



Flora and Fauna Management Plan

Googong Township IWC Project: Stage B Network

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I.0 Introduction

I.1 Context

This Flora and Fauna Management Plan (FFMP or Plan) forms part of the Construction Environmental Management Plan (CEMP) for the Googong Township IWC Project Stage B Network.

Refer to Section 1 and Section 2 of the CEMP for additional detail on the scope of Stage B Network to which this FFMP applies.

This FFMP has been prepared to address the requirements of the Minister's Conditions of Approval (CoA), the Statement of Commitments (SoC), the safeguards listed in the Googong Township water cycle project Environmental Assessment (EA), submissions report, and all applicable legislation.

I.2 Background

The Googong Township water cycle project EA assessed the impacts of construction and operation of the IWC Project on flora and fauna.

As part of EA development, a detailed assessment was prepared to address the Director-General's Requirements issued by the **former** Department of Planning and Infrastructure (DP&I), **now known as the Department of Planning and Environment (DP&E)**. The flora and fauna assessment was addressed in Section 11 and Appendix F of the EA.

The EA concluded that there were unlikely to be significant flora and fauna impacts associated with the construction and operation of the IWC Project, following the implementation of the proposed mitigation measures identified in the EA.

The Googong Township Project was also referred to the Commonwealth Department of the Environment (DoE) (formerly known as the Department of Sustainability, Environment, Water, Population and Communities [DSEWP&C]) under the *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act) due to potential impacts on matters of national environmental significance, including migratory species, threatened species and communities. The Googong Township IWC Project was declared a controlled action under the EPBC Act, and subsequently approved on 19 May 2011, subject to conditions.

A pre-construction field survey of the Stage B Network area was undertaken by ecological consultants Biosis, in March 2014, to assess and map the vegetation within, and identify the presence of, or habitat flora and fauna species and ecological communities and which has been relied up to prepare this FFMP.

I.3 Environmental Management System overview

The overall Environmental Management System for Stage B Network and approach to managing environmental impacts during construction is described throughout the CEMP.

This FFMP forms part of the environmental management framework for Stage B Network, as described in Section 1.6 of the CEMP. In accordance with CoA C20(e), this Plan has been developed in consultation with the Office of Environment and Heritage (OEH), Queanbeyan City Council (QCC) and the DoE.

2.0 Purpose and objectives

2.1 Purpose

The purpose of this Plan is to describe how Googong Township Proprietary Limited (GTPL) and the contractor will manage and protect flora and fauna during construction of Stage B Network.

This Plan also assists in ensuring that the construction of Stage B Network meets the environmental objectives and targets as defined in Section 3.5 of the CEMP.

2.2 Objectives

The key objective of the FFMP is to ensure that impacts to flora and fauna are minimised. To realise this objective, the following will be undertaken:

- Ensure appropriate controls and procedures are implemented during construction activities to avoid or minimise potential adverse impacts to flora and fauna (refer to Section 5.1).
- Ensure appropriate measures are implemented to address the relevant CoA and SoC, and the safeguards detailed in the EA and submissions report (refer to Sections 3.2 and 3.3).
- Ensure appropriate measures are implemented to comply with all relevant legislation and other requirements as described in Section 3.1 of this Plan.

3.0 Environmental requirements

3.1 Relevant legislation and guidelines

Section 3.1 of the CEMP identifies the legal and other requirements applicable to the IWC Project and the construction of Stage B Network. This section identifies the key legislation and guidelines applicable to managing flora and fauna.

3.1.1 Legislative requirements

3.1.1.1 Environmental Planning and Assessment Act 1979 (EP&A Act)

As outlined in Section 3.1 of the CEMP, the IWC Project has been assessed and approved by the Planning Assessment Commission under delegation from the Minister for Planning and Infrastructure under Part 3A (now repealed) of the EP&A Act.

3.1.1.2 Environmental Protection and Biodiversity Conservation Act 1999 (EPBC Act) – Commonwealth

The Googong Township Project was referred to the DoE under the EPBC Act due to potential impacts on matters of national environmental significance, including migratory species, threatened species and communities. The Googong Township Project was declared a controlled action under the EPBC Act, and subsequently approved on 19 May 2011, subject to conditions.

Conditions include the preparation and implementation of a Pink-tailed Worm-lizard Protection and Management Plan (EPBC1) and a Googong Foreshores Interface Management Strategy (EPBC2). Both have been prepared and approved by the Minister. The Stage B Network construction footprint involves works that potentially trigger the implementation of both these plans. GTPL is responsible for co-ordinating and implementing the actions of the plans. A number of the measures contained within the Stage B Network CEMP and sub-plans are consistent with and help to achieve the objectives of these plans. In particular weed removal, revegetation planting, environmental management checklists, erosion and sedimentation controls and weed hygiene measures.

This FFMP will comply with the conditions of the EPBC Act approval, where relevant. The relevant conditions of approval, and a reference to where the condition is addressed in this Plan or other management documents are included in Table 3.

3.1.1.3 Other legislation

- *National Parks and Wildlife Act 1974.*
- *Threatened Species Conservation Act 1995.*
- *Noxious Weeds Act 1993.*
- *Pesticides Act 1999.*

The relevant provisions of other applicable legislation are further explained in the register of legal and other requirements included in Appendix 13 of the CEMP.

3.1.2 Relevant guidelines

The following guidelines and documents have been reviewed in the preparation of this FFMP:

- *Queanbeyan City Council Development Construction Specification C212 – Clearing and grubbing (QCC, 2011).*

3.2 Minister's Conditions of Approval

The CoA relevant to this Plan are listed in Table 1. A cross reference is also included to indicate where the condition is addressed in this Plan or other management documents.

