

Flora and Fauna Management Plan

Camden Gas Project
August 2020





Document Status

Document status	Date	Prepared by	Checked by	Approved by	Comments
Rev 0	Aug 2008	URS Australia Pty Ltd	A. Clifton	D. Kelly	
Rev 1	Nov 2013	URS Australia Pty Ltd	A. Clifton	D. Chia	
Rev 2	April 2015	AGL Upstream Investments Pty Ltd	A. Clifton	K. Franke	
Rev 3	April 2016	AGL Upstream Investments Pty Ltd	A. Clifton	K. Franke	
Rev 4	June 2017	AGL Upstream Investments Pty Ltd	A. Clifton	K. Franke	
Rev 5	June 2018	WSP	A. Clifton	A. Clifton	
Rev 6	June 2019	AGL Upstream Investments Pty Ltd	A. Clifton	S. Bottin	Minor changes only
Rev 7	August 2020	AGL Upstream Investments Pty Ltd	D. Mudd	S. Bottin	Minor changes only



Table of Contents

1. Introduction	1
1.1 Objectives	1
1.2 Targets	1
1.3 Responsibilities	2
2. Requirements	3
2.1 Key licence/development consent requirements	3
2.2 Key legislative and regulatory requirements.....	10
3. Management measures	13
3.1 Potential impacts.....	13
3.2 Management measures	13
4. Monitoring and reporting	17
4.1 Monitoring requirements	17
4.2 Reporting requirements	17
4.3 Records.....	17
5. Administrative	18
5.1 Training and competence	18
5.2 Site specific plans	18
5.3 Attachments	18
5.4 Definitions	18
5.5 HSEMS References.....	18
5.6 References.....	18

Tables

Table 1.1: Roles and responsibilities	2
Table 2.1: Key licence/development consent requirements	3
Table 2.2: Applicable New South Wales and Commonwealth Legislation and Policies	10
Table 3.1: Flora and fauna management measures	14



1. Introduction

An Environmental Management Plan (EMP) has been prepared for the AGL Upstream Investments Pty Ltd (AGL) Camden Gas Project ('the project' or 'CGP'). This Flora and Fauna Management Sub Plan (FFMSP) has been prepared to supplement the EMP.

The EMP includes a description of the CGP and the overall environmental management framework for the CGP. This FFMSP has been developed to specifically address and manage potential flora and fauna issues for all of the operations of the CGP.

The construction phases for the existing development consents have been completed, and the CGP is a mature operating field. Note: All historical references to construction activities have been retained in this plan for completeness and to document compliance with Licence and Development Consent requirements.

1.1 Objectives

As stated in Table 4.1 of the EMP, the objectives of the FFMSP are to:

Flora

- Minimise the loss of remnant native vegetation and promptly carry out rehabilitation activities. To promote, monitor and maintain regrowth of rehabilitated vegetation cover to ensure that it is consistent with the surrounding environment and to the satisfaction of the landowner.

Fauna

- Ensure habitat disturbance is avoided during construction and operational activities and to protect fauna from physical harm.

1.2 Targets

Flora and fauna targets are:

- Zero unauthorised disturbance to native flora.
- Zero complaints from landowners relating to native vegetation disturbance.
- No injured native fauna.



1.3 Responsibilities

The roles and responsibilities for implementing this FFMSMP are summarised in **Table 1.1**. Further responsibilities are assigned in **Table 3.1**.

Table 1.1: Roles and responsibilities

Role	Responsibility
Environment Business Partner	<p>Inform site personnel of the flora and fauna management procedures through the induction program.</p> <p>Inspection and recording of vegetation clearance prior to tree removal.</p> <p>Implementing site specific recommendations such as fencing off sensitive areas of vegetation as required.</p> <p>Monitoring procedures and reporting as required.</p> <p>Monitoring site rehabilitation progress to ensure rehabilitation is complete.</p> <p>Review and update this FFMSMP following modifications to Project Development Approvals or new Development Approvals.</p> <p>Responsible for monitoring procedures and reporting as required by this FFMSMP.</p>
Field and Rehabilitation Operator	<p>Landowner consultation with assistance from the Environment Business Partner in addressing and managing incidents and complaints in relation to flora and fauna.</p>
All leaders	<p>Responsible for ensuring that all works under their control are undertaken in accordance with the FFMSMP. Responsible for ensuring that all employees and contractors under their control are familiar with and adhere to the requirements of the FFMSMP.</p>
All employees / contractors	<p>Following the flora and fauna management requirements identified in induction and this FFMSMP for their work activities so as to meet FFMSMP objectives.</p>
Operations Superintendent	<p>Directly responsible for the implementation of this FFMSMP.</p> <p>Responsible for monitoring procedures and reporting as required by this FFMSMP</p>



