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30 July 2013

An Assessment of Direct & Indirect Impacts on Remnant Vegetation and Fauna Species:

Proposed Food Processing and Packaging Facility on part of Lot 2304, Templar Road, Erskine Park.

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1. INTRODUCTION

A Food Processing and Packaging Facility ("the proposed development") is proposed for construction on Templar Road, Erskine Park. The parcel of land upon which it would be located ("the subject site") is part of Lot 2304 in DP 1172543 (Figure 1).

Figure 1 Location of Subject Site

The Department of Planning recently advised Commercial & Industrial Property Pty Ltd (CIP Pty Ltd) ("the proponent") to address biodiversity issues in the EIS, "*including identification of species on site, and potential direct and indirect impacts on critical habitats, threatened species and populations, ecological communities, vegetation reserves, wetlands, riparian land and groundwater dependent ecosystems.*"

Biosis Research (1999) conducted an environmental study of the entire Erskine Park Employment Area. Kevin Mills & Associates (2003), in reviewing all the available environmental information, developed a conservation and development strategy for the Erskine Park Employment Area. HLA (2006a) conducted a Flora and Fauna Assessment for proposed development of the subject site. A Vegetation Management Plan (HLA 2006b) has been developed to ameliorate impacts of the proposed development on this community. The proposed development is in compliance with the conservation and development strategy.

HLA (2006a) concluded that development would not significantly impact the status of critical habitats, threatened species and populations, and endangered ecological communities that are listed under the schedules of the NSW Threatened Species Conservation Act, 1995 (TSC Act) or Commonwealth *Environment Protection and Biodiversity Act, 1999* (EPBC Act).

The present report addresses the potential direct and indirect impacts of the proposed development on fauna and their habitats within the riparian forest that occurs along, but outside, the eastern and southern boundaries of the subject site.

2. SUBJECT SITE

The subject site is currently vacant land that has been cleared, levelled and benched (Plate 1) consistent with previous approvals for development and subdivision. The site lies within Erskine Park Industrial Estate, which is part of the Western Sydney Employment Zone, and is fully serviced.

The proposed development lot is 43,347m^2 and is immediately north of a riparian forest corridor (Plate 2), which is on the flood plain of Ropes Creek. The floristic structure and composition of this corridor is described in HLA (2006a & b) and summarised as:

"*Tree cover of the Study Area is characterised by woodland and open forest structure that is mostly dominated by Forest Redgum (*E. tereticornis*) and Grey Box (*E. moluccana*), a community that is widely referred to as Cumberland Plain Woodland. These two eucalypt species also occur in association with Broad-leaved Ironbark (*E. fibrosa*), Stringybark (*E. eugenioides*) and Paper Bark (*M. decora*) throughout the Study Area's eastern elevated parts to form a distinct community type that is widely referred to as Shale/Gravel Transition Forest.*

*"Blackthorn (*B. spinosa*) is common throughout both these communities as the principle shrub species. Other shrub species observed throughout the Study Area in localised patches include* Grevillea juniperina *ssp.* juniperina*,* Dodonea viscosa *and* Melaleuca nodosa*. Recent fires throughout the Study Area, in combination with grazing pressures, have eliminated the presence of wattle species that were once present within this area.*

"*Native grasses and herbs dominate the majority of the Study Area's vegetation cover. The most regularly observed native grasses were Wire Grass (*Aristida vagans*), Common Couch (*Cynodon dactylon*) and Kangaroo Grass (*Themeda australis*). The density of the groundcover stratum was greatest throughout the dry open grassland, with decreased density under the influence of the open forest eucalypt canopy.*

*"The vegetation of the Study Area's treed creek lines is dominated by a Forest Redgum (*E. tereticornis*) tree cover above a stratum of grasses and herbs, with the dominants being Couch (*Cynodon dactylon*) and Paspalum (*P. dilatatum*). Instream conditions are described as ephemeral with the occasional semi-permanent pool.* Juncus usitatus *is commonly found throughout this environment.*

