EnergyAustralia NSW Biodiversity Offset Management Plan

Mount Piper Ash Placement Project 09_0186

Lamberts North

July 2015

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Cover photography: 'Thompsons Creek Reservoir"*, EnergyAustralia NSW, 2014.*

EXECUTIVE SUMMARY

On 16 February 2012, the NSW Department of Planning and Infrastructure (DP&I) approved the Mount Piper Ash Repository Project for the construction and operation of a new ash placement area at Lamberts Gully. Condition B6 of the Minister's Conditions of Approval states that EnergyAustralia NSW (then Delta Electricity) must prepare and submit a Biodiversity Offset Management Plan (this Plan).

EnergyAustralia NSW acknowledges that it has agreed to prepare a Biodiversity Offset Management Plan (BOMP) and the Department has advised that an offset be provided. Rehabilitating an alternative site in the vicinity of Lamberts North, at a ratio of 1:1 was deemed suitable.

This plan focuses on the rehabilitation of a 5 hectare site at Thompsons Creek Reservoir. The proposed project focuses on creating and strengthening links with existing revegetation through the rehabilitation of the site. This plan includes details of the project area including geology and soils; aspect; climate and site disturbance; and ecological aspects. The objective of the revegetation of the final landscape is to establish plant species and vegetation communities that are typical of the surrounding landscape and soil types and establish suitable habitat for native animals.

The offset management issues addressed in this plan include seed collection and propagation, site preparation, weed removal and control, pest removal and control and erosion control. The plan also provides a methodology for monitoring the rehabilitation. The goal of biodiversity offsets is to achieve no net loss and preferably net gain of biodiversity on the ground with respect to species composition, habitat structure, and ecosystem function.

A schedule summarising the timing, outcomes and responsibilities of each management actions details is provided. The management actions detail the maintenance and management works that are expected to take place for the life of the project and include the monitoring to take place during the initial revegetation and also for ongoing revegetation.

TABLE OF CONTENTS

1. INTRODUCTION

This Biodiversity Offset Management Plan (BOMP) has been developed to address the Project Approval for Application 09_0186 Mt Piper Power Station Ash Placement Project Condition of Approval dated 16 February 2012 which was issued to EnergyAustralia NSW (then Delta Electricity) by The NSW Department of Planning and Environment (then NSW Department of Planning and Environment). Condition B6 within Schedule 2 of the Project Approval requires the preparation and where relevant the implementation, of the following plans that relate to biodiversity:

- Biodiversity Offset Management Plan –Schedule 2 Condition B6

Subsequent to Project Approval, EnergyAustralia NSW proposed to increase the area of ash placement within the Lamberts North site (Consistency Report, SKM, 2012).

The project as presented to the Department of Planning and Environment (DPE) was essentially divided into two parts-Lamberts North and Lamberts South, with the two phases of the project separated by a significant period of time. Subsequent to approval of this project, Centennial Coal notified the Department of Planning on their intent to expand their Coal Services, and increase the placement of Coal Mine rejects to the Lambert's South site for another 25 year period. At time of preparation of this document, it is highly unlikely that EnergyAustralia NSW will ever have access to the Lambert's South site

Further consultation with the DPE (11 January 2013) has resulted in the requirement for the following management plan and strategic outline in lieu of the abovementioned Biodiversity Offset Management Plan.

- Biodiversity Offset Management Plan for Lamberts North
- Biodiversity Offset Strategy Outline for Lamberts South

This document has been prepared to address Conditions B6 and the subsequent amendment - Biodiversity Offset Management Plan for Lamberts North. It is noted that the Biodiversity Offset Strategy Outline for Lamberts South was prepared as a separate document and approved by DPE in May 2014 (EnergyAustralia NSW, 2013). This BOMP was prepared in consultation with the Office of Environment and Heritage (OEH).

1.1. Purpose

EnergyAustralia NSW's Land Management Plan (EnergyAustralia NSW, 2014) provides the overarching concepts for decision making in terms of landscape and the land use for EnergyAustralia NSW's Power Stations, whilst this Biodiversity Offset Management Plan (BOMP) and other management plans provide specific actions for management. The post ash placement landscape of the site is addressed in the sub-plans of the Operational Environment Management Plans (OEMP) (CDM Smith, 2013) and will also be discussed in detail in this document. The post ash placement area will incorporate positive compensatory design, intended to enhance the landscape that as a result of prior mining activity was found to be devoid of ecological value. In keeping with the commitment in the Mt Piper Power Station Ash Placement Project Environmental Assessment (EA) (SKM, 2010), the OEMP and BOMP have been developed to ensure that the post ash placement landform of the site is designed to optimise productivity and visual amenity whilst enhancing wildlife habitat landscapes.

This management plan is specific to Lamberts North; however Lamberts South will also be discussed to provide background and an indication of how these discrete Project sites may eventually be operated in the event that Lamberts South is acquired by EnergyAustralia NSW.

1.2. Relevant Legislation

The following legislation is applicable to the Biodiversity Offset Plan:

- *Environmental Planning and Assessment Act 1979;*
- *Environmental Protection and Biodiversity Conservation Act 1999;*
- *Threatened Species Conservation Act 1995;*
- *National Parks and Wildlife Act 1974*

1.3. Project background

EnergyAustralia NSW currently has approval to carry out the Project in accordance with the Environmental Assessment titled *Mt Piper Power Station Ash Placement Project,* dated August 2010, including a range of conditions imposed by the Director General. The Project Approval is a step in EnergyAustralia NSW ongoing growth projects, and ash placement in Lamberts North is expected to continue until approximately 2026/7.

Subsequent to Project Approval, EnergyAustralia NSW proposed to increase the area of ash placement within the Lamberts North site and to change the direction and location of the drainage line proposed to take clean water from the south west boundary of Lamberts North (Consistency Report, SKM, 2012). The change was proposed due to Centennial Coal significantly delaying the sale/transfer of Lamberts South to EnergyAustralia NSW. The extent of vegetation clearing required for drainage work was expected to be minimal and the areas that had been revegetated were expected to have little or no effect on the identified areas of flora and fauna as the area had been heavily disturbed by open-cut mining. At this point the Project was essentially divided into two parts-Lamberts North and Lamberts South; this was in response to the uncertainty of Lamberts South becoming available in the future for ash placement.

Due to past disturbances from open-cut mining, the Lamberts North site has been independently assessed as being devoid of any ecological attributes (CEMP CDM Smith, 2012). The field surveys did not identify any threatened or listed fauna within or immediately adjacent to the project site. Only the south western corner of Lamberts North abuts relatively undisturbed vegetation. The likelihood of the adjacent vegetation being anything more than marginal habitat, or providing an important wildlife corridor for threatened or listed fauna is non-existent (SKM,2010).

The construction of the Project in relation to the Lamberts North site has required the removal of the small 5 ha section of regrowth located on a mullock heap. A small section of adjacent vegetation may also be required to be removed for the construction of the diversion drain to the west of the site; however this is currently mapped as non-native vegetation. No endangered ecological communities (EEC) were identified within or close to the Project site.

1.4. Definition of the site area and surrounds

EnergyAustralia NSW operates Mt Piper Power Station in the Central West region of NSW, approximately 17 km north-west of Lithgow (Figure 1). Ash storage operations at Mt Piper are currently managed within the previously approved ash placement area – Storage Area 1, which also incorporates an approved area for brine and ash co-placement. The Lamberts North site is adjacent to Storage Area 1 and is known as Lots 9 and 15 of Deposited Plan (DP) 804929 and Lamberts South as Lots 15 of DP 804929, Lot 501 DP 825541 and Lots 13 and 357 of DP 751651 located at 350 Boulder Road Portland (Figure 2).

Lamberts North and Lamberts South areas have both undergone extensive mining and reworking. Both sites are located to the immediate east of the Mt Piper Power Station and are part of the existing Lamberts Gully Open Cut Mine operations. Lamberts North is bordered by the current ash Storage Area 1 and Huon Void on the west and the proposed Lithgow Council Landfill Site on the east. Lamberts South adjoins Lamberts North and is mostly surrounded by the southern sections of the Ben Bullen State Forest.

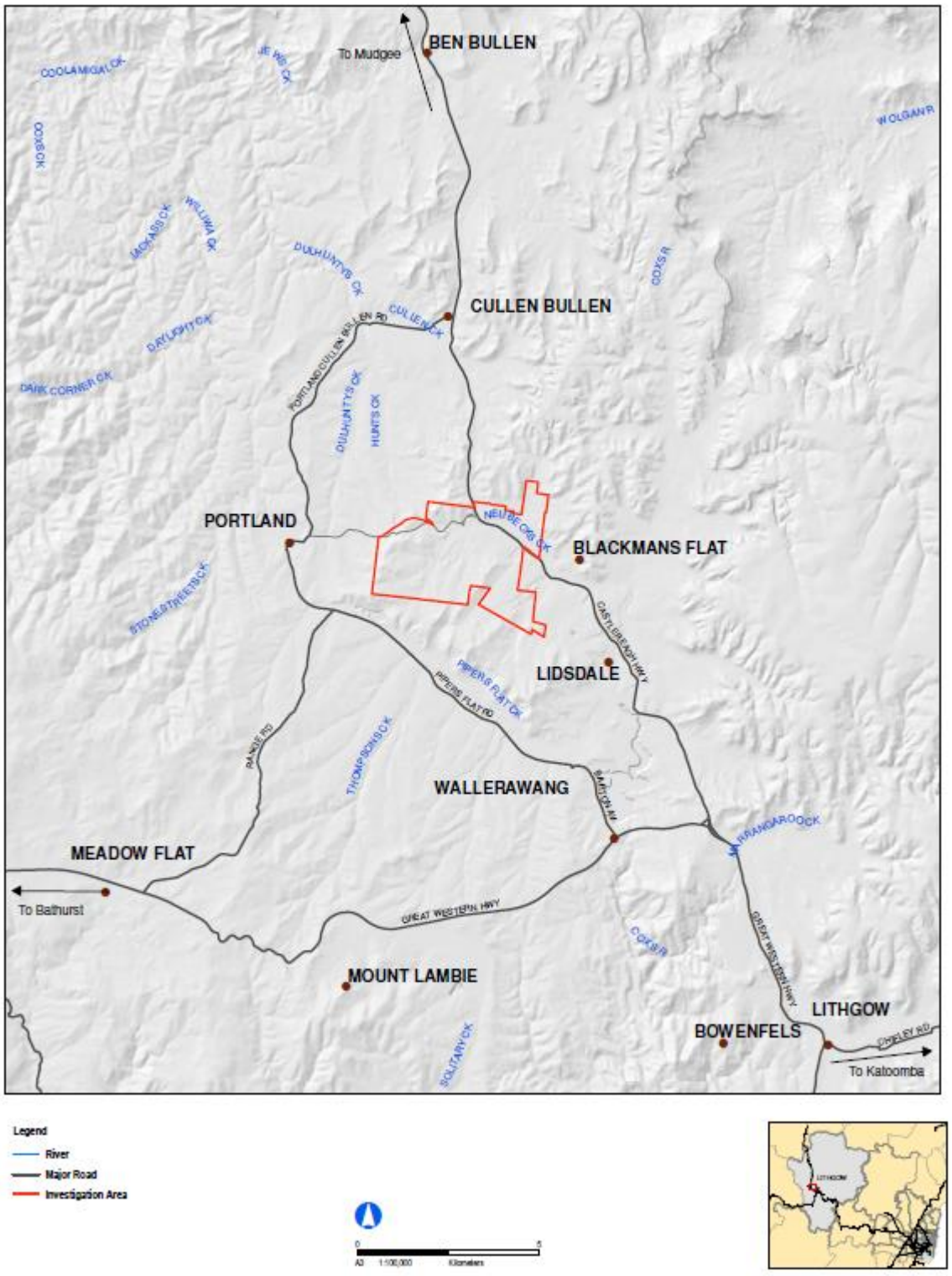


Figure 1: Locality plan

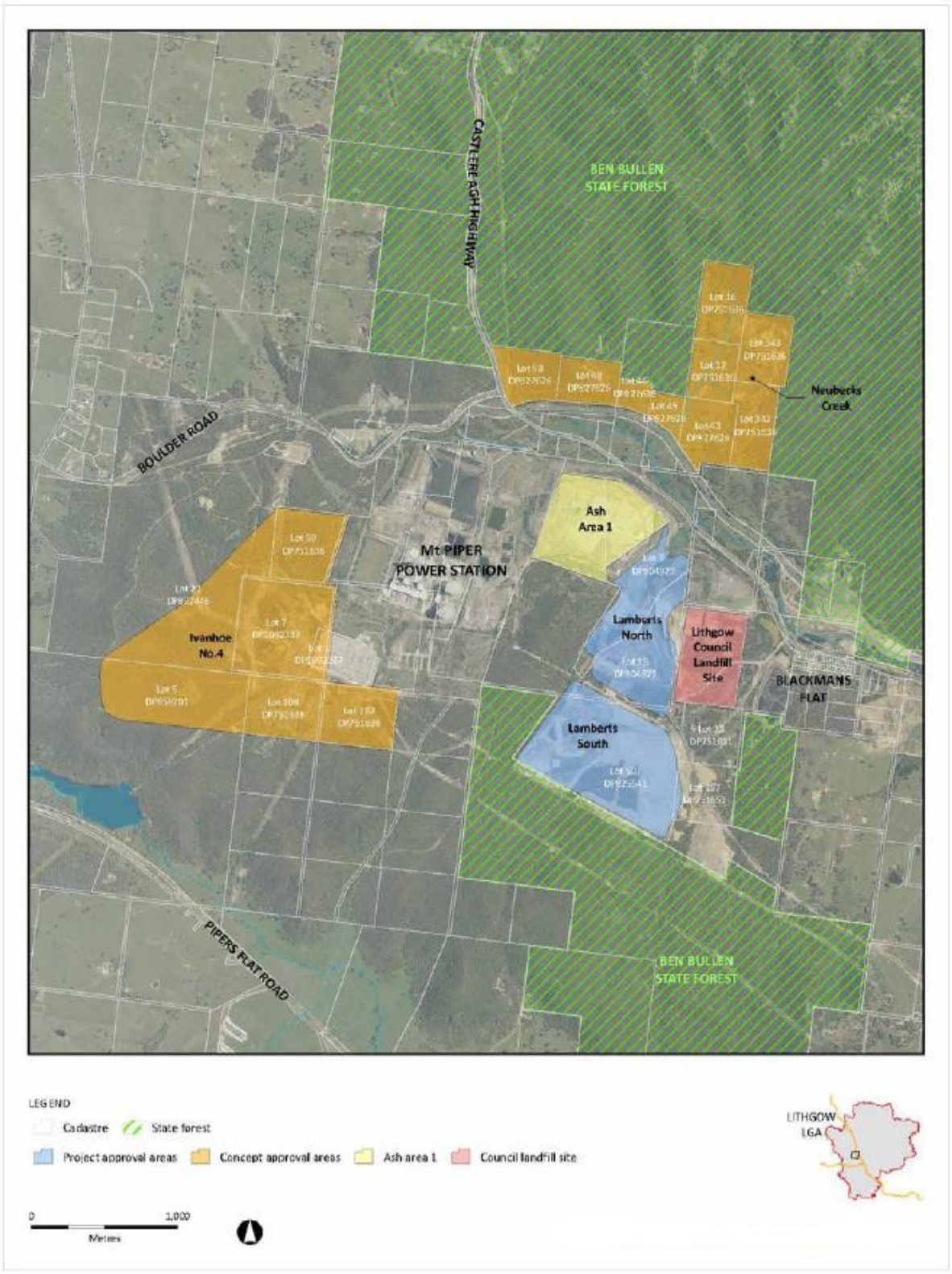


Figure 2: Site location and land tenure

1.5. Biodiversity Offsets

The areas of native vegetation potentially impacted by the Project as described in Table 5.1 of the Flora and Fauna Assessment of the EA (SKM, 2010) and Condition B6 are detailed in Table 1 below and illustrated in Figure 3.