2. Requirements

2.1 Key licence/development consent requirements

Table 2.1: Key licence/development consent requirements

Reference	Requirement	Section of this Management Plan
<p>DA 282-6-2003i: 20-28B (Sch 4) Fields – Rosalind Park, Wandinong, EMAI (EM01-20, 38-40), Glenlee (GL05, 07-10, 14-17)</p>	<p>Raptor Breeding Zones at EMAI</p> <p>20. The Applicant shall ensure that the drilling of gas wells and the construction of the gas gathering system and any related activities do not occur within 100 metres of the Raptor Breeding zones.</p> <p>21. The Applicant shall only drill and “fracc” wells EM05, EM07, EM08, EM09, EM11 and EM12 during the months of February and/or March or such other period as agreed by the Director-General.</p> <p>22. The Applicant shall ensure that gas gathering lines connecting well sites listed in Condition 21 shall be constructed outside the breeding seasons of raptor species.</p> <p>Note: The above conditions provide protection for breeding raptor species on the EMAI, in proximity to the stated wells, through ensuring activities that are likely to generate noise are conducted outside of the breeding season of raptor species. All drilling and construction works related to conditions 20-22 have now been completed.</p> <p>Flora and Fauna Protection Measures</p> <p>23. The Applicant shall implement best practice flora and fauna management.</p> <p>24. The Applicant shall take all practicable measures to minimise potential flora and fauna impacts of the proposed development.</p> <p>25. The Applicant shall ensure that trenches constructed during the construction of gas gathering lines are not left open overnight unless otherwise agreed by the Director-General.</p> <p>26. The Applicant shall not remove mature trees as part of this development unless otherwise agreed by the Director-General.</p> <p>27. The Applicant shall employ a suitably qualified ecologist with specific experience in identifying the Cumberland Plain Snail, during the construction period of the development. The ecologist shall monitor and examine areas for the presence of the threatened Cumberland Plain Snail, during the clearing for the proposed development.</p>	<p>Activity 1, 2, 4, 5 & 6, Table 3.1 of Section 3.2</p>

Reference	Requirement	Section of this Management Plan
	<p>28. The Applicant shall prepare a translocation strategy for the threatened Cumberland Plain Snail which will be submitted for the Director-General's approval prior to construction. The Translocation strategy shall be implemented should any individuals or populations of the Cumberland Plain Snail be identified.</p> <p>Threatened Species:</p> <p>28A. The Applicant shall ensure that, during the drilling and construction of EM38 and upgrading of the gas gathering lines, impacts on threatened species are minimised by implementing actions including, but not limited, to the following:</p> <p>(a) The recommendations outlined in Ecosearch Environmental Consultants Pty Ltd's reports titled: "Flora and Fauna Assessment, AGL –Gas Well and Gathering Line Project Modifications" (Sections 6 and 7); and "Flora and Fauna Assessment, Executive Summary for Rosalind Park Gas Field" (page 9); and</p> <p>(b) Marking the boundaries of endangered ecological communities (EECs) and locations of other known threatened species and, where possible, avoiding construction activities within these areas.</p> <p>28B. The Applicant shall ensure that, during the drilling and construction of EM39 and GL17 and upgrading of the gas gathering lines, impacts on threatened species are minimised by implementing actions including, but not limited to the following:</p> <p>(a) the recommendations outlined in the flora and fauna assessment carried out by Biosis Research Pty Ltd in Appendix A of the Statement of Environmental Effects titled "Camden Gas Project Joint Venture – EM39 and GL17 Modification Project"; and</p> <p>(b) marking the boundaries of endangered ecological communities (EECs) and locations of other known threatened species and, where possible, avoiding construction activities within these areas.</p> <p>Note: All drilling and construction works related to conditions 23 to 28B have now been completed.</p>	

Reference	Requirement	Section of this Management Plan
<p>DA 183-8-2004: 16B (Sch 2) Fields – Mount Taurus, Menangle Park (MP13-17, MP30)</p>	<p>16B. The Applicant shall ensure that, during the drilling and construction of MP30 and upgrading of the gas gathering lines, impacts on threatened species are minimised by implementing actions including, but not limited, to the following:</p> <p>(a) The recommendations outlined in Sections 6 and 7 of the Ecosearch Environmental Consultants Pty Ltd report titled “Flora and Fauna Assessment, AGL –Gas Well and Gathering Line Project Modifications”; and</p> <p>(b) Marking the boundaries of endangered ecological communities (EECs) and locations of other known threatened species and, where possible, avoiding construction activities within these areas.</p> <p>Note: All drilling and construction works related to condition 16B have now been completed.</p>	<p>Activity 1, 2 & 3, Table 3.1 of Section 3.2.</p>
<p>DA 183-8-2004: Fields – Mount Taurus, Menangle Park (MP13-17, MP30) SOC 31 to 39 – MP25</p>	<p>Ecology</p> <p>31. The Proponent shall take all practicable measures to minimise potential flora and fauna impacts of the proposed MP25 and associated infrastructure.</p> <p>32. The Proponent shall take all practicable measures to limit the potential spread of noxious weeds in constructing MP25.</p> <p>33. The existing sedimentation fence installed between the proposed twinned GGL between MP16 and MP30 and the Riverflat Eucalypt Forest EEC will be maintained throughout the construction period.</p> <p>34. The Proponent shall ensure that no works are undertaken within the drip line of trees on the western side of the access track near the proposed GGL twinning between MP16 and MP30.</p> <p>35. The Proponent shall ensure that all personnel are informed during their site induction that the fenced-off vegetation to the west of MP25 is an EEC and that it not to be accessed or otherwise impacted during construction activities.</p> <p>36. Five River She-oaks will be planted in tubestock form at the southern portion of the construction pad following the completion of construction of MP25.</p> <p>37. The Proponent shall ensure that the River She-oaks within the site compound of MP25 and the Riverflat Eucalypt Forest EEC are avoided during the proposed activities. This includes erecting para-webbing around the root zone of the one established River She-oak within the site compound prior to construction and between the site compound and the regeneration area to the south, as shown in Figure 5.2 of the RTS.</p>	<p>Activity 1, 2, 3 & 9, Table 3.1 of Section 3.2.</p>