Table 1 Conditions of Approval relevant to flora and fauna management

CoA No.	Condition requirements	Document reference
B11	The Proponent shall limit the clearing of native vegetation to the minimum extent practicable. Details regarding the procedures for clearing vegetation, minimising the extent of clearing and the extent and location of these reductions shall be included in the Flora and Fauna Management Plan prepared in accordance with condition C20.	Table 5 (FF10) Appendix 2
B12	All hollow bearing trees shall be retained to the greatest extent practicable. Where this is not feasible, trees containing hollows shall be inspected by a suitably qualified ecologist prior to disturbance, and where native fauna are located using the tree hollows, procedures shall be developed and implemented under the guidance of the qualified ecologist to minimise impacts on the native fauna. Details of actions to be taken and measures to monitor their effectiveness shall be included in the Flora and Fauna Management Plan.	Table 5 (FF11, FF12, FF13) Section 7.2 Appendix 2 Appendix 3
B13	Where possible, the removal of trees which form potential habitat for the Speckled Warbler (<i>Chthonicola sagittata</i>) shall occur outside of the August to January period breeding season of the species. If clearing cannot be avoided during this time, the area must be inspected by a qualified ecologist prior to any disturbance to identify potential nesting sites. If a nesting site is observed and it contains young, the area must be retained for at least 3 weeks to allow the young to fledge.	Table 5 (FF13) Appendix 2
B14	The Proponent shall establish and maintain in perpetuity a dedicated area of land on the project site for the conservation of the Pink-tailed Worm Lizard (<i>Aprasia parapulchella</i>) as outlined in the plan prepared in accordance with condition D9 and shown in Appendix 2 (of the Project Approval).	Table 5 (FF2) Pink-tailed Worm-lizard Protection and Management Plan. Note. Construction of Stage B Network takes place outside the conservation area.
C20 (e)	A Flora and Fauna Management Plan to outline measures to protect, and minimise the loss of, terrestrial, riparian and aquatic native vegetation and native fauna habitat as a result of construction of the project. The Plan shall be prepared in consultation with OEH, DSEWPaC and Queanbeyan City Council, and include, but not necessarily be limited to:	This Plan Section 1.3
	(i) procedures for pre-construction surveys to identify key flora and fauna features within and adjacent to the construction area;	Table 5 (FF7, FF9, FF11) Appendix 1
	(ii) procedures to accurately determine the total area, type and condition of vegetation community to be cleared;	Section 4.2 Table 5 (FF7, FF8, FF9, FF10, FF11) Appendix 1
	(iii) plan/s showing terrestrial vegetation communities, important flora and fauna habitat areas, EECs, threatened species (Hoary Sunray <i>Leucochrysum albicans</i> var. <i>tricolor</i> , Speckled Warbler <i>Chthonicola sagittata</i> and Pink-tailed Legless Lizard <i>Aprasia parapulchella</i>), weeds and areas to be cleared. The plans shall also identify vegetation adjoining the site which contains important habitat areas and/or threatened species, populations or ecological communities;	Table 5 (FF8, FF11) Appendix 5
	(iv) methods to avoid and manage potential impacts on flora and fauna species and their habitat which may be directly or indirectly affected by the project, such as location of fencing to exclude access to sensitive areas, procedures for vegetation clearing or soil removal/stockpiling and procedures for re-locating hollows or	Table 5 (FF6, FF8, FF9, FF10, FF11, FF12, FF13, F14, FF15 FF17, FF18, FF19) Appendix 1

CoA No.	Condition requirements	Document reference
	installing nesting boxes and managing weeds;	Appendix 2 Appendix 3 Appendix 4
	(v) measures for conserving and reusing topsoil;	Table 5 (FF15, FF17, FF19) Appendix 4
	(vi) procedures to be implemented for controlling weeds and feral pests;	Table 5 (FF17, FF18, FF19, FF20, FF21, FF22) Appendix 4
	(vii) rehabilitation details and success criteria;	Table 5 (FF16) Appendix 4 Landscape Management Plan
	(viii) a program for reporting on the effectiveness of flora and fauna management measures; and	Section 6.5
	(ix) a procedure to review management methods where they are found to be ineffective.	Section 7.0 Section 8.3, 8.4 and 8.5 of CEMP

3.3 Statement of Commitments

The SoC relevant to this Plan are listed Table 2. A cross reference is also included to indicate where the commitment is addressed in this Plan or other management documents.

Table 2 Statement of Commitments relevant to flora and fauna management

Objective	Ref. No.	Commitment	Timing	Document reference
Protect native flora and fauna	F1	A flora and fauna management plan will be prepared prior to construction as part of the CEMP. All feasible and reasonable measures will be undertaken to minimise the impact of construction on native vegetation and fauna including: <ul style="list-style-type: none"> Minimising the disturbance of native flora and hollow-bearing trees. Implementing weed control measures. Revegetating with endemic species. Minimising soil disturbance. Implementing clearing protocols to protect flora and fauna. 	Prior to and during construction	This Plan Table 5 (FF10, FF11, FF12, FF13, FF14, FF15, FF16, FF17, FF18, FF19) Appendix 2 Appendix 3 Appendix 4
Protect threatened flora and fauna	F2	The Flora and fauna management plan (within the CEMP) will contain specific additional measures for threatened species, including: <ul style="list-style-type: none"> Only approved works will be undertaken within 5m of a threatened species and exclusion fencing will be erected around threatened flora species and threatened fauna habitats and maintained in place until such time as construction works are completed, unless otherwise approved by OEH. 	Prior to and during construction	Note pre-clearing survey did not reveal presence of any threatened species. No specific mitigation measures are required. Table 5 (FF10, FF11, FF13) and Appendix 2 will help to ensure protection of native fauna.

Objective	Ref. No.	Commitment	Timing	Document reference
	F3	Site-specific management measures will be implemented for the protection of the Pink-Tailed Worm Lizard near the site proposed for SPS2 and at Hill 800, and for the Hoary Sunray near the BWPS site, including exclusion zones, signage and pre-construction surveys. These works will be undertaken under the supervision of an appropriately qualified ecologist		Table 5 (FF2, FF3, FF4, FF5) Pink-tailed Worm-lizard Protection and Management Plan. Note. Construction of Stage B Network takes place outside the conservation area.
Avoid impacts on and monitor changes to aquatic ecology	A1	Aquatic ecology impacts are considered under WQ4. A water quality and aquatic ecology monitoring program will be developed to monitor construction and operation impacts of the Project on waterways (refer to WQ4 for further details). The monitoring program will include siting of the aquatic ecology monitoring location to ensure viable comparison with historical and other recent river ecology data. Riparian vegetation, weeds and invasive scrub will be managed within the Googong township site. This will include surveying, mapping and managing invasive species.	Prior to and during construction, and during operation	Table 5 (FF17, FF18, FF19) Water Management Plan
Monitor impacts on waterways	WQ4	A monitoring program to assess the potential impacts of the Project on the Queanbeyan River (including water quality, flow, fish migration, macrophytes and macro invertebrate communities) will be undertaken. <ul style="list-style-type: none"> ▪ Details of the monitoring program will be determined in consultation with relevant government authorities/stakeholders (including the OEH, DPI and, potentially, ACTEW Corporation). Such consultation will ensure the sharing of available data for the Queanbeyan River for comparative and impact assessment purposes. ▪ A new monitoring site within the Queanbeyan River is proposed to measure water quality and aquatic ecology impacts over the medium term. This site will be located near the confluence of Googong Creek and Queanbeyan River (and will be sited to enable comparison with data collected from upstream and downstream sites). ▪ Monitoring will commence approximately 12 months prior to commissioning the water recycling plant. 	Prior to, during construction and during operation	Water Management Plan

3.4 EPBC Act Conditions of Approval

The EPBC Act conditions of approval relevant to this Plan are listed in Table 3. A cross reference is also included to indicate where the condition is addressed in this Plan or other management documents.

