AKS FOREST SOLUTIONS PTY LTD

Strathroy Agri Park Development

Vegetation and Fauna Habitat Assessment

For Beaumont Percival Grubb – November 2014

EXECUTIVE SUMMARY

Grubb Consulting engaged AKS Forest Solutions in November 2014 to undertake a vegetation and fauna habitat assessment of a proposed property development at 'Strathroy', Meander Valley Rd, Prospect Vale. The purpose of the survey was to locate any threatened flora or fauna within the proposed development site The property is within the Launceston Municipality.
The area surveyed is predominantly agricultural land with patches of remnant forest, which has been highly disturbed over a long period of time. The survey area adjoins a contiguous 147 hectare patch of native vegetation to the north (that includes 89 hectares in the Kate Read reserve) and a contiguous 72 hectare patch of native vegetation on the development property to the south.

No threatened vegetation communities listed under the *Nature Conservation Act 2002* were recorded in the study area. The Rockplate grasslands and north-western section of Eucalyptus viminalis grassy forest and woodland, as identified in Figure 2, do however support state listed threatened flora species. No threatened vegetation communities listed on the *Environment Protection and Biodiversity Conservation Act 1999 (Cwlth)* (EPBC Act) were identified during the survey.

Three threatened flora species listed under the *Threatened Species Protection Act 1995* (Tas) (TSP Act) were recorded in the study area. They are Arthropodium strictum - Chocolate lily, Hypoxis vaginata var. brevistigmata - Sheathing Yellow Star and Caesia caliantha - Blue grasslily. All three are listed as rare and are regionally abundant in locations in the North and Midlands. No threatened flora listed on the *Environment Protection and Biodiversity Conservation Act 1999 (Cwlth)* (EPBC Act) were identified during the survey

Four threatened fauna species listed under the TSP Act and EPBC Act may occur or have suitable habitat in the study area. They are Eastern-Barred Bandicoot, Masked Owl, Tasmanian Devil and Spotted Tailed Quoll. The habitat provided for each species at the development site is not considered significant habitat as no nesting or denning habitat was present.

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SCOPE OF ASSESSMENT

1.1 Background

Grubb Consulting engaged *AKS Forest Solutions* to undertake a flora and fauna assessment of 'Strathroy', Meander Valley Rd, Prospect Vale, and Launceston Municipality for a proposed property development. Two previous surveys had been conducted at the site but did not identify the location of threatened flora or fauna habitat. Consequently measures to mitigate impacts could not be determined.

This assessment included the identification of threatened flora and fauna habitat and the mapping of vegetation communities. The assessment is in accordance with the *Guidelines for Natural Values Assessments.*[1]

1.2 Study Area

The defined study area covers an area of 51.9 hectares and is within an urban fringe landscape as depicted in Figure 1. The terrain is generally sloping with the altitude between 170 m and 200 m. The underlying geology is dominated by Jurassic Dolerite and Tertiary sediments (dominantly non-marine sequences of gravel) to the north. The area is within the dry subhumid cool climate zone and prone to heavy frosts and unseasonal droughts. The annual rainfall is around the 600mm to 700mm per annum.

The land use is predominantly livestock grazing. Livestock have access to drainage lines and native vegetation remnants. Consequently, the areas of native vegetation and drainage lines within the proposed development area are in poor condition. The development area is adjacent to a contiguous forest area that covers an area of 219 hectares.

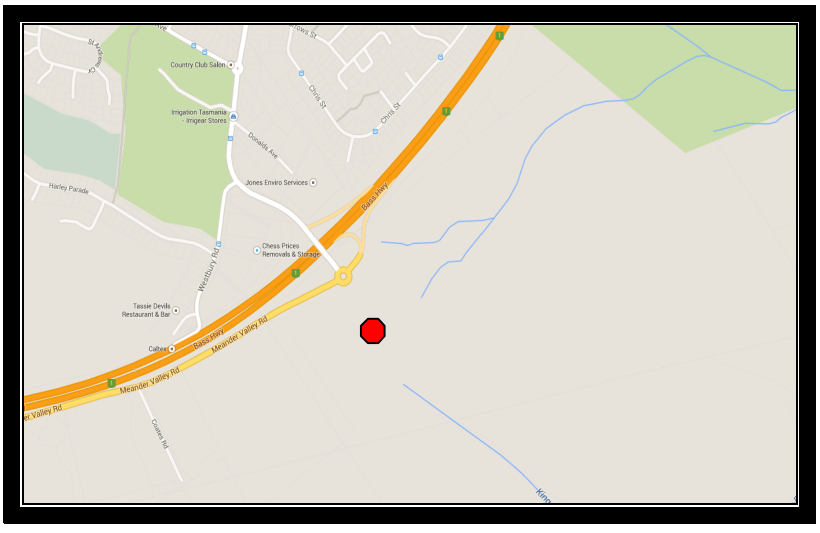

Figure 1: The location of land assessed for Flora and Fauna values, 'Strathroy', Meander Valley Rd, Prospect Vale

1.3 Assessment Team

Fieldwork: Greg Williams

Report: Greg Williams

Survey mapping: Greg Williams

1.4 Limitations of the survey

The survey was conducted on 18th November 2014 between 0900 -1400 Hrs. It should be noted that ephemeral flora species may have been overlooked, for example, summer flowering herbs, notably orchids and grasses. However, all native species known to occur in the vicinity (5km radius) of the study area are considered in this report.

