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Fauna study and impact assessment : Kemps Creek
reclamation project, Brandown Pty Ltd



Fauna Study and Impact Assessment

KEMPS CREEK RECLAMATION PROJECT

Brandown Pty Ltd

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Summary

The Brandown Quarry Project Site at Kemps Creek is located in the semi-rural setting on the outskirts of Sydney approximately 37km from the GPO; Fig 1. This report assesses the likely impact the proposed activity may have on the fauna on a local, regional and national context. An assessment of the quality of the remnant bushland on the Project Site was carried out according to Clark and Woodhall (1991). See Appendix 1.

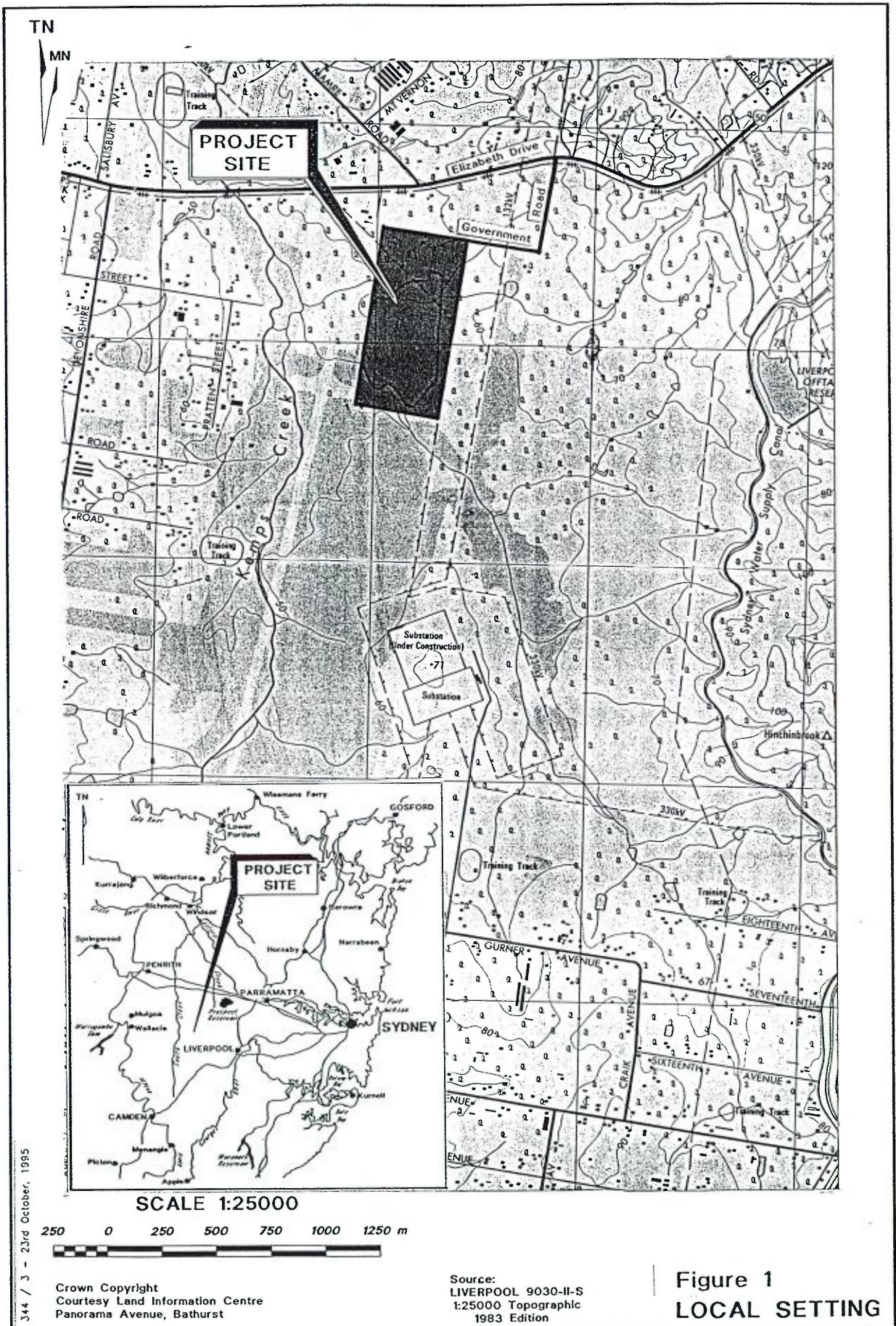
Due to the highly altered nature of the Project Site only a limited fauna survey was conducted. The site was examined for animal signs (eg. faecal material, animal remains, calls, paw or foot prints, scratch marks, diggings) of vertebrate species. A dawn bird census was also conducted on the 29/9/93.