Table 3 EPBC Conditions of Approval relevant to flora and fauna management

CoA No.	Condition requirements	Document reference
EPBC 1	<p>The person taking the action must prepare and submit a Pink-tailed Worm-lizard Protection and Management Plan for the Minister's approval for the protection of Pink-tailed Worm-lizard (<i>Apraisa parapulchella</i>) The Plan must include:</p> <ol style="list-style-type: none"> Details of the establishment of the Pink-tailed Worm-Lizard Conservation area; Management measures to mitigate construction impacts; Measures for the management of the Pink-tailed Worm-lizard Conservation Area for before and after the conservation area's dedication to Queanbeyan City Council or other appropriate authority; Maps showing fences and other infrastructure; Details of the legal mechanisms to protect the conservation area in perpetuity; and Provision for public comment on the draft plan. <p>The plan must be submitted to the Minister for written approval within 6 months of the date of this approval.</p> <p>The person taking the action must not commence construction within 50 metres of Pink-tailed Worm-lizard habitat until the Minister has approved the Plan.</p> <p>The approved Pink-tailed Worm-lizard Protection and Management Plan must be implemented.</p>	<p>Pink-tailed Worm-lizard Protection and Management Plan</p> <p>Table 5 (FF2, FF3, FF4, FF5)</p> <p>Note. Construction of Stage B Network takes place outside the conservation area.</p>
EPBC 2	<p>To prevent impacts on listed threatened species and ecological communities, and the environment on Commonwealth land, the person taking the action must prepare and submit a Googong Foreshores Interface Management Strategy for the Minister's approval. The strategy must include measures to:</p> <ol style="list-style-type: none"> Induct construction workers and contractors about requirements to protect threatened species and the environment on Commonwealth land; Provide indicative environmental management checklists to assist with monitoring the implementation of environmental management obligations during construction works; Establish and main fences; Identify and implement erosion and sedimentation control measures; Identify and implement appropriate weed hygiene measures; Protect and maintain the Googong Foreshores buffer area; Provide details of financial contributions for the publishing, monitoring and review of the Googong Foreshores Plan of Management; Provide details of financial contributions for capital and recurrent costs associated with the implementation of the Googong Foreshores Plan of Management; Manage community and water supply impacts, including measures from the Queanbeyan Local Environment Plan (Googong) 2009; Provide details of an environmental education program, which must include information about the protection of water quality in the Googong reservoir; Indicate timing and frequency of monitoring to determine impacts and effectiveness of mitigation measures; Provide performance indicators, specifying outcomes to be achieved and reports of compliance at key milestones; Undertake corrective actions if management measures are not achieved; Clearly state the person or persons responsible for each management measure; and Provide details of how the area to be managed under the Googong Foreshores Interface Management Strategy will be managed in perpetuity. <p>The area to be managed under the Googong Foreshores Interface Management Strategy is defined by Figure 1 at Appendix 1. This map must be included in the Googong Foreshores Interface Management Strategy.</p>	<p>Googong Foreshores Interface Management Strategy</p> <p>Table 5 (FF1)</p>

CoA No.	Condition requirements	Document reference
	The person taking the action must not commence construction of neighbourhoods 1B, 4 or 5, as defined by Figure 8 at Appendix 2, until the Minister has approved the Strategy. The approved Googong Foreshores Interface Management Strategy must be implemented.	

4.0 Environmental aspects and impacts

The following sections summarise existing vegetation communities, threatened flora, fauna and habitat at the Stage B Network site and the potential for ecological impacts are reviewed. The key reference documents are Section 11 and Appendix F of the EA and the pre-construction survey undertaken by Biosis in March 2014. As part of this pre-clearing survey, a study area of 6.58 hectares was inspected. The study area incorporated the Stage B Network site and a buffer of land that could potentially be disturbed, depending on construction methodology. The study area is marked as the construction footprint in the environmental constraints map included at Appendix 5 of this plan.

4.1 Environmental aspects

4.1.1 Endangered ecological communities

No endangered ecological communities (EECs) were identified during the survey within the study area.

4.1.2 Vegetation and flora species

The study area is of low ecological value as the area has been grazed at a moderate or high intensity for many years, resulting in the removal of all but the most resilient native flora. Very few shrubs and no tree saplings have been allowed to regenerate. Only eight remnant trees remain within the study area.

Dominant native species include Redgrass (*Bothriochloa macra*) and Corkscrew Grass (*Austrostipa scabra*). A number of exotic species common to pastoral lands were recorded in high densities, including Phalaris (*Phalaris aquatica*), Sheep Sorrel (*Acetocella vulgaris*), and Clover (*Trifolium sp.*). Several grazing/disturbance-tolerant native forbs (herbaceous flowering plants) were recorded during the field survey, while one native shrub, Sweet Bursaria (*Bursaria spinosa*) was recorded in the south-eastern portion of the study area only. The species list developed during the survey is presented in Table 4.

Table 4 Flora recorded during the field survey (March 2014)

Scientific name	Common Name
Native trees	
<i>Eucalyptus blakelyi</i>	Blakely's Red Gum
<i>Eucalyptus mannifera</i>	Brittle Gum
<i>Eucalyptus polyanthemos</i>	Red Box
Native Shrubs	
<i>Bursaria spinosa</i>	Sweet Bursaria
Native Groundstorey	
<i>Austrostipa bigeniculata</i>	Tall Speargrass
<i>Austrostipa scabra</i>	Corkscrew
<i>Bothriochloa macra</i>	Redgrass
<i>Chloris truncata</i>	Windmill Grass
<i>Cymbonotus lawsonianus</i>	Austral Bear's Ear
<i>Elymus scaber</i>	Wheatgrass
<i>Epilobium hirtigerum</i>	Narrow-leafed Willow Herb
<i>Hypericum graminium</i>	Small St John's Wort
<i>Juncus australis</i>	Leafless Rush
<i>Juncus subsecundus</i>	Finger Rush

Scientific name	Common Name
<i>Oxalis perennans</i>	Grassland Woodsorrel
<i>Panicum effusum</i>	Hairy Panic
<i>Pseudognaphalium luteoalbum</i>	Jersey Cudweed
<i>Rumex brownii</i>	Swamp Dock
<i>Rytidosperma spp.</i>	Wallaby Grasses
<i>Vittadinia muelleri</i>	Narrow-leaf New Holland Daisy
<i>Wahlenbergia spp.</i>	Bluebells
Exotic	
<i>Aira sp.</i>	Airgrass
<i>Acetocella vulgaris</i>	Sheep Sorrel
<i>Bromus sp.</i>	Brome Grass
<i>Carthamus lanatus</i>	Saffron Thistle
<i>Chondrilla juncea</i>	Skeleton Weed
<i>Conyza bonariensis</i>	Flaxleaf Fleabane
<i>Cynodon dactylon</i>	Couch
<i>Eragrostis curvula</i>	African Lovegrass
<i>Hypericum perforatum</i>	St John's Wort
<i>Hypochaeris radicata</i>	Cat's Ear
<i>Malva sp.</i>	Marshmallow
<i>Nassella trichotoma</i>	Serrated Tussock
<i>Paspalum dilatatum</i>	Paspalum
<i>Phalaris aquatica</i>	Phalaris
<i>Plantago lanceolata</i>	Ribwort Plantain
<i>Rosa rubiginosa</i>	Sweet Briar/Briar Rose
<i>Rubus fruticosus</i>	Blackberry
<i>Trifolium spp.</i>	Clovers
<i>Verbascum thapsus</i>	Great Mullein
<i>Vulpia spp.</i>	Fescue

4.1.3 Threatened flora

All threatened flora species in the region are considered to have a 'negligible' likelihood of occurring within the study area.

