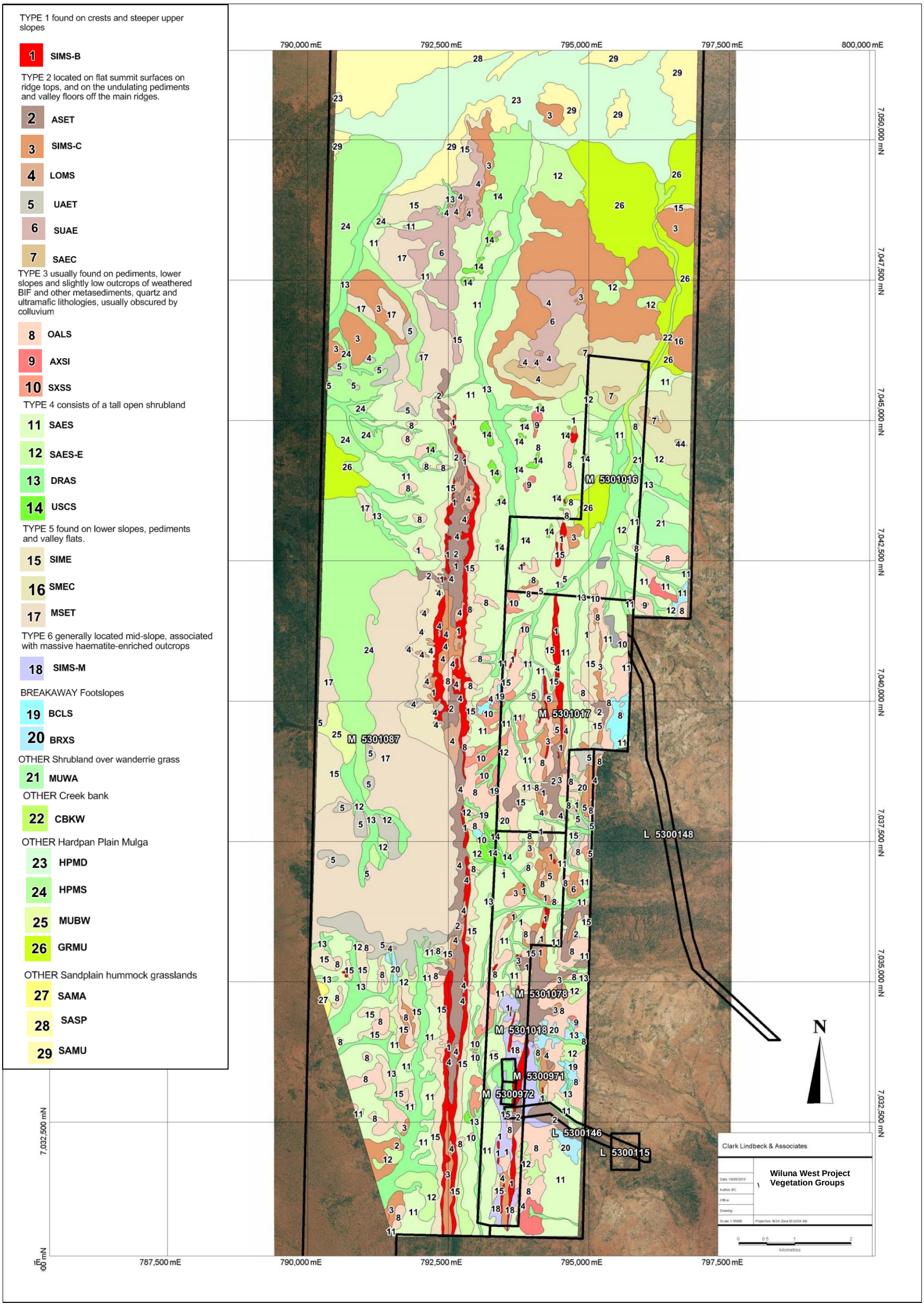

Figure 6: Vegetation communities at the Wiluna West Project

2.3 PROJECT FAUNA

Four Level 2 fauna surveys have been undertaken at the wider Wiluna West area to date. These surveys were completed on the:

- 31 October – 9 November 2005 - M53/1016 and L53/148 (Ninox Wildlife Consulting, 2005).
- 15 – 24 September 2006 – B ridge from Joyners Find deposit to Bowerbird deposit (Ninox Wildlife Consulting, 2006).
- 23 - 31 October 2007 – 'C' Ridge (Ninox Wildlife Consulting, 2008).
- 9 – 18 November 2011 – Bowerbird, C3 and C4 deposit areas (KLA, 2012).

Evidence of Malleefowl were first recorded at the project (on the C ridge) in 2006 (Ninox Wildlife Consulting, 2007). As well as records collected during the fauna surveys, numerous targeted searches have been undertaken which include:

- Targeted search along the C ridge, Traditional owners and GWR exploration staff in May 2008 - recorded one active mound, numerous old inactive mounds and tracks at various locations along C ridge.
- Audit of known Malleefowl mounds in the C3, C4 and Bowerbird areas, as part of the KLA 2011 Level 2 survey (November 2011). This recorded one active mound and 22 inactive mounds.
- Targeted search along the B and C ridges at grid spacings of 100m, was undertaken by Traditional owners (Martu) with GWR exploration staff, in 2012 – three active mounds, 54 inactive (near extinct-extinct) mounds were recorded.
- A reassessment survey of Malleefowl mounds that have been identified in previous surveys (in particular those located in the proposed BB, C3 and C4 mine footprint) was undertaken by AES in March 2014. A total of 24 Malleefowl mounds were assessed:
  - Two active mounds surveyed.
  - Four mounds were surveyed as inactive.
  - 15 mounds were described as either extinct or near-extinct; and
  - One mound was unable to be located or it has been misidentified (i.e. not a Malleefowl mound).

To date a total of 78 Malleefowl mounds have been located at the wider Wiluna West project through targeted surveys which includes (Figure 7):

- Six active mounds;
- Four inactive mounds; and
- 68 near-extinct to extinct mounds.

As can be seen in Figure 7, the active mounds are all located west of the C ridge and none are located within the Golden Monarch disturbance footprint.

DBCA shows a record within the proposed search area which relates to an opportunistic siting of Malleefowl track during the 2006 Ninox survey. Ninox (2006) states: *"fresh footprints were noted just west of the current survey area"*. GWR understand this record relates to the C ridge.