The fauna habitat assessment included noting the potential of the study area as general habitat and focused on habitat for threatened species.

2. FLORISTIC SURVEY AND FAUNA HABITAT ASSESSMENT

2.1 Assessment tools

The following sources were used for biological records from the region:

- Bushways Environmental Services - Tasmania report 30th November 2008
- Bushways Environmental Services - Tasmania report 6th February 2004
- Natural Values Atlas,(Appendix 1 - NVA Report # 62061) (all threatened plant and animal records within 5km of the study area)
- Tasveg vegetation mapping
- Threatened Fauna Adviser
- Biodiversity Values Database - Forest Practices Authority
- Tasmanian Threatened Fauna handbook / FPA Planning Guidelines

2.2 Floristic Survey

The floristic survey was carried out by traversing the study area. All potential habitats were covered. All areas containing at least 5% native vegetation were investigated on foot. Areas of cleared agricultural land were inspected and traversed. The Bushways reports were used as a guide to enable a spatial representation of the information provided in those reports to be developed for the site.

2.3 Fauna Habitat assessment

The study area was assessed for fauna habitat with particular emphasis on habitat for threatened fauna species previously recorded from the vicinity or that had suitable habitat identified within the study area. The vegetation was related to fauna habitat with respect to threatened fauna species known from the area, or considered to potentially occur there.

3. BIODIVERSITY VALUES

3.1 Vegetation communities

The study area is 59.1 hectares in total with 36.7 hectares (62%) of the area classified as cleared agricultural land. There is a total of 15.2 hectares of native vegetation present at the site. In total four Tasveg communities occur in the proposed development area. None of these communities are listed as threatened. Table 1 gives the areas for each community present and Figure 2 shows the distribution of the communities across the site.

Table 1: Native Vegetation communities and areas

Floristic equivalent and Tasveg community	**Area**
Eucalyptus viminalis grassy forest and woodland **(DVG)**	7.8ha
Agricultural Land **(FAG)**	36.7ha
Rockplate Grassland **(GRP)**	1.3ha
Eucalyptus amygdalina forest and woodland on dolerite **(DAD)**	6.1ha

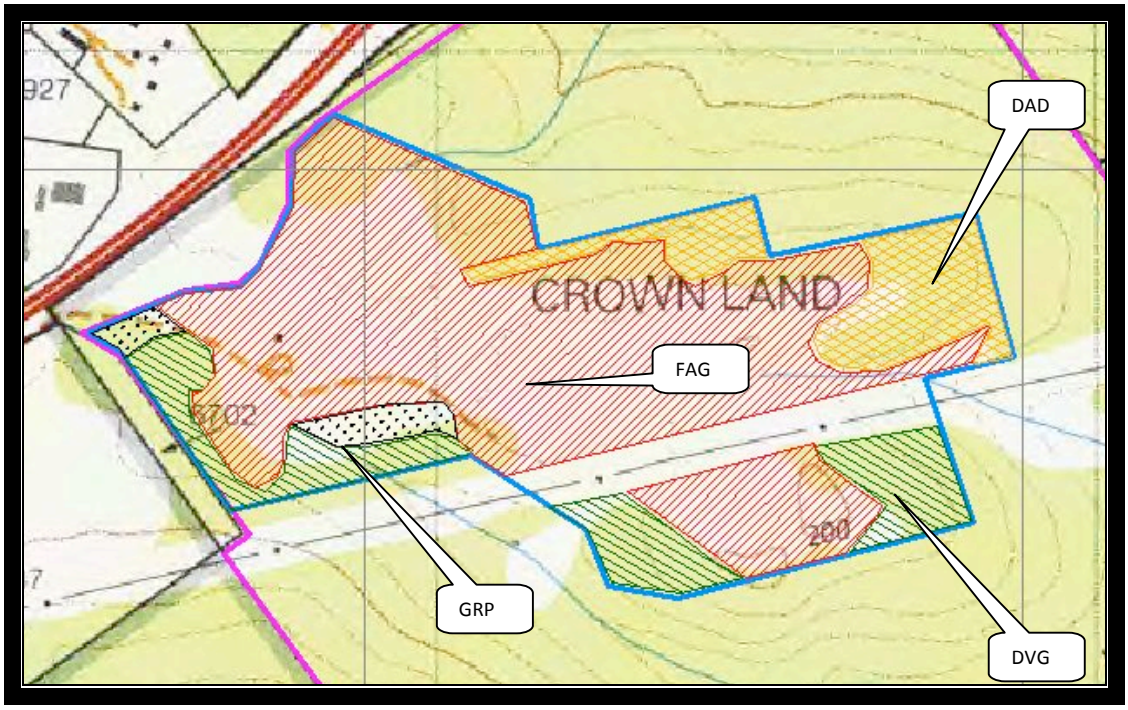

Figure 2: Tasveg communities map

3.2 Flora of Conservation Significance

The Bushways report 2008 identified 3 rare species (Threatened Species Protection Act 1995).