Reference	Requirement	Section of this Management Plan
	<p>38. The Proponent shall ensure that dead wattles removed by the preparation of the site compound and the northern access route are placed in a nearby area so that potential native fauna habitat in the vicinity is not reduced.</p> <p>39. The Proponent shall monitor the health of the relocated four wattles identified in Photo 5.1 of the EA following relocation and during site rehabilitation. Practicable measures to restore the health of the trees will be applied, as necessary.</p> <p>Note: All drilling and construction works related to SOC 31-39 have now been completed.</p>	
<p>DA 9-1-2005: 18, 21-28 (Sch 2) Field – Glenlee incl. EM21/2, GL02, 04, 06, 11-13</p>	<p>18. The Applicant shall ensure that the gas gathering system connecting well site EM 1H shall be constructed outside the breeding seasons of raptor species.</p> <p>21. The Applicant shall ensure that the route of the gas gathering system follows previously or currently disturbed areas wherever possible.</p> <p>22. The Applicant shall ensure that trenches constructed during the construction of gas gathering lines are not left open overnight unless otherwise agreed by the Director-General.</p> <p>22A The Applicant shall ensure that during the upgrading of the gas gathering lines, impacts on threatened species are minimised by implementing actions including, but not limited, to the following:</p> <p>(a) The recommendations outlined in Sections 6 and 7 of the Ecosearch Environmental Consultants Pty Ltd report titled “Flora and Fauna Assessment, AGL –Gas Well and Gathering Line Project Modifications”; and</p> <p>(b) Marking the boundaries of endangered ecological communities (EECs) and locations of other known threatened species and, where possible, avoiding construction activities within these areas.</p> <p>23. The Applicant shall not remove mature trees as part of this development unless otherwise agreed by the Director-General.</p> <p>24. The Applicant shall implement best practice flora and fauna management.</p> <p>25. The Applicant shall take all practicable measures to minimise potential flora and fauna impacts of the proposed development.</p> <p>26. The Applicant shall provide landscaping around the well heads using appropriate species in consultation with the landowner.</p>	<p>Activity 1, 2, 3, 4, 5, 6 & 8, Table 3.1 of Section 3.2.</p>

Reference	Requirement	Section of this Management Plan
	<p>(In condition 26 of schedule 2, delete the words “native species” and insert “species in consultation with the land owner”).</p> <p>27. The Applicant shall employ a suitably qualified ecologist with specific experience in identifying the Cumberland Plain Snail, during the construction period of the development. The ecologist shall monitor and examine areas for the presence of the threatened Cumberland Plain Snail, during the clearing for the development.</p> <p>28. The Applicant shall prepare a translocation strategy for the threatened Cumberland Plain Snail, which will be submitted for the Director-General's approval prior to construction. The translocation strategy shall be implemented should any individuals or populations of the Cumberland Plain Snail be identified.</p> <p>29. The Applicant is required to prepare and implement a Weed Management Plan for the sites for the life of the development. The Applicant shall submit the Weed Management Plan for the Director-General's approval within one month of the date of this consent.</p> <p>Note: All drilling and construction works related to the above conditions have now been completed.</p>	
<p>DA 75-4-2005: 39-41, 42A (Sch 2) Field – Sugarloaf</p>	<p>39. The Applicant shall take all practicable measures to minimise potential flora and fauna impacts of the development.</p> <p>40. The Applicant shall not remove mature trees as part of this development unless otherwise agreed by the Director-General.</p> <p>41. The Applicant shall prepare a translocation strategy for the threatened Cumberland Plain Snail, which will be submitted for the Director-General's approval prior to construction. The translocation strategy shall be implemented should any individuals or populations of the Cumberland Plain Snail be identified.</p> <p>42A. The Applicant shall ensure that, during the drilling and construction of SL08 and SL09, impacts on threatened species are minimised by implementing actions including, but not limited, to the following:</p> <p>(a) The recommendations outlined in Sections 6 and 7 of the Ecosearch Environmental Consultants Pty Ltd report titled “Flora and Fauna Assessment, AGL –Gas Well and Gathering Line Project Modifications”; and</p> <p>(b) Marking the boundaries of endangered ecological communities (EECs) and locations of other known threatened species and, where possible, avoiding construction activities within these areas.</p>	<p>Activity 1, 2, 3, 4, 5 & 6, Table 3.1 of Section 3.2.</p>