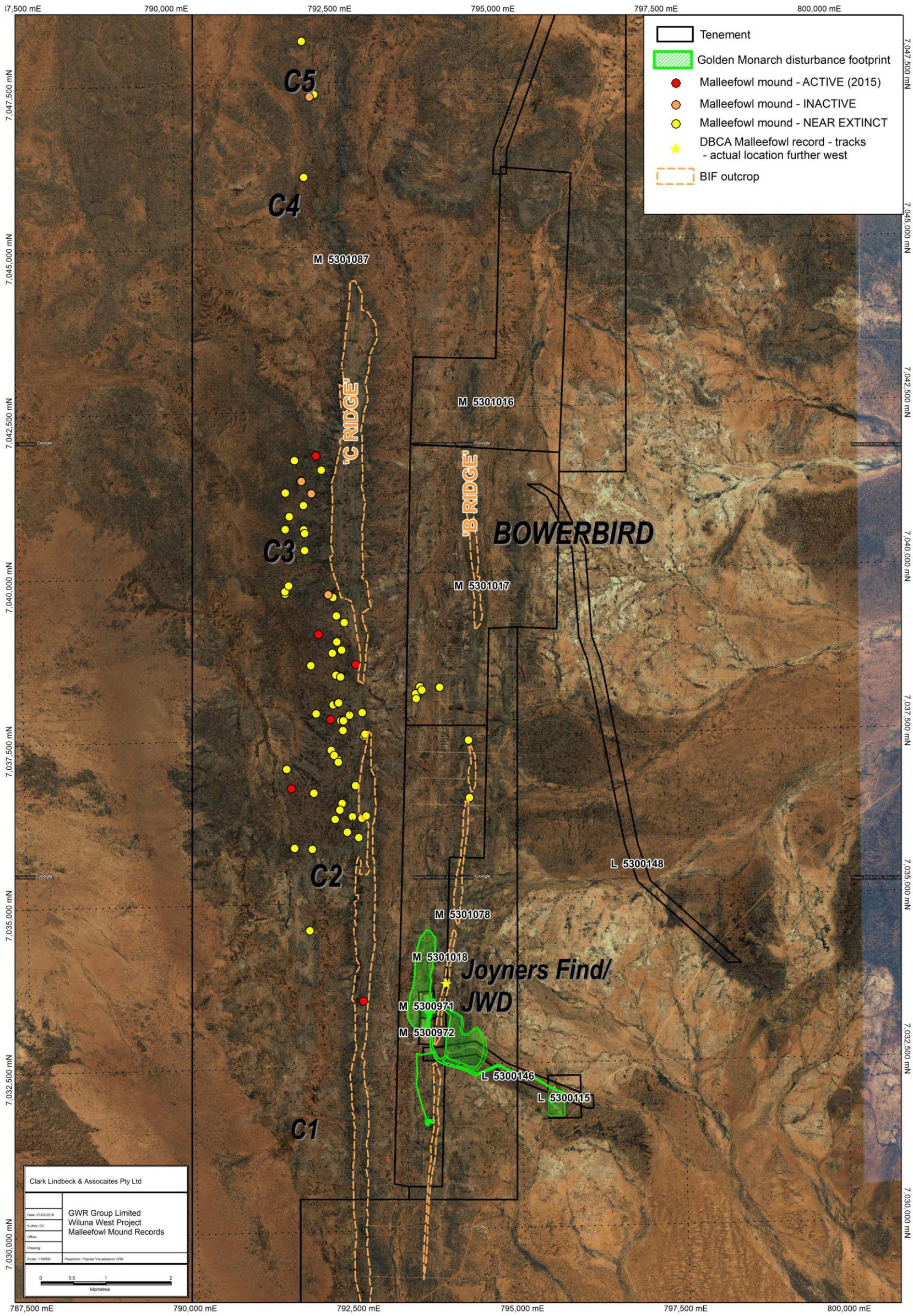

Figure 7: Locations of Malleefowl mounds at the Project in relation to the Golden Monarch disturbance footprint

3.0 SURVEY METHODOLGY

3.1 SITE SURVEY

A Level 2 targeted Malleefowl survey was completed on the 8th July, 30th July and the 4th August 2018. The survey area focused on proposed disturbance Golden Monarch disturbance (Figure 8).

The survey was carried out with reference to:

- Commonwealth of Australia (2010). *Survey Guidelines for Australia's threatened birds*.
- Environmental Protection Authority (2016). *Technical Guidance: Terrestrial Fauna Surveys.*
- EPA (2016b). *Technical Guidance: Sampling methods for Terrestrial Vertebrate Fauna.*

A line survey approach was adopted that ensured all parts of the area were surveyed. Between six and eight surveyors accompanied by a GWR representative with a GPS walked in east-west parallel lines, as topography permitted, across all uncleared areas of vegetation to:

- assess the suitability of habitat for Malleefowl use;
- identify any nesting mounds – size, age and evidence of recent use; and
- identify secondary signs of Malleefowl or direct sightings i.e. tracks, recently moulted feathers and scats.

The distance between lines was dictated by the density of the vegetation and topography, with personnel spaced either side of the centre line at spacings of less than 20 m.

Figure 8 shows the centreline traverses of the survey area which were at 85-100 m spacings. The surveyors were spaced either side of this centreline providing comprehensive coverage of the survey area.

3.2 PERSONNEL AND REPORTING

The field work was undertaken by the Martu Women (Traditional Owners) in conjunction with GWR.

