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Dear Mike,

RE – Queanbeyan School for Special purposes - EPBC Ref: 2019/8418

1 INTRODUCTION

The Commonwealth Department of the Environment and Energy (DoEE) determined the proposed development for a new School for Special Purposes within Karabar High School to be a controlled action. DoEE have subsequently requested further additional information on potential impacts of the proposal on Matters of National Environmental Significance (MNES) listed under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). This report addresses information specifically requested by the DoEE detailed within their *Guidelines for request for additional documentation*. The *Guidelines for request for additional documentation* has been included as Appendix A. Biodiversity impacts to NSW species and other MNES are discussed in the Biodiversity Development Assessment Report (BDAR) attached in the EPBC referral.

2 DESCRIPTION OF THE ACTION.

The proposed action comprises the construction of a new School for Special Purposes (SSP) in Queanbeyan, NSW. The proposed action area is within the grounds of the existing Karabar High School, located on Alanbar Street, Queanbeyan. The works would provide a new SSP on the existing site by providing up to seven teaching spaces and required core facilities from Kindergarten to Year 12.

The proposed action involves the following:

- Two buildings to accommodate the seven learning spaces
- One building to accommodate the hall, library and special programs
- One building to accommodate staff and administration
- Four outdoor spaces, including two outdoor learning spaces and two common spaces
- Footpaths connecting the buildings
- Landscaped gardens
- A drop-off road, connecting to Alanbar Street at one entry and one exit point
- Carparking, located between Alanbar Street and the drop-off road.

3 DESCRIPTION OF THE EXISTING ENVIRONMENT

The proposed action area is approximately 0.9 ha and located in a treed area within the grounds of Karabar High School (Figure 3-1 and Figure 3-2).

Around 0.6 ha of the proposed action area is comprised of native vegetation. Thirty (30) mature trees occur in the development site, including Yellow Box (*Eucalyptus melliodora*), Apple Box (*Eucalyptus bridgesiana*), Red Box (*Eucalyptus polyanthemos*) and Red Stringybark (*Eucalyptus macrorhyncha*). The vegetation is best represented by Plant Community Type (PCT) 654 – Apple Box-Yellow Box Woodland in the South Eastern Highlands Bioregion.

A few native shrubs remain under the canopy of remnant trees in the eastern end of the proposed action area, such as Sweet Bursaria (*Bursaria spinosa*), Early Wattle (*Acacia genistifolia*) and Bitter Cryptandra (*Cryptandra amara*). The non-endemic and invasive native shrub Cootamundra Wattle (*Acacia baileyana*) is also present.

The front half of the proposed action area along Alanbar Road has been fenced and landscaped as an indigenous garden with planted native shrubs such as Red-stemmed Wattle (*Acacia rubida*), Black Wattle (*Acacia decurrens*), Bottle Brush (*Callistemon* spp.), *Grevillea* spp. and *Banksia* spp. Landscaped pathways, dry creek beds and seating has also been incorporated into the landscaping. This area still maintains an overstory of mature Yellow Box and Apple Box.

The groundcover is in various condition throughout the site however it is comprised of predominantly native grasses and forbs such as Wallaby grasses (*Rytidosperma* spp.), Spear Grass (*Austrostipa scabra*), Wire grasses (*Aristida* spp.), Red Grass (*Bothriochloa macra*), Native Wheat Grass (*Elymus scaber*) and Mat Rush (*Lomandra filiformis*). The groundcover is comprised of more than 50% native vegetation foliage cover. At present, the entire proposed action area is accessible and the groundcover undergoes near-constant disturbance from mowing and trampling by school students.

The northern most area of the proposed action area is a sports field comprised of exotic manicured grasses.



Figure 3-1 Site Photos: from top to bottom a. Looking South b. Looking East c. Looking West d. Planted Indigenous Garden

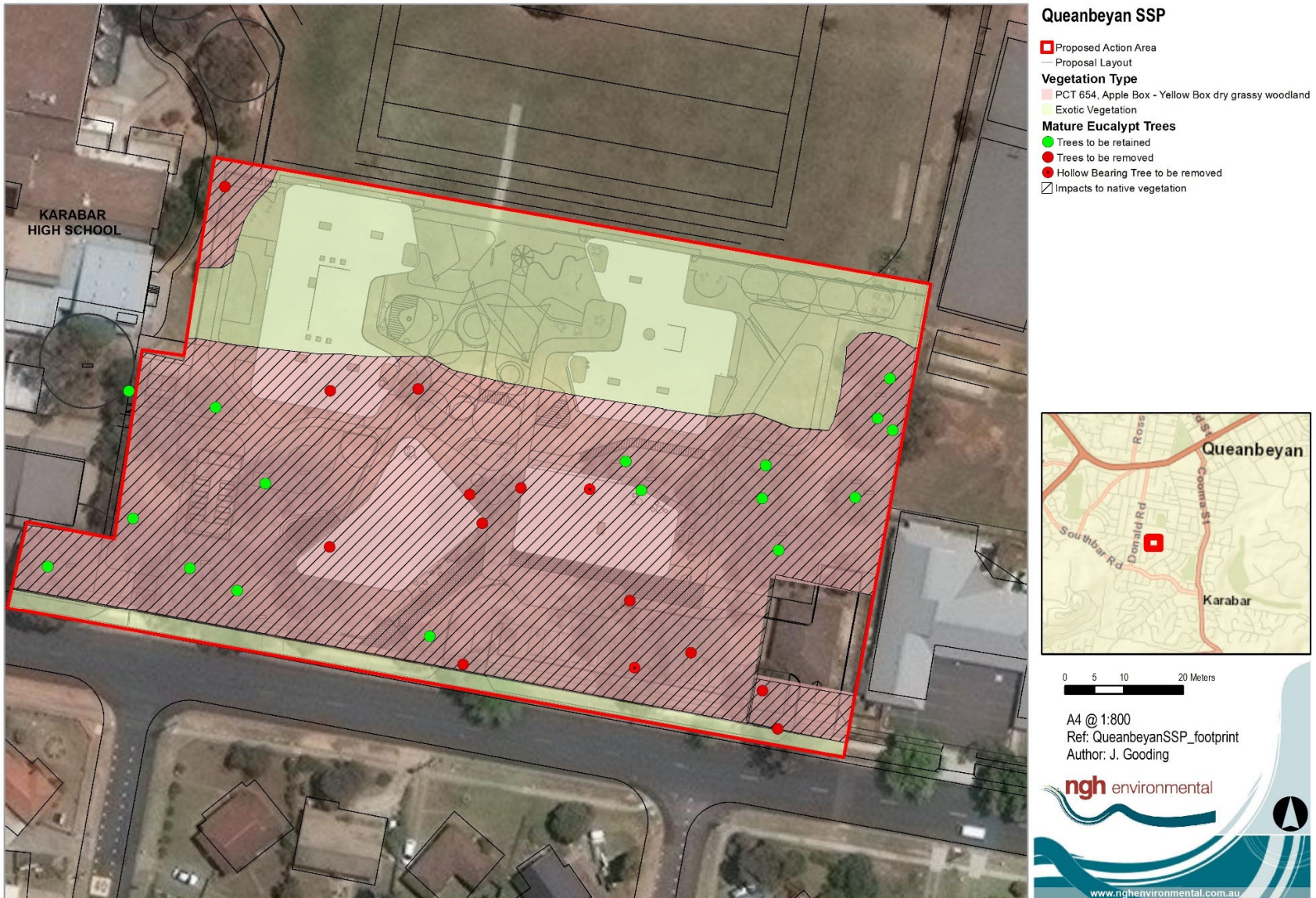


Figure 3-2 Proposed Action Area

4 DESCRIPTION OF MATTERS OF NATIONAL SIGNIFICANCE

The DoEE has requested further information on the following threatened flora and fauna species. These species were considered to have suitable habitat present based on a desktop assessment.

Flora

- Austral Toadflax (*Thesium australe*)
- Basalt Peppercross (*Lepidium hyssopifolium*)
- Button Wrinklewort (*Rutidosia leptorrhynchoides*)
- Canberra Spider Orchid (*Caladenia actensis*)
- Hoary Sunray (*Leucochrysum albicans* var. *tricolor*)
- Small Purple-pea (*Swainsona recta*)
- Tarengo Leek Orchid (*Prasophyllum petium*).

Fauna

- Golden Sun Moth (*Synemon plana*).

A description of habitat requirements, survey methods and survey results is given in Table 4-1 below. Targeted surveys were carried out by Senior Ecologist Sam Patmore (Path-Co – Pty Ltd) on 27th November 2018. Survey effort adhered to OEH (2016).

Table 4-1 Survey results for threatened species

Name	Habitat	Habitat present	Nearest known records	Survey effort	Survey results
FLORA					
<p>Canberra Spider Orchid <i>Caladenia actensis</i> Critically Endangered - EPBC</p>	<p>Grows on shallow gravelly brown clay loam soils of volcanic origin In Yellow Box - Red Gum grassy woodland and Red Stringybark Tableland Grass/shrub forest at an altitude of 645m – 745m. Plants occur amongst a ground cover of grasses, forbs and low shrubs, often among rocks</p>	<p>Marginal habitat. Characteristic tree species not dominant. Altitude of site is 600m and not above 645m. Soils are sedimentary and not of volcanic origin. No naturally occurring rocks present in development site.</p>	<p>Only three known locations in ACT. Mount Ainslie Nature Reserve (ALA, 2019) is the closest approx. 12 km from development site.</p>	<p>Entire development site surveyed 27th November 2018 using Parallel Transects method approx. 5 m apart.</p>	<p>No <i>Caladenia</i> species were detected during the site surveys however surveys were just outside of optimal flowering times (Sept – Oct). Habitat within the development site is not characteristic in comparison to the three known populations. <i>Caladenia actensis</i> is also highly vulnerable to disturbance such as trampling and soil disturbance (Frawley, 2010). As the development site has been regularly trampled by school students over the past thirty years and has undergone past soil disturbance through landscaping it is highly unlikely the Canberra Spider Orchid occurs in the development site.</p>
<p>Basalt Peppercress <i>Lepidium hyssopifolium</i> Endangered – BC Endangered - EPBC</p>	<p>Known to occur in both woodland with a grassy understorey and in grassland.</p>	<p>Present</p>	<p>Nearest known record 3 km west in Queanbeyan Nature Reserve (ALA, 2019)</p>	<p>Entire development site surveyed 27th November 2018 using Parallel Transects method approx. 5 m apart.</p>	<p>One <i>Lepidium</i> species was detected within the development site during the surveys. It was not identified to be <i>Lepidium hyssopifolium</i> (Basalt Peppercress) as hairs were absent from the fruit. It was considered likely to be <i>*L. africanum</i>, an exotic species. Basalt Peppercress was not detected within the development site.</p>
<p>Hoary Sunray</p>	<p>Occurs in a wide variety of grassland, woodland and forest</p>	<p>Present</p>	<p>Nearest recent record less than 1 km</p>	<p>Entire development site</p>	<p>Approximately 1400 plants detected in south eastern corner (see Figure 4-1).</p>

Name	Habitat	Habitat present	Nearest known records	Survey effort	Survey results
<i>Leucochrysum albicans</i> var. <i>tricolor</i> Endangered - EPBC	habitats, generally on relatively heavy soils. Can occur in modified habitats such as semi-urban areas and roadsides.		west on Southbar Road. 32 records in surrounding 5 km radius in urban areas (ALA, 2019)	surveyed 27 th November 2018 using Parallel Transects method approx. 5 m apart.	Surveys were undertaken at the optimal survey time when species would be flowering (Threatened Species Section 2019).
Button Wrinklewort <i>Rutidosia leptorrhynchoides</i> Endangered - BC Endangered – EPBC	Occurs in Box-Gum Woodland, secondary grassland derived from Box-Gum Woodland or in Natural Temperate Grassland; and often in the ecotone between the two communities. Grows on soils that are usually shallow, stony or disturbed	Present- Box-gum woodland present in study area.	Nearest known record 3km west in Queanbeyan Nature Reserve (ALA, 2019)	Entire development site surveyed 27 th November 2018 using Parallel Transects method approximately 5 m apart.	Button Wrinklewort was not detected within the proposed action area. Surveys were taken at the optimal survey time when species would be starting to flower. Given the relatively small area of the development site and the open nature of the groundcover and understory it is likely the species would have been detected if present. This species is unlikely to be present.
Austral Toadflax <i>Thesium australe</i> Vulnerable – BC Vulnerable - EPBC	Occurs in grassland on coastal headlands or grassland and grassy woodland away from the coast. Often found in association with Kangaroo Grass (<i>Themeda australis</i>). A root parasite that takes water and some nutrient from other plants, especially Kangaroo Grass.	Present Kangaroo Grass present in study area.	Nearest known record is 18 km south west of the development site in nature reserves along the Murrumbidgee River.	Entire development site surveyed 27 th November 2018 using Parallel Transects method approx. 5 m apart.	Austral Toadflax was not detected within the proposed action area. Surveys were taken at the optimal survey time when the species would be flowering. Given the relatively small area of the development site and the open nature of the groundcover and understory it is likely the species would have been detected if present. This species is unlikely to be present.
Small Purple-pea	Grows in grassy understory of woodlands and open forests	Present	Nearest known current records occur	Entire development site	Small Purple-pea was not detected within the proposed action area. Surveys were

Name	Habitat	Habitat present	Nearest known records	Survey effort	Survey results
<i>Swainsona recta</i> Endangered – BC Endangered - EPBC	dominated by Blakely’s Red Gum and Yellow Box.	Box-gum woodland present in study area.	15 km south west, along the railway line.	surveyed 27 th November 2018 using Parallel Transects method.	taken at the optimal survey time when the species would be flowering. Given the relatively small area of the development site and the open nature of the groundcover and understory it is likely the species would have been detected if present. This species is unlikely to be present.
Tarengo Leek Orchid <i>Prasophyllum petilum</i> Endangered – BC Endangered - EPBC	Grows in grassy woodland with river tussock, Black Gum and <i>Leptospermum spp.</i> Peak flowering period – November	Present – Grassy woodland occurs on site	Nearest known record is approximately 25 km north west at Gungahlin.	Entire development site surveyed 27 th November 2018 using Parallel Transects method.	Tarengo Leek Orchid was not detected within the proposed action area. Surveys were taken at the optimal survey time when the species would be flowering. Given the relatively small area of the development site and the open nature of the groundcover and understory it is likely the species would have been detected if present. This species is unlikely to be present.
Fauna					
Golden Sun Moth <i>Synemon plana</i> Endangered – BC Critically Endangered - EPBC	Occurs in natural temperate grasslands and grassy Box-gum Woodlands dominated by Wallaby Grass. Appear to favour slightly sloping, north facing sites with minimal shading and high inter-tussock space.	Box-gum Woodland occurs on site with Wallaby Grass understory, however land use is not conducive to this species.	Nearest know records are approximately 2 km south west, in Queanbeyan Nature Reserve.	Surveys not undertaken due to unsuitable habitat.	As the development site has been regularly trampled by school students over the past thirty years as well as past soil disturbance through landscaping, it is highly unlikely the Golden Sun Moth occurs in the development site. The Golden Sun Moth is only able to move short distances and due to the isolation of the patch from suitable habitat it is unlikely the species would be

Name	Habitat	Habitat present	Nearest known records	Survey effort	Survey results
	Species unlikely to travel more than 100 m away from suitable habitat.				able to colonise the patch of Box-gum Woodland.

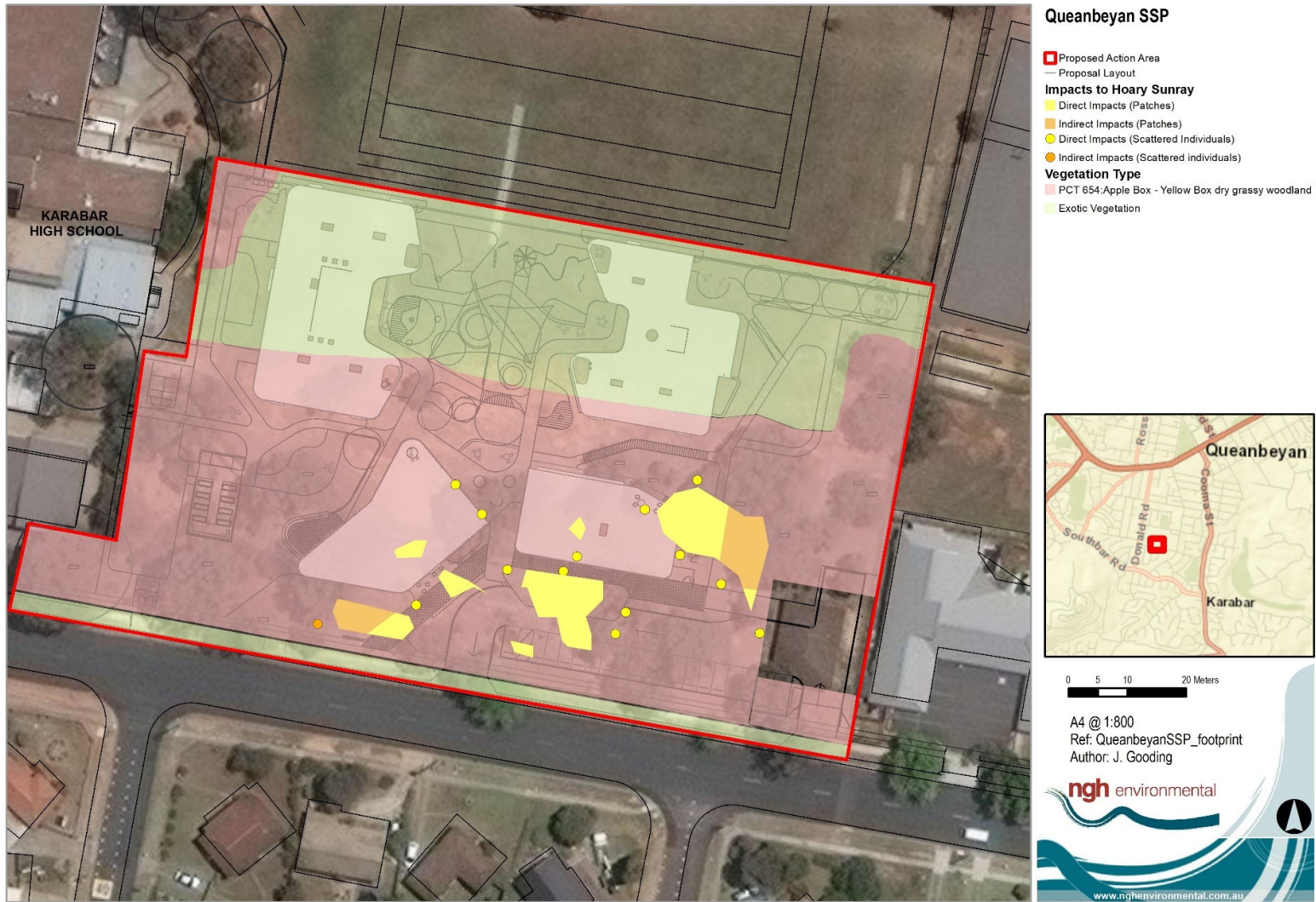


Figure 4-1 Location of Hoary Sunray within the proposed action area

5 IMPACTS TO MATTERS OF NATIONAL SIGNIFICANCE

The proposed action would impact on a population of Hoary Sunray (*Leucochrysum albicans* var. *tricolor*). Approximately 1400 individuals of this species were detected within the development site. This population of Hoary Sunray was not detected outside the development site and is isolated from any other known population. The development footprint would impact on all of these species through disturbance of the understory.

An assessment of significance was undertaken for the Hoary Sunray (Appendix D) and determined that a significant impact was considered likely for this population. The proposal could:

- Lead to a long-term decrease in the size of a population of species
- Reduce the area of occupancy of the species
- Disrupt the breeding cycle of a population
- Interfere with the recovery of the population.

No other impacts are considered to occur to threatened flora or fauna species (Table 5-1)

Table 5-1 Direct and Indirect Impacts to matters of national environmental significance

Name	Direct Impacts	Indirect Impacts
Flora		
Canberra Spider Orchid <i>Caladenia actensis</i>	No – unlikely to occur in proposed action area.	Unlikely - Development site an isolated patch surrounded by urban development.
Basalt Peppergrass <i>Lepidium hyssopifolium</i>	No – unlikely to occur in proposed action area.	Unlikely - Development site an isolated patch surrounded by urban development.
Hoary Sunray <i>Leucochrysum albicans</i> var. <i>tricolor</i>	Yes – Direct loss. Approximately 1400 plants impacted by proposal.	Likely - Those avoided by construction would form part of the school yards and be subject to increased trampling and mowing.
Button Wrinklewort <i>Rutidosis leptorrhynchoides</i>	No – unlikely to occur in proposed action area.	Unlikely - Development site an isolated patch surrounded by urban development.
Austral Toadflax <i>Thesium australe</i>	No – unlikely to occur in proposed action area.	Unlikely - Development site an isolated patch surrounded by urban development.
Small Purple-pea <i>Swainsona recta</i>	No – unlikely to occur in proposed action area.	Unlikely - Development site an isolated patch surrounded by urban development.
Tarengo Leek Orchid <i>Prasophyllum petilum</i>	No – unlikely to occur in proposed action area.	Unlikely - Development site an isolated patch surrounded by urban development.
Fauna		
Golden Sun Moth <i>Synemon plana</i>	No – unlikely to occur in proposed action area.	Unlikely - Development site an isolated patch surrounded by urban development.

6 MITIGATION AND MANAGEMENT MEASURES

6.1 SITE SELECTION – CONSIDERATION OF ALTERNATIVE LOCATIONS

The SSP is proposed to be constructed on the same lot as Karabar High School, Queanbeyan South Public School and Queanbeyan Preschool.

Demographic analysis by the Department of Education determined a new SSP education facility was required in the Queanbeyan area. Through utilisation surveys of existing school assets in the region, the Department of Education determined Karabar High School was the most appropriate site for the education facility.

Queanbeyan SSP will cater for students with moderate to severe intellectual and physical disabilities and requires a ‘kiss and drop’ and parking at the entry. For this reason, direct street frontage is required.

The Karabar High School site currently has two portions of street frontage which are not occupied by buildings: Donald Street frontage (near Anne Street) and Alanbar Street frontage (between Boronia Crescent and Cassia Crescent). The Alanbar Street frontage has the following advantages over the Donald Street frontage

- Alanbar Street has less vehicle traffic than Donald Street.
- Karabar High school already uses the Donald Street frontage as the main entry. Locating the Queanbeyan SSP here would lead to increased congestion.
- Alanbar frontage between Boronia Crescent and Cassia Crescent is underutilised by Karabar High School while the Donald Street frontage is currently used for agriculture education.
- The terrain at Alanbar Street frontage is flatter, which is vital for a school with a high proportion of students requiring wheelchair accessibility.

The development site was considered to be the most appropriate location for the proposal. The final site layout has not been able to completely avoid clearing native vegetation, including MNES, due to the small area of the development site providing limited scope for positioning of buildings, carparks or infrastructure.

Table 6-1 documents the prescribed management measure committed to by the proponent in order to avoid and minimise impact to remaining vegetation. Most measures are not species-specific and thereby apply to MNES as well as other native species.

Table 6-1 Mitigation measures proposed to avoid and minimise impacts on native vegetation and habitats

Mitigation measure	Proposed techniques	Timing	Frequency	Responsibility	Risk of failure	Risk and consequences of residual impacts
Displacement of resident fauna through vegetation clearing and habitat removal						
instigating clearing protocols including pre-clearing surveys, daily surveys and staged clearing, the presence of a trained ecological or licensed wildlife handler during clearing events	<ul style="list-style-type: none"> Pre-clearing checklist Tree clearing procedure 	Construction	Regular	Contractor	Low	Species not detected during pre-clearing surveys may be impacted.
relocation of habitat features (fallen timber, hollow logs) from within the development site.	<ul style="list-style-type: none"> Tree-clearing procedure including relocation of habitat features to adjacent area for habitat enhancement 	Construction	Regular	Contractor	Low	None
Impacts on native vegetation and habitat						
clearing protocols that identify vegetation to be retained, prevent inadvertent damage and reduce soil disturbance; for example, removal of native vegetation by chainsaw, rather than heavy machinery, is preferable in situations where partial clearing is proposed	<ul style="list-style-type: none"> Approved clearing limits to be clearly delineated with temporary fencing or similar prior to construction commencing. No stockpiling or storage within dripline of any mature trees In areas to clear adjacent to areas to be retained, chainsaws would be used rather than heavy machinery to minimise risk of unauthorised disturbance 	Construction	Regular	Contractor	Low	Impacts to retained vegetation if protocols not followed (low risk)
temporary fencing to protect vegetation to be retained	<ul style="list-style-type: none"> Prior to construction commencing, exclusion fencing and signage would be installed around vegetation (trees) to be retained 	Construction	Regular	Contractor	Low	Impacts to retained vegetation if protocols not followed (low risk)
	<ul style="list-style-type: none"> 					

Mitigation measure	Proposed techniques	Timing	Frequency	Responsibility	Risk of failure	Risk and consequences of residual impacts
hygiene protocols to prevent the spread of weeds or pathogens between infected areas and uninfected areas	<ul style="list-style-type: none"> Site weed hygiene protocol in relation to plant, machinery, and fill 	Construction, Operation	Regular	Contractor	Low	Weed encroachment (low risk)
staff training and site briefing to communicate environmental features to be protected and measures to be implemented	<ul style="list-style-type: none"> Site induction Toolbox talks 	Construction	Regular	Contractor	Low	Impacts to native vegetation if staff training not being followed (low risk)

7 REQUIREMENT TO OFFSET

The Environmental Offsets Policy (EOP) outlines the Australian Government’s approach to the use of environmental offsets (‘offsets’) under the EPBC Act. This policy relates to all matters protected under the EPBC Act. Offsets are required where a significant impact is anticipated. For the Queanbeyan SSP, this is relevant for impacts to the Hoary Sunray (*Leucochrysum albicans* var. *tricolor*).

A BDAR has been prepared for the proposed development, with 15 ecosystem credits generated for impacts to PCT 654 – Apple Box- Yellow Box dry grassy woodland of the South Eastern Highlands Bioregion under the NSW Biodiversity Assessment Methodology (BAM). An equivalent credit area of Box-gum Woodland in the South Eastern Highlands Bioregion would be protected that also provides habitat for threatened species associated with this community.

The Hoary Sunray is not listed as threatened under the NSW *Biodiversity Conservation Act 2016* (BC Act) and does not appear in the BAM-C offsets calculator. Notwithstanding this, credits are available for purchase within NSW. Through discussions with DoEE a value for threatened species credits was determined using a combination of the Commonwealth Offset Assessment Guide and the NSW methodology listed in the BAM.

7.1 COMMONWEALTH OFFSET ASSESSMENT

Under the Commonwealth offset requirement, calculations are calculated using the Offsets Assessment Guide (OAG). In running the OAG, the user is required to enter a number of variables which require a quantitative assessment of the condition of the vegetation at the development and offset site and also factors such as the time until the ecological benefit of the offset is realised, the risk of the loss of the offset and the level of confidence in these results. The reasoning used in reaching these values is discussed individually for each below. The final Commonwealth Offset Assessment Guide is shown in Appendix C.

Area of habitat

The total area of suitable habitat for the Hoary Sunray to be lost in the proposed action area is 0.6 ha.

Quality of habitat

The overall habitat quality score (0-10) was determined by considering the following factors (as outlined in the ‘How to use the Offsets Assessment Guide’) individually:

- Site condition. Including vegetation condition, structure and species diversity.
- Site context. The biodiversity importance of the site in terms of its landscape position.
- Species stocking rate. The number of individual populations at the site.

The contribution of these factors was noted according to their level of importance. The results of this analysis are provided in Appendix C below.

Table 7-1 Offset Quality Score

Factor	Score	Importance Ranking	Reasoning
Site condition	8	2	The understory vegetation undergoes regular disturbance within a school environment and has many bare patches. However, this supports ideal conditions for the Hoary Sunray which requires disturbance for establishment and relies on bare ground for germination.
Site context	6	3	The site occurs in an isolated population and lacks connectivity to other areas. Records of the Hoary Sunray show the species is abundant in the broader area, where it is often found in semi-urban areas and amidst roadside vegetation.

Factor	Score	Importance Ranking	Reasoning
Species stocking rate	8	1	1400 Hoary Sunray were detected within the site which is a substantial population size considering the small area of the site. This represents approximately 1.4% of the NSW population (100,000; Sinclair 2010).
Overall habitat quality score	8		

Time over which loss is averted for the offset

An offset site would be legally secured and managed in perpetuity under a biodiversity stewardship agreement. The maximum forecast term of 20 years was selected for this variable.

Future quality with or without offset and time until ecological benefit

An offset site would be legally secured and managed in perpetuity under a biodiversity stewardship agreement. Management actions proposed as part of an offset site would include:

- Protection from cropping and grazing
- Weed control
- Rabbit control
- Disturbance regimes to stimulate germination

It is considered reasonable that the overall quality of the habitat within the offset site could be increased to a value of 8 over a period of five years by maintaining these management actions. The Hoary Sunray germinates quickly from seed and has a life cycle of 5 – 7 years (DoEE, 2019) and ecological benefit within an offset site could be achieved within 5 years.

Without a stewardship agreement on the offset site, it is considered a lack of management actions could slowly degrade the quality of the site to a value of 5.

Results

Utilising the values described above, 1.9 ha of vegetation containing habitat for the Hoary Sunray is required to offset impacts for the Hoary Sunray to achieve at least a 100% direct offset. This equates to a 1:3.2 ratio.

7.2 NSW BAM CREDITS

A search of the NSW biodiversity credit register showed Hoary Sunray credits are available for trading within the NSW Biodiversity Offsets Scheme. Offsetting outcomes achieved through the BAM will generally be accepted for the purposes of the EPBC Act provided they are like for like for listed threatened species. In consultation with DoEE, the 1.9ha area required for offsetting under the EPBC ACT was converted to BAM credits to be able to be offset under the NSW Biodiversity Scheme. In order to adequately compensate for the impacts to the Hoary Sunray, the 1.9ha offset area was used as the area of suitable habitat impacted.

Methodology

The required species credits for direct impacts on threatened species was calculated by using equation 2 in the BAM. This calculation is used for determining species credits according to the area of suitable habitat identified in the site survey. Discussions with DoEE determined that it was more appropriate to use the area of

Equation 2 is as follows;

$$\text{Number of flora species credits required} = HC \times HL \times BRW \times 0.25$$

Where;

HC = the condition of flora habitat in the species polygon summed across the area of each vegetation zone within the species polygon

HL = the area of habitat determined using the species polygon for the development site

BRW = the biodiversity risk waiting for the species as set out in the Threatened Biodiversity Data Collection

Results

Using Equation 2 from the NSW BAM, 55 species credits for the Hoary Sunray are required to offset impacts to this species. Variables are shown in Table 7-1.

Table 7-2 Hoary Sunray BAM Calculations

Variable	Definition	Result
HC	Vegetation Integrity Score within the vegetation zone for the Hoary Sunray (Calculated in the BDAR)	57.1
HL	Area of habitat for the Hoary Sunray (ha).	1.9*
BRW	Biodiversity Risk Rating for the Hoary Sunray	2.0
	Hoary Sunray Species offset credits required	54.25

*1.9 ha calculated using the Commonwealth Offset Assessment Guide

7.3 OFFSETS

A search of the NSW biodiversity credit register showed equivalent Hoary Sunray credits are available for trading within the NSW Biodiversity Offsets Scheme. The 55 Hoary Sunray credits would be retired by purchasing 55 equivalent Hoary Sunray Credits through the NSW Biodiversity Offsets Scheme.

8 ECONOMIC AND SOCIAL MATTERS

8.1 CONSIDERATION OF BOTH COSTS AND BENEFITS.

Costs

- Social costs include disruption to the existing Karabar High School and traffic along Alanbar Road during construction
- Environmental costs include the loss of 0.6 ha of Box-Gum Woodland and loss of 1400 federally listed Hoary Sunray

Benefits

The project benefits include:

- A new school for special purposes to service children with special needs in the local community
- Quality education facilities
- Queanbeyan students with special needs no longer need to travel into Canberra.

8.2 DISCUSSION OF RELEVANT PUBLIC CONSULTATION

This project is guided by the Project Reference Group (PRG), which consists of key stakeholders and representatives from School Infrastructure New South Wales (SINSW), Department of Education, local school principals and community members who have met regularly to date, on almost a monthly basis. The project has been discussed at length with the PRG providing advice and feedback on various design elements. The community garden and landscaping of the proposed SSP has been discussed at length at these meetings. Landscape designers have been engaged who are respectful of the native flora and fauna of the area and have taken on board feedback from the PRG to include in designs. Detailed design of the landscaped areas could include translocation or seed dispersal of Hoary Sunray plants to be removed.

Broader public consultation has been undertaken with the local community through an information booth held at the local shopping centre on 24th October 2018. This consultation focused mainly on the building design aspects. Community engaged on the day voiced support for the project. Further information booths and in-depth community sessions will be held as part of the ongoing consultation process.

The previous Education Director and current Acting Executive Director Matthew Brown and current Acting Education Director Fiona Senior Conroy have met with local Aboriginal Elders (Aunties) in the area who have asked for a new Aboriginal garden for the children to celebrate Aboriginal culture. As the project progresses, the intent is to engage local children from neighbouring schools to help with the design, and planting of the gardens. Principals of the schools have been supportive of setting this up in the detailed design phase.

Feedback continues to be received via the SINSW website, phone line and email.

9 ENVIRONMENTAL HISTORY OF THE PERSON TAKING THE CONTROLLED ACTION

SINSW is undertaking the action. SINSW holds a satisfactory record of environmental management. There are no past or present proceedings under a Commonwealth, State or Territory law for the protection of the environment or the conservation and sustainable use of natural resources against the company or its directors.

SINSW currently has no environmental policy and planning framework, however it has committed to mitigation measure listed in the BDAR and in Table 6-1 above to manage the environmental impact of the construction and operation of Queanbeyan SSP.

10 CONCLUSION

Further assessment was considered for eight federally listed threatened species as requested by the Department of Environment and Energy. Of these, one species (Hoary Sunray) would be impacted by the proposal with the loss of approximately 0.6ha of suitable habitat. A combination of the Commonwealth Offsets Guide and the NSW BAM was used to calculate an equivalent offset for the Hoary Sunray. This generated the requirement for 55 Hoary Sunray species credits to be offset under the NSW BAM. These credits would be retired within the NSW Biodiversity Offsets scheme.

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- Office of Environment and Heritage (2016) NSW Guide to Surveying Threatened Plants.
- Sinclair (2010) National Recovery Plan for the Hoary Sunray *Leucochrysum albicans* var. *tricolor* Department of Sustainability and Environment, Victoria.
- Threatened Species Section (2019). *Leucochrysum albicans* subsp. *tricolor* (grassland paperdaisy): Species Management Profile for Tasmania's Threatened Species Link. <https://www.threatenedspecieslink.tas.gov.au/Pages/Leucochrysum-albicans-subsp-tricolor.aspx>. Department of Primary Industries, Parks, Water and Environment, Tasmania, accessed July 2019.

APPENDIX A – ADDITIONAL INFORMATION REQUIRED FOR PRELIMINARY DOCUMENTATION

APPENDIX B – ASSESSMENT OF SIGNIFICANCE

Hoary Sunray

Table B1 outlines an assessment of significance for an endangered species under the EPBC Act for the Hoary Sunray at the proposed site for the Queanbeyan SSP.

Table B 1 Assessment of Significance: Hoary Sunray

Criteria	Significant Impact Likely
<p>a) Will the action lead to a long-term decrease in the size of a population of a species?</p> <p>The Hoary Sunray is a tufted perennial paper daisy found in grassland and woodland at relatively high elevations, flowering in spring and summer. After flowering it dries out to rootstock (Sinclair 2010). It occurs on a variety of soil types including clays, clay loams, stony and gravelly soil on heavy soils (Sinclair 2010), in natural or semi-natural vegetation and grazed or ungrazed habitat. It is wind dispersed and an obligate outbreeder. Bare ground is required for germination.</p> <p>On the proposed site, 1,400 individuals have been identified. Potentially all of these may be removed during the proposed development, or subject to increased disturbance by a greater number of students utilising the area.</p> <p>The nearest recent record of this species is less than 1 km west on Southbar Road. There are 32 records within a 5 km radius of the proposed site, predominantly in urban areas (ALA, 2019).</p> <p>The proposal is therefore considered likely to lead to a long-term decrease in the size of a population of these species.</p>	Yes
<p>b) Will the action reduce the area of occupancy of the species?</p> <p>The proposal would result in the loss of 1,400 individuals and up to 0.6 ha of known habitat for these species. The proposal is therefore considered likely to reduce the area of occupancy of the species.</p>	Yes
<p>c) Will the action fragment an existing population into two or more populations?</p> <p>The site is located in a developed residential area, and the individuals identified on the proposed site are not known to be connected to or near other populations of the species. The proposal is therefore considered unlikely to fragment an existing population into two or more populations.</p>	No
<p>d) Will the action adversely affect habitat critical to the survival of a species?</p> <p>The proposal would remove up to 1,400 individuals and up to 0.6 ha of existing known habitat for the species. Given the small area, the current and historic land use (school grounds) and its location in a developed residential area, the proposal is considered unlikely to adversely affect habitat critical to the survival of a species.</p>	No
<p>e) Will the action disrupt the breeding cycle of a population?</p> <p>The proposal would remove up to 1,400 individuals and up to 0.6 ha of existing known habitat for the species. The proposal is therefore likely to disrupt the breeding cycle of a population.</p>	Yes
<p>f) 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?</p> <p>The proposal would remove up to 1,400 individuals and up to 0.6 ha of existing known habitat for the species, which is a relatively small area of habitat. This habitat is considered to be under threat regardless of the proposed action, given the location within a school yard and current activities including mowing and play grounds.</p> <p>Within NSW, there are thought to be 100,000 individuals, with a national population somewhere between 400,000 and 1,000,000 (Sinclair 2010; DoEE 2019). The loss of Hoary Sunray at the proposed action site represents approximately 1.4% of the state population, and 0.3% of the conservative national population estimate.</p>	No

The proposal is therefore considered unlikely to modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.	
g) Will the action result in invasive species that are harmful to a critically endangered or endangered/vulnerable species becoming established in the endangered / critically endangered	
<p>The proposal has potential to introduce and spread weeds which may be harmful to the species. These risks are considered manageable using best practice during the construction phase. Additionally, the site is located in a developed residential area and the population on site is not known to be connected or near other populations of the species, thereby reducing the risk of weeds spreading to other populations. The school is also committed to ongoing weed control through operation.</p> <p>The proposed action is unlikely to result in the establishment of invasive species that are harmful to the species.</p>	No
h) Will the action introduce disease that may cause the species to decline?	
<p>The proposal has potential to introduce and spread disease which may be harmful to the species. These risks are considered manageable using best practice during the construction phase. Additionally, the site is located in a developed residential area and the population on site is not known to be connected or near other populations of the species, thereby reducing the risk of disease spreading to other populations. The proposed action is unlikely to result in the establishment of invasive species that are harmful to the species.</p>	No
i) Will the action interfere with the recovery of the species?	
<p>National recovery plans have been developed for Hoary Sunray (Sinclair 2011). The plan has the following objectives:</p> <ol style="list-style-type: none"> 1. Determine taxonomy, distribution, abundance and population structure 2. Determine habitat requirements 3. Ensure that all populations and their habitat are protected and managed 4. Identify and manage threats to populations 5. Identify key biological functions 6. Determine growth rates and viability of populations 7. Build community support for conservation <p>The proposal conflicts with item (3) as part of the recovery plan, as it does not ensure that all populations and their habitats are protected and managed.</p>	Yes

The Hoary Sunray has been identified in the project site area. Of the nine criteria for significant impact to an endangered species, the project is likely to cause a significant impact to four of these criteria. The proposal is therefore considered to significantly impact the hoary sunray.