Table 1: Areas of vegetation potentially impacted by the Project

Vegetation community	**Area (ha)**
Brittle Gum- Red Stringybark Woodland	7.5
Scribbly Gum Woodland	1.1
Ribbon Gum Woodland	0.3
Rehabilitated area	31.4
Total	**40.3**

The original proposed ash placement area comprised of approximately 108 ha in the entire Lamberts Gully area, incorporating both Lamberts North and South. The majority of this area comprised disturbed lands previously used as part of an active mine and areas of rehabilitated land following mining activities which were devoid of vegetation. The quality of the vegetation communities present within the proposed ash placement area is affected by the extent of previous clearing and disturbance from mining activities. However, there are three patches of remnant vegetation in the southern-most proposed ash placement area (Lamberts South, currently owned and operated by Centennial Coal) with regenerating vegetation within rehabilitation areas at the northern and southern end of the Lamberts Gully area. The areas of vegetation potentially affected by the ash placement at Lamberts Gully are illustrated in Figure 3, providing an overview of the existing site, including the surrounding vegetation communities and threatened flora. At this site four different vegetation communities including regenerating vegetation in rehabilitation areas were identified in the proposed ash placement lands and these are described in Table 2.

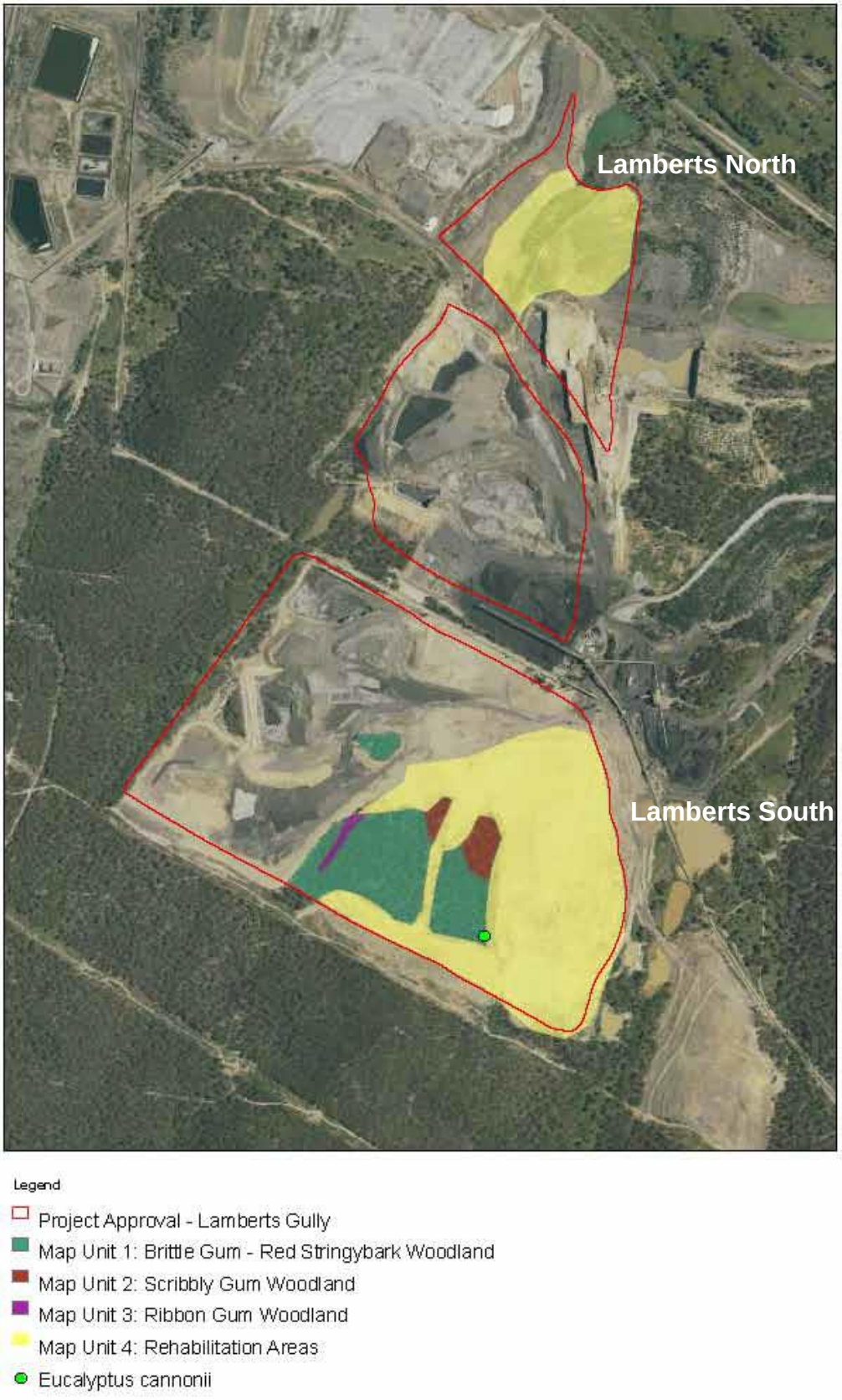


Figure 3: Vegetation and threatened Flora

Table 2: Description of the structural vegetation types within the site

1.Brittle Gum- Red Stringybark Woodland Areas of intact remnant vegetation in the southern portion of Lamberts Gully. Distribution: Lamberts South Dominant species:Brittle Gum (*Eucalyptus macrorhyncha)* up to 15 m high. Dominant shrub species include Silver Wattle (*Acacia dealbata*), Showy Parrot-pea (*Dillwynia sericea*) and Peach Heath (*Lissanthe strigosa*). Dominant groundcovers include Snowgrass (*Poa siebriana*), Raspwort (*Gonocarpus tetragynus*), Wattle Mat-rush (*Lomandra filiformis*) and Forest Goodenia (*Goodenia hederacea*).
2.Scribbly Gum Woodland A small area of intact remnant vegetation in the southern portion of Lamberts Gully. Distribution: Lamberts South Dominant species: Inland Scribbly Gum (*Eucalyptus rossii*) occurring with Brittle Gum and Red Stringybark approximately to 15-17 m high. Dominant shrub species include Silver Wattle (*Acacia dealbata*), Showy Parrot-pea (*Dillwynia sericea*) and Peach Heath (*Lissanthe strigosa*). Box-leaf Wattle (*Acacia buxifolia*), Ploughshare Wattle (*Acacia gunnii*) and *Mirbelia platylobioides*. Dominant groundcovers include Snowgrass, Silky Purple-flag (*Patersonia* *sericea*), Variable Sword-sedge (*Lepidosperma laterale*) and Button Everlasting (*Coronidium* *scorpioides*).
3.Ribbon Gum Woodland A small area of this vegetation community is present along the main drainage line within the area of intact remnant vegetation in the southern portion of the Lamberts Gully area. Distribution: Lamberts South Dominant species: Brittle Gum (*Eucalyptus macrorhyncha)* up to 15 m high. Dominant shrub species include Silver Wattle (*Acacia dealbata*), Showy Parrot-pea (*Dillwynia sericea*) and Peach Heath (*Lissanthe strigosa*). Dominant groundcovers include Snowgrass (*Poa siebriana*), Raspwort (*Gonocarpus tetragynus*), Wattle Mat-rush (*Lomandra filiformis*) and Forest Goodenia (*Goodenia hederacea*).
Rehabilitation areas There are several areas within the study area that are being rehabilitated with native trees and shrubs including a large area at the northern end of Lamberts Gully and surrounding remnant vegetation at the southern end of the Lamberts Gully. Distribution: Lamberts North and southern end of Lamberts Gully. Dominant species: These areas are dominated by various shrub species including Silver Wattle, Red-stemmed Wattle (*Acacia rubida*), Box-leaf Wattle, Black Wattle (*Acacia mearnsii*), Sifton Bush, Green Wattle (*Acacia parramattensis*) and Fine-leaf Green Wattle (*Acacia decurrens*). Eucalypt species are also interspersed within these areas including Ribbon Gum, Brittle Gum and Candlebark.

Much of the rehabilitation area is recently completed, with seedlings and low shrubs sparsely distributed throughout. However, there are two areas of well-established rehabilitated vegetation at the Lamberts South site – in the narrow 'laneway' between the two largest remnant patches, and in-between the two largest remnant patches and Ben Bullen State Forest beyond the southern boundary of the site. These areas are taller and more dense than other rehabilitated vegetation at the site.

The Flora and Fauna Assessment of the EA (SKM, 2010) recommended an area of up to 9 ha of remnant vegetation to be offset to ensure no net loss of flora and fauna values in the area. This would provide a habitat offset of 1:1. No threatened species or ecological communities would be affected by the loss of the 8.9ha of vegetation, but the generally good habitat value would suggest that an offset would be appropriate. It was recommended that the remnant vegetation within the offset location should have similar habitat attributes as the remnant vegetation within the proposal area, comprising a relatively mature area of vegetation with an abundance of hollow trees and fallen timber. It also suggested that although only 3 specimens of Capertee Stringybark would be lost to the development, the proposed offset area should contain specimens of that species if possible.

It is noted that the EA *(SKM, 2010)* was prepared for both Lamberts North and Lamberts South in the initial phases of the Project, and that the remnant vegetation is situated entirely within the Lamberts South site. Although it is not disputed that a biodiversity offset is required for the 8.9 ha of vegetation at Lamberts South, this management plan refers hereafter only to the biodiversity offsets for Lamberts North. The biodiversity offset for Lamberts South is discussed in the Lamberts South Biodiversity Offset Strategic Outline (EnergyAustralia NSW, 2013).

2. LAMBERTS NORTH

2.1. Rehabilitated area pertinent to Biodiversity Offset Management Plan

Lamberts North is located on land that contains former coal workings, including both underground and surface mining. The mining lease was held until early 2012 by Centennial Coal until open pit extraction was completed. The Lamberts North site is now owned by EnergyAustralia NSW with the exception of the southern part that is currently occupied and controlled by Centennial Coal.

Lamberts North is a highly disturbed area due to the open cut mining activities until 2012 on this site (see Figure 4). The Lamberts North area is described in the Flora and Fauna Impact Assessment of the EA *(SKM, 2010)* as almost completely devoid of all vegetation due to the past mining activities. The areas of native vegetation potentially impacted by the Project that are pertinent to Lamberts North BOMP are described in Table 2**,** Part 4. There is a regrowth area of some 5 hectares on the mullock heap (mine spoils) near Huon Dam rehabilitated with native trees and shrubs. This vegetation is approximated to be five years old and did not form part of the offset calculation in the Environmental Assessment (SKM, 2010). The rehabilitation of this area was part of Springvale Coal's requirement for relinquishing their mining lease of the site. This area has not had prior development approval requiring biodiversity offsets.

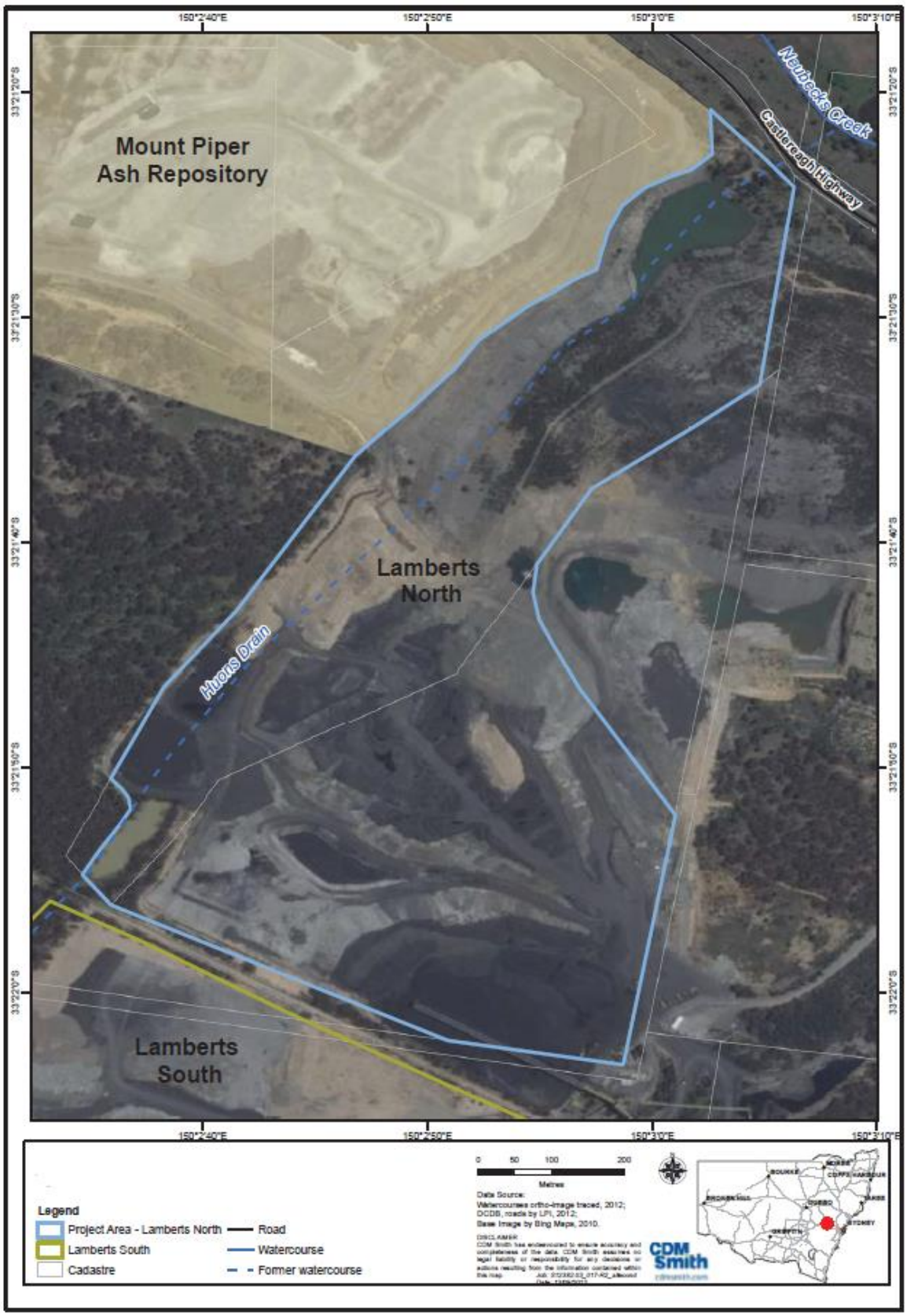


Figure 4: Lamberts North Site Condition (CDM Smith, 2012)