"*Exotic species were frequently observed throughout the cleared areas of the Study Area (i.e. dry open grassland community), with some species forming co-dominants in the groundcover stratum, e.g. Paspalum (*P. dilatatum*) in the drainage lines. Other frequently observed exotics include Ribwort (*Plantago lanceolata*), Fireweed (*Senecio madagascariensis*) and Paddy's Lucerne (*Sida rhombifolia*)."*

3. PROPOSED DEVELOPMENT

The proposed development consists of the construction and 24 hour operation of a new purpose-built fully accredited fresh food packing centre where fresh cuts of meat and poultry will be packaged and labelled before being distributed to stores. The facility will receive

Plate 1 Subject Site

Plate 2 Riparian forest south of the subject site.

already prepared processed bulk red meat and poultry in refrigerated, sealed plastic packaging prior to it being re-packaged for distribution.

The development will consist of the following components:

- Large main warehouse/processing facility
- Single storey office and amenities building;
- Service buildings;
- Plant room and electrical switch room;
- Hardstand and car parking; and
- Mezzanine offices and amenities.

The proposed development (Figure 2) includes:

Development Summary	
Site Area	**43,347m^2**
Total Warehouse / Processing Facility	16,392 m^2
Amenities	1,303 m^2
Service Buildings	943 m^2
Mezzanine Offices	1,036 m^2
Mezzanine Production Area	1,343 m^2
Total Building Area	**21,017 m^2**
Efficiency	**43.0%**

Awnings & Hardstand	
Awning (3m)	731m^2
Heavy Duty Pavement	15,275 m^2
Light Duty Pavement	6,348 m^2