The avian fauna on the vegetation remnants on the southern end of the Project Site was relatively abundant and diverse, given the highly modified nature of the site (Table 1). It is most likely that the site is marginal habitat and the adjoining Proposed Nature Reserve supports the populations. Colonies of Rufous Whistlers, Yellow Robins and Double-barred Finches were found on the Project Site, and a number of species was seen foraging adjacent to noisy and locally dusty earthmoving activities undertaken on the Project Site.

Very little evidence was found of terrestrial native mammals in the proposed quarry extension area, and there were no actual mammal sightings, most evidence was from tracks or scats, indicating a number of feral animals (Table 2). However, up to 10 bat species occur in the area (Hoye in Pastorelli 1990). However, the probability of a significant bat population existing on the Project Site is negligible.

Recording of the herpetofauna was restricted to a sighting of a skink, *Varanus* spp., track in the nearby Proposed Nature Reserve and two frog species, identified by their calls in the creek draining off the artificial wetland.

None of the species observed or expected to occur are listed as either "Threatened" or "Rare and Vulnerable" under the National Parks and Wildlife Act, 1974. The major constraint on further development of this Project Site is its proximity to Kemps Creek Proposed Nature Reserve to the south. The reserve abuts the proposed quarry extension, therefore, any further development requires an appropriate buffer zone to minimise dust pollution, sedimentation and nutrient leaching due to water runoff that may arise from the Project Site. Five recommendations are put forward for consideration to ameliorate this potential impact of the environmentally sensitive adjoining environmentally sensitive land.