Reference	Requirement	Section of this Management Plan
	Note: All drilling and construction works related to conditions 39-42 have now been completed.	
DA 15-1-2002: 60A (Sch 3) Fields – Ray Beddoe Treatment Plant, Joe Stanley, Johndilo, Loganbrae, Lipscombe,	Threatened Species 60A. The Applicant shall ensure that, during the drilling and construction of AP02 and AP03, impacts on threatened species are minimised by implementing actions including, but not limited, to the following: a) The recommendations outlined in Sections 6 and 7 of the Ecosearch Environmental Consultants Pty Ltd report titled “Flora and Fauna Assessment, AGL – Gas Well and Gathering Line Project Modifications”; and b) Marking the boundaries of endangered ecological communities (EECs) and locations of other known threatened species and, where possible, avoiding construction activities within these areas. Note: All drilling and construction works related to the above conditions have now been completed.	Activity 1, 2 & 5 (a-e), Table 3.1 of Section 3.2.
DA 246-8-2002-i: 28A (Sch 3) Fields – Kay Park	Threatened Species 28A The Applicant shall ensure that, during the drilling and construction of KP05 and KP06, impacts on threatened species are minimised by implementing actions including, but not limited, to the following: a) The recommendations outlined in Sections 6 and 7 of the Ecosearch Environmental Consultants Pty Ltd report titled “Flora and Fauna Assessment, AGL – Gas Well and Gathering Line Project Modifications”; and b) Marking the boundaries of endangered ecological communities (EECs) and locations of other known threatened species and, where possible, avoiding construction activities within these activities. Note: All drilling and construction works related to this condition has now been completed.	Activity 1, 2, 5 & 6, Table 3.1 of Section 3.2.
PA 06_0138: 14 (Sch 3) Field – EMAI (EM23-37)	Flora and Fauna 14. The Proponent shall only undertake drilling and fracing of EM23, EM27, EM33 and EM36, and construction of gas gathering lines and access roads located within the raptor zones outside of the recognised breeding season (June to January) of raptor species nesting in the EMAI’s raptor zones.	Activity 1, 2, 3 & 4, Table 3.1 of Section 3.2.
PA 06-0138: SoC (7) PA 06-0137: SoC (7)	7. The Proponent shall provide screening trees around selected well heads, as identified in the EA, using appropriate native species.	

Reference	Requirement	Section of this Management Plan
PA 06-138: SoC (8)	8. The Proponent shall drill and fracc well EM36 outside the recognised breeding season of raptor species nesting in the EMAI's raptor zones.	Activity 9, Table 3.1 of Section 3.2.
PA 06_0291: SoC 9 Fields – Spring Farm, Menangle Park PA 06-138- SoC (9),	Ecology 9. The Proponent shall take all practicable measures to limit the potential spread of noxious weeds at the site.	Activity 3 & 4, Table 3.1 of Section 3.2.
PA 06-138 - SoC (6) PA 06_0291:SoC (7) PA 06-0137: SoC (6)	The Proponent shall take all practicable measures to minimise potential flora and fauna impacts of the proposed Project.	Activity 8, Table 3.1 of Section 3.2.
PA 06_0291: 10 (Sch 3) Fields – Spring Farm, Menangle Park	10 (h) impacts to riparian vegetation and endangered ecological communities are minimised; and 10 (i) impacts to the Cumberland Plain Land Snail (<i>Meridolum corneovirens</i>) are negligible.	Activity 1, Table 3.1 of Section 3.2.
PPL 1, 2: 2c, 9 Fields – EMAI (part), Johndilo, Joe Stanley, Kay Park, Loganbrae, Lipscombe	2 Operations must be carried out in a manner that interferes as little as possible with flora and fauna. 9(a) The lease holder must not cut, destroy, ringbark or remove any timber or other vegetative cover on any land subject of this lease except such as directly obstructs or prevents the carrying on of operations. (b) All trees, shrubs and undergrowth which the leaseholder cuts down, removes or damages for the purpose of the operations must be as directed by and to the satisfaction of the Director-General	Activity 6 & 5, Table 3.1 of Section 3.2.

It is a requirement of all development consents that work be carried out generally in accordance with the relevant Environmental Impact Statement (EIS) or Environmental Assessment (EA), which incorporates specific recommendations or commitments related to flora and fauna.

2.2 Key legislative and regulatory requirements

Table 2.2 lists the applicable New South Wales and Commonwealth legislation and policies for the project.

Table 2.2: Applicable New South Wales and Commonwealth Legislation and Policies

Legislation / Policy	Relevance
NSW Environmental Planning and Assessment Act 1979 (EP&A Act)	<p>The <i>Environmental Planning and Assessment Act 1979</i> (EP&A Act) and Regulation include provisions to ensure that proposals which have the potential to impact the environment are subject to detailed assessment, and provide opportunity for public involvement.</p> <p>Section 5A of the EP&A Act provides specific provisions for determining whether an activity will have a significant impact on threatened species, populations or ecological communities, or their habitats.</p>
NSW Threatened Species Conservation Act 1995	<p>This legislation is now repealed by the <i>Biodiversity Conservation Act 2016</i>. The objectives of the former <i>Threatened Species Conservation Act 1995</i> (TSC Act) was to prevent the extinction and promote the recovery of threatened species, populations, ecological communities and critical habitat in NSW. The schedules of the TSC Act provide lists of species, populations and ecological communities that are endangered, vulnerable or extinct. Actions that may impact on the threatened species, populations and ecological communities must be properly assessed.</p>
Biodiversity Conservation Act 2016	<p>The <i>Biodiversity Conservation Act 2016</i> provides for a strategic approach to conservation of flora and fauna in NSW. The purpose of this Act is to maintain a healthy, productive and resilient environment for the greatest well-being of the community, now and into the future, consistent with the principles of ecologically sustainable development. For actions that may impact threatened species, populations and/or communities or their habitat, an assessment of significance must be completed.</p>
NSW Fisheries Management Act, 1994	<p>The purpose of the <i>Fisheries Management Act, 1994</i> (FM Act) aims 'to conserve, develop and share the fishery resources of the State for the benefit of present and future generations and, in particular to:</p> <ul style="list-style-type: none"> • conserve fish stocks and key fish habitats, and • conserve threatened species, populations and ecological communities of fish and marine vegetation, and • promote ecologically sustainable development, including the conservation of biological diversity, and, consistently with those objects: <ul style="list-style-type: none"> – promote viable commercial fishing and aquaculture industries, and – promote quality recreational fishing opportunities, and – appropriately share fisheries resources between the users of those resources, and – provide social and economic benefits for the wider community of NSW. <p>To meet these objectives, Part 7 of the FM Act outlines legislative provisions to protect fish habitat and Part 7A outlines provisions to conserve threatened species of fish and marine vegetation and their habitat.</p> <p>The Act applies to the Project if any threatened species, populations, or communities listed under the Act are potentially affected by the activity or impacted on or off the work site, as a consequence of the activity.</p>