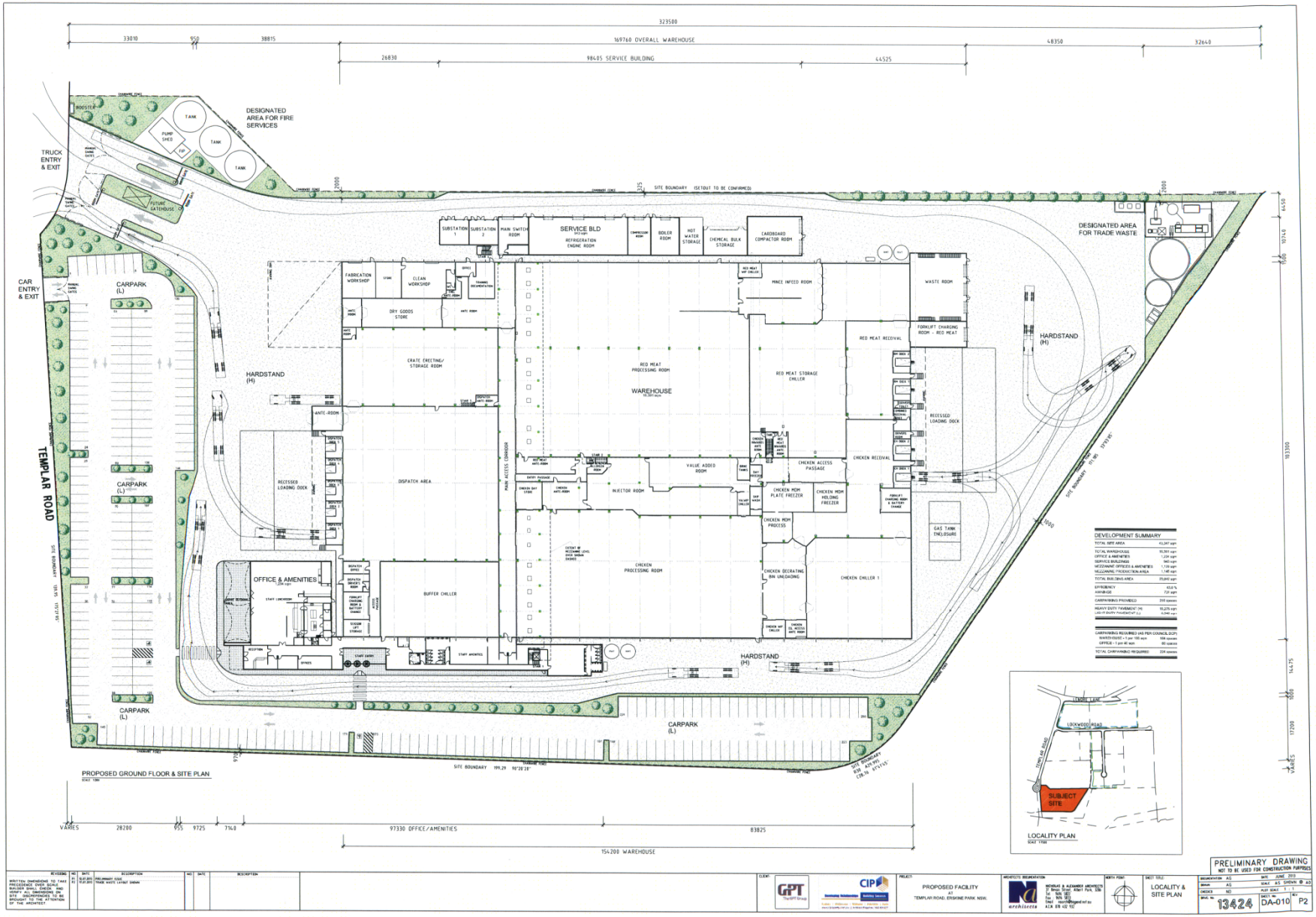
Parking	
Car parking	250 car spaces

4. METHODS OF ASSESSMENT OF POTENTIAL IMPACTS

The following documents were consulted in identifying potential direct and indirect impacts of the proposed development on fauna and their habitats in the riparian forest corridor south of the subject site:

- Presentation material of the Food Processing and Packaging Facility Proposal from the Penrith City Council Meeting, 18 July 2013. Prepared by The GPT Group and CIP Pty Ltd.

Figure 2: Site Plan



- Concept Plan Approval from the Minister of Planning for the construction and use of a warehouse and distribution complex and associated infrastructure (Application No. 06_0216) for Lot 20 DP 110180 and a portion of adjoining Crown Road (dated 1 March 2007).

- Draft Memorandum of Understanding between the Minister for Planning, CSR Ltd, ING Industrial Custodian Pty Ltd, Fitzpatrick Investments Pty Ltd, BMGW2 Pty Ltd, Penrith City Council, Sydney Catchment Authority and Trust Company Ltd re: Biodiversity Conservation at Erskine Park. MOU prepared by Herbert Geer Rundle Lawyers.

- HLA (2006a). Flora and Fauna Impact Assessment: Bulk Earthworks Project Application and Industrial Development Concept Plan application. CSR Lands, Erskine Park. Report prepared by HLA Environmental for CSR Ltd (dated 23 August 2006).

- HLA (2006b). CSR Subdivision, Erskine Park Vegetation Management Plan. Report prepared by HLA Environmental for CSR Ltd (dated January 2006).

- HLA (2006c). Biodiversity Management Plan, Erskine Park Employment Area. Report prepared by HLA Environmental for CSR Ltd (dated 2 May 2006).

- Aerial photographs of the Erskine Park Industrial Estate (prepared by The GPT Group).

The subject site and the vegetation corridor were also inspected between 1200 & 1500 hrs on 27 July 2013 to gain an additional appreciation of the presence and quality of ecological habitats in these areas and the potential impacts that the proposed development would have on them.

5. GENERAL IMPACTS OF DEVELOPMENT ON FAUNA IN URBAN AREAS

A summary of the ecological impacts of urban development on fauna and their habitats that need to be considered in relation to the proposed development is presented below.

5.1 Potential Impacts on Frogs and Their Habitats

5.1.1 Light Pollution

Artificial lighting of natural environments of frogs can result in:

- Reduced calling activity and increased movements of adult male frogs (Baker & Richardson 2006). A reduction in the number of calls by males may affect mate choice by females (Gerhardt & Huber 2002). If the effect is long-term and widespread, then the reproductive success and population dynamics of affected frog species may be significant (Wise 2007).