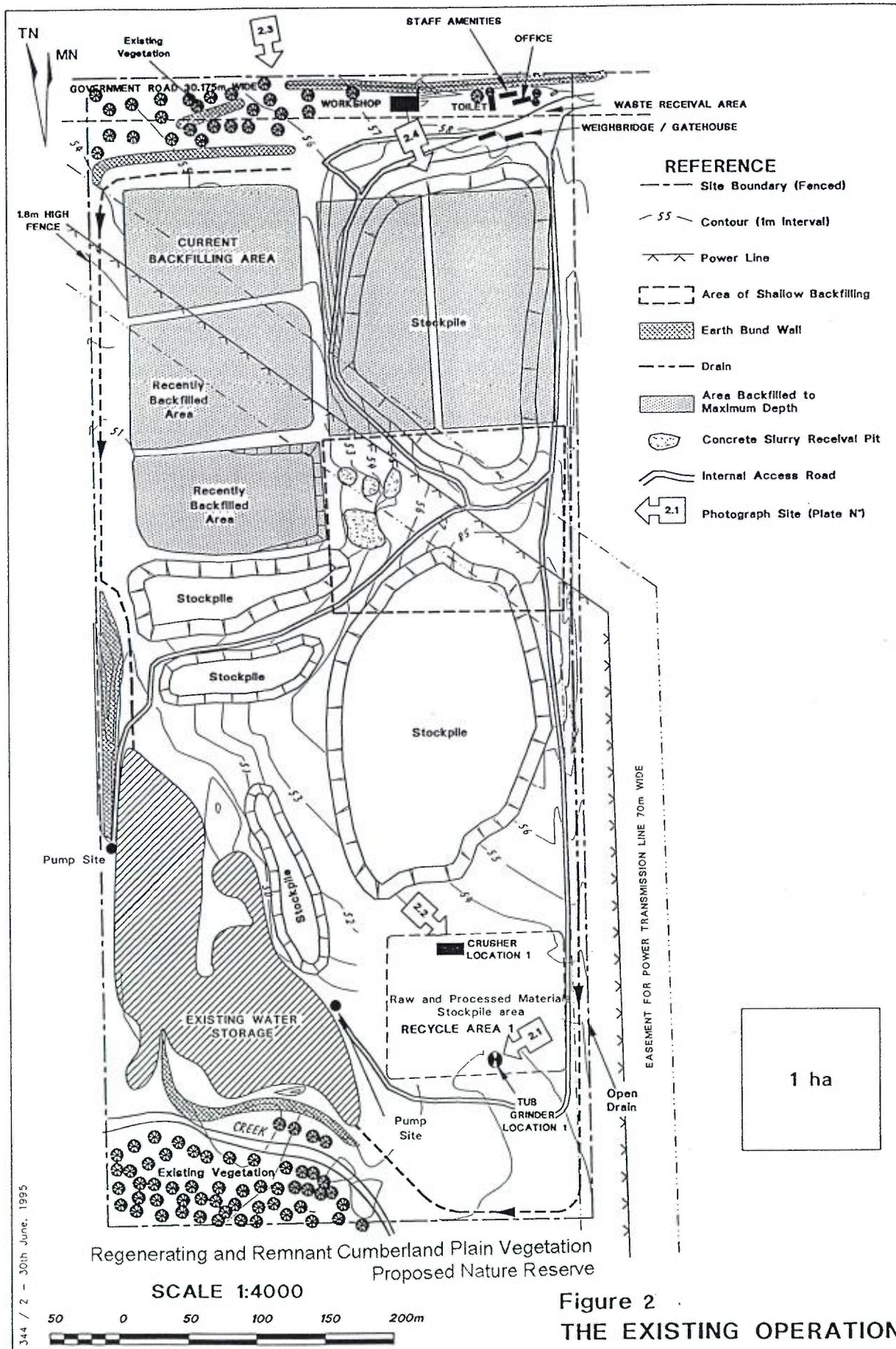


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Source:
 LIVERPOOL 9030-II-S
 1:25000 Topographic
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Figure 1
 LOCAL SETTING



1.0 Background

The Brandown Quarry Project Site at Kemps Creek is located in the semi-rural setting on the outskirts of Sydney approximately 37km from the GPO; Fig 1.

This site has been used continuously since the 1960's for clay extraction for the production of roofing tiles off-site. The proposal by Brandown Pty Ltd is for further shale extraction, requiring further development of the existing quarry of 20 hectares with extraction depths of 20-30 metres. The life of the site is estimated at approximately 25 years.

This report assesses the likely impact the proposed activity may have on the fauna on a local, regional and national context.

2.0 Existing Fauna Habitat

The Project Site is bounded on three sides by semi-rural residential cleared land and on the fourth side by the proposed Kemps Creek Proposed Nature Reserve that has been partly cleared and now contains remnant and regenerating Cumberland Plains vegetation. See Fig. 2. The Project Site contains a small creek line that flows into an artificial wetland that was formed from previous quarrying dating back to the 1960's. This creek flows from the north-east corner of the proposed Kemps Creek Proposed Nature Reserve on to the project site. Most of the site is comparatively flat, with a slight slope to the south west.

The proposed activity includes the area occupied by previously quarried areas and has already been considerably altered. Most of the Project Site has been cleared of vegetation. Salt contamination of the water table is evident by the presence of salt tolerant vegetation species. The southern boundary of the quarry extension, which abuts the Kemps Creek Proposed Nature Reserve, is delineated by a wire fence in poor condition. The Project Site is currently being used as a non-putrescible waste emplacement.

This proposed quarry extension and surrounding vegetation is typical Cumberland Plain vegetation, dominated by Cabbage gum *Eucalyptus amplifolia*, and Grey gum *E. moluccana*, with an understorey of predominantly *Allocasuarina littoralis* and *Casuarina glauca*. Salt accumulation of the water table is evidenced by salt tolerant species *Eucalyptus moluccana* and *Casuarina glauca*. The adjoining proposed Kemps Creek Proposed Nature Reserve is significant as the last relatively substantial (approximately 300 hectares) area of vegetation

representative of River Flat forest and Grey Box woodland in the Penrith environs (Benson 1992). The reserve is planned to become part of a green corridor linking forest remnants (Dept of Planning, I. Perkins, pers comm.).

3.0 Site Fauna Survey

Due to the highly altered nature of the Project Site only a limited fauna survey was conducted.

The site was examined for animal signs (eg. faecal material, animal remains, calls, paw or foot prints, scratch marks, diggings) of vertebrate species. A dawn bird census was also conducted on the 29/9/93 to maximise bird counts.