4.1.4 Fauna habitats

There are eight remnant trees situated within the study area, including one dead tree (stag). Each of these was examined for hollows, nests and other notable habitat values. Seven of the trees contain hollows, with none showing any clear indications of recent/current use.

Some small areas of rock outcrop/scatter are present within the study area.

Extensive evidence of pig rooting (soil disturbance to dig for roots) by Feral Pigs (*Sus scrofa*) was observed during the field survey. This was restricted to the channel/drainage lines that cross the study area.

European Rabbit (*Oryctolagus cuniculus*) droppings were observed during field survey, however no warrens were recorded within the study area.

4.1.5 Threatened fauna

4.1.5.1 Birds

Threatened birds such as the Scarlet Robin (*Petroica boodang*), a species known to occur in the locality, may occasionally move through the area. However, the study area contains no midstorey vegetation and is therefore of very low value to woodland bird species. The area is also unlikely to be of value to Little Eagles (*Hieraaetus morphnoides*).

4.1.5.2 Mammals

No threatened mammals are likely to utilise the study area.

4.1.5.3 Reptiles

Confirmed habitat for threatened Pink-tailed Worm-lizard (*Aprasia parapulchella*) (PTWL) has been mapped within the study area, 50 metres east of the 'year 0 trigger line'. The extent of confirmed habitat and location of the trigger line are shown in the environmental constraints map included at Appendix 5. Part of the works for Stage B Network will be undertaken across the trigger line and within the confirmed PTWL habitat.

Although some rock outcrops are present across the remainder of the study area, the rocks are insufficient in number and are too deeply embedded to be potential habitat for the PTWL. In addition, in the vicinity of most of these small outcrops, the ground storey vegetation is predominantly exotic. In summary, the potential risk to the Pink-tailed Worm-lizard is low. Protection of the Pink-tailed Worm-lizard is being addressed through the implementation of the Pink-tailed Worm-lizard Protection and Management Plan that has been approved by the DoE and DP&E.

No other threatened reptile species are likely to occur within the study area.

4.1.6 Aquatic habitat

No aquatic habitat falls within the study area.

4.1.7 Weeds

The study area contains several exotic species, five of which are noxious weeds. The location, extent and severity of noxious weeds in the study area is described in Table 7 of Appendix 4.

Based upon the classification described in the Weed and Pest Management Strategy (refer Appendix 4), the study area has been classed as 'moderate/scattered weed infestation'.

In addition to the weeds of concern, several exotic species common to rural areas in the ACT region were recorded (refer Appendix 4). These species are not considered to be of concern and their prominence within the study area is likely to be a result of the intensive grazing history of the study area.

4.2 Flora and fauna impacts

4.2.1 Threatened species

The study area is of low ecological value and it is unlikely that any threatened fauna species would utilise the study area, aside from the Pink-tailed Worm-lizard. In addition, given the absence of EECs and threatened fauna, there is unlikely to be any significant impacts to threatened flora and fauna protected by environment legislation.

The amended temporary access track route is likely to impact upon identified Pink-tailed Worm-lizard habitat that has been approved for clearance. So in Mid-October, Biosis the Project Ecologist have undertaken the rock removal and translocation works (including translocation of any Pink-tailed Worm-lizard found) and relocated to be outside the construction footprint.

See environmental constraints map included at Appendix 5 for relocation details.

4.2.2 Clearing of native vegetation and fauna habitat

The construction of Stage B Network would result in the removal of up to seven hollow bearing trees and one other tree. The trees are not threatened species but do provide potential habitat for native fauna. There are two main risks to native fauna as a result of tree removal:

- Risk of immediate injury/death during tree removal process.
- Removal of habitat – hollow bearing trees provide habitat for animals such as bats, gliders, possums and parrots. The hollow bearing trees are considered to be of low value, as they don't appear to be currently in use or been used recently by native fauna.

The amended temporary access track route will not result in the removal of any additional trees.

Measures to avoid impacts to native fauna are addressed in Table 5, Appendix 2 (Vegetation Clearance Procedure) and Appendix 3 (Hollow Relocation and Nest Box Strategy).

4.2.3 Spread of weeds

Noxious and other weeds are present in the study area and may be spread through the use of equipment, reuse of weed-infested topsoil or other construction activities.

Measures to avoid weed impacts are addressed in Appendix 4 (Weed and Pest Management Strategy)

4.2.4 Disturbance of soils, consequential erosion and sedimentation

Impacts and mitigation measures to address risks of erosion and sedimentation are addressed in the Soil and Water Management Plan (Appendix 1 to the CEMP).

5.0 Environmental control measures

5.1 Flora and fauna mitigation and management measures

A range of environmental requirements and control measures are identified in the various environmental documents, including the CoA, SoC and the EA. Specific measures and requirements to address impacts on flora and fauna are outlined in Table 5. Responsibilities have been assigned to roles that GTPL considers will be required by the contractor. However the contractor will be responsible for confirming roles prior to the commencement of construction.

Table 5 Mitigation measures

ID	Measure	When to implement	Reference	Responsibility
Overarching management measures				
FF1	All project personnel will be informed of the location and importance of the Googong Foreshores through a toolbox talk, in accordance with the conditions of the Googong Foreshores Interface Management Strategy. The Googong Foreshores boundary is shown in the Environmental Constraints Map included at Appendix 9 to the CEMP. Construction activities will not extend beyond the Googong Foreshores boundary.	Prior to construction; construction	EPBC CoA 2	Environment Manager Project Engineer
FF2	All project personnel will be informed of the location and importance of the Pink-tailed Worm-lizard (PTWL) Conservation Area through a toolbox talk. The PTWL Conservation Area boundary is shown in the Environmental Constraints Map included at Appendix 9 to the CEMP.	Prior to construction; construction	EPBC CoA 1 SoC F3	Environment Manager Project Engineer
FF3	Rock removal and translocation works (including translocation of any PTWL found) will occur within PTWL habitat approved for clearance in accordance with Section 2.2.4 of the PTWL Protection and Management Plan. Note rock removal and translocation works were completed in November 2014.	Prior to construction	EPBC CoA 1 SoC F3	GTPL Assistant Project Director
FF4	A construction exclusion fence will be established in accordance with Section 2.2.1 of the PTWL Protection and Management Plan. Note construction exclusion fence has been installed by Huon (subdivision contractor).	Prior to construction	EPBC CoA 1 SoC F3	GTPL Assistant Project Director
FF5	If a PTWL is encountered during construction works, PTWL encounter protocols will be followed in accordance with Section 2.2.4 of the PTWL Protection and Management Plan.	Construction	EPBC CoA 1 SoC F3	Environment Manager Project Engineer
FF6	All project personnel will be provided training on the requirements of this Plan through site inductions, toolbox talks or specific training.	Prior to construction; construction	CoA A8 CoA C20(e)(iv)	Environment Manager Project Engineer
FF7	A Project Ecologist will be appointed prior to the commencement of construction to provide technical advice and assist the contractor in implementing the management measures (e.g. installation of nest boxes).	Prior to construction	CoA C20(e)(i) CoA C20(e)(ii)	Construction Manager Project Engineer
FF8	The Flora and Fauna Constraints map at Appendix 5 will be reviewed and updated by the	Prior to construction;	CoA C20(e)(ii)	Environment Manager