3.2.1 Arthropodium strictum - Chocolate lily

This survey confirmed that the species is present at the site and occurs in varying densities across all native vegetation areas on the site. The greatest numbers occur in the DVG (north of the transmission line) and GRP communities. The species is known to be widespread within the Midlands with 1237 records for the species documented on the NVA.

3.2.2 Hypoxis vaginata var. brevistigmata - Sheathing Yellow Star

This survey confirmed that the species is present at the site and occurs in varying densities across all native vegetation areas on the site. The greatest numbers occur in the DVG (north of the transmission line) and GRP communities, especially in damp areas. The species is known to be widespread within the Midlands and the North of the state with 546 records for the species documented on the NVA.

3.3.3 Caesia caliantha - Blue grasslily

Previous surveys identified two specimens at Grid ref 510912/5406683 in December 2003. This survey and a previous survey conducted in 2008 were unable to identify any specimens of the species. All grassy forest and grassland in the general area is potential habitat for this species. The species is known to be widespread within the Midlands and grassy roadsides with 326 records for the species documented on the NVA.

Figure 3 below demonstrates densities.

The south western section (pink hatching) has the highest densities for both species. In this area A.strictum has densities of approx. 10 to 20 individuals per $100m^2$ and the area of rockplate in the far north west corner has densities of up to 50 individuals per $100m^2$. This area also contains the highest densities of H.vaginata with populations of 10 to 20 individuals per $100m^2$ and in some especially damp areas densities of 100 to 200 individuals per 1 m^2 were found.

The south eastern section (purple hatching) has lower densities for both species. In this area A.strictum and H.vaginata has densities of 1 to 5 individuals per $100m^2$.

The north eastern section (brown hatching) has scattered individuals of both species.