Construction of the Project required the removal of 5 ha of regrowth vegetation as detailed in the Construction Environmental Management Plan (CEMP) (CDM Smith, 2012). EnergyAustralia NSW did not require a permit under the *Native Vegetation Act 2003* to clear regrowth vegetation within the construction area boundary, as the regrowth on mined surfaces and mullock heaps was established after the specified date of 1 January 1990. Management of flora and fauna has been undertaken as detailed in Appendix 1.5 of the CEMP Flora and Fauna Management Plan (CFFMP) (CDM Smith, 2012). No threatened or listed fauna were identified within or immediately adjacent to the Project site during the fauna survey.

Lamberts North is extensively covered by large and variable mounds of overburden (largely granular soil and boulders derived from the mining of the sedimentary overburden) resulting from the open-cut coal mining practices. The 'mullock heap' on the west side of Huon Gully has been revegetated with Acacia species approximately five years old, which will be required to be cleared. Figure 5 demonstrates a typical view of overburden, stockpiles and voids in the Lamberts North area.

Figure 5: Lamberts North Site showing mine overburden and Huon Gully

2.1.1. Vegetation

Eight native vegetation communities have been mapped within a 10km radius of Lamberts North described in Table 6-31 OEMP and in Table 3. None of these communities are considered endangered. Community distribution is influenced by the underlying geology and soils.

Table 3: Vegetation communities mapped within 10km of Lamberts North (SKM, 2010)

Vegetation communities on Triassic Sandstone	Vegetation communities on the Permian sediment (Illawarra Coal Measures)
Silvertop ash Open Forest	Brittle Gum / Red Stringybark / Scribbly Gum Open Woodland
Sydney Peppermint Open Forest	Snow Gum Grassy Open Woodland
Brown Stringybark Open Forest	Ribbon Gum / Apple Box / Snow Gum Open Woodland
Scribbly Gum Open Woodland / Forest	
Thin-leaved Stringybark Open Forest	

Shrubs of Wattle (*Acacia* spp.), Guinea flower (*Hibbertia* spp.) and Tea-tree (*Leptospermum* spp.) are present. Common species in the grass understorey include Tussock grass (*Poa labillardieri*), Blown grass (*Agrosits avenacea*), Wallaby grass (*Danthonia* spp.) and Kangaroo grass (*Themeda australis*). Native vegetation has been cleared and re-seeded with radiata pine (*Pinus radiata*) over parts of the landscape.

2.2. Rehabilitation of site

When Lamberts North has reached its ash placement capacity and at critical stages and locations during operations, rehabilitation is planned that will provide an enhanced landscape that will have equal or greater ecological value than at present. Revegetation of the ash placement areas would use native species which occur in the local area and are adapted to the local conditions.

One of the objectives for rehabilitation of the site is to ensure that the ash placement area is integrated aesthetically and ecologically within the surrounding landscape following project completion. The ash placement area is required to be rehabilitated in the final stage of the ash placement as outlined in the OEMP (CDM Smith, 2013). As each stage is completed, various forms of overburden stockpiled during construction will be placed as capping material over the compacted ash. Subsequently, these areas will be further stabilised by planting trees, shrubs and grasses. Revegetation provides a landscape feature for the area as well as facilitating effective water management. The objective for the rehabilitation and revegetation of the final landscape is to:

- Establish plant species and vegetation communities that are typical of the surrounding landscape and soil types; and

- Establish habitat for native animals.

The performance targets and performance indicators as described in Table 6.1 of the Operational Environment Management Plan (OEMP) (CDM Smith, 2013) are as follows:

- Performance targets
- Develop and reconstruct landscape to minimise the visual impacts of ash placement area by ensuring long-term stabilisation of the site and compatibility with surrounding landscapes through revegetation.
- Performance indicators
- Site inspections records to confirm ash placement targets are being achieved;
- Evidence of long-term water management plan that integrates the concepts of landscape revegetation and rehabilitation;
- Evidence of an established revegetation and rehabilitation and monitoring program to meet short and long-term goals;
- Physical coverage of exposed ash on all external batters and boundaries capped with suitable materials.

The OEMP Landscape Rehabilitation and Revegetation Plan (OEMP LLRP) (CDM Smith, 2013) specifically addresses the methods, techniques and timing for rehabilitating after operations of the ash placement areas have ceased. This LRRP seeks to address the specific requirements of the Conditions of Approval D3 (e) and (f) respectively attached to the Project Approval for Lamberts North, as they relate to the landscape revegetation and site rehabilitation management.

2.3. Approval Conditions

The NSW Department of Planning and Environment (DPE) Project Approval Conditions B6 pertaining to the Biodiversity Offset Management Plan is summarised below in Table 4. The requirements relating to biodiversity management from the project approval and identifies where these requirements are addressed in the BOMP.

Table 4: Conditions of Approval established for Project 09_0186

	Approval Conditions	Relevant section of BOMP
NSW Department of Planning and Infrastructure Instrunment of Approval		
B6	***The Proponent shall develop and submit for the approval of the Director-General, a Biodiversity Offset Management Plan. The Biodiversity Offset Management Plan is to be submitted within 12 months of the project approval, unless otherwise agreed to by the Director-General. The Plan shall be developed in consultation with the EPA and shall:***	
	a) identify the objectives and outcomes to be met by the Biodiversity Offset Management Plan;	3.1
	b) describe the size and quality of the habitat/vegetation communities of the offset;	3.2.1
	c) identify biodiversity impacts, including impacts related to the loss of impacted flora and fauna including threatened Capertee Stringybark (Eucalyptus cannonii), nine (9) hectares of remnant vegetation (including, Red Stringy Bark Woodland, Scribbly Gum Woodland, Ribbon Gum Woodland), habitat for microbat and woodland bird species and the 31 ha of rehabilitated vegetation to be removed;	2.4
	d) describe the decision-making framework used in selecting the priority ranking of compensatory habitat options available in the region. Where possible, this should include purchase of land, development of agreements with identified land management authorities (e.g. EPA, local Council) for long term management and funding of offsets and mitigation measures, and installation of identified mitigation measures;	3.2.1; 3.2.2
	e) include an offset for direct and indirect impacts of the proposal which maintains or improves biodiversity values;	3.2
	f) identify the mechanisms for securing the biodiversity values of the offset measures in perpetuity and identify a monitoring regime, responsibilities, timeframes and performance criteria; and	3.2,3.2.2; 4.2, 4.2.1, 4.2.2
	g) detail contingency measures to be undertaken should monitoring against performance criteria indicate that the offset/ rehabilitation measures have not achieved performance outcomes . Rehabilitation measures are required to be implemented to ensure that the biodiversity impacts are consistent with a maintain or improve biodiversity outcome.	4.2

2.3.1. Non applicable condition

As previously discussed the loss of flora and fauna from the remnant vegetation detailed in Condition of Approval B6(c) is applicable only to Lamberts South, this includes threatened Capertee Stringybark (*Eucalyptus cannonii*), nine (9) hectares of remnant vegetation (including, Red Stringy Bark Woodland, Scribbly Gum Woodland, Ribbon Gum Woodland), habitat for microbat and woodland bird species. The flora and fauna found in Lamberts South does not need to be addressed in this BOMP.

Of the 31 ha of rehabilitated vegetation only 5 ha resides in the Lamberts North site with the remaining vegetation found in the Lamberts South site. Construction of Lamberts North has resulted in the removal of 5 ha of the rehabilitated vegetation; this area does not include any communities listed under the EPBC Act. The impacts from the loss of flora and

fauna at Lamberts North have independently accessed to be non-existent as the majority of Lamberts North site comprises of disturbed lands previously used as part of an active mine and areas of rehabilitated land following mining activities. Lamberts North is extensively covered by large and variable mounds of overburden (largely granular soil and boulders derived from the mining of the sedimentary overburden). The quality of the vegetation communities present within the 5 ha is therefore affected by the extent of previous clearing and disturbance from mining activities with much of the rehabilitation area recently completed, with seedlings and low shrubs sparsely distributed throughout.

There is an existing mullock heap on the west side of Huon Gully in the Lamberts North area which contains some revegetation that is less than five years old. It consists of Acacia species including Red-stemmed Wattle (*Acacia rubida*), Box-leaf Wattle, Black Wattle (*Acacia mearnsii*), Sifton Bush, Green Wattle (*Acacia parramattensis*) and Fine-leaf Green Wattle (*Acacia decurrens*). Vegetation located in the flatter areas of Lamberts North, heading in an easterly direction away from Huons Void were considered in moderate to poor condition. The EA determined that this area was considered to have no ecological significance with very little wildlife observed in the area. Acacias do not produce hollows, so it was not considered necessary to provide any alternative nesting boxes.

Nevertheless, EnergyAustralia NSW is committed to providing an offset at an alternative site in the vicinity of Lamberts North, and rehabilitating the offset site at a ratio of 1:1 as recommended by DPE (Appendix A). The next section details the management framework for the offset area and the monitoring requirements in line with the Approval conditions.

3. Management Actions

3.1. Objectives of BOMP

The overall aim of a BOMP is to provide an implementation framework that will guide rehabilitation and ongoing management of any threatened species or communities and general biodiversity of the land in perpetuity. A BOMP generally will demonstrate how the offset will meet an improved or maintained outcome (OEH, 2013).

Offset assessment and evaluation includes the co-ordination of multiple offset requirements and will be carried out in accordance with the following legislation that is applicable to the Biodiversity Offset Plan including:

- *Environmental Planning and Assessment Act 1979;*
- *Environmental Protection and Biodiversity Conservation Act 1999;*
- *Threatened Species Conservation Act 1995;*
- *National Parks and Wildlife Act 1974*

The Biodiversity Offset Management Plan aims to address the objectives of both the current State and Commonwealth legislative biodiversity offsetting requirements. An evaluation to identify the offset requirements for potential impacts for the proposed *Mt Piper Power Station Ash Placement Project* pertinent to the Lamberts North site is presented below. Evaluations to be undertaken for offsets that are intended to address Schedule 2 Conditions B6 of the Project Approval will include:

- Identification of suitable offset options;
- Extent and size of offsets required to be secured;
- Options for securing offsets.
- Offset validation and preparation of specific Biodiversity Offset Management Plan; and
- Liaison to finalise contractual arrangements and covenants.

In addition to the objectives outlined above and those previously stated within Environment Assessment (EA) (SKM, 2010) and Condition of Approval B6, the BOMP will be implemented in a suitable time frame and in consultation with the OEH to achieve the following specific aims:

- Identification of suitable potential offset areas with ecological value comparable to impacted ecological communities;
- Assessment of the ecological value and equivalence of offsets to ensure suitable offset value, species assemblage, floristic structure and ecological integrity utilising an appropriate biometric field methodology;

- Development of appropriate management recommendations to ensure management of offsets. These may include pest control, livestock management, access control, enriched planting and fire management plans;
- Placement of appropriate covenants for future conservation and management of offset;
- Development of appropriate monitoring and maintenance activities and performance review processes to ensure offset requirements are occurring;
- Identify mechanisms for securing the biodiversity values of the offset measures in perpetuity;
    - Identify responsibilities, timeframes and performance criteria;
    - Detail of long term management and funding of offsets and mitigation measure;
    - The estimated time frame for management objectives and outcomes;
    - Detail contingency measures to be undertaken should monitoring against selection criteria indicate than an offset/rehabilitation measure have not achieved performance outcomes; and
    - Detail rehabilitation measures to be implemented to ensure that the biodiversity impacts are consistent with a maintain or improve biodiversity outcome.

Lamberts North however, does not have significant or threatened species, communities or populations and habitat that were deemed to require offsetting. What has been suggested by the DPE is that a BOMP for Lamberts North be developed to ensure that the post ash placement landscape of the site and associated offset area provide for:

- Re-establishment of newly planted rehabilitated vegetation of limited ecological value, including:
- various shrub species including Silver Wattle, Red-stemmed Wattle (Acacia rubida), Box-leaf Wattle, Black Wattle (Acacia mearnsii), Sifton Bush, Green Wattle (Acacia parramattensis) and Fine-leaf Green Wattle (Acacia decurrens).
- Eucalypt species are also interspersed within these areas including Ribbon Gum, Brittle Gum and Candlebark.

EnergyAustralia NSW is committed to providing and implementing an offset that provides long-term benefits to the environment and meets the regulatory requirements. DPE has advised that it was appropriate that an offset be provided by rehabilitating an alternative site in the vicinity of Lamberts North, at a ratio of 1:1. An adaptive approach to management will be applied to ensure that management actions reflect the changing priorities within the offset and to improve the ecological values of the offset site.