APPENDIX C EPBC OFFSETS CALCULATOR

Offsets Assessment Guide

For use in determining offsets under the *Environment Protection and Biodiversity Conservation Act 1999*
2 October 2012

This guide relies on Macraa being enabled in your browser.

Matter of National Environmental Significance

Name	Haaru Sunray
EPBC Act status	Endangered
Annual probability of extinction <small>Based on IUCN category definition</small>	1.2%

Impact calculator							
Impact calculator	Protected matter attributes	Attribute relevant to case?	Description	Quantum of impact		Units	Information source
	<i>Ecological communities</i>						
	Area of community <input type="button" value="Clear row"/>	No		Area			
				Quality			
				Total quantum of impact	0.00		
	<i>Threatened species habitat</i>						
	Area of habitat <input type="button" value="Clear row"/>	Yes	Laz of Haaru Sunray Habitat	Area	0.6	Hectares	Vegetation Surveys
				Quality	8	Scale 0-10	
				Total quantum of impact	0.48	Adjusted hectares	
	Protected matter attributes	Attribute relevant to case?	Description	Quantum of impact		Units	Information source

Key to Cell Colours	
User input required	
Drop-down list	
Calculated output	
Not applicable to attribute	



Offset calculator																				
Protected matter attributes	Attribute relevant to case?	Total quantum of impact	Units	Proposed offset	Time horizon (years)		Start area and quality		Future area and quality without offset		Future area and quality with offset		Raw gain	Confidence in result (%)	Adjusted gain	Net present value (adjusted hectares)	% of impact offset	Minimum (90%) direct offset required	Cost (\$ total)	Information source
					Start	End	Start area (hectares)	Start quality (scale of 0-10)	Future area without offset (hectares)	Future quality without offset (scale of 0-10)	Future area with offset (hectares)	Future quality with offset (scale of 0-10)								
<i>Ecological Communities</i>																				
Area of community	No				Risk-related time horizon (max. 20 years)		Start area (hectares)		Risk of loss (%) without offset	0.0	Risk of loss (%) with offset	0.0								
					Time until ecological condition is restored		Start quality (scale of 0-10)		Future area without offset (adjusted) (hectares)		Future quality without offset (scale of 0-10)		Future area with offset (adjusted) (hectares)		Future quality with offset (scale of 0-10)					
<i>Threatened species habitat</i>																				
Area of habitat	Yes	0.48	Adjusted hectares	Kneun Heery Sunray Habitat managed and protected	Time over which loss is averted (max. 20 years)	20	Start area (hectares)	1.9	Risk of loss (%) without offset	0%	Risk of loss (%) with offset	0%	0.00	90%	0.00	0.00	0.48	100.69%	Yes	
					Time until ecological condition is restored	5	Start quality (scale of 0-10)	6	Future area without offset (adjusted) (hectares)	1.9	Future quality without offset (scale of 0-10)	5	Future area with offset (adjusted) (hectares)	8	Future quality with offset (scale of 0-10)	8	3.00	90%	2.70	2.54
Protected matter attributes	Attribute relevant to case?	Total quantum of impact	Units	Proposed offset	Time horizon (years)	Start value	Future value without offset	Future value with offset	Raw gain	Confidence in result (%)	Adjusted gain	Net present value	% of impact offset	Minimum (90%) direct offset required	Cost (\$ total)	Information source				
Number of features e.g. Nest hollow, habitat tree	No																			
Condition of habitat Change in habitat condition, but no change in extent	No																			

Offset calculator

APPENDIX D EPBC REFERRAL

Title of Proposal - Queanbeyan SPP**Section 1 - Summary of your proposed action**

Provide a summary of your proposed action, including any consultations undertaken.

1.1 Project Industry Type

Commercial Development

1.2 Provide a detailed description of the proposed action, including all proposed activities.

The project comprises the construction of a new School for Special Purposes (SPP) in Queanbeyan. The proposal area is located in the grounds of Karabar High School. The works would provide up to seven teaching spaces and all required core facilities for students in Kindergarten through year 12. The proposal area is approximately 0.9 ha and located in a treed area next to the sports field of Karabar High School. The proposal area falls within the grounds of a school and the vegetation has been highly disturbed through previous clearing, fragmentation and trampling.

The proposed works involve the following:

- Two buildings to accommodate the seven learning spaces
- One building to accommodate the hall, library and special programs
- One building to accommodate staff and administration
- An area for a future hydrotherapy pool
- Four outdoor spaces, including two outdoor learning spaces and two common spaces
- Footpaths connecting the buildings
- A porte-cochere/vehicle drop-off road, connecting to Alanbar Street at one entry and one exit point
- Carparking, located between Alanbar Street and the vehicle drop-off road

The proposed activities include:

- Clearing of existing vegetation
- Construction of the facilities described above
- Operation of the SPP by up to 49 students

1.3 What is the extent and location of your proposed action? Use the polygon tool on the map below to mark the location of your proposed action.

Area	Point	Latitude	Longitude
SPP footprint	1	-35.365588687329	149.22565801354
SPP footprint	2	-35.365759294669	149.22706349106
SPP footprint	3	-35.366459218442	149.22693474503
SPP footprint	4	-35.366275489039	149.22550780983

Area	Point	Latitude	Longitude
SPP footprint	5	-35.365588687329	149.22565801354

1.5 Provide a brief physical description of the property on which the proposed action will take place and the location of the proposed action (e.g. proximity to major towns, or for off-shore actions, shortest distance to mainland).

The proposal area is located on the same site as Karabar High School and Queanbeyan South Public School in the suburb of Karabar in Queanbeyan NSW. The site is bound by Donald Road to the West, Anne Street to the North, Alanbar Street to the South and Cameron Drive to the East. The proposal area is approximately 0.9 ha and located in a treed area next to the sports field of Karabar High School. The proposal area falls within the grounds of a school and the vegetation has been highly disturbed through previous clearing, fragmentation and trampling.

The proposal area is zoned R2 Low Density Residential under the Queanbeyan Local Environment Plan (LEP) 2012. The site occurs within a residential area. Land use surrounding the development site is educational facilities to the east and west, sports field directly to the north and urban residential to the south.

1.6 What is the size of the proposed action area development footprint (or work area) including disturbance footprint and avoidance footprint (if relevant)?

0.9 ha

1.7 Is the proposed action a street address or lot?

Lot

1.7.2 Describe the lot number and title.183/DP239180

1.8 Primary Jurisdiction.

New South Wales

1.9 Has the person proposing to take the action received any Australian Government grant funding to undertake this project?

No

1.10 Is the proposed action subject to local government planning approval?

Yes

1.10.1 Is there a local government area and council contact for the proposal?

No

1.11 Provide an estimated start and estimated end date for the proposed action.

Start date 12/2019

End date 12/2020

1.12 Provide details of the context, planning framework and State and/or Local government requirements.

NSW Legislation:

Environmental Planning and Assessment Act 1979 (EP&A Act): Development in NSW is subject to the requirements of the EP&A Act and its associated regulations. Environmental planning instruments prepared pursuant to the Act set the framework for approvals under the Act. The SPP project proposal will be assessed under Part 4 of the EP&A Act.

Queanbeyan Local Environment Plan 2012: The entire site is located within the Queanbeyan – Palerang Regional Council LGA to which the provisions of the Queanbeyan Local Environmental Plan 2012 apply. The proposal area is zoned R2 Low Density Residential under the *Queanbeyan Local Environment Plan (LEP) 2012*. The site occurs within a residential area. Land use surrounding the development site is educational facilities to the east and west, sports field directly to the north and urban residential to the south. The proposal is consistent with existing land use and is not inconsistent with the objectives of this zoning.

Biodiversity Conservation Act 2016: This Act relates to the conservation of biodiversity. The purpose of this Act is to maintain a healthy, productive and resilient environment for the greatest well-being of the community consistent with the principles of the ecological sustainable development. The BOS threshold for clearing of native vegetation on this property is 0.25ha. The development would very likely exceed the 0.25ha of vegetation clearing. This triggers the need for a Biodiversity Development Assessment Report (BDAR) to determine the offset requirements for the proposal. A NSW Bionet Search conducted 20 July 2018 identified 38 threatened species (7 flora species and 31 fauna species) that have been recorded within 10km of the study area. No records of threatened species occur within the proposal area. A flora and fauna assessment was subsequently conducted 26 July 2018 to assess species occurring on the site. A BDAR was completed in January 2019 and is attached with this referral.

Protection of the Environment Operations Act 1997: This Act aims to reduce pollution of the environment and governs the way discharge of pollutants is to be managed. This includes pollution of waters. This Act also requires Environment Protection Licences to be obtained for the conduct of certain activities. Under schedule 1 of this act, this project would not require these licenses.

Rural Fires Act 1997: This Act relates to the prevention and minimisation of bushfires and their impacts. The site is not mapped as bushfire prone. An assessment of both the potential to cause a fire and impede access to fight a fire will be required in the impact assessment. This

site is not mapped as bushfire-prone.

Fisheries Management Act 1994: This Act sets out to conserve fish stocks and key fish habitats, threatened species, populations and ecological communities of fish and marine vegetation and biological diversity. Further, it aims to promote viable commercial fishing, aquaculture industries and recreational fishing opportunities. Key fish habitat is defined as aquatic habitat important to the maintenance of fish populations generally and the survival and recovery of threatened aquatic species. A site assessment occurring on 26 July 2018 assessed that no natural water bodies are on site, and while one man-made frog pond is present on the site, no key fish habitat, threatened species or populations listed under the *Fisheries Management Act* are considered to occur within the proposal site boundaries.

The following legislation is not applicable:

- *National Parks and Wildlife Act 1974*
- *Forestry Act 2012*:
- *Water Management Act 2000*:
- *Roads Act 1993*
- *Crown Lands Act 1989*

Commonwealth Legislation

Environmental Protection and Biodiversity Conservation Act 1999: A search of the Commonwealth Protected Matters Search Tool conducted 20 July 2018 indicates that there are no World Heritage or National Heritage areas or items within 10km of the proposal site. Search results listed four Wetlands of International Importance that are either known to occur or have potential to occur within 10km, however these are not relevant to the site or proposal. The proposed development is not likely to impact Commonwealth land. The search indicated 12 threatened flora species and 27 threatened fauna species that have the potential to occur in the study area. A flora and fauna assessment was subsequently conducted 26 July 2018 to assess species occurring on the site. One threatened species, the Hoary Sunray (*Leucochrysum albicans*) was detected within the study area. Further studies for species listed under the EPBC Act have been undertaken

1.13 Describe any public consultation that has been, is being or will be undertaken, including with Indigenous stakeholders.

This project is guided by the Project Reference Group (PRG), which consists of key stakeholders and representatives from School Infrastructure New South Wales (SINSW), Dept of Education, local school principals and community members who have met regularly to date,

on almost a monthly basis. The project has been discussed at length with the PRG providing advice and feedback on various design elements. The community garden and landscaping of the proposed SSP has been discussed at length at these meetings. Landscape designers have been engaged who are respectful of the native flora and fauna of the area and have taken on board feedback from the PRG to include in designs.

Broader public consultation has been undertaken with the local community through an information booth held at the local shopping centre on 24 October 2018. This consultation focused mainly on the building design aspects. Community engaged on the day voiced support for the project. Further information booths and in-depth community sessions will be held as part of the ongoing consultation process.

The previous Education Director and current Acting Executive Director Matthew Brown and current Acting Education Director Fiona Senior Conroy have met with local Aboriginal Elders (Aunties) in the area who have asked for the Aboriginal garden for the children and celebrate Aboriginal culture. The Aunties have been positive about the project and have said they will ratify the project once their desires are met. As the project progresses, our intent is to engage local children from neighbouring schools to help with the design, and planting of the gardens. Principals of the schools have been supportive of setting this up in the detailed design phase of the project, scheduled for early 2019.

Further public consultation will continue throughout the project at major milestones, and both local Aboriginal communities and the school community will be involved at these stages.

Feedback is also received via the SINSW website, phone line and email.

1.14 Describe any environmental impact assessments that have been or will be carried out under Commonwealth, State or Territory legislation including relevant impacts of the project.

A flora and fauna assessment was conducted July 2018.

A Biodiversity Development Assessment Report (BDAR) consistent with NSW *Biodiversity Conservation Act 2016* was undertaken in January 2019 and is attached to this referral.

A Statement of Environmental Effects (SEE) will be prepared in accordance with Part 4 of the NSW *Environmental Planning and Assessment Act 1979*.

1.15 Is this action part of a staged development (or a component of a larger project)?

No

1.16 Is the proposed action related to other actions or proposals in the region?

No

Section 2 - Matters of National Environmental Significance

Describe the affected area and the likely impacts of the proposal, emphasising the relevant matters protected by the EPBC Act. Refer to relevant maps as appropriate. The [interactive map tool](#) can help determine whether matters of national environmental significance or other matters protected by the EPBC Act are likely to occur in your area of interest. Consideration of likely impacts should include both direct and indirect impacts.

Your assessment of likely impacts should consider whether a bioregional plan is relevant to your proposal. The following resources can assist you in your assessment of likely impacts:

- [Profiles of relevant species/communities](#) (where available), that will assist in the identification of whether there is likely to be a significant impact on them if the proposal proceeds;
- [Significant Impact Guidelines 1.1 – Matters of National Environmental Significance](#);
- [Significant Impact Guideline 1.2 – Actions on, or impacting upon, Commonwealth land and Actions by Commonwealth Agencies](#).

2.1 Is the proposed action likely to have ANY direct or indirect impact on the values of any World Heritage properties?

No

2.2 Is the proposed action likely to have ANY direct or indirect impact on the values of any National Heritage places?

No

2.3 Is the proposed action likely to have ANY direct or indirect impact on the ecological character of a Ramsar wetland?

No

2.4 Is the proposed action likely to have ANY direct or indirect impact on the members of any listed species or any threatened ecological community, or their habitat?

Yes

2.4.1 Impact table

Species	Impact
Hoary Sunray (<i>Leucochrysum albicans</i> var. <i>tricolor</i>)	Loss of or impact on approximately 1400 Hoary Sunray plants (endangered). This will reduce the area of occupancy of the species and may

Species	Impact
	lead to a long-term decrease in the size of a population. An assessment of significance report is attached to this referral

2.4.2 Do you consider this impact to be significant?

Yes

2.5 Is the proposed action likely to have ANY direct or indirect impact on the members of any listed migratory species, or their habitat?

Yes

2.5.1 Impact table

Species	Impact
Fork-tailed Swift	Proposal area contains habitat considered to be suitable for this species. There is likely to be no impact to this species. An assessment of significance report is attached to this referral.
White-throated Needletail	Proposal area contains habitat considered to be suitable for this species. There is likely to be no impact to this species. An assessment of significance report is attached to this referral.

2.5.2 Do you consider this impact to be significant?

No

2.6 Is the proposed action to be undertaken in a marine environment (outside Commonwealth marine areas)?

No

2.7 Is the proposed action to be taken on or near Commonwealth land?

No

2.8 Is the proposed action taking place in the Great Barrier Reef Marine Park?

No

2.9 Is the proposed action likely to have ANY direct or indirect impact on a water resource related to coal/gas/mining?

No

2.10 Is the proposed action a nuclear action?

No

2.11 Is the proposed action to be taken by the Commonwealth agency?

No

2.12 Is the proposed action to be undertaken in a Commonwealth Heritage Place Overseas?

No

2.13 Is the proposed action likely to have ANY direct or indirect impact on any part of the environment in the Commonwealth marine area?

No

Section 3 - Description of the project area

Provide a description of the project area and the affected area, including information about the following features (where relevant to the project area and/or affected area, and to the extent not otherwise addressed in Section 2).

3.1 Describe the flora and fauna relevant to the project area.

Ecological Communities

An EPBC Protected Matters Search of the proposal site and a 10km buffer was undertaken 20 July 2018 and identified two endangered ecological communities that had the potential to occur within the study area: Natural Temperate Grassland of the South Eastern Highlands; and White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived native grassland (Box-Gum Woodland)

Based on the site inspection and floristic plots, the native vegetation within the site was classified to one plant community type (PCT). The dominant overstorey vegetation within the site is Apple Box and Yellow Box and this provided the best match with PCT 654 – Apple Box – Yellow Box dry grassy woodland of the South Eastern Highlands Bioregion. This PCT forms part of the Box Gum Woodland Threatened Ecological Community. This community is listed as Endangered under the NSW *Biodiversity Conservation Act*. However, based on the lack of diversity of native understorey species and the small size of the patch, the vegetation was not considered to meet the criteria for the EPBC listed Box-Gum Woodland.

Flora

The EPBC Protected Matters Search identified 12 threatened flora species were identified. Of these, one is critically endangered (Canberra Spider Orchid, *Caladenia actensis*), six are endangered, and five are listed as vulnerable.

During the site assessment, one threatened forb – the Hoary Sunray (*Leucochrysum albicans* var. *tricolor*) was detected within the proposal area. The Hoary sunray is listed as Endangered under the EPBC Act, and is a small perennial paper daisy and occurs in grassland and woodland habitats. It is estimated around 1400 plants are scattered throughout the area, however an extensive targeted search has not yet been undertaken.

A habitat assessment was undertaken for the remaining threatened flora species identified in the EPBC Protected Matters Search report as having the potential to occur within the development sites to determine the likelihood the species being present in the proposal area. Six of these flora species are considered to have suitable habitat in the proposal area.

These are:

- Canberra Spider Orchid (*Caladenia actensis*)
- Basalt Peppergrass (*Lepidium hyssopifolium*)
- Button Wrinklewort (*Rutidosis leptorrhynchoides*)
- Austral Toadflax (*Thesium australe*)
- Small Purple-pea (*Swainsona recta*)
- Tarengo Leek Orchid (*Prasophyllum petilum*)

Fauna and Fauna Habitat

Twenty-four threatened fauna species were identified in the EPBC Protected Matters Search as having the potential to occur. A habitat assessment for these species was undertaken in the proposal area to determine the likelihood the species being present on the site. Four of these fauna species are considered to have suitable habitat in the proposal area.

These are:

- Swift Parrot (*Lathamus discolor*)
- Superb Parrot (*Polytelis swainsonii*)
- Koala (*Phascolarctos cinereus*)

Further surveys have been conducted for these species.

During the site survey, two hollow bearing trees were identified within the proposal area. Hollows provide nesting and breeding habitat for many threatened bird and mammal species. One apple box tree has a large hollow that appeared to have signs of use with grass and straw in the base of the hollow. No fallen timber or rocky outcrops that provide habitat for ground dwelling fauna were identified on site. No evidence of use such as large stick nests or fauna scratchings were observed. The proposal area does not form part of any major connectivity through the landscape as the site is surrounded by urban residential areas.

No threatened fauna species were detected during the site surveys.

Migratory Species

Fourteen listed migratory species were identified in the EPBC Protected Matters Search tool as having the potential to occur within the proposal area or 10km buffer. Based on a habitat assessment, two of these species could occur on the site on occasion: Fork-tailed Swift (*Apus pacificus*) and White-throated Needletail (*Hirundapus caudacutus*). However, as these species

are almost exclusively aerial, they are considered unlikely to rely on the habitats present within the proposal area.

3.2 Describe the hydrology relevant to the project area (including water flows).

Karabar is within the Murray-Darling Basin. The Murray-Darling Basin is the largest and most complex river system in Australia, running from Qld, through NSW and the ACT, Vic and SA, spanning 77,000km of rivers. The site is located within the Murrumbidgee catchment, which is a major component of the Murray-Darling Basin, joining the Murray River at Balranald, with an area of 84,000 square kilometres. The Murrumbidgee catchment has a diverse range of landscapes, and significant agricultural, social and conservation values.

Karabar is located within the Molonglo sub catchment, which encompasses parts of the Queanbeyan-Palerang Regional Council and Snowy-Monaro Regional Council, and part of the ACT. Included within the boundary is the entire city of Queanbeyan and a portion of the central suburbs of Canberra.

The Queanbeyan River is one of the major rivers in the catchment, flowing from the southern edge of the catchment. The Queanbeyan River flows north through the Googong Reservoir approximately 8km south of the site and is joined by Valley Creek approximately 3km southeast of the site. The Queanbeyan River flows south to north approximately 1.3km east of the site, continuing north until it joins the Molonglo River 4km north of the site in ACT. The Molonglo River is joined by Woolshed Creek before it flows into Lake Burley Griffin approximately 11.4km north-west of the site in Canberra.

The Queanbeyan River is the closest waterway to the proposal site. No waterways are likely to be impacted during the proposed works.

Groundwater:

The closest registered groundwater bore is located 1.5km north of the site. A number of registered groundwater bores are located approximately 1.6 to 3km east and north-east of the site. Groundwater in the Queanbeyan City Council area is generally of good to moderate quality and low yield. Groundwater flow is mostly from local flow systems in sedimentary and intrusive Palaeozoic rock, which provides a mix of good to moderate quality groundwater. A low natural rainfall is likely to be the most significant factor keeping bore levels low, which is further compounded by an increase in extraction (Regional State of the Environment Report 2008, Queanbeyan Groundwater).

3.3 Describe the soil and vegetation characteristics relevant to the project area.

Soil characteristics:

The soil landscape that occurs within the project area is Queanbeyan (qn). This landscape is comprised of rolling to undulating low hills and rises on metasediments of the Canberra

Lowlands and includes much of the Queanbeyan urban area and Majura Firing Range.

The landscape is generally comprised of low hills with moderately inclined slopes. Soils include: shallow well-drained rudosols (Lithosols) on crests and upper slopes; moderately deep and moderately well-drained Red Kurosols (Red Podzolic Soils) on sideslopes; and moderately deep to deep imperfectly drained Magnesic Brown Chromosols (Yellow Podzolic soils) in drainage lines. Limitations include strongly acid shallow soils of moderate aluminium toxicity potential, low fertility and low available water-holding capacity. Soils have the potential for sheet erosion and gully erosion.

Contaminated lands:

A search of the contaminated land record, managed by the NSW EPA, identified no sites of known contamination on the proposed site. Due to existing nearby land use as a school and residential area, the potential for contamination to be present and disturbed by construction activities is considered to be low.

Vegetation characteristics:

The proposal area falls within the grounds of a school and the vegetation has been highly disturbed through previous clearing, fragmentation and trampling. Around 12 mature trees remain in the area comprised of Yellow Box (*Eucalyptus melliodora*), Apple Box (*Eucalyptus bridgesiana*) and Red Stringybark (*Eucalyptus macrorhyncha*). These species have shown signs of regeneration and younger trees are also present in the understory. These remnant trees create an intact native overstory cover within the benchmark for this vegetation type.

A few native shrubs remain under the canopy of some remnant trees. These species are Sweet Bursaria (*Bursaria spinosa*), Early Wattle (*Acacia genistifolia*) and Bitter Cryptandra (*Cryptandra amara*). The invasive native shrub Cootamundra Wattle (*Acacia baileyana*) is also present but this species is not local to the area.

The groundcover is in various condition with some sections degraded and sparse through regular trampling and mowing while other sections are comprised of a diverse and intact groundcover. However, throughout the whole site, the ground cover is comprised of predominantly native grasses and forbs such as Wallaby Grasses (*Rytidosperma spp.*), Spear grasses (*Austrostipa scabra*), Wire Grasses (*Aristida spp.*), Red Grass (*Bothriochloa macra*), Native Wheat Grass (*Elymus scaber*) and Mat rush (*Lomandra filiformis*). The groundcover is comprised of more than 50% native vegetation foliage cover.

The front section along Alanbar Road has been fenced and planted out as an indigenous garden with native shrubs such as Red-stemmed Wattle (*Acacia rubida*), Black Wattle (*Acacia decurrens*), Bottle Brush (*Callistemon sp.*) and Grevillea. This area still maintains an overstory of mature Yellow Box and Apple Box and a diverse native groundcover.

The northern most area of the proposal area is a sports field and is comprised of exotic

manicured grasses. Native grasses persist on the edge of the sports field adjacent to the woodland, however comprise less than 50% of the vegetation cover.

One protected species, Hoary Sunray (*Leucochrysum albicans* var. *tricolor*) was detected in high abundance throughout the whole site. It is estimated around 1400 plants are scattered throughout the area. This species is listed as Endangered under the Commonwealth EPBC Act but is not listed as threatened under the NSW BC Act.

Two hollow bearing trees are present within the proposal area. Hollows provide nesting and breeding habitat for many threatened bird and mammal species. One apple box has a large hollow that appears to have signs of use with grass and straw in the base of the hollow.

3.4 Describe any outstanding natural features and/or any other important or unique values relevant to the project area.

Not applicable.

3.5 Describe the status of native vegetation relevant to the project area.

Threatened Ecological communities (TECs) (EPBC Act)

One critically endangered ecological community, White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived native grassland (Box-Gum Woodland), was identified to have the potential to occur within the study area by the EPBC Protected Matters search. This community has the potential to occur within the study area, based on the presence of remnant Yellow Box in the proposal area. An analysis of whether the vegetation meets the condition threshold for the EPBC listed community was undertaken. Based on the lack of diversity of native understory species and the small size of the patch, the vegetation was not considered to meet the criteria for the EPBC listed Box-Gum Woodland.

Summary of listed native vegetation relative to the project area (EPBC Act and BC Act):

Species confirmed on site:

Hoary Sunray (*Leucochrysum albicans* var. *tricolor*): endangered (EPBC Act).

Species with the potential to occur on site (suitable habitat is present and the species was not found on site):

Canberra Spider Orchid (*Caladenia actensis*): critically endangered (EPBC Act).

Basalt Peppergrass (*Lepidium hyssopifolium*): endangered (EPBC Act); endangered (BC Act).

Button Wrinklewort (*Rutidosia leptorrhynchoidea*): endangered (EPBC Act); endangered (BC Act).

Austral Toadflax (*Thesium australe*): vulnerable (EPBC Act); vulnerable (BC Act).

Small Purple-pea (*Swainsona recta*): endangered (EPBC Act); endangered (BC Act).

Tarengo Leek Orchid (*Prasophyllum petilum*): endangered (EPBC Act); endangered (BC Act).

3.6 Describe the gradient (or depth range if action is to be taken in a marine area) relevant to the project area.

The landscape on the proposal site is relatively flat and approximately 610m above sea level.

3.7 Describe the current condition of the environment relevant to the project area.

The proposal area falls within the grounds of a school and the vegetation has been highly disturbed through previous clearing, fragmentation and trampling. Around 30 mature trees remain in the area. These tree species have shown signs of regeneration and younger trees are also present in the understory. These remnant trees create an intact native overstorey cover within the benchmark for this vegetation type.

A few native shrubs remain under the canopy of some remnant trees. The groundcover is in various condition with some sections degraded and sparse through regular trampling and mowing while other sections are comprised of a diverse and intact groundcover. However, throughout the whole site, the ground cover is comprised of predominantly native grasses and forbs. The groundcover is comprised of more than 50% native vegetation foliage cover.

The front section along Alanbar Road has been fenced and planted out as an indigenous garden with native shrubs. The northern most area of the proposal area is a sports field and is comprised of exotic manicured grasses. Native grasses persist on the edge of the sports field adjacent to the woodland, however comprise less than 50% of the vegetation cover.

3.8 Describe any Commonwealth Heritage Places or other places recognised as having heritage values relevant to the project area.

Fifteen Commonwealth Heritage places were listed under the EPBC Protected Matters Report conducted on 20 July 2018. All places are located within ACT, the border of which is 3.2 km from the site.

3.9 Describe any Indigenous heritage values relevant to the project area.

A basic AHIMS search was conducted on the 3 January 2019 for the site and a 1km buffer. One Aboriginal site was identified approximately 1km south-east of the site. The proposed development is unlikely to affect the site.

3.10 Describe the tenure of the action area (e.g. freehold, leasehold) relevant to the project area.

Freehold

3.11 Describe any existing or any proposed uses relevant to the project area.

The proposed site is located in the Queanbeyan-Pallerang Local Government Area on land zoned low-density residential use. Residential properties, schools and public parks is dominant in the area surrounding the proposal site. The site is located on the same lot as the Karabar High School, situated directly to the west of the proposed SPP site.

Section 4 - Measures to avoid or reduce impacts

Provide a description of measures that will be implemented to avoid, reduce, manage or offset any relevant impacts of the action. Include, if appropriate, any relevant reports or technical advice relating to the feasibility and effectiveness of the proposed measures.

Examples of relevant measures to avoid or reduce impacts may include the timing of works, avoidance of important habitat, specific design measures, or adoption of specific work practices.

4.1 Describe the measures you will undertake to avoid or reduce impact from your proposed action.

A flora and fauna assessment was conducted by NGH Environmental in July 2018 (NGH Environmental 2018, *Queanbeyan SPP Flora and Fauna Assessment*, attached), which informed the proposed site layout design.

The final site layout has not been able to completely avoid clearing of native vegetation due to the small area of the development site providing limited scope for movement of buildings, carparks or infrastructure.

Vegetation constituting the highest ecological constraints such as mature Eucalyptus trees would be avoided and minimised as far as practical by:

- Retaining large significant trees that will continue to provide habitat for fauna species
- Landscaping plans incorporating the existing trees and using the natural environment for nature education areas.
- Making provisions for the landscaping of new plantings.

4.2 For matters protected by the EPBC Act that may be affected by the proposed action, describe the proposed environmental outcomes to be achieved.

The outcomes proposed for Hoary Sunray are to minimise the impacts as much as practical and to offset all residual impacts. Existing commitments include:

- minimising indirect impacts by utilising weed hygiene and sediment erosion controls
- creating exclusion zones for areas of Hoary Sunray not impacted by the building footprint by creating temporary fencing
- avoiding stockpiling in this area

Section 5 – Conclusion on the likelihood of significant impacts

A checkbox tick identifies each of the matters of National Environmental Significance you identified in section 2 of this application as likely to be a significant impact.

Review the matters you have identified below. If a matter ticked below has been incorrectly identified you will need to return to Section 2 to edit.

5.1.1 World Heritage Properties

No

5.1.2 National Heritage Places

No

5.1.3 Wetlands of International Importance (declared Ramsar Wetlands)

No

5.1.4 Listed threatened species or any threatened ecological community

Listed threatened species and communities - Yes

5.1.5 Listed migratory species

No

5.1.6 Commonwealth marine environment

No

5.1.7 Protection of the environment from actions involving Commonwealth land

No

5.1.8 Great Barrier Reef Marine Park

No

5.1.9 A water resource, in relation to coal/gas/mining

No

5.1.10 Protection of the environment from nuclear actions

No

5.1.11 Protection of the environment from Commonwealth actions

No

5.1.12 Commonwealth Heritage places overseas

No

5.2 If no significant matters are identified, provide the key reasons why you think the proposed action is not likely to have a significant impact on a matter protected under the EPBC Act and therefore not a controlled action.

Not applicable – the proposed action is likely to have a significant impact on a listed threatened species.

Section 6 – Environmental record of the person proposing to take the action

Provide details of any proceedings under Commonwealth, State or Territory law against the person proposing to take the action that pertain to the protection of the environment or the conservation and sustainable use of natural resources.

6.1 Does the person taking the action have a satisfactory record of responsible environmental management? Please explain in further detail.

SINSW holds a satisfactory record of environmental management in our projects and schools. SINSW currently do not have any proceedings against us under environmental law. SINSW develops site specific and project specific environmental management plans and undertake environmental management as required by statutory conditions.

6.2 Provide details of any past or present proceedings under a Commonwealth, State or Territory law for the protection of the environment or the conservation and sustainable use of natural resources against either (a) the person proposing to take the action or, (b) if a permit has been applied for in relation to the action – the person making the application.

To their knowledge, SINSW has no past or present proceedings under a Commonwealth, State or Territory law for the protection of the environment or the conservation and sustainable use of natural resources.

6.3 If it is a corporation undertaking the action will the action be taken in accordance with the corporation's environmental policy and framework?

Yes

6.3.1 If the person taking the action is a corporation, please provide details of the corporation's environmental policy and planning framework.

Due the large variation of SINSW school sites across the state, SINSW currently only have site specific Environment Management Plans. SINSW is working towards developing an over-arching environmental policy and planning framework. Currently, SINSW has guidance documents for navigating environmental statutory processes.

6.4 Has the person taking the action previously referred an action under the EPBC Act, or been responsible for undertaking an action referred under the EPBC Act?

No

Section 7 – Information sources

You are required to provide the references used in preparing the referral including the reliability of the source.

7.1 List references used in preparing the referral (please provide the reference source reliability and any uncertainties of source).

Reference Source	Reliability	Uncertainties
NGH Environmental 2018, Queanbeyan SPP Flora and Fauna Assessment	High	Precautionary assumptions made regarding potential habitat based on literature and existing studies
NGH Environmental 2019, Queanbeyan SPP Biodiversity Development Assessment Report	High	Precautionary assumptions made regarding potential habitat based on literature and existing studies
NGH Environmental 2019, Queanbeyan SPP Assessment of Significance	High	Precautionary assumptions made regarding potential habitat based on literature and existing studies
Hayball 2017, New Queanbeyan SPP: Functional Design Brief Concept Design Report	High	N/A

Section 8 – Proposed alternatives

You are required to complete this section if you have any feasible alternatives to taking the proposed action (including not taking the action) that were considered but not proposed.

8.0 Provide a description of the feasible alternative?

An alternative to the construction and operation of the SPP is to do nothing. However, this action would not present an opportunity for the benefits that constructing the SSP at this site provides:

- It provides beneficial learning opportunities for students in years K – 12.
- It shares the site with Karabar High School, Queanbeyan South Primary School and a pre-school.
- It provides seven learning spaces for up to 49 students.
- It provides for a possible joint use hydrotherapy pool for students.

Five design options were proposed and are described in the attached Functional Design Brief Concept Design Report (Hayball 2017). Option 1a was selected for the following reasons:

- It provides a welcoming environment ideal for achieving learning outcomes.
- It provides appropriate pedestrian and vehicle access.
- It integrates well with other nearby schools (Karabar High School and Queanbeyan South Primary School).
- It interfaces well with the street and maintains its own character and identity.
- It provides the best opportunities for safety and access for the students.

8.1 Select the relevant alternatives related to your proposed action.

8.27 Do you have another alternative?

No

Section 9 – Contacts, signatures and declarations

Where applicable, you must provide the contact details of each of the following entities: Person Proposing the Action; Proposed Designated Proponent and; Person Preparing the Referral. You will also be required to provide signed declarations from each of the identified entities.

9.0 Is the person proposing to take the action an Organisation or an Individual?

Organisation

9.2 Organisation

9.2.1 Job Title

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9.2.2 First Name

Margo

9.2.3 Last Name

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9.2.7 Organisation Telephone

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9.2.8 Organisation E-mail

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9.2.9 I qualify for exemption from fees under section 520(4C)(e)(v) of the EPBC Act because I am:

Not applicable

Small Business Declaration

I have read the Department of the Environment and Energy's guidance in the online form concerning the definition of a small a business entity and confirm that I qualify for a small business exemption.

Signature:..... Date:

9.2.9.2 I would like to apply for a waiver of full or partial fees under Schedule 1, 5.21A of the EPBC Regulations

No

9.2.9.3 Under sub regulation 5.21A(5), you must include information about the applicant (if not you) the grounds on which the waiver is sought and the reasons why it should be made

Person proposing the action - Declaration

I, _____, declare that to the best of my knowledge the information I have given on, or attached to the EPBC Act Referral is complete, current and correct. I understand that giving false or misleading information is a serious offence. I declare that I am not taking the action on behalf of or for the benefit of any other person or entity.

Signature:..... Date:

I, _____, the person proposing the action, consent to the designation of _____ as the proponent of the purposes of the action describe in this EPBC Act Referral.

Signature:..... Date:

9.3 Is the Proposed Designated Proponent an Organisation or Individual?

Organisation

9.5 Organisation

9.5.1 Job Title

Senior Project Director

9.5.2 First Name

Margo

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9.5.8 Organisation E-mail

margo.kouvaris@det.nsw.edu.au

Proposed designated proponent - Declaration

I, _____, the proposed designated proponent, consent to the designation of myself as the proponent for the purposes of the action described in this EPBC Act Referral.

Signature:..... Date:

9.6 Is the Referring Party an Organisation or Individual?

Organisation

9.8 Organisation

9.8.1 Job Title

Senior Project Director

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9.8.7 Organisation Telephone

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9.8.8 Organisation E-mail

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Referring Party - Declaration

I, _____, I declare that to the best of my knowledge the information I have given on, or attached to this EPBC Act Referral is complete, current and

correct. I understand that giving false or misleading information is a serious offence.