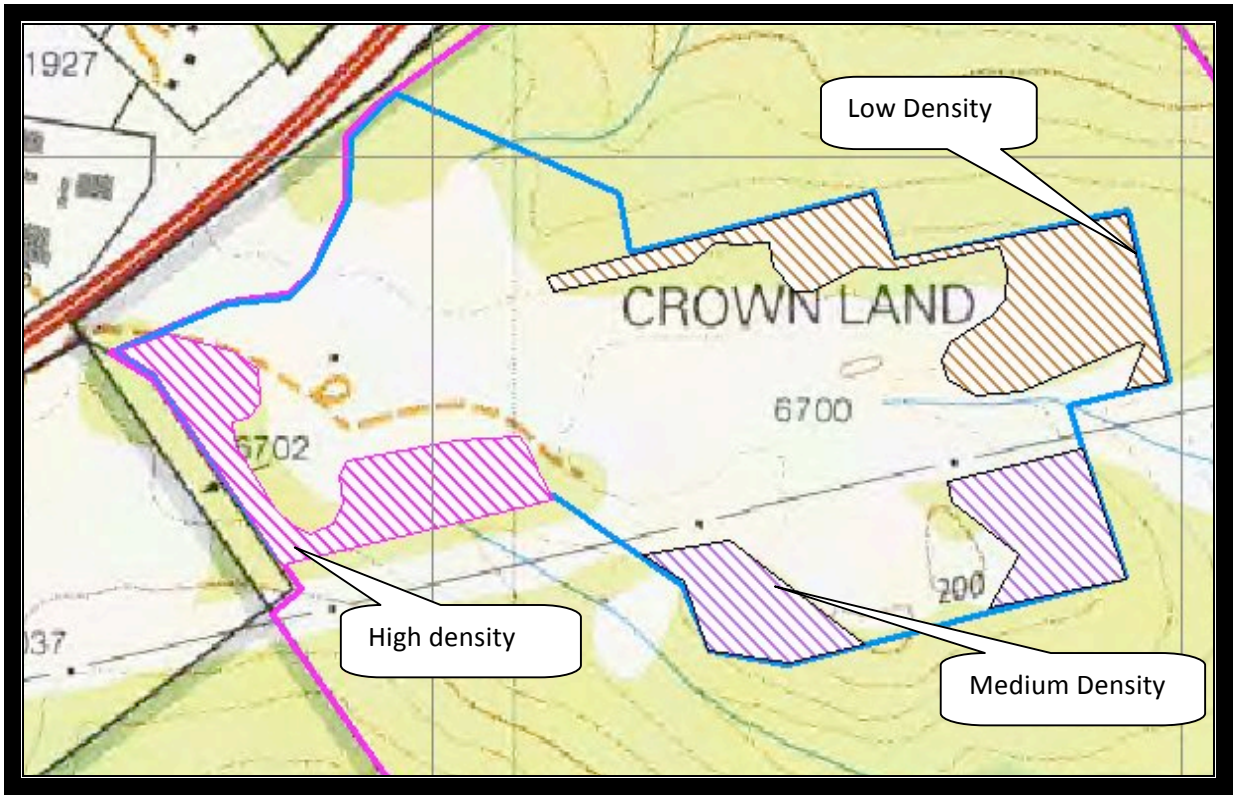

Figure 3 Population density map for A strictum & H vaginata

3.3 Fauna Habitat

The study area is dominated by exotic pasture for livestock grazing with limited habitat diversity for native fauna. The presence of remnant eucalypt vegetation offers some potential niches for birds and arboreal mammal species. In particular a few trees with hollows are present but they do not provide suitable masked owl nesting habitat as they are not of sufficient size. These and other mature trees may provide habitat in the future.
The remnant forest provides very limited habitat diversity because of the absence of multiple vegetation layers, lack of ground cover and ground logs. The spotted tailed quoll may utilise the areas of remnant woodland and farmland interface as foraging habitat though they are likely to only be present in low densities. No scats were identified during the survey period. No denning habitat was present at the site. The study area does not contain any habitat for threatened aquatic species.

3.4 Fauna of Conservation Significance

No threatened fauna species listed under the TSP Act and the EPBC Act were observed during the survey. Previous surveys identified potential habitat for a number of threatened species.
Table 2 addresses the threatened fauna species identified as having possible habitat within the study area.
(Appendix 1 - NVA report, # 62061).

Table 2: Threatened fauna species with possible habitat within the study area.

Species	Status TSPA / EPBCA	Potential to occur	Potential habitat and observations
Known within 500 m			
MAMMALS			
Spotted-Tailed Quoll *Dasyurus maculatus subsp. Maculatus*	rare / vulnerable	High (foraging habitat)	This naturally rare forest dweller most commonly inhabits wet forest but also occurs in dry forest. It forages and hunts on farmland and pasture, travelling up to 20km at night, and shelters in logs, rocks or thick vegetation. Core range is the fertile riparian forests of the north coast. However, the mosaic of farm land and remnant forest patches and adjacent native vegetation with a dense understorey provide suitable foraging habitat. No scats were recorded in November 2014 or during Bushways survey 2008. There is a lack of hollow logs, other den habitat or thick ground cover in the study area. The development area is only 59.1 hectares n size and adjoins a contiguous forest reserve that covers an area of 219 hectares that provides higher quality habitat for the species. The construction and operation of the DBIS will not have an impact on this habitat

Eastern Barred Bandicoot Perameles gunnii	- /vulnerable	High (foraging habitat)	This species favours a mosaic of open grassy areas for foraging with thick vegetation cover for shelter and nesting. The mosaic of farm land and remnant forest patches with some clumps of weeds in the general area provides suitable habitat.
Tasmanian Devil *Sarcophilus harrisii*	endangered / Endangered	Moderate (foraging habiata)	Occurs widely in extensive forest areas or in farmland-bushland mosaics. Devil dens are highly significant for the recovery of the species from devil facial tumour disease. No suitable habitat for dens is present within the study area.
BIRDS			
Masked Owl *Tyto novaehollandiae*	endangered / -	Moderate (foraging)	Requires a mosaic of forest and open areas for foraging and large old-growth hollow bearing trees for nesting with old growth white gums being favoured. Some sites with large white gums occur but no trees were observed to have suitable hollows of a large enough size. Better nesting habitat occurs in forest to the north and east of the study area see figure 4.
Wedge-Tailed Eagle *Aquila audax*	endangered / Endangered	Very Low	Requires large sheltered trees for nesting and is highly sensitive to disturbance during the breeding season. Survey done of moderate to high suitability nesting habitat within 1km of the study area on 18/11/14 - See Figure 6. No nests were located and the habitat was assessed as low suitability for nesting during the survey.
Grey Goshawk *Accipiter novaehollandiae*	endangered/-	Very Low (nesting / foraging)	Requires wet forest with closed canopy. Habitat within the study area is not suitable to support the species
Swift Parrot *Lathamus discolor*	Endangered / Endangered	Low (nesting)	Requires habitat comprising foraging and nesting trees. Foraging habitat includes *E. ovata* and *E. globulus* dominated woodlands. Neither of these forest communities occurs within the study area so the habitat is not likely to be significant for species. Because the habitat is not suitable foraging habitat for this species there is a very low probability of nests in the vicinity.

3.5 Significance of habitat for threatened fauna species

The following species have a high to moderate chance of occurring within the study area:

Eastern-barred bandicoot (*Perameles gunnii*) (-/Vulnerable)

This bandicoot species is listed as vulnerable under the EPBC Act primarily because it is nearly extinct on mainland Australia. Although rare in the midlands, in other parts of Tasmania the species is widespread and relatively common. It has expanded into the mosaic of woodland remnants in an otherwise cleared agricultural landscape. It is likely that the species is in the general area based on recorded sightings and the presence of suitable habitat.

Spotted tailed quoll (*Dasyurus maculatus ssp.* Maculatus) (rare/Vulnerable)

Priority habitat for this species is lowland, high rainfall forest across the north of Tasmania. The species requires forested areas with suitable shelter sites such as hollow logs or rocky caverns as denning habitat. Within the study area there is generally a lack of hollow logs and other den habitat present. Denning habitat is possible in the area south and north of the study area but was not assessed as the development proposal will not impact on these areas.