3.2. Responsibilities

Biodiversity Offset management responsibilities will be delegated across several functional teams within EnergyAustralia NSW including:

- **The Environment Group -** Managing compliance in accordance with Environmental Protection Licenses, Water Management Licenses and Environmental Legislation. In

addition, they manage any environmental matters that may arise throughout operational sites, buffer lands or lake areas;

- **The Site Services Team within the Business Services Group -** Responsible for site and land management service providers and its associated contractors, and ensuring maintenance programs are implemented and carried out e.g. weed spraying, feral animal control and fencing;

- **The Commercial Group -** Responsible for property management function including leasing and agistment of buffer zones areas. They also seek funding for community based project where practicable; and

- **Other groups, including:** External Assets and associated contractors assisting with the management of waste, security and ash repository areas.

3.3. Offset

3.3.1. Offset site description

EnergyAustralia NSW currently owns Thompsons Creek Reservoir and surrounding lands which has been identified as an area that is suitable as an offset. Thompsons Creek Reservoir is an artificial body of water that was created in 1992, when a 20ha portion of the Falnash State Forest was inundated. The reservoir was created to provide a water source linked to Lake Lyell for the Mt Piper Power station. Thompsons Creek Reservoir is located near Lithgow on the Central Tablelands of NSW 5km south-west from the township of Wallerawang (Figure 6) and is approximately 9.0km to the south-west of Lamberts North. Thompsons Creek Reservoir has an earth shoreline of 6.2 km, with about 1.9 km of constructed gabion wall as the northern wall (Figure 7). Much of the remaining vegetation is located within State Forests, including Falnash State Forest situated directly to the north of the site which covers an area of 373ha. Thompsons Creek Reservoir encompasses 464ha of land and the area in hectares and percentage of land use across the area is described in Table 5. Land uses surrounding the site include the water reservoir of Thompsons Creek Dam and the associated infrastructure to the north and east of the site. Thompsons Creek Reservoir is located on land identified as suitable for fishing; access is via Willow Park Road car park through land owned by EnergyAustralia NSW. An access agreement allows passage for anglers to fish on the reservoir and ensures there is no vehicular access with foot access only permissible. See Appendix B for Access Agreement and conditions of entry and use.

Table 5: Thompsons Creek Reservoir Land use

Land use (ha and % of total area)		
Grazed, disturbed or landscaped areas	**Open water**	**Vegetation**
293ha or 63%	117ha or 25%	54ha or 12%

Agricultural and mining activities are the dominant land use in the area. The majority of the landscape immediately adjacent to Thompsons Creek Reservoir is mapped as cleared or severely disturbed. Thompsons Creek Reservoir is adjacent to the pine plantation of Sunny Corner State Forest to the south-west and Falnash State Forest to the north. Vegetation within Falnash State Forest is dominated by Southern Tableland Dry Sclerophyll Forest, with some Tableland Clay Grassy Woodland associated with riparian areas. Small pockets of Southern Tableland Dry Sclerophyll Forest and Tableland Clay Grassy Woodland occur across the Thompson's Creek Reservoir site. Despite fencing grazing by kangaroos, wallabies, hares and rabbits have an impact on the native vegetation of the site. There is also evidence of foxes and cats on this site and the presence of goats.

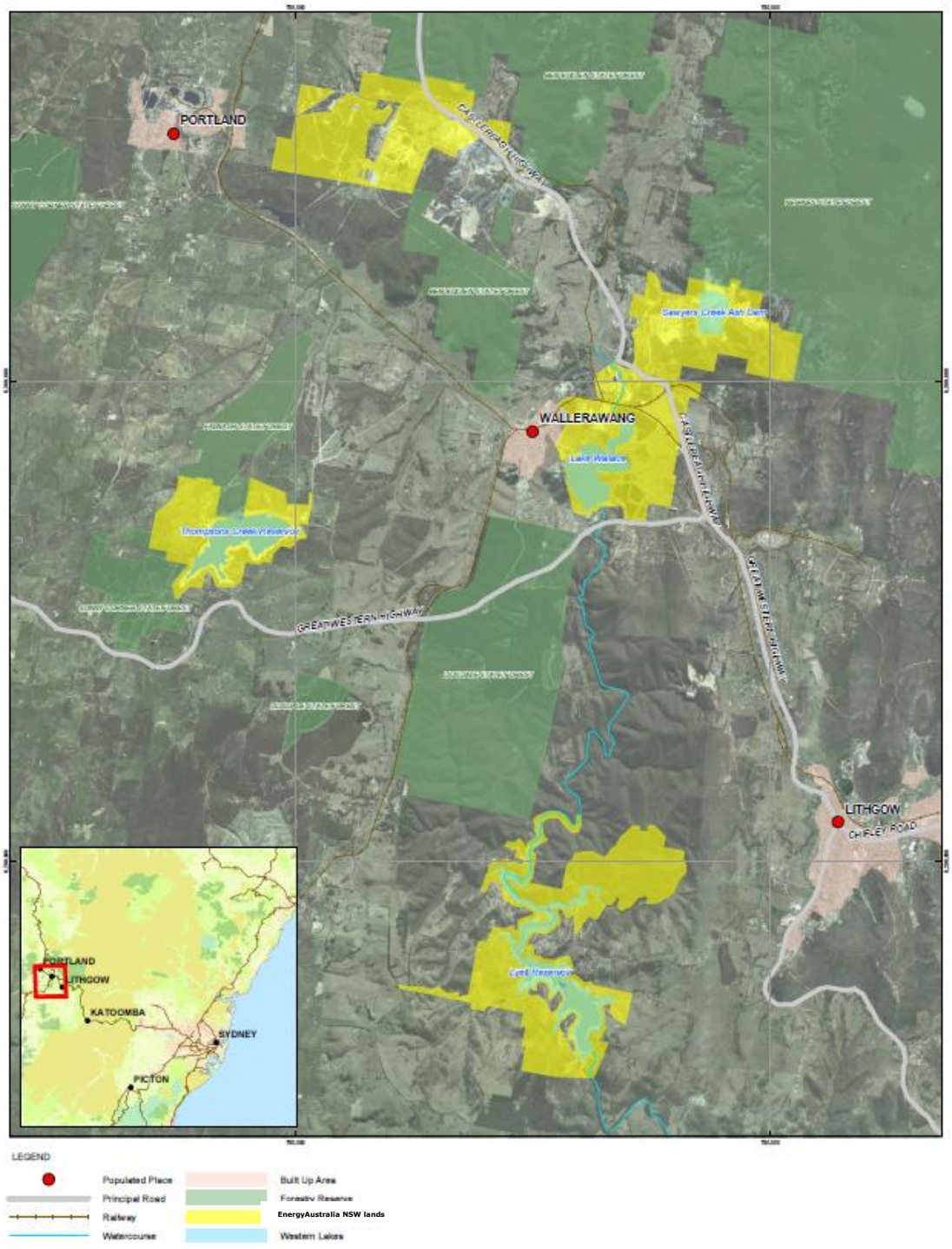


Figure 6 Thompsons Creek Reservoir locality

Figure 7: Thompsons Creek Reservoir overview

The south eastern side was determined to be an appropriate site for the biodiversity offset. It has a north-westerly aspect and is adjacent to a native woodland-forest of shrub and tree species. The land has the identifier DP 801915, dissected further to the south by DP 803501 and then to the west again as DP 801915 (Figure 8). The land area proposed for the offset totals 6.7239 ha with a total foreshore line of 816 m (Figure 8) comprising:

- Lot 243 of DP 801915 east site estimated 3.849 ha with 403 m of foreshore
- Lot 432 of DP 803501 south side estimated 1.943 ha with 225 m of foreshore

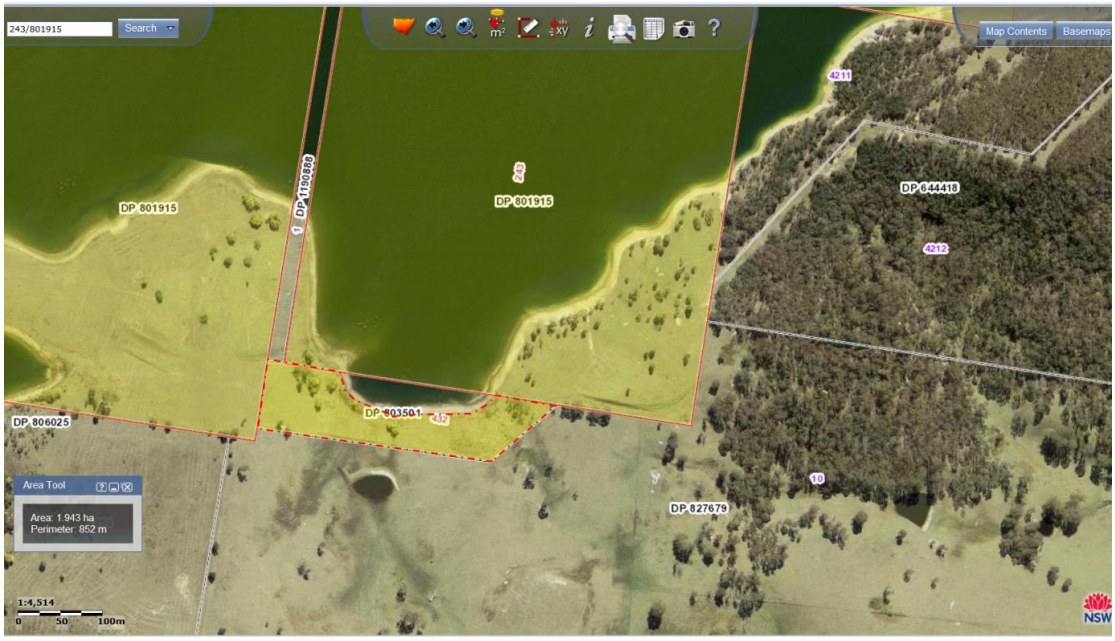


Figure 8: Proposed biodiversity offset area

3.3.2. Securing offset site

The offset area will be managed and secured utilising the overarching EnergyAustralia NSW Land Management Plan (LMP). Thompsons Creek Reservoir is currently managed within the LMP which is used for the management and security of all of EnergyAustralia NSW's landholdings. The Land Management Plan will be revised to include the Lamberts North offset to provide a consistent instrument in which to manage the offset area.

An offset area must be legally protected and managed in perpetuity, as the impact of the development is permanent. Offset areas should not be amenable to being offset again in the future. There are mechanisms such as BioBanking Agreements, Property Vegetation Plans in NSW and Conservation Agreements all of which can last in perpetuity and are registered on title. The intention is to secure the Thompsons Creek Reservoir offset site by way of a Conservation Agreement prepared under the NSW *National Parks and Wildlife Act 1974*. Guidance will be sought from the OEH for the suitability of managing the offset site under a conservation agreement to protect and conserve the offset site in perpetuity. The Conservation Agreement will comprise a joint agreement between EnergyAustralia NSW and the NSW Minister for the Environment and will remain in place for the life of the proposed project. The Conservation Agreement will incorporate the key management actions to be implemented at the offset site. Upon execution of the Conservation Agreement, EnergyAustralia NSW will have a legal obligation to implement the required management actions. The conservation agreement registration process with NSW Office of Environment and Heritage (OEH) will begin following formal approval of the BOMP by DPE.

3.3.3. Climatic information

Local weather observations are available from weather monitoring stations within the EnergyAustralia NSW operational area. Whilst useful in determining conditions at the

observation point, the limited temporal range of data is not considered to sufficiently indicate climatic patterns over the long-term. Long term climate data for the region is available from the Bureau of Meteorology. While this data may not specifically reflect conditions within EnergyAustralia NSW lands, the long-term weather observations are considered to provide a good indication of general patterns affecting the broader area.

Long term average rainfall and temperature data is available from two locations within the broader area; however each of these observation stations is now closed. The Lithgow (Birdwood Street) station (closed in 2006) and the Lithgow (Newnes Forest Centre) station (closed in 2002) are considered to provide the best available representation of climate conditions in the EnergyAustralia NSW operational area. Comparison of these stations shows that while Lithgow (Newnes Forest Centre) is geographically closer to EnergyAustralia NSW lands, Lithgow (Birdwood Street) is topographically more representative of EnergyAustralia NSW lands.

Mean monthly temperature and rainfall statistics from each station indicate strong seasonality in average temperatures, with relatively similar average rainfall patterns throughout the year. The following average rainfall and temperature data (Figure 9) has been sourced from BoM records for Lithgow (Birdwood Street) and is considered to be indicative of conditions across the EnergyAustralia NSW lands.

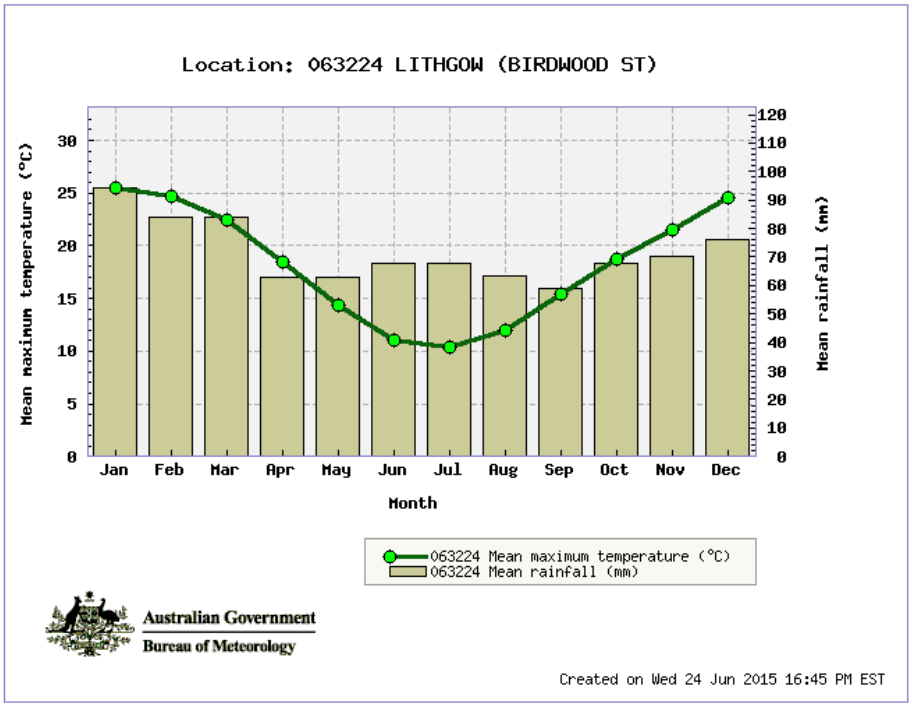


Figure 9: Mean maximum temperature and rainfall

3.3.4. Geology and soils

Thompsons Creek Reservoir site is situated at the western limit of the Sydney Basin. Three major geological types are present including Permian sediments of the Illawarra Coal measures and the Shoalhaven group, Devonian sediments. Parent geology in the north eastern corner of the site consists of Permian sediment, while Devonian sediments dominate the southern western corner. Vegetation communities on the site are largely distributed according to geological types to which it is related. The Cullen Bullen soil landscape covers a significant proportion of the site. Cullen Bullen is characterised by low rolling hills, low topsoil fertility, moderate to low pH buffering capacity and low available water holding capacity. Subsoil material at this landscape unit has a high potential for aluminium toxicity. Erosion hazard is high on these soils (Hyder, 2002).

