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FLORA AND FAUNA ASSESSMENT REPORT

312 Londonderry Road
Londonderry

PREPARED FOR: Tony Wilson

OUR REFERENCE: 253415

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1. Introduction

1.1 Background

This report has been prepared as an addendum to a previous flora and fauna report undertaken by ENVIROTECH (REP -154213-E); following discussions with personnel from Penrith City Council about the layout of game zones and the effects on vegetation communities situated within the footprint of the proposal.

The proponent has changed the layout to take into consideration these discussions, making sure that the proposal footprint has a minimal effect on vegetation communities found on site (see Figure 2).

The site is situated at the rear of 312 Londonderry Road, Londonderry (Richmond Race Club).

1.2 The Proposal

The development proposed is for a paint ball enterprise, with the establishment of administration buildings (basecamp, utilities) and gamezones (6) in areas which have for the majority been cleared previously. The carpark and storage facility will be set up in areas that are being utilised in some capacity at the moment.

2. Survey Methodology

2.1 Flora

The site was surveyed for the new footprint and Game zones 3 and 4 as the vegetation in these zones will be retained for use in the enterprise. The flora survey was undertaken on Tuesday 8th of December 2015 for 2 hours, it was a warm summers day.

The methodology employed was designed (Table 1) in accordance with the *Working Draft Threatened Biodiversity Assessment Guidelines for Developments and activities (2004)*.

Table 1. Survey techniques employed at the site

Survey Type	Description	Is this in accordance with Guidelines?
Random Meander	The area was traversed and the flora species observed were recorded	Yes

No threatened flora species were recorded during this survey: the previous report (REP -154213-E) detected *Dillwynia tenuifolia* on the Western side of the lake. This area is not included or near the new layout.

2.2 Habitat Assessment

The degree to which the vegetation on the site resembled natural, undisturbed vegetation was used to determine the habitat potential of the site. This included the following criteria:

- The composition of the species (diversity, degree of weed invasion); and
- Structure of the vegetation (how many original layers of vegetation existed).

Criteria used to evaluate the habitat values of the area in general terms, were *good, moderate, poor* and *cleared/disturbed*. These are detailed in table 2.

Table 2: Criteria used to assess habitat quality for threatened flora

Score	Criteria
Good	There is a high diversity of species, no weeds are extant or those weeds that are present only occur on the edges of the study site, the vegetation represents many layers (i.e. ground, shrub, canopy layers) and these are readily identifiable
Moderate	There are a high number of native species, some weed invasion but these only occur in small patches, one or more of the vegetation layers are disturbed but these are relatively intact:
Poor	There is a low number of native species, many of the plants that are on the site consist of exotic species that occur in dense patches, more than one of the vegetation layers has been disturbed or removed:
Cleared and disturbed	This represents a significantly modified landscape that has less than three native species, invasive species are mostly dominant, there is little representation of vegetation layers, the soil profile is disturbed and there is the likelihood that the area will not regenerate to its natural condition and that revegetation techniques would need to be implemented in order to achieve this.

2.3 Detailed Vegetation Description

The site at 312 Londonderry Road is 29.82 hectares in area. The subject area is on the western side of Londonderry Road, at the western end of the Richmond Race club. The study area is covered with native vegetation (approximately 50%), and is degraded in areas due to past disturbances such as clearing; the vegetation map for the site is presented in Figure 1 (Six Maps Vegetation Viewer). This resource has indicated that the vegetation communities:-

1. Cooks River Castlereagh Ironbark Forest (EEC)
2. Castlereagh Scribbly Gum Woodland (EEC)
3. Shale Gravel Transition Forest (EEC)
4. Shale Plains Woodland (EEC)

are present on the site (Figure 1).

The vegetation communities 1, 3 and 4 above are not within the footprint of the proposal (see figure 1 and 2) and will not be affected by any work undertaken.

2. The vegetation community mapped as Castlereagh Scribbly Gum Woodland is within the southern boundary of the proposal footprint (Game Zones 3 and 4 see figure 1 and 2). The previous report classified this vegetation community as River Flat Eucalypt Forest (RFEF), and this report concludes the same.