Masked Owl *Tyto novaehollandiae castanops* (endangered / Vulnerable)

This species is threatened mainly through loss of nesting habitat which is tree hollows in old growth trees, with a preference for white gums (*Eucalyptus viminalis*). The masked owl is known to nest in isolated trees in otherwise cleared grazing land. Some white gums occur within the study area but no sites were observed to have suitable tree hollows of a large enough size. A number of trees in the study area do however support hollows that may develop to support this species and are identified in figure 5 below.
Avoiding damage or felling of these trees during construction would increase the likelihood of hollows forming in the future and thereby minimising any future impact on this species.

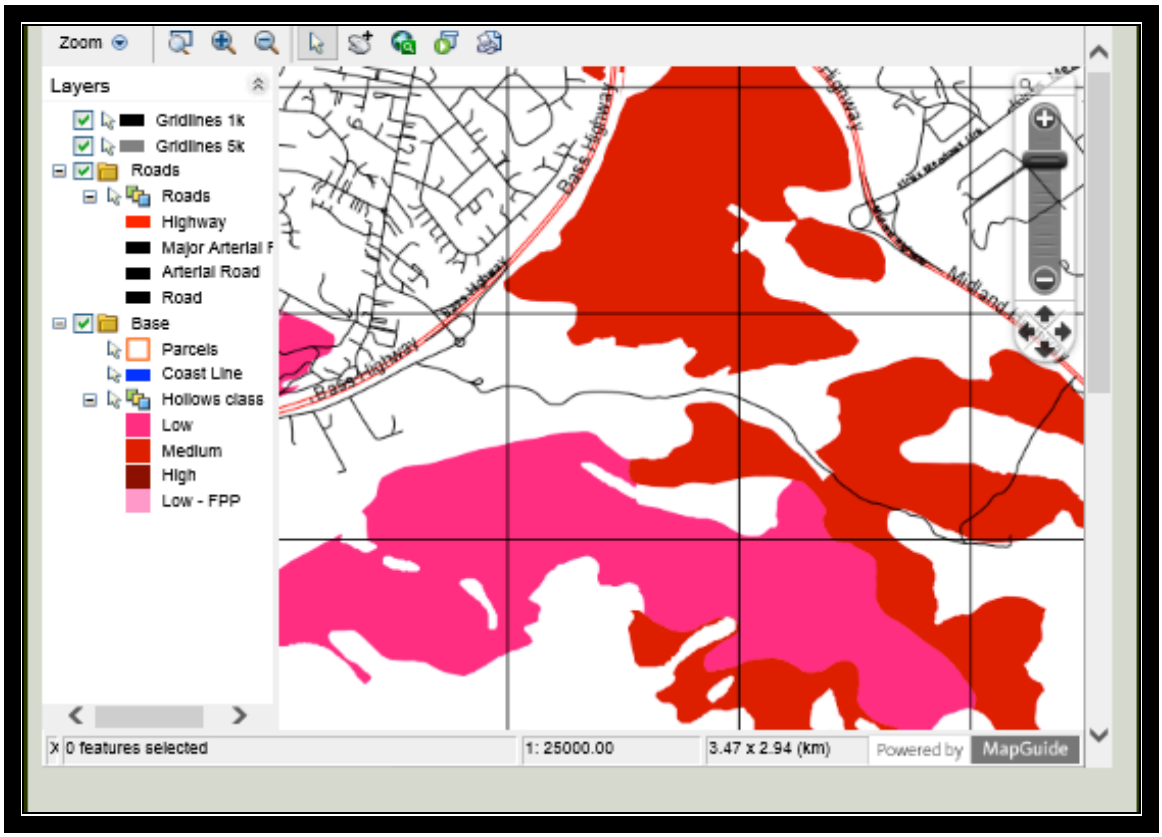

Figure 4: Masked Owl habitat modelling showing large areas to the north and east of moderate habitat suitability. The area adjacent to the south east of the study area did not contain suitable habitat.