The area surrounding Thompsons Creek Reservoir contains seven soil units (Pacific Power 1993). Of these three are located within the rehabilitation site (Hyder, 2002):

- Unit B- Orange and Yellow Duplex soils- Occur in drainage plains and foot slopes, low fertility, depths between 1 and 3 metres, moderately erodible due to their weak structure and loamy texture.
- Unit C- Yellow-Grey Gradational and Duplex Soils-Occur on drainage depressions, depths greater than 1.5 metres, low fertility, suffer poor drainage, often subject to minor gully erosion, waterlogging and flood liability.
- Unit F- Stony Duplex Soils-Occur on rolling terrain (gradients Between 5 to 20%), depths between 1 and 5 metres, underlain by partially weathered bedrock top spoils have high erodibility or have been lost due to poor management, subsoils exhibit gully erosion on disturbed areas, on slopes exceeding 10% there is a high erosion hazards for these soils

Soil types B and C suffer from poor drainage due to high clay content. Soil type F is found at higher elevations and is therefore less prone to waterlogging (Pacific Power, 1993). Erosion Hazard is high and soils are exposed to seasonal waterlogging and high water tables (King, 1993).

3.3.5. Aboriginal cultural heritage values

The activity would be conducted on previously disturbed land and it is considered unlikely that any items of Aboriginal cultural heritage would be affected by the activity. A search of the Aboriginal Heritage Information Management System (AHIMS) database was conducted on 3 June 2013. No Indigenous heritage items have been recorded on the offset site. There are no native title claims, Indigenous land use agreements or joint management arrangements over this land.

3.3.6. Historic cultural or heritage values

The activity would be conducted on previously disturbed land and it is considered unlikely that any items of cultural heritage would be affected by the activity. A search of the National Heritage List, State Heritage Register and Lithgow City Local Environment Plan heritage schedule was conducted on 3 June 2013. No items of historic, cultural or natural heritage values are listed on or in the vicinity of the offset site.

3.3.7. Land of Environmental Concern

The subject site is not mapped as an area of environmental concern.

3.3.8. Ecology

Flora and fauna which are Endangered, Critically Endangered or Vulnerable, either as a species or Ecological Community, are listed as Schedules in the NSW Threatened Species Conservation Act 1995 (TSC Act 1995) and may also be separately listed Federally under the Environmental Protection and Biodiversity Conservation (EPBC Act 1999).

There are 11 threatened species (10 fauna and 1 flora) recorded at Thompsons Creek Reservoir, based on Atlas of NSW Wildlife (2015) records. Under the TSC Act 11 species are listed as Vulnerable and two listed under the EPBC Act. The threatened species consist of eight birds, one microbat, one arboreal mammal, and one tree. These records, and those for surrounding lands, are shown in Table 6.

Previous studies completed for Thompsons Creek Reservoir (Ecotone 1996, Hyder 2002, LMP 2014) reported the presence of five threatened fauna species (Figure 10):

- The Eastern False Pipistrelle;
- The Glossy Black cockatoo;
- The Powerful Owl;
- Varied Sittella; and
- Scarlet Robin.

Threatened species identified on Thompsons Creek Reservoir are listed below. A complete list of associated threatening processes affecting these species is given in Appendix C.

Table 6: Threatened flora and fauna species identified on Thompsons Creek Reservoir

Common Name	Scientific Name	TSC Status[1]	EPBC Status
Gang-Gang Cockatoo	*Callocephalon fimbriatum*	V	-
Glossy-Black Cockatoo	*Calyptorhynchus lathami*	V	-
Brown Treecreeper (eastern subspecies)	*Climacteris picumnus victoriae*	V	-
Spotted-tailed Quoll	*Dasyurus maculatus*	V	E
Varied Sittella	*Daphoenositta chrysoptera*	V	-
Scarlet Robin	*Petroica boodang*	V	-
Flame Robin	*Petroica phoenicea*		
Powerful Owl	*Ninox strenua*	V	-
Eastern False Pipistrelle	*Falsistrellus tasmaniensis*	V,	-

[1] Status sourced from records obtained from the Atlas of NSW Wildlife database

Eastern Bentwing-Bat	*Miniopterus schreibersii oceanensis*	V	-
Capertee Stringybark	*Eucalyptus cannonii*	V	V

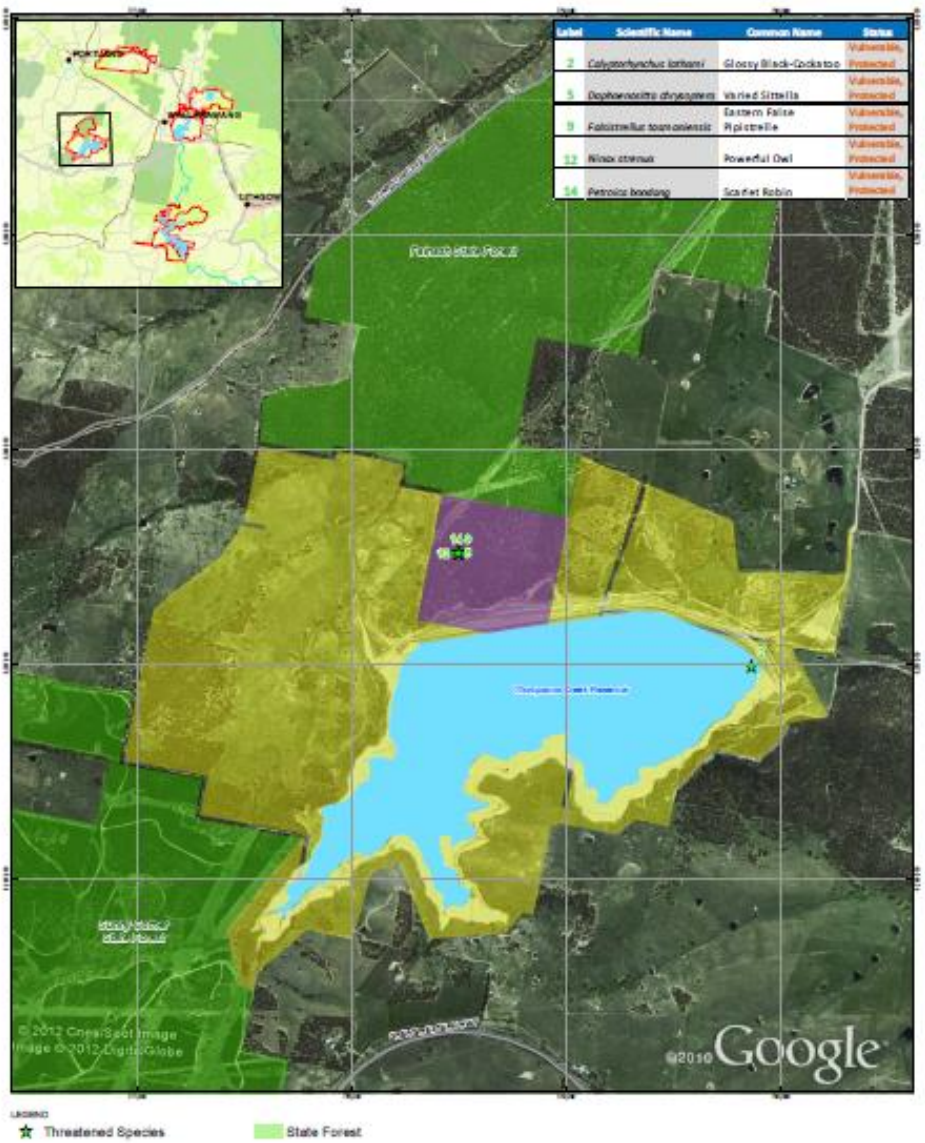


Figure 10: Threatened species within Thompsons Creek Reservoir

Three main vegetation communities occurring within the study area (Hyder 2002): Broad-leaved Peppermint/Brittle Gum Open woodland/Forest, Broad-leaved Peppermint/Mountain Gum open woodland and Ribbon Gum Open Forest. Within those communities, 69 plant species were recorded including four introduced species: Blackberry Nightshade (*Solanum nigrum*), Blackberry (*Rubus ulmifolius*), Sweet Briar (*Rosa rubigonosa*), and Dandelion (*Taraxacum officionale*) (Ecotone, 1996). Shrubs of Wattle (*Acacia* spp.), Guinea flower (*Hibbertia* spp.) and Tea-tree (*Leptospermum* spp.) are present. Common species in the grass understorey include Tussock grass (*Poa labillardieri*), Blown grass (*Agrosits avenacea*), Wallaby grass (*Danthonia* spp.) and Kangaroo grass (*Themeda*

australis). Native vegetation has been cleared and re-seeded with radiata pine (*Pinus radiata*) over parts of the landscape. None of the vegetation communities and species at this site have been listed as threatened on either the *NSW Threatened Species Conservation Act 1995* (TSC Act) or the *Environment Protection and Biodiversity Conservation Act 1999*. One (1) vulnerable and three (3) endangered ecological communities- as listed on the TSC Act, may occur in the Thompsons Creek Reservoir area (NPWS Wildlife Atlas, 04/06/2015). See Appendix C for threatened species previously recorded within 10km of the subject site.

The Broad-leaved Peppermint/Brittle Gum Open Woodland/Forest merges with Ribbon Gum Open Forest that occurs downslope in gully situations. The Broad-leaved Peppermint/Brittle Gum Open Woodland/Forest and Broad-leaved Peppermint/Brittle Gum regrowth adjacent to the offset site (Figure 11) is previously cleared lands on Devonian sediments in exposed slope positions associated with cold air drainage associated with soils units B, C and F (see Section 3.3.4) has habitat of conservation value. It is expected that the layout of the rehabilitation works approximate the distribution of vegetation communities in the original landscape as closely as possible (Hyde, 2002).

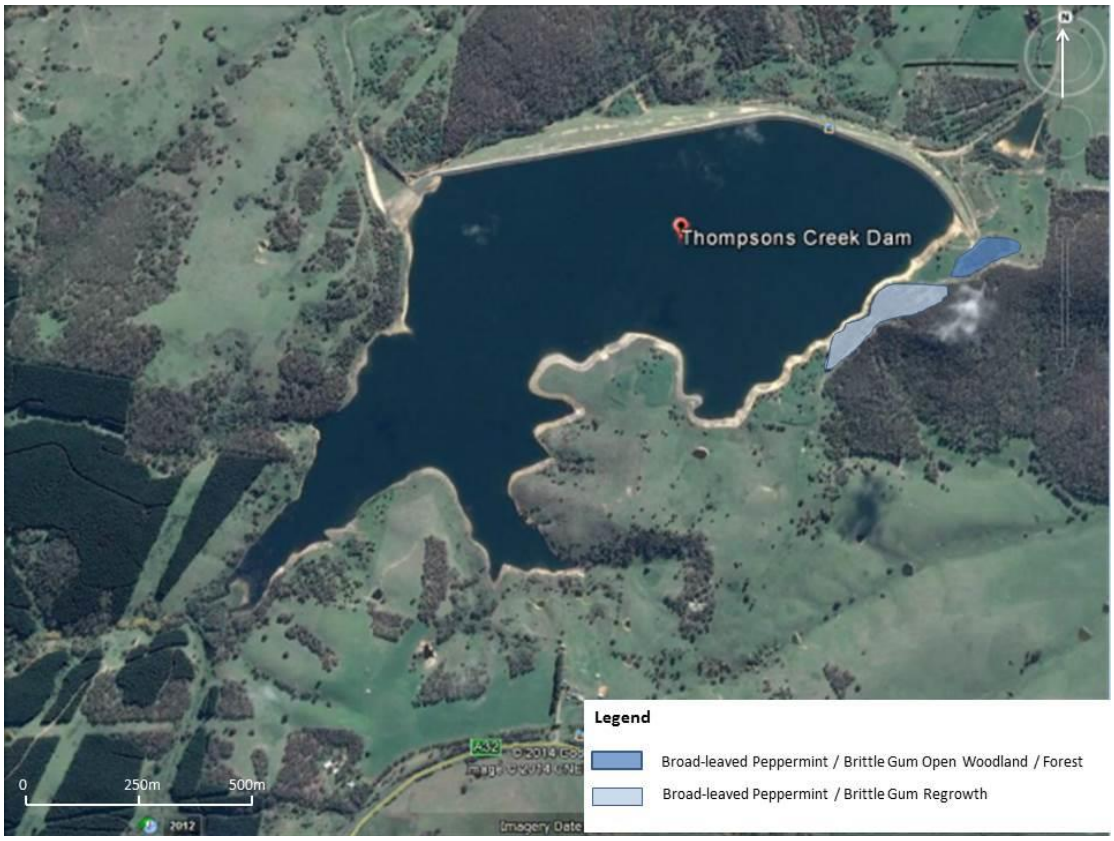


Figure 11: Vegetation adjacent to offset site within Thompsons Creek Reservoir

4. Offset Management Strategies

Biodiversity offsets are measurable conservation outcomes resulting from actions designed to compensate for significant residual adverse biodiversity impacts arising from project development after prevention and mitigation measures have been taken. The goal of biodiversity offsets is to achieve no net loss and preferably net gain of biodiversity on the ground with respect to species composition, habitat structure, and ecosystem function.

The management objective for the Lamberts North Offset area is to maintain and improve its ecological values. It is proposed to achieve this through:

- Promotion of areas of regenerating Broad-leaved Peppermint/Brittle Gum Woodland and Ribbon Gum Open Forest species to increase the condition of the remnant communities;
- Maintaining the existing diversity and abundance of native flora and fauna associated with the area and respective vegetative communities;
- The control of noxious weeds within the offset area;
- The control of feral animals; and
- The control of erosion within the offset site.