ID	Measure	When to implement	Reference	Responsibility
	contractor as required.	construction	CoA C20(e)(iii) CoA C20(e)(iv) SoC F2	Project Engineer
Vegetation clearing, protection and management				
FF9	A pre-construction clearing survey will be carried out by a qualified ecologist prior to construction in accordance with the Pre-construction Clearing Survey Procedure (Appendix 1). Note the pre-clearing survey was completed in March 2014.	Prior to construction; construction	CoA C20(e)(i) CoA C20(e)(ii) CoA C20(e)(iv)	GTPL Assistant Project Director
FF10	The limits of clearing will generally be limited to the construction footprint boundary shown in the Flora and Fauna Constraints Map (Appendix 5) and will be clearly marked on construction work plans and on site prior to clearing.	Construction	CoA B11 CoAC20(e)(ii) CoA C20(e)(iv) SoC F1 SoC F2	Environment Manager Project Engineer
FF11	Hollow bearing trees will be identified on the Flora and Fauna Constraints Map (Appendix 5) and retained where possible through the use of exclusion fencing or similar.	Prior to construction; construction	CoA B12 CoA C20(e)(i) CoA C20(e)(ii) CoA C20(e)(iii) CoA C20(e)(iv) SoC F1 SoC F2	Environment Manager Project Engineer
FF12	Nest boxes will be installed at the Googong Foreshores to offset the loss of hollow bearing trees where feasible and reasonable, as per the Hollow Relocation and Nest Box Strategy (Appendix 3). Nest box installation will be undertaken so as to limit damage to existing vegetation <u>and</u> prior to tree clearance.	Prior to construction	CoA B12 CoA C20(e)(iv) SoC F1	Environment Manager Project Engineer
FF13	The Project Ecologist will undertake searches for native fauna for all hollow-bearing trees immediately prior to removal and will relocate any fauna. Refer to the Vegetation Clearance Procedure (Appendix 2) and Hollow Relocation and Nest Box Strategy (Appendix 3).	Prior to construction; construction	CoA B12 CoA B13 CoA C20(e)(iv) SoC F1 SoC F2	Environment Manager Project Engineer
FF14	Erosion and sediment controls will be installed prior to and during clearing, in order to protect adjacent vegetation and watercourses. Refer to Soil and Water Management Plan (Appendix 1	Prior to construction; construction	CoA C20(e)(iv) SoC F1	Environment Manager Project Engineer

ID	Measure	When to implement	Reference	Responsibility
	of CEMP).			
FF15	Topsoil will be stripped and stockpiled for reuse. Topsoil and other soil stockpiles will not be located outside the construction footprint shown in the in the Flora and Fauna Constraints Map (Appendix 5).	Construction	CoA C20(e)(iv) CoA C20(e)(v) SoC F1	Environment Manager Project Engineer
Revegetation				
FF16	Disturbed areas will be rehabilitated to a condition consistent with the pre-construction state, in accordance with the Landscape Management Plan.	Construction	CoA C20(e)(vii) SoC F1	Environment Manager Project Engineer
FF17	The top 50 – 100 mm of topsoil will be stripped, scalped for weeds and stockpiled separately. Weed infested topsoil will be reused as fill where possible, and will not be reused for landscaping.	Construction	CoA C20(e)(iv) CoA C20(e)(v) CoA C20(e)(vi) SoC A1 SoC F1	Construction Manager Project Engineer
Weed and pest management				
FF18	Weed management measures, such as weed spraying will be implemented in accordance with the Weed and Pest Management Strategy (Appendix 4).	Prior to construction; construction	CoA C20(e)(iv) CoA C20(e)(vi) SoC F1 SoC A1	Environment Manager Project Engineer
FF19	<ul style="list-style-type: none"> ▪ Any topsoil that is imported from offsite for use in landscaping will be weed free. ▪ Topsoil will be stripped from areas of 'high weed infestation' and buried as fill or disposed of offsite. ▪ Topsoil from moderate and low weed infestation categories will be stripped and stockpiled separately. Topsoil will only be reused in an area of the same weed category. 	Construction	CoA C20(e)(iv) CoA C20(e)(v) CoA C20(e)(vi) SoC A1 SoC F1	Construction Manager Project Engineer
FF20	Pest management measures, such as landscape control will be implemented in accordance with the Weed and Pest Management Strategy (Appendix 4).	Prior to construction; construction	CoA C20(e)(vi)	Environment Manager Project Engineer
FF21	No domestic pets will be brought on site.	Construction	CoA C20(e)(vi)	Construction Manager Project Engineer
FF22	Vegetation will not be left in piles to create potential habitat for rabbits and other vermin.	Construction	CoA C20(e)(vi)	Construction Manager Project Engineer

6.0 Compliance management

6.1 Roles and responsibilities

The project team's roles and responsibilities are outlined in Section 4.1 of the CEMP. Specific responsibilities for the implementation of environmental controls are detailed in Section 5.0 of this Plan.

6.2 Training

All personnel working on site will undergo site induction training relating to flora and fauna issues. The induction training will address elements related to flora and fauna management including:

- The objectives and requirements of this Plan.
- Relevant legislation.
- Pre-clearing and clearing protocols.
- Environmental exclusion fencing and 'no-go zones'.
- General flora and fauna management measures.
- Weed control measures.

Targeted training for personnel directly involved in vegetation clearing would be provided as required. Training would be developed and delivered through environmental work method statements and toolbox talks.

Further details regarding induction and training are outlined in Section 5 of the CEMP.

6.3 Inspections

Inspection of actual or potential impacts to flora and fauna will occur as required for the duration of construction.

The Environment Manager will undertake weekly environmental inspections and will evaluate flora and fauna management and mitigation measures. This will include ensuring that hollow bearing trees have been appropriately removed and there are no additional threats to threatened species, endangered ecological communities or habitats in addition to that already permitted. It will also include inspection of retained vegetation and any environmental exclusion fencing. These inspections will be documented on the weekly checklist.

The Environmental Representative will inspect the site regularly to inspect flora and fauna management controls.

Requirements and responsibilities in relation to inspections are documented in Section 8.1 of the CEMP.