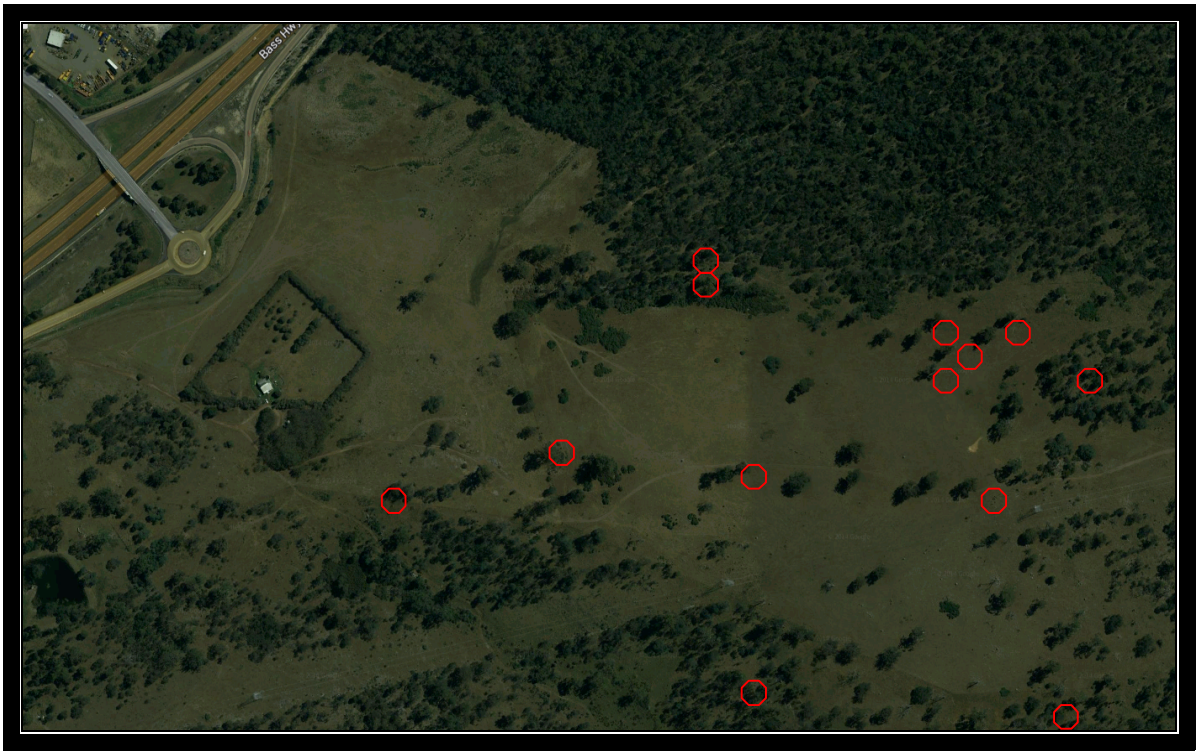

Figure 5: Trees containing hollows that may develop to support Masked Owl nesting.

Tasmanian Devil Sarcophilus harrisii (endangered / Endangered)

Given that Tasmanian Devils are highly mobile and can be considered generalists in terms of their habitat preferences, they are less susceptible to habitat modification than many other species. However, if Tasmanian Devil densities become very low there is a risk that disturbance or destruction of maternal dens, as a result of land clearance, such as for urban development, forestry and agriculture, could pose a significant threat to the Tasmanian Devil (Owen and Pemberton, 2005).

No denning habitat is present within the study area. Denning habitat is possible in the area south of the study area but was not assessed due to the development proposal not impacting on these areas.

Wedge tailed Eagle - Aquila audax (endangered / Endangered)

With only about 130 pairs successfully breeding each year in Tasmania, the wedge-tailed eagle is listed as endangered. The major threats to the species include habitat loss, nest disturbance, collisions and electrocutions with powerlines and persecution through shooting, trapping and poisoning by thoughtless persons. Using the Forest Practices Authority WTE nesting modelling, three areas within 1km Line of Sight of the study area were identified. These areas were searched on foot for WTE nests (See Figure 6). During this ground survey it was discovered that, for all three areas, no suitable nesting habitat existed.

