SORBY MANAGEMENT PTY LTD

BIRD SPECIES RICHNESS AND DIVERSITY IN SORBY MANAGEMENT PROPRIETY LIMITED (SMPL) SORBY HILLS SILVER LEAD ZINC PROJECT (SORBY HILLS).

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KML11002 – Sorby Hills Biological Assessment Survey

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ABSTRACT

A total of 95 species were actually recorded in the five day field survey of the Sorby Management Propriety Limited (SMPL) Sorby Hills Silver Lead Zinc Project (Sorby Hills). Based on records collected by Animal Plant Mineral (APM) from 23 collection events in the local area over the period from May 2009 to May 2011, and comparing the size and structure of the project area with other similar areas that were surveyed over longer periods, the Sorby Hills project area potentially supports 144 species of birds. Most of the species recorded are common to the surrounding areas. Previous surveys have revealed that up to 239 species of birds, including 90 passerines and 149 non-passerines are expected to occur in the Ord River floodplains and surrounding ranges.

The bird assemblages recorded in the Sorby Hills project area are representative of those communities that would inhabit similar habitats elsewhere. There are no habitats or microhabitats in the proposed impact area that are not well represented elsewhere in the East Kimberley region.

However, the standing fresh water bodies at Sorby Hills are an important component of the habitat within the Sorby Hills project area, despite the fact that three (i.e. the cattle yards, the old incline, the Sorby Hills dams) of the four water bodies are not naturally occurring.

Many species recorded during the survey would utilise many of the habitats described on various occasions throughout the project area over the different seasons. The low relative area of impact of the project ensures that the majority of these habitats will remain and sustain viable populations of these species. Volant fauna (bats and birds) can be resilient to broad-scale clearing, provided that habitat resources required for breeding or refuge are retained to some degree. Highly mobile volant fauna can move beyond disturbed areas to feed. However, damage to nesting or refuge sites can lead to demise in local populations. In some cases this can persist to an extent where the species is unable to recolonise.

A total of 40 species were recorded during the systematic census. KML Census Site 001 had the highest species richness and the greatest number of species unique to the site. KML Census Site 005 had the second highest species richness but only one species unique to the site. KML Census Site 003 and Site 004 were located in similar woodland habitat and had similar species richness and composition.

Richness, Abundance and Diversity data were also calculated for the Weaber Plains Ord Stage 2 project. Based on a total of 50 census there was an average of 12 species and 47 individuals located, and the average diversity was 1.936. All of the calculated indices are lower for Sorby Hills than for Weaber Plain. Only KML Census Site 1 had a diversity indices within the 95% confidence interval of Weaber Plains. All sites with the exception of KML Census Site 2 were within one standard deviation of the Weaber Plains diversity index.

Despite the minor variations in the avifauna habitats across the five Sorby Hills sites chosen for sampling there was no significant difference in richness, abundance or diversity between any of the five survey areas.

When the data are compared with the Parry Lagoon wetland area Parry Lagoon is shown to have a significantly greater diversity than both Weaber Plains and Sorby Hills using the census data for morning census only (Parry Lagoon was not surveyed in the afternoon thus reducing the power of the test.

A total of eight species listed under the EPBC Act (1999) as Threatened or Migratory or Other Matters have been recorded in recent surveys undertaken by APM in the region. Five of these species were recorded during the survey at Sorby Hills and one additional species, White-bellied Sea-eagle, has been recorded occupying the Keep River nearby. Though not recorded during the Sorby Hills survey, the Common Cicadabird and Rufous Fantail have a preference for dry rainforest, vine scrub or tall riverine forest of Melaleuca leucadendra, and vine covered slopes. There are some suitable habitats in the project area. The Cattle Egret, Eastern Great Egret and the Rainbow Bee-eater were listed species common to all three survey areas (Parry Lagoon, Weaber Plain and Keep River/Border Creek). Rainbow Bee-eaters were very common in each of the areas and in much of northern Australia may include both sedentary and migratory animals, depending on the time of year. Cattle Egret were observed in much greater numbers at Parry Lagoon (100 individuals) and Keep River/Border Creek (71 individuals) than at Weaber Plain (3 individuals) and Sorby Hills (16 individuals). Fifteen Eastern Great Egrets were recorded at Parry Lagoon and 18 were recorded at Keep River/Border Creek. This compares with only two recorded on the Weaber Plain project area and a single individual recorded at Sorby Hills.

The record of Gouldian Finch was made at the base of the Sorby Hills at KML003, exactly where the species would be expected to occur at this time of the year.

The entire design and layout of the SMPL Sorby Hills mine has been structured around maintaining the required habitat for the Gouldian Finch, with the development exclusion zone allowing quality breeding habitat in the foot hills of the Sorby Hills to remain undisturbed. A number of the existing permanent freshwater sources are also forecast to remain undisturbed.

Leading up to the commencement of the development SMPL are committed to undertaking further survey work for the Gouldian Finch.

