Attachment 2 Significance assessment for Greater Bilby for the Shamrock Station Irrigation Project

Prepared by Phoenix Environmental Sciences Pty Ltd

Species overview

The Greater Bilby or Dalgyte is a rabbit-sized marsupial that originally occupied over 70% of the Australian mainland. It now occurs in less than 20% of its original range, with remaining WA populations predominantly in the Great Sandy and Gibson Deserts. Habitat preferences of the Greater Bilby include hummock grassland in plains and alluvial areas, open tussock grassland on uplands and hills, and mulga woodland/shrubland on ridges and rises (Department of the Environment and Energy 2017). The Greater Bilby is highly mobile and can have large foraging ranges. Home ranges in sandy deserts are usually temporary and may shift in response to changes in food availability (Van Dyck & Strahan 2008). The species can be identified through secondary evidence, such as scats, tracks and its typical burrow systems. The massive decline in Greater Bilby distribution is thought to be due to effects on food availability from changing fire regimes, drought, grazing by rabbits and livestock, and predation by the Red Fox and feral Cat (Bradley *et al.* 2015; Van Dyck & Strahan 2008).

Records

Evidence of Greater Bilby presence within and in the vicinity of the project area was recorded during a Level 1 terrestrial fauna survey conducted for the Project (Phoenix 2017). Greater Bilby foraging diggings were recorded at four locations within 1 km of the project area and one location inside it. All foraging diggings recorded appeared to be aged and weathered. No evidence of Greater Bilby tracks, scats or burrows was recorded during the survey.

A plot-based habitat assessment for the species conducted during the Level 1 terrestrial fauna survey assessed most sampled plots within the project area (9 of 12) as low habitat suitability for the species; three were assessed as high suitability(Phoenix 2017). High suitability habitat was more commonly encountered to the east, north and west of the project area and this is likely to extend beyond the study area.

Significance assessment

The impacts of the proposed action on the Greater Bilby are assessed against the Significant Impact Guidelines (Department of the Environment 2013) below.

1. Will the action lead to a long-term decrease in the size of an important population of a species?

UNLIKELY

The importance of the Bilby population within the La Grange area is not well understood. The Greater Bilby population in Western Australia has been estimated at 5,000 to 10,000 individuals (Cramer *et al.* in press). Based on the 1,765 NatureMap records (DBCA 2017a) of Greater Bilby in Western Australia, the species is widespread across the Pindanland subregion, although records are sporadic, most likely due to inconsistent sampling effort across the subregion.

Dr Richard Southgate (Envisage Environmental Services 2012), regards the northern edge of the Greater Bilby distribution, including the Dampierland bioregion within which the project area occurs, as an important area for the species because it represents the only part of its range where it can persist without intensive management; however, the distribution and importance of the Greater Bilby within the La Grange area has not been comprehensively assessed. There are several desktop records (DBCA 2017b) to the south and west of the project area, including some within 10 km (Figure 3). Records are sparser north and east of the project area, but most likely due to limited

sampling; it is likely to be more widespread across the La Grange area where suitable habitat occurs, including Shamrock Station.

While it is not clear if the Greater Bilby records from the terrestrial fauna survey (Phoenix 2017) are from individuals of an important population, the results of the survey suggest the project area is not supporting a high level of Greater Bilby activity. No burrows and only one foraging record was recorded in the project area. Higher suitability habitat and level of activity was mostly recorded outside the project area, which has been refined specifically to avoid Greater Bilby records and high value habitat plots as far as practicable.

The proposed action will reduce the availability of potential foraging and breeding habitat for Greater Bilby; however, the project layout will avoid areas rated as high value for the species by the terrestrial fauna survey (Phoenix 2017). The project area forms a small portion (~1.4%) of Shamrock Station. Additional habitat elsewhere within Shamrock Station will not be impacted by the proposed action. As the intention of the Project is to concentrate stock grazing within the project area, grazing pressure will be reduced over the remainder of Shamrock Station, which may have a beneficial effect on the Greater Bilby population of the La Grange area; distribution of the species is associated with an absence or low intensity of stock/pastoralism (Bradley *et al.* 2015).

2. Will the action reduce the area of occupancy of an important population?

UNLIKELY

Implementation of the proposed action will require clearing of up to 650 ha of native vegetation. While all of this can be considered Greater Bilby habitat, the project layout will be designed to avoid known Bilby signs and areas assessed as high value for the species.

3. Will the action fragment an existing important population into two or more populations?

UNLIKELY

Suitable habitat for the species, rated more commonly as high value habitat, was recorded adjacent to the project area (to the east, north and west) which would allow for movement between localities outside the project area.

4. Will the action adversely affect habitat critical to the survival of a species?

UNLIKELY

The project area is not considered to contain habitat critical to survival of the Greater Bilby as the majority of habitat plots in the project area were rated as low value and the survey results (Phoenix 2017) are indicative of low level activity within, and in the vicinity of, the project area.

5. Will the action disrupt the breeding cycle of an important population?

UNLIKELY

The proposed action is unlikely to cause any substantial disruption to the breeding cycle of the regional population due to the small scale and nature of the Project and minimal direct impacts on the species from ongoing operations.

The Greater Bilby relies on burrows for breeding and refuge. As no burrows were recorded during the terrestrial fauna survey, either within the project area or its vicinity, and the survey results are indicative of low level foraging activity by the Greater Bilby, it is considered unlikely that the project area represents important breeding habitat for the species.