The area within the proposal footprint with vegetation (Game Zones 3 and 4) is scattered and would be classified as sparse; the main tree in this area is *Eucalyptus tereticornis* up to 20 meters high, with *Eucalyptus fibrosa*, the mid storey contains *Melaleuca nodosa* and *Acacia falcata*. *Angophora floribunda* and *Melaleuca decora* were identified closer to the creek line and will be behind the proposed fence. The grass covering is thick for the most part excepting where building waste has been dumped.

The majority of the footprint would be classified as cleared and disturbed to poor, the exception being in the footprint area for game zones 3 and 4 which contains the RFEF community and would be classified as poor to moderate (Table 2).

Figure 1. Vegetation Communities mapped for the site (six maps vegetation viewer)

Cooks River Castlereagh Ironbark Forest

Castlereagh Scribbly Gum Woodland

Shale Gravel Transition Forest

Shale Plains Woodland

2.3 Fauna

The fauna survey was undertaken on Tuesday 8th December for 2 hours, it was a warm Summers day.

Methodology employed was in accordance with the *Working Draft Threatened Biodiversity Assessment Guidelines for Developments and activities (2004)* and consisted of the following survey methods (Table 3):

Table 3: Survey techniques employed to target threatened fauna

Survey Type	Description	Does this match guidelines?
Frog	The site was surveyed for potential habitat and any calls emitted from species present.	Yes, however the survey was limited in effort and time.
Reptile Search / Cumberland Plain land Snail Search	1 targeted habitat search was undertaken, across the entire site. Techniques used to locate species included peeling back loose bark from trees, upturning logs and disturbing leaf litter.	Yes, however the survey was limited in effort and time.
Bird point Count Survey	2 point count surveys were undertaken onsite, for a period of 20 minutes each, using both visual and aural detection.	Yes, however the survey was limited in effort and time.
Opportunistic (Diurnal)	The entire site was traversed with emphasis on searches for mammal scats, tracks, burrows, diggings and scratching's.	Yes

Note: Surveying over different seasons and for longer periods would more than likely find more species

2.3.1 Habitat Assessment

A number of habitat values were recorded during the site inspection (Table 4).

The potential for the site to provide habitat for threatened fauna species was based upon habitat values provided in Table 4, and the specific habitat requirements of threatened species. Criteria used to evaluate the overall quality of the habitat, were *good, moderate, and poor*. These criteria are detailed in Table 5.

Table 4: Description of fauna habitat values

Habitat Value	Description
Hollow Bearing Trees	No hollows were observed within the new footprint
Stags	No stags were observed within the new footprint
Connectivity	There was connectivity to the south and west.
Water	There was a creek running north to south at the western end of the footprint.
Rocky Outcrops	There were no rocky outcrops on the site.

Leaf Litter	The site had a covering of grass.

Table 5: Criteria used to assess habitat quality for the site

Score	Criteria
Good	The presence of the ground flora consists of a diverse range of native species, the assemblages of species of the vegetation, leaf litter, significant number of refuge, feeding and breeding sites and the presence of a diverse range of native fauna species
Moderate	The ground flora contains a relatively high number of native species, the assemblages of species is relatively undisturbed, leaf litter, the presence of some refuge, feeding and breeding sites and diverse presence of native fauna
Poor	There was a low diversity of ground flora and very little presence of native flora, the assemblages of species of vegetation is low, poor presence of leaf litter, little or no refuge, feeding and breeding sites and a low diversity of fauna species.

2.3.2 Detailed Fauna habitat description

While the new footprint contains a large area of introduced vegetation, the southern portion where Game Zones 3 and 4 are to be placed, have a low to moderate covering of vegetation in the form of River Flat Eucalypt Forest (EEC). This area has a range of disturbances, such as clearing and rubbish dumping within these game zones and the new footprint.

The fauna habitat at the site ranges from a canopy (up to 20m) of Eucalypts, a mid storey of Melaleucas, down to a groundcover of introduced and native grasses. The study area generally contains the following fauna habitats:

- Foraging resources for birds from a range of canopy and sub-canopy trees and shrubs;
- Ground shelter for reptiles and amphibians (Creek and rubble)

The groundcover would provide shelter and foraging for terrestrial fauna, and the low level of hollows on site, would decrease the availability of resources for hollow dependent fauna.