6.4 Auditing

Audits (both internal and external) will be undertaken to assess the effectiveness of environmental controls, compliance with this Plan, CoA, SoC and other relevant approvals, licenses and guidelines.

Audit requirements are detailed in Section 8.4 of the CEMP.

6.5 Reporting

Results and outcomes of inspections, monitoring and auditing will be reported internally on a monthly basis. Six-monthly construction compliance reports will be prepared to report on compliance with the IWC Project Approval. Reporting requirements and responsibilities are documented in Section 8.5 of the CEMP.

7.0 Review and improvement

7.1 Non-conformity, corrective and preventative actions

A non-conformance is an action or omission that does not conform with the requirements of this Plan or any legal and other requirements. Any member of the project team or the Environmental Representative can identify a non-conformance or opportunity for improvement. Section 8.3 of the CEMP identifies the process for identifying, reporting, recording and reviewing non-conformances. This will ensure continual improvement.

7.2 Management plan update and amendment

The processes described in Section 7 and Section 8 of the CEMP (relating to incidents, inspections, monitoring and auditing) may result in the need to update or revise this Plan. This will occur as needed.

Appendix I

Pre-construction Clearing Survey Procedure

Distribution

There are no restrictions on the distribution or circulation of this procedure within the Googong IWC Project Stage B Network.

Purpose

This procedure details the requirements for conducting a flora and fauna survey on site prior to the commencement of construction.

The procedure will assist to identify any additional mitigation measures required to manage impacts on flora and fauna.

Induction/training

Where required, project personnel will be made aware of this procedure through toolbox talks.

Scope

This procedure is applicable to all activities conducted by GTPL or the contractor/sub-contractors that have the potential to impact on vegetation or fauna habitat. This procedure includes the following key elements:

- Confirm location of biodiversity features.
- Identify habitat trees.
- Locate suitable habitat for fauna that may require relocation.
- Update management measures.

Procedure

Identify biodiversity features

Review the environmental assessment and submissions report and any other ecological investigations carried out on site to identify the known and potential locations of threatened flora (e.g. Hoary Sunray (*Leucochrysum albicans* var. *tricolor*)), threatened fauna (e.g. Speckled Warbler (*Chthonicola sagittate*)) and endangered ecological communities (e.g. White Box-Yellow Box-Blakely's Red Gum Woodland and Derived Native Grasslands).

Conduct pre-clearing survey

Prior to the commencement of clearing, the ecologist is to conduct an on site survey to check for the presence of threatened flora and fauna species identified in the assessment as likely to occur.

Record the location of hollow bearing trees, threatened flora and trees containing threatened fauna, including (where relevant):

- GPS location.
- Species.
- Type of habitat.
- Size of hollow.

- Type of hollow.

Locate suitable habitat for fauna relocation

Identify (including GPS location) nearby habitat that would be suitable for the release of fauna that may require relocation.

Update management measures

- GTPL or the contractor will incorporate the results of the pre-construction clearing survey into the CEMP, Flora and Fauna Management Plan and Flora and Fauna Constraints Map as required. This may include:
 - » The location of threatened flora and fauna identified.
 - » The location of nearby habitat that would be suitable for the release of fauna.
 - » Any additional biodiversity management measures, e.g. an update to identified 'no-go zones' or weeds of concern.

Appendix 2

Vegetation Clearance Procedure

Distribution

There are no restrictions on the distribution or circulation of this procedure within the Googong IWC Project Stage B Network.

Purpose

This procedure details the requirements for clearing and grubbing of vegetation on site. It will be used to identify the limits to clearing.

This procedure relates to the measures to be put in place prior to, during and following clearing of vegetation.

Induction/training

Where required, project personnel will be made aware of this procedure through toolbox talks or targeted training.

Scope

This procedure is applicable to all activities conducted by the contractor or sub-contractors that have the potential to impact on vegetation or fauna habitat. This procedure includes the following key elements:

- Inspect vegetation prior to commencement of clearing.
- Implement environmental controls.
- Remove vegetation.
- Inspect site after felling.
- Manage cleared vegetation.

Procedure

Mark out clearing limits

- In consultation with the Environment Manager, identify the limits of clearing. The limits of clearing will generally be limited to the construction footprint shown in the Flora and Fauna Constraints Map in Appendix 5.
- Install fencing or flagging to identify the clearing limits.

Pre-clearing activities

- Within the clearing limits, mark all habitat trees (refer Flora and Fauna Constraints Map in Appendix 5). A habitat tree includes hollow bearing trees and any trees that contain nests or cavities that may act as a hollow.
- Should any threatened flora or fauna species be unexpectedly encountered, the Environment Manager and Project Ecologist will determine the significance, assess impacts and identify management measures, approvals/licences or permits required, in consultation with the Office of Environment and Heritage (OEH), Department of Primary Industries – Fisheries Conservation and Aquaculture and Department of Environment (DoE) as appropriate.
- If grubbing is to take place, erosion and sediment controls are to be in place prior to grubbing.

Obtain approval to clear

- The Environment Manager should issue the approval to clear, indicating that clearing limits and environmental controls are adequate.

Non-woody vegetation

- Where the Project Ecologist has not identified the presence of habitat features, non-woody vegetation (grasses and groundcover species) can be removed.
- Grasses and groundcover species should be incorporated into the stripping of topsoil to retain any organic material and stockpiled according to the Soil and Water Management Plan (CEMP Appendix 1).

Tree clearing process

- The Project Ecologist is to be on site for felling of all habitat trees.
- Fell habitat trees carefully, allowing trees to be lowered to the ground.
- The Project Ecologist is to inspect the felled habitat trees for fauna. Fauna identified should be captured, inspected for injury and relocated to suitable habitat (as identified by the Project Ecologist).

Management of cleared vegetation

- Mulch remaining native vegetation and stockpile for reuse in rehabilitation works and erosion control.

Reporting

- The Environment Manager should record the outcomes of the clearing process, including:
 - » Clearing dates, areas cleared, surveyed limits to clearing etc.
 - » Confirm details of habitat trees, the number of trees, nests etc.
 - » Fauna species present, captured and located.
 - » Fauna injured or killed.
 - » Discussion on the effectiveness of methods.
 - » Recommendations, if any, to review and improve the vegetation clearing procedure.

Appendix 3

Hollow Relocation and Nest Box Strategy

Distribution

There are no restrictions on the distribution or circulation of this procedure within the Googong IWC Project Stage B Network.

Purpose

This procedure details the requirements to mitigate the impacts of vegetation clearance on hollow-dependent fauna. It outlines the procedures for relocating hollows and/or installing nest boxes.

Induction/training

All project personnel will be provided with a general site induction including an outline of their responsibilities relating to reducing impacts on flora and fauna. Personnel involved in vegetation clearance and nest box installation will be inducted into this procedure. If required, additional training will be provided through toolbox talks.

Scope

This procedure is applicable to all activities conducted by the contractor or sub-contractors that are involved in the removal of hollow bearing trees.