4.1. Revegetation of site

One of the objectives for rehabilitation of the offset site is to ensure that the erosion issues are addressed and are integrated aesthetically and ecologically within the surrounding landscape following project completion. Subsequently, these areas will be further stabilised by planting trees, shrubs and grasses. Revegetation of the Thompsons Creek Reservoir offset site would use native species which occur in the local area and are adapted to the local conditions.
The objective for the revegetation of the final landscape is to:

- Establish plant species and vegetation communities that are typical of the surrounding landscape and soil types;
- Create links between existing vegetation ensuring resulting areas are connected; and
- Establish suitable habitat for native animals.

The dominant species in the Broad-leaved Peppermint/Brittle Gum Regrowth community are *Eucalyptus dives* (Broad-leaved Peppermint). Subdominants include *E. viminalis* (Ribbon Gum), *E. pauciflora* (Snow Gum) and *Allocasuarina littoralis* (Black Sheoak). The initial focus will be to establish local species in the offset area so as to link the existing vegetation remnants on-site. Understory species will be planted to create an extra layer of habitat that can provide different types of foraging and shelter for fauna. The development of the understory is particularly important in the Ribbon Gum Open Forest and Broad-leaved Peppermint/Mountain Gum Open Forest and Broad-leaved Peppermint/Mountain Gum Open woodland communities which have naturally occurring under cover storey of 5-70% and 0-8-% respectively, indicating the presence of natural clumps of understorey species throughout these communities (Hyder, 2002). Seed collection will be carried out at the

appropriate time for the species concerned and seedlings are best planted out while they are in their active period of growth. Seed propagation therefore should ideally be carried out in December or January approximately four months prior to the planting date in autumn. Seeds collected are then germinated as soon as practicable and ready for planting. The site is prone to winter frosts and mature tube stock with well-developed roots will be used to aid in frost resistance and the timing of planting will maximise the survival rate of the seedlings. Planting should occur annually, in late April to May, to get maximum benefit from winter root growth, protecting against drought stress in subsequent dry spring or summer months. Collection of seeds was carried out in November 2014 on site as listed below in Table 7.

Table 7: Seeds collected on site November 2014

Common Name	Scientific Name
Snow gum	Eucalyptus pauciflora ssp pauciflora
Narrow Leafed Peppermint	Eucalyptus radiata
Broad Leaved Peppermint	Eucalyptus dives
Scribbly Gum	Eucalyptus rossii
Stringybark	Eucalyptus macrorhyncha ssp. Macrorhyncha
Brittle Gum	Eucalyptus mannifera ssp. mannifera
Red Stem Wattle	Acacia spp.

Future seed collection will include understory species prevalent to Ribbon Gum Open Forest and Broad-leaved Peppermint/Mountain Gum Open Forest and Broad-leaved Peppermint/Mountain Gum Open woodland communities. The initial revegetation area will be monitored and will allow for the planning of additional revegetation required in the upcoming years. The ongoing collection of seed species particularly near the wooded foreshores and adjacent eucalypt woodland regrowth area in the following years will allow for the revegetation to take place in a staged approach. The success of the revegetation program will be monitored on a yearly basis to determine if additional revegetation is required in the following year. The total area planted would be approximately 5ha with planting starting at a distance of approximately 50m from the foreshore.

Methods to achieve vegetation establishment are:

- The initial planting will occur 50 m from the foreshore at Lot 243 in DP 801915 comprising 3.849ha (Figure 8 and 12). Planting will begin at the existing vegetation stands and continue back towards the southern boundary;
- Site preparation to be performed at least 6 weeks prior to planting;
- Tree and shrub planting using a methodology with a wide augured hole refilled with a selection of organic soil mix;

- Tube-stock planted to this soil base will be provided with a weed mat and a plastic tree guard, positioned with hardwood stakes;
- All exposed soil areas will be covered with the suitable organic tree mulch to address the need to blend with the existing landscape and to remediate any existing exposed soil patches. Planting to occur in a landscape mosaic and then in-fill after plants have established in year one;
- Planting to a pre-augured hole will ensure the new trees will not become root bound and grow to an expected 1 m height after 12 months; and
- Plant species will be established at approximately 5m intervals for all communities planted. This spacing distance will ensure the likely rate of survival of each plant to maturity whilst minimising erosion of the soil.

Figure 12: Initial offset site plan in Lot 243 in DP 801915 comprising 3.849 ha

Maintenance will be required to ensure that the revegetation is successful. This will include:

- Heavy, regular watering that deeply penetrates the soil to discourage shallow root growth;
- Weed control by hand weeding around each new plant.
- Pest control of targeted grazers such as rabbits and goats; and
- Monitoring.

4.1.1. Weed control

The eradication of weeds within the offset area will be routinely controlled and monitored. Weed control is currently performed on all EnergyAustralia NSW landholdings as part of the

Land Management Plan. As a result weeds are not likely to represent a major hindrance to the success of the program. Introduced pasture grasses are the main weeds on the site. Earlier revegetation attempts at Thompsons Creek Reservoir indicated that establishing a canopy virtually eliminated introduced pasture grasses and selectively encouraged native grass species (Hyder, 2002). Three monthly surveys are currently performed and the weed status updated to ensure that weeds in this area is kept at ongoing maintenance levels. Methods to control weeds in the early stages of vegetation establishment are:

- A program of weed control prior to and during the establishment of newly vegetated areas, including weeds that provide shelter for rabbits to be removed prior to revegetation, including blackberry;
- Limited herbicide use will be necessary to control weeds and is not advised once plants are established;
- Hand weeding around each new planting will be necessary until the canopy and native ground species are well established to supress exotic grasses; and
- Aim to maintain an area of 60cm to 1 meter around each plant free of weeds at least the first year of planting.

4.1.2. Feral animal control

The feral animal population within the offset area will be routinely monitored and controlled. Feral animal control is currently performed on all EnergyAustralia NSW landholdings and is part of the Land Management Plan. Feral animals in Thompsons Creek Reservoir are currently monitored and included in the control program are rabbits, hares, foxes and feral goats. Three monthly surveys are currently performed and the population status updated to ensure that the number of feral animals in this area is kept at ongoing maintenance levels. Methods to control grazing in the early stages of vegetation establishment are:

- A program of rabbit control prior to and during the establishment of newly vegetated areas, including the destruction of warrens;
- Meshguards will be trialled around some plants to control grazing if rabbits and hares are found to be affecting the growth of the seedlings; and
- Repair existing fences and maintain fencing to exclude goats from adjoining properties; and
- Taller exclusion fencing around revegetated areas to control grazing by larger animals such as macropods if deemed necessary.

4.1.3. Erosion control

Erosion is a primary concern in regards to soil degradation at Thompsons Creek Reservoir. The major concern is the high risk if site erosion and soil loss for these soils. Any site preparation needs to consider the potential erosion after disturbing the existing grass cover. Three monthly surveys are currently performed and the erosion status updated to ensure that erosion in this area is kept at ongoing maintenance levels. Methods to control erosion in the early stages of vegetation establishment are:

- A program of erosion control prior to and during the establishment of newly vegetated areas, including covering all exposed soil areas with organic tree mulch to blend with the existing landscape and to remediate any existing soil patches;
- Adopt a staged approach to planting to establish future biodiversity stands;
- Start planting at a distance of approximately 50m from the foreshore;
- Plant in a mosaic landscape pattern and then fill in after the year one planting have been established;

4.1.4. Bushfire management

Specifications for the management of bushfire within the offset area will be developed as well as an assessment of fire hazard and fuel load within the EnergyAustralia NSW Bushfire Management Plan (BMP, 2014). The BMP provides the framework for the maintenance and mitigation measures throughout the EnergyAustralia NSW's landholdings that meets the NSW Rural Fire Service minimum requirements. The majority of the landscape immediately adjacent to Thompsons Creek Reservoir (Figure 13) is mapped as cleared or severely disturbed. EnergyAustralia NSW's land at Thompsons Creek Reservoir is adjacent to the pine plantation of Sunny Corner State Forest to the south-west and Falnash State Forest to the north. Vegetation within Falnash State Forest is dominated by Southern Tableland Dry Sclerophyll Forest, with some Tableland Clay Grassy Woodland associated with riparian areas. Small pockets of Southern Tableland Dry Sclerophyll Forest and Tableland Clay Grassy Woodland occur across the Thompson's Creek Reservoir site. The offset site on the south-eastern side is adjoined by pine planation with some Tableland Clay Grassy Woodland. The bushfire hazard affecting the offsets area will most likely be considered to be low to moderate, reflecting the mostly low fuel accumulation levels associated with the grassy woodland vegetation that is prevalent. Asset Protections Zones (APZ) are a key component of bushfire planning and an APZ appropriate of a conservation zoning will be outlined and included in the Bushfire Management Plan. Currently Fuel hazard assessments are undertaken prior to the bush fire season to aid in identifying areas where fuel reduction may be required. Mechanical fuel reduction may include routine slashing, trittering and vegetation removal. Fuel hazard reduction through burning may be scheduled in advance. Fire trails within EnergyAustralia NSW lands are identified as internal thoroughfares which allow strategic access into and throughout the property to assets and potential bush fire zones. Fire trail maintenance is scheduled to occur throughout the year and particularly prior to the bush fire season.

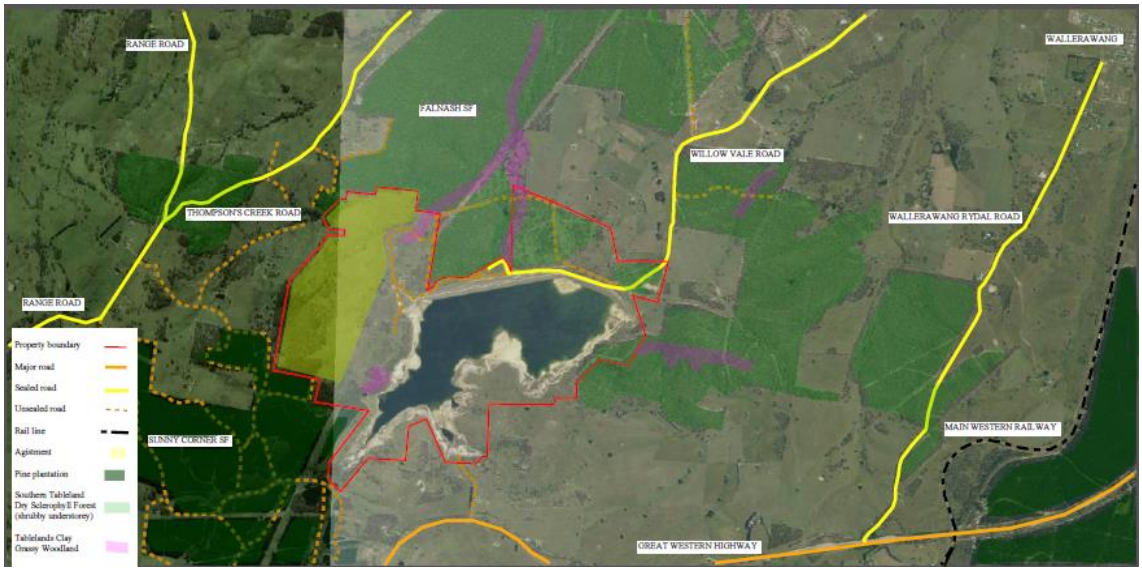


Figure 13: Thompsons Creek Reservoir environmental assets

4.2. Project Management

The project will be managed within the provisions of the EnergyAustralia NSW Land Management Plan (LMP). Currently the EnergyAustralia NSW's Land Management Plan (EnergyAustralia NSW, 2014) provides the overarching concepts for decision making in terms of landscape and the land use for EnergyAustralia NSW's Power Stations. The activities associated with the ongoing implementation of the biodiversity offset management plan will be delegated as part of the LMP implementation process. A biodiversity offset project budget will be established and managed within the LMP.

4.2.1. Monitoring

Monitoring will occur in the Thompsons Creek Reservoir offset area to determine the success of the program and to guide the adaptive management process. Monitoring will occur frequently in the initial stages of the revegetation including:

- Site inspections
  - Fortnightly post planting for the first three months, including watering and replacement of protective coverings as required, monthly thereafter;
  - Quarterly inspections of weed and pest by qualified personnel; and
  - Quarterly inspections of erosion by qualified personnel.
- Annual flora and fauna monitoring to determine planting health and survival. This will assist in determining:
  - Success rates of native grasses and trees;
  - Success of weed and pest control;
  - Success of erosion control;
  - Corrective actions required; and
  - Future planning of further revegetation.

- The monthly and annual inspections required to be completed within the offset site are to be documented by an inspection form, provided in Appendix D and should include, but not be limited to inspections of:

o Fencing and gates for any breaches of stock or recreational activity;

o Observations of weed management, any out-breaks or success in control to inform where targeted weed control should occur;

o Observations of vertebrate pests and impact areas

o Observations on natural regeneration and success of assisted regeneration

o Observations of issues relating to bushfire management, including excessive fuel load areas, areas burnt if relevant.

If the monthly inspections reveal an issue, a basic action plan is to be prepared identifying appropriate recommendations to rectify the issue.

Monitoring and auditing are important elements of any offset management plan. EnergyAustralia will undertake specific monitoring to determine the success of the offset and to guide future management of the offset site.

4.2.2. Methodology for monitoring and reporting

The key objective of this management plan is to maintain or improve the biodiversity values of the offset site. The most effective revegetation programs us an adaptive management approach (Hyder, 2002). Progress of the offset will be monitored frequently and the results from the site inspections will be used to make assessment of the success of the techniques utilised. This will allow for changes to management practices to be made if performance outcomes are not achieved. If for example more than 20% of the planted species fail, replanting may be deemed necessary, also if natural regeneration has not occurred alternative methodology of planting may be required such as exclusion fencing.

Both the outcome of the revegetation including the planting success rate and the effectiveness of techniques used will be required to be assessed often. As such there is a need to undertake ongoing flora and fauna monitoring to determine the effectiveness of the BOMP. A flora and fauna monitoring program will be developed for the offset site, which will be based on repeatable and quantifiable methods. This will be performed by suitably qualified and licensed personnel with experience in flora and fauna survey and monitoring. Factors that may be considered are:

- Success of weed, pest and erosion control;
- Success of planting;
- Occurrence of natural regeneration; and
- Structure and composition of revegetated offset site.

Flora and fauna monitoring is to occur annually in spring for the first five years. A monitoring report is to be prepared by the ecological contractor documenting the methods, findings and recommendations after each monitoring event. Management of the offset site can be adapted accordingly. These findings will be discussed and considered further in the Annual Environmental Management Report for Lamberts North that is submitted to the DPE for review and comment.