ACC will ensure no burrows are impacted during vegetation clearing by undertaking pre-clearance surveys prior to excavation.

6. Will the action modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline?

UNLIKELY

Greater Bilby distribution has been associated with an absence or low intensity of stock/pastoralism (Bradley *et al.* 2015). The project area is located on an active pastoral lease which is currently used for cattle grazing with no restriction on cattle movement within the lease. It is evident, from desktop records (DBCA 2017b) and the terrestrial fauna survey conducted for the Project (Phoenix 2017), that Bilbies are coexisting with cattle on the Shamrock Pastoral Lease. The proposed action will consolidate grazing activity within the project area, with stock to be concentrated in the pivot areas and vegetation buffers for a large part of each year. It is expected that this will reduce grazing pressure on Greater Bilby habitat elsewhere on Shamrock Pastoral Lease and other ACC pastoral leases, which may provide a beneficial outcome for the Greater Bilby population in the La Grange region.

7. Will the action result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat?

UNLIKELY

All invasive fauna species that are known to be harmful to the Greater Bilby, through either predation, competition or indirectly through habitat degradation, are known to occur within or in the vicinity of the project area. The proposed action is therefore unlikely to introduce any new invasive fauna species to the project area. However, the increase in resource availability (i.e. water and food) may lead to an increase in the abundance of some feral animal species that are harmful to Bilbies in the project area, for example:

- Increased abundance of rabbits, wallabies or other prey animals due to increased food availability which may lead to degradation of habitat and decrease Bilby access to food resources and burrow sites. It is noted though that rabbits are not present in high abundance in the La Grange area.
- Increased abundance of introduced predators (foxes or cats) due to increased water availability and rabbit abundance. Both species are considered to be a threat to the Greater Bilby (Threatened Species Scientific Committee 2016), although their relative effect is not consistent throughout the Bilby's distribution. For example, foxes are more abundant, and therefore a more significant threat in the southern Bilby populations (the project area is located within the distribution of the northern range of the species); however, foxes expanding into Greater Bilby habitat may increase mortality through predation (Bradley *et al.* 2015).

Feral animal control of rabbits, cats and foxes (or other species as required) will be undertaken periodically, in collaboration with Indigenous rangers, to prevent an increase in feral animal abundance and consequential detrimental impact on Greater Bilby.

The proposed grazing grass to be utilised for the Project, Rhodes grass (*Chloris gayana*) is a non-native fodder species. Previous studies on the invasiveness of Rhodes grass at Kilto Station (approximately 115 km north of Shamrock Station) indicated the species has low invasive properties (Hurter & Naaykens 2012; Rio Tinto 2013). The study indicated that the species only established and persisted beyond cultivation in highly disturbed areas with high soil moisture, and under a 'no active weed management' regime. Isolated occurrences of non-vigorous plants were observed in intact vegetation following wet season conditions, but were absent in the same environments during the late dry season, indicating the species may not persist in undisturbed soil and sustained elevated soil moisture conditions (Rio Tinto 2013). Occurrences were limited to within 300 m of pivot cells or associated irrigated agriculture infrastructure and there was no evidence of individuals successfully

spreading vegetatively to colonise or smother native vegetation. The study concluded that factors such as competition with native species, poor soil fertility, and low/variable soil moisture potentially act as a major constraint on the ability of Rhodes grass to persist and spread in intact native vegetation (Rio Tinto 2013).

The native vegetation being retained within the project area for the proposed action is currently subject to low level of disturbance, with the condition of native vegetation rated as almost entirely excellent condition in the flora and vegetation survey (Phoenix 2017). On the basis of the findings from the Rio Tinto (2013) study, it is reasonable to assume that the risk of significant spread of Rhodes grass into the remaining vegetation and suitable Bilby habitat is low, provided this vegetation/habitat remains undisturbed. Rhodes grass monitoring and control will be implemented for the proposed action as part of the Detailed Operating Strategy.

Possible supplementary crops of forage sorghum (*Sorghum* spp.) and oats (*Avena sativa*) may be planted in some pivots in the cooler months. The Department of Primary Industries and Regional Development regarding potential supplementary crops, as part of the diversification permit application for Shamrock Station.

8. Will the action introduce disease that may cause the species to decline?

UNLIKELY

There are no known diseases that may lead to Greater Bilby decline and disease has not been identified as a significant threat to the Greater Bilby. Implementation of the proposed action is therefore unlikely to introduce disease that may cause the species to decline.

9. Will the action interfere substantially with the recovery of the species?

UNLIKELY

The project area occurs near the northern edge of the Greater Bilby's distribution (Dampierland bioregion, northern edge of Great Sandy and Tanami Deserts) which has been identified as an area where the species can persist without the need for intensive management to prevent significant decline (Envisage Environmental Services 2012). There are therefore no formal recovery actions being implemented in the La Grange area for the Greater Bilby and the proposed action will not substantially interfere with the recovery of the species.

ACC is committed to implementing appropriate management practices and working with any key stakeholders to ensure the proposed action does not adversely impact the Greater Bilby or any recovery efforts in the future. The Western Australian Department of Primary Industries and Regional Development has commissioned a Greater Bilby and conservation significant plant survey in the La Grange area, building on land and water assessments already undertaken in the area by the Department of Agriculture and Food Western Australia and the Department of Water. The surveys aim to provide a baseline on distribution and abundance of Bilbies in the La Grange area. ACC is in communication with DPIRD regarding the surveys.

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