Signature:..... Date:

Appendix A - Attachments

The following attachments have been supplied with this EPBC Act Referral:

1. 181024 - Queanbeyan SSP Info Booth Memo APPROVED BY SINSW.pdf
2. Assessment of Significance_Queanbeyan SPP EPBC_v1_em_opt.pdf
3. Queanbeyan SSP BDAR_em_opt.pdf
4. Queanbeyan SSP Proposal Area.zip
5. Queanbeyan SSP_Flora and Fauna Report_em_opt.pdf
6. Queenbeyan_Hoary Sunray map2.jpg

hayball

Biodiversity Development Assessment Report

QUEANBEYAN SSP



JANUARY 2019

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Document Verification



Project Title:

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Project Number: 18-290

Project File Name: Queanbeyan BDAR

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ACRONYMS AND ABBREVIATIONS

BAM	Biodiversity Assessment Methodology
BC Act	Biodiversity Conservation Act 2016 (NSW)
BV	Biodiversity Values
BDAR	Biodiversity Development Assessment Report
BOM	Australian Bureau of Meteorology
BOS	Biodiversity Offset Scheme
CEEC	Critically Endangered Ecological Community
DBH	Diameter at Breast Height
DPE	(NSW) Department of Planning and Environment
EEC	Endangered Ecological Community
EPBC Act	<i>Environmental Protection and Biodiversity Conservation Act 1999</i> (Cwth)
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i> (NSW)
ha	hectares
HBT	Hollow-bearing Tree
km	kilometres
m	Metres
LEP	Local Environment Plan
MNES	Matters of National environmental significance under the EPBC Act (<i>c.f.</i>)
NSW	New South Wales
OEH	(NSW) Office of Environment and Heritage, formerly Department of Environment, Climate Change and Water
SAII	Serious and Irreversible Impact
SEPP	State Environmental Planning Policy (NSW)
SSP	School for Special Purposes
sp/spp	Species/multiple species
TEC	Threatened Ecological Community
VIS	Vegetation Integrity Score

EXECUTIVE SUMMARY

A new School for Special Purposes (SSP) is proposed for Queanbeyan, at the site of Karabar High School. The proposal would develop approximately the entire 0.9 ha site. This Biodiversity Development Assessment Report (BDAR) has been prepared by NGH Environmental on behalf of Hayball.

This development application is being assessed under Part 4 of the EP&A Act. An initial flora and fauna assessment by NGH Environmental determined that the development exceeded the NSW Biodiversity Offset Scheme (BOS) Thresholds for the clearing of native vegetation and triggered the requirement for the preparation of a BDAR. The area of clearing met the threshold for a small area development and only a streamlined BDAR is required. The Biodiversity Assessment Methodology (BAM) is the required assessment methodology for developments that trigger the NSW BOS, under the NSW *Biodiversity Conservation Act 2016*. This report follows the field work methodologies and assessment format required by the BAM.

One PCT was identified within the development site - PCT 654 *Apple Box – Yellow Box dry grassy woodland of the South Eastern Highlands Bioregion*. 0.6 ha of this vegetation would be removed by the development resulting in the generation of 15 ecosystem credits.

Thirteen threatened species credit species were predicted to occur for this vegetation type from the BAM Calculator. Targeted species were undertaken for these species, but none of these species were detected within the development site.

One federally listed species, Hoary Sunray (*Leucochrysum albicans*) occurs within the development site. Approximately 1400 individuals are scattered throughout the site. This plant was unable to be avoided by the development footprint and a referral has been sent to the federal Department of Environment and Energy.

Consideration has been given to avoiding and minimising impacts to biodiversity throughout each phase of the proposal. Landscape and Building design has incorporated the majority of the mature eucalyptus species to remain within the site. Mitigation and management measures will be put in place to adequately address impacts associated with the proposal, both direct and indirect.

The retirement of the credits generated will be carried out in accordance with the NSW Biodiversity Offsets Scheme under the *Biodiversity Conservation Act 2016*. With the retirement of credits and effective implementation of the mitigation measures, the proposal is consistent with the requirements of the BAM.

1 INTRODUCTION

A new School for Special Purposes (SSP) is proposed for Queanbeyan, at the site of Karabar High School. The vegetation removal required for the development is being assessed under Part 4 of the EP&A Act. An initial flora and fauna assessment by NGH Environmental determined that the development exceeded the Biodiversity Offset Scheme (BOS) Thresholds for the clearing of native vegetation. As such, this triggered the requirement for the preparation of a Biodiversity Development Assessment Report (BDAR). This BDAR assesses the impacts of the proposed SSP (The Proposal) according to the NSW Biodiversity Assessment Methodology (BAM) and determines the offset requirements for the proposal.

The following terms are used in this document:

- **Development footprint** – The area of land that is directly impacted on by the proposal. Including new buildings, footpaths, carparking, garden landscaping and driveway crossovers.
- **Development site** – The area of land that is subject to a proposed development. The development site is approximately 0.9 ha. The development site is the area surveyed for this assessment.
- **Buffer area** – All land within 1500 m of the outside edge of the boundary of the development footprint

1.1 THE PROPOSAL

A new School for Special Purposes (SSP) is proposed for Queanbeyan. The proposal area is located in the grounds of Karabar High School. The works would provide a new SSP asset on the existing site by providing up to 7 teaching spaces and all required core facilities from Kindergarten to year 12.

The proposed works involve the following:

- Two buildings to accommodate the seven learning spaces
- One building to accommodate the hall, library and special programs
- One building to accommodate staff and administration
- An area for a future hydrotherapy pool
- Four outdoor spaces, including two outdoor learning spaces and two common spaces
- Footpaths connecting the buildings
- Landscaping of gardens
- A porte-cochere/vehicle drop-off road, connecting to Alanbar Street at one entry and one exit point
- Carparking, located between Alanbar Street and the vehicle drop-off road

1.2 THE DEVELOPMENT SITE

1.2.1 Site location

The development site is located on the same lot as the existing Karabar High School and Queanbeyan South Public School on lot 183/DP239180 (Figure 1-4). The site is bound by Donald Road to the West, Anne Street to the North, Alanbar Street Road to the South and Cameron Drive to the East. The development site is approximately 0.9 ha and located in a treed area next to the sports field of Karabar High School.

The proposal area is zoned R2 Low Density Residential under the Queanbeyan Local Environment Plan (LEP) 2012. The site occurs within a residential area. Landuse surrounding the development site is educational facilities to the East and West, Sports Field directly to the North and urban residential to the south.

1.2.2 Site description

The development site is approximately 0.9 ha in size and falls within the grounds of Karabar High school in a treed area next to the sports field of Karabar High School

Around 12 mature trees remain in the development site comprised of Yellow Box (*Eucalyptus melliodora*), Apple Box (*Eucalyptus bridgesiana*) and Red Stringybark (*Eucalyptus macrorhyncha*). Smaller juvenile eucalypts are also present in the site. The native vegetation has been highly disturbed through previous clearing, fragmentation and trampling (Figure 1-2 & Figure 1-3).

A few native shrubs remain under the canopy of some remnant trees. These species are Sweet Bursaria (*Bursaria spinosa*), Early Wattle (*Acacia genistifolia*) and Bitter Cryptandra (*Cryptandra amara*). The invasive native shrub Cootamundra Wattle (*Acacia baileyana*) is also present but this species is not local to the area.

The groundcover is in various condition with some sections degraded and sparse through regular trampling and mowing while other sections are comprised of a diverse and intact groundcover. However, throughout the whole site, the ground cover is comprised of predominantly native grasses and forbs such as Wallaby Grasses (*Rytidosperma* spp.), Spear grasses (*Austrostipa scabra*), Wire Grasses (*Aristida* spp), Red Grass (*Bothriochloa macra*), Native Wheat Grass (*Elymus scaber*) and Mat rush (*Lomandra filiformis*). The groundcover is comprised of more than 50% native vegetation foliage cover.

The front section along Alanbar Road has been fenced and planted out as an indigenous garden with native shrubs such as Red-stemmed Wattle (*Acacia rubida*), Black Wattle (*Acacia decurrens*), Bottle Brush (*Callistemon* sp) and Grevillea species. This area still maintains an overstory of mature Yellow Box and Apple Box and a diverse native groundcover (Figure 1-3).

The northern most area of the proposal area is a sports field and is comprised of exotic manicured grasses. Native grasses persist on the edge of the sports field adjacent to the woodland, however comprise less than 50% of the vegetation cover.



Figure 1-1 Development Site looking West



Figure 1-2 Development Site looking South towards Alanbar Road



Figure 1-3 Indigenous Garden within the development site

1.2.3 Trigger for a Biodiversity Development Assessment Report

Almost the entire 0.9 ha development site is comprised of native vegetation and the clearing of native vegetation cannot be avoided. The landscaping and construction of the new SSP would impact on 0.6 ha of native vegetation.

The minimum lot size for the development site is 600 m² (Queanbeyan Local Environment Plan, 2012). Thus, under the BAM the Biodiversity Offset Scheme Threshold for clearing native vegetation on this property is 0.25 ha. The development would exceed the 0.25 ha of vegetation clearing and triggers the need for a Biodiversity Development Assessment Report (BDAR) to be prepared.

The amount of clearing of native vegetation is less than 1 ha and not within an area classed as high biodiversity on the biodiversity values map (OEH, 2018) Therefore, the development meets the requirements of a small area development and a streamlined BDAR is required.

Table 1-1 Biodiversity Offset Scheme Thresholds

Threshold		Application to the Proposal	Threshold Exceeded?
Minimum lot size associated with the property	Threshold for clearing of native vegetation	The minimum lot size for the property is 600 m ² . The threshold for clearing is 0.25 ha. A minimum of 0.6 ha would be cleared by the development.	Yes. Area clearing threshold exceeded.
Less than 1 ha	0.25 ha or more		
1 ha to less than 40 ha	0.5 ha or more		
40 ha to less than 1000 ha	1 ha or more		
1000 ha or more	2 ha or more		
Areas of Outstanding Biodiversity Value		None occur in the development site.	No
Significant impact on threatened species, populations or ecological communities		Threatened species assessed in the BDAR.	No
Activity on land identified as being of high biodiversity value on the Biodiversity Values Map		The development site does not impact on any land classed as land of high biodiversity value	No

1.3 STUDY AIMS

This BDAR has been prepared by NGH Environmental on behalf of Hayball.

The aim of this BDAR is to address the requirements of the BAM, as required by the biodiversity offset scheme. The report has followed the streamlined assessment methodology for small area development.

1.4 SOURCE OF INFORMATION USED IN THE ASSESSMENT

The following information sources were used in this BDAR:

- Proposal layers, construction methodology and concept designs provided by Hayball
- Queanbeyan Local Environment Plan 2012
- NSW OEH's Threatened Species Profiles
<http://www.environment.nsw.gov.au/threatenedspeciesapp/>
- Australian Government's Species Profiles and Threats (SPRAT) database
<http://www.environment.gov.au/cgi-bin/sprat/public/sprat.pl>
- Commonwealth Department of Environment and Energy Protected Matters Search Tool
Accessed online at <http://environment.gov.au/epbc/protected-matters-search-tool>
- NSW OEH's Biodiversity Assessment Method (BAM) calculator
(<http://www.environment.nsw.gov.au/bbccapp/ui/mynews.aspx>).
- NSW OEH's BioNet threatened biodiversity database
Accessed online via login at <http://www.bionet.nsw.gov.au/>.

- OEH BioNet Vegetation Classification Database (OEH 2017)
Accessed online via login at <http://www.environment.nsw.gov.au/NSWVCA20PRapp/default.aspx>
- Office of Environment and Heritage (OEH) (2017). Biodiversity Assessment Method.
- NSW Government SEED Mapping
https://geo.seed.nsw.gov.au/Public_Viewier/index.html?viewer=Public_Viewier&locale=en-AU
- NSW Biodiversity Values Map 7
<https://www.lmbc.nsw.gov.au/Maps/index.html?viewer=BVMap>



Figure 1-4 Site Map

2 LANDSCAPE FEATURES

2.1 IBRA BIOREGIONS AND SUBREGIONS

The development site falls within the South East Highlands IBRA Bioregion and the Monaro IBRA subregion. The bioregion is a temperate climate characterised by a warm climate and no dry season. It covers the ranges and plateaus of the Great Dividing Range.

The Monaro subregion was entered into the BAM Calculator for this assessment.

2.2 NATIVE VEGETATION

As determined by aerial imagery and GIS Mapping, approximately 149.8 ha of native vegetation occurs in the surrounding 1500 m buffer area. This vegetation in the landscape surrounding the development site is predominantly open woodland comprised of Blakely's Red Gum (*Eucalyptus blakelyi*), Yellow Box (*Eucalyptus melliodora*), Red Stringybark (*Eucalyptus macrorhyncha*) and Apple Box (*Eucalyptus bridgesiana*).

2.3 CLEARED AREAS

Within the 1500 m buffer area around the development site, 615 ha occurs as cleared areas. This is comprised of 588 ha of residential and urban areas and 28 ha of cleared open space such as sporting fields and golf courses.

2.4 RIVER AND STREAMS

No natural rivers and streams occur within the development site. However, a small man-made frog pond is present in the Indigenous Garden

2.5 WETLANDS

No wetlands occur in or adjacent to the development site. The nearest important wetland listed under the EPBC Act is Hattah-kulkyne lakes located over 600 km away. There is no apparent connectivity to this or any other wetland.

2.6 CONNECTIVITY FEATURES

The development site is a small isolated patch of native vegetation within a highly cleared urban environment. There is no apparent connectivity with any other native vegetation in the surrounding area. The patch size of the native vegetation in the development site is 0.6 ha.

2.7 AREAS OF GEOLOGICAL SIGNIFICANCE

No karsts, caves, crevices or cliffs or other areas of geological significance occur in or adjacent to the development site.

2.8 AREAS OF BIODIVERSITY VALUE

The development site is not listed as an area of biodiversity value under the BC Act 2016.

2.9 SITE CONTEXT COMPONENTS

Method applied

The proposal conforms to the definition of a *site-based development* under the Biodiversity Assessment Methodology. The site-based development assessment methodology has been used in this BAM assessment.

Percent Native Vegetation Cover

The 1500 m buffer area around the development site comprises an area of 765 ha. Native vegetation mapped within the 1500 m buffer area is calculated to be an area of 149.8 ha. This determines the percent native vegetation cover in the landscape to be 19.5%. This value was entered into the BAM Calculator for the assessment.

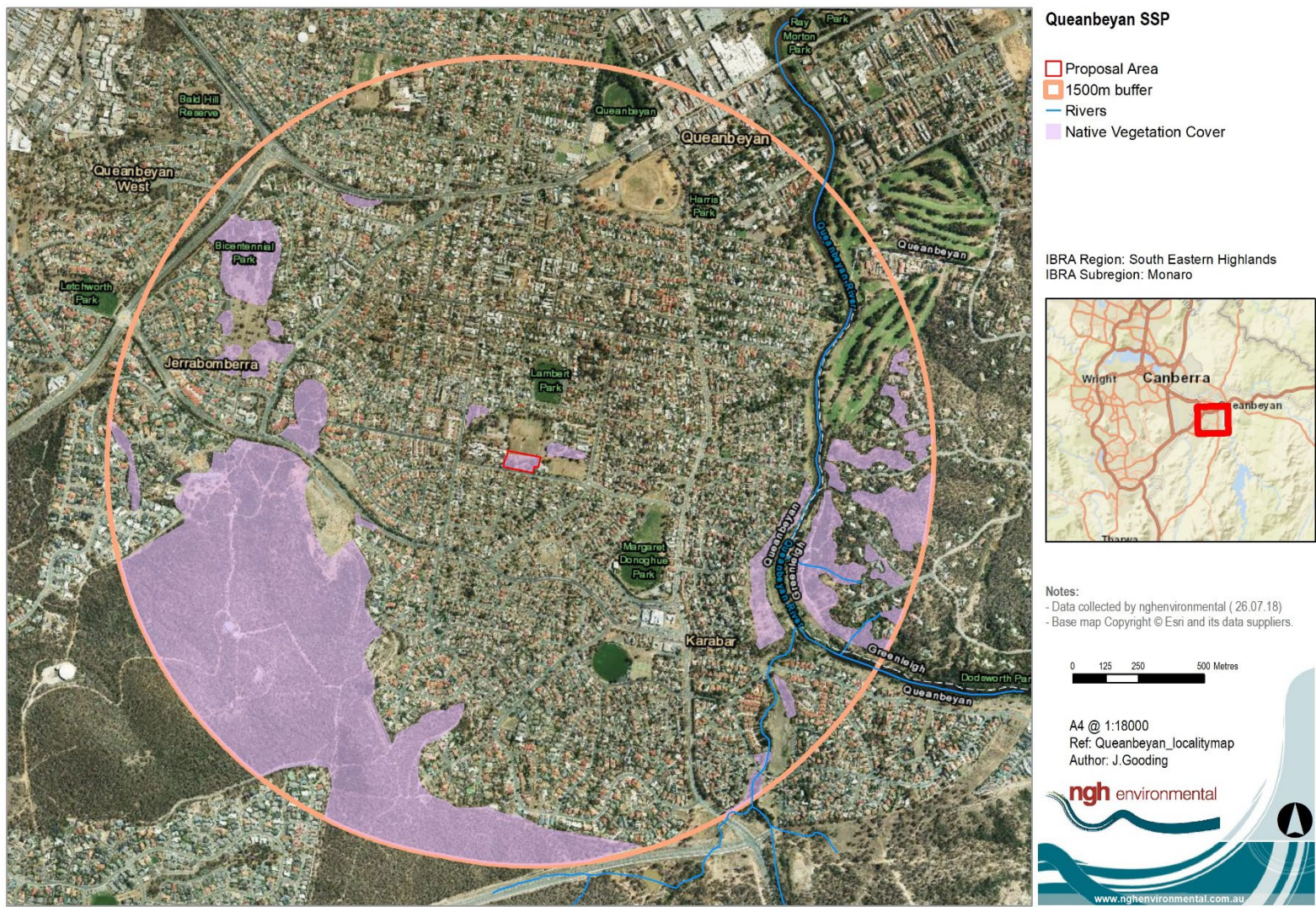


Figure 2-1 Location map

3 NATIVE VEGETATION

3.1 PLANT COMMUNITY TYPES (PCTS)

3.1.1 Methods to assess PCTs.

Floristic survey

A floristic survey was undertaken on the 26th July 2018. Random meander (Cropper 1993) and vegetation integrity plots under the Biodiversity Assessment Methodology (BAM - NSW Government 2017) were used to survey vegetation at the proposal site. These methods provide good coverage in terms of area and microhabitats and maximises opportunities for detecting rare or sparsely distributed species.

Species occurrences were recorded progressively and within 20 x 20 m floristic plots. Cover/abundances were identified within each plot. Any priority weeds were recorded opportunistically. The survey method and effort are consistent with the NSW guidelines Field Survey Methods (DEC 2004) and the BAM.

Plant Community Types (PCTs) were identified according to the OEH BioNet Vegetation Classification (OEH, 2017). Where relevant, Threatened Ecological Communities (TEC) were confirmed based on the relevant Scientific Committee – final determinations for each TEC. Botanical nomenclature follows Harden (1990-2002) and the PlantNet website, updated with recent changes recognised in Angiosperm Phylogeny Group (2016) and the Australian Plant Census.

3.1.2 PCTs identified on the development site

One Plant Community Type (PCT) was identified in the development site. This was

- *PCT 654 Apple Box – Yellow Box dry Grassy woodland of the South Eastern Highlands Bioregion*

Table 3-1 Description of PCT 654: Apple Box -Yellow Box dry grassy woodland of the South Eastern Highlands Bioregion

Apple Box - Yellow Box dry grassy woodland of the South Eastern Highlands Bioregion		
Vegetation formation	Grassy Woodlands	
Vegetation class	Southern Tableland Grassy Woodland	
Vegetation type	PCT ID	654
	Common Community Name	Apple Box – Yellow Box dry grassy woodland
Approximate extent within the development site	0.6 ha	
Species relied upon for PCT identification	Species name	Relative cover
	<i>E. bridgesiana</i>	25%

Apple Box - Yellow Box dry grassy woodland of the South Eastern Highlands Bioregion									
	<table border="1"> <tr> <td><i>E. melliodora</i></td> <td>15%</td> </tr> <tr> <td><i>Themeda triandra</i></td> <td>1%</td> </tr> <tr> <td><i>Auistrostipa scabra</i></td> <td>1%</td> </tr> <tr> <td><i>Elymus scaber</i></td> <td>1%</td> </tr> </table>	<i>E. melliodora</i>	15%	<i>Themeda triandra</i>	1%	<i>Auistrostipa scabra</i>	1%	<i>Elymus scaber</i>	1%
<i>E. melliodora</i>	15%								
<i>Themeda triandra</i>	1%								
<i>Auistrostipa scabra</i>	1%								
<i>Elymus scaber</i>	1%								
Justification of evidence used to identify the PCT	<p>Two PCTS were shortlisted based on the species identified within the development site. These were;</p> <ul style="list-style-type: none"> • PCT 654 (Apple Box – Yellow Box dry grassy woodland of the South Eastern Highlands Bioregion, and • PCT 1330 (Yellow Box – Blakely’s Red Gum grassy woodland on the tablelands, South Eastern Highlands Bioregion) <p>Both these PCTS occur as grassy woodlands on undulating terrain on the tablelands and they were both considered as possible vegetation communities on the site. It was difficult to determine the original community based on the fragmented nature of the remnant vegetation in the site and absence of vegetation in adjacent areas. PCT 654 was considered to be the best match for the vegetation within the development site based on the dominance of Apple Box and Yellow Box within the development site and the absence of Blakely’s Red Gum.</p>								
TEC Status	This PCT forms part of the TEC: White Box – Yellow Box – Blakely’s Red Gum Woodland listed as Endangered under the NSW BC Act.								
Estimate of percent cleared in the bioregion	95%								

Apple Box - Yellow Box dry grassy woodland of the South Eastern Highlands Bioregion

Examples



Figure 3-1 Example of PCT 654 in the development site



Figure 3-2 PCTs and TECs at the development site

3.2 VEGETATION INTEGRITY ASSESSMENT

3.2.1 Vegetation zones and survey effort

The vegetation within the development site was homogenous in condition across the site and considered to be one zone. This zone is 0.6 ha in size. According to the BAM, a minimum of one vegetation integrity plot is required to be undertaken in a zone of this size. One vegetation integrity plot was undertaken at the development site on the 26th July 2018.

3.2.2 Vegetation integrity assessment results

The results of the vegetation integrity Plot are shown in Table 3-2. The plot data from the vegetation integrity survey plots were entered into the BAM calculator by accredited assessor (Julie Gooding-BAAS18074). The vegetation integrity score of the development site is 57.1 (Table 3-3).

Table 3-2 Results of Vegetation Integrity Plot

Plot 1	Count of Native Richness (#)	Sum of Native plant cover (%)
400 m² Plot		
Trees	2	40
Shrubs	1	0.2
Grasses	6	37.6
Forbs	2	0.6
Ferns	0	0
Other	1	0.1
High Threat Weeds		0.2%
1000 m² Plot		
Length of Logs (m)		0
Number Stem Classes		4
Number of Large Trees		3
Number of Hollow Bearing Trees		1
Regenerating Trees		Present
Average Litter Cover (%)		56%

Table 3-3 Table of vegetation integrity score for the vegetation zone within the development site.

Zone ID	Composition score	Structure score	Function score	Vegetation Integrity Score
1 – PCT 654	28.7	81	80	57.1

4 THREATENED SPECIES

4.1 ECOSYSTEM CREDIT SPECIES

The following ecosystem credit species were returned by the calculator as being associated with the PCT present on the development site.

Table 4-1 Predicted Ecosystem Credit Species

Ecosystem credit species	NSW Listing Status	National Listing Status
<i>Artamus cyanopterus cyanopterus</i> Dusky Woodswallow	Vulnerable	Not Listed
<i>Anthochaera phrygia</i> Regent Honeyeater (foraging)	Critically Endangered	Critically Endangered
<i>Callocephalon fimbriatum</i> Gang-gang Cockatoo (foraging)	Vulnerable	Not listed
<i>Climacteris picumnus victoriae</i> Brown Treecreeper	Vulnerable	Not listed
<i>Daphoenositta chrysoptera</i> Varied Sittella	Vulnerable	Not listed
<i>Dasyurus maculatus</i> Spotted-tailed Quoll	Vulnerable	Endangered
<i>Glossopsitta pusilla</i> Little Lorrikeet	Vulnerable	Not listed
<i>Hieraetus morphnoides</i> Little Eagle (Foraging)	Vulnerable	Not listed
<i>Lathamus discolor</i> Swift Parrot	Endangered	Critically Endangered
<i>Lophoictinia isura</i> Square-tailed Kite (Foraging)	Vulnerable	Not listed
<i>Melanodryas cucullata cucullata</i> Hooded Robin (south-eastern form)	Vulnerable	Not listed
<i>Miniopterus schreibersii oceanensis</i> Eastern Bentwing-bat (Foraging)	Vulnerable	Not listed
<i>Neophema pulchella</i> Turquoise Parrot	Vulnerable	Not listed
<i>Ninox strenua</i>	Vulnerable	Not listed

Ecosystem credit species	NSW Listing Status	National Listing Status
Powerful Owl (Foraging)		
<i>Petroica boodang</i> Scarlet Robin	Vulnerable	Not listed
<i>Petroica phoenicea</i> Flame Robin	Vulnerable	Not listed
<i>Phascolarctos cinereus</i> Koala (Foraging)	Vulnerable	Vulnerable
<i>Polytelis swainsonii</i> Superb Parrot (Foraging)	Vulnerable	Vulnerable
<i>Pomatostomus temporalis temporalis</i> Grey-headed Flying-fox (Foraging)	Vulnerable	Vulnerable
<i>Stagonopleura guttata</i> Diamond Firetail	Vulnerable	Not listed

4.1.1 Species excluded from the assessment

All species listed above were considered to have the potential to occur in the development site on occasion and were included in the assessment.

4.2 SPECIES CREDIT SPECIES

4.2.1 Candidate species to be assessed

The BAM Calculator predicted the following species credit species to occur at the development site (Table 4-2). Species excluded based on the absence of suitable habitat with the development site are highlighted in Table 4-2.

Table 4-2 Predicted Species Credit Species

Species Credit Species	Habitat components and geographic restrictions. ¹	Sensitivity to gain class	NSW listing status	National listing status	Habitat components and abundance on site	Included or excluded	Reason for inclusion or exclusion
FAUNA							
<i>Anthochaera phrygia</i> Regent Honeyeater (Breeding)	Mapped Important Areas (OEH)	High	Critically Endangered	Critically Endangered	Development site not within mapped important areas	Excluded	Excluded – not within mapped important areas
<i>Aprasia parapulchella</i> Pink-tailed Legless Lizard	Rocky areas or within 50m of Rocky Areas	High	Vulnerable	Vulnerable	Absent – No rocky areas within or adjacent to development site	Excluded	No suitable habitat in development site
<i>Callocephalon fimbriatum</i> Gang-gang Cockatoo (Breeding)	Eucalypt tree species with hollows greater than 9 cm diameter	High	Vulnerable	Not Listed	Hollow Bearing Trees within development site	Included	Habitat components on site
<i>Hieraetus morphnoides</i> Little Eagle (Breeding)	Nest trees - live (occasionally dead) large old trees within vegetation.	Moderate	Vulnerable	Not Listed	Large trees present within development site	Included	Habitat components on site
<i>Lathamus discolor</i> Swift Parrot (Breeding)	Mapped Important Areas (OEH)	Moderate	Endangered	Critically Endangered	Development site not within mapped important areas	Excluded	Excluded – not within mapped important areas
<i>Litoria aurea</i> Green and Golden Bell Frog	Semi-permanent/ephemeral wet areas or within 1km of wet areas, swamps or waterbodies	High	Endangered	Vulnerable	Development site not within 1km of a waterbody	Excluded	No suitable habitat in development site

Species Credit Species	Habitat components and geographic restrictions. ¹	Sensitivity to gain class	NSW listing status	National listing status	Habitat components and abundance on site	Included or excluded	Reason for inclusion or exclusion
<i>Litoria raniformis</i> Southern Bell Frog	-	Moderate	Endangered	Vulnerable	Development site not within 1km of a waterbody	Excluded	No suitable habitat in development site
<i>Lophoictinia isura</i> Square-tailed Kite (Breeding)	Nest trees	Moderate	Vulnerable	Not Listed	Large trees present within development site	Included	Habitat components on site
<i>Miniopterus schreibersii oceanensis</i> Eastern Bentwing-bat (Breeding)	Cave, tunnel, mine, culvert or other structure known or suspected to be used for breeding	Very High	Vulnerable	Not Listed	Absent – no caves tunnels, mines or culverts in development site.	Excluded	No suitable habitat in development site
<i>Ninox strenua</i> Powerful Owl (Breeding)	Living or dead trees with hollow greater than 20cm diameter	High	Vulnerable	Not Listed	Trees with hollows present in development site	Included	Habitat components on site
<i>Petaurus norfolcensis</i> Squirrel Glider	Relies on large old trees with hollows for breeding and nesting. These trees are also critical for movement and typically need to be closely-connected (i.e. no more than 50 m apart).	High	Vulnerable	Not Listed	Large trees with hollows present in development site	Included	Habitat components on site
<i>Phascogale tapoatafa</i> Brush-tailed Phascogale	Hollow Bearing Trees	High	Vulnerable	Not Listed	Trees with hollows present in development site	Included	Habitat components on site
<i>Phascolarctos cinereus</i> Koala (Breeding)	Areas identified via survey as important habitat based on density of Koalas and quality of habitat	High	Vulnerable	Vulnerable	Survey required to identify	Included	Surveys required

Species Credit Species	Habitat components and geographic restrictions. ¹	Sensitivity to gain class	NSW listing status	National listing status	Habitat components and abundance on site	Included or excluded	Reason for inclusion or exclusion
<i>Polytelis swainsonii</i> Superb Parrot (Breeding)	Living or dead <i>E. blakelyi</i> , <i>E. melliadora</i> , <i>E. albens</i> , <i>E. camaldulensis</i> , <i>E. microcarpa</i> & <i>E. polyanthemos</i> with hollows greater than 5cm diameter; greater than 4m above ground or trees with a DBH of greater than 30cm. North of Hoskinstown	High	Vulnerable	Vulnerable	Suitable Hollow Bearing Trees present in development site. Development site north of Hoskinstown.	Included	Habitat components on site
<i>Pteropus Poliocephalus</i> Grey-headed Flying-fox (Breeding)	Breeding Camps. The initial search for camps should encompass any recorded camps and roosting habitat likely to occur on the subject land	High	Vulnerable	Vulnerable	Survey required to identify	Included	Surveys required
FLORA							
<i>Lepidium hyssopifolium</i> Aromatic Peppercreess	-	High	Endangered	Endangered	Suitable Woodland habitat	Included	Habitat components on site
<i>Prasophyllum petilum</i> Tarengo Leek Orchid	-	Moderate	Endangered	Endangered	Suitable woodland habitat	Included	Habitat components on site
<i>Swainsona recta</i> Small Purple-pea	-	Moderate	Endangered	Endangered	Suitable Woodland habitat	Included	Habitat components on site
<i>Swainsona sericea</i> Silky Swainson-pea	-	High	Vulnerable	Not Listed	Suitable woodland habitat	Included	Habitat components on site

4.2.2 Candidate species requiring confirmation of presence or absence

The species listed in Table 4-3 are those that are considered to have habitats present at the development site. Surveys have been conducted for these species and the results are summarised in Table 4-3. Details of the survey methodologies and results are provided for each surveyed species are provided in section 4.2.3.

Table 4-3 Summary of species credit species surveyed at the development site

Species Credit Species	Biodiversity risk weighting	Survey Period	Assumed occur/survey/ expert report	to	Present on site?	Species polygon area or count
FAUNA						
<i>Collocephalon fimbriatum</i> Gang-gang Cockatoo	2.0	Oct - Jan	Surveyed 2018	November	No	n/a
<i>Hieraaetus morphnoides</i> Little Eagle	1.5	Aug – Oct	Surveyed 2018	August	No	n/a
<i>Lophoictinia isura</i> Square-tailed Kite	1.5	Sept - Jan	Surveyed 2018	November	No	n/a
<i>Ninox strenua</i> Powerful Owl	2.0	May - Aug	Surveyed 2018	August	No	n/a
<i>Petaurus norfolcensis</i> Squirrel Glider	2.0	All Year	Surveyed 2018	August	No	n/a
<i>Phascogale tapoatafa</i> Brush-tailed Phascogale	2.0	All Year	Surveyed 2018	August	No	n/a
<i>Phascolarctos cinereus</i> Koala	2.0	All Year	Surveyed 2018	August	No	n/a
<i>Polytelis swainsonii</i> Superb Parrot	2.0	Sept - Nov	Surveyed 2018	November	No	n/a
<i>Pteropus poliocephalus</i> Grey-headed Flying-fox	2.0	Oct - Dec	Surveyed 2018	November	No breeding camps	n/a
FLORA						
<i>Lepidium hyssopifolium</i> Aromatic Peppergrass	3.0	Oct – Apr	Surveyed 2018	November	No	n/a
<i>Prasophyllum petilum</i> Tarengo Leek Orchid	2.0	Oct - Dec	Surveyed 2018	November	No	n/a
<i>Swainsona recta</i> Small Purple-pea	2.0	Sept - Nov	Surveyed 2018	November	No	n/a

<i>Swainsona sericea</i> Silky Swainson-pea	2.0	Sept - Feb	Surveyed November 2018	No	n/a
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4.2.3 Survey methods

Diurnal Birds (Gang-gang Cockatoo, Square-tailed Kite, Superb Parrot)

SURVEY EFFORT

Surveys for these species were undertaken on the 26th and 27th November 2018. Weather conditions averaged 20°C, with cloud cover and a light breeze.

The Area Search Method was used to detect bird species. This method involved walking around an area of pre-determined size for a pre-determined length of time (60 minutes) recording bird species presence and activity. The Guidelines recommend for a 1 ha (200 m x 500 m) 20-minute search is the most common method (Loyn 1986). Loyn (1986) showed that 3 x 20 minute censuses of a 2 ha block revealed only 53% of the species present while 3 x 60 minute searches revealed 90.4 %.

Given the Site area is approx. 6,000 m² (0.6 ha) and located in urban area, 2 x 60 min surveys were considered adequate. The total survey time therefore was 2 hours

SURVEY RESULTS

No threatened birds were detected. No raptor nests were detected within the development site. Considering the highly fragmented vegetation, small patch size and lack of raptor nests it is considered unlikely the threatened birds are breeding in the development site. A full list of bird species observed can be found in Appendix B.

Diurnal Birds (Little Eagle, Swift Parrot)

SURVEY EFFORT

Surveys for these species were undertaken on the mornings of the 30th – 31st August and 1st September 2018.

The Area Search Method was used to detect bird species. This method involves walking around an area of pre-determined size for a pre-determined length of time (20 minutes) recording bird species presence and activity. The Guidelines recommend for a 1 ha (200 m x 500 m) 20-minute search is the most common method (Loyn 1986). Loyn (1986) showed that 3 x 20 minute censuses of a 2 ha block revealed only 53% of the species present while 3 x 60 minute searches revealed 90.4 %.

Surveys for this project were conducted from between 7 am and 10 am (note: due to cold mornings surveys were delayed until about 30 minutes after dawn for bird activity to increase).

Given the Site area is approx. 6,000 m² (0.6 ha) and located in urban area, 3 x 30 min surveys were considered adequate. The total survey time therefore was 1.5 hours.

SURVEY RESULTS

No threatened birds were detected. No raptor nests were detected within the development site. Considering the highly fragmented vegetation, small patch size and lack of raptor nests it is considered unlikely the threatened birds are breeding in the development site. A full list of bird species observed can be found in Appendix B.

Nocturnal Birds (Powerful Owl)

SURVEY EFFORT

Surveys were undertaken on the evenings of the 29th – 31st August 2018. The temperature during surveys averaged between 0 and 2°C with no rain or wind.

Call Playback was used to detect nocturnal birds. This method involved broadcasting pre-recorded calls of the target species to elicit a response from individuals of that species if present in the area (such as approaching the call, or calling back in reply to the played call).

The call playback method typically involved an initial listening period of 10 to 15 minutes, followed by a spotlight search for 10 minutes to detect any animal in the immediate vicinity. The calls of each target species were then played intermittently for 5 minutes, followed by a 10-minute listening period. After all the calls have been played, another 10 minutes of spotlighting and listening was conducted in the vicinity to check for birds that are attracted by the calls but are not vocalising.

Owls typically call most frequently in the early evening and before dawn and surveys should be undertaken at these times (Kavanagh and Peake 1993). Wet and windy weather is to be avoided, as owls are most vocal on calm dry nights (Debus 1995).

For the Powerful Owl, it has been reported that 3 nights survey are required to have 50% probability of detecting the species, and that at least 5 visits per site, on different nights are recommended for detection of the Powerful Owl.

Given the small size of the site, its location in an urban area (and the generally low suitability of the hollows for use as roosting habitat by Powerful Owl), 3 nights of call playback survey were considered adequate. The call playback was conducted simultaneously with the spotlighting surveys, described below.

SURVEY RESULTS

The Powerful Owl was not detected within the development site. Given the highly fragmented vegetation, small patch size and low suitability of hollows it is considered unlikely the Powerful Owl occurs in the development site.

Nocturnal Mammals (Squirrel Glider, Brush Tailed Phascogale)

SURVEY EFFORT

Surveys were undertaken for these species on the evenings of the 29th – 31st August 2018.

Spotlighting:

The Guidelines recommend that at least two searches, each for one hour with a hand-held spotlight of appropriate power for the conditions should be conducted on two separate nights.

For this survey, 3 consecutive nights of spotlighting was undertaken to maximise the probability of detecting nocturnal fauna at the site. The surveys were conducted after completion of stagwatch surveys (see below), and so were not commenced until well after dark, and were combined with/supported by the call playback surveys.

Stagwatching

This survey method involved an observer with a hand-held spotlight of appropriate power positioned at a suitable vantage point to observe the tree hollow (or hollows), and record any fauna seen entering or leaving the hollow. These surveys were conducted for a period of at least 45 minutes, and commenced at

or just before sunset through to at least a half hour after dark. Two reconvex wildlife cameras were deployed to survey the hollows throughout the night.