- A congregation of frogs in areas where artificial light has attracted insects (prey items). This may result in increased frog mortality if these illuminated areas are also frequented by vehicular traffic (Mazerolle *et al*. 2005).

5.1.2 Noise Pollution

Traffic and other urban noise pollution masks the calls of adult male frogs (Ehret & Capranica 1980, Brenowitz *et al*. 1984, Bee & Swanson 2007, Parris *et al*. 2009). The average pitch (frequency) of male calls in frog populations in noisy urban environments tends to be higher or lower than in populations of conspecifics in quieter environments (Lopez *et al*. 1988, Wagner 1989, Howard & Young 1998, Giacoma & Castellano 2001, Owen & Gordon 2005). However, there is no evidence that individual frogs can change the frequency of their calls as a short-term response to noise (Harrison 1987, Parris *et al*. 2009). Possible reasons for observed frequency shifts may be related to:

- males in noisier sites being consistently smaller than those in quieter sites (smaller males generally have higher-pitched calls than larger males of the same species). That is, the smaller males are calling in poorer-quality habitats because they are competitively excluded from better-quality habitats by larger males (Parris *et al*. 2009); or

- males calling more loudly to compete with background traffic noise, despite the increased energetic costs, with a concomitant increased in call frequency (Martin 1971, Lopez *et al*. 1988).

If individual male frogs do not call at a higher pitch in traffic noise, females may have difficulty locating mates, potentially leading to reduced breeding success and population declines over time. In addition, females may expend extra energy and expose themselves to an increased risk of predation while searching for mates (Gerhardt 1991). If males do call at a higher pitch, they may make themselves less attractive to females and less imposing to rival males (Wagner 1989, Giacoma and Castellano 2001).

5.1.3 Degradation of Frog Habitats

Degradation of frog habitat (aquatic habitats and riparian vegetation) downstream of urban development as a result of sediment, pollution and water runoff from urban development and increased weed infestation.

5.2 Potential Impacts on Reptiles

5.2.1 Light Pollution

Light pollution impacts on terrestrial reptile populations have not been well studied. Perry & Fisher (2006) suggest that observed local declines of some nocturnal snake populations in urban areas may be due to increased predation by nocturnal birds in illuminated areas.

5.2.3 Noise Pollution

Reptiles seem relatively unaffected by noise pollution in suburban areas (Minton 1968).

5.3 Potential Impacts on Birds

5.3.1 Light Pollution

Forest-breeding male songbirds near artificially illuminated areas start their dawn chorus significantly earlier in the morning than those in forested areas that are not affected by artificial light. Birds that sing earlier may be getting less sleep and may be at a higher risk of predation. Moreover, females gauge the reproductive fitness of males from the timing, duration and quality of their singing; therefore, females may be attracted to mate with lower-quality males who have been impacted by light pollution (Kempenaers *et al*. 2010).

5.3.2 Noise Pollution

Francis *et al*. (2011) demonstrated that noise pollution can impact on the structure of bird communities. Bird species most likely to abandon noisy areas are those with low-frequency signals, which are usually species with larger bodies. In contrast, smaller species persist in noisy environments because of the high pitch of their calls, but also benefit from the increased reproductive success relative to those nesting in less noisy areas due to reduced predation by larger bird species (Francis *et al*. 2009). However, this has to be balanced with the energetic costs associated with changed male-female communication, pairing success, reproductive success and the increased competition for resources (e.g. nest sites, roost sites and food) in the absence of predation (Gross *et al*. 2010, Halfwerk *et al*. 2011a & b, Habib *et al*. 2007).

5.4 Potential Impacts on Mammals

5.4.1 Light Pollution

Beier (2006) indicates that light pollution impacts mammals in the following ways:

- Increased predation risk. When in an artificially illuminated area, a mammal may hesitate to move out and into the shadows because, in doing so, it is temporarily blinded while the eyes adjust to the darkness. However, while in an artificially illuminated area, the mammal is more visible to predators and so is at a greater risk of predation.