4.2.3. Management actions within offset site

The following table describes the management actions to be undertaken for the biodiversity offset site at Thompsons Creek Reservoir.

Table 8 Management actions within offset site

Management Action	Timing	Outcomes	Monitoring	Responsibility
Site preparation Preparation will involve adressing issues of erosion and augering holes to a depth of 0.6m.	**2015**- Initial preparation will occur 6 weeks prior to planting.	The overall aim of the site preparation is to ensure the quality of the offset by mitigating erosion due to disturbance of grass cover.	**Daily** inspections during planting .	**Contractor and environment officers**
Initial Revegetation Revegetation will occur within the offset site, 50m from shoreline and . Native species appropriate to local vegetation types will be used for all revegetation within the offset area. The offset area will be mapped to determine where revegetation will occur.	**2015**- Initial revegetation will occur	The overall aim of the revegetation program is to enhance the quality of the offset over time through the reintroduction of the Broad-leaved Peppermint/Brittle Gum Open Woodland/Forest and Boroad-leaved Pepeprmint/Brittle gum Regrowth to the existing area. This will maintain and enhance the existing biodiversity and increase the condition for future communities.	**Fortnightly** inspections post planting for the first three months. **Monthly** inspections after three months post planting	**Contractor and environment officers**
Ongoing Revegetation Monitoring of the initial revegetation area will determine the additional revegetation required	**2016**- Revegetation will occur on a yearly basis as required. The revegatation will occur in Autumn	The overall aim of the revegetation program is to enhance the quality of the offset over time through the reintroduction of the Broad-leaved Peppermint/Brittle Gum Open Woodland/Forest and Boroad-leaved Pepeprmint/Brittle gum Regrowth to the existing area. This will maintain and enhance the existing biodiversity and increase the condition for future communities.	**Monthly** inspections **Yearly** flora and fauna monitoring by suitably qualified personnel.	**Contractor, ecologist and environment officers**
Feral animal control Monitoring feral animals within the offset site will occur on a quarterly basis to determine feral animal status and controls required	**2015** - Initial feral animal control works to occur **2015 onwards**- Monitoring will occur every three months to determine control program to be developed.	If required the feral animal control program will aim to maintain current levels within the offset site to reduce grazing and predation of native fauna.	**Quarterly** inspections	**Suitably qualified contractor**
Weed control Monitoring weeds within the offset site will occur on a quarterly basis to determine weed status and controls required	**2015** - Initial weed control works to occur **2015 onwards-** Monitoring will occur every three months to determine control program to be developed.	The initial works will control invasive weeds within the offset improving the success of the revegatation and provide habitat for native flora and fauna.	**Quarterly** inspections	**Suitably qualified contractor**
Erosion control Monitoring erosion within the offset site will occur on a quarterly basis to determine weed status and controls required	**2015** - Initial erosion control works to occur **2015 onwards-** Monitoring will occur every three months to determine control program to be developed.	A reduction in the amount of erosion occurring within the offset site reducing the soil loss.	**Quarterly inspections**	**Suitably qualified contractor**
Bushfire management The bushfire management plan encompasses all landholdings and provides the framework for mitigation measures. EnergyAustralia NSW will update the current Bushfire Management Plan to incorporate the offset site.	**2015**- The EnergyAustralia NSW Bushfire Management Plan will be updated by July 2016.	The updated BMP will mitigate the impact of bushfire on the ecological values of the offset area.	**Yearly** review of BMP	**Environment Officer**

5. Review

An important component of the BOMP is as part of the EnergyAustralia NSW's EMS is the requirement to review the effectiveness and performance of the biodiversity offset management. EnergyAustralia NSW will annually review the BOMP as part of the AEMR and will consider and discuss the following as a minimum:

- Biodiversity monitoring;
- Biodiversity impacts;
- Predicted results vs actual monitoring results;
- Contingency plans to manage unpredicted outcomes;
- Management strategies to be implemented to improve biodiversity outcome; and
- Future revegetation requirements and recommendations.

Appendix A: Correspondence from DPE in regard to biodiversity offset required

NSW GOVERNMENT | Planning & Infrastructure

Contact: Alexander Scott
Phone: 02 9228 2096
Email: alexander.scott@planning.nsw.gov.au

Our ref: MP 09_0186

Mr Nino Di Falco
Environment Manager Western
Delta Electricity
Private Bag No 1
PORTLAND NSW 2847

Att: Ms Coleen Milroy

Dear Mr Di Falco

Subject: Mount Piper Ash Placement Project (MP 09_0186) Biodiversity Offset Management Plan (BOMP) – Condition B6

I refer to your letter of 14 May 2013, with which you provided a Biodiversity Offset Management Plan (BOMP) for the Lamberts North stage and a Biodiversity Offset Strategy Outline (BOSO) for the Lamberts South stage, as required by Condition B6 and the Department's letter of 11 January 2013.

The Department advises that the BOSO for Lamberts South is considered to be appropriate and has no further comment on it at this stage.

However, the BOMP for Lamberts North is not approved. While the Department acknowledges the rehabilitation that will take place as part of the site's development and the limited current ecological value of the five hectares of rehabilitated vegetation currently on the site, it is concerned that the future ecological value expected as the vegetation develops will be deferred or lost. It is a requirement of Condition B6 that an offset be provided. The Department requires that the BOMP for Lamberts North be revised to include an offset, such as rehabilitating an alternative site in the vicinity of Lamberts North, at a ratio of 1:1 to the existing rehabilitation site to be cleared.

Please contact Alexander Scott, Planning Officer on 9228 2096 or alexander.scott@planning.nsw.gov.au or Neville Osborne, Manager Energy Projects on 9228 6337 or neville.osborne@planning.nsw.gov.au if you wish to discuss this matter further.

Yours sincerely

Karen Jones 18/6/13.
A/ Director
Infrastructure Projects
as nominee for the Director-General

Department of Planning & Infrastructure 23-33 Bridge Street Sydney 2000 GPO Box 39 Sydney 2001 Phone 02 9228 6111
Fax 02 9228 6455 Website planning.nsw.gov.au

Appendix B Thompsons Creek Reservoir Access Licence Deed

NSW GOVERNMENT Primary Industries

Access Licence Deed

This is a deed between:

- the Crown in right of the State of New South Wales acting through the **Department of Primary Industries** as an office of the Department of Trade and Investment, Regional Infrastructure and Services (ABN 72 189 919 072) located at 161 Kite Street Orange NSW 2800 ("the Department"); and
- the **Landholder**,

under which the Landholder agrees to grant a licence to the Department to enable access to the Landholder's Land, in accordance with the following **Details, Terms** and any **Annexures** (this "**Deed**").

Details	
Land	Lot 243 DP 801915 , Lot 4211 DP 644418, Lot 254 DP 806025, Lot 262 DP 803710, Lot 341 DP 803500, Lot 432 DP 803501 County of Cook Parish of Lidsdale and Falnash
Landholder	Name: **Delta Electricity** ABN: 67 139 819 642 Address: Level 20, 175 Liverpool Street, Sydney, NSW **Contact Person**: Michelle Blackley Telephone: (02) 6354 8130 Fax: (02) 93548113 E-mail: michelle.blackley@de.com.au
The Department's Contact Person	Name : Alistair McBurnie Position: Fisheries Manager Telephone: (02) 60424214 Fax: (02) 60210113 E-mail: alistair.mcburnie@dpi.nsw.gov.au
Fishing Site	**Thompsons Creek Dam,** being the area located on the Land identified as suitable for fishing, as illustrated on the map attached as **Annexure A**, and any access from Willow Vale Road carpark through the Land to reach that location.
Fishing Closure	Fishing Closure notification titled "Trout and Salmon" published in the Government Gazette No. 47 of 4 May 2012 at pages 1152 to 1159.

Commencement Date	The date on which the last party signed this Deed.
Expiry Date	5 years from the Commencement Date.

Terms

1. **Definitions and Interpretation**

1.1 **Interpretation**

Unless the context requires otherwise, in this Deed:

(a) the terms set out in the left hand column of the Details have the meaning ascribed to them in the right hand column of the Details;
(b) words in the singular include the plural and vice versa;
(c) a reference to a statute, regulation, ordinance or by-law will be deemed to include a reference to all statutes, regulations, ordinances or by-laws amending, consolidating or replacing same from time to time;
(d) headings are for convenience only and do not affect the interpretation of this Deed;
(e) the meaning of general words is not limited by specific examples introduced by "including" or "for example" or similar expressions;
(f) references to persons include bodies corporate, government agencies and vice versa;
(g) references to the parties include references to respective directors, officers, employees, and agents of the parties;
(h) nothing in this Deed is to be interpreted against a party solely on the ground that the party put forward this Deed or any part of it; and
(i) where an expression is defined, any other grammatical form of that expression has a corresponding meaning.

1.2 **Definitions**

Anglers mean members of the public who from time to time access and use the Fishing Site.

Business Day means any day other than a Saturday, Sunday or public holiday in New South Wales.

Claim means any cost, expense, loss, damage, claim, action, proceeding or other liability (whether in contract, tort or otherwise), however arising and includes legal costs on a full indemnity basis.

Conditions of Entry and Use means the conditions set out in **clause 5**.

Notice means any approvals, consents, instructions, orders, directions, statements, requests and certificates, or other communication to be given under this Deed.

Term means the period commencing on the Commencement Date and ending on the Expiry Date, unless terminated earlier, or extended, in accordance with this Deed.

2. **Fishing Closure**

2.1 The parties acknowledge that the Fishing Closure applies to the Fishing Site, which Fishing Closure includes conditions to the effect that:

(a) only artificial lure and fly fishing methods, and landing net methods in accordance with clause 33 of the *Fisheries Management (General) Regulation 2010* (NSW), are permitted;

(b) only shore based fishing is permitted (ie: no fishing from any vessel, flotation device or floating platform);

(c) fishing is prohibited on the dam wall of Thompsons Creek Dam; and

(d) fishing is only permitted from one hour before sunrise to four hours after sunset.

3. **Grant of Licence**

3.1 The Landholder grants a free, non-exclusive licence to the Department for the Term to enter the Land and use the Fishing Site for shore based fishing, compliance checks, fish stocking, fisheries research, advisory initiatives and other related purposes to enable the Department to comply with its obligations under this Deed.

4. **Anglers**

4.1 The parties acknowledge that the Anglers are not a party to this Deed, and that neither the Landholder nor the Department can be held responsible for the actions of Anglers.

4.2 The Department will consult with representative Anglers from the Central Acclimatisation Society over the Conditions of Entry and Use.

4.3 The Landholder will permit Anglers to enter the Land and use the Fishing Site for shore-based fishing in accordance with the Fishing Closure and the Conditions of Entry and Use.

4.4 Without restricting any person's right to fish as conferred by section 38 of the *Fisheries Management Act 1994* (NSW), the Landholder may at any time at its discretion refuse access through the Land to the Fishing Site by any Angler.

4.5 The Department acknowledges that:

(a) the Department is responsible for enforcing the Conditions of Entry and Use for which it has authority to enforce; and

(b) the Landholder is not required to take any action to enforce the Conditions of Entry and Use.

5. **Conditions of Entry and Use**

5.1 In addition to the requirements of the Fishing Closure, the Conditions of Entry and Use are:

(a) walk-in access only (no vehicles);

(b) one point of entry, being from the Willow Vale Road carpark;

(c) no fires;

(d) no guns or other firearms;

(e) no camping, swimming, boating or digging;

(f) no removal of firewood, rock, flora, fauna, or anything else from the Land except fish;

(g) no dogs or other animals;

(h) no garbage, waste or litter to be left or deposited on the Land;

(i) no interference with the Landholders' property; and

(j) persons fishing do so at their own risk.

6. **The Department's obligations**

6.1 The Department will:

(a) comply, and use its reasonable endeavours within the scope of its authority to procure the Anglers to comply, with the Conditions of Entry and Use and any laws relating to use of the Fishing Site;

(b) comply, and use its reasonable endeavours within the scope of its authority to procure the Anglers to comply, with any reasonable directions given by the Landholder, including (without limitation) in relation to safety and security;

(c) erect signs on or near the Fishing Site to identify that there is a Fishing Site on the Land that it is available to Anglers to access and that the Conditions of Entry and Use apply;

(d) promote the fact that the Landholder has the discretion to refuse access to any Angler to the Fishing Site;

(e) continue to implement an adequate program of fish stocking;

(f) contact the Landholder to prearrange any fish stocking;

(g) conduct compliance checks of Anglers at the Fishing Site;

(h) not interfere with the Land except to the extent permitted by this Deed;

(i) comply with the Landholder's sign-in or other reasonable security requirements;

(j) use vessels (other than in contravention of the Fishing Closure) only with the Landholder's prior consent, which consent must not be unreasonably withheld;

(k) not cause or permit contamination of the Land or the Fishing Site;

(l) not permit any accumulation of useless property or rubbish on the Land;

(m) notify the Landholder of any damage to, or accident on, the Land as soon as possible as it becomes aware of the damage or accident; and

(n) promptly repair any damage to the Land or the Fishing Site caused by the Department or the Anglers.

7. **Infrastructure**

7.1 The Department acknowledges that it is liable for any infrastructure which has been, or will be, built by the Department on the Land (such as signage).

7.2 Should the Landholder substantially alter any infrastructure built by the Department on the Fishing Site (such as the turnstile or fence stiles) without the permission of the Department, the Landholder will assume responsibility for the safety of that infrastructure.

7.3 The Department must not unreasonably withhold its consent to any request by the Landholder to alter any existing infrastructure built by the Department if reasonably required by the Landholder.

8. **Ownership of the Land**

8.1 The Landholder warrants that it is the owner of the Land as at the Commencement Date.

9. **[Deleted]**

10. **Indemnity**

10.1 The Department agrees to access and use the Land and the Fishing Site at its own risk.

10.2 The Department must indemnify and keep indemnified the Landholder from and against any and all Claims incurred by, or made against, the Landholder arising from:

(a) any breach of this Deed by the Department;

(b) any unlawful or negligent act or omission by the Department in connection with this Deed;

(c) any infrastructure built by the Department on the Land; or

(d) access or use of the Fishing Site by the Department or Anglers.

10.3 The Department's liability to indemnify the Landholder under this clause will be reduced proportionately to the extent that any negligent or unlawful act or

omission by the Landholder or its officers, agents or employees contributed to the relevant Claim.