RESULTS

One hollow had signs of prior use with grass and straw in base of the hollow. No animals were seen entering or leaving the hollow during the stag watch or on the wildlife cameras.

No nocturnal mammals were detected during the surveys. Based on the very small, isolated and heavily disturbed patch in an urban environment it is unlikely these species would be breeding within the development site.

Koala

SURVEY EFFORT

Surveys for signs of Koalas, such as scats or scratches were undertaken around the trees. Spotlighting surveys were undertaken for these species on the evenings of the 29th – 31st August 2018.

SURVEY RESULTS

No Koalas were detected within the development site during the site surveys. Based on the very small, isolated and heavily disturbed patch in an urban environment it is unlikely Koalas would be breeding within the development site.

Grey-headed Flying-fox

SURVEY EFFORT

Surveys were undertaken on the 26th November for breeding camps. A search of the national Flying-fox monitoring database (DoE, 2018) was undertaken to determine if known breeding camps occur on or adjacent to the development site.

SURVEY RESULTS

No Breeding camps for the Grey-headed Flying-fox were detected within the development site. The National Flying-fox monitoring viewer revealed no known breeding camps are known in the development site. The nearest known breeding camp is located approximately 12 km to the North-East near Lake Burley Griffin in Canberra.

Flora (Aromatic Peppergrass, Tarengo Leek Orchid, Small Purple-pea & Silky Swainson-pea)

SURVEY EFFORT

Targeted searches for these species were undertaken on the 27th November 2018. The development site was surveyed using the parallel field traverse survey technique in accordance with the NSW Guide to Surveying Threatened Plants (OEH, 2016).

SURVEY RESULTS

One *Lepidium* species was detected within the development site during the surveys. It was not identified to be *Lepidium hyssopifolium* (Aromatic peppergrass) as hairs were absent from the fruit. It was considered likely to be **L. africanum*, an exotic species. None of the listed threatened species were detected within the development site.



Figure 4-1 Hollow Bearing Tree within the development site

4.3 ADDITIONAL HABITAT FEATURES RELEVANT TO PRESCRIBED BIODIVERSITY IMPACTS

4.3.1 Occurrences of karst, caves, crevices and cliffs

No Karsts, Caves, Crevices or Cliffs occur within the development site

4.3.2 Occurrences of rock

No Rocky outcrops occur within the development site

4.3.3 Occurrences of human made structures and non-native vegetation

A native indigenous garden has been planted and fenced in the southern half of the development site. This garden has been landscaped with native plants, garden beds and a small frog pond. This area still maintains a remnant overstory canopy of Apple Box and Yellow Box and this area has been assessed as part of PCT654.

4.3.4 Hydrological processes that sustain and interact with the rivers, streams and wetlands

No rivers, streams or wetlands occur within the development site. The nearest natural watercourse is Queanbeyan River, just over 1 km to the East of the site. Run-off from the site would enter the stormwater drains on Alanbar Road.

5 MATTERS OF NATIONAL ENVIRONMENTAL SIGNIFICANCE

An EPBC protected matters report was undertaken on the 23 July 2018 (10km buffer of the development site) to identify Matters of National Environmental Significance (MNES) that have the potential to occur within the development site (Appendix C). Relevant to Biodiversity these include:

- Wetlands of International Importance
- Threatened Ecological Communities
- Threatened species
- Migratory species

The potential for these MNES to occur at the site are discussed below.

5.1 WETLANDS OF INTERNATIONAL IMPORTANCE

Four wetlands of international importance were returned from the protected matters report. No wetlands of international importance occur within or adjacent to the proposal area. The nearest wetland of international importance is Hattah-kulkyne lakes located over 600 km away on the Murray River. There is no apparent connectivity to this wetland.

5.2 THREATENED ECOLOGICAL COMMUNITIES

Two endangered ecological communities were identified to have the potential to occur within the study area by the Protected Matters (EPBC Act) search. These are;

- Natural Temperate Grassland of the South Eastern Highlands
- White Box – Yellow Box – Blakely’s Red Gum Grassy Woodland and Derived native grassland (Box-Gum Woodland) – Critically Endangered

One of these communities, White Box-Yellow Box-Blakely’s Red Gum and Derived Native Grassland (Box-Gum woodland) has the potential to occur within the study area, based on the presence of remnant Yellow Box in the proposal area. An analysis of whether the vegetation meets the condition threshold for the EPBC listed community was undertaken (**Table 5-1**). Based on the lack of diversity of native understory species and the small size of the patch, the vegetation was not considered to meet the criteria for the EPBC listed Box-Gum Woodland.

Table 5-1 Assessment of Condition threshold for EPBC listed Box-Gum Woodland

EPBC Condition threshold Criteria	Proposal Area Condition
Is at least one of the common overstory species White Box, Yellow Box or Blakely’s Red Gum	Yes, Yellow Box abundant in the proposal area
Does the patch have a predominantly native understory	Yes
Is the patch 0.1 ha or greater in size	Yes, patch 0.6 ha in size
Are there 12 or more native understory species present (Excluding grasses) and at least one important species.	No – 10 native understory species present in the understory. Important species present. (Planted native

	species were excluded from the count as they are not indicative of remnant vegetation understory species).
Is the patch 2ha or greater in size	No. Not the listed ecological community

No vegetation characteristic of the Natural temperate grassland of the South Eastern Highlands was present in the proposal area and this community is not considered to occur in the proposal area.

5.3 THREATENED SPECIES

One threatened forb – the Hoary Sunray (*Leucochrysum albicans* var. *tricolor*) was detected within the development site (Figure 5-1, Figure 5-2). The Hoary Sunray is a small perennial paper daisy and occurs in grassland and woodland habitats. It is estimated around 1400 plants are scattered throughout the area. Hoary Sunray is listed as Endangered under the EPBC Act. It is not listed under the NSW BC Act. The plants are scattered around mainly the Eastern half of the development site but there are seven main patches where density of the plants are higher. These areas are shown in figure 5-3.

Thirty-eight other threatened species were identified in the PMST report as having the potential to occur within the development site. A habitat assessment was undertaken for these species to determine the likelihood the species being present in the proposal area (Appendix D). Ten of these species are considered to have suitable habitat in the proposal area.

These are;

Flora

- Canberra Spider Orchid *Caladenia actensis*
- Basalt Peppercross *Lepidium hyssopifolium*
- Button Wrinklewort *Rutidosis leptorrhynchoides*
- Austral Toadflax *Thesium australe*
- Small Purple-pea *Swainsona recta*
- Tarengo Leek Orchid *Prasophyllum petilum*

Fauna

- Swift Parrot *Lathamus discolor*
- Superb Parrot *Polytelis swainsonii*
- Koala *Phascolarctos cinereus*

Surveys were undertaken for these species and they were not detected within the development site. However, suitable Box-Gum woodland habitat is present for the Swift Parrot and Superb Parrot, and it is considered these species may forage in the development site on occasion.

5.4 MIGRATORY SPECIES

Fourteen listed migratory species were returned from the protected matters report. Based on a habitat assessment, two of these species could occur on the site on occasion:

- Fork-tailed Swift

- White-throated Needletail

However, as these species are almost exclusively aerial they are considered unlikely to rely on the habitats present within the proposal area.



Figure 5-1 Hoary Sunray in the development site



Figure 5-2 Patch of Hoary Sunray in the development site



Figure 5-3 Distribution of Hoary Sunray patches in the development site

6 AVOID AND MINIMISE IMPACTS

6.1 AVOIDING AND MINIMISING IMPACTS ON NATIVE VEGETATION AND HABITAT

6.1.1 Site selection – consideration of alternative locations

The school for special purposes (SSP) is proposed to be constructed on the same lot as Karabar High School, Queanbeyan South Public School and Queanbeyan Preschool.

Through demographic analysis the Department of Education determined a new SSP education facility was required in the Queanbeyan area. Through utilisation surveys of existing school assets in the region, the Department of Education determined Karabar High school was the most appropriate site for the education facility.

As Queanbeyan SSP will cater for students for moderate to severe intellectual and physical disabilities, the facility requires a kiss and drop and parking at the entry. For this reason, a direct street frontage is required.

The Karabar High School site currently has two portions of street frontage which are not occupied by buildings: Donald Street frontage (near Anne Street) and Alanbar Street frontage (between Boronia Cres and Cassia Cres). The Alanbar Street frontage has the following advantages over the Donald Street frontage

- Alanbar Street has less vehicle traffic than Donald Street.
- Karabar High school already uses the Donald Street frontage as the main entry. Locating the Queanbeyan SSP here would lead to increased congestion.
- Alanbar frontage between Boronia Cres and Cassia Cres is underutilised by Karabar high school while the Donald Street frontage is currently used for agriculture education.
- The terrain/ground at Alanbar Street frontage is flatter, which is vital for a school with a high proportion of students requiring wheelchair accessibility.

The development site was considered to be the most appropriate location for the proposal.

6.1.2 Proposal planning phase – detailed design

A preliminary biodiversity assessment was conducted by NGH Environmental (2018) to inform the highest biodiversity constraints. An Arborist survey (Ryan, 2018) was also undertaken to assess the health of the trees.

The final site layout has not been able to completely avoid clearing of native vegetation due to the small area of the development site providing limited scope for movement of buildings, carparks or infrastructure.

Vegetation constituting the highest ecological constraints such as mature Eucalyptus trees would be avoided and minimised as far as practical by:

- Retaining large significant trees that will continue to provide habitat for fauna species
- Landscaping plans incorporating the existing trees and using the natural environment for nature education areas.

- Making provisions for the landscaping of new plantings.

The final design footprint is detailed in Figure 6-1.

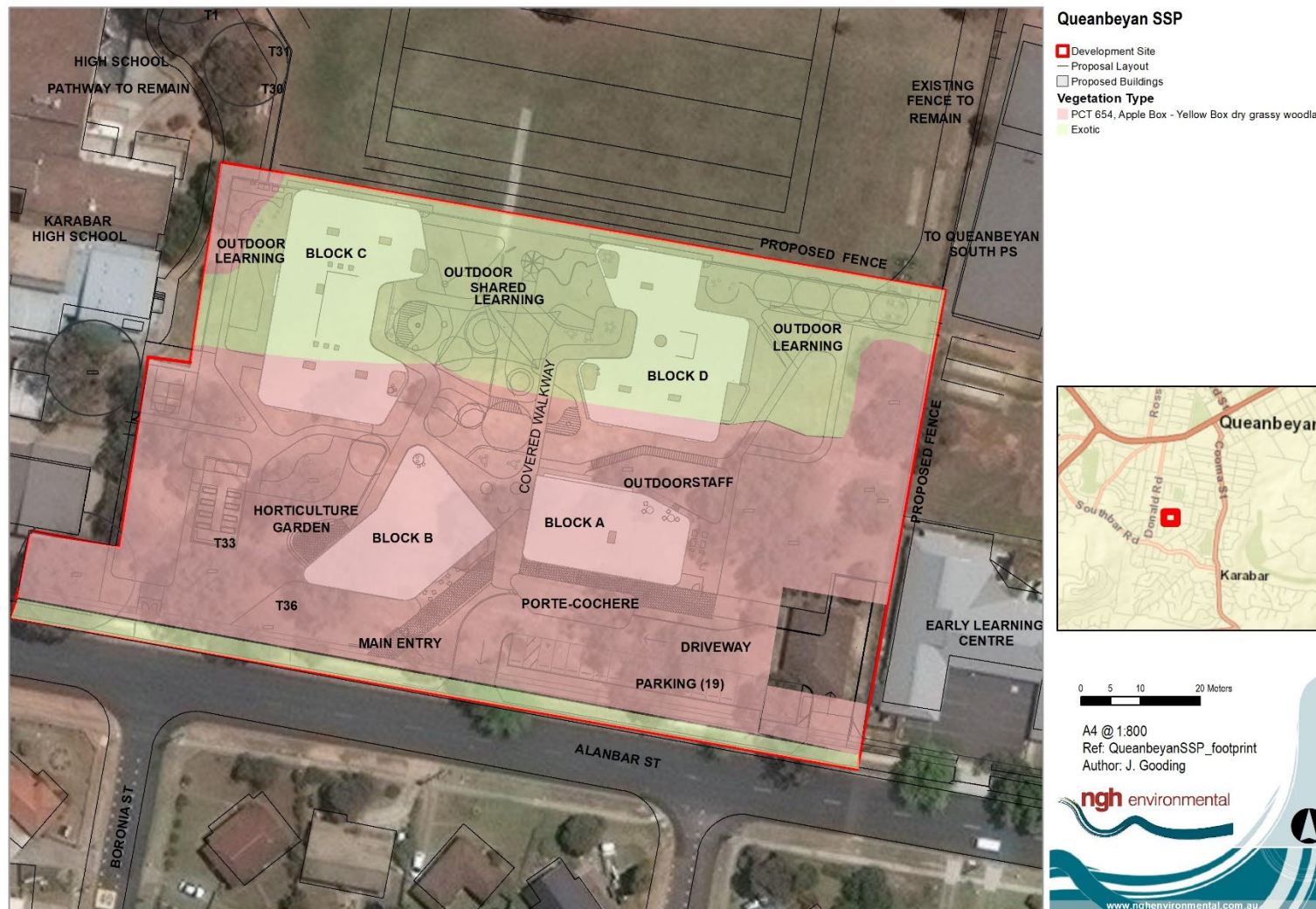


Figure 6-1 Final project footprint

7 IMPACTS UNABLE TO BE AVOIDED

7.1 DIRECT IMPACTS

The construction and operational phases of the proposal has the potential to impact biodiversity values at the site that cannot be avoided. This would occur through direct impacts such as habitat clearance and installation and existence of infrastructure. Direct impacts are shown in Figure 7-1.

Table 7-1 Potential impacts to biodiversity during the construction and operational phases

Nature of impact	Extent	Frequency	Duration and timing	Consequence
Direct impacts				
Habitat clearance for permanent and temporary construction facilities	0.6 ha 14 mature trees	Once	Construction Phase; Long term	<ul style="list-style-type: none"> • Direct loss of native flora and fauna habitat • Injury and mortality of fauna during clearing of fauna habitat and habitat trees • Disturbance to stags, fallen timber, and bush rock
Impact to native vegetation	0.6 ha	Once	Construction Phase; Long term	<ul style="list-style-type: none"> • Degradation of TEC – White Box, Yellow Box, Blakley's Red Gum Grassy Woodland
Displacement of resident fauna	0.6 ha	Regular	Construction Phase; Short Term	<ul style="list-style-type: none"> • Direct loss of native fauna • Decline in local fauna populations
Injury or death of fauna	0.6 ha	Regular	Construction Phase; Short Term	<ul style="list-style-type: none"> • Direct loss of native fauna • Decline in local fauna populations
Removal of habitat features e.g. HBTs	2 HBTs	Once	Construction Phase; Short Term	<ul style="list-style-type: none"> • Direct loss of native fauna • Decline in local fauna populations
Removal of threatened flora; Hoary Sunray (<i>Leucochrysum albicans</i>)	Approx. 14 00 plants	Once	Construction Phase; Long term	<ul style="list-style-type: none"> • Decline in Hoary Sunray population

7.1.1 Changes in vegetation integrity scores

The development footprint has been designed to minimise the removal of mature trees. Where possible, remnant eucalyptus trees would be incorporated to remain in the landscaped design of the school grounds.

Thirty-one Eucalyptus trees occur within the 0.6 ha patch. Fourteen of these trees are proposed to be removed, thus the reduction in foliage cover would be reduced by approximately 50%. The future vegetation integrity score was entered into the BAM Calculator as follows.

- Composition of trees was kept the same (Two species present before and after construction).
- Structure of tree canopy was reduced by 50% (from 40% to 20% overstory cover after construction).
- The composition and structure for shrubs, forbs, ferns and other was reduced to zero as the understory would be likely to be completely disturbed during construction.

The change in vegetation integrity scores as a result of the above calculations are shown in Table 7-2 below. The total change in Vegetation score is -51.6.

Table 7-2 Table of current and future vegetation integrity scores for each vegetation zone within the development site.

Zone 1: PCT 654	Composition score	Structure score	Function score	Vegetation Integrity Score
Current VIS	28.7	81	80	57.1
Future VIS	5.8	29.3	0	5.5

7.1.2 *Loss of species credit species habitat or individuals*

No species credit species were detected in the development site throughout targeted surveys. No loss of species credit species habitat is considered to occur.

7.1.3 *Loss of hollow-bearing trees*

Two hollow-bearing trees were identified within the development site. Both of these trees would be removed as one poses a hazard in a high use school environment and the other occurs within the building footprint. The hollow stumps have been proposed to be retained on site as part of the outdoor learning areas.

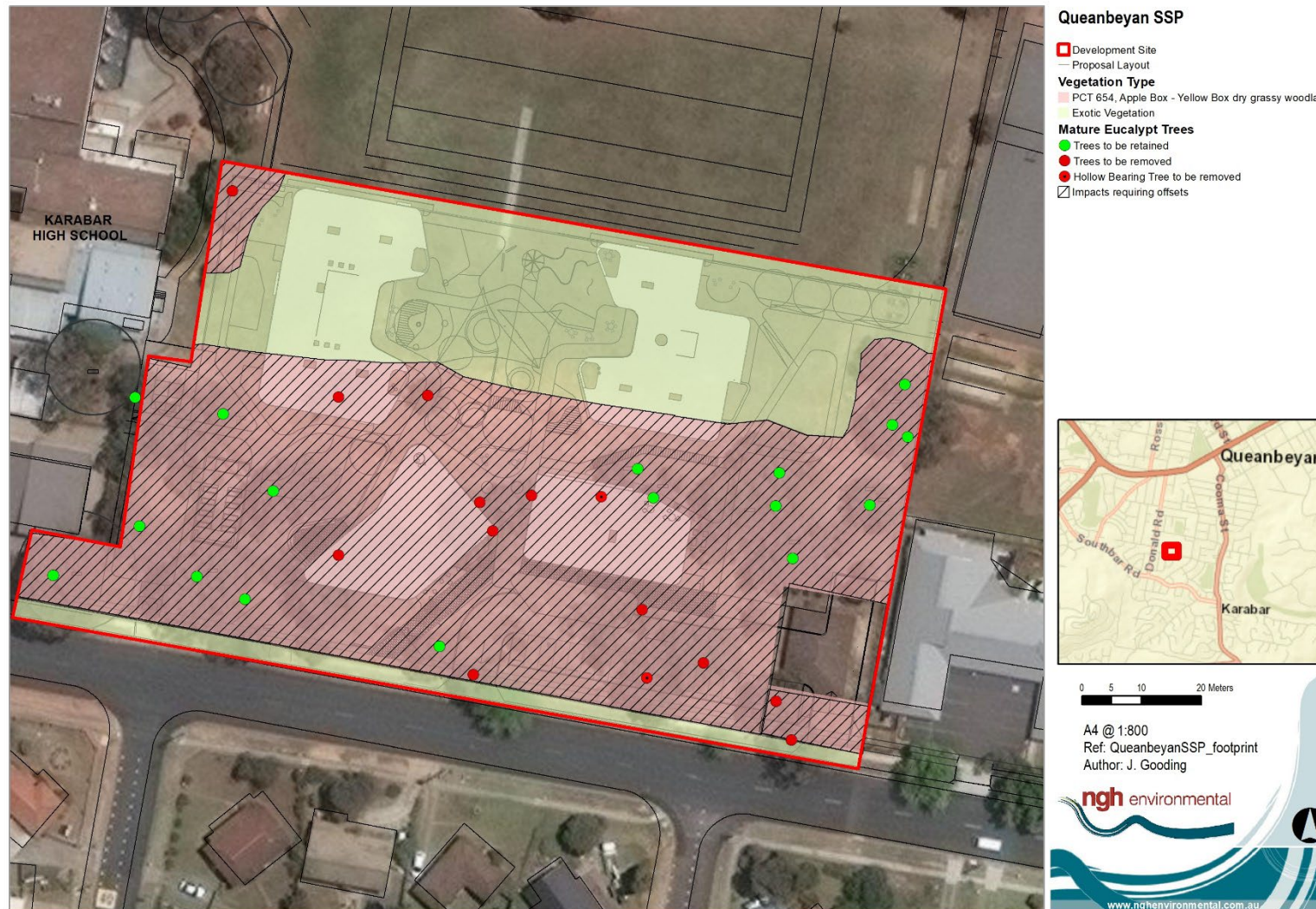


Figure 7-1 Direct Impacts

7.2 INDIRECT IMPACTS

Indirect impacts can occur when the proposal or activities relating to the construction or operation of the proposal affect native vegetation, threatened ecological communities or threatened species habitat beyond the development site. Table 7-1 below details the type, frequency, intensity, duration and consequence of the direct and indirect impacts of the proposal.

Table 7-3 Potential impacts to biodiversity during the construction and operational phases

Nature of impact	Impact	Reason	TEC, threatened species and habitats likely to be affected	Consequence for bioregional persistence
Indirect impacts (those listed below are included in the BAM)				
Inadvertent impacts on adjacent habitat or vegetation	Unlikely	Development site an isolated patch surrounded by urban development.	n/a	n/a
Reduced viability of adjacent habitat due to edge effects	Unlikely	Development site an isolated patch surrounded by urban development.	n/a	n/a
Reduced viability of adjacent habitat due to noise, dust or light spill	Unlikely	Development site an isolated patch surrounded by urban development.	n/a	n/a
Transport of weeds and pathogens from the site to adjacent vegetation	Unlikely	Development site an isolated patch surrounded by urban development.	n/a	n/a
Increased risk of starvation, exposure and loss of shade or shelter	Unlikely	Development site an isolated patch surrounded by urban development.	n/a	n/a
Loss of breeding habitats	Unlikely	Development site an isolated patch surrounded by urban development. Minimal breeding habitat surrounding development site.	n/a	n/a
Trampling of threatened flora species	Likely	Hoary Sunray present in development site. Those avoided by construction would form part of the school yards	Hoary Sunray (<i>Leucochrysum albicans</i> var. <i>tricolor</i>) – Endangered EPBC Act.	Reduction in extent of Hoary Sunray. Referral to Federal Government recommended.
Inhibition of nitrogen fixation and increased soil salinity	Possible.	Nitrogen fixing wattles present in development site that would be	None	None

Nature of impact	Impact	Reason	TEC, threatened species and habitats likely to be affected	Consequence for bioregional persistence
Indirect impacts (those listed below are included in the BAM)				
		removed. Increased water infiltration from increased infrastructure and watering of gardens.		
Fertiliser drift	Unlikely	Fertilisers unlikely to be applied.	n/a	n/a
Rubbish dumping	Unlikely	Development site within a highly populated school ground.	n/a	n/a
Wood collection	Unlikely	Development site surrounded by urban areas. No firewood present	n/a	n/a
Bush rock removal and disturbance	Unlikely	Development site surrounded by urban areas. No bush rock present.	n/a	n/a
Increase in predatory species populations	Unlikely	Development site isolated patch within urban environment. No increase in predatory animals expected.	n/a	n/a
Increase in pest animal populations	Unlikely	Development site isolated patch within urban environment. No increase in pest animals expected.	n/a	n/a
Increased risk of fire	Unlikely	Reduced area of dry woodland. Development site converted to buildings	n/a	n/a
Disturbance to specialist breeding and foraging habitat, e.g. beach nesting for shorebirds	Unlikely	No specialist breeding and foraging habitat present in site.	n/a	n/a

Nature of impact	Impact	Reason	TEC, threatened species and habitats likely to be affected	Consequence for bioregional persistence
Indirect impacts (those listed below are included in the BAM)				
Barriers to fauna movement	Unlikely	Development site an isolated patch surrounded by urban development	n/a	n/a

7.3 IMPACTS TO MATTERS OF NATIONAL ENVIRONMENTAL SIGNIFICANCE

7.3.1 Threatened Ecological Communities

One EPBC listed ecological community, White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland EEC, had the potential to occur within the development site, based on the presence of remnant Yellow Box and Blakely's Red Gum trees in the surrounding area. However, the derived native grassland and planted vegetation do not meet the condition threshold for the EPBC listed community due to a lack of diversity of native understory species and lack of mature trees within the patch.

No EPBC listed communities are considered to occur within the development site.

7.3.2 Threatened Species

Hoary Sunray (*Leucochrysum albicans* var. *tricolor*)

Approximately 1400 individuals of this species were detected within the development site. This population of Hoary Sunray was not detected outside the development site and is isolated from any other known population. The development footprint would impact on all of these species through disturbance of the understory. An Assessment of Significance was undertaken for the Hoary Sunray (Appendix D) and determined that a Significant impact was considered likely for this population. The proposal could:

- Lead to a long-term decrease in the size of a population of species
- Reduce the area of occupancy of the species
- Disrupt the breeding cycle of a population
- Interfere with the recovery of the population

Of the nine criteria for significant impact to an endangered species, the project is likely to cause a significant impact to four criteria. A referral has been sent to the federal Department of Environment and Energy and determined that the development is a Controlled Action.

Superb Parrot and Swift Parrot

Suitable Box-Gum Woodland habitat is present for the Swift Parrot and Superb Parrot in the development site. Surveys were undertaken for this species and they were not detected. However, it is considered these species may forage in the development site on occasion.

EPBC Assessments of significance were completed for these two fauna species (Appendix E). These concluded that a significant impact was unlikely, on the basis that the proposal would not:

- Lead to a reduction of the size or area of occupancy of a population, or fragment or disrupt the breeding cycle of a population
- Affect habitat critical to the survival of these species
- Affect habitat or introduce disease such that these species would decline
- Introduce invasive species harmful to the species
- Interfere with the recovery of these species.

A referral is not considered necessary for these species.

Koala

The EPBC Referral Guidelines for the Koala (DoE 2014) documents the 'Koala habitat assessment tool' to assist proponents in determining if a proposal may impact on habitat critical to the survival of the Koala. The tool is provided as Table 7-4 below as it applies to the proposal. Impact areas that score five or more using the habitat assessment tool contain habitat critical to the survival of the Koala. The assessment in Table 7-4 resulted in a score of 2 and as such habitat within the study area is not considered to be critical to the survival of the Koala. An assessment of significant impact is not required.

Table 7-4: Koala habitat assessment tool for inland areas (DoE 2014)

Attribute	Score	Inland	Applicable to the proposal?
Koala occurrence	+2 (high)	Evidence of one or more koalas within the last 5 years.	✓ No records within 2km within the last 10 years. Nearest recent record over 3km away (Bionet)
	+1 (medium)	Evidence of one or more koalas within 2 km of the edge of the impact area within the last 10 years.	
	0 (low)	None of the above.	
Vegetation composition	+2 (high)	Has forest, woodland or shrubland with emerging trees with 2 or more known koala food tree species, OR 1 food tree species that alone accounts for >50% of the vegetation in the relevant strata.	✓ 2 secondary food tree species present, Apple Box and Yellow Box
	+1 (medium)	Has forest, woodland or shrubland with emerging trees with only 1 species of known koala food tree present.	
	0 (low)	None of the above.	
Habitat connectivity	+2 (high)	Area is part of a contiguous landscape ≥ 1000 ha.	✓ Area is an isolated patch less than 1 ha in size
	+1 (medium)	Area is part of a contiguous landscape < 1000 ha, but ≥ 500 ha.	
	0 (low)	None of the above.	
Key existing	+2	Little or no evidence of koala mortality	

Attribute	Score	Inland	Applicable to the proposal?
threats	(high)	from vehicle strike or dog attack at present in areas that score 1 or 2 for koala occurrence. Areas which score 0 for koala occurrence and have no dog or vehicle threat present	✓ Small patch in midst of urban environment. Significant dog and vehicle threat.
	+1 (medium)	Evidence of infrequent or irregular koala mortality from vehicle strike or dog attack at present in areas that score 1 or 2 for koala occurrence, OR Areas which score 0 for koala occurrence and are likely to have some degree dog or vehicle threat present.	
	0 (low)	Evidence of frequent or regular koala mortality from vehicle strike or dog attack in the study area at present, OR Areas which score 0 for koala occurrence and have a significant dog or vehicle threat present.	
Recovery value	+2 (high)	Habitat is likely to be important for achieving the interim recovery objectives for the relevant context, as outlined in Table 1.	✓ Study area is not considered a habitat refuge nor does it provide important connectivity to large areas surrounding a habitat refuge
	+1 (medium)	Uncertain whether the habitat is important for achieving the interim recovery objectives for the relevant context, as outlined in Table 1.	
	0 (low)	Habitat is unlikely to be important for achieving the interim recovery objectives for the relevant context, as outlined in Table 1.	
Total	2	Decision: Habitat not critical to the survival of the Koala—assessment of significance not required	

7.3.3 Migratory species

Two migratory species, the Fork-tailed Swift and the White-throated Needletail could occur on the site on occasion. These species are almost exclusively aerial and the habitat within the development site is not considered important habitat for these species.

An assessment of significance was undertaken (Appendix D) for these species and concluded that a significant impact was unlikely, on the basis that the proposal would not:

- Substantially modify, destroy or isolate an area of important habitat for these species
- Result in an invasive species that is harmful to the migratory species becoming established in an area of important habitat for these species
- Seriously disrupt the lifecycle of an ecologically significant proportion of the population of a migratory species.

No referral is considered necessary to the Federal Department of Environment and Energy for these migratory species.

8 MITIGATING AND MANGING IMPACTS

8.1 MITIGATION MEASURES

A general summary of the key measures required to mitigate the impacts of the proposal are provided below. Mitigation measures proposed to manage impacts, including proposed techniques, timing, frequency, responsibility for implementing each measure, risk of failure and an analysis of the consequences of any residual impacts are provided in Table 8-1.

8.1.1 *Impacts from the clearing of vegetation and habitats*

1. Implement clearing protocols during tree clearing works, including pre-clearing surveys, daily surveys and staged clearing, with the presence of a trained ecologist or wildlife handler
2. Relocate habitat features (fallen timber) from within the development site to an adjacent area.
3. Clearing protocols that identify vegetation to be retained, prevent inadvertent damage and reduce soil disturbance; for example, removal of native vegetation by chainsaw, rather than heavy machinery, is preferable in situations where partial clearing is proposed.
4. Temporary fencing to protect significant environmental features such as trees to be retained
5. Hygiene protocols to prevent the spread of weeds or pathogens between infected areas and uninfected areas
6. Staff training and site briefing to communicate environmental features to be protected and measures to be implemented

8.1.2 *Prescribed impacts*

1. Appropriate landscape plantings of local indigenous species and non-invasive species

Table 8-1 Mitigation measures proposed to avoid and minimise impacts on native vegetation and habitat

Mitigation measure	Proposed techniques	Timing	Frequency	Responsibility	Risk of failure	Risk and consequences of residual impacts
Displacement of resident fauna through vegetation clearing and habitat removal						
instigating clearing protocols including pre-clearing surveys, daily surveys and staged clearing, the presence of a trained ecological or licensed wildlife handler during clearing events	<ul style="list-style-type: none"> Pre-clearing checklist Tree clearing procedure 	Construction	Regular	Contractor	Low	Species not detected during pre-clearing surveys may be impacted.
relocation of habitat features (fallen timber, hollow logs) from within the development site.	<ul style="list-style-type: none"> Tree-clearing procedure including relocation of habitat features to adjacent area for habitat enhancement 	Construction	Regular	Contractor	Low	None
Impacts on native vegetation and habitat						
clearing protocols that identify vegetation to be retained, prevent inadvertent damage and reduce soil disturbance; for example, removal of native vegetation by chainsaw, rather than heavy machinery, is preferable in situations where partial clearing is proposed	<ul style="list-style-type: none"> Approved clearing limits to be clearly delineated with temporary fencing or similar prior to construction commencing. No stockpiling or storage within dripline of any mature trees In areas to clear adjacent to areas to be retained, chainsaws would be used rather than heavy machinery to minimise risk of unauthorised disturbance 	Construction	Regular	Contractor	Low	Impacts to retained vegetation if protocols not followed (low risk)
temporary fencing to protect vegetation to be retained	<ul style="list-style-type: none"> Prior to construction commencing, exclusion fencing and signage would be installed around vegetation to be retained 	Construction	Regular	Contractor	Low	Impacts to retained vegetation if protocols not followed (low risk)

Mitigation measure	Proposed techniques	Timing	Frequency	Responsibility	Risk of failure	Risk and consequences of residual impacts
temporary fencing to protect threatened flora (Hoary Sunray) to be retained	<ul style="list-style-type: none"> • Prior to construction commencing, exclusion fencing and signage would be installed around threatened flora to be retained • No stockpiling or storage to occur within this area 	Construction	Regular	Contractor	Low	Impacts to threatened flora if protocols not followed (low risk)
hygiene protocols to prevent the spread of weeds or pathogens between infected areas and uninfected areas	<ul style="list-style-type: none"> • Site Weed hygiene protocol in relation to plant, machinery, and fill 	Construction, Operation	Regular	Contractor	Low	Weed encroachment (low risk)
staff training and site briefing to communicate environmental features to be protected and measures to be implemented	<ul style="list-style-type: none"> • Site induction • Toolbox talks 	Construction	Regular	Contractor	Low	Impacts to native vegetation if staff training not being followed (low risk)

9 SERIOUS AND IRREVERSIBLE IMPACTS (SAII)

9.1 POTENTIAL SERIOUS AND IRREVERSIBLE IMPACT ENTITIES

The principles used to determine if a development will have serious and irreversible impacts, include impacts that:

- Will cause a further decline of the species or ecological community that is currently observed, estimated, inferred, or reasonably suspected to be in a rapid rate of decline, or
- Will further reduce the population size of the species or ecological community that is currently observed, estimated, inferred, or reasonably suspected to have a very small population size, or
- Impact on the habitat of a species or ecological community that is currently observed, estimated, inferred, or reasonably suspected to have a very limited geographic distribution, or
- Impact on a species or ecological community that is unlikely to respond to measures to improve habitat and vegetation integrity and is therefore irreplaceable.

9.1.1 *Threatened ecological communities*

One threatened ecological community will be impacted on by the proposal that is listed as a potential SAI entity in the *Guidance to assist a decision-maker to determine a serious and irreversible impact*. This is the;

- White Box-Yellow Box- Blakely's Red Gum Woodland (Box-gum Woodland)

9.1.2 *Threatened species*

No threatened flora or fauna species listed as potential SAI entities are considered to occur in the development site.

9.1.3 *Additional potential entities*

There are no further species considered to be potential SAI entities.

9.2 ASSESSMENT OF SERIOUS AND IRREVERSIBLE IMPACTS

9.2.1 *White Box - Yellow Box – Blakely's Red Gum Woodland (Box-gum Woodland)*

An assessment of the impacts to the Box-gum woodland was undertaken.

a) **the action and measures taken to avoid the direct and indirect impact on the potential entity for an SAI**

An iterative process was adopted in the design of the SSP. Input from ecologists and arborists was included in the decision making. This has led to the final plan for the buildings and infrastructure avoiding high value environmental assets and minimising the impact on existing trees where possible. Vegetation constituting the highest ecological constraints such as mature Eucalyptus trees would be avoided and minimised as far as practical by:

- Retaining 17 Eucalyptus trees

- Landscaping plans incorporating the existing trees and using the natural environment for nature education areas.
- Making provisions for the landscaping of new plantings.

The final site layout has not been able to completely avoid clearing of native vegetation due to the small area of the development site providing limited scope for movement of buildings, carparks or infrastructure.

The selection of the site for the SSP was made following a demographic analysis. The Department of Education determined a new SSP education facility was required in the Queanbeyan area. Through utilisation surveys of existing school assets in the region, the Department of Education determined Karabar High school was the most appropriate site for the education facility.

As Queanbeyan SSP will cater for students for moderate to severe intellectual and physical disabilities, the facility requires a kiss and drop and parking at the entry. For this reason, a direct street frontage is required. The most appropriate street frontage at the site is Alanbar Street (between Boronia Cres and Cassia Cres). The Alanbar Street frontage had the following advantages over other streets:

- Alanbar Street has less vehicle traffic than Donald Street
- Karabar High school already uses the Donald Street frontage as the main entry. Locating the Queanbeyan SSP here would lead to increased congestion.
- Alanbar frontage between Boronia Cres and Cassia Cres is underutilised by Karabar high school while the Donald Street frontage is currently used for agriculture education.
- The terrain/ground at Alanbar Street frontage is flatter, which is vital for a school with a high proportion of students requiring wheelchair accessibility.

Therefore, whilst some removal of TEC is required, significant ecological values such as mature eucalypt trees have been retained.

b) the area (ha) and condition of the TEC to be impacted directly and indirectly by the proposed development. The condition of the TEC is to be represented by the vegetation integrity score for each vegetation zone

0.6 ha of Box-gum Woodland would be impacted by the proposal through the construction of the school. The vegetation score for the Box-gum Woodland in the development site from the plot data is 57.1. The vegetation has some variation in structure and function throughout the patch. Based on the streamlined assessment methodology, it was considered one plot was sufficient to determine the vegetation integrity across the site. The plot was undertaken in the most diverse area to capture the vegetation in the best condition. A summary of the vegetation score is below:

Zone ID	Composition score	Structure score	Function score	Vegetation Integrity Score
1 – PCT 654	28.7	81	80	57.1

Composition: The composition score is low as there is a lack of diversity of native understorey forbs and grasses. The native species present are common species that often found in disturbed areas such as Redleg Grass (*Bothriochloa macra*), Common Couch (*Cynodon dactylon*), Spear Grass (*Austrostipa scabra*), Wallaby Grass (*Rytidosperma sp.*) as well as *Dianella longifolia* which appeared to have been planted. The groundlayer undergoes constant disturbance from mowing and trampling and part of the patch of woodland has been planted with native species such as Banksia and Grevillea species that are not typical of Box-Gum Woodland. The invasive shrub Cootamundra Wattle *Acacia baileyana* is not local to the area but meets the definition of a native plant under the BAM.

Structure: The overstorey cover of trees exceeded the benchmark for this community. The high percentage of Wallaby Grass met the benchmark for native grass cover. However, the cover of forb and shrubs is lacking, well below the benchmark for an intact vegetation community.

Function: The diversity of tree stem sizes (DBH) met the benchmark for this community. This is in part to some Eucalypt trees having been planted in the past and regeneration occurring directly under the mature trees. The litter cover and number of large trees also met the benchmark. However, there is no fallen timber which is a key component of an intact woodland community.