4.0 Fauna of Kemps Creek

4.1 Avifauna

There are at least 477 native bird species known to occur in the Sydney district (Hoskin 1991), due to the wide range of habitats available. These habitats may be broadly divided into two major geological formations, Hawkesbury Sandstone and Wianamatta Shale. Sandstone occurs to the north-east and south of Cumberland County, while the shales occur generally in the western half of Penrith at the base of the Blue Mountains. The shale formation being the material quarried at the Project site. Although this region supports a large variety of birds, a number of species that used to be characteristic of the shale country are now absent due to disturbance of habitat from development and clearing (Hoskin 1991).

The avian fauna on the vegetation remnants on the southern end of the Project Site was relatively abundant and diverse, given the highly modified nature of the site. It is most likely that the site is marginal habitat and the adjoining Proposed Nature Reserve supports the populations. Colonies of Rufous Whistlers, Yellow Robins and Double-barred Finches were found on the Project Site, and a number of species was seen foraging adjacent to noisy and locally dusty earthmoving activities undertaken on the Project Site.

4.2 Terrestrial and Arboreal Mammals

Very little evidence was found of terrestrial native mammals in the proposed quarry extension area, and there were no actual mammal sightings, most evidence was from tracks or scats, indicating a number of feral animals (Table 2). This result is not unexpected as this is a highly modified site close to residential areas. As well as predation by feral animals (dogs,

cat and foxes), the scarcity of native mammals may also be due to the site appearing to have been logged in previous years, lacking large trees with hollows and with a poor litter layer for shelter.

4.3 Chiropteran

Up to 10 bat species occur in the area (Hoye in Pastorelli 1990). However, the probability of a significant bat population existing on the Project Site is negligible. This is because there are no caves or large trees with roosting hollows to support a residential bat population. However, when the trees in the adjoining Proposed Nature Reserve and remnant eucalypts blossom from time to time they may attract fruit bats.

4.4 Herpetofauna

Recording of the herpetofauna was restricted to a sighting of a skink, *Varanus* spp., track in the nearby Proposed Nature Reserve and two frog species, identified by their calls in the creek draining off the artificial wetland. The small number may be due to the modified nature of the proposed Project Site, with lack of well-developed understorey, poor litter cover in areas and soil disturbance by dozer tracks.

5.0 Fauna Impact Assessment

None of the species observed or expected to occur are listed as either "Threatened" or "Rare and Vulnerable" under the National Parks and Wildlife Act, 1974.

The Green and Golden Bell Frog (*Litoria aurea*), a "Threatened" species under Schedule 12 of NPW Act, has been recorded before 1990 in the Penrith Lakes, Mt. Druitt areas to the west of the site. To the east and south this endangered frog has been known to occur in Guildford, Milperra, East Hills, Gorge's River and Holsworthy. More recently, it has been recorded again in Mt Druitt, Milperra, East Hills and Holsworthy as well as Hammondville and North Ryde. This species is known to occur in highly disturbed sites in the Greater Sydney area although it has not been recorded in the Kemps Creek area.

On a local scale the proposed activity is unlikely to further affect the fauna on the Project Site more than it already has. However, the proposed activity may have a noticeable impact on the adjoining Proposed Nature Reserve if appropriate safeguards are not adopted (See 7.0 Recommendations).

On a regional scale, in its current condition, the Project Site has no nature conservation value. However, with appropriate

rehabilitation the long term value of the Project Site as a wildlife habitat can be greatly improved from its current highly modified and poor condition. Its value to a regional wildlife habitat system should be considered in conjunction with the adjoining Kemps Creek Proposed Nature Reserve.

This site has no fauna significance on a national scale.

An assessment of the quality of the remnant bushland on the Project Site was carried out according to Clark and Woodhall (1991). See Appendix 1. The summary of factors indicated that the Project Site has only one compelling characteristic, ie. that of the creek line on its south-western corner. Although there are some positive factors, including its proximity to a dedicated Proposed Nature Reserve, the site, in its current condition has overwhelming negative factors associated with it.

6.0 Conclusions

The major constraint on further development of this Project Site is its proximity to Kemps Creek Proposed Nature Reserve to the south. The reserve abuts the proposed quarry extension, therefore, any further development requires an appropriate buffer zone to minimise dust pollution, sedimentation and nutrient leaching due to water runoff that may arise from the Project Site.