Legislation / Policy	Relevance
<p>NSW Noxious Weeds Act 1993</p> <p>Note – Weed Management is also addressed in the Rehabilitation and Landscape Management Plan</p>	<ul style="list-style-type: none"> The <i>Noxious Weeds Act 1993</i> was repealed by the <i>Biosecurity Act 2015</i>. The former act was applicable to the notification and classification of noxious weeds. The act was administered by the NSW Department of Primary Industries within the DTIRIS, Local Control Authorities (LCA) were responsible for implementing the act on private land, usually the local council.
<p>Biosecurity Act 2015</p>	<p>The objective of the <i>Biosecurity Act 2015</i> is to provide a framework for the prevention, elimination and minimisation of biosecurity risks, including pest and weed species.</p> <p>The following weed species are known to occur within the site and it's surrounds:</p> <ul style="list-style-type: none"> African Boxthorn (<i>Lycium ferocissimum</i>) Blackberry (<i>Rubus fruticosus</i>) Bridal Creeper (<i>Asparagus asparagoides</i>) Paterson's Curse (<i>Echium</i> sp.) Broad-leaf Privet (<i>Ligustrum lucidum</i>) Narrow-leaf Privet (<i>Ligustrum sinense</i>) Willows (<i>Salix</i> sp.). <p>A number of other priority weeds are listed in the region, as per the NSW WeedWise Register (NSW Department of Primary industries, 2018).</p> <p>In accordance with the <i>Biosecurity Act 2015</i>, there is a duty to prevent, eliminate or minimise any biosecurity risk. Any person who deals with any plant, who knows (or ought to know) of any biosecurity risk, has a duty to ensure the risk is prevented, eliminated or minimised, so far as is reasonably practicable.</p>
<p>NSW Native Vegetation Act 2003</p>	<p>The <i>Native Vegetation Act 2003</i> was repealed by the <i>Biodiversity Conservation Act 2016</i>. The former Act, stated that clearing of native vegetation (outside urban zoning) must be carried out in accordance with a development consent or a property vegetation plan (section 12(1)), unless it is permitted clearing or activities listed as excluded clearing.</p> <p>The Act did not apply in a number of circumstances related to the CGP; including, for example, if the clearing is carried out in accordance with a determination under Part 5 of the EP&A Act, or is carried out on Excluded Land.</p>
<p>Environment Protection and Biodiversity Conservation Act 1999</p>	<p>The <i>Environment Protection and Biodiversity Conservation Act 1999</i> (EPBC Act) sets out the requirements for the approval of the Commonwealth Minister for the Environment, Water, Heritage and the Arts for actions that may have a significant impact on Matters of National Environmental Significance (MNES). MNES include wetlands of national importance, Commonwealth listed threatened species, threatened ecological communities and migratory species; and for coal seam gas and large coal mining development, water resources.</p> <p>The Act applies to the Project if any action that has, will have or is likely to have a significant impact on a MNES or Commonwealth land.</p>

Legislation / Policy	Relevance
<p><i>State Environmental Planning Policy No. 44 (SEPP 44) – Koala Habitat Protection</i></p>	<p>SEPP 44 aims to encourage the proper conservation and management of areas of natural vegetation that provide habitat for koalas to ensure a permanent free-living population over their range and reverse the current trend of koala population decline:</p> <ul style="list-style-type: none"> (a) by requiring the preparation of plans of management before development consent can be granted in relation to areas of core koala habitat, and (b) by encouraging the identification of areas of core koala habitat, and (c) by encouraging the inclusion of areas of core koala habitat in environment protection zones. <p>Any development consent that AGL apply for in Campbelltown or Wollondilly, over an area of more than 1 hectare (including adjoining land in the same ownership) must be assessed for its potential for koala habitat.</p>

3. Management measures

3.1 Potential impacts

The activities with the greatest potential to impact on flora and fauna occur primarily during construction of well drilling compounds, access roads and installation of the gas gathering lines.

Whilst there is also a potential to impact on flora and fauna during operational and rehabilitation activities, the risk is much lower as the area has already been disturbed. See the EMP for further details of these activities.