The patch of Box-gum Woodland is not representative of an intact or viable Box-gum woodland community. The very small patch size is subject to edge effects and frequent trampling by school students. Within half the patch, the understorey has been landscaped into an indigenous garden, comprised of seating, pathways and dry river beds. Non-endemic plants such as Cootamundra Wattle, planted Banksias, Grevilleas and Callistemons are present which are not typical of a Box-gum Woodland Community.

The proposal would retain some of the higher value components of this community, including native overstorey species, and encourages the use of native understorey species in landscaping.

c) a description of the extent to which the impact exceeds the threshold for the potential entity that is specified in the Guidance to assist a decision-maker to determine a serious and irreversible impact

No threshold has yet been defined by OEH for the extent of Box-gum Woodland to be removed that constitutes a serious and irreversible impact. However, the patch to be removed is small comprising only 0.6ha.

d) the extent and overall condition of the potential TEC within an area of 1000 ha, and then 10,000 ha, surrounding the proposed development footprint

Using GIS, aerial imagery and State Vegetation Mapping VIS_3858 (OEH 2016) it is estimated 14.6 ha of Box-gum Woodland occurs within an area of 1000 ha surrounding the proposed development footprint and 4319 ha of Box-gum Woodland occurs within an area of 10000 ha surrounding the proposed development footprint (Figure 9-1). Vegetation visible from aerial photography is predicted to be moderate/good condition. This reflects the urban nature of the land surrounding the development site.

e) an estimate of the extant area and overall condition of the potential TEC remaining in the IBRA subregion before and after the impact of the proposed development has been taken into consideration

Using GIS, aerial imagery and SELLS Vegetation Mapping (Eco Logical Australia 2015) it is estimated 19 585 ha of Box Gum Woodland remains in the Monaro IBRA subregion. Vegetation visible from aerial photography is predicted to be moderate/good condition. The 0.6 ha of Box-Gum woodland to be removed is less than 0.001% of this area and removal would have a negligible impact on the extent of Box-Gum Woodland remaining in the IBRA subregion.

f) an estimate of the area of the potential TEC that is in the reserve system within the IBRA region and the IBRA subregion

In NSW Box-gum grassy Woodland is known to occur within at least 42 reserve systems (Benson, 2008). The nearest reserve containing Box-Gum Woodland is Queanbeyan Nature Reserve which covers an area of 46 ha.

g) the development, clearing or biodiversity certification proposal's impact on:

- i. **abiotic factors critical to the long-term survival of the potential TEC; for example, how much the impact will lead to a reduction of groundwater levels or the substantial alteration of surface water patterns**

Surface water patterns would be modified through the construction of buildings, footpaths and carparks that would reduce the permeable surface for water to infiltrate. However, the proposed landscaping around the school would be irrigated and likely to maintain the current groundwater levels. The remaining Eucalypts in the development site would unlikely be impacted. The development site is isolated from other areas of Box-Gum Woodland and the proposal would not impact on Box-Gum Woodland in the locality.

- ii. **characteristic and functionally important species through impacts such as, but not limited to, inappropriate fire/flooding regimes, removal of understorey species or harvesting of plants**

The understorey of the Box-gum woodland patch would be removed or heavily disturbed but these groundcover species occurring within the patch are comprised of common and disturbance tolerant native species and are not considered functionally important species. Some of the characteristic trees for this community (Yellow Box, Red Box and Apple Box) would need to be removed, but 17 trees would remain in the patch that are characteristic of the Box-gum woodland community. No impacts are anticipated to Box-Gum Woodland in the locality. No introduced fire or flooding regimes would occur and no increase of natural occurrences of these events is anticipated from the development.

- iii. **the quality and integrity of an occurrence of the potential TEC through threats and indirect impacts including, but not limited to, assisting invasive flora and fauna species to become established or causing regular mobilisation of fertilisers, herbicides or other chemicals or pollutants which may harm or inhibit growth of species in the potential TEC**

The implementation of weed management protocols would minimise impacts of invasive flora and fauna species to become established. The invasive shrub, Cootamundra Wattle (*Acacia baileyana*) is already established in the Eastern end of the site. There will be minimal use of herbicides or fertilisers in the construction or operation of the school. Any used will be handled according to their directions and unlikely to harm Box-Gum Woodland. The development site is isolated from other areas of Box-Gum Woodland and the proposal would not impact on Box-Gum Woodland in the locality.

- h) **direct or indirect fragmentation and isolation of an important area of the potential TEC**

The Box-gum Woodland to be removed is a small (0.6 ha) isolated patch in the midst of a residential area. It is not connected to other areas of native vegetation. The proposal would impact on the 0.6 ha of woodland, however it would not fragment or isolate larger tracts of Box-gum Woodland in the locality.

- i) **the measures proposed to contribute to the recovery of the potential TEC in the IBRA subregion.**

The 0.6 ha of Box-gum Woodland to be removed would be offset by 15 ecosystem credits that would be used for management of another area of Box-gum Woodland in the same IBRA region.

The proposal would impact 0.6 ha of Box Gum Woodland within the development site, however the patch is very small, (0.6 ha), and is highly modified having a landscaped understorey and subject to frequent

trampling by school students. It does not constitute a patch that is vital to sustain the habitat for the ecological community. It is surrounded by a residential area and does not provide connectivity to any other areas of Box Gum Woodland or native vegetation. Based on the assessment above, it is considered unlikely the proposal would have a serious and irreversible impact on the White Box Yellow Box Blakely's Red Gum Woodland EEC.

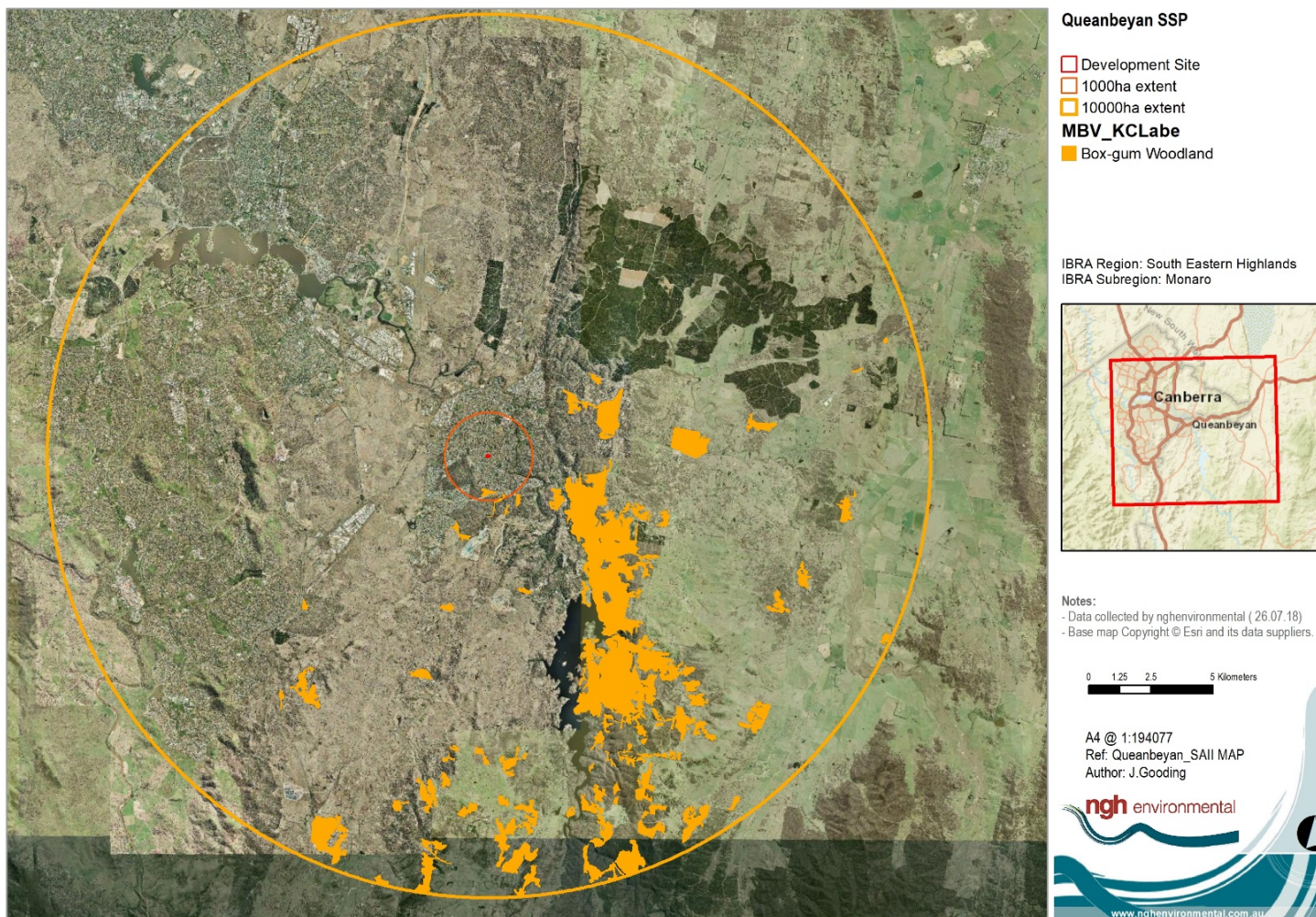


Figure 9-1 Location of serious and irreversible impacts (Box-gum Woodland)

10 REQUIREMENT TO OFFSET

10.1 IMPACTS REQUIRING AN OFFSET

10.1.1 Ecosystem credits

An offset is required for all impacts of development on PCTs that are associated with:

- a) a vegetation zone that has a vegetation integrity score ≥ 15 where the PCT is representative of an endangered or critically endangered ecological community, or
- b) a vegetation zone that has a vegetation integrity score of ≥ 17 where the PCT is associated with threatened species habitat (as represented by ecosystem credits), or is representative of a vulnerable ecological community, or
- c) a vegetation zone that has a vegetation integrity score ≥ 20 where the PCT is not representative of a TEC or associated with threatened species habitat.

The PCTs and vegetation zones requiring offset and the ecosystem credits required are documented in Table 10-1. The full Biodiversity Credit Report generated by the BAM Calculator is provided in Appendix F.

Table 10-1 PCTs and vegetation zones that require offsets

Zone ID	PCT ID	PCT name	Zone area (ha)	Vegetation integrity score	Ecosystem credits required
1	654	Apple Box – Yellow Box dry grassy woodland of the South Eastern Highlands Bioregion	0.6	57.1	15

10.1.2 Species credits

No species credit species were detected on site and no species offset credits are required for the development.

10.1.3 Offsets required under the EPBC Act

Approximately 1400 Hoary Sunray (*Leucochrysum albicans* var. *tricolor*) plants would be impacted by the development. A referral was sent to the federal Department of Environment and Energy for impacts relating to the Hoary Sunray and determined that a controlled action is required. A full assessment of impacts to the Hoary Sunray would be undertaken under the EPBC Act in a separate report.

11 CONCLUSIONS

NGH Environmental has prepared this BDAR on behalf of Hayball for the proposed Queanbeyan School for Special Purposes. The purpose of this BDAR was to address the requirements of the BAM. In this BDAR, biodiversity impacts have been assessed through:

- Identification of PCTS and TECS on the development site
- Comprehensive mapping and assessment completed in accordance with the BAM
- Mitigation measures which have been outlined to reduce the impacts to biodiversity
- The generation of 15 Ecosystem Credits for impacts to Apple Box – Yellow Box dry grassy woodland of the South Eastern Highlands Bioregion (PCT654).

The retirement of these credits will be carried out in accordance with the NSW Biodiversity Offsets scheme, and will be achieved by either;

- a) Retiring credits under the Biodiversity Offsets Scheme, or
- b) Making payments into the Biodiversity Conservation Fund using the offset payments calculator, or
- c) Funding a biodiversity action that benefits the threatened entity(ies) impacted by the development.

Impacts to the federally listed, Hoary Sunray are considered to be significant and a referral has been made to the federal department of Environment and Energy.

12 REFERENCES

- Baker-Gabb (2011) National Recovery Plan for the Superb Parrot *Polytelis swainsonii* , Victorian Government Department of Sustainability and Environment
- DoE (2016). Species Profile and Threats Database, Department of Sustainability, Environment, Water, Population and Communities, Canberra. Available from: <http://www.environment.gov.au/sprat>.
- DoE (2014) EPBC Act Referral Guidelines for the vulnerable koala (combined populations of Queensland, New South Wales and the Australian Capital Territory), Commonwealth Department of Environment, 2014.
- DoE (2018) National Flying-fox monitoring viewer, Accessed at <http://www.environment.gov.au/biodiversity/threatened/species/flying-fox-monitoring>
- Environment Australia (2001) A Directory of Important Wetlands in Australia. 3rd Edition. Environment Australia, Canberra.
- Eco Logical Australia (2015) Biometric Vegetation Compilation (SELLS Vegetation Mapping), South East Local Land Services
- OEH (2016) Vegetation of the Southern Forest _ VIS ID 3858, State Government of NSW.
- Office of Environment and Heritage (OEH) (2016) NSW Guide to Surveying Threatened Plants
- Office of Environment and Heritage (OEH) (2017) Biodiversity Assessment Methodology (BAM). Office of Environment and Heritage for the NSW Government, Sydney, NSW.
- Office of Environment and Heritage (OEH) (2017) BioNet Vegetation Information System: Classification Database. Accessed online at <http://www.environment.nsw.gov.au/research/Visclassification.htm>
- Ryan, W. (2018) Arborist report for Queanbeyan SSP.
- Saunders & Tzaros, 2011 National Recovery Plan for the Swift Parrot *Lathamus discolor*, Birds Australia, 2011
- Sinclair (2011) National Recovery Plan for the Hoary Sunray *Leucochrysum albicans* var. *tricolor* Department of Sustainability and Environment, Victoria

APPENDIX A FLORA SPECIES

Floristic survey results are presented for the plant community type identified in the development site (PCT)

PCT 654 – Apple Box – Yellow Box dry grassy woodland of the South Eastern Highlands Bioregion.

The foliage cover of species is based on visual estimates of foliage cover within a standard 20 metre x 20 metre plot. Incidentals are recorded using the random meander method (Cropper 1993). ‘

Where uncertainty exists due to the unavailability of reproductive material, the taxon is preceded by a question mark, or plants are identified to genus level only. Species of conservation significance are bolded. Introduced species are denoted by an asterisk. Priority or significant environmental weeds are indicated with a ‘Δ’ symbol. Scientific nomenclature follows Harden (1990-2002) and the Sydney Royal Botanic Gardens PlantNet website, updated with recent changes accepted by the except where recent changes accepted by the Angiosperm Phylogeny Group (2016) and the Australian Plant Census (2017).

Family	Exotic	Scientific Name	Common Name	TSC Status	EPBC Status	Plot 1 PCT 1330		Incidentals
						Cover%	#individuals	
Trees								
Malvaceae		<i>Brachychiton populneus</i>	Kurrajong					*
Myrtaceae		<i>Eucalyptus bridgesiana</i>	Apple Box			15	1	
Myrtaceae		<i>Eucalyptus melliodora</i>	Yellow Box			25	2	
Myrtaceae		<i>Eucalyptus macrorhyncha</i>	Red Stringybark					*
Shrubs								
Fabaceae (Mimosoideae)		<i>Acacia baileyana</i>	Cootamundra Wattle					*
Fabaceae (Mimosoideae)		<i>Acacia decurrens</i>	Black Wattle					Planted
Fabaceae (Mimosoideae)		<i>Acacia genistifolia</i>	Early Wattle			0.2	4	*
Fabaceae (Mimosoideae)		<i>Acacia rubida</i>	Red-stemmed Wattle					Planted
Proteaceae		<i>Banksia spp.</i>	Ornamental					Planted
Pittosporaceae		<i>Bursaria spinosa</i>	Native Blackthorn					*
Myrtaceae		<i>Callistemon spp.</i>	Ornamental					Planted
Rhamnaceae		<i>Cryptandra amara</i>	Bitter Cryptandra					*
Proteaceae		<i>Grevillea spp.</i>	Ornamental					Planted
Xanthorrhoeaceae		<i>Xanthorrhoeaceae</i>	Grass Tree					Planted
Vines/Climbers								
Fabaceae (Faboideae)		<i>Glycine tabacina</i>	Variable Glycine			0.1	1	
Ferns								
Pteridaceae		<i>Cheilanthes sieberi</i>	Rock Fern					*
Forbs								
Clusiaceae	*	<i>Hypericum perforatum</i>	St. Johns Wort			0.5	20	
Asteraceae	*	<i>Hypochaeris radicata</i>	Catsear			0.1	10	
Brassicaceae	*	<i>Lepidium spp.</i>	A Peppercross			0.1	10	
Asteraceae		<i>Leucochrysum albicans var. tricolor</i>	Hoary Sunray	P	E	0.5	50	
Plantaginaceae	*	<i>Plantago lanceolata</i>	Lamb's Tongues			0.5	500	
Fabaceae (Faboideae)	*	<i>Trifolium spp.</i>	A Clover			0.1	1	
Campanulaceae		<i>Wahlenbergia spp.</i>	Bluebell			0.1	10	

Grasses and Grass Like								
Poaceae		<i>Aristida spp.</i>	A Wiregrass					*
Poaceae		<i>Austrostipa scabra</i>	Speargrass			6	25	
Poaceae	*	<i>Avena fatua</i>	Wild Oats					*
Poaceae		<i>Bothriochloa macra</i>	Red Grass			3	20	
Poaceae		<i>Cynodon dactylon</i>	Common Couch			3	10	
Poaceae	*	<i>Dactylis glomerata</i>	Cocksfoot					*
Phormiaceae		<i>Dianella longifolia</i>	Blueberry Lily			0.5	20	
Poaceae		<i>Elymus scaber</i>	Common Wheatgrass					*
Poaceae	*	<i>Eragrostis spp.</i>	A Lovegrass			20	300	
Lomandraceae		<i>Lomandra filiformis</i>	Mat-rush			0.1	20	
Iridaceae	*	<i>Romulea rosea var. australis</i>	Onion Grass					*
Poaceae		<i>Rytidosperma spp.</i>	Wallaby Grass			25	200	
Poaceae		<i>Themeda australis</i>	Kangaroo Grass					*

APPENDIX B FAUNA SPECIES

Fauna species recorded within the development site.

Scientific Name	Common Name	Survey Date	
		August 2018	November 2018
<i>*Acridotheres tristis</i>	Common/Indian Myna	√	√
<i>Alisterus scapularis</i>	Australian King Parrot	√	
<i>Anthochaera carunculata</i>	Red Wattlebird	√	√
<i>Cacatua galerita</i>	Sulphur-crested Cockatoo	√	√
<i>Cacatua sanguinea</i>	Little Corella	√	√
<i>*Columba livia</i>	Rock Dove (Feral Pigeon)	√	
<i>Corvus coronoides</i>	Australian Raven	√	
<i>Cracticus tibicen</i>	Australian Magpie	√	√
<i>Dacelo novaeguineae</i>	Laughing Kookaburra	√	
<i>Eolophus roseicapillus</i>	Galah	√	√
<i>Grallina cyanoleuca</i>	Magpie-lark	√	√
<i>Manorina melanocephala</i>	Noisy Miner	√	√
<i>Ocyphaps lophotes</i>	Crested Pigeon	√	√
<i>Platycercus elegans</i>	Crimson Rosella	√	
<i>Platycercus eximus</i>	Eastern Rosella	√	√
<i>Rhipidura leucophrys</i>	Willy Wagtail	√	
<i>Strepera graculina</i>	Pied Currawong	√	
<i>Sturnus vulgaris</i>	Common Starling		√
<i>Trichoglossus moluccanus</i>	Rainbow Lorikeet	√	
<i>Vanellus miles</i>	Masked Lapwing	√	

APPENDIX C EPBC PROTECTED MATTERS SEARCH



EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected.

Information on the coverage of this report and qualifications on data supporting this report are contained in the caveat at the end of the report.

Information is available about [Environment Assessments](#) and the EPBC Act including significance guidelines, forms and application process details.

Report created: 20/07/18 15:47:10

[Summary](#)

[Details](#)

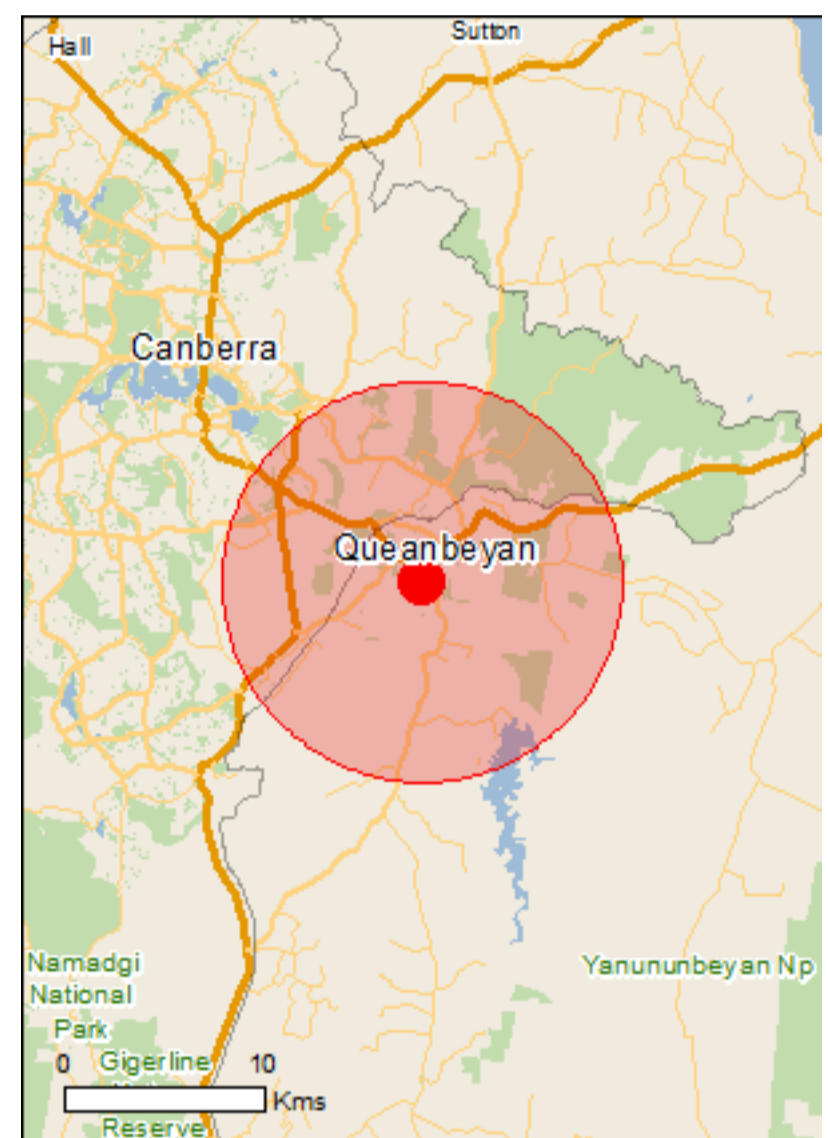
[Matters of NES](#)

[Other Matters Protected by the EPBC Act](#)

[Extra Information](#)

[Caveat](#)

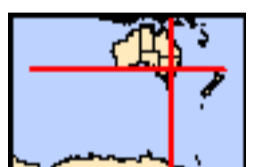
[Acknowledgements](#)



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[Coordinates](#)

[Buffer: 10.0Km](#)



Summary

Matters of National Environmental Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the [Administrative Guidelines on Significance](#).

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance:	4
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	2
Listed Threatened Species:	39
Listed Migratory Species:	14

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at <http://www.environment.gov.au/heritage>

A [permit](#) may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Land:	19
Commonwealth Heritage Places:	15
Listed Marine Species:	20
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None

Extra Information

This part of the report provides information that may also be relevant to the area you have nominated.

State and Territory Reserves:	8
Regional Forest Agreements:	1
Invasive Species:	35
Nationally Important Wetlands:	1
Key Ecological Features (Marine)	None

Details

Matters of National Environmental Significance

Wetlands of International Importance (Ramsar)	[Resource Information]
Name	Proximity
Banrock station wetland complex	800 - 900km upstream
Hattah-kulkyne lakes	600 - 700km upstream
Riverland	700 - 800km upstream
The coorong, and lakes alexandrina and albert wetland	800 - 900km upstream

Listed Threatened Ecological Communities [Resource Information]

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Name	Status	Type of Presence
Natural Temperate Grassland of the South Eastern Highlands	Critically Endangered	Community likely to occur within area
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Critically Endangered	Community likely to occur within area

Listed Threatened Species [Resource Information]

Name	Status	Type of Presence
Birds		
Anthochaera phrygia Regent Honeyeater [82338]	Critically Endangered	Species or species habitat known to occur within area
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat may occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Grantiella picta Painted Honeyeater [470]	Vulnerable	Species or species habitat likely to occur within area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat known to occur within area
Limosa lapponica baueri Bar-tailed Godwit (baueri), Western Alaskan Bar-tailed Godwit [86380]	Vulnerable	Species or species habitat may occur within area
Limosa lapponica menzbieri Northern Siberian Bar-tailed Godwit, Bar-tailed Godwit (menzbieri) [86432]	Critically Endangered	Species or species habitat may occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Polytelis swainsonii Superb Parrot [738]	Vulnerable	Species or species habitat known to occur

Name	Status	Type of Presence within area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area
Fish		
Bidyanus bidyanus Silver Perch, Bidyan [76155]	Critically Endangered	Species or species habitat known to occur within area
Maccullochella peelii Murray Cod [66633]	Vulnerable	Species or species habitat likely to occur within area
Macquaria australasica Macquarie Perch [66632]	Endangered	Species or species habitat may occur within area
Frogs		
Litoria aurea Green and Golden Bell Frog [1870]	Vulnerable	Species or species habitat may occur within area
Litoria booroolongensis Booroolong Frog [1844]	Endangered	Species or species habitat may occur within area
Litoria castanea Yellow-spotted Tree Frog, Yellow-spotted Bell Frog [1848]	Endangered	Species or species habitat likely to occur within area
Litoria raniformis Growling Grass Frog, Southern Bell Frog, Green and Golden Frog, Warty Swamp Frog [1828]	Vulnerable	Species or species habitat may occur within area
Insects		
Synemon plana Golden Sun Moth [25234]	Critically Endangered	Species or species habitat known to occur within area
Mammals		
Chalinolobus dwyeri Large-eared Pied Bat, Large Pied Bat [183]	Vulnerable	Species or species habitat likely to occur within area
Dasyurus maculatus maculatus (SE mainland population) Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184]	Endangered	Species or species habitat likely to occur within area
Petauroides volans Greater Glider [254]	Vulnerable	Species or species habitat may occur within area
Petrogale penicillata Brush-tailed Rock-wallaby [225]	Vulnerable	Species or species habitat may occur within area
Phascolarctos cinereus (combined populations of Qld, NSW and the ACT) Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104]	Vulnerable	Species or species habitat known to occur within area
Pteropus poliocephalus Grey-headed Flying-fox [186]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Plants		
Caladenia actensis Canberra Spider Orchid [76138]	Critically Endangered	Species or species habitat known to occur within area
Dodonaea procumbens Trailing Hop-bush [12149]	Vulnerable	Species or species

Name	Status	Type of Presence
Eucalyptus aggregata Black Gum [20890]	Vulnerable	habitat may occur within area Species or species habitat known to occur within area
Lepidium ginninderrense Ginninderra Peppercross [78474]	Vulnerable	Species or species habitat may occur within area
Lepidium hyssopifolium Basalt Pepper-cress, Peppercross, Rubble Pepper-cress, Pepperweed [16542]	Endangered	Species or species habitat may occur within area
Leucochrysum albicans var. tricolor Hoary Sunray, Grassland Paper-daisy [56204]	Endangered	Species or species habitat known to occur within area
Pelargonium sp. Striatellum (G.W.Carr 10345) Omeo Stork's-bill [84065]	Endangered	Species or species habitat may occur within area
Pomaderris pallida Pale Pomaderris [13684]	Vulnerable	Species or species habitat known to occur within area
Prasophyllum petilum Tarengo Leek Orchid [55144]	Endangered	Species or species habitat may occur within area
Rutidosis leptorrhynchoides Button Wrinklewort [7384]	Endangered	Species or species habitat known to occur within area
Swainsona recta Small Purple-pea, Mountain Swainson-pea, Small Purple Pea [7580]	Endangered	Species or species habitat known to occur within area
Thesium australe Austral Toadflax, Toadflax [15202]	Vulnerable	Species or species habitat likely to occur within area

Reptiles

Aprasia parapulchella Pink-tailed Worm-lizard, Pink-tailed Legless Lizard [1665]	Vulnerable	Species or species habitat known to occur within area
Delma impar Striped Legless Lizard [1649]	Vulnerable	Species or species habitat known to occur within area
Tymanocryptis pinguicolla Grassland Earless Dragon [66727]	Endangered	Species or species habitat known to occur within area

Listed Migratory Species

[[Resource Information](#)]

* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.

Name	Threatened	Type of Presence
Migratory Marine Birds		
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area

Migratory Terrestrial Species

Hirundapus caudacutus White-throated Needletail [682]		Species or species habitat known to occur within area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat known to occur within area

Name	Threatened	Type of Presence
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat known to occur within area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat known to occur within area
Migratory Wetlands Species		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat likely to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat known to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat known to occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat may occur within area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Pandion haliaetus Osprey [952]		Species or species habitat likely to occur within area

Other Matters Protected by the EPBC Act

Commonwealth Land [\[Resource Information \]](#)

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Name
Commonwealth Land - Commonwealth Land - Airservices Australia Commonwealth Land - Australian Postal Corporation Commonwealth Land - Australian Telecommunications Commission Commonwealth Land - Defence Housing Authority Commonwealth Land - Telstra Corporation Limited Defence - 10 WHYALLA ST - FYSHWICK Defence - 139 CANBERRA AVE - FYSHWICK Defence - 169 GLADSTONE ST - FYSHWICK Defence - DEFENCE ARCHIVES - QUEANBEYAN Defence - HMAS HARMAN - SYMONSTOWN Defence - MAJURA FIELD FIRING RANGE Defence - MAJURA NAVIGATION BEACON Defence - MT JERRABOMBERRA OBSTRUCTION WARNING Defence - NAVAL COMBAT DATA SYSTEM CENTRE - FYSHWICK Defence - NORTHCOTT DRIVE PLAYING FIELDS (Addison Rd)

Name
Defence - RAAF BASE FAIRBAIRN
Defence - ROYAL MILITARY COLLEGE - DUNTROON
Defence - WERRIWA DEPOT

Commonwealth Heritage Places		[Resource Information]
Name	State	Status
Natural		
Majura Valley Natural Temperate Grassland	ACT	Listed place
Historic		
Anzac Memorial Chapel of St Paul	ACT	Listed place
Apple Shed Asset C58	ACT	Listed place
Commandants House Asset B9	ACT	Listed place
Duntroon House and Garden	ACT	Listed place
RMC Duntroon Conservation Area	ACT	Listed place
Redwood Plantation	ACT	Listed place
Residence Asset B5	ACT	Listed place
Residence Asset B7	ACT	Listed place
Residence Asset C12	ACT	Listed place
Residence Asset C13	ACT	Listed place
Residence Asset C14	ACT	Listed place
Residence Asset C15	ACT	Listed place
Residence Asset C8	ACT	Listed place
Three Wartime Bomb Dump Buildings	ACT	Listed place

Listed Marine Species		[Resource Information]
* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.		
Name	Threatened	Type of Presence
Birds		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat likely to occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardea alba Great Egret, White Egret [59541]		Species or species habitat known to occur within area
Ardea ibis Cattle Egret [59542]		Species or species habitat may occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat known to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat known to occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat may occur within area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Breeding known to occur within area
Hirundapus caudacutus White-throated Needletail [682]		Species or species habitat known to occur within area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat known to occur

Name	Threatened	Type of Presence within area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat known to occur within area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat known to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Pandion haliaetus Osprey [952]		Species or species habitat likely to occur within area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat known to occur within area
Rostratula benghalensis (sensu lato) Painted Snipe [889]	Endangered*	Species or species habitat likely to occur within area

Extra Information

State and Territory Reserves	[Resource Information]
Name	State
Callum Brae	ACT
Cuumbeun	NSW
Jerrabomberra Wetlands	ACT
Molonglo Gorge	ACT
Queanbeyan	NSW
Stony Creek	NSW
Wanna Wanna	NSW
West Jerrabomberra	ACT

Regional Forest Agreements

[Resource Information]

Note that all areas with completed RFAs have been included.

Name	State
Southern RFA	New South Wales

Invasive Species

[Resource Information]

Weeds reported here are the 20 species of national significance (WoNS), along with other introduced plants that are considered by the States and Territories to pose a particularly significant threat to biodiversity. The following feral animals are reported: Goat, Red Fox, Cat, Rabbit, Pig, Water Buffalo and Cane Toad. Maps from Landscape Health Project, National Land and Water Resources Audit, 2001.

Name	Status	Type of Presence
Birds		
Acridotheres tristis Common Myna, Indian Myna [387]		Species or species habitat likely to occur within area
Alauda arvensis Skylark [656]		Species or species habitat likely to occur within area
Anas platyrhynchos Mallard [974]		Species or species habitat likely to occur within area
Carduelis carduelis European Goldfinch [403]		Species or species habitat likely to occur within area
Carduelis chloris European Greenfinch [404]		Species or species habitat likely to occur within area
Columba livia Rock Pigeon, Rock Dove, Domestic Pigeon [803]		Species or species habitat likely to occur within area
Passer domesticus House Sparrow [405]		Species or species habitat likely to occur within area
Streptopelia chinensis Spotted Turtle-Dove [780]		Species or species habitat likely to occur within area
Sturnus vulgaris Common Starling [389]		Species or species habitat likely to occur within area
Turdus merula Common Blackbird, Eurasian Blackbird [596]		Species or species habitat likely to occur within area
Mammals		
Bos taurus Domestic Cattle [16]		Species or species habitat likely to occur within area
Canis lupus familiaris Domestic Dog [82654]		Species or species habitat likely to occur within area
Felis catus Cat, House Cat, Domestic Cat [19]		Species or species habitat likely to occur within area
Feral deer Feral deer species in Australia [85733]		Species or species habitat likely to occur within area
Lepus capensis Brown Hare [127]		Species or species habitat likely to occur within area
Mus musculus House Mouse [120]		Species or species habitat likely to occur within area
Oryctolagus cuniculus Rabbit, European Rabbit [128]		Species or species habitat likely to occur within area
Rattus norvegicus Brown Rat, Norway Rat [83]		Species or species habitat likely to occur

Name	Status	Type of Presence within area
Rattus rattus Black Rat, Ship Rat [84]		Species or species habitat likely to occur within area
Sus scrofa Pig [6]		Species or species habitat likely to occur within area
Vulpes vulpes Red Fox, Fox [18]		Species or species habitat likely to occur within area
Plants		
Alternanthera philoxeroides Alligator Weed [11620]		Species or species habitat likely to occur within area
Cytisus scoparius Broom, English Broom, Scotch Broom, Common Broom, Scottish Broom, Spanish Broom [5934]		Species or species habitat likely to occur within area
Genista monspessulana Montpellier Broom, Cape Broom, Canary Broom, Common Broom, French Broom, Soft Broom [20126]		Species or species habitat likely to occur within area
Genista sp. X Genista monspessulana Broom [67538]		Species or species habitat may occur within area
Lycium ferocissimum African Boxthorn, Boxthorn [19235]		Species or species habitat likely to occur within area
Nassella neesiana Chilean Needle grass [67699]		Species or species habitat likely to occur within area
Nassella trichotoma Serrated Tussock, Yass River Tussock, Yass Tussock, Nassella Tussock (NZ) [18884]		Species or species habitat likely to occur within area
Opuntia spp. Prickly Pears [82753]		Species or species habitat likely to occur within area
Pinus radiata Radiata Pine Monterey Pine, Insignis Pine, Wilding Pine [20780]		Species or species habitat may occur within area
Rubus fruticosus aggregate Blackberry, European Blackberry [68406]		Species or species habitat likely to occur within area
Sagittaria platyphylla Delta Arrowhead, Arrowhead, Slender Arrowhead [68483]		Species or species habitat likely to occur within area
Salix spp. except S.babylonica, S.x calodendron & S.x reichardtii Willows except Weeping Willow, Pussy Willow and Sterile Pussy Willow [68497]		Species or species habitat likely to occur within area
Senecio madagascariensis Fireweed, Madagascar Ragwort, Madagascar Groundsel [2624]		Species or species habitat likely to occur within area
Ulex europaeus Gorse, Furze [7693]		Species or species habitat likely to occur within area

Nationally Important Wetlands

Name [\[Resource Information \]](#)

State

Name

State

[Jerrabomberra Wetlands](#)

ACT

Caveat

The information presented in this report has been provided by a range of data sources as acknowledged at the end of the report.

This report is designed to assist in identifying the locations of places which may be relevant in determining obligations under the Environment Protection and Biodiversity Conservation Act 1999. It holds mapped locations of World and National Heritage properties, Wetlands of International and National Importance, Commonwealth and State/Territory reserves, listed threatened, migratory and marine species and listed threatened ecological communities. Mapping of Commonwealth land is not complete at this stage. Maps have been collated from a range of sources at various resolutions.

Not all species listed under the EPBC Act have been mapped (see below) and therefore a report is a general guide only. Where available data supports mapping, the type of presence that can be determined from the data is indicated in general terms. People using this information in making a referral may need to consider the qualifications below and may need to seek and consider other information sources.

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species distributions have been derived through a variety of methods. Where distributions are well known and if time permits, maps are derived using either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc) together with point locations and described habitat; or environmental modelling (MAXENT or BIOCLIM habitat modelling) using point locations and environmental data layers.

Where very little information is available for species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc). In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More reliable distribution mapping methods are used to update these distributions as time permits.

Only selected species covered by the following provisions of the EPBC Act have been mapped:

- migratory and
- marine

The following species and ecological communities have not been mapped and do not appear in reports produced from this database:

- threatened species listed as extinct or considered as vagrants
- some species and ecological communities that have only recently been listed
- some terrestrial species that overfly the Commonwealth marine area
- migratory species that are very widespread, vagrant, or only occur in small numbers

The following groups have been mapped, but may not cover the complete distribution of the species:

- non-threatened seabirds which have only been mapped for recorded breeding sites
- seals which have only been mapped for breeding sites near the Australian continent

Such breeding sites may be important for the protection of the Commonwealth Marine environment.