However, the proposed extension of the existing quarry is unlikely to affect any fauna significantly because the site does not contain rare habitats and because of the modified nature of the Project Site, which has undergone erosion, soil disturbance, loss of understorey, and removal of large trees with hollows. Because the site lies next to a Proposed Nature Reserve, and has a creek flowing from the reserve, a number of recommendations that would minimise the impact of both the existing quarry and proposed quarry extension are listed below.

7.0 Recommendations

1. That a buffer zone of a least 20m be kept between the site and the proposed nature reserve. See Fig. 3.
2. A revegetated bund wall of a height of, say 10m, be constructed 20m from the boundary of the site to the Proposed Nature Reserve, to contain dust, sedimentation and water run-off from the quarry. See Fig. 1. Alternatively, a channel be constructed to prevent runoff from the Project Site onto the Proposed Nature Reserve. The vegetation buffer should also be enhanced by planting of appropriate native species.

3. A rabbit proof fence be constructed between the boundary of the reserve and the site, being of the same standard as that on the west side of the reserve around the electrical sub-station.
4. The creek line flowing to the reserve be maintained, and appropriate sediment traps within the proposed site be constructed.
5. Rehabilitation of the site be conducted in consultation with the National Parks and Wildlife Service to mitigate any nutrient run-offs and weed infestation on to Kemps Creek Proposed Nature Reserve.

References

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Acknowledgments

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TABLE 1 - AVIFAUNA PRESENT ON THE KEMPS CREEK SITE

SCIENTIFIC NAME	COMMON NAME-
<i>Porphyrio porphyrio</i>	Purple Swamphen
<i>Pachycephala rufiventris</i>	Rufous Whistler
<i>Strepera versicolor</i>	Pied Currawong
<i>Oriolus sagittatus</i>	Olive-backed Oriole
<i>Eopsaltria australis</i>	Yellow Robin
<i>Haliastur sphenurus</i>	Whistling Kite
<i>Manorina melanocephala</i>	Noisy Miner
<i>Grallina cyanoleuca</i>	Magpie Lark
<i>Streptopelia chinensis</i>	Turtle Dove
<i>Ardea novaehollandiae</i>	White-faced Heron
<i>Acridotheres tristis</i>	Indian Myna
<i>Cacatua galerita</i>	Sulphur-crested Cockatoo
<i>Gymnorhina tibicen</i>	Magpie
<i>Platycercus eximius</i>	Eastern Rosella
<i>Platycercus elegans</i>	Crimson Rosella
<i>Rhipidura fuliginosa</i>	Grey Fantail
<i>Psophodes olivaceus</i>	Eastern Whipbird
<i>Lalage suerii</i>	White-winged Triller
<i>Zosterops lateralis</i>	Silvereye
<i>Phalacrocorax varius</i>	Pied Cormorant
<i>Poephila bichenovii</i>	Double barred Finch
<i>Acanthiza reguloides</i>	Buff-rumped Thornbill
<i>Dacelo novaeguineae</i>	Laughing Kookaburra
<i>Petroica phoenicea</i>	Flame Robin
? <i>Malurus cyaneus</i>	Superb Fairy-wren