10.4 The Department's liability to indemnify the Landholder under this clause does not exclude or reduce the liability of, or benefit to, a party that may arise by operation of the common law, statute or the other terms of this Deed.

11. **Release**

11.1 The Department agrees that the Landholder will not be responsible for, and releases the Landholder from liability in respect of:

(a) any Claim relating to the Department's or Anglers' use of the Fishing Site;

(b) anything the Department or the Anglers are permitted to do under this Deed; or

(c) any infrastructure built by the Department on the Land.

11.2 The Department's liability to release the Landholder under this clause will be reduced proportionately to the extent that any Claim, injury or damage is contributed to by the Landholder or its officers, agents or employees.

12. **Insurance**

12.1 The Department warrants that it is self-insured with Treasury Managed Fund protection.

12.2 The Landholder is entitled to request evidence of such insurance by contacting the Department at any time.

13. **Term and Termination**

13.1 This Deed will continue for the Term unless terminated earlier.

13.2 Either party may terminate this Deed at any time by giving 3 months written notice to the other party.

13A **Change of Landowner**

(a) The Landowner may assign or novate its interests under this Deed without the consent of the Department.

(b) If the Landowner:

(i) sells or transfers its interest in the Land; or

(ii) grants a lease over the Land,

then if requested by the Landowner, the Department must at the Department's cost enter into a deed in a form reasonably required by the Landowner under which the other person in its own name is entitled to enforce the benefit of all obligations owed by the Department under this Deed.

(c) If the Landowner sells or transfers its interest in the Land then the Department releases the Landowner from all obligations and Claims

under this Deed arising following the date the other person becomes the licensor under this Deed.

14. **Application for closure and purchase of Crown roads**

14.1 The parties acknowledge that:

(a) Lot 1 in DP644959 and Lot 263 in DP803710 (**Crown Roads**) are Crown roads and the Landholder does not have any interest in these parcels of land as at the date of this Deed; and

(b) the Landholder may lodge an application to the New South Wales Department of Primary Industries to close and purchase the Crown Roads (**Crown Road Application**).

14.2 If the Crown Road Application is approved and title to the Crown Roads issue in the name of the Landholder, then the Landholder may notify the Department that the Landholder requires this Deed be varied to include the title to the Crown Roads in the Details of this Deed. On and from the date of a notice provided by the Landholder under this clause 14.2, this Deed is deemed to have been amended to include the variation.

15. **Notices**

15.1 Subject to **clause 15.3**, and unless otherwise stated in this Deed, all Notices to be given under this Deed must be in writing, and hand-delivered, posted, faxed or emailed:

(a) for the Landholder, the contact details specified in the Details or as otherwise notified in writing; and

(b) for the Department, the contact details for the Department's Contact Person specified in the Details or as otherwise notified in writing.

15.2 Any Notice is deemed to be received by the receiving party as follows:

(a) if hand delivered, the day on which it is left at the relevant address;
(b) if sent by regular post within Australia, four (4) Business Days after the day on which it is posted;
(c) if sent by facsimile, the day of transmission, or the date and time the sender received a delivery confirmation report; and
(d) if sent by email, on entering the information system of the recipient party,

provided that if it is hand-delivered, faxed or emailed after 5.00pm on a Business Day, it will be deemed to be received on the following Business Day.

15.3 Notices given under the following clauses of the Deed must not be sent by email: clause 13 (Termination) and clause 12 (Insurance).

16. **General**

16.1 **No Waiver:**

(a) If a party fails to exercise any of its rights under this Deed, or delays exercising those rights, that failure or delay will not operate as a waiver of those rights or any future rights, or estop the party from relying on the terms of this Deed to their full force and effect.

(b) Any waiver by a party of a breach of this Deed must be in writing and will not be construed as a waiver of any further breach of the same or any other provision.

16.2 **Entire Agreement:** This Deed states all the express terms agreed by the parties as to the matters referred to in this Deed. It supersedes all prior contracts, obligations, representations, conduct and understandings.

16.3 **Variation:** This Deed may only be varied by agreement in writing signed by the parties.

16.4 **Inconsistency:** If there is any inconsistency between provisions then the order of precedence will be:
(a) the **Details**; then
(b) these **Terms**; then
(c) any **Schedules**.

16.5 **Negation of employment, partnership or agency**

(a) This Deed does not create a relationship of agency, partnership, and/or employment between the parties.

(b) Neither party will represent itself as being an agent of the other party nor able to bind nor represent the other party.

16.6 **Governing law:** The laws of New South Wales, Australia govern this Deed and the parties submit to the non-exclusive jurisdiction of the courts in that State.

Executed as a Deed

By entering into this Deed the signatory warrants that the signatory is duly authorised to execute this Deed.

Signed, sealed and delivered for and on behalf of **Delta Electricity** by its attorney under Power of Attorney registered number Book 4634 No. 434 dated 2 July 2012:

Signature

GREG EVERETT

Name

CHIEF EXECUTIVE

Title

19 JULY 2013

Date

Before:

Signature of Witness

RAYMOND MADDEN

Name of Witness

91 TARARA RD GYMEA

Address of Witness

19 JULY 2013

Date

Signed, sealed and delivered for and on behalf of the Crown in right of the State of New South Wales acting through the **Department of Primary Industries** as an office of the Department of Trade and Investment, Regional Infrastructure and Services by its authorised signatory:

Signature

Geoff Allan

Name

Executive Director, Fisheries NSW

Title

09 July 2013

Date

Before:

Signature of Witness

HELENA M. HEASMAN

Name of Witness

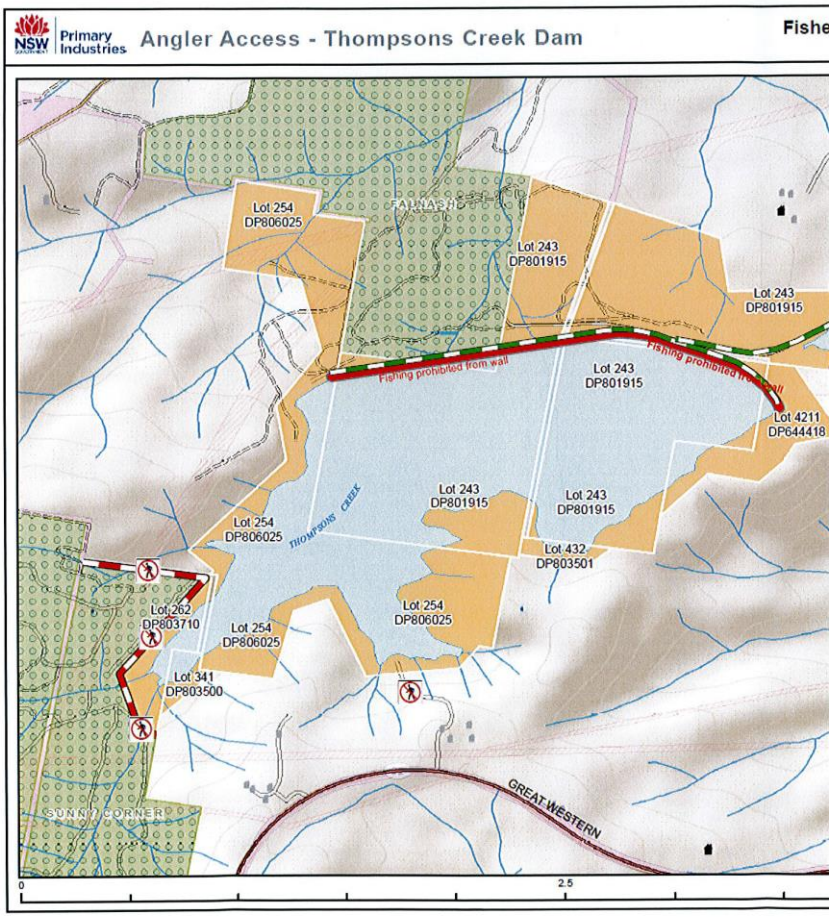
35 KANANGRA AVE CORLETTE 2315

Address of Witness

9/7/13

Date

Annexure A: F



Appendix C Threatened and endangered species that may occur on the subject site

Scientific name	Common name	TSC Act status	EPBC Act status	Habitat association	Likelihood of occurring in the study area
Aves					
Callocephalon fimbriatum	Gang-gang Cockatoo	Vulnerable		May be found in open Eucalypt forests or around urban areas in winter. In summer the species generally inhabits heavily timbered and dense wet sclerophyll forest at higher altitude.	Unlikely. Associated vegetation type does not occur on or near the subject site.
Calyptorhynchus lathami	Glossy Black-Cockatoo	Vulnerable		Associated with forests on low nutrient soils. Often found within *Allocasuarina* spp.	Unlikely. Associated flora species does not occur on or near the subject site.
Climacteris picumnus victoriae	Brown Treecreeper (eastern subspecies)	Vulnerable		Found in Eucalypt woodlands (including Box-Gum Woodland) and dry open forest of the inland slopes and plains inland of the Great Dividing Range; mainly inhabits woodlands dominated by stringybarks or other rough-barked Eucalypts, usually with an open grassy understorey. Also found in mallee and River Red Gum (*Eucalyptus camaldulensis*) Forest bordering wetlands with an open understorey of Acacias, saltbush, lignum, cumbungi and grasses; usually not found in woodlands with a dense shrub layer.	Unlikely. Associated vegetation type does not occur on or near the subject site.
Daphoenositta chrysoptera	Varied Sittella	Vulnerable		Associated with Eucalypt forests and woodlands, especially those containing rough-barked species and mature smooth-barked gums with dead branches, mallee and Acacia woodland.	Unlikely. Associated vegetation type does not occur on or near the subject site.

Ninox strenua	Powerful Owl	Vulnerable		Associated with a range of vegetation types, from woodland and open sclerophyll forest to tall open wet forest and rainforest. The species breeds and hunts in open or closed sclerophyll forest or woodlands and occasionally hunts in open habitats. It roosts by day in dense vegetation comprising species such as Turpentine *Syncarpia glomulifera*, Black She-oak *Allocasuarina littoralis*, Blackwood *Acacia melanoxylon*, Rough-barked Apple *Angophora floribunda*, Cherry Ballart *Exocarpus cupressiformis* and a number of Eucalypt species.	Unlikely. Associated vegetation type and flora species do not occur on or near the subject site.
Petroica boodang	Scarlet Robin	Vulnerable		Found in dry Eucalypt forests and woodlands with an open and grassy understorey of with few scattered shrubs. Associated with both mature and regrowth vegetation. It occasionally occurs in mallee or wet forest communities, or in wetlands and tea-tree swamps.	Unlikely. Associated vegetation type does not occur on or near the subject site.
Petroica phoenicea	Flame Robin	Vulnerable		Associated with clearings and vegetation with an open understorey dominated by native grasses. May be found in temperate rainforest, heathlands, shrublands and sedgelands at high altitudes.	Possible. Associated vegetation type may occur on or near the subject site.
Endangered Ecological Community					
	Montane Peatlands and Swamps of the New England Tableland, NSW North Coast, Sydney Basin, South East Corner, South Eastern Highlands and Australian Alps bioregions	Endangered	Endangered	The Montane Peatlands community is associated with accumulated peaty or organic-mineral sediments on poorly drained flats in the headwaters of streams. It occurs on undulating tablelands and plateaux, above 400-500 m elevation, generally in catchments with basic volcanic or fine-grained sedimentary substrates or, occasionally, granite.	Unlikely. This ecological community is not mapped and has not been observed on or near the subject site. Associated flora species do not occur on or near the subject site.

	Tableland Basalt Forest in the Sydney Basin and South Eastern Highlands Bioregions	Endangered		Dominated by an open eucalypt canopy of variable composition. *Eucalyptus viminalis, E. radiata, E. dalrympleana* subsp. *dalrympleana* and *E. pauciflora* may occur in the community in pure stands or in varying combinations. The community typically has an open canopy of Eucalypts with sparse mid-story shrubs (e.g. *Acacia melanoxylon* and *A. dealbata*) and understory shrubs (e.g. *Rubus parvifolius*) and a dense groundcover of herbs and grasses, although disturbed stands may lack either or both of the woody strata.	Unlikely. This ecological community is not mapped and has not been observed on or near the subject site. Associated flora species do not occur on or near the subject site.
	White Box Yellow Box Blakely's Red Gum Woodland	Endangered	Critically Endangered	An open woodland community of one or more of the following: White Box *Eucalyptus albens*, Yellow Box *E. melliodora* and Blakely's Red Gum *E. blakelyi*. Intact sites contain a high diversity of plant species, including the main tree species, additional tree species, some shrub species, several climbing plant species, many grasses and a very high diversity of herbs.	Unlikely. This ecological community is not mapped and has not been observed on or near the subject site. Associated flora species do not occur on or near the subject site.
Flora					
Eucalyptus cannonii	Capertee Stringybark	Vulnerable	Vulnerable	Associated with Tablelands Grassy Woodland Complex and Talus Slope Woodland vegetation. Often found within vegetation dominated by Red Stringybark (E. macrorhyncha*)* and Long-leaved Box (*E. goniocalyx)*	Unlikely. Associated vegetation type and flora species do not occur on or near the subject site.
Mammalia					
Dasyurus maculatus	Spotted-tailed Quoll	Vulnerable	Endangered	Associated with wet sclerophyll forest, open and closed Eucalypt woodlands and coastal heathlands. The species occurs in a range of vegetation formations, but is limited by the availability of suitable den sites such as hollow logs and trees. The species requires relatively large habitat patches (approximately 250ha) through which to forage.	Unlikely. Associated vegetation does not occur on or near the subject site.

Falsistrellus tasmaniensis	Eastern False Pipistrelle	Vulnerable		Found in moist habitats, with trees taller than 20 m. Generally roosts in Eucalypt hollows, but has also been found under loose bark on trees or in buildings.	Unlikely. Associated vegetation type does not occur on or near the subject site.
Miniopterus schreibersii oceanensis	Eastern Bentwing-bat	Vulnerable		Roosts in caves, derelict mines, storm-water tunnels, buildings and other man-made structures.	Possible. Associated habitat may occur on or near the subject site.

Appendix D Indicative offset site inspection form

Form ID: Thompsons Creek Reservoir Biodiversity Offset

Internal Environmental Survey Form

Land Management issue	Description	Actions
Protective coverings		
Watering		
Stock management and fencing		
Weed Management		
Pest Management		
Erosion Management		
Regeneration		
Assisted regeneration		
Other		

Comments

Completed By:
Signature:
Completion Date:

Insert Map

Insert photos

6. REFERENCES

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