Coordinates

-35.3656 149.22664

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

- [-Office of Environment and Heritage, New South Wales](#)
- [-Department of Environment and Primary Industries, Victoria](#)
- [-Department of Primary Industries, Parks, Water and Environment, Tasmania](#)
- [-Department of Environment, Water and Natural Resources, South Australia](#)
- [-Department of Land and Resource Management, Northern Territory](#)
- [-Department of Environmental and Heritage Protection, Queensland](#)
- [-Department of Parks and Wildlife, Western Australia](#)
- [-Environment and Planning Directorate, ACT](#)
- [-Birdlife Australia](#)
- [-Australian Bird and Bat Banding Scheme](#)
- [-Australian National Wildlife Collection](#)
- [-Natural history museums of Australia](#)
- [-Museum Victoria](#)
- [-Australian Museum](#)
- [-South Australian Museum](#)
- [-Queensland Museum](#)
- [-Online Zoological Collections of Australian Museums](#)
- [-Queensland Herbarium](#)
- [-National Herbarium of NSW](#)
- [-Royal Botanic Gardens and National Herbarium of Victoria](#)
- [-Tasmanian Herbarium](#)
- [-State Herbarium of South Australia](#)
- [-Northern Territory Herbarium](#)
- [-Western Australian Herbarium](#)
- [-Australian National Herbarium, Canberra](#)
- [-University of New England](#)
- [-Ocean Biogeographic Information System](#)
- [-Australian Government, Department of Defence Forestry Corporation, NSW](#)
- [-Geoscience Australia](#)
- [-CSIRO](#)
- [-Australian Tropical Herbarium, Cairns](#)
- [-eBird Australia](#)
- [-Australian Government – Australian Antarctic Data Centre](#)
- [-Museum and Art Gallery of the Northern Territory](#)
- [-Australian Government National Environmental Science Program](#)
- [-Australian Institute of Marine Science](#)
- [-Reef Life Survey Australia](#)
- [-American Museum of Natural History](#)
- [-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania](#)
- [-Tasmanian Museum and Art Gallery, Hobart, Tasmania](#)
- [-Other groups and individuals](#)

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the [Contact Us](#) page.

APPENDIX D EPBC HABITAT ASSESSMENT

Name	Habitat	Habitat Present	Likelihood of occurrence	Potential for impact?
FAUNA				
Australian Bittern <i>Botaurus poiciloptilus</i>	Permanent freshwater wetlands with tall, dense vegetation.	Absent – no freshwater wetlands with dense vegetation	Unlikely – no suitable habitat.	No – Unlikely to occur on site
Regent Honeyeater <i>Botaurus poiciloptilus</i>	The species inhabits dry open forest and woodland, particularly Box-Ironbark woodland, and riparian forests of River Sheoak woodlands that support a significantly high abundance and species richness of bird species. These woodlands have significantly large numbers of mature trees, high canopy cover and abundance of mistletoes.	Marginal – Box-gum woodland present.	Unlikely – fragmented residential area	No – Unlikely to occur on site
Curlew Sandpiper <i>Calidris ferruginea</i>	Intertidal mudflats in both fresh and brackish waters in sheltered coastal areas, such as estuaries, bays, inlets, and lagoons. Also recorded inland, including around ephemeral and permanent lakes, dams, and waterholes, usually with bare edges of mud or sand	Absent – no intertidal mudflats	Unlikely – no suitable habitat.	No – Unlikely to occur on site
Painted Honeyeater <i>Grantiella picta</i>	Boree/Weeping Myall, Brigalow, and Box-Gum Woodlands and Box-Ironbark Forests. Specialist feeder on the fruits of mistletoes.	Scattered paddock trees of box-gum woodland. No mistletoes present.	Unlikely – not detected during site surveys. No suitable food sources. (mistletoes)	No – Unlikely to occur on site
Swift Parrot <i>Lathamus discolor</i>	On the coast and southwest slopes in areas with abundant flowering eucalypts or lerp. Feed trees include winter flowering species such as Swamp Mahogany, Spotted Gum, Red Bloodwood, Mugga Ironbark, and White Box and Lerp infested trees such as Grey Box and Black Butt.	Present	Possible – not detected during site surveys. May forage in development site on occasion	AoS Undertaken

Name	Habitat	Habitat Present	Likelihood of occurrence	Potential for impact?
FAUNA				
Bar-tailed Godwit <i>Limosa lapponica baueri</i>	Mostly coastal habitats such as estuaries, sandflats and mudflats. Occasionally found on inland wetlands or in areas of short grass such as farmland, paddocks and airstrips.	Absent – no wetlands in proposal area	Unlikely – no suitable habitat.	No – Unlikely to occur on site
Northern Siberian Bar-tailed Godwit <i>Limosa lapponica menzbieri</i>	Mostly coastal habitats such as estuaries, sandflats and mudflats. Occasionally found on inland wetlands or in areas of short grass such as farmland, paddocks and airstrips.	Absent – no wetlands in proposal area	Unlikely – no suitable habitat.	No – Unlikely to occur on site
Eastern Curlew <i>Numenius madagascariensis</i>	Large intertidal mudflats often with seagrass beds along sheltered coasts including in estuaries, bays, harbours, inlets, lagoons, and among saltmarshes and mangroves.	Absent	Unlikely – no suitable habitat.	No – Unlikely to occur on site
Superb Parrot <i>Polytelis swainsonii</i>	Box-Gum, Box-Cypress, and Boree Woodlands and River Red Gum Forests. They nest in hollows of large trees in tall open forest or woodland.	Present	Possible – not detected during site surveys. May forage in development site on occasion	AoS Undertaken
Australian Painted Snipe <i>Rostratula australis</i>	Shallow terrestrial freshwater or occasionally brackish wetlands, including temporary and permanent lakes, swamps, and claypans, as well as inundated or waterlogged grassland or saltmarsh, dams, rice crops, sewage farms, and bore drains. Fringes of swamps, dams, and nearby marshy areas with cover of grasses, lignum, low scrub, or open timber. Shallow wetlands with areas of bare wet mud.	Absent	Unlikely	No – Unlikely to occur on site
FISH				
Silver Perch <i>Bidyanus Bidyanus</i>	Rivers and streams	Absent – No waterbodies	Unlikely	No – No suitable habitat

Name	Habitat	Habitat Present	Likelihood of occurrence	Potential for impact?
FAUNA				
Murray Cod <i>Maccullochella peelii</i>	Wide range of warm water habitat including clear rocky streams, slow flowing turbid rivers, and billabongs, most frequently in main river channel and larger tributaries but occasionally in floodplain channels during floods. Near complex structural cover such as large rocks, woody debris, and overhanging vegetation.	Absent – No waterbodies	Unlikely	No – No suitable habitat
Macquarie Perch <i>Macquaria australasica</i>	Both river and lake habitats; especially the upper reaches of rivers and their tributaries. Clear, deep, rocky holes with plenty of cover including aquatic vegetation, large boulders, large woody debris, and overhanging banks.	Absent – No waterbodies	Unlikely	No – No suitable habitat
FROGS				
Southern Bell Frog <i>Litoria raniformis</i>	Found in or around permanent or ephemeral Black Box/Lignum/Nitre Goosefoot Swamps, Lignum/Typha swamps and River Red Gum Swamps or Billabongs along floodplains and river valleys.	Absent	Unlikely – no suitable habitat	No – Unlikely to occur on site.
Green and Golden Bell Frog <i>Litoria aurea</i>	Inhabits marshes, dams and stream-sides, particularly those containing bullrushes (<i>Typha</i> spp.) or spikerushes (<i>Eleocharis</i> spp.).	Absent	Unlikely – no suitable habitat	No – Unlikely to occur on site.
Booroolong Frog <i>Litoria booroolongensis</i>	Live along permanent streams with some fringing vegetation cover such as ferns, sedges or grasses. Adults occur on or near cobble banks and other rock structures within stream margins.	Absent	Unlikely – no suitable habitat	No – Unlikely to occur on site.
Yellow Spotted Tree Frog <i>Litoria castanea</i>	Require large permanent ponds or slow flowing 'chain-of-ponds' streams with abundant emergent vegetation such as bulrushes and aquatic vegetation.	Absent	Unlikely – no suitable habitat	No – Unlikely to occur on site.

Name	Habitat	Habitat Present	Likelihood of occurrence	Potential for impact?
FAUNA				
INSECTS				
Golden Sun Moth <i>Synemon plana</i>	Occurs in Natural Temperate Grasslands and grassy Box-Gum Woodlands in which groundlayer is dominated by wallaby grasses <i>Austrodanthonia</i> spp. Grasslands dominated by wallaby grasses are typically low and open - the bare ground between the tussocks is thought to be an important microhabitat feature for the Golden Sun Moth, as it is typically these areas on which the females are observed displaying to attract males.	Present	Unlikely – no suitable habitat	No – Unlikely to occur on site.
MAMMALS				
Large-eared Pied Bat <i>Chalinolobus dwyeri</i>	Roosts in caves (near their entrances), crevices in cliffs, old mine workings and in the disused, bottle-shaped mud nests of the Fairy Martin (<i>Petrochelidon ariel</i>), frequenting low to mid-elevation dry open forest and woodland close to these features. Found in well-timbered areas containing gullies	Absent	Unlikely – No suitable habitat	No – Unlikely to occur on site
Koala <i>Phascolarctos cinereus</i>	Temperate, subtropical and tropical eucalypt woodlands and forests where suitable food trees grow, of which there are more than 70 eucalypt species and 30 non-eucalypt species that are particularly abundant on fertile clay soils.	Present	Unlikely - based on koala habitat assessment	No – Unlikely to occur on site
Greater Glider <i>Petauroides volans</i>	Typically found in tall, montane moist eucalypt forests with relatively old trees and abundant hollows	Absent	Unlikely – No suitable habitat	No – Unlikely to occur on site
Brush-tailed Rock Wallaby <i>Petrogale penicillata</i>	Occupy rocky escarpments, outcrops and cliffs with a preference for complex structures with fissures, caves and ledges, often facing north	Absent	Unlikely – No suitable habitat	No – Unlikely to occur on site

Name	Habitat	Habitat Present	Likelihood of occurrence	Potential for impact?
FAUNA				
Spotted Tail Quoll <i>Dasyurus maculatus</i>	Recorded across a range of habitat types, including rainforest, open forest, woodland, coastal heath and inland riparian forest, from the sub-alpine zone to the coastline. Individual animals use hollow-bearing trees, fallen logs, small caves, rock outcrops and rocky-cliff faces as den sites.	Absent	Unlikely – No suitable habitat	No – Unlikely to occur on site
Grey-headed Flying-fox <i>Pteropus poliocephalus</i>	Range of vegetation communities including rainforest, open forest, and closed and open woodland. Roost sites usually near water, including lakes, rivers, and coastlines.	Absent	Unlikely – No suitable habitat	No – Unlikely to occur on site
REPTILES				
Striped Legless Lizard <i>Delma impar</i>	Found mainly in Natural Temperate Grassland but has also been captured in grasslands that have a high exotic component. Habitat is where grassland is dominated by perennial, tussock-forming grasses such as Kangaroo Grass <i>Themeda australis</i> , spear-grasses <i>Austrostipa</i> spp. and poa tussocks <i>Poa</i> spp., and occasionally wallaby grasses <i>Austrodanthonia</i> spp	Absent - no perennial tussock grasses	Unlikely – no suitable habitat	No – Unlikely to occur on site
Grassland Earless Dragon	Restricted to a small number of Natural Temperate Grassland sites dominated by tussock grasses. In addition to tussocks, partially embedded surface rocks, and spider and insect holes are used for shelter. These are important micro-habitat elements within the grassland habitat. Rocks and arthropod holes provide important thermal refuges during temperature extremes.	Absent – no surface rocks.	Unlikely – proposal area within residential area.	No – Unlikely to occur on site
Pink-tailed Worm-lizard	Inhabits sloping open woodland areas with predominantly native grassy ground layers. Commonly	Absent – no rocky outcrops	Unlikely – No suitable habitat	No – Unlikely to occur on site

Name	Habitat	Habitat Present	Likelihood of occurrence	Potential for impact?
FAUNA				
<i>Aprasia parapulchella</i>	found beneath small, partially-embedded rock.	or partially buried rocks.		
FLORA				
Canberra Spider Orchid <i>Caladenia actensis</i>	Grows on shallow gravelly brown clay loam soils of volcanic origin. Plants occur amongst a ground cover of grasses, forbs and low shrubs, often among rocks	Present	Unlikely – known from only two locations. Not detected during site surveys.	No – unlikely to occur on site.
Trailing Hop-bush <i>Dodonaea procumbens</i>	Grows in Natural Temperate Grassland or fringing eucalypt woodland of Snow Gum (<i>Eucalyptus pauciflora</i>). Grows in open bare patches where there is little competition from other species.	Absent	Unlikely – Conspicuous species not detected during site surveys	No – unlikely to occur on site.
Black Gum <i>Eucalyptus aggregata</i>	Grows on alluvial soils, on cold, poorly-drained flats and hollows adjacent to creeks and small rivers.	Absent	Absent – Not detected during site surveys	No – unlikely to occur on site
Ginninderra Peppercross <i>Lepidium ginninderrense</i>	Natural Temperate Grassland	Absent	Unlikely – not detected during site surveys	No – unlikely to occur on site
Basalt Peppercross <i>Lepidium hyssopifolium</i>	Known to have occurred in both woodland with a grassy understorey and in grassland.	Present	Unlikely – not detected during site surveys	No – unlikely to occur on site.
Hoary Sunray <i>Leucochrysum albicans</i> var. <i>tricolor</i>	Occurs in a wide variety of grassland, woodland and forest habitats, generally on relatively heavy soils. Can occur in modified habitats such as semi-urban areas and roadsides.	Present	Present – detected on site	Yes – AoS undertaken
Omeo Stork's-bill <i>Pelargonium</i> sp. <i>Striatellum</i>	A narrow habitat that is usually just above the high-water level of irregularly inundated or ephemeral lakes	Absent – no ephemeral lakes	Unlikely – no suitable habitat	No – unlikely to occur.

Name	Habitat	Habitat Present	Likelihood of occurrence	Potential for impact?
FAUNA				
Pale Pomaderris <i>Pomaderris pallida</i>	This species usually grows in shrub communities surrounded by Brittle Gum (<i>Eucalyptus mannifera</i>) and Red Stringybark (<i>E. macrorhyncha</i>) or <i>Callitris</i> spp. woodland.	Absent – no associated vegetation	Unlikely – conspicuous shrub not detected during site surveys,	No – unlikely to occur.
Button Wrinklewort <i>Rutidosia leptorrhynchoides</i>	Occurs in Box-Gum Woodland, secondary grassland derived from Box-Gum Woodland or in Natural Temperate Grassland; and often in the ecotone between the two communities. Grows on soils that are usually shallow, stony or disturbed	Present- Box-gum woodland present in study area.	Unlikely – not detected during site surveys	No – unlikely to occur on site
Austral Toadflax <i>Thesium australe</i>	Occurs in grassland on coastal headlands or grassland and grassy woodland away from the coast. Often found in association with Kangaroo Grass (<i>Themeda australis</i>). A root parasite that takes water and some nutrient from other plants, especially Kangaroo Grass.	Present Kangaroo Grass present in study area.	Unlikely – not detected during site surveys	No – unlikely to occur on site.
Small Purple-pea <i>Swainsona recta</i>	Grows in grassy understory of woodlands and open forests dominated by Blakely's Red Gum and Yellow Box.	Present	Unlikely – not detected during site surveys	No – unlikely to occur on site
Tarengo Leek Orchid <i>Prasophyllum petilum</i>	Grows in grassy woodland with river tussock, Black Gum and Leptospermum sp	Present – Grassy woodland occurs on site	Unlikely – not detected during site surveys	No – unlikely to occur on site.

APPENDIX E EPBC ASSESSMENT OF SIGNIFICANCE

The following assessment assesses the significance of the likely impacts associated with the proposed works on:

- Hoary sunray (*Leucochrysum albicans* var. *tricolor*); - Endangered
- Fork-tailed Swift (*Apus pacificus*) - Migratory
- White-throated Needletail (*Hirundapus caudacutus*) – Migratory
- Superb Parrot (*Polytelis swainsonii*) – Vulnerable
- Swift Parrot (*Lathamus discolor*) – Critically Endangered

Hoary Sunray

Table 12-1 outlines an assessment of significance for an endangered species under the EPBC Act for the Hoary Sunray at the proposed site for the Queanbeyan SSP.

Table 12-1 Assessment of Significance: Hoary Sunray

Criteria	Significant Impact Likely
a) Will the action lead to a long-term decrease in the size of a population of a species?	
<p>The Hoary Sunray is a tufted perennial paper daisy found in grassland and woodland at relatively high elevations, flowering in spring and summer. After flowering it dries out to rootstock (Sinclair 2010). It occurs on a variety of soil types including clays, clay loams, stony and gravelly soil on heavy soils (Sinclair 2010), in natural or semi-natural vegetation and grazed or ungrazed habitat. It is wind dispersed and an obligate outbreeder. Bare ground is required for germination.</p> <p>On the proposed site, 1,400 individuals have been identified. Potentially all of these may be removed during the proposed development. The proposal is therefore considered likely to lead to a long-term decrease in the size of a population of these species.</p>	Yes
b) Will the action reduce the area of occupancy of the species?	
<p>The proposal would result in the loss of 1,400 individuals and up to 0.6 ha of potential habitat for these species. The proposal is therefore considered likely to reduce the area of occupancy of the species.</p>	Yes
c) Will the action fragment an existing population into two or more populations?	
<p>The site is located in a developed residential area, and the individuals identified on the proposed site are not known to be connected to or near other populations of the species. The proposal is therefore considered unlikely to fragment an existing population into two or more populations.</p>	No
d) Will the action adversely affect habitat critical to the survival of a species?	
<p>The proposal would remove up to 1,400 individuals and up to 0.6 ha of existing potential habitat for the species. Given the small area and its location in a developed residential area, the proposal is considered unlikely to adversely affect habitat critical to the survival of a species.</p>	No

<p>e) Will the action disrupt the breeding cycle of a population?</p>	
<p>The proposal would remove up to 1,400 individuals and up to 0.6 ha of existing potential habitat for the species. The proposal is therefore likely to disrupt the breeding cycle of a population.</p>	<p>Yes</p>
<p>f) 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?</p>	
<p>The proposal would remove up to 1,400 individuals and up to 0.6 ha of existing potential habitat for the species, which is a relatively small area of habitat. The proposal is therefore considered unlikely to modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species are likely to decline.</p>	<p>No</p>
<p>g) Will the action result in invasive species that are harmful to a critically endangered or endangered/vulnerable species becoming established in the endangered / critically endangered</p>	
<p>The proposal has potential to introduce and spread weeds which may be harmful to the species. These risks are considered manageable using best practice during the construction phase. Additionally, the site is located in a developed residential area and the population on site is not known to be connected or near other populations of the species, thereby reducing the risk of weeds spreading to other populations. The proposed action is unlikely to result in the establishment of invasive species that are harmful to the species.</p>	<p>No</p>
<p>h) Will the action introduce disease that may cause the species to decline?</p>	
<p>The proposal has potential to introduce and spread disease which may be harmful to the species. These risks are considered manageable using best practice during the construction phase. Additionally, the site is located in a developed residential area and the population on site is not known to be connected or near other populations of the species, thereby reducing the risk of disease spreading to other populations. The proposed action is unlikely to result in the establishment of invasive species that are harmful to the species.</p>	<p>No</p>
<p>i) Will the action interfere with the recovery of the species?</p>	
<p>National recovery plans have been developed for Hoary Sunray (Sinclair 2011). The plan has the following objectives:</p> <ol style="list-style-type: none"> 1. Determine taxonomy, distribution, abundance and population structure 2. Determine habitat requirements 3. Ensure that all populations and their habitat are protected and managed 4. Identify and manage threats to populations 5. Identify key biological functions 6. Determine growth rates and viability of populations 7. Build community support for conservation <p>The proposal conflicts with item (3) as part of the recovery plan, as it does not ensure that all populations and their habitats are protected and managed.</p>	<p>Yes</p>

The hoary sunray has been identified in the project site area. Of the nine criteria for significant impact to an endangered species, the project is likely to cause a significant impact to four of these criteria. The proposal is therefore considered to significantly impact the hoary sunray.

Migratory Species

An assessment of significance for migratory species must establish whether the habitat on the proposed site is considered “important habitat” as defined in the EPBC Act. Table 12-2 outlines an assessment of important habitat under the EPBC Act for the two migratory species for which suitable habitat was identified at the proposed project site.

“Important habitat” for migratory species is described as:

1. Habitat utilised by a migratory species occasionally or periodically within a region that supports an ecologically significant proportion of the population of the species; and/or
2. Habitat that is of critical importance to the species at particular life-cycle stages; and/or
3. Habitat utilised by a migratory species which is at the limit of the species range; and/or
4. Habitat within an area where the species is declining.

Table 12-2 Assessment of important habitat: Migratory species, Fork-tailed Swift and White-throated Needletail

Criteria	Considered Important habitat
a) Habitat utilised by a migratory species occasionally or periodically within a region that supports an ecologically significant proportion of the population of the species.	
The Fork-tailed Swift and the White-throated Needletail are almost exclusively aerial and are considered unlikely to rely on the habitats present within the proposal site. The area is not considered to support an ecologically significant proportion of the population of the species Therefore the habitat is unlikely to be utilised by a the species occasionally or periodically within a region that supports an ecologically significant proportion of the population of the species.	No
b) Habitat that is of critical importance to the species at particular life-cycle stages.	
The Fork-tailed Swift and the White-throated Needletail are almost exclusively aerial and are considered unlikely to rely on the habitats present within the proposal site. Therefore the habitat is unlikely to be of critical importance to the species at particular life-cycle stages.	No
c) Habitat utilised by a migratory species which is at the limit of the species range.	
The habitat is not located at the limit of the species range for the Fork-tailed Swift or the White-throated Needletail.	No
d) Habitat within an area where the species is declining.	
The Fork-tailed Swift and the White-throated Needletail are not known to be declining in the area of the proposed project.	No

As per the criteria discussed in the above table, the habitat within the proposal site is not considered important habitat for the Fork-tailed Swift or the White-throated Needletail.

Table 12-3 outlines an assessment of significance for migratory under the EPBC Act for the two migratory species for which suitable habitat was identified at the proposed project site, the Fork-tailed Swift and the White-throated Needletail.

Table 12-3 Assessment of Significance: Migratory species, Fork-tailed Swift and White-throated Needletail

Criteria	Significant Impact Likely
a) Will the action substantially modify (including by fragmenting, altering fire regimes, altering nutrient cycles or altering hydrological cycles), destroy or isolate an area of important habitat for a migratory species?	
The Fork-tailed Swift and the White-throated Needletail are almost exclusively aerial and are considered unlikely to rely on the habitats present within the proposal site. As outlined in Table 12-2, the habitats within the proposal site are not considered important habitat. Therefore the action is unlikely to substantially modify, destroy or isolate an area of important habitat for either species.	No
b) Will the action result in an invasive species that is harmful to the migratory species becoming established in an area of important habitat for the migratory species?	
The Fork-tailed Swift and the White-throated Needletail are almost exclusively aerial and are considered unlikely to rely on the habitats present within the proposal site. As outlined in Table 12-2, the habitats within the proposal site are not considered important habitat. Therefore the action is unlikely to substantially modify, destroy or isolate an area of important habitat for either species.	No
c) Will the action seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of a migratory species?	
The Fork-tailed Swift and the White-throated Needletail are almost exclusively aerial and are considered unlikely to rely on the habitats present within the proposal site. The area is not considered to support an ecologically significant proportion of the population of the species. Therefore the action is unlikely to seriously disrupt the lifecycle of an ecologically significant proportion of the population of either species.	No

The project site area contains habitat that could potentially be used by the Fork-tailed Swift or the White-throated Needletail. Of the four criteria for significant impact for a migratory species, the project is unlikely to cause a significant impact to any criteria. The proposal is therefore considered unlikely to significantly impact the Fork-tailed Swift or the White-throated Needletail.

Superb Parrot

The assessment of significance for a vulnerable species considers whether an important population occurs within the development site.

An important population is defined as 'a population that is necessary for a species long-term survival and recovery.

This includes populations identified in recovery plans and/or

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

Targeted surveys were undertaken for breeding superb parrots in November within the two hollow bearing trees within development site. No superb parrots were detected within the development site and no known records of the superb parrot occurs within the development site. The nearest known records, occurs approximately 2 km to the East and a larger cluster of records occur 15 to 20 km north in Canberra. As suitable habitat occurs within the development site, the Superb Parrot may forage within the development site on occasion.

An important population of Superb Parrot is not considered to occur within the development site based on the following factors;

- The development site is not listed an area of important population is the National Recovery Plan for the Superb Parrot *Polytelis swainsonii* (Baker-Gabb, 2011) and it is not shown as an area of Breeding habitat.
- The species is highly mobile and undertake regular seasonal movements. Therefore, the development site is not necessary for maintaining genetic diversity.
- The area of the development site is known as an area where the species is likely to occur. It is not near the limit of the species range.

Table 12-4 Assessment of Significance Superb Parrot

Criteria	Significant Impact Likely
a) Will the action lead to a long-term decrease in the size of an important population of a species?	
Based on limited habitat features within the site, targeted fauna surveys and background searches, no important population of superb parrot is considered to occur within the development site. The development would not lead to a long-term decrease in the size of an important population of a species.	No
b) Will the action reduce the area of occupancy of an important population?	
Based on limited habitat features within the site, targeted fauna surveys and background searches, no important population of superb parrot is considered to occur within the development site. The development would not reduce the area of occupancy of an important population.	No
c) Will the action fragment an existing important population into two or more populations?	

Based on limited habitat features within the site, targeted fauna surveys and background searches, no important population of superb parrot is considered to occur within the development site. The development would not fragment an existing important population into two or more populations.	No
d) Will the action adversely affect habitat critical to the survival of a species?	
Habitat critical to the survival of the superb parrot is divided into breeding and foraging habitat. Breeding habitat include: Box-gum Woodlands in the Tablelands and slopes. Hollows of six species of Eucalypts, River Red Gum, Blakely's Red Gum, Apple Box, Grey Box, White Box and Red Box.	No
e) Will the action disrupt the breeding cycle of an important population?	
Based on limited habitat features within the site, targeted fauna surveys and background searches, no important population of superb parrot is considered to occur within the development site. No breeding parrots were detected within the hollows. The development would not disrupt the breeding cycle of an important population.	No
f) 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?	
The proposal would impact on 0.6 ha of Box-gum Woodland. The quality of the habitat is poor, existing as a small isolated patch in the midst of an urban area surrounded by houses. The small patch of woodland is heavily utilised by school students walking through frequently on a daily basis. The majority of the overstory eucalyptus trees would remain, keeping any 'stepping stone' connectivity that may be used for the Superb Parrot to move across the landscape. Based on GIS Mapping, it is estimated 18 ha of Box-Gum Woodland in Moderate to Good Condition occurs in the 1000 ha locality. Based on these factors, the removal of 0.6 ha of poor quality habitat would be unlikely to cause a decline in the Superb Parrot.	No
g) Will the action result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species habitat	
The development site occurs within the midst of an urban area surrounded by houses and schools. Invasive species such as foxes and cats that may harm the superb parrot are likely to already be present in the environment. The development site would maintain its current land use as a school and unlikely cause an increase in invasive species becoming established.	No
h) Will the action introduce disease that may cause the species to decline?	
Superb Parrots are susceptible to Psittacine beak and feather disease (Pbfd). Transmission usually occurs between adults and nestlings. Transmission can be increased by loss of hollows and increased competition for nesting. Two hollow bearing trees within the development site were surveyed for nesting superb parrots and were none detected. The removal of these trees is unlikely to increase competition for nesting and increase transmission of Pbfd.	No
i) Will the action interfere substantially with the recovery of the species?	
National recovery plans have been developed for Superb Parrot (Baker-Gabb, 2011). The plan has the following objectives: 1. Determine population trends in the Superb Parrot	No

<ol style="list-style-type: none">2. Increase the level of knowledge of the Superb Parrot's ecological requirements3. Develop and implement threat abatement strategies4. Increase community involvement in and awareness of the Superb Parrot recovery program <p>The proposal does not interfere substantially with any of these actions.</p>	
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The project site area contains habitat that could potentially be used by the Superb Parrot. Of the nine criteria for significant impact for a migratory species, the project is unlikely to cause a significant impact to any criteria. The proposal is therefore considered unlikely to significantly impact the Superb Parrot.

Swift Parrot

Table 12-1 outlines an assessment of significance for a Critically endangered species listed under the EPBC Act. This assessment relates to the Swift Parrot at the proposed site for the Queanbeyan SSP.

Table 12-5 Assessment of Significance Swift Parrot

Criteria	Significant Impact Likely
a) Will the action lead to a long-term decrease in the size of a population of a species?	
The Swift Parrot occurs as a single migratory population that migrates from Tasmania to South-eastern Australia each year to forage. The proposal would impact on 0.6 ha of Box-gum Woodland that could provide potential foraging habitat. The majority of the overstorey Eucalyptus trees would remain as part of the landscaped school grounds. The development site is not a mapped important area under the NSW Biodiversity Conservation Act. Given the small area and its location in a developed residential area, the proposal is considered unlikely to lead to a long-term decrease in the size of a population of a species.	No
b) Will the action reduce the area of occupancy of the species?	
The proposal would impact on 0.6 ha of Box-gum Woodland that could provide potential foraging habitat. The majority of the overstorey Eucalyptus trees would remain as part of the landscaped school grounds. Given the small area and its location in a developed residential area, the proposal is considered unlikely to reduce the area of occupancy of the species.	No
c) Will the action fragment an existing population into two or more populations?	
The Swift Parrot occurs a single migratory population that are highly mobile across the landscape. The proposal would impact on 0.6 ha of Box-gum Woodland that could provide potential foraging habitat. The majority of the overstorey eucalyptus trees would remain, keeping any 'stepping stone' connectivity that may be used for the Swift Parrot to move across the landscape. The action would not fragment the population into two or more populations.	No
d) Will the action adversely affect habitat critical to the survival of a species?	
Priority habitats for the Swift Parrot define defined in the National recovery plan (Saunders & Tzaros, 2011) are habitats that are used for nesting, by large proportion of the Swift Parrot Population, Repeatedly between seasons or for prolonged periods of time. The proposal would impact on 0.6 ha of Box-gum Woodland that could provide potential foraging habitat. The Swift Parrots breeds in Tasmania and there is no nesting habitat within the site. Targeted surveys over 3 days in Winter did not detect any Swift Parrots and there are no known record within 10 km of the development site. The nearest record occurs over 15 km to the North in Canberra. The development site does not fall within a mapped important area under the NSW BC Act. Therefore, it is considered the habitat is not used by a large proportion of the Swift Parrot Population, repeatedly between seasons or for prolonged periods of time.	No
e) Will the action disrupt the breeding cycle of a population?	

<p>The Swift Parrot breeds in Tasmania during Spring and Summer and migrates to South-eastern Australia during the Autumn and Winter Months. The proposal would not impact on movement of the species to return to Tasmania and so would not disrupt the breeding cycle of the population.</p>	<p>No</p>
<p>f) 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?</p>	
<p>The proposal would impact on 0.6 ha of Box-gum Woodland. The quality of the habitat is poor, existing as a small isolated patch in the midst of an urban area surrounded by houses. The small patch of woodland is heavily utilised by school students walking through frequently on a daily basis. The majority of the overstorey trees would remain, keeping any 'stepping stone' connectivity that may be used for the Superb Parrot to move across the landscape. Based on GIS Mapping, it is estimated 18 ha of Box-Gum Woodland in Moderate to Good Condition occurs in the 1000 ha locality. Based on these factors, the removal of 0.6 ha of poor quality habitat would be unlikely to cause a decline in the Swift Parrot.</p>	<p>No</p>
<p>g) Will the action result in invasive species that are harmful to a critically endangered or endangered/vulnerable species becoming established in the endangered / critically endangered</p>	
<p>The development site occurs within the midst of an urban area surrounded by houses and schools. Invasive species such as foxes, cats and honeybees that may harm the swift Parrot are likely to already be present in the environment. The development site would maintain its current land use as a school and unlikely cause an increase in invasive species becoming established.</p>	<p>No</p>
<p>h) Will the action introduce disease that may cause the species to decline?</p>	
<p>Swift Parrots are susceptible to Psittacine beak and feather disease (Pbfd). The development site would maintain its current land use as a school and unlikely cause an increase in Pbfd in the area.</p>	<p>No</p>
<p>i) Will the action interfere with the recovery of the species?</p>	
<p>National recovery plans have been developed for Swift Parrot (Saunders & Tzaros, 2011). The plan has the following objectives:</p> <ol style="list-style-type: none"> 1. Identify the extent and quality of habitat 2. Manage and protect Swift Parrot habitat at the landscape scale 3. Monitor and manage the impact of collisions, competitions and disease 4. Monitor population and habitat 5. Increase community involvement in, and awareness of, the recovery program 6. Coordinate, review and report on recovery process <p>The proposal does not interfere substantially with any of these actions.</p>	<p>No</p>

The project site area contains habitat that could potentially be used by the Swift Parrot. Of the nine criteria for significant impact for a migratory species, the project is unlikely to cause a significant impact to any criteria. The proposal is therefore considered unlikely to significantly impact the Swift Parrot.

APPENDIX F BAM CALCULATOR REPORT



BAM Credit Summary Report

Proposal Details

Assessment Id	Proposal Name	BAM data last updated *
00011870/BAAS18074/19/00011871	Queanbeyan SSP	04/01/2019
Assessor Name	Report Created	BAM Data version *
Julie Gooding	23/01/2019	6
Assessor Number	* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.	
BAAS18074		

Ecosystem credits for plant communities types (PCT), ecological communities & threatened species habitat

Zone	Vegetation zone name	Vegetation integrity loss / gain	Area (ha)	Constant	Species sensitivity to gain class (for BRW)	Biodiversity risk weighting	Candidate SAI	Ecosystem credits
Apple Box - Yellow Box dry grassy woodland of the South Eastern Highlands Bioregion								
1	654_Good	51.6	0.6	0.25	High Sensitivity to Potential Gain	2.00	TRUE	15
							Subtotal	15
							Total	15



BAM Credit Summary Report

Species credits for threatened species

Vegetation zone name	Habitat condition (HC)	Area (ha) / individual (HL)	Constant	Biodiversity risk weighting	Candidate SAI	Species credits
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James Cristallo
Project Leader
Hayball
11 – 17 Buckingham Street
Surry Hills NSW 2010
Jcristallo@hayball.com.au

Dear James

RE – Queanbeyan SSP Flora and Fauna Assessment

Please find following the results of the initial flora and fauna assessment for the proposed primary school at Queanbeyan

Please note that as we have progressed to prepare a Biodiversity Development Assessment Report (BDAR), a full Flora and Fauna Assessment report as per our original scope of works was not warranted. This report provides a summary of the results of our field work.

Kind Regards,

Julie Gooding

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INTRODUCTION

A new School for Special Purposes (SSP) is proposed for Queanbeyan. The proposal area is located in the grounds of Karabar High School. The works would provide a new SSP asset on the existing site by providing up to 7 teaching spaces and all required core facilities from Kindergarten to year 12.

This Flora and Fauna Assessment has been prepared by NGH Environmental. Its purpose is to consider the potential flora and fauna impacts associated with the development. The Queanbeyan-Palerang Regional Council is the consent authority for the development, under Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). The proposal is therefore to be assessed under the provisions of the *Biodiversity Conservation Act 2016* (BC Act).

THIS REPORT

This report provides a summary of the flora and fauna field work done to date and makes a preliminary assessment of impacts under the NSW BC Act and the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The report identifies and describes biodiversity values in terms of vegetation structure, composition, type and condition, and fauna habitats, sightings and signs.

The potential for impacts to threatened species and communities listed under these have been identified.

THE PROPOSAL

SITE LOCATION

The proposal area is located on the same site as Karabar High School and Queanbeyan South Public School on lot 183/DP239180 (Figure 1). The site is bound by Donald Road to the West, Anne Street to the North, Alanbar Street Road to the South and Cameron Drive to the East. The proposal area is approximately 0.7ha and located in a treed area next to the sports field of Karabar High School.

The proposal area is zoned R2 Low Density Residential under the Queanbeyan Local Environment Plan (LEP) 2012. The site occurs within a residential area. Landuse surrounding the development site is educational facilities to the east and west, sports field directly to the north and urban residential to the south.

The proposal area falls within the South East Highlands IBRA Bioregion and the Monaro subregion. The bioregion is a temperate climate characterised by a warm summer and no dry season. It covers the ranges and plateaus of the Great Dividing Range.



Queanbeyan SSP
Queanbeyan

- Proposal Area
- roads
- Lots



IBRA Region: South East Highlands
IBRA Subregion: Monaro

- Notes:
- Data collected by ngenvironmental (26.07.18)
 - Base map Copyright © Esri and its data suppliers.

0 50 100 200 Metres

A4 @ 1:7500
Ref: Queanbeyan_localitymap_230718
Author: J.Gooding



Figure 1 Proposal location

LEGAL AND POLICY REQUIREMENTS

BIODIVERSITY CONSERVATION ACT 2016

The NSW government introduced new biodiversity legislation for the consideration and assessment of biodiversity impacts in 2017. The *Biodiversity Conservation Act 2016* (BC Act) and *Local Land Services Act 2013* (LLS Act) commenced on the 25th August 2017 and has replaced the *Threatened Species Conservation Act 1995*. As the transitional arrangements in place have expired, this report has been prepared to meet the requirements of the new legislation.

The Biodiversity Offset Scheme (BOS) applies to local developments assessed under Part 4 of the EP&A Act (1979) where development activities exceed the BOS thresholds for the clearing of native vegetation. The BOS threshold is a test used to determine whether the clearing activities require further assessment to evaluate the impacts of the development approval. There are three triggers of the BOS set out in the *Biodiversity Conservation Regulation 2017*. The three elements of the threshold include:

- Whether the amount of native vegetation being cleared exceeds the threshold areas as set out in Table 1.
- Whether the impacts occur on an area mapped as being of Outstanding Biodiversity Value, see Table 1.
- Whether the proposed activity has the potential to significantly affect threatened biota.