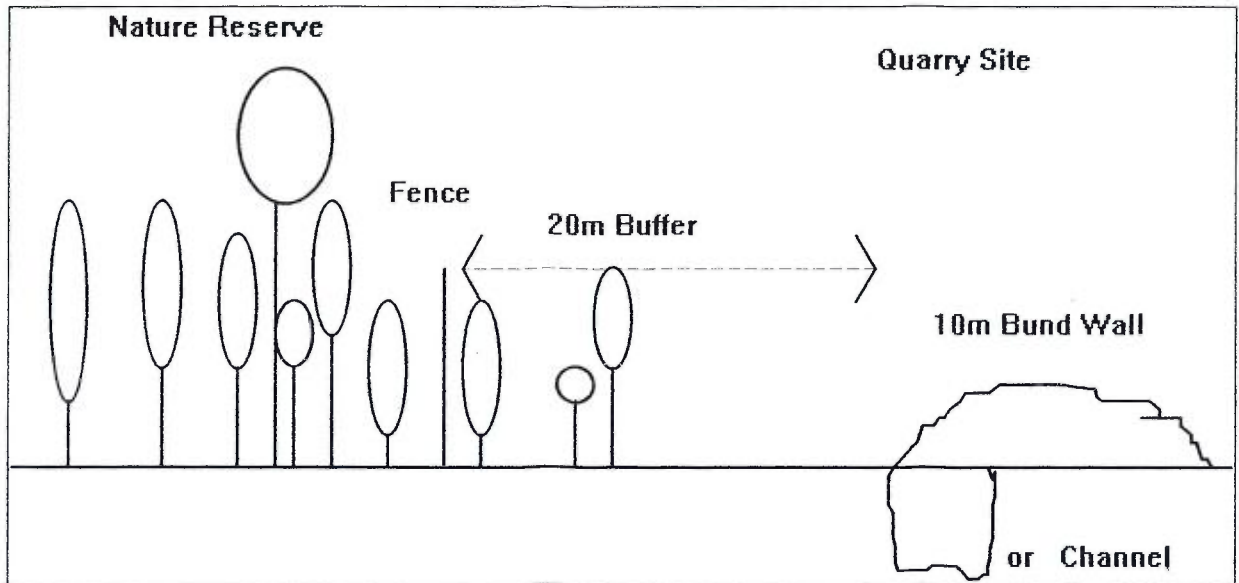
TABLE 2 - MAMMAL FAUNA PRESENT AT THE KEMPS CREEK SITE

SCIENTIFIC NAME	COMMON NAME
<i>Trichosurus vulpecula</i>	Brush-tailed possum
<i>Oryctolagus cuniculus</i>	Rabbit (Introduced)
<i>Canis familiaris</i>	Dog (Introduced)
<i>Vulpes vulpes</i>	European Fox (Introduced)
<i>Felis catus</i>	Cat (Introduced)

TABLE 3- HERPETOFAUNA RECORDED AT THE KEMPS CREEK SITE

SCIENTIFIC NAME	COMMON NAME
<i>Lampropholis delicata</i>	Grass Skink
<i>Varanus spp.</i>	Monitor Lizards
<i>Crinia signifera</i>	Common Toadlet
<i>Limnodynastes peronii</i>	Brown-striped Frog

Fig.3 LOCATION OF BUFFER STRIP AND BUND WALL OR CHANNEL



Checklist of Bushland Remnant Site Quality Factors

Site Quality Factors	Y / N / ?	Factor Rating
Land and Soil		
Landform poorly conserved elsewhere	N	+
High soil fertility	N	+
Area of remnant bushland 0 - 5 ha	Y	-
Area of remnant bushland 5 - 100 ha	N	+
Area of remnant bushland 100+ ha	N	++
Probable recharge area (salinity)	Y	+
Area is compact shape	Y	+
Substantial soil erosion	Y	-
Salinity present and extensive	N Reason	--
Includes drainage line (intermittent or permanent)	Y South end	++
Management		
Keen owner willing to conserve remnant	N	+
Not needed for grazing	N	+
Valued as a windbreak	N	+
Used for compatible community uses	N Tip	+
Remnant well fenced	Y in south end	+
Owner willing to fence remnant	Y ?	+
Difficult to fence	N	-
Grazed and needed for grazing	N	-
Likely to be mined, cleared or developed	Y	--
Incompatible community use (trail bikes, shooters)	Y ex rehabilitation stage	-
Biological		
Relatively undisturbed ecology	N	++
Good example of vegetation type	N	+
Rare plant species present (*)	N	++

Checklist of Bushland Remnant Site Quality Factors - Page 2

Site Quality Factors	Y / N / ?	Factor Rating
Biological Cont		
Rare plant association present	N	++
Range of tree ages, including mature hollows	N	++
Most trees one age	Rejuvenating	-
Some standing dead trees (mature)	N N	+
Developed understorey present	N	+
Suppressed understorey	Y	-
Rare fauna present (*)	N	++
Rare habitat	N	++
Most trees healthy	Y	+
Good litter and log cover	N	+
Exotics dominant (trees, grasses etc)	N	-
Noxious weeds dominant	N	-
Most trees of one age, unhealthy, many moribund	N	--
Feral animal (especially rabbit) damage	N	-
Context		
Linked to nearby remnants or could be linked	Y	+
Close to pollution source	Y	-

* Official Rare and Endangered Species Lists are available from the NPWS

Summary

Tally the number of answers in each category and fill in the boxes. Use these results to choose a management strategy - refer back to page 2.

Factor Rating	YES	NO	?
++	1	7	
+	4/5	11	
-	5	5	
--	1	2	
Totals	12	25	0

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