The following personnel were involved in the survey:

- Mick Wilson (GWR)

Martu (Traditional Owners)

- Milesha Yappo
- Miranda Long
- Rebeca Anderson
- Rita Cutter
- Selena Richards
- Lina Long
- Shoronne Elliott.

Rita Cutter, Lina Long and Selena Richards are senior Martu Women and are highly knowledgeable in respect to native fauna. Lina Long and Rita Cutter are members of the highly respected Birriliburu Rangers Program and lead a number of land management activities in the Birriliburu Indigenous Protected Area (IPA), including reinstating traditional fire patterns, threatened species monitoring and baseline fauna surveys. They have more than 40 years of experience in this area, in particular with identification of threatened fauna.

This survey report was prepared by GWR in conjunction with Clark Lindbeck & Associates Pty Ltd.

3.3 LIMITATIONS

The survey was planned and designed to inspect all areas of uncleared vegetation within the footprint of disturbance for the Golden Monarch disturbance footprint. Notwithstanding this, Table 2 lists the potential limitations of the survey.

Table 2: Limitations and constraints associated with the targeted assessment

Variable	Potential Impact on Survey	Details
Access problems	Not a constraint	The survey was conducted via 4WD and on foot. Numerous tracks were located within the survey area, providing ease of access.
Competency/ Experience	Not a constraint	The Martu Elders that conducted the survey are regarded as suitably qualified and experienced with >40 years' experience. Clark Lindbeck & Associates Pty Ltd employs qualified environmental scientists and has more than 28 years of experience in the environmental consulting industry. They assisted GWR in preparation of this report.
Timing of survey, weather & season	Not a constraint	Fieldwork was conducted in July - August 2018. Identification of mounds and tracks is not season dependent.
Area disturbance	Not a constraint	Disturbance in the area was a result of historic mining activity, exploration and access tracks and did not limit the survey.
Survey Effort/ Extent	Not a constraint	Survey intensity was appropriate for the size/significance of the area with a maximum 25 m line spacing for the targeted assessment.
Availability of contextual information at a regional and local scale	Not a constraint	Results of DBCA searches and previous fauna assessments at the Project were reviewed to provide context on the local environment and the region.
Data Analysis	Not a constraint	N/A
Completeness	Not a constraint	GWR considers the spacing of the survey adequate for the assessment.

3.4 LICENCE AND PERMITS

No licences or permits were required for the targeted Malleefowl survey and report.