Overall the site was assessed to have a poor quality habitat over the majority of the new footprint, and a moderate habitat quality within the footprint of Game Zones 3 and 4 (see Tables 4 and 5 above).

3. Results

3.1 Vegetation Communities

The Endangered Ecological Community River flat Eucalypt Forest was identified as being found in the area for Game Zones 3 and 4 (see Figure 1 and 2), the previous report (REP -154213-E) also identified this vegetation community at the site.

3.2. Flora

The previous flora survey undertaken for the site identified 76 species, this survey identified an extra 4 species (*Angophora floribunda, Asparagus asparagoides, Dianella caruela and Gonocarpus teucroides*). This includes 51 native (64%) and 29 introduced (36%) for 80 species in total. The threatened species *Dillwynia tenuifolia* was identified in the previous survey; it was identified on the western side of the lake, well away from the new footprint. No threatened flora species were identified during this survey.

3.3. Fauna

The previous fauna survey identified 40 species for the site, including 30 birds, 3 amphibians, 2 reptiles and 4 mammals. This survey identified an extra 2 birds (Wood Duck *Chenonetta jubata* and the Corella *Cacatua sanguinea*), 1 amphibian (Striped Marsh Frog *Limnodastes peronii*) and 1 reptile (Common Garden Skink *Lampropholis guichenoti*). The total fauna species recorded for the study area is 44 species, of these 3 were introduced the Indian Mynah, Red Fox and European Rabbit. No threatened fauna species were recorded during the surveys undertaken at the site.

4. Impacts of the Proposed Development

4.1. Potential Impacts on Endangered Ecological Communities

The proposal footprint has been changed to have a much smaller impact on the vegetation communities at the site. The Endangered Ecological Community River Flat Eucalypt Forest (RFEF) was identified as being on site within the footprint of Game Zones 3 and 4. The previous report concluded that the proposal would not have a significant effect on the EEC's found on site; the Council Officers on inspecting the site and during consultation with the proponent have asked for a new footprint (Compare Figure 2 top and bottom), the resultant footprint will minimise the impact on Endangered Ecological Communities compared to the previous footprint.