Although disturbance to the Sorby Hills project area will have localised impact on the bird species that utilise the area, the regional impact will be made less significant if other areas providing a greater array of critical habitats, such as Parry Lagoons, are actively maintained and managed as conservation reserves.

As part of the of the Ord River Irrigation Area – Weaber Plain Development Project the Weaber Plain area will have 10 805 ha set aside as a buffer zone and conservation area. This area will be destocked to improve its habitat integrity. The Environmental Impact Statement

identifies that more than 75% of habitat suitable for EPBC listed wetland species will be preserved and that approximately 30% of habitat for remaining non-wetland specific birds (mainly small passerines) will be preserved. The buffer area represents almost exactly 50% of the total area outlined in the Weaber Plain Development Project.

Within the 1782 ha of the SMPL lease areas (M80/197 and M80/286), only 427.8 are going to be impacted and therefore 1354.47 ha or 76 % will be retained. These areas will be destocked and burning will be managed to stimulate Gouldian Finch retention.

In addition to the 10805 ha buffer area managed by the Ord Irrigation Expansion, a total of approximately 188 200 ha of rangelands will be conserved under the Ord final agreement Within these reserves, habitat identical to that which occurs at Sorby Hills will be preserved.

The development boundaries of the Sorby Hills project have been designed specifically to enhance and maintain the value of avifauna habitat around the base of Sorby Hills, the interzone with Knox Creek Plain and the densely vegetated grassland around KML Census Site 001.

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1. INTRODUCTION

1.1 INTRODUCTION AND SCOPE OF WORK

Sorby Management Propriety Limited (SMPL) proposes to develop the Sorby Hills Silver Lead Zinc Project (Sorby Hills), 50km north north-east of Kununurra, Western Australia. SMPL intend to mine four ore pods out of three open pits located on the Knox Creek Plain, with a small number of the infrastructure components located on the slightly elevated foothills of the adjacent Sorby Hills. The project is proposed to mine below the water table and water may be dispensed into the Keep River or used to irrigate crops as part of the Ord Irrigation Expansion Project (OIEP).

Adjacent to the proposed Sorby Hills project area is the now approved development of 10 300 hectares associated with the OIEP, and an associated buffer zone of 10 480 ha surrounding the irrigated farm lots that are still to be constructed. The buffer zone was proposed as part of the development to ensure the preservation of cracking clay habitat and the protection of the proposed Pincombe Range and Weaber Range conservation areas adjacent to Weaber Plain.

The Sorby Hills project area is shown in proximity to the OIEP development in Figure 1. Figure 2 shows the location of the pits and infrastructure in relation to the Knox Creek Plains and uplands of Sorby Hills.

The proposed development of the Sorby Hills area will be referred under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) to the Minister for Sustainability, Environment, Water, Populations, Arts and Community (SEWPAC). The development of the Sorby Hills project has the potential to have a significant impact on listed threatened species and communities (sections 18 and 18A) and listed migratory species (sections 20 and 20A) protected under Part 3 of the *EPBC Act 1999* (Commonwealth).

The *EPBC Act 1999* listed species of interest for the current survey included:

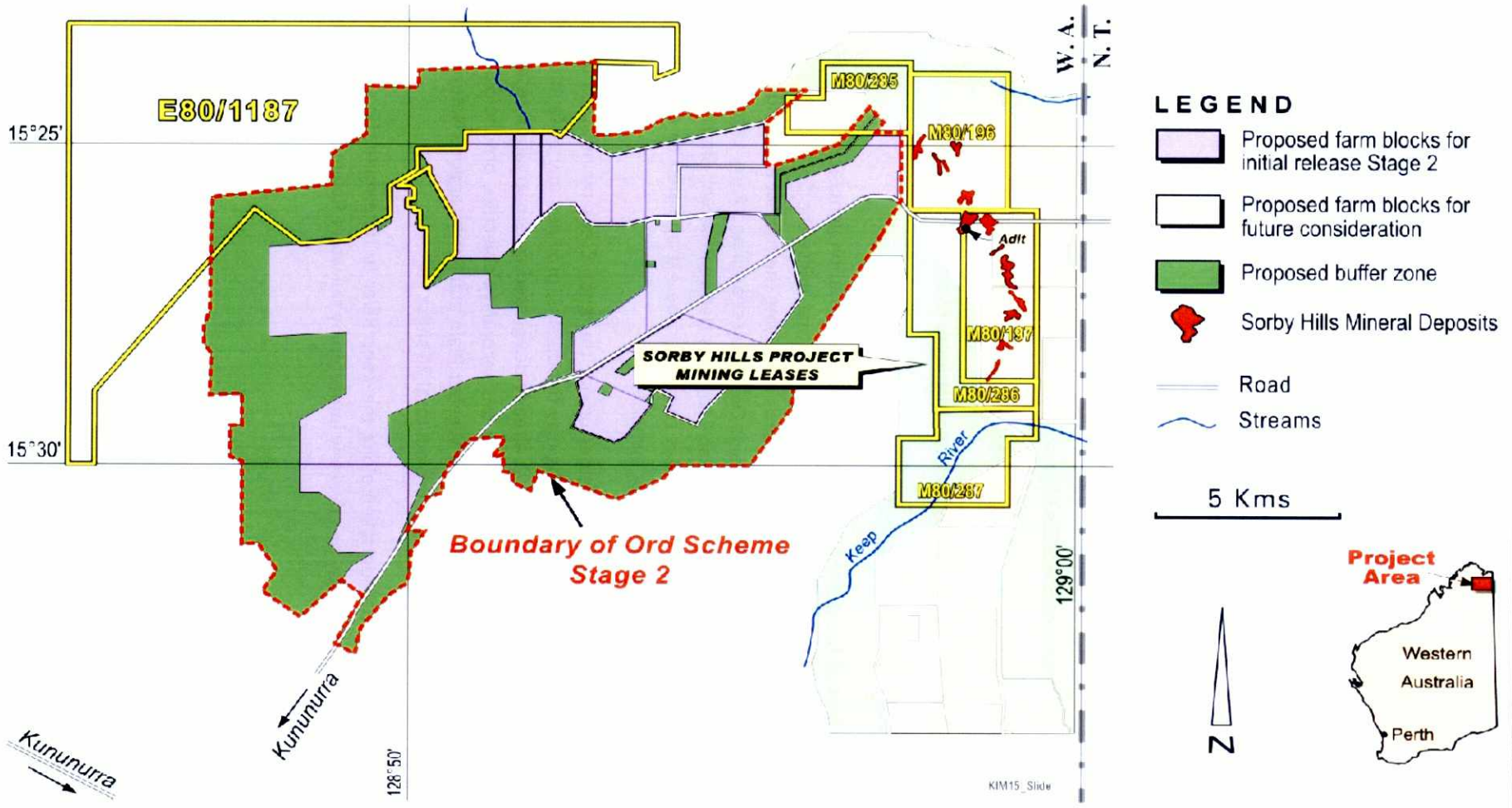
1. **Red Goshawk** *Erythrotriorchis radiatus* Threatened (Vulnerable)
2. **Gouldian Finch** *Erythrura gouldiae* Threatened (Endangered). Migratory (terrestrial)
3. **Northern Shrike-tit** *Falcunculus frontatus whitei* Threatened (Vulnerable). Migratory (terrestrial)
4. **Purple-crowned Fairy-wren (western]** *Malurus coronatus coronatus* Threatened (Vulnerable)
5. **Australian Painted Snipe** *Rostratula australis* Threatened (Vulnerable)
6. **Melville Cicadabird** *Coracina tenuirostris melvillensis* Migratory (terrestrial)
7. **White-bellied Sea-Eagle** *Haliaeetus leucogaster* Migratory (terrestrial)

8. **Barn Swallow** *Hirundo rustica* Migratory (terrestrial)
9. **Rainbow Bee-eater** *Merops ornatus* Migratory (terrestrial)
10. **Derby White-browed Robin** *Poecilodryas superciliosa cerviniventris* Migratory (terrestrial)
11. **Rufous Fantail** *Rhipidura rufifrons* Migratory (terrestrial)
12. **Great Egret** *Ardea alba* Migratory (wetland/marine)
13. **Cattle Egret** *Ardea ibis* Migratory (wetland/marine)
14. **Oriental Plover** *Charadrius veredus* Migratory (wetland)
15. **Oriental Pratincole** *Glareola maldivarum* Migratory (wetland)
16. **Painted Snipe** *Rostratula benghalensis s. lat.* Migratory (wetland)
17. **Fork-tailed Swift** *Apus pacificus* Migratory (marine)

To determine the extent of the potential impact from the proposal on general avifauna assemblages and EPBC 1999 Act (Cth) threatened and migratory bird species that utilise the Sorby Hills area, Animal Plant Mineral Pty Ltd undertook a systematic survey of birds occupying the project area and compared the data with similarly acquired data from the Weaber Plains OIEP project area and Parry Lagoons, which is an area currently designated as a conservation reserve (Parry Lagoons Nature Reserve). Similarities or differences in avifauna assemblages between these three areas could then be extrapolated to determine the general avifauna assemblages in areas not proposed for disturbance.

A secondary objective was to determine whether or not the Knox Creek plains areas of the Sorby Hills project, which are comprised mainly of cracking clay floodplains, provided any avifauna habitat that was significantly better flood plain habitat than that already designated as conservation reserve elsewhere or that designated as 'buffer' in the OEIP. To achieve this secondary objective, ornithologists replicated the comprehensive and systematic census surveys at Weaber Plain and Parry Lagoons Nature Reserve and the data were compared with all other sites (i.e. project total 20 sites).

Opportunistic surveys were also undertaken along the Keep River to determine the species assemblages along these riverine habitats that may be adversely impacted by tail water flowing out of the irrigation area and along these watercourses.



Auth: M Ladyman	Project: SMPL Sorby Hills	arimal plant mineral	**Figure 1: General Location Map**
Date: October 2011	Datum: GDA94 MGA Zone 52	NORTH	