- The foraging activities of nocturnal herbivorous and frugivorous mammals are disrupted because these species need to be more vigilant of predators.

- Disruption of dispersal movements and corridor use because of the disorientating effects of bright light sources on mammal behaviour.

5.4.2 Noise Pollution

Mammals generally habituate quickly to background noise levels in urban areas. However, Dufour (1980) indicates that noise levels at 95 dBA can cause temporary loss of hearing sensitivity, and can permanently damage hearing and when at or above 120 dBA.

6. RELEVANCE OF IMPACTS TO PROPOSED DEVELOPMENT

Ecological impacts on the riparian forest and aquatic environment that may result from the proposed development are discussed below. These impacts already occur widely in the Erskine Park Industrial Estate as a result of past and present land-uses.

6.1 Light Pollution

Light pollution from the proposed development has the potential to impact on fauna using the vegetation corridor that extends south and east of the subject site. However, these impacts are not likely to be significant because the area and intensity of illumination will be minimised through the appropriate use of lighting.

Lighting will be installed and operated in the Facility in accordance with the requirements of AS 1158 (Road Lighting) and AS 4282-1997 (Control of the obtrusive effects of outdoor lighting). The installation of luminaires will minimise the intensity of artificial night light on the subject site. Luminaires will be positioned to illuminate pedestrian paths, roads, warehouse and parking areas on the subject site, but located and orientated to minimise or eliminate upward and backward light spill, and thus aim to avoid light pollution to areas outside the subject site.

6.2 Noise Pollution

There is a potential for noise disturbance to fauna using the vegetation corridor to the south and east of the subject site during the day and at night. Vehicular access to the subject site and heavy plant are likely to be the main sources of noise pollution.

Fauna species that have been recorded in the vegetation corridor also occur elsewhere in the Erskine Park Industrial Estate. These species are urban-generalists that have a wide distribution in the greater Sydney metropolitan area and are likely to have habituated to high noise levels. Therefore, it is likely that fauna will be habituated to industrial noises that are generated on the subject site.

6.3 Sediment & Water Runoff

There is potential for degradation of aquatic habitats and riparian vegetation adjacent to the subject site as a result of sediment and water runoff from the site during the construction and operational phases of the proposed development.

The following measures will be put in place to minimise the risk of these impacts:

- Silt fences and sediment ponds will be appropriately placed around earthwork and construction areas on the subject site to prevent runoff of sediment and nutrient-enriched waters into the riparian forest and associated aquatic habitats. The effectiveness of these traps will be monitored closely, ensuring that treated site run-off meets EPA guidelines.

- There will be no significant difference in pre- and post-development stormwater flows from the subject site. The stormwater will discharge from a pipe on the subject site into

the riparian corridor onto riprap with rocks around it. This will minimize the risk of soil and bank erosion in downstream areas.

6.4 Weed Infestation

Vehicles entering the subject site during construction and operational phases of the development have the potential of carrying weed materials (e.g. seeds and pollen) onto the subject site, which may subsequently be discharged by stormwater or carried by wind into the riparian corridor.

Weed infestation is already widespread within the riparian forest corridor. Implementation of the Vegetation Management Plan proposed by HLA (2006b) will help control weeds that currently and will occur on and adjacent to the subject site.

6.5 Barrier Effects

Standard chain-wire fencing around the subject site will reduce the incidence of fauna entering the site. This will reduce the risk of injury or mortality to fauna from collisions with vehicles and heavy plant on the subject site.

The subject site is currently unsuitable as dispersal habitat for forest- or riparian-obligate fauna specialists. Other species (e.g. large urban-generalist bird species, bats, possums) are extremely mobile and are able to move over or around the subject site. Therefore, fences and walls around the subject site are unlikely to prevent movements to and from the riparian corridor south and east of the subject site.

7. CONCLUSION

Impacts on flora and fauna and their habitats within the vegetation corridor to the south and east of the subject site are likely to be minimal if the mitigation measures described in Section 6 of the present report are implemented. Therefore, the status of threatened species and populations, and endangered ecological communities, will not be significantly impacted by the proposed development.

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