Where possible, the areas earmarked for construction activities are sited in previously cleared or disturbed areas and are assessed in specific detail based on site surveys completed by qualified ecologists as part of the EA.

Potential flora and fauna impacts can include:

- direct disturbance or removal of native flora, fauna and Endangered Ecological Communities (EEC); and
- disturbances to habitat including clearing of native vegetation, particularly hollow bearing trees, removal of logs and leaf litter and allowing contaminated runoff to enter water bodies.

It is noted that no further development is planned for the CGP, and no further native vegetation clearing is anticipated.

3.2 Management measures

The flora and fauna management strategies in **Table 3.1** are designed to address site specific recommendations from the various Environmental Assessments for the CGP project.

Any potential, or actual impact to native vegetation, is to be managed in accordance with the following biodiversity management hierarchy:

1. **Avoid:** All efforts must be made to prevent or avoid impacts to biodiversity
2. **Minimise:** Any impacts that cannot be avoided must be minimised and reduced wherever possible through change of design and alternative methods for the proposed task or activity
3. **Remedy:** If there are remaining impacts on biodiversity, then all effort is required to repair or restore any adverse effects
4. **Offset:** After these steps, any significant residual effects should then be addressed via a 'biodiversity offset' in order to achieve 'no net loss' of biodiversity.

Impacts must be initially avoided using prevention and mitigation measures to avoid, minimise and remedy any activities before offsetting is considered. If an offset is not possible after the above measures are considered and implemented, some other form of compensation may be needed, and will be decided through consultation between the Environment Business Partner and the Office of Environment and Heritage (OEH) prior to any activities occurring.

Table 3.1 summarises the measures to be implemented to manage potential flora and fauna issues and outlines responsibilities for their implementation.

Table 3.1: Flora and fauna management measures

Activity	Action	Responsibility
1. General	The AGL Employee and Contractor Induction shall inform all site personnel about flora and fauna management measures and the designated work areas and access routes.	Environment Business Partner
	The construction and operations footprint is to be kept to a minimum where possible, and areas of significant flora and fauna, particularly EEC and riparian vegetation, will be avoided where possible through the site design and layout process. Review and use of the most recent Native Vegetation Regulatory Maps (NVR Map), prior to undertaking clearing of native vegetation on rural land.	Environment Business Partner
2. Access	The gas gathering line routes will be selected to use previously or currently disturbed areas of land wherever possible.	Operations Superintendent
3. Construction and maintenance	All construction and maintenance activities shall be restricted to the well compound area or designated gathering line construction corridor and designated access routes. All vehicles shall obey speed limits and remain on designated vehicle tracks and in designated work areas.	Operations Superintendent
	a. The site design and layout process will determine which trees / vegetation to clear to minimise disturbance. b. Temporarily fence off or clearly mark out significant habitat (e.g. mature trees) if present at well surface locations, along access roads and gas gathering lines, so that they are clearly visible as no-go areas to construction staff and vehicles. c. All open trenches shall be checked daily for trapped animals, and those found shall be removed, recorded and relocated to appropriate areas away from construction activities by qualified personnel. d. Trenches shall generally not be left open overnight on public land. Where this is necessary, bunting shall be installed. e. Mature trees will not be removed as part of this development unless otherwise agreed by the Director-General. f. Timber or other vegetation cover will not be cut, destroyed, ringbarked or removed on any land subject except such as directly obstructs or prevents the carrying on of operations. Any clearing not authorised under the <i>Petroleum (Onshore) Act 1991</i> , must comply with the provisions of the <i>Biodiversity Conservation Act 2016</i> . The licence holder must have any necessary licence from the Department before using timber from any Crown land within the licence area. g. Trees, shrubs and undergrowth that are cut down, removed or damaged for the purpose of the operations must be as directed by and to the satisfaction of the Director-General	Environment Business Partner

Activity	Action	Responsibility
4. Construction (EMAI)	<p>The following management measures apply to specific operating gas fields where particular flora and fauna issues have been identified. These issues are:</p> <ul style="list-style-type: none"> • Threatened Species; • Cumberland Plain Land Snail (EMAI); and • Raptor Breeding Zones (EMAI). <p>The recommendations to manage these issues were implemented in the construction phase of the relevant gas fields. These issues need to also be considered and investigated prior to further construction activities in existing fields being undertaken, particularly in previously undisturbed areas including for refracing, redrilling, gas gathering line upgrades and additional wells.</p> <p>Section 5.5 of this FFMSPP lists the ecological assessments undertaken for areas within the CGP.</p> <p>a. The drilling of gas wells and the construction of the gas gathering system and any related activities will not occur within 100 metres of the Raptor Breeding zones.</p> <p>b. Drilling and fracture stimulation of wells EM05, EM07, EM08, EM09, EM11 and EM12 will only occur during the months of February and/or March or such other period as agreed by the Director-General.</p> <p>c. Gas gathering lines connecting well sites listed in Condition 21 will be constructed outside the breeding seasons of raptor species.</p> <p>d. Only undertake drilling and fracture stimulation of EM23, EM27, EM33 and EM36, and construction of gas gathering lines and access roads located within the raptor zones outside of the recognised breeding season (June to January) of raptor species nesting in the EMAI's raptor zones.</p>	Environment Business Partner
5. Threatened Species	<p>a. Review the relevant ecological report regarding the potential impact upon threatened species and implement the recommendations outlined within these reports. (Note the ecological reports relating to the CGP are outlined in Section 5.5 of this Sub-Plan). Where relevant, mark the boundaries of the EEC and locations of other known threatened species and, where possible, avoid construction activities within these areas.</p>	Environment Business Partner
6. Protected species	<p>If a protected species requires relocating, is injured, a fatality occurs, or an abandoned juvenile is located within the site boundary, the Environment Business Partner must be informed. The Environment Business Partner is responsible to notify the relevant authorities when required by legislation, and engage a suitably qualified and experienced wildlife management professional if required.</p>	Environment Business Partner