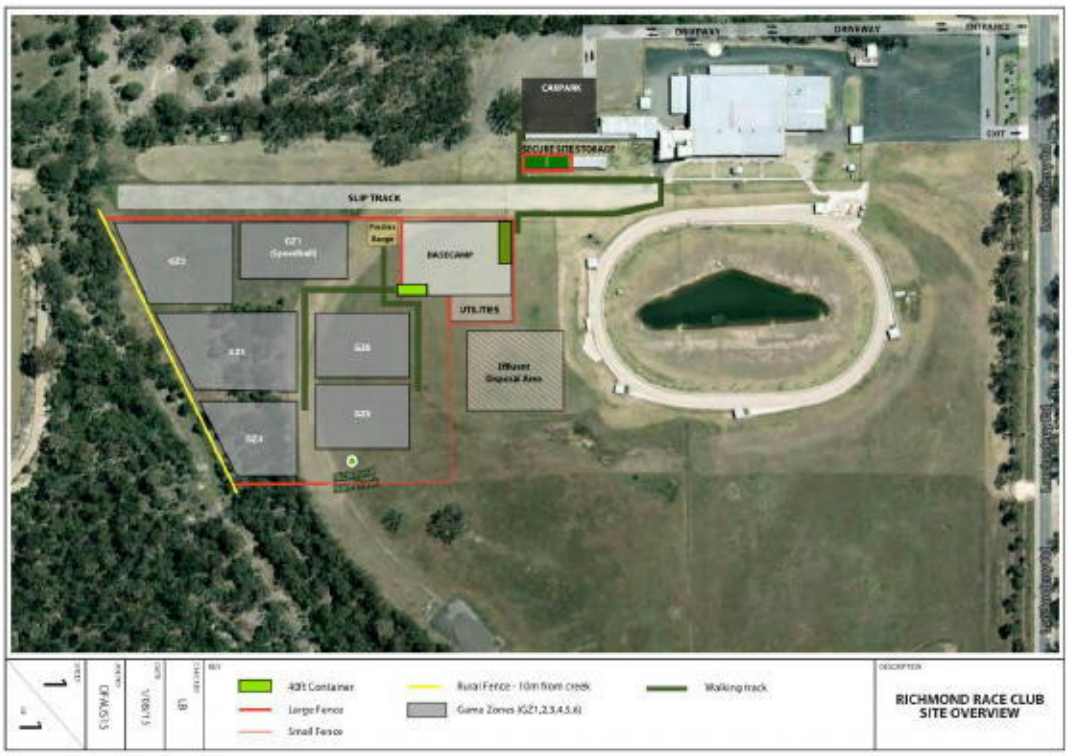

Figure 2 . Top the new proposal footprint, bottom the original proposal footprint.

4.2. Potential Impacts on Threatened Flora Species

The previous report (REP -154213-E) identified a total of 13 threatened flora species which were recorded within a 10 km radius of the site.

- 13 species listed on the TSC Act
- 11 species listed on the EPBC Act

The previous report determined that the proposal would not have a significant impact upon threatened flora species with suitable habitat represented on site; and with the change in footprint proposal to have a much less impact upon flora species and no threatened flora species were identified within this new footprint, it is determined that the proposal will not impact upon threatened flora species.

4.3 Potential Impacts on Threatened Fauna Species

The previous report (REP -154213-E) identified a total of 38 threatened species recorded within a 10 km radius of the site.

- 37 species listed under the TSC Act
- 16 species listed under the EPBC Act

The previous report determined that the development will not have a significant impact upon any of the threatened species that might have habitat on site. No threatened species were found on site within the study area and the proposal footprint. It has been determined that the proposal will not impact upon the threatened fauna species.

5. EPBC ACT Considerations

An assessment of the impact of the proposed development upon threatened species, populations, ecological communities, World Heritage values, and migratory species listed under the *Environment Protection and Biodiversity Conservation Act 1999* are listed below. These species and considerations were undertaken in the previous report (REP -154213-E) before the new proposal footprint, it was determined that there would not be any local extinction of any species or community by the previous proposal. The following is for the same species but new footprint.

Impacts on threatened species and ecological communities

An action has, will have, or is likely to have a significant impact on a threatened species if it does, will, or is likely to:

- Lead to a long-term decrease in the size of a population
- Reduce the area of occupancy of the species
- Fragment an existing population into two or more populations
- Adversely affect habitat critical to the survival of a species

- Disrupt the breeding cycle of a population
- Modify, destroy, remove, isolate, or decrease the availability or quality of habitat to the extent that the species is likely to decline
- Result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species habitat: or
- Interfere with the recovery of the species

Critically endangered and endangered species

No critically endangered species or endangered species were observed/detected on the subject site.

It is considered that the proposed development will not disrupt the lifecycle of any species such that any potentially viable local population would be placed at increased risk of extinction. The potential impacts of the proposed development is not likely to lead to significant exacerbation of those points listed above.

Vulnerable Species

No vulnerable species were recorded at the study site.

It is considered that the proposed development will not disrupt the lifecycle of any vulnerable species such that any potentially viable local population would be placed at increased risk of extinction. The potential impacts of the proposed development is not likely to lead to significant exacerbation of those points listed above.

Critically endangered and endangered ecological communities

An important population is one that is necessary for a species long-term survival and recovery. This may include populations that are:

- Key source populations either for breeding or dispersal
- Populations that are necessary for maintaining genetic diversity: and/or
- Populations that are near the limit of the species range.

No critically endangered or endangered ecological community were observed /detected on the proposal footprint.

It is considered that the proposed development will not disrupt the lifecycle of any critically endangered or endangered ecological communities such that any potentially viable local population would be placed at increased risk of extinction. The potential impacts of the proposed development is not likely to lead to significant exacerbation of those points listed above.

Impacts on migratory species

An action has, will have, or is likely to have a significant impact on a migratory species if it does, will, or is likely to:

- Substantially modify (including by fragmenting, altering fire regimes, altering nutrient cycles or altering hydrological cycles), destroy or isolate an area of important habitat of the migratory species:
- Result in invasive species that are harmful to the migratory species, and prevent the species becoming established in an area of important habitat:
- Seriously disrupt the lifecycle (breeding, feeding, migration or nesting behaviour) of an ecologically significant proportion of the population of the species.