Table 1 BOS thresholds and the application to the development site

Threshold	Application to the Proposal										
<table border="1"> <thead> <tr> <th>Minimum lot size associated with the property</th> <th>Threshold for clearing native vegetation.</th> </tr> </thead> <tbody> <tr> <td>Less than 1 ha</td> <td>0.25 ha or more</td> </tr> <tr> <td>1 ha to less than 40 ha</td> <td>0.5 ha or more</td> </tr> <tr> <td>40 ha to less than 1000 ha</td> <td>1 ha or more</td> </tr> <tr> <td>1000 ha or more</td> <td>2 ha or more</td> </tr> </tbody> </table>	Minimum lot size associated with the property	Threshold for clearing native vegetation.	Less than 1 ha	0.25 ha or more	1 ha to less than 40 ha	0.5 ha or more	40 ha to less than 1000 ha	1 ha or more	1000 ha or more	2 ha or more	The minimum lot size for the property is 600m ² under the Queanbeyan LEP. Therefore the threshold of clearing native vegetation for the proposal is 0.25 ha or more.
Minimum lot size associated with the property	Threshold for clearing native vegetation.										
Less than 1 ha	0.25 ha or more										
1 ha to less than 40 ha	0.5 ha or more										
40 ha to less than 1000 ha	1 ha or more										
1000 ha or more	2 ha or more										
Areas of Outstanding Biodiversity Value: <ul style="list-style-type: none"> • Gould's Petrel critical habitat declaration • Little penguin population in Sydney's North Harbour • Mitchell's Rainforest Snail in Stotts Island Nature Reserve • Wollemi Pine 	None occur near the development site.										
Significant impact on threatened species, populations or ecological communities	Assessed in this report										
Activity on land identified as being of high biodiversity value on the Biodiversity Values Map	Assessed in this report										

STATE ENVIRONMENTAL PLANNING POLICY NO. 44 – KOALA HABITAT PROTECTION

SEPP 44 encourages the conservation and management of natural vegetation areas that provide habitat for Koalas to ensure that permanent free-living populations will be maintained over their present range. Queanbeyan – Palerang LGA is not listed as Land to which the policy applies and this SEPP does not apply to the development.

ENVIRONMENTAL PROTECTION AND BIODIVERSITY CONSERVATION (EPBC) ACT 1999 (CWTH)

The EPBC Act protects nationally and internationally important flora, fauna, ecological communities and heritage places, which are defined in the EPBC Act as matters of national environmental significance. Matters of national environmental significance relevant to biodiversity are:

- Wetlands of international importance
- Nationally threatened species and ecological communities
- Migratory species
- Commonwealth marine areas

Significance of impacts is determined in accordance with the Significance impact guidelines 1.1 – Matters of National Environmental Significance (DoE 2013).

Where a proposal is likely to have a significant impact on a matter of national environmental significance, the proposal is referred to the Commonwealth Environment Minister via the Department of the Environment (DoE). The Minister then determines whether the proposal is a 'controlled action'. If a proposal is declared a controlled action, an assessment of the action is carried out and the Minister makes a decision to approve, approve with conditions, or not approve the proposed action.

This assessment considers the potential for the proposal to impact on matters of national environmental significance relevant to biodiversity.

FISHERIES MANAGEMENT ACT 1994

The *Fisheries Management Act 1994* (FM Act) sets out to conserve fish stocks and key fish habitats, threatened species, populations and ecological communities of fish and marine vegetation and biological diversity. Further, it aims to promote viable commercial fishing, aquaculture industries and recreational fishing opportunities. Threatened species, populations and ecological communities and key threatening process are listed in the FM Act's Schedules.

METHODOLOGY

BACKGROUND REVIEW

Database searches were undertaken on 23rd July 2018 to identify threatened species, populations and ecological communities known to occur, or with potential to occur, within a 10 km radius of the proposal site. The following online search tools were used:

- NSW Bionet Atlas database for species, populations and communities listed under the NSW BC Act and Commonwealth EPBC Act.
- Commonwealth *Protected Matters Search Tool* for threatened species and communities listed under the EPBC Act.
- Office of Environment and Heritage Interim Biogeographic Regionalisation (IBRA) search by region and habitat for threatened species and communities listed under the BC Act.
- Areas of high biodiversity values maps declared under the BC Act
- Office of Environment and Heritage (OEH) Vegetation Information System (VIS) Mapping
- NSW Government's SEED (Sharing and Enabling Environmental Data) Mapping

FIELD SURVEYS

The proposal site was surveyed by one ecologist on 26th July 2018 to assess the biodiversity values of the site. The survey was undertaken over a period of 3 hours between 11 am and 2 pm. Weather conditions during the survey were sunny and dry with a maximum temperature of 14°C.

Flora

Random meander (Cropper 1993) and floristic plots under the Biodiversity Assessment Methodology (BAM - NSW Government 2017) were used to survey vegetation at the proposal site. These methods provide good coverage in terms of area and microhabitats and maximises opportunities for detecting rare or sparsely distributed species.

Species occurrences were recorded progressively and within 20 x 20 m floristic plots. Cover/abundances were identified within each plot. Any priority weeds were recorded opportunistically. The survey method and effort are consistent with the NSW guidelines Field Survey Methods (DEC 2004) and the BAM.

Plant Community Types (PCTs) were identified according to the OEH BioNet Vegetation Classification (OEH, 2017). Where relevant, Threatened Ecological Communities (TEC) were confirmed based on the relevant Scientific Committee – final determinations for each TEC. Botanical nomenclature follows Harden (1990-2002) and the PlantNet website, updated with recent changes recognised in Angiosperm Phylogeny Group (2016) and the Australian Plant Census.

Field Survey – Fauna and Fauna Habitat

The terrestrial fauna survey was undertaken to record and assess the value of habitats at the site to fauna, particularly threatened species with potential to occur at the site. Fauna sign and key habitat features were recorded, including:

- Hollows and fissures in standing trees and stags.
- Large woody debris and litter.
- Fauna signs such as nests, scratches, glider sap feed marks, scats and latrine sites.
- Food tree species (for gliders and possums, Koala).
- Microhabitats such as soaks, rock outcrops and dense understorey.

All trees were individually inspected for trunk or limb hollows and any signs of occupation or use. Any disturbances and active threats to fauna or habitats were also recorded during the survey.

RESULTS

BACKGROUND SEARCHES

Threatened Species

The NSW Bionet Search identified 38 threatened species (7 flora species and 31 fauna species) that have been recorded within 10km of the study area (Table 2). No records of threatened species occur within the proposal area.

The EPBC search indicated 12 threatened flora species and 27 threatened fauna species that have the potential to occur in the study area.

Table 2 Threatened flora and fauna species indicated in the databases searches

Species	Indicated in search?	
	EPBC Act	BC Act
Plants		
Basalt Peppercress (<i>Lepidium hyssopifolium</i>)	✓	-
Black Gum (<i>Eucalyptus aggregata</i>)	✓	✓
Button Wrinklewort (<i>Rutidosia leptorrhynchoides</i>)	✓	✓
Canberra Spider Orchid (<i>Caladenia actensis</i>)	✓	-
Ginniderra Peppercress (<i>Lepidium ginninderrense</i>)	✓	-
Hoary Sunray (<i>Leucochrysum albicans</i> var. <i>tricolor</i>)	✓	✓
Omeo Stork's-bill (<i>Pelargonium</i> sp. <i>Striatellum</i>)	✓	

Species	Indicated in search?	
	EPBC Act	BC Act
Pale Pomaderris (<i>Pomaderris pallida</i>)	✓	✓
Silky Swainson-pea (<i>Swainsona sericea</i>)	-	✓
Small Purple-pea (<i>Swainsona recta</i>)	✓	✓
Tarengo Leek Orchid (<i>Prasophyllum petilum</i>)	✓	-
Thesium australe (<i>Thesium australe</i>)	✓	-
Thick Lip Spider Orchid (<i>Caladenia tessellata</i>)	-	✓
Trailing Hop-bush (<i>Dodonea procumbens</i>)	✓	-
Frogs		
Southern Bell Frog (<i>Litoria raniformis</i>)	✓	✓
Green and Golden Bell Frog (<i>Litoria aurea</i>)	✓	✓
Booroolong Frog (<i>Litoria booroolongensis</i>)	✓	-
Yellow-spotted Tree Frog (<i>Litoria castanea</i>)	✓	-
Birds		
Australasian Bittern (<i>Botaurus poiciloptilus</i>)	✓	✓
Australian Painted Snipe (<i>Rostratula australis</i>)	✓	-
Bar-tailed Godwit (<i>Limosa lapponica baueri</i>)	✓	-
Black-chinned Honeyeater (<i>Melithreptus gularis gularis</i>)	-	✓
Black Falcon (<i>Falco subniger</i>)	-	✓
Brown Treecreeper – Eastern Subspecies) – <i>Climacteris picumnus victoriae</i>	-	✓
Curlew Sandpiper (<i>Calidris ferruginea</i>)	✓	-
Diamond Firetail (<i>Stagonopleura guttata</i>)	-	✓
Dusky Woodswallow (<i>Artamus cyanopterus cyanopterus</i>)	-	✓
Eastern Curlew, Far Eastern Curlew (<i>Numenius madagascariensis</i>)	✓	-
Flame Robin (<i>Petroica phoenicea</i>)	-	✓
Gang-Gang Cockatoo (<i>Callocaphalon fimbriatum</i>)	-	✓
Glossy Black Cockatoo (<i>Calyptorhynchus lathami</i>)	-	✓
Hooded Robin (<i>Melanodryas cucullata cucullata</i>)	-	✓
Little Eagle (<i>Hieraetus morphnoides</i>)	-	✓
Little Lorikeet (<i>Glossopsitta pusilla</i>)	-	✓
Northern Siberian Bar-tailed Godwit	✓	-
Olive Whistler (<i>Pachycephala olivacea</i>)	-	✓
Painted Honeyeater (<i>Grantiella picta</i>)	✓	✓
Regent Honeyeater (<i>Botaurus poiciloptilus</i>)	✓	-
Scarlet Robin (<i>Petroica boodang</i>)	-	✓
Speckled Warbler (<i>Chthonicola sagittata</i>)	-	✓
Spotted Harrier (<i>Circus assimilis</i>)	-	✓
Superb Parrot (<i>Polytelis swainsonii</i>)	✓	✓
Swift Parrot (<i>Lathamus discolor</i>)	✓	-
Varied Sittella (<i>Daphoenositta chrysoptera</i>)	-	✓
White bellied Sea-Eagle (<i>Haliaeetus leucogaster</i>)	-	✓
White-fronted Chat (<i>Epthianura albifrons</i>)	-	✓
Mammals		
Brush-tailed Rock-Wallaby (<i>Petrogale penicillata</i>)	✓	-
Eastern Bentwing-bat (<i>Miniopterus schreibersii oceanensis</i>)	-	✓
Eastern False Pipistrelle (<i>Falsistrellus tasmaniensis</i>)	-	✓
Greater Glider (<i>Petauroides volans</i>)	✓	-
Grey-headed Flying-fox (<i>Pteropus Poliocephalus</i>)	✓	-

Species	Indicated in search?	
	EPBC Act	BC Act
Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) (<i>Phascolarctos cinereus</i>) (combined populations of Qld, NSW and the ACT)	✓	✓
Large-eared Pied Bat (<i>Chalinolobus dwyeri</i>)	✓	-
Spotted-tail Quoll (<i>Dasyurus maculatus</i>)	✓	✓
Fish		
Silver Perch (<i>Bidyanus bidyanus</i>)	✓	-
Murray Cod (<i>Maccullochella peelii</i>)	✓	-
Macquarie Perch (<i>Macquarie Perch</i>)	✓	-
Reptiles		
Pink-tailed Worm-lizard, Pink-tailed Legless Lizard (<i>Aprasia parapulchella</i>)	✓	✓
Striped Legless Lizard (<i>Delma impar</i>)	✓	-
Grassland Earless Dragon (<i>Tympanocryptis pinguicolla</i>)	✓	✓
Rosenberg's Goanna (<i>Varanus rosenbergi</i>)	-	✓
Insects		
Golden Sun Moth (<i>Synemon plana</i>)	✓	✓

Vegetation Mapping

An assessment was undertaken of the Biodiversity Values Mapping (Appendix A). The proposal area is not listed as an area with high biodiversity value under the Biodiversity Conservation Act.

SITE SURVEYS

The proposal area falls within the grounds of a school and the vegetation has been highly disturbed through previous clearing, fragmentation and trampling. Around 12 mature trees remain in the area comprised of Yellow Box (*Eucalyptus melliodora*), Apple Box (*Eucalyptus bridgesiana*) and Red Stringybark (*Eucalyptus macrorhyncha*). These species have shown signs of regeneration and younger trees are also present in the understory. These remnant trees create an intact native overstory cover within the benchmark for this vegetation type.

A few native shrubs remain under the canopy of some remnant trees. These species are Sweet Bursaria (*Bursaria spinosa*), Early Wattle (*Acacia genistifolia*) and Bitter Cryptandra (*Cryptandra amara*). The invasive native shrub Cootamundra Wattle (*Acacia baileyana*) is also present but this species is not local to the area.

The groundcover is in various condition with some sections degraded and sparse through regular trampling and mowing while other sections are comprised of a diverse and intact groundcover. However, throughout the whole site, the ground cover is comprised of predominantly native grasses and forbs such as Wallaby Grasses (*Rytidosperma* spp.), Spear grasses (*Austrostipa scabra*), Wire Grasses (*Aristida* spp), Red Grass (*Bothriochloa macra*), Native Wheat Grass (*Elymus scaber*) and Mat rush (*Lomandra filiformis*). The groundcover is comprised of more than 50% native vegetation foliage cover.

The front section along Alanbar Road has been fenced and planted out as an indigenous garden with native shrubs such as Red-stemmed Wattle (*Acacia rubida*), Black Wattle (*Acacia decurrens*), Bottle Brush (*Callistemon* sp) and Grevillea. This area still maintains an overstory of mature Yellow Box and Apple Box and a diverse native groundcover.

The northern most area of the proposal area is a sports field and is comprised of exotic manicured grasses. Native grasses persist on the edge of the sports field adjacent to the woodland, however comprise less than 50% of the vegetation cover.

One endangered species, Hoary Sunray (*Leucochrysum albicans* var. *tricolor*) was detected in high abundance throughout the whole site. It is estimated around 600 plants are scattered throughout the area. This species is listed as Endangered under the Commonwealth EPBC Act but is not listed as threatened under the NSW BC Act.

A full list of flora species detected during the initial surveys are shown in Appendix B.



Figure 2- Apple Box - Yellow Box woodland with good condition native groundcover on the east of the proposal area



Figure 3 Apple Box – Yellow Box Woodland with planted indigenous garden in the south of the proposal area



Figure 4 Apple Box – Yellow Box Woodland with degraded understory in the centre of the proposal area.

Plant Community Types

Native Vegetation is classified to Plant Community Types (PCTs) or the most likely PCT where structural layers are missing and are classified in accordance with the Vegetation Information System Classification Database (VIS). PCTs were determined based on the presence of diagnostic species identified in the site survey.

Based on the site inspection and floristic plots, the native vegetation within the site was classified to 1 PCT. The dominant overstory vegetation within the site is Apple Box and Yellow Box and this provided the best match with;

PCT 654 – Apple Box – Yellow Box dry grassy woodland of the South Eastern Highlands Bioregion.

This PCT forms part of the Threatened Ecological Community - *White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland*. This community is listed as Endangered under the BC Act.

Fauna habitat

Two hollow bearing trees are present within the proposal area. Hollows provide nesting and breeding habitat for many threatened bird and mammal species. One apple box (HBT #2) has a large hollow that appears to have signs of use with grass and straw in the base of the hollow (Figure 5).

No fallen timber or rocky outcrops that provide habitat for ground dwelling fauna are present on site. No evidence of use such as large stick nests or fauna scratchings were observed.

The proposal area does not form part of any major connectivity though the landscape as the site is surrounded by urban residential areas.

No threatened fauna species were detected during the site surveys. A list of fauna species detected during the initial surveys are shown in Appendix C.



Figure 5 Apple Box with large hollow showing signs of use

Aquatic habitat

A small man-made frog pond is present in the indigenous garden. However, no key fish habitat, threatened species or populations listed under the *Fisheries Management Act* are considered to occur in the proposal area.

EPBC MATTERS OF NATIONAL SIGNIFICANCE

The following matters of national significance relevant to biodiversity are considered to apply to the proposal. These matters are assessed further in this report.

Wetlands of International Importance

No wetlands of international importance occur within or adjacent to the proposal area.

Endangered ecological communities

Two endangered ecological communities were identified to have the potential to occur within the study area by the Protected Matters (EPBC Act) search. These are;

- Natural Temperate Grassland of the South Eastern Highlands
- White Box – Yellow Box – Blakely’s Red Gum Grassy Woodland and Derived native grassland (Box-Gum Woodland) – Critically Endangered

One of these communities, White Box-Yellow Box-Blakely’s Red Gum and Derived Native Grassland (Box-Gum woodland) has the potential to occur within the study area, based on the presence of remnant Yellow Box in the proposal area. An analysis of whether the vegetation meets the condition threshold for the EPBC listed community was undertaken (Table 3). Based on the lack of diversity of native understory species and the small size of the patch, the vegetation was not considered to meet the criteria for the EPBC listed Box-Gum Woodland.

Table 3 Assessment of Condition threshold for EPBC listed Box-Gum Woodland

EPBC Condition threshold Criteria	Proposal Area Condition
Is at least one of the common overstory species White Box, Yellow Box or Blakely's Red Gum	Yes, Yellow Box abundant in the proposal area
Does the patch have a predominantly native understorey	Yes
Is the patch 0.1ha or greater in size	Yes, patch 0.6ha in size
Are there 12 or more native understorey species present (Excluding grasses) and at least one important species.	No – 10 native understorey species present in the understorey, including one important species. (Planted native species were excluded from the count as they are not indicative of remnant vegetation understorey species).
Is the patch 0.2ha or greater in size	No. Not the listed ecological community

No vegetation characteristic of the Natural Temperate Grassland of the South Eastern Highlands was present in the proposal area and this community is not considered to occur in the proposal area.

Threatened Species

One threatened forb – the Hoary Sunray (*Leucochrysum albicans* var. *tricolor*) was detected within the proposal area (Figure 6 & 7). The hoary sunray is a small perennial paper daisy and occurs in grassland and woodland habitats. It is estimated around 600 plants are scattered throughout the area, however an extensive targeted search was not undertaken. Hoary sunray is listed as Endangered under the EPBC Act.

Thirty eight other threatened species were identified in the EPBC Protected Matters Search Tool (PMST) report as having the potential to occur within the development site. A habitat assessment was undertaken for these species to determine the likelihood the species being present in the proposal area (Appendix D). Ten of these species are considered to have suitable habitat in the proposal area.

These are:

- Canberra Spider Orchid *Caladenia actensis*
- Basalt Peppercress *Lepidium hyssopifolium*
- Button Wrinklewort *Rutidosia leptorrhynchoides*
- Austral Toadflax *Thesium australe*
- Small Purple-pea *Swainsona recta*
- Tarengo Leek Orchid *Prasophyllum petilum*
- Swift Parrot *Lathamus discolor*
- Superb Parrot *Polytelis swainsonii*
- Golden Sun Moth *Synemon plana*
- Koala *Phascolarctos*

Further surveys would be required for these species.



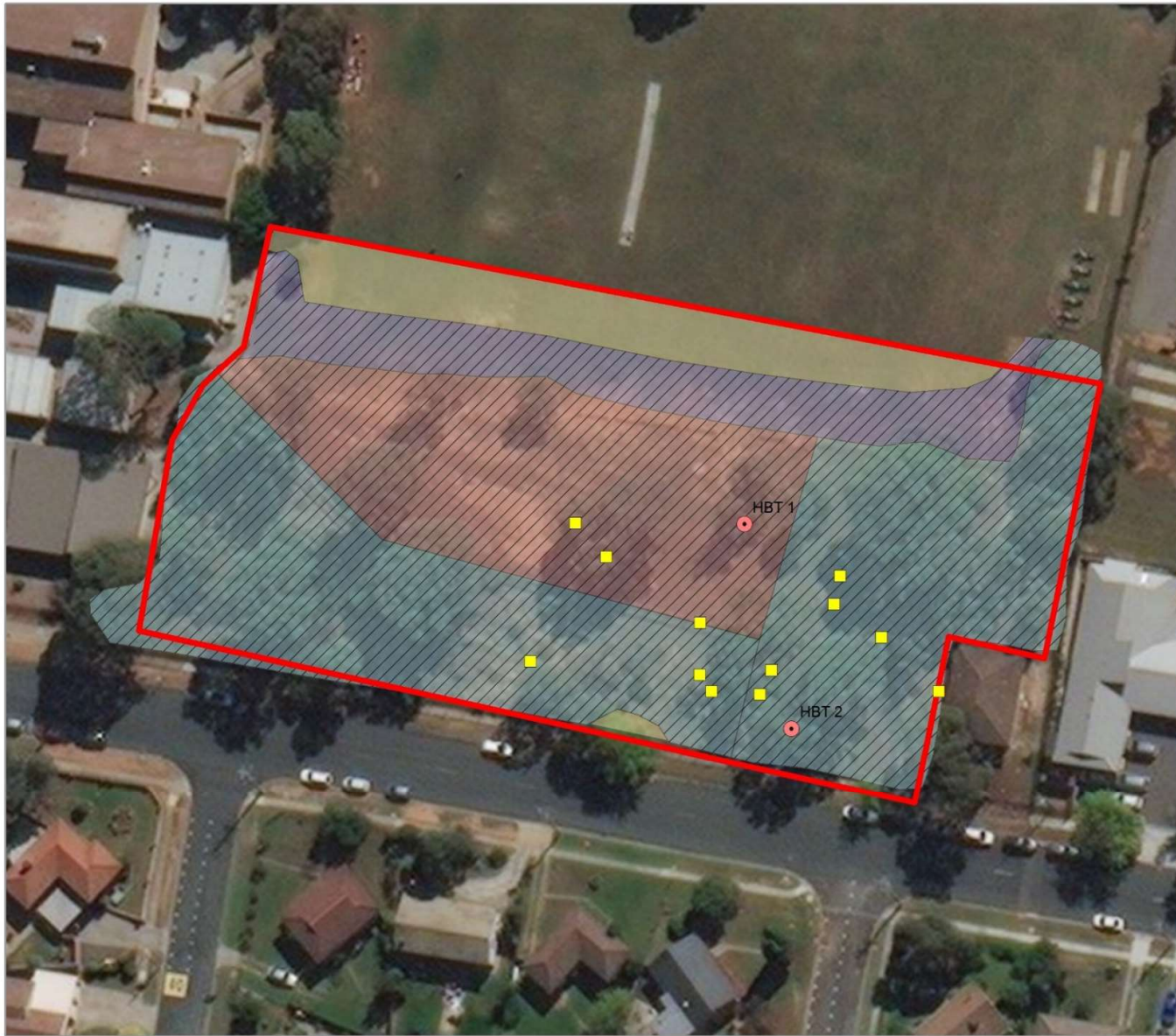
Figure 6 Hoary Sunray in the proposal area

Migratory Species

Fourteen listed migratory species were returned from the protected matters report. Based on a habitat assessment, two of these species could occur on the site on occasion:

- Fork-tailed Swift
- White-throated Needletail

However, as these species are almost exclusively aerial they are considered unlikely to rely on the habitats present within the proposal area.



Queanbeyan SSP

Queanbeyan

■ Proposal Area

Threatened Flora

■ Hoary Sunray patches *EPBC Listed*

Vegetation Type

■ PCT 654 Apple Box-Yellow Box Woodland *Good cond. understory*

■ PCT 654 Apple Box-Yellow Box woodland *Mod. cond. understory*

■ PCT 654 - Derived native grassland *Low Condition*

■ Exotic

Threatened Ecological Communities

■ Box Gum Woodland (BC Act)

● Hollow Bearing Tree



Notes:

- Data collected by nghenvironmental (26.07.18)
- Base map Copyright © Esri and its data suppliers.

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Ref: Queanbeyan_biodiversitymap_230718

Author: J.Gooding

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Figure 7 Vegetation Map

ASSESSMENTS OF IMPACTS

The design for the school buildings have not yet been finalised and the exact area of impact to native vegetation cannot yet be determined. However, the entire 0.7ha proposal area is comprised of native vegetation and the clearing of native vegetation cannot be avoided. The BOS threshold for clearing of native vegetation on this property is 0.25ha. The development would very likely exceed the 0.25ha of vegetation clearing. This triggers the need for a Biodiversity Development Assessment Report (BDAR) to determine the offset requirements for the proposal.

A summary of the potential impacts from the proposal against the BOS thresholds is provided in Table 4.

Table 4 Impact assessment against the BOS Thresholds.

Threshold		Application to the Proposal	Threshold Exceeded?
Minimum lot size associated with the property	Threshold for clearing of native vegetation	The minimum lot size for the property is 600m ² . The threshold for clearing is 0.25ha. A minimum of 0.25 ha would be cleared by the development.	Yes. Area clearing threshold exceeded.
Less than 1 ha	0.25 ha or more		
1 ha to less than 40 ha	0.5 ha or more		
40 ha to less than 1000 ha	1 ha or more		
1000 ha or more	2 ha or more		
Areas of Outstanding Biodiversity Value		None occur in the development site.	No
Significant impact on threatened species, populations or ecological communities		Threatened species to be assessed in the BDAR.	N/A
Activity on land identified as being of high biodiversity value on the Biodiversity Values Map		The development site does not impact on any land classed as land of high biodiversity value	No

RECOMMENDATIONS

The proposal triggers the area clearing threshold therefore the Biodiversity Offset Scheme (BOS) applies and a Biodiversity Development Assessment Report (BDAR) must be prepared.

As part of the BDAR targeted surveys for candidate threatened species would be undertaken. The ten EPBC threatened species considered with suitable habitat would also be surveyed for in November as part of the targeted surveys required for the BDAR.

Full floristic plots using the Biodiversity Assessment Methodology (BAM) would need to be undertaken in areas of native vegetation. Data collected would be added to the Biodiversity Assessment Methodology Calculator to determine the credit offset requirement for the proposal.

An Assessment of Significance would be required for the Hoary Sunray and given the extent of the population a referral to the federal environment minister is recommended.

APPENDIX A BACKGROUND SEARCHES



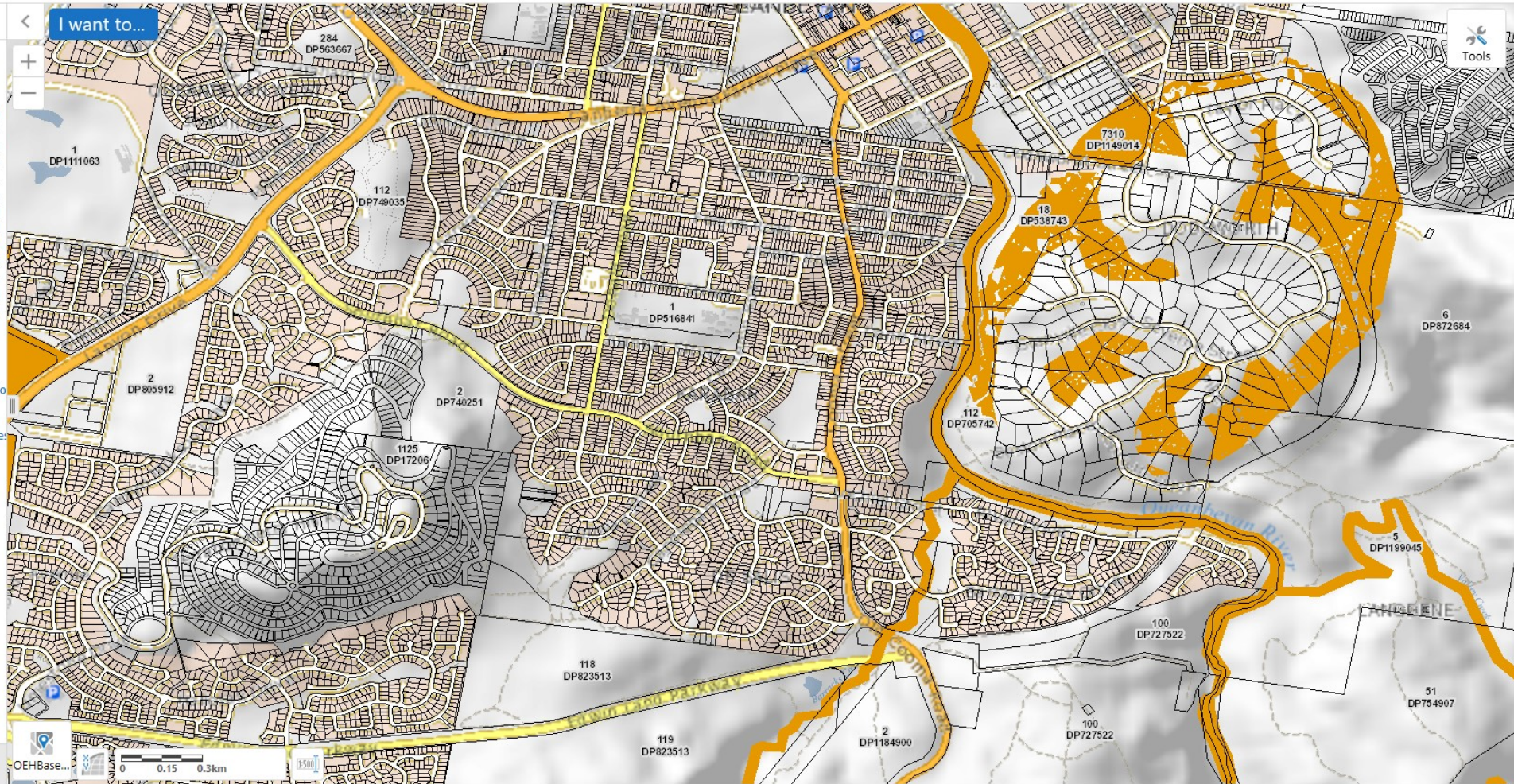
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Biodiversity Value Map

The Biodiversity Values Map (BV Map) identifies land with high biodiversity value, as defined by the *Biodiversity Conservation Regulation 2017*. The Biodiversity Offsets Scheme applies to all local developments, major projects or the clearing of native vegetation where the *State Environmental Planning Policy (Vegetation in Non-Rural Areas) 2017* applies. Any of these will require entry into the Biodiversity Offsets Scheme if they occur on land mapped on the Biodiversity Values Map. Exempt and complying development or private native forestry are not subject to the Biodiversity Offsets Scheme.

For further information on the Biodiversity Offsets Scheme go to <http://www.environment.nsw.gov.au/biodiversity/>

A user manual for this tool is also available at: <http://www.environment.nsw.gov.au/resources/values-map-user-guide-170503.pdf>




















Home





















Layers

OEHBase...

0 0.15 0.3km

Data from the BioNet BioNet Atlas website, which holds records from a number of custodians. The data are only indicative and cannot be considered a comprehensive inventory, and may contain errors and omissions. Species listed under the Sensitive Species Data Policy may have their locations denatured (^ rounded to 0.1°; ^^ rounded to 0.01°). Copyright the State of NSW through the Office of Environment and Heritage. Search criteria : Licensed Report of all Valid Records of Threatened (listed on TSC Act 1995) or Commonwealth listed Entities in selected area [North: -35.32 West: 149.18 East: 149.28 South: -35.42] returned a total of 254 records of 37 species.
Report generated on 20/07/2018 3:44 PM

Kingdom	Class	Family	Species Code	Scientific Name	Exotic	Common Name	NSW Com status	NSW Com status	Records	Info
Animalia	Amphibia	Hylidae	3166	<i>Litoria aurea</i>		Green and Golden Bell Frog	E1,P	V	1	
Animalia	Amphibia	Hylidae	3207	<i>Litoria raniformis</i>		Southern Bell Frog	E1,P	V	1	
Animalia	Reptilia	Pygopodid	2144	<i>Aprasia parapulchella</i>		Pink-tailed Legless Lizard	V,P	V	19	
Animalia	Reptilia	Agamidae	2824	<i>Tympanocryptis pinguicollis</i>		Grassland Earless Dragon	E1,P	E	14	
Animalia	Reptilia	Varanidae	2287	<i>Varanus rosenbergi</i>		Rosenberg's Goanna	V,P		9	
Animalia	Aves	Ardeidae	0197	<i>Botaurus poiciloptilus</i>		Australasian Bittern	E1,P	E	1	
Animalia	Aves	Accipitrida	0218	<i>Circus assimilis</i>		Spotted Harrier	V,P		1	
Animalia	Aves	Accipitrida	0226	<i>Haliaeetus leucogaster</i>		White-bellied Sea-Eagle	V,P	C	1	
Animalia	Aves	Accipitrida	0225	<i>Hieraaetus morphnoides</i>		Little Eagle	V,P		5	
Animalia	Aves	Cacatuidae	0268	<i>Callocephalon fimbriatum</i>		Gang-gang Cockatoo	V,P,3		14	
Animalia	Aves	Cacatuidae	0265	<i>^Calyptrorhynch lathami</i>		Glossy Black-Cockatoo	V,P,2		1	
Animalia	Aves	Psittacidae	0260	<i>Glossopsitta pusilla</i>		Little Lorikeet	V,P		1	
Animalia	Aves	Psittacidae	0277	<i>Polytelis swainsonii</i>		Superb Parrot	V,P,3	V	1	
Animalia	Aves	Climacteric	8127	<i>Climacteris picumnus victoriae</i>		Brown Treecreeper (eastern subspecies)	V,P		2	
Animalia	Aves	Acanthizid	0504	<i>Chthonicola sagittata</i>		Speckled Warbler	V,P		10	
Animalia	Aves	Meliphagic	0448	<i>Epthianura albifrons</i>		White-fronted Chat	V,P		1	
Animalia	Aves	Meliphagic	0598	<i>Grantiella picta</i>		Painted Honeyeater	V,P	V	1	

Animali:	Aves	Meliphagici	8303	<i>Melithreptus gularis gularis</i>	Black-chinned Honeyeater (eastern subspecies)	V,P		1	
Animali:	Aves	Neosittidae	0549	<i>Daphoenositta chrysoptera</i>	Varied Sittella	V,P		3	
Animali:	Aves	Pachycephali	0405	<i>Pachycephala olivacea</i>	Olive Whistler	V,P		1	
Animali:	Aves	Artamidae	8519	<i>Artamus cyanopterus cyanopterus</i>	Dusky Woodswallow	V,P		10	
Animali:	Aves	Petroicidae	8367	<i>Melanodryas cucullata cucullata</i>	Hooded Robin (south-eastern form)	V,P		8	
Animali:	Aves	Petroicidae	0380	<i>Petroica boodang</i>	Scarlet Robin	V,P		8	
Animali:	Aves	Petroicidae	0382	<i>Petroica phoenicea</i>	Flame Robin	V,P		2	
Animali:	Aves	Estrildidae	0652	<i>Stagonopleura guttata</i>	Diamond Firetail	V,P		3	
Animali:Mammal:	Dasyuridae		1008	<i>Dasyurus maculatus</i>	Spotted-tailed Quoll	V,P	E	1	
Animali:Mammal:	Phascolarctidae		1162	<i>Phascolarctos cinereus</i>	Koala	V,P	V	4	
Animali:Mammal:	Vespertilio		1372	<i>Falsistrellus tasmaniensis</i>	Eastern False Pipistrelle	V,P		1	
Animali:Mammal:	Vespertilio		1834	<i>Miniopterus schreibersii oceanensis</i>	Eastern Bentwing-bat	V,P		6	
Animali:	Insecta	Castniidae	1003	<i>Synemon plana</i>	Golden Sun Moth	E1	CE	24	
Plantae	Flora	Asteraceae	9071	<i>Leucochrysum albicans var. tricolor</i>	Hoary Sunray	P	E	45	
Plantae	Flora	Asteraceae	1645	<i>Rutidosis leptorrhynchoide</i>	Button Wrinklewort	E1,P	E	39	
Plantae	Flora	Fabaceae (Faboideae)	3056	<i>Swainsona recta</i>	Small Purple-pea	E1,P	E	4	
Plantae	Flora	Fabaceae (Faboideae)	8538	<i>Swainsona sericea</i>	Silky Swainson-pea	V,P		5	
Plantae	Flora	Myrtaceae	4038	<i>Eucalyptus aggregata</i>	Black Gum	V,P	V	2	
Plantae	Flora	Orchidaceae	4386	<i>Caladenia tessellata</i>	Thick Lip Spider Orchid	E1,P,2	V	2	
Plantae	Flora	Rhamnaceae	5588	<i>Pomaderris pallida</i>	Pale Pomaderris	V,P	V	2	



EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected.

Information on the coverage of this report and qualifications on data supporting this report are contained in the caveat at the end of the report.

Information is available about [Environment Assessments](#) and the EPBC Act including significance guidelines, forms and application process details.