Activity	Action	Responsibility
7. Cumberland Plain Land Snail	a. A translocation strategy for the threatened Cumberland Plain Snail will be prepared and submitted for the Director-General's approval prior to construction. The Translocation strategy shall be implemented should any individuals or populations of the Cumberland Plain Snail be identified.	Environment Business Partner
8. Stockpiles	Cleared vegetation shall be stockpiled so as not to impede vehicles, stock or wildlife, surface drainage or water flows and to avoid damage to adjacent live vegetation. Cleared vegetation shall be stockpiled separately for subsequent re-spreading within the compound during site rehabilitation.	Environment Business Partner
9. Weeds	a) A Weed Management Plan will be prepared and implemented for the sites for the life of the development. The Applicant shall submit the Weed Management Plan for the Director-General's approval within one month of the date of this consent.	Environment Business Partner
10. Pests	AGL does not own any land within the CGP and has not been requested to participate in any fauna pest management strategies. If pest control strategies are required onsite, an appropriate site-specific management plan will be developed in consultation with the Environment Business Partner.	Environment Business Partner
11. Planting	a) Five River She-oaks will be planted in tubestock form at the southern portion of the construction pad following the completion of construction of MP25. b) The Proponent shall monitor the health of the relocated four wattles identified in Photo 5.1 of the EA following relocation and during site rehabilitation. Practicable measures to restore the health of the trees will be applied, as necessary. c) The Proponent shall provide screening trees around selected well heads, as identified in the EA, using appropriate native species.	Environment Business Partner



4. Monitoring and reporting

4.1 Monitoring requirements

Flora and Fauna monitoring requirements for CGP include the following:

- The **Environment Business Partner** is responsible for:
 - assessing the potential flora and fauna impacts when completing the *Pre Mobilisation Hazard Identification Form (AEL 8611201)* prior to mobilising the workover rig or civil contractors to any well site location;
 - monitoring compliance with licence and approval conditions and environmental obligations relevant to permits or authorisations prescribed by regulatory authorities through the Compliance Management System.
 - using the myHSE system to record and initiate actions to respond to the regulator and ensure compliance in the event that a notice or order is received or a breach of legislation or licence condition is identified.
 - monitoring the CGP's performance against this FFMSP.
- **Civil Earthworks Contractors** to check open trenches and drill pits daily for trapped fauna and that fauna escape methods are provided.

4.2 Reporting requirements

Flora and Fauna reporting requirements include the following:

- The **Environment Business Partner** is responsible for reporting flora and fauna matters in the CGP AEPR, and completing the Environmental Management Sub Plan Compliance Audit – Flora and Fauna (AEL 8610864) and reporting findings to the Operations Superintendent.
- Any protected animal fatalities, as a result of AGL activities, or injured/sick protected animals or abandoned juvenile protected animals found within AGL controlled site boundaries must be reported to the Environmental Business Partner. If required by legislation, AGL controlled sites must also notify the relevant regulatory authority(ies).
- Declared and emergency declared pests, identified or suspected to be present at AGL controlled sites must be reported to the regulatory authority(ies), in accordance with the notification requirements established by applicable legislation.

4.3 Records

The following monitoring and reporting records will be maintained:

- Environmental Management Sub Plan Compliance Audit – Flora and Fauna (AEL 8610864).
- Pre Mobilisation Hazard Identification Form (AEL 8611201)

5. Administrative

5.1 Training and competence

Section 5.2 of the CGP EMP details the Training and Competence requirements, including for biodiversity management.

Ecological surveys and other biodiversity field work must be carried out by suitably qualified and experienced professionals.

5.2 Site specific plans

Currently not applicable

5.3 Attachments

Currently not applicable

5.4 Definitions

Currently not applicable

5.5 HSEMS References

- AGL Environment Policy
- AGL-HSE-SDM-007.8.1 Excavation Standard Methodology
- AGL-HSE-STD-009.6 Biodiversity Standard
- AGL-HSE-SDM-009.6 Biodiversity Standard Methodology
- AGL-HSE-STD-009.1 Land Standard
- AGL-HSE-SDM-009.1 Land Standard Methodology