Hollow bearing trees

Seven hollow bearing trees supporting 20 hollows were recorded within the study area. For each hollow bearing tree the following data were collected:

- Location of tree using GPS (accurate +/- three metres).
- Species of tree (and whether living or dead).
- Estimation of hollow size based upon volume and entrance size (small, medium or large).
- Approximate height of tree (metres).
- Approximate tree DBH (diameter at breast height); and
- Additional information including potential native fauna occupant type or likely current occupancy (i.e. parrot, glider, possum, bat etc.).

Details on the hollow bearing trees is provided in Table 6. The locations of hollowing bearing trees is provided in Appendix 5 (Flora and Fauna Constraints Maps).

Table 6 Hollow data set

Tree ID	Tree Species	Hollow type, size and characteristics
T1	Red Box (<i>Eucalyptus polyanthemus</i>)	1 medium (parrots/possums/bats)
T2	Red Box (<i>Eucalyptus polyanthemus</i>)	1 medium (parrots/possums/bats) 2 small (possums/gliderns/small birds/bats)
T3	Blakely's Red Gum (<i>Eucalyptus blakelyi</i>)	1 large (large birds/possums/bats) 2 medium (parrots/possums/bats)

Tree ID	Tree Species	Hollow type, size and characteristics
T4	Stag (dead)	1 large (large birds/possums/bats) 3 small (possums/gliders/small birds/bats)
T5	Brittle Gum (<i>Eucalyptus mannifera</i>)	1 medium (parrots/possums/bats) 2 small (possums/gliders/small birds/bats)
T6	Red Box (<i>Eucalyptus polyanthemos</i>)	1 medium (parrots/possums/bats) 1 small (possums/gliders/small birds/bats)
T7	Brittle Gum (<i>Eucalyptus mannifera</i>)	2 medium (parrots/possums/bats) 2 small (possums/gliders/small birds/bats)

Nest boxes

- While the relocation of hollows is preferred, it is difficult and not feasible or likely to be worthwhile for this stage of works. As such, nest box installation is recommended for all hollows that will be lost.
- A total of 40 nest boxes will be required to offset the loss of the 20 hollows in the seven trees if all are to be removed for construction activities associated with Stage B Network. At the time of installation the Project Ecologist will be able to provide advice on the final number and siting in accordance with the Procedure below.
- A range of boxes will be installed including a mixture of insectivorous bat roosts, small glider boxes, possum boxes and medium nest boxes suitable for parrots.

Procedure

Identity host trees and seek landowner permission to install nest boxes prior to vegetation clearing

- Potential host trees should be chosen from those within the Pink-tailed Worm-lizard Conservation Area, Googong Foreshores or the Googong Foreshores/Googong Township Interface Area.
- The availability of these trees will be confirmed through negotiations with the relevant landowners.
- Once permission to install nest boxes is granted, the specific host trees within these patches will be chosen by the Project Ecologist, in consultation with GTPL, the Environment Manager and landowner.
- Order nest boxes.

Install nest boxes prior to vegetation clearing

- All nest boxes will be installed prior to the commencement of vegetation clearance.
- Nest boxes will be mounted between two and eight metres above the ground, depending on target fauna group, subject to advice from the Project Ecologist.
- A maximum of two nest boxes will be placed in each chosen host tree.

Implement the Vegetation Clearing Procedure

The Vegetation Clearing Procedure (Appendix 2) outlines the steps to be taken during vegetation clearing.

Monitoring

- Monitoring will be undertaken in the spring or summer following the clearance of vegetation (i.e. Spring or Summer 2014).
- All nest boxes/relocated hollows will be inspected for fauna occupation.

- Monitoring will be conducted by the Project Ecologist.
- If monitoring of nest boxes determines that pest birds or invertebrates such as Mynas, Starlings or honeybees have taken up residence, pest control may be required.

Appendix 4

Weed and Pest Management Strategy

Distribution

There are no restrictions on the distribution or circulation of this procedure within the Googong IWC Project Stage B Network.

Purpose

This procedure details the requirements for managing weeds and feral pests.

Induction/training

All project personnel will be provided with a general site induction including an outline of their responsibilities relating to weed management. Personnel involved in weed management will be inducted into this procedure. If required, additional training will be provided through toolbox talks.

Scope

This procedure is applicable to all activities conducted by the project contractor or sub-contractors that have the potential to introduce or spread weeds/feral pests.

Weed and pest species present

7.2.1.2 Weed Species

During the pre-clearing survey several exotic species were identified, including five species of noxious weed. The location, extent and severity of the weed infestations are provided in Table 7. The area of the small Blackberry (*Rubus fruticosus*) infestation is shown in the Flora and Fauna Constraints Map (refer Appendix 5).

In addition to the weeds of concern, several exotic species common to rural areas in the ACT region were recorded, including Cat's Ear (*Hypochaeris radicata*), Phalaris (*Phalaris aquatica*), Fescue (*Vulpia spp*) and Ribwort Plantain (*Plantago lanceolata*) and Clover (*Trifolium spp.*). These species are not considered to be of concern and their prominence within the study area is likely a result of the intensive grazing history of the study area.

Table 7 Weed species recorded during the field survey (March 2014)

Species name	Level of concern	Weed of National Significance?	Noxious Weed Category*	Location and extent of infestation
African Lovegrass (<i>Eragrostis curvula</i>)	High	No	4	This species occurs at high density in the far northeast of the study area. Within this area, concentrated in the drainage line, African Lovegrass occurred at a high density. The species was not recorded elsewhere during the survey. As small tussocks may be difficult to identify, the species may be present in low numbers elsewhere.
St John's Wort (<i>Hypericum perforatum</i>)	Low-Moderate	No	3	This species occurred across the study area in low density.
Serrated Tussock (<i>Nasella trichotoma</i>)	Moderate	Yes	4	One tussock was recorded just outside (approximately 10 m east) of the study area (refer Appendix 5).

Species name	Level of concern	Weed of National Significance?	Noxious Weed Category*	Location and extent of infestation
Sweet Briar/Briar Rose (<i>Rosa rubiginosa</i>)	Low	No	4	One large (approx. 2 m tall and 3 m across) Briar Rose bush was recorded within the study area (refer Appendix 5).
Blackberry (<i>Rubus fruticosus</i>)	Moderate	Yes	4	Four occurrences of 1-2 plants were recorded within the study area. All plants were small, being less than 1 m high and less than 1 m in diameter (refer Appendix 5).

* From the NSW Department of Primary Industries website for Queanbeyan LGA.

Weed infestation classification

The Stage B Network site has been classified as comprising:

- Moderate/scattered weed infestation.

This includes areas with a predominantly native groundstorey or a groundstorey dominated by naturalised exotic pasture species of low-moderate concern (such as *Phalaris*) and moderate weed infestation. Weeds present in these areas are mostly common agricultural land weed species although there may be scattered plants or small clumps of Weeds of National Significance, which will require targeted control to prevent them becoming a more significant problem.