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[Summary](#)

[Details](#)

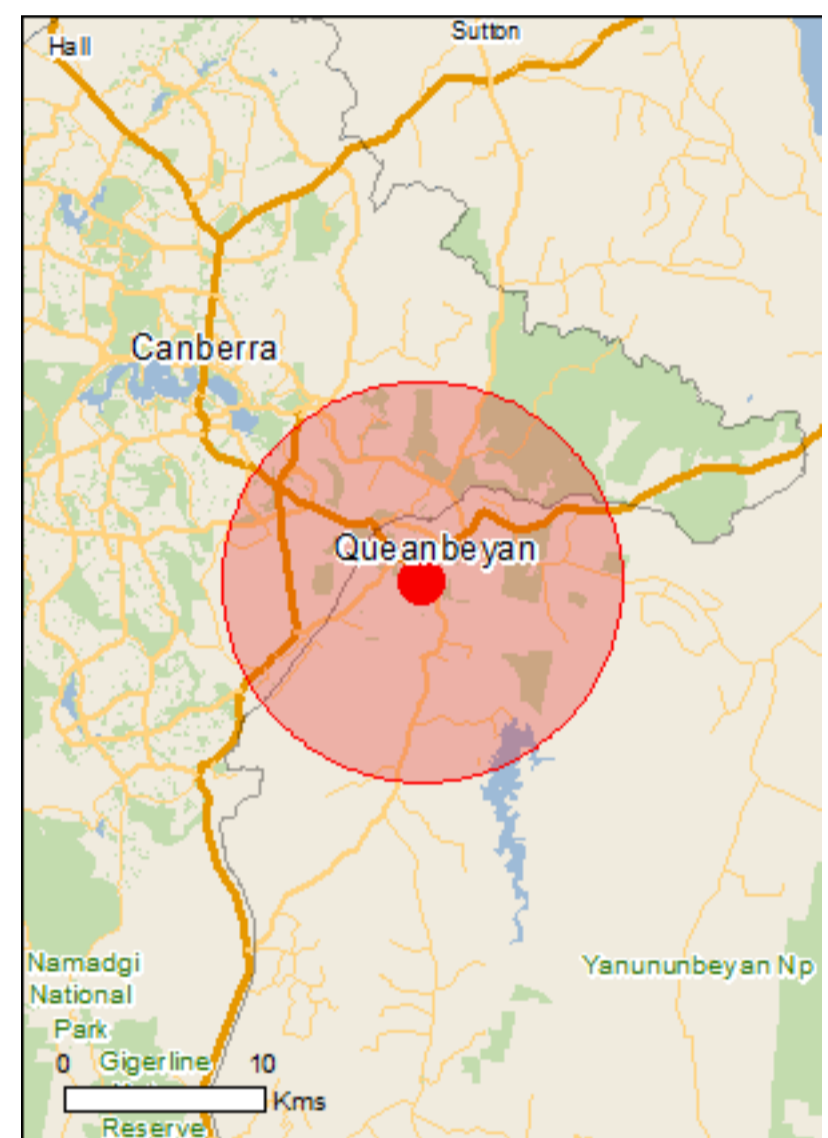
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[Other Matters Protected by the EPBC Act](#)

[Extra Information](#)

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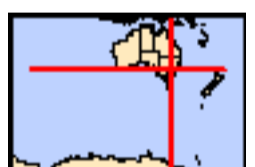
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Summary

Matters of National Environmental Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the [Administrative Guidelines on Significance](#).

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance:	4
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	2
Listed Threatened Species:	39
Listed Migratory Species:	14

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at <http://www.environment.gov.au/heritage>

A [permit](#) may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Land:	19
Commonwealth Heritage Places:	15
Listed Marine Species:	20
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None

Extra Information

This part of the report provides information that may also be relevant to the area you have nominated.

State and Territory Reserves:	8
Regional Forest Agreements:	1
Invasive Species:	35
Nationally Important Wetlands:	1
Key Ecological Features (Marine)	None

Details

Matters of National Environmental Significance

Wetlands of International Importance (Ramsar)	[Resource Information]
Name	Proximity
Banrock station wetland complex	800 - 900km upstream
Hattah-kulkyne lakes	600 - 700km upstream
Riverland	700 - 800km upstream
The coorong, and lakes alexandrina and albert wetland	800 - 900km upstream

Listed Threatened Ecological Communities [Resource Information]

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Name	Status	Type of Presence
Natural Temperate Grassland of the South Eastern Highlands	Critically Endangered	Community likely to occur within area
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Critically Endangered	Community likely to occur within area

Listed Threatened Species [Resource Information]

Name	Status	Type of Presence
Birds		
Anthochaera phrygia Regent Honeyeater [82338]	Critically Endangered	Species or species habitat known to occur within area
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat may occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Grantiella picta Painted Honeyeater [470]	Vulnerable	Species or species habitat likely to occur within area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat known to occur within area
Limosa lapponica baueri Bar-tailed Godwit (baueri), Western Alaskan Bar-tailed Godwit [86380]	Vulnerable	Species or species habitat may occur within area
Limosa lapponica menzbieri Northern Siberian Bar-tailed Godwit, Bar-tailed Godwit (menzbieri) [86432]	Critically Endangered	Species or species habitat may occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Polytelis swainsonii Superb Parrot [738]	Vulnerable	Species or species habitat known to occur

Name	Status	Type of Presence within area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area
Fish		
Bidyanus bidyanus Silver Perch, Bidyan [76155]	Critically Endangered	Species or species habitat known to occur within area
Maccullochella peelii Murray Cod [66633]	Vulnerable	Species or species habitat likely to occur within area
Macquaria australasica Macquarie Perch [66632]	Endangered	Species or species habitat may occur within area
Frogs		
Litoria aurea Green and Golden Bell Frog [1870]	Vulnerable	Species or species habitat may occur within area
Litoria booroolongensis Booroolong Frog [1844]	Endangered	Species or species habitat may occur within area
Litoria castanea Yellow-spotted Tree Frog, Yellow-spotted Bell Frog [1848]	Endangered	Species or species habitat likely to occur within area
Litoria raniformis Growling Grass Frog, Southern Bell Frog, Green and Golden Frog, Warty Swamp Frog [1828]	Vulnerable	Species or species habitat may occur within area
Insects		
Synemon plana Golden Sun Moth [25234]	Critically Endangered	Species or species habitat known to occur within area
Mammals		
Chalinolobus dwyeri Large-eared Pied Bat, Large Pied Bat [183]	Vulnerable	Species or species habitat likely to occur within area
Dasyurus maculatus maculatus (SE mainland population) Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184]	Endangered	Species or species habitat likely to occur within area
Petauroides volans Greater Glider [254]	Vulnerable	Species or species habitat may occur within area
Petrogale penicillata Brush-tailed Rock-wallaby [225]	Vulnerable	Species or species habitat may occur within area
Phascolarctos cinereus (combined populations of Qld, NSW and the ACT) Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104]	Vulnerable	Species or species habitat known to occur within area
Pteropus poliocephalus Grey-headed Flying-fox [186]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Plants		
Caladenia actensis Canberra Spider Orchid [76138]	Critically Endangered	Species or species habitat known to occur within area
Dodonaea procumbens Trailing Hop-bush [12149]	Vulnerable	Species or species

Name	Status	Type of Presence
Eucalyptus aggregata Black Gum [20890]	Vulnerable	habitat may occur within area Species or species habitat known to occur within area
Lepidium ginninderrense Ginninderra Peppercross [78474]	Vulnerable	Species or species habitat may occur within area
Lepidium hyssopifolium Basalt Pepper-cress, Peppercross, Rubble Pepper-cress, Pepperweed [16542]	Endangered	Species or species habitat may occur within area
Leucochrysum albicans var. tricolor Hoary Sunray, Grassland Paper-daisy [56204]	Endangered	Species or species habitat known to occur within area
Pelargonium sp. Striatellum (G.W.Carr 10345) Omeo Stork's-bill [84065]	Endangered	Species or species habitat may occur within area
Pomaderris pallida Pale Pomaderris [13684]	Vulnerable	Species or species habitat known to occur within area
Prasophyllum petilum Tarengo Leek Orchid [55144]	Endangered	Species or species habitat may occur within area
Rutidosis leptorrhynchoides Button Wrinklewort [7384]	Endangered	Species or species habitat known to occur within area
Swainsona recta Small Purple-pea, Mountain Swainson-pea, Small Purple Pea [7580]	Endangered	Species or species habitat known to occur within area
Thesium australe Austral Toadflax, Toadflax [15202]	Vulnerable	Species or species habitat likely to occur within area

Reptiles

Aprasia parapulchella Pink-tailed Worm-lizard, Pink-tailed Legless Lizard [1665]	Vulnerable	Species or species habitat known to occur within area
Delma impar Striped Legless Lizard [1649]	Vulnerable	Species or species habitat known to occur within area
Tymanocryptis pinguicolla Grassland Earless Dragon [66727]	Endangered	Species or species habitat known to occur within area

Listed Migratory Species

[[Resource Information](#)]

* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.

Name	Threatened	Type of Presence
Migratory Marine Birds		
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area

Migratory Terrestrial Species

Hirundapus caudacutus White-throated Needletail [682]		Species or species habitat known to occur within area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat known to occur within area

Name	Threatened	Type of Presence
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat known to occur within area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat known to occur within area
Migratory Wetlands Species		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat likely to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat known to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat known to occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat may occur within area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Pandion haliaetus Osprey [952]		Species or species habitat likely to occur within area

Other Matters Protected by the EPBC Act

Commonwealth Land [\[Resource Information \]](#)

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Name
Commonwealth Land -
Commonwealth Land - Airservices Australia
Commonwealth Land - Australian Postal Corporation
Commonwealth Land - Australian Telecommunications Commission
Commonwealth Land - Defence Housing Authority
Commonwealth Land - Telstra Corporation Limited
Defence - 10 WHYALLA ST - FYSHWICK
Defence - 139 CANBERRA AVE - FYSHWICK
Defence - 169 GLADSTONE ST - FYSHWICK
Defence - DEFENCE ARCHIVES - QUEANBEYAN
Defence - HMAS HARMAN - SYMONSTOWN
Defence - MAJURA FIELD FIRING RANGE
Defence - MAJURA NAVIGATION BEACON
Defence - MT JERRABOMBERRA OBSTRUCTION WARNING
Defence - NAVAL COMBAT DATA SYSTEM CENTRE - FYSHWICK
Defence - NORTHCOTT DRIVE PLAYING FIELDS (Addison Rd)

Name
Defence - RAAF BASE FAIRBAIRN
Defence - ROYAL MILITARY COLLEGE - DUNTROON
Defence - WERRIWA DEPOT

Commonwealth Heritage Places		[Resource Information]
Name	State	Status
Natural		
Majura Valley Natural Temperate Grassland	ACT	Listed place
Historic		
Anzac Memorial Chapel of St Paul	ACT	Listed place
Apple Shed Asset C58	ACT	Listed place
Commandants House Asset B9	ACT	Listed place
Duntroon House and Garden	ACT	Listed place
RMC Duntroon Conservation Area	ACT	Listed place
Redwood Plantation	ACT	Listed place
Residence Asset B5	ACT	Listed place
Residence Asset B7	ACT	Listed place
Residence Asset C12	ACT	Listed place
Residence Asset C13	ACT	Listed place
Residence Asset C14	ACT	Listed place
Residence Asset C15	ACT	Listed place
Residence Asset C8	ACT	Listed place
Three Wartime Bomb Dump Buildings	ACT	Listed place

Listed Marine Species		[Resource Information]
* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.		
Name	Threatened	Type of Presence
Birds		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat likely to occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardea alba Great Egret, White Egret [59541]		Species or species habitat known to occur within area
Ardea ibis Cattle Egret [59542]		Species or species habitat may occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat known to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat known to occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat may occur within area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Breeding known to occur within area
Hirundapus caudacutus White-throated Needletail [682]		Species or species habitat known to occur within area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat known to occur

Name	Threatened	Type of Presence within area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat known to occur within area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat known to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Pandion haliaetus Osprey [952]		Species or species habitat likely to occur within area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat known to occur within area
Rostratula benghalensis (sensu lato) Painted Snipe [889]	Endangered*	Species or species habitat likely to occur within area

Extra Information

State and Territory Reserves	[Resource Information]
Name	State
Callum Brae	ACT
Cuumbeun	NSW
Jerrabomberra Wetlands	ACT
Molonglo Gorge	ACT
Queanbeyan	NSW
Stony Creek	NSW
Wanna Wanna	NSW
West Jerrabomberra	ACT

Regional Forest Agreements

[Resource Information]

Note that all areas with completed RFAs have been included.

Name	State
Southern RFA	New South Wales

Invasive Species

[Resource Information]

Weeds reported here are the 20 species of national significance (WoNS), along with other introduced plants that are considered by the States and Territories to pose a particularly significant threat to biodiversity. The following feral animals are reported: Goat, Red Fox, Cat, Rabbit, Pig, Water Buffalo and Cane Toad. Maps from Landscape Health Project, National Land and Water Resources Audit, 2001.

Name	Status	Type of Presence
Birds		
Acridotheres tristis Common Myna, Indian Myna [387]		Species or species habitat likely to occur within area
Alauda arvensis Skylark [656]		Species or species habitat likely to occur within area
Anas platyrhynchos Mallard [974]		Species or species habitat likely to occur within area
Carduelis carduelis European Goldfinch [403]		Species or species habitat likely to occur within area
Carduelis chloris European Greenfinch [404]		Species or species habitat likely to occur within area
Columba livia Rock Pigeon, Rock Dove, Domestic Pigeon [803]		Species or species habitat likely to occur within area
Passer domesticus House Sparrow [405]		Species or species habitat likely to occur within area
Streptopelia chinensis Spotted Turtle-Dove [780]		Species or species habitat likely to occur within area
Sturnus vulgaris Common Starling [389]		Species or species habitat likely to occur within area
Turdus merula Common Blackbird, Eurasian Blackbird [596]		Species or species habitat likely to occur within area
Mammals		
Bos taurus Domestic Cattle [16]		Species or species habitat likely to occur within area
Canis lupus familiaris Domestic Dog [82654]		Species or species habitat likely to occur within area
Felis catus Cat, House Cat, Domestic Cat [19]		Species or species habitat likely to occur within area
Feral deer Feral deer species in Australia [85733]		Species or species habitat likely to occur within area
Lepus capensis Brown Hare [127]		Species or species habitat likely to occur within area
Mus musculus House Mouse [120]		Species or species habitat likely to occur within area
Oryctolagus cuniculus Rabbit, European Rabbit [128]		Species or species habitat likely to occur within area
Rattus norvegicus Brown Rat, Norway Rat [83]		Species or species habitat likely to occur

Name	Status	Type of Presence within area
Rattus rattus Black Rat, Ship Rat [84]		Species or species habitat likely to occur within area
Sus scrofa Pig [6]		Species or species habitat likely to occur within area
Vulpes vulpes Red Fox, Fox [18]		Species or species habitat likely to occur within area
Plants		
Alternanthera philoxeroides Alligator Weed [11620]		Species or species habitat likely to occur within area
Cytisus scoparius Broom, English Broom, Scotch Broom, Common Broom, Scottish Broom, Spanish Broom [5934]		Species or species habitat likely to occur within area
Genista monspessulana Montpellier Broom, Cape Broom, Canary Broom, Common Broom, French Broom, Soft Broom [20126]		Species or species habitat likely to occur within area
Genista sp. X Genista monspessulana Broom [67538]		Species or species habitat may occur within area
Lycium ferocissimum African Boxthorn, Boxthorn [19235]		Species or species habitat likely to occur within area
Nassella neesiana Chilean Needle grass [67699]		Species or species habitat likely to occur within area
Nassella trichotoma Serrated Tussock, Yass River Tussock, Yass Tussock, Nassella Tussock (NZ) [18884]		Species or species habitat likely to occur within area
Opuntia spp. Prickly Pears [82753]		Species or species habitat likely to occur within area
Pinus radiata Radiata Pine Monterey Pine, Insignis Pine, Wilding Pine [20780]		Species or species habitat may occur within area
Rubus fruticosus aggregate Blackberry, European Blackberry [68406]		Species or species habitat likely to occur within area
Sagittaria platyphylla Delta Arrowhead, Arrowhead, Slender Arrowhead [68483]		Species or species habitat likely to occur within area
Salix spp. except S.babylonica, S.x calodendron & S.x reichardtii Willows except Weeping Willow, Pussy Willow and Sterile Pussy Willow [68497]		Species or species habitat likely to occur within area
Senecio madagascariensis Fireweed, Madagascar Ragwort, Madagascar Groundsel [2624]		Species or species habitat likely to occur within area
Ulex europaeus Gorse, Furze [7693]		Species or species habitat likely to occur within area

Nationally Important Wetlands

Name [\[Resource Information \]](#)

Name State

Name

State

[Jerrabomberra Wetlands](#)

ACT

Caveat

The information presented in this report has been provided by a range of data sources as acknowledged at the end of the report.

This report is designed to assist in identifying the locations of places which may be relevant in determining obligations under the Environment Protection and Biodiversity Conservation Act 1999. It holds mapped locations of World and National Heritage properties, Wetlands of International and National Importance, Commonwealth and State/Territory reserves, listed threatened, migratory and marine species and listed threatened ecological communities. Mapping of Commonwealth land is not complete at this stage. Maps have been collated from a range of sources at various resolutions.

Not all species listed under the EPBC Act have been mapped (see below) and therefore a report is a general guide only. Where available data supports mapping, the type of presence that can be determined from the data is indicated in general terms. People using this information in making a referral may need to consider the qualifications below and may need to seek and consider other information sources.

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species distributions have been derived through a variety of methods. Where distributions are well known and if time permits, maps are derived using either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc) together with point locations and described habitat; or environmental modelling (MAXENT or BIOCLIM habitat modelling) using point locations and environmental data layers.

Where very little information is available for species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc). In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More reliable distribution mapping methods are used to update these distributions as time permits.

Only selected species covered by the following provisions of the EPBC Act have been mapped:

- migratory and
- marine

The following species and ecological communities have not been mapped and do not appear in reports produced from this database:

- threatened species listed as extinct or considered as vagrants
- some species and ecological communities that have only recently been listed
- some terrestrial species that overfly the Commonwealth marine area
- migratory species that are very widespread, vagrant, or only occur in small numbers

The following groups have been mapped, but may not cover the complete distribution of the species:

- non-threatened seabirds which have only been mapped for recorded breeding sites
- seals which have only been mapped for breeding sites near the Australian continent

Such breeding sites may be important for the protection of the Commonwealth Marine environment.

Coordinates

-35.3656 149.22664

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

- [-Office of Environment and Heritage, New South Wales](#)
- [-Department of Environment and Primary Industries, Victoria](#)
- [-Department of Primary Industries, Parks, Water and Environment, Tasmania](#)
- [-Department of Environment, Water and Natural Resources, South Australia](#)
- [-Department of Land and Resource Management, Northern Territory](#)
- [-Department of Environmental and Heritage Protection, Queensland](#)
- [-Department of Parks and Wildlife, Western Australia](#)
- [-Environment and Planning Directorate, ACT](#)
- [-Birdlife Australia](#)
- [-Australian Bird and Bat Banding Scheme](#)
- [-Australian National Wildlife Collection](#)
- [-Natural history museums of Australia](#)
- [-Museum Victoria](#)
- [-Australian Museum](#)
- [-South Australian Museum](#)
- [-Queensland Museum](#)
- [-Online Zoological Collections of Australian Museums](#)
- [-Queensland Herbarium](#)
- [-National Herbarium of NSW](#)
- [-Royal Botanic Gardens and National Herbarium of Victoria](#)
- [-Tasmanian Herbarium](#)
- [-State Herbarium of South Australia](#)
- [-Northern Territory Herbarium](#)
- [-Western Australian Herbarium](#)
- [-Australian National Herbarium, Canberra](#)
- [-University of New England](#)
- [-Ocean Biogeographic Information System](#)
- [-Australian Government, Department of Defence Forestry Corporation, NSW](#)
- [-Geoscience Australia](#)
- [-CSIRO](#)
- [-Australian Tropical Herbarium, Cairns](#)
- [-eBird Australia](#)
- [-Australian Government – Australian Antarctic Data Centre](#)
- [-Museum and Art Gallery of the Northern Territory](#)
- [-Australian Government National Environmental Science Program](#)
- [-Australian Institute of Marine Science](#)
- [-Reef Life Survey Australia](#)
- [-American Museum of Natural History](#)
- [-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania](#)
- [-Tasmanian Museum and Art Gallery, Hobart, Tasmania](#)
- [-Other groups and individuals](#)

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the [Contact Us](#) page.

APPENDIX B FLORA SPECIES

Floristic survey results are presented for the plant community type identified in the development site (PCT)

PCT 654 – Apple Box – Yellow Box dry grassy woodland of the South Eastern Highlands Bioregion.

The foliage cover of species is based on visual estimates of foliage cover within a standard 20 metre x 20 metre plot. Incidentals are recorded using the random meander method (Cropper 1993). ‘

Where uncertainty exists due to the unavailability of reproductive material, the taxon is preceded by a question mark, or plants are identified to genus level only. Species of conservation significance are bolded. Introduced species are denoted by an asterisk. Priority or significant environmental weeds are indicated with a ‘Δ’ symbol. Scientific nomenclature follows Harden (1990-2002) and the Sydney Royal Botanic Gardens PlantNet website, updated with recent changes accepted by the except where recent changes accepted by the Angiosperm Phylogeny Group (2016) and the Australian Plant Census (2017).

Family	Exotic	Scientific Name	Common Name	TSC Status	EPBC Status	Plot 1 PCT 1330		Incidentals
						Cover%	#individuals	
Trees								
Malvaceae		<i>Brachychiton populneus</i>	Kurrajong					*
Myrtaceae		<i>Eucalyptus bridgesiana</i>	Apple Box			15	1	
Myrtaceae		<i>Eucalyptus melliodora</i>	Yellow Box			25	2	
Myrtaceae		<i>Eucalyptus macrorhyncha</i>	Red Stringybark					*
Shrubs								
Fabaceae (Mimosoideae)		<i>Acacia baileyana</i>	Cootamundra Wattle					*
Fabaceae (Mimosoideae)		<i>Acacia decurrens</i>	Black Wattle					Planted
Fabaceae (Mimosoideae)		<i>Acacia genistifolia</i>	Early Wattle			0.2	4	*
Fabaceae (Mimosoideae)		<i>Acacia rubida</i>	Red-stemmed Wattle					Planted
Proteaceae		<i>Banksia spp.</i>	Ornamental					Planted
Pittosporaceae		<i>Bursaria spinosa</i>	Native Blackthorn					*
Myrtaceae		<i>Callistemon spp.</i>	Ornamental					Planted
Rhamnaceae		<i>Cryptandra amara</i>	Bitter Cryptandra					*
Proteaceae		<i>Grevillea spp.</i>	Ornamental					Planted
Xanthorrhoeaceae		<i>Xanthorrhoeaceae</i>	Grass Tree					Planted
Vines/Climbers								
Fabaceae (Faboideae)		<i>Glycine tabacina</i>	Variable Glycine			0.1	1	
Ferns								
Pteridaceae		<i>Cheilanthes sieberi</i>	Rock Fern					*
Forbs								
Clusiaceae	*	<i>Hypericum perforatum</i>	St. Johns Wort			0.5	20	
Asteraceae	*	<i>Hypochaeris radicata</i>	Catsear			0.1	10	
Brassicaceae	*	<i>Lepidium spp.</i>	A Peppercross			0.1	10	
Asteraceae		<i>Leucochrysum albicans var. tricolor</i>	Hoary Sunray	P	E	0.5	50	
Plantaginaceae	*	<i>Plantago lanceolata</i>	Lamb's Tongues			0.5	500	
Fabaceae (Faboideae)	*	<i>Trifolium spp.</i>	A Clover			0.1	1	
Campanulaceae		<i>Wahlenbergia spp.</i>	Bluebell			0.1	10	
Grasses and Grass Like								
Poaceae		<i>Aristida spp.</i>	A Wiregrass					*
Poaceae		<i>Austrostipa scabra</i>	Speargrass			6	25	

Poaceae	*	<i>Avena fatua</i>	Wild Oats			*
Poaceae		<i>Bothriochloa macra</i>	Red Grass	3	20	
Poaceae		<i>Cynodon dactylon</i>	Common Couch	3	10	
Poaceae	*	<i>Dactylis glomerata</i>	Cocksfoot			*
Phormiaceae		<i>Dianella longifolia</i>	Blueberry Lily	0.5	20	
Poaceae		<i>Elymus scaber</i>	Common Wheatgrass			*
Poaceae	*	<i>Eragrostis spp.</i>	A Lovegrass	20	300	
Lomandraceae		<i>Lomandra filiformis</i>	Mat-rush	0.1	20	
Iridaceae	*	<i>Romulea rosea var. australis</i>	Onion Grass			*
Poaceae		<i>Rytidosperma spp.</i>	Wallaby Grass	25	200	
Poaceae		<i>Themeda australis</i>	Kangaroo Grass			*

APPENDIX C FAUNA SPECIES

The following fauna were observed opportunistically.

Scientific Name	Common Name
* <i>Acridotheres tristis</i>	Common/Indian Myna
<i>Alisterus scapularis</i>	Australian King Parrot
<i>Anthochaera carunculata</i>	Red Wattlebird
<i>Cacatua galerita</i>	Sulphur-crested Cockatoo
<i>Cacatua sanguinea</i>	Little Corella
* <i>Columba livia</i>	Rock Dove (Feral Pigeon)
<i>Corvus coronoides</i>	Australian Raven
<i>Cracticus tibicen</i>	Australian Magpie
<i>Dacelo novaeguineae</i>	Laughing Kookaburra
<i>Eolophus roseicapillus</i>	Galah
<i>Grallina cyanoleuca</i>	Magpie-lark
<i>Manorina melanocephala</i>	Noisy Miner
<i>Ocyphaps lophotes</i>	Crested Pigeon
<i>Platycercus elegans</i>	Crimson Rosella
<i>Platycercus eximus</i>	Eastern Rosella
<i>Rhipidura leucophrys</i>	Willy Wagtail
<i>Strepera graculina</i>	Pied Currawong
<i>Trichoglossus moluccanus</i>	Rainbow Lorikeet
<i>Vanellus miles</i>	Masked Lapwing

* indicates non-native

APPENDIX D EPBC HABITAT ASSESSMENT

Name	Habitat	Habitat Present	Likelihood of occurrence	Potential for impact?
FAUNA				
Australian Bittern <i>Botaurus poiciloptilus</i>	Permanent freshwater wetlands with tall, dense vegetation.	Absent – no freshwater wetlands with dense vegetation	Unlikely – no suitable habitat.	No – Unlikely to occur on site
Regent Honeyeater <i>Botaurus poiciloptilus</i>	The species inhabits dry open forest and woodland, particularly Box-Ironbark woodland, and riparian forests of River Sheoak woodlands that support a significantly high abundance and species richness of bird species. These woodlands have significantly large numbers of mature trees, high canopy cover and abundance of mistletoes.	Marginal – Box-gum woodland present.	Unlikely – fragmented residential area	No – Unlikely to occur on site
Curlew Sandpiper <i>Calidris ferruginea</i>	Intertidal mudflats in both fresh and brackish waters in sheltered coastal areas, such as estuaries, bays, inlets, and lagoons. Also recorded inland, including around ephemeral and permanent lakes, dams, and waterholes, usually with bare edges of mud or sand	Absent – no intertidal mudflats	Unlikely – no suitable habitat.	No – Unlikely to occur on site
Painted Honeyeater <i>Grantiella picta</i>	Boree/Weeping Myall, Brigalow, and Box-Gum Woodlands and Box-Ironbark Forests. Specialist feeder on the fruits of mistletoes.	Scattered paddock trees of box-gum woodland. No mistletoes present.	Unlikely – not detected during site surveys. No suitable food sources. (mistletoes)	No – Unlikely to occur on site
Swift Parrot <i>Lathamus discolor</i>	On the coast and southwest slopes in areas with abundant flowering eucalypts or lerp. Feed trees include winter flowering species such as Swamp Mahogany, Spotted Gum, Red Bloodwood, Mugga Ironbark, and White Box and Lerp infested trees such as Grey Box and Black Butt.	Present	Possible – known to occur in area.	Surveys required
Bar-tailed Godwit <i>Limosa lapponica baueri</i>	Mostly coastal habitats such as estuaries, sandflats and mudflats. Occasionally found on inland	Absent – no wetlands in proposal area	Unlikely – no suitable habitat.	No – Unlikely to occur on site

Name	Habitat	Habitat Present	Likelihood of occurrence	Potential for impact?
FAUNA				
	wetlands or in areas of short grass such as farmland, paddocks and airstrips.			
Northern Siberian Bar-tailed Godwit <i>Limosa lapponica menzbieri</i>	Mostly coastal habitats such as estuaries, sandflats and mudflats. Occasionally found on inland wetlands or in areas of short grass such as farmland, paddocks and airstrips.	Absent – no wetlands in proposal area	Unlikely – no suitable habitat.	No – Unlikely to occur on site
Eastern Curlew <i>Numenius madagascariensis</i>	Large intertidal mudflats often with seagrass beds along sheltered coasts including in estuaries, bays, harbours, inlets, lagoons, and among saltmarshes and mangroves.	Absent	Unlikely – no suitable habitat.	No – Unlikely to occur on site
Superb Parrot <i>Polytelis swainsonii</i>	Box-Gum, Box-Cypress, and Boree Woodlands and River Red Gum Forests. They nest in hollows of large trees in tall open forest or woodland.	Present	Possible – known to occur in the area.	Surveys required
Australian Painted Snipe <i>Rostratula australis</i>	Shallow terrestrial freshwater or occasionally brackish wetlands, including temporary and permanent lakes, swamps, and claypans, as well as inundated or waterlogged grassland or saltmarsh, dams, rice crops, sewage farms, and bore drains. Fringes of swamps, dams, and nearby marshy areas with cover of grasses, lignum, low scrub, or open timber. Shallow wetlands with areas of bare wet mud.	Absent	Unlikely	No – Unlikely to occur on site
FISH				
Silver Perch <i>Bidyanus Bidyanus</i>	Rivers and streams	Absent – No waterbodies	Unlikely	No – No suitable habitat
Murray Cod <i>Maccullochelle peeli</i>	Wide range of warm water habitat including clear rocky streams, slow flowing turbid rivers, and billabongs, most frequently in main river channel and larger tributaries but occasionally in floodplain channels during floods. Near complex structural cover such as large rocks, woody debris, and overhanging vegetation.	Absent – No waterbodies	Unlikely	No – No suitable habitat

Name	Habitat	Habitat Present	Likelihood of occurrence	Potential for impact?
FAUNA				
Macquarie Perch <i>Macquaria australasica</i>	Both river and lake habitats; especially the upper reaches of rivers and their tributaries. Clear, deep, rocky holes with plenty of cover including aquatic vegetation, large boulders, large woody debris, and overhanging banks.	Absent – No waterbodies	Unlikely	No – No suitable habitat
FROGS				
Southern Bell Frog <i>Litoria raniformis</i>	Found in or around permanent or ephemeral Black Box/Lignum/Nitre Goosefoot Swamps, Lignum/Typha swamps and River Red Gum Swamps or Billabongs along floodplains and river valleys.	Absent	Unlikely – no suitable habitat	No – Unlikely to occur on site.
Green and Golden Bell Frog <i>Litoria aurea</i>	Inhabits marshes, dams and stream-sides, particularly those containing bullrushes (<i>Typha</i> spp.) or spikerushes (<i>Eleocharis</i> spp.).	Absent	Unlikely – no suitable habitat	No – Unlikely to occur on site.
Booroolong Frog <i>Litoria booroolongensis</i>	Live along permanent streams with some fringing vegetation cover such as ferns, sedges or grasses. Adults occur on or near cobble banks and other rock structures within stream margins.	Absent	Unlikely – no suitable habitat	No – Unlikely to occur on site.
Yellow Spotted Tree Frog <i>Litoria castanea</i>	Require large permanent ponds or slow flowing 'chain-of-ponds' streams with abundant emergent vegetation such as bulrushes and aquatic vegetation.	Absent	Unlikely – no suitable habitat	No – Unlikely to occur on site.
INSECTS				
Golden Sun Moth <i>Synemon plana</i>	Occurs in Natural Temperate Grasslands and grassy Box-Gum Woodlands in which groundlayer is dominated by wallaby grasses <i>Austrodanthonia</i> spp. Grasslands dominated by wallaby grasses are typically low and open - the bare ground between the tussocks is thought to be an important microhabitat feature for the Golden Sun Moth, as it is typically these areas on which the females are observed displaying to attract males.	Present	Possible – Surveys required	Surveys required
MAMMALS				

Name	Habitat	Habitat Present	Likelihood of occurrence	Potential for impact?
FAUNA				
Large-eared Pied Bat <i>Chalinolobus dwyeri</i>	Roosts in caves (near their entrances), crevices in cliffs, old mine workings and in the disused, bottle-shaped mud nests of the Fairy Martin (<i>Petrochelidon ariel</i>), frequenting low to mid-elevation dry open forest and woodland close to these features. Found in well-timbered areas containing gullies	Absent	Unlikely – No suitable habitat	No – Unlikely to occur on site
Koala <i>Phascolarctos cinereus</i>	Temperate, subtropical and tropical eucalypt woodlands and forests where suitable food trees grow, of which there are more than 70 eucalypt species and 30 non-eucalypt species that are particularly abundant on fertile clay soils.	Present	Possible – Surveys required	Surveys required
Greater Glider <i>Petauroides volans</i>	Typically found in tall, montane moist eucalypt forests with relatively old trees and abundant hollows	Absent	Unlikely – No suitable habitat	No – Unlikely to occur on site
Brush-tailed Rock Wallaby <i>Petrogale penicillata</i>	Occupy rocky escarpments, outcrops and cliffs with a preference for complex structures with fissures, caves and ledges, often facing north	Absent	Unlikely – No suitable habitat	No – Unlikely to occur on site
Spotted Tail Quoll <i>Dasyurus maculatus</i>	Recorded across a range of habitat types, including rainforest, open forest, woodland, coastal heath and inland riparian forest, from the sub-alpine zone to the coastline. Individual animals use hollow-bearing trees, fallen logs, small caves, rock outcrops and rocky-cliff faces as den sites.	Absent	Unlikely – No suitable habitat	No – Unlikely to occur on site
Grey-headed Flying-fox <i>Pteropus poliocephalus</i>	Range of vegetation communities including rainforest, open forest, and closed and open woodland. Roost sites usually near water, including lakes, rivers, and coastlines.	Absent	Unlikely – No suitable habitat	No – Unlikely to occur on site
REPTILES				
Striped Legless Lizard <i>Delma impar</i>	Found mainly in Natural Temperate Grassland but has also been captured in grasslands that have a high exotic component. Habitat is where grassland is	Absent - no perennial tussock grasses	Unlikely – no suitable habitat	No – Unlikely to occur on site

Name	Habitat	Habitat Present	Likelihood of occurrence	Potential for impact?
FAUNA				
	dominated by perennial, tussock-forming grasses such as Kangaroo Grass <i>Themeda australis</i> , spear-grasses <i>Austrostipa</i> spp. and poa tussocks <i>Poa</i> spp., and occasionally wallaby grasses <i>Austrodanthonia</i> spp			
Grassland Earless Dragon	Restricted to a small number of Natural Temperate Grassland sites dominated by tussock grasses. In addition to tussocks, partially embedded surface rocks, and spider and insect holes are used for shelter. These are important micro-habitat elements within the grassland habitat. Rocks and arthropod holes provide important thermal refuges during temperature extremes.	Absent – no surface rocks.	Unlikely – proposal area within residential area.	No – Unlikely to occur on site
Pink-tailed Worm-lizard <i>Aprasia parapulchella</i>	Inhabits sloping open woodland areas with predominantly native grassy ground layers. Commonly found beneath small, partially-embedded rock.	Absent – no rocky outcrops or partially buried rocks.	Unlikely – No suitable habitat	No – Unlikely to occur on site
FLORA				
Canberra Spider Orchid <i>Caladenia actensis</i>	Grows on shallow gravelly brown clay loam soils of volcanic origin. Plants occur amongst a ground cover of grasses, forbs and low shrubs, often among rocks	Present	Possible – known in locality.	Surveys required in Spring
Trailing Hop-bush <i>Dodonaea procumbens</i>	Grows in Natural Temperate Grassland or fringing eucalypt woodland of Snow Gum (<i>Eucalyptus pauciflora</i>). Grows in open bare patches where there is little competition from other species.	Absent	Unlikely – Conspicuous species not detected during site surveys	No – unlikely to occur on site.
Black Gum <i>Eucalyptus aggregata</i>	Grows on alluvial soils, on cold, poorly-drained flats and hollows adjacent to creeks and small rivers.	Absent	Absent – Not detected during site surveys	No – unlikely to occur on site
Ginninderra Peppergrass <i>Lepidium ginninderrense</i>	Natural Temperate Grassland	Absent	Unlikely – not known to occur in locality	No – unlikely to occur on site

Name	Habitat	Habitat Present	Likelihood of occurrence	Potential for impact?
FAUNA				
Basalt Peppergrass <i>Lepidium hyssopifolium</i>	Known to have occurred in both woodland with a grassy understorey and in grassland.	Present	Possible – Surveys required in Spring	Surveys required
Hoary Sunray <i>Leucochrysum albicans</i> var. <i>tricolor</i>	Occurs in a wide variety of grassland, woodland and forest habitats, generally on relatively heavy soils. Can occur in modified habitats such as semi-urban areas and roadsides.	Present	Present – detected on site	Yes – AoS would be required
Omeo Stork's-bill <i>Pelargonium</i> sp. <i>Striatellum</i>	A narrow habitat that is usually just above the high-water level of irregularly inundated or ephemeral lakes	Absent – no ephemeral lakes	Unlikely – no suitable habitat	No – unlikely to occur.
Pale Pomaderris <i>Pomaderris pallida</i>	This species usually grows in shrub communities surrounded by Brittle Gum (<i>Eucalyptus mannifera</i>) and Red Stringybark (<i>E. macrorhyncha</i>) or <i>Callitris</i> spp. woodland.	Absent – no associated vegetation	Unlikely – conspicuous shrub not detected during site surveys,	No – unlikely to occur.
Button Wrinklewort <i>Rutidosia leptorrhynchoides</i>	Occurs in Box-Gum Woodland, secondary grassland derived from Box-Gum Woodland or in Natural Temperate Grassland; and often in the ecotone between the two communities. Grows on soils that are usually shallow, stony or disturbed	Present- Box-gum woodland present in study area.	Possible – Surveys required in Spring	Surveys required
Austral Toadflax <i>Thesium australe</i>	Occurs in grassland on coastal headlands or grassland and grassy woodland away from the coast. Often found in association with Kangaroo Grass (<i>Themeda australis</i>). A root parasite that takes water and some nutrient from other plants, especially Kangaroo Grass.	Present Kangaroo Grass present in study area.	Possible – Surveys required in Spring	Surveys required
Small Purple-pea <i>Swainsona recta</i>	Grows in grassy understorey of woodlands and open forests dominated by Blakely's Red Gum and Yellow Box.	Present	Possible – Surveys required in Spring	Surveys required
Tarengo Leek Orchid <i>Prasophyllum petilum</i>	Grows in grassy woodland with river tussock, Black Gum and <i>Leptospermum</i> sp	Present – Grassy woodland occurs on site	Possible – Surveys required in Spring	Surveys required