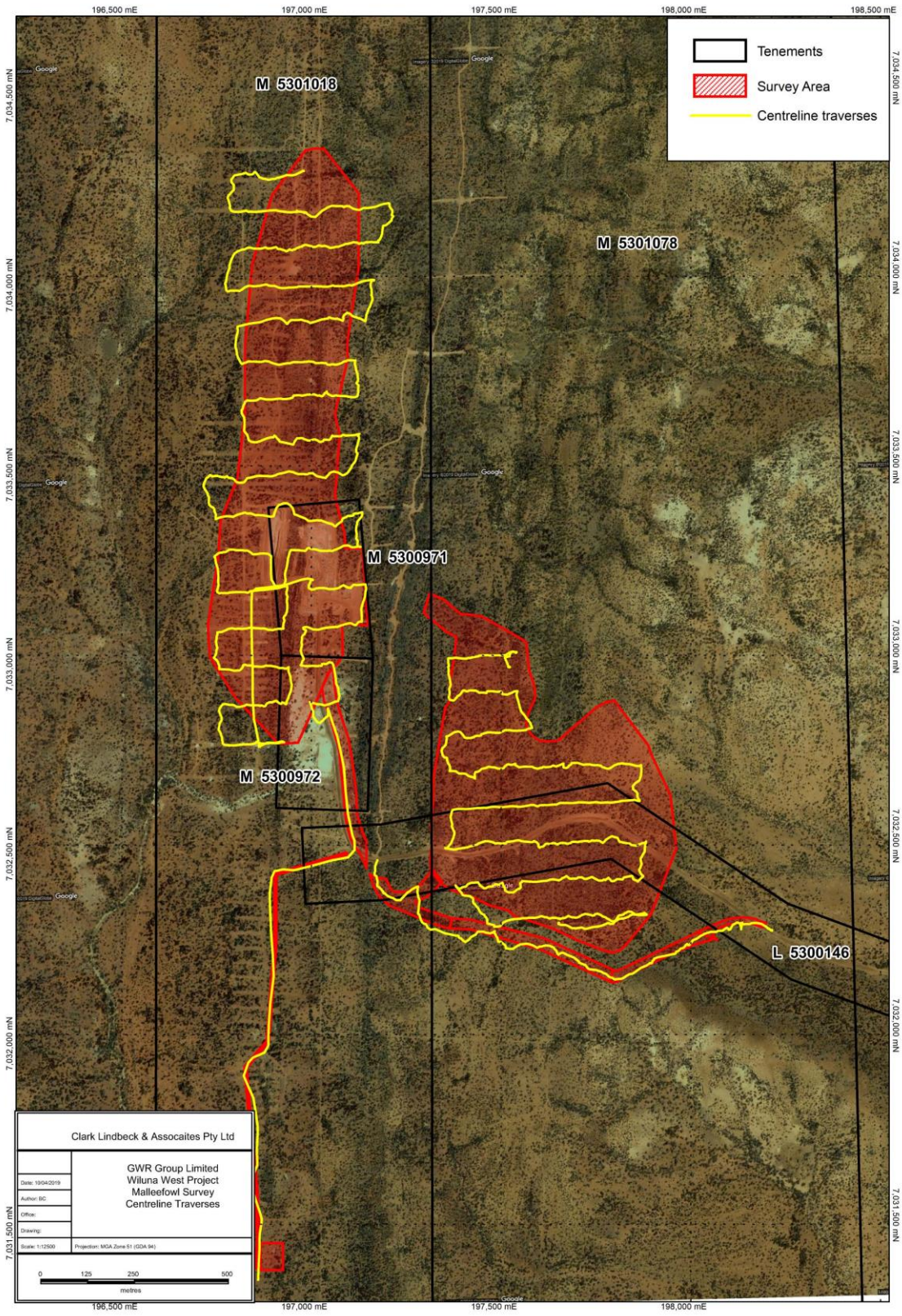

Figure 8: Line traverses walked during targeted survey

4.0 SURVEY RESULTS

4.1 MALLEEFOWL HABITAT

Malleefowl favour dense shrublands and areas that contain sufficient leaf litter for mound building.

Following assessment of the area, the senior Martu Women were strongly of the opinion that the habitat within the survey area was not suitable for Malleefowl as it was either:

- disturbed, and
- either too rocky and/or too open
- there was a lack of suitable leaf litter.

4.2 EVIDENCE OF MALLEEFOWL

No active, inactive or historic Malleefowl mounds or evidence of their recent presence (tracks, scats) was recorded during the targeted survey.

This is consistent with previous survey results and the preferred Malleefowl vegetation groups previously mapped which were not present within the proposed footprint.

5.0 DISCUSSION

Although there was no evidence of Malleefowl recorded within the Golden Monarch disturbance footprint, GWR is cognisant they may venture into the area to forage. Therefore, GWR will implement the following management measures to prevent impacts to this species:

- ensuring no clearing outside the proposed footprint,
- clearing boundaries will be well marked and all clearing activities supervised;
- erect signage to alert drivers of potential presence of Malleefowl;
- continue to monitor all known mounds frequently;
- maintain management that reduces risk of fire;
- ensure that all personnel attend inductions prior to commencing work onsite and that these inductions include information about the Malleefowl, its legal status, ecology and habitat requirements;
- encourage all personnel to report any signs of Malleefowl; and
- all vehicles are to remain on designated tracks and speed restrictions appropriate to operational areas.

6.0 REFERENCES

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