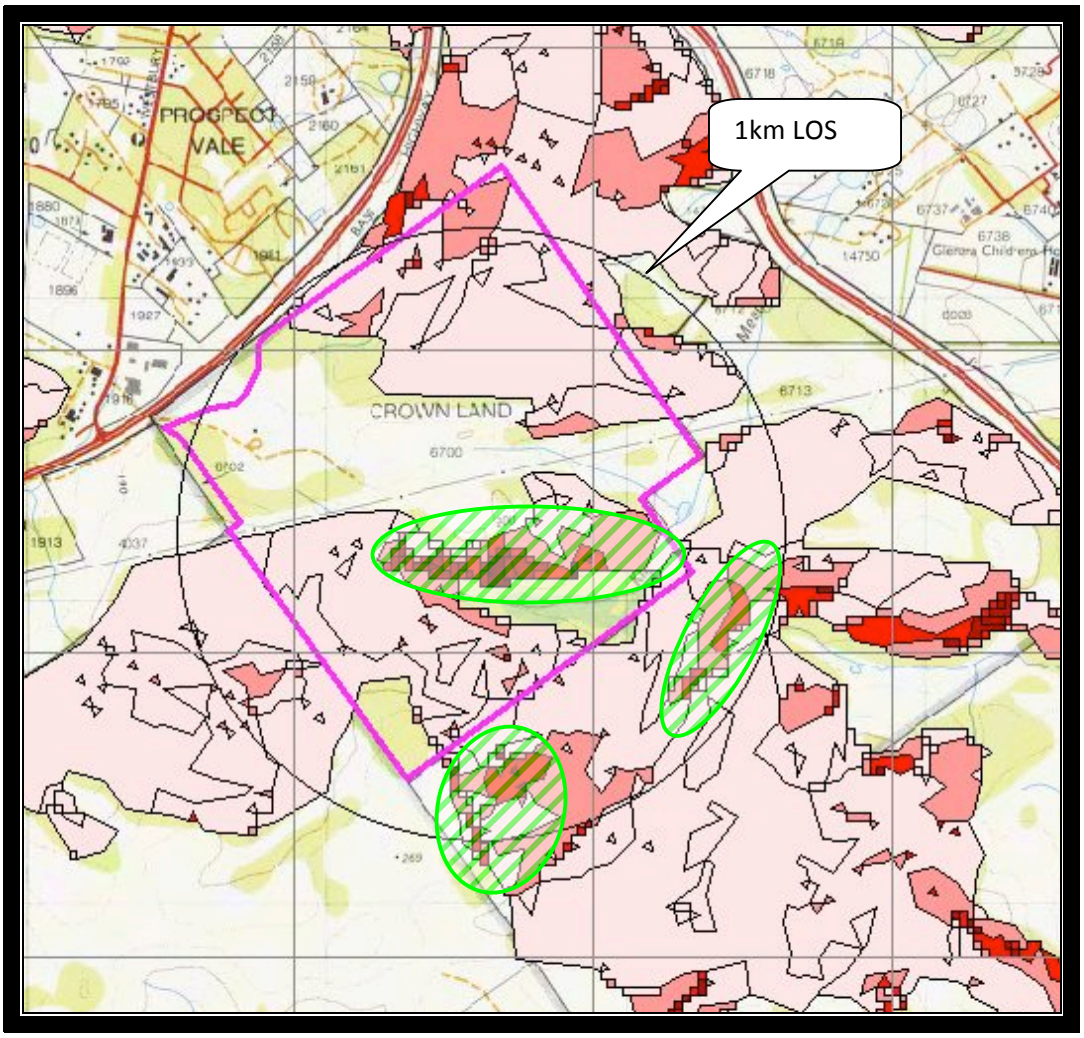

Figure 6: WTE nesting modelling. All areas of moderate or higher probability (Green hatched area) within 1km LOS were surveyed.

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Addendum2 - Threatened Flora Individual Numbers Assessment and Fauna Habitat Assessment - Detention Basins
April 2015