Pest fauna

- Extensive evidence of rooting (soil disturbance to dig for roots) by Feral Pigs (*Sus scrofa*) has been identified in the channel/drainage lines that cross the study area.
- European Rabbit (*Oryctolagus cuniculus*) droppings were observed during field survey, however no warrens were recorded within the study area.

Procedure

The following measures will be adopted during all clearing and construction works. Construction personnel will be informed of the importance of these measures during toolbox talks.

These measures are also included in Table 5, where appropriate.

Management measures during construction

- Earth moving vehicles will, as far as possible, be cleaned of dirt before entering the Stage B Network site and when leaving areas of 'high weed infestation'.
- Construction personnel will, as far as possible, clean their boots and clothing of all seed laden material prior to leaving high weed infested areas.
- Any topsoil that is imported from offsite for use in landscaping will be weed free.
- Topsoil will be stripped from areas of 'high weed infestation' and buried as fill or disposed of off site.
- Stripped topsoil will not be utilised outside the construction boundary.
- No domestic pets will be brought on site.

Targeted weed control

- Prior to vegetation clearance, woody weeds will be removed. This will include the physical removal and stump poisoning (i.e. cut-and-daub technique) for Blackberry (refer Appendix 5).
- Targeted weed control includes the spraying/poisoning and/or physical removal of specific weed species within the site. Targeted control is not considered warranted prior to construction provided the construction mitigation measures (above) are implemented.
- Targeted weed control will be carried out for two consecutive years following construction/revegetation/landscaping. Any African Lovegrass, Blackberry or Serrated Tussock that re-establishes will be controlled with targeted spraying and physical removal. Details will be included in the Operation Environmental Management Plan.

Pest control

- To avoid the creation of additional areas of rabbit harbour, cleared vegetation will be mulched for use in erosion and sedimentation control or landscaping.
- Vegetation will not be left in piles to create potential habitat for rabbits and other vermin.
- If monitoring of nest boxes determines that pest birds or invertebrates such as Mynas, Starlings or honeybees have taken up residence, pest control may be required.

Monitoring and rehabilitation

Landscaping and rehabilitation will be carried out as per the Landscape Management Plan.

Where possible the following measures will be implemented:

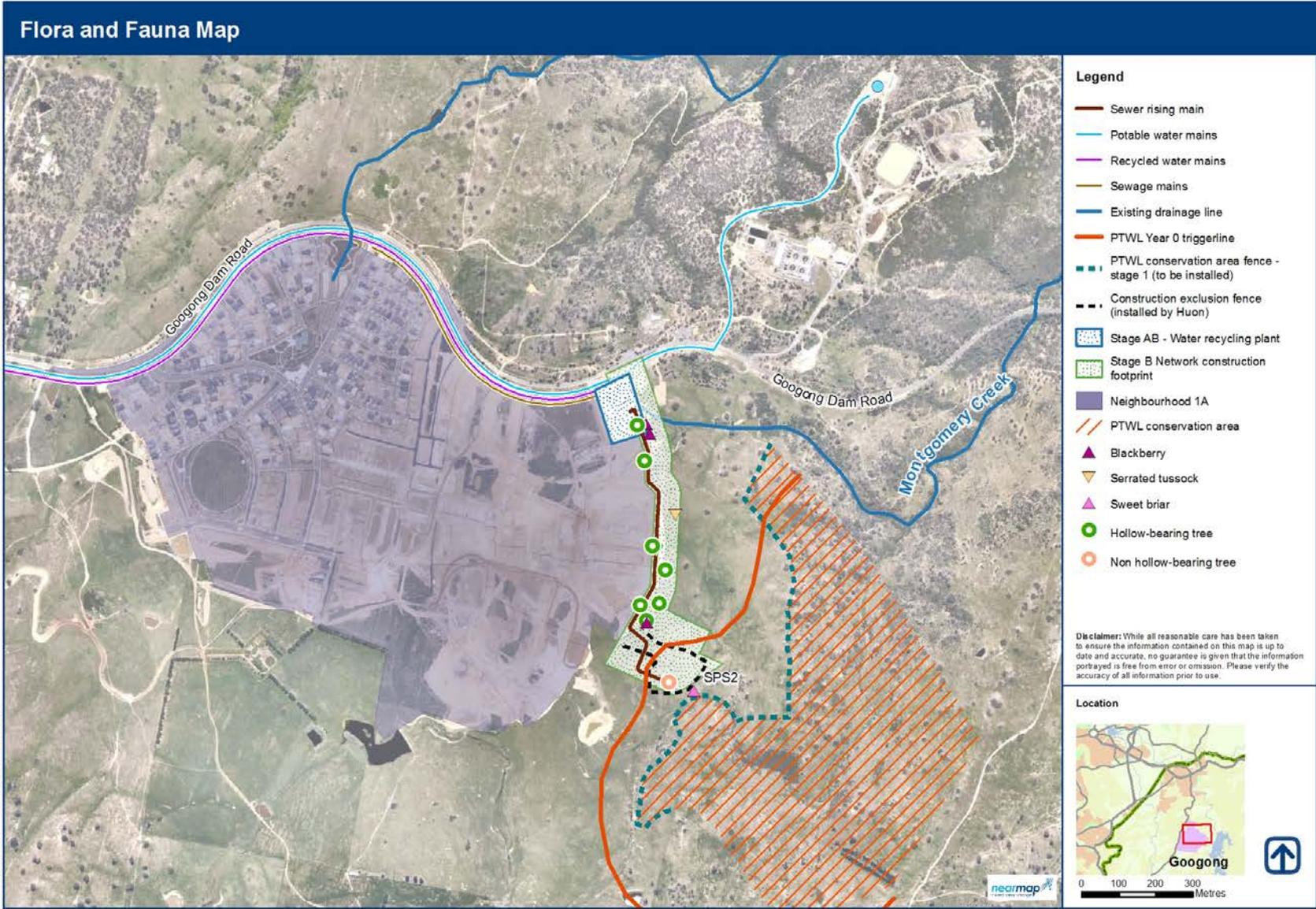
- Seeding of areas for rehabilitation will include only native species of local provenance, as advised by the Project Ecologist.
- Sowing is to occur immediately after the completion of construction.
- The sowing rate will aim to deliver a minimum 200 germinable seeds per square metre. This is to prevent significant weed establishment.

Upon completion of the landscaping works (including areas of native grass seeding) annual monitoring will be undertaken to monitor the success of the revegetation works and to identify areas where additional weed management is required. This will be undertaken with the objective of ensuring that total weed infestation is maintained at a maximum of 5%, with the complete eradication of any Weeds of National Significance or Noxious Weeds.

Species that may require future management include the African Lovegrass, the Blackberry and the Serrated Tussock.

Appendix 5

Flora and Fauna Constraints Map



Source:
 1. GIS datasets as supplied from Biosis and Huon
 2. Aerial imagery from Nearmap (2014)