An area of important habitat is:

- Habitat utilised by a migratory species occasionally or periodically within a region that supports an ecologically significant portion of the population of the species
- Habitat utilised by a migratory species which is at the limit of the species range: or
- Habitat within an area where the species is declining.

None of the 14 migratory species recorded within a 10km radius of the site (REP - 154213-E) were observed/detected on site, and they were deemed as having a low potential for occurrence on the site. The proposed development is therefore not likely to have a significant impact on migratory species and is not likely to result in any points listed above under the migratory species provisions of the EPBC Act.

EPBC Act Assessment

- The proposed action will not significantly impact on any of the 11 flora and 16 fauna species listed under the EPBC Act and recorded within a 10km radius of the site (Tables 13 and 15).
- The proposed action will not significantly impact on any critically endangered and endangered ecological communities as none were detected on the subject site.
- The proposed action will not significantly impact on any of the 14 migratory species listed under the EPBC Act and recorded within a 10km radius of the site (Table 16).

Referral Recommendation

The proposed development will **not** require referral to the Commonwealth Minister for the Environment for consideration under the EPBC Act.

Conclusion

This report assesses whether any threatened flora and fauna species, endangered populations and endangered ecological communities, are likely to be impacted upon by the proposed paintball development. It addresses the *Threatened Species Conservation Act* (1995) and the *Environmental Protection and Biodiversity Conservation Act* (1999).

The endangered ecological community River Flat Eucalypt Forest while mapped as being on site, will not be affected by the proposal as no vegetation that is a part of this community will be removed.

No other threatened species, endangered populations or endangered ecological communities listed on the schedules of the *NSW Threatened Species Conservation Act 1995*, or the *Commonwealth Environment Protection and Biodiversity Conservation Act 1999* were recorded in the study area.

Following the application of the seven factors from Section 5A of the *NSW Environmental Planning and Assessment Act 1979*, as required by the *NSW Threatened Species Conservation Act 1995*, in accordance with relevant assessment guidelines, it is concluded that the proposal is unlikely to have a significant effect on threatened species, endangered populations, ecological communities, or their habitats.

A Species Impact Statement is not required for the proposal.

Following consideration of the administrative guidelines for determining significance under the *Commonwealth Environment Protection & Biodiversity Conservation Act 1999*, it is concluded that the proposal is unlikely to have a significant impact on matters of National Environmental Significance or Commonwealth land, and a referral to the Commonwealth Environment Minister is not necessary.

A number of impact mitigation and amelioration strategies have been recommended for the proposal. These strategies mitigate the effects of the proposal on threatened species, endangered populations, ecological communities, or their habitats and minimise the impacts of the proposal on the flora and fauna values of the study area in general.

Recommendations

The following recommendations are suggested in order to mitigate and ameliorate the impacts of the proposal on threatened flora and fauna species and endangered communities:

Vegetation Monitoring:

- The monitoring of the vegetation within Game Zones 3 and 4, be undertaken to ascertain if any impact is occurring due to paintball activities, this could be achieved by taking monthly photos at the same site for comparison.
- Auditing of the vegetation be undertaken by an ecologist every 6 months and a report prepared outlining impacts.

Vegetation Removal:

- Clearing for the proposal should be undertaken such that areas of native vegetation to be retained are not impacted upon during construction works.
- Invasive exotic perennial grass species listed in the Final Determination of the NSW Scientific Committee for this key threatening process (Appendix B) should not be sown within 10m of vegetation to be retained intact. Sterile cover crops should be sown if necessary to stabilise exposed surfaces, and native grasses or non-invasive exotic grasses should be sown to provide the final vegetative cover in these areas if required.
- Native plants from the species list in Appendix 2 of this report should be considered in any landscaping for the proposal.
- Known weed or invasive species should not be planted for landscaping purposes.
- Any invasive weeds and escaped garden plants should be removed from the site.

Offsetting the Impacts:

- If any fauna is injured during construction works WIRES should be called immediately.
- Appropriate sediment control measures should be established before the commencement of work on the proposal and retained in place until all bare areas have been revegetated.
- Vehicles and earthmoving machinery should only be parked in restricted areas in order to protect the off-site habitat surrounding the study site.