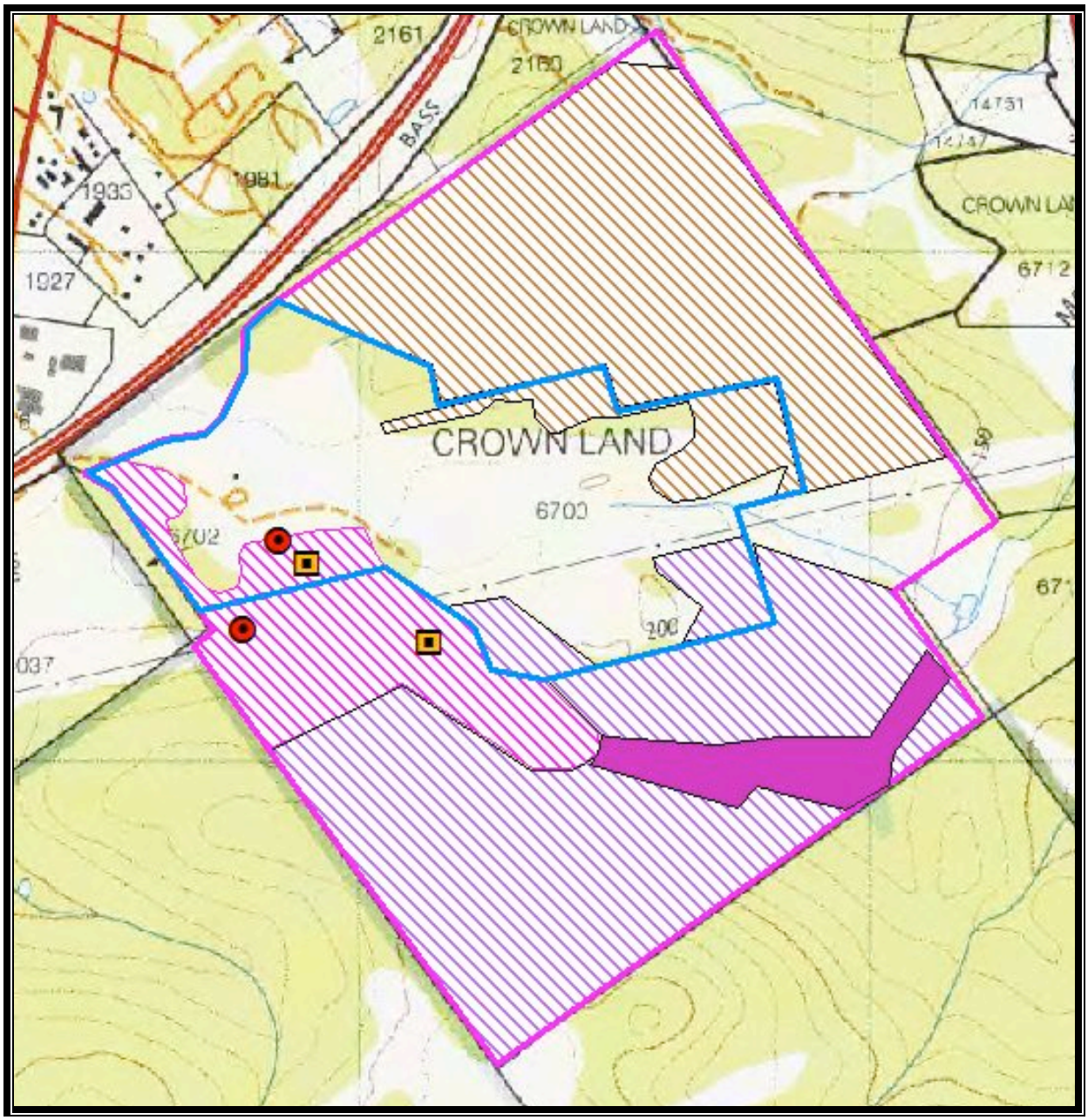

Figure 1 showing areas of high (pink), medium(purple) & low(brown) density for A strictum and H vaginata. Note red dot denotes 'hot spots' for A strictum and yellow dot denotes 'hot spots' for H vaginata. Dark pink shaded area denotes Melaleuca ericifolia forest.

Northern Detention Basin:

This site is within the area described in the initial report.

Southern Detention Basin

Native Vegetation Community:

Eucalyptus viminalis grassy forest and woodland (DVG)
Melaleuca ericifolia forest (NME) occurs south along stream from grid ref 511537/5406193. This community is listed as threatened and should be excluded from any works. See figure 1 for location.

Flora of conservation significance:

Both A. strictum and H vaginata occur in high densities in this area. See Table 1 for species numbers

A hot spot for H vaginata at grid ref 511245/5406412 should be avoided.

Fauna habitat for threatened species:

Eastern Barred bandicoot - It is likely that the species is in the general area based on recorded sightings and the presence of suitable habitat within the detention basin site.
Spotted tailed Quoll - No denning habitat is within the detention basin site.
Masked Owl - No suitable nest trees present within the detention basin site.
Tasmanian Devil - No denning habitat is within the detention basin site.

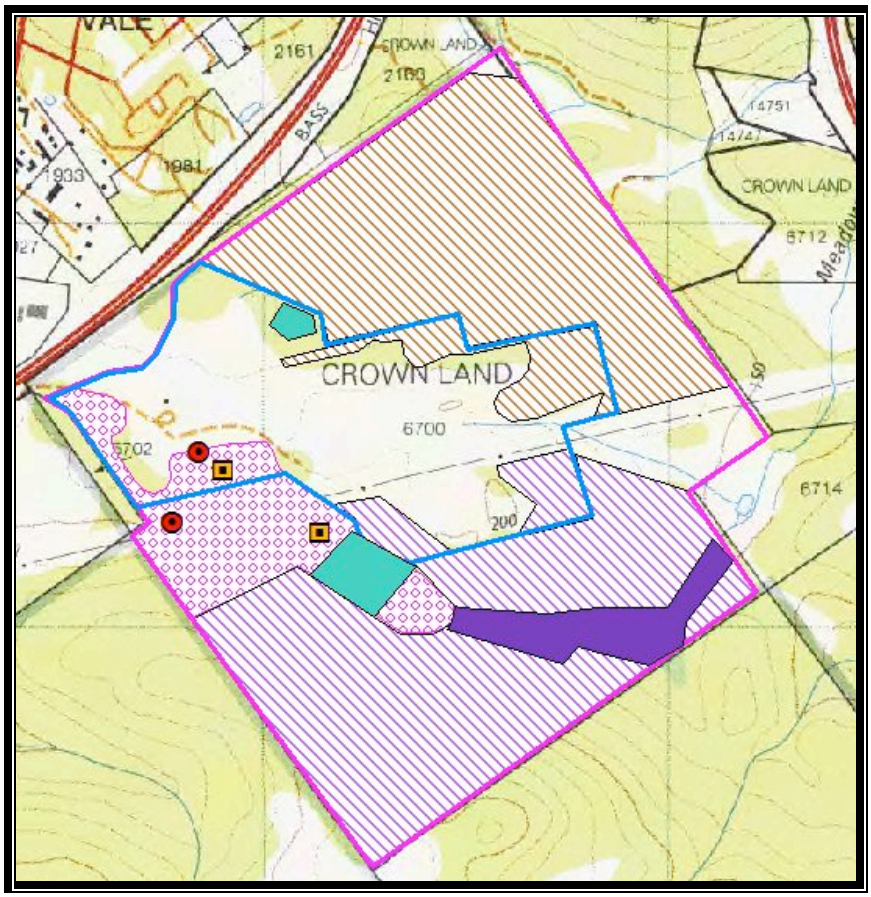

Figure 2 - Showing detention basin locations (light blue)

Table 1 - Species individual numbers per TASVEG type.

Species	Common Name	TASVEG	Condition	Population Density	No. Individuals	Area Impacted (m2)	Comments
Arthropodium strictum	Chocolate lilly	DVG	Poor	High	165	16526	Southern detention basin (Northern basin unaffected)
Hypoxis vaginata	Sheathing Yellow Star	DVG	Poor	High	90	16526	Southern detention basin (Northern basin unaffected)

No. of individuals is based on previous surveys and average plant numbers across the areas, varying on high, medium and low density population areas. Numbers of plants / m2 for each of the two species were similar across the impacted and non impacted areas.