5.6 References

- Biosis Research (June 2008) Flora and Fauna Assessment for the Kay Park and Loganbrae Gas Gathering Twinning Modification. Prepared for AGL Gas Production (Camden) Pty Limited.
- Biosis Research (February 2008) Flora and Fauna Assessment for the EM39 and GL17 Modification Project. Prepared for AGL Gas Production (Camden) Pty Limited.
- HLA ENSR (September 2007) Ecology Assessment for the Spring Farm and Menangle Park Project, prepared for AGL Gas Production (Camden) Pty Limited.
- EcoSearch Consultants (January 2007) Flora and Fauna Assessment for the Gas Well and Gathering Line Modification Project (wells AP02-3, EM38, KP05-6, MP30, SL08-9, GGL from MP14-MP13, GL02-GL05, GL05-GL07, GL05-GL10, MP14-GL10, RP03-RP08)
- EcoSearch Consultants (August 2006) Flora and Fauna Assessment for the Rosalind Park Gas Plant Access Road and RP03-RP08 Gas Gathering Line Twinning. Prepared for AGL Gas Production (Camden) Pty Limited.
- EcoSearch Consultants (March 2005) Flora and Fauna Assessment for the Sugarloaf Project (SL01-SL07). Prepared for Sydney Gas Operations Pty Ltd.
- EcoSearch Consultants (June 2005) Flora and Fauna Assessment for the EMAI Project (EM23-36), prepared for Camden Gas Project Joint Venture.
- EcoSearch Consultants (June 2005) Flora and Fauna Assessment for the Razorback Project (RB03-RB12), prepared for Camden Gas Project Joint Venture.



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- EcoSearch Consultants (March 2004) Flora and Fauna Assessment for the Mt Taurus Project (MT01-MT10). Prepared for Sydney Gas Operations Pty Ltd.
 - EcoSearch Consultants (June 2003) Flora and Fauna Survey Data Sheets in Appendix B of the Statement of Environmental Effects for the Harness Racing Drilling Program (MP13- MP17). SEE prepared by Sydney Gas Operations Pty Ltd.
 - EcoSearch Consultants (June 2003) Flora and Fauna Survey Data Sheets for Wandinong Wells and Gathering. Prepared for Sydney Gas Operations Pty Ltd.
 - Wildscenes Eco-Research (May 2003) Flora and Fauna Survey Report for Elizabeth Macarthur Agricultural Institute (EM01-EM20 including gas gathering lines). Prepared for Sydney Gas Operations Pty Ltd.
 - Wildscenes Eco-Research (April 2003) Flora and Fauna Survey Report for Gas Gathering System between well sites GL01-GL19, MP01-MP23, RP01-RP12. Prepared for Sydney Gas Operations Pty Ltd.
 - Wildscenes Eco-Research (September 2002) Flora and Fauna Survey Report for Glenlee (GL01-GL05 and GL10). Prepared for Sydney Gas Operations Pty Ltd.
 - EcoSearch Consultants (July 2001) Flora and Fauna Survey Data Sheets in Appendix 2 of the Statement of Environmental Effects for the Kay Park Exploration Drilling and Gas Gathering Project (PEL 2) (completion of KP01, drilling of KP02 and KP03 and gas gathering lines from KP01 to LB05). SEE prepared by Sydney Gas Operations Pty Ltd.
 - EcoSearch Consultants (June 2001) Flora and Fauna Survey Data Sheets in Appendix 2 of the Statement of Environmental Effects for Exploration Drilling Operations (PEL 2) for the Nepean River Valley CBM Project (GL07, WG03, KP01). SEE prepared by Sydney Gas Operations Pty Ltd.
 - EcoSearch Consultants (May 2000) Regional Flora and Fauna Assessment in Appendix 5 and Flora and Fauna Survey Data Sheets in Appendix 7 of the Statement of Environmental
 - Effects for Exploration and Bulk Testing Operations (PEL 2). Prepared for Sydney Gas Operations Pty Ltd.
 - EcoSearch Consultants (April 2000) Flora and Fauna Survey Data Sheets in Appendix 8 of the Statement of Environmental Effects for Exploration Drilling Operations (PEL 2) for the Nepean River Valley CBM Project (GL07, WG03, KP01). SEE prepared by Sydney Gas Operations Pty Ltd.
 - EcoSearch Consultants (March 2000) Logan Brae Regional Assessment and Flora and Fauna Survey Data Sheets (PEL 2) part of SEE for the Logan Brae CBM Project by Harvest Scientific Services (LB01-LB10).
 - EcoSearch Consultants (March 2000) Flora and Fauna Survey Data Sheets for Sheathers Lane (PEL 2) part of SEE for the Sheathers Lane CBM Project by Harvest Scientific Services.
 - EcoSearch Consultants (August 1999) Flora and Fauna Survey Data Sheets for Westbrook Rd Cawdor (PEL 2) part of SEE for the Westbrook Road CBM Project by Harvest Scientific Services (Joe Stanley, Apap).
 - EcoSearch Consultants (June 1999) Flora and Fauna Survey Data Sheets for Johndilo pipeline (PEL 2). Prepared for CBM Management Pty Ltd and Sydney Gas Operations Pty Ltd.
 - EcoSearch Consultants (February 1999) Flora and Fauna Assessment in Appendix 2 of Johndilo CBM Project (PEL 2) Statement of Environmental Effects for Exploration Drilling Operations (JD01-JD11). Prepared for CBM Management Pty Ltd and Sydney Gas Operations Pty Ltd.
 - EcoSearch Consultants (January 1999) Advisory Flora and Fauna Assessment in Appendix 2 of Johndilo CBM Project (PEL 2) Statement of Environmental Effects for Exploration Drilling Operations (JD01-JD11). Prepared for CBM Management Pty Ltd and Sydney Gas Operations Pty Ltd.