



Edmondson Park South Part 3A – Concept Plan

Ecological Assessment

Ed Park Part 3A - Ecological - Concept Plan Report - 090910 – Rev4

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Abbreviations

ABBREVIATION	DESCRIPTION
CPW	Cumberland Plain Woodland
DECCW	NSW Department of Environment Climate Change and Water
DEWHA	Commonwealth Department of Environment, Water, Heritage and the Arts
ENV	Existing Native Vegetation as defined in the Biodiversity Certification Order
EP&A Act	NSW Environmental Planning and Assessment Act, 1979
EPBC Act	Commonwealth Environment Protection and Biodiversity Conservation Act, 1999
GC SEPP	Environmental Planning Policy (Sydney Region Growth Centres) 2006
LGA	Local Government Area
RAP	Remediation Action Plan
RTA	NSW Roads and Traffic Authority
TSC Act	NSW Threatened Species Conservation Act, 1995
WCM	Water Cycle Management

Executive Summary

Landcom is proposing to deliver a new diverse and sustainable urban community at Edmondson Park South. Once complete, Edmondson Park South will accommodate a mix of land uses, a diversity of housing (approximately 3,200 dwellings), a new town centre incorporating 35,000 – 45,000m² retail, business and commercial floor space with employment opportunities for 1,000 people, multi-purpose community and education facilities, a new 150 hectare Regional Park, a number of other local parks and environmental conservation areas.

The Edmondson Park site contains a significant area of Cumberland Plain Woodland, listed as a critically endangered ecological community under the *NSW Threatened Species Conservation Act, 1995* and the *Commonwealth Environment Protection and Biodiversity Conservation Act, 1999*. This area has been subject to a considerable level of previous survey, assessment and planning, with the protection of Cumberland Plain Woodland on the site forming an important component of urban design.

This protection has primarily been achieved through the establishment of a Regional Park on the site that will be owned and managed by the NSW Department of Environment, Climate Change and Water.

The large area that has been set aside for conservation purposes combined with additional complementary conservation measures has given state and commonwealth governments surety that the proposal will lead to an overall improvement in biodiversity values. This has enabled both levels of government to strategically approve the loss of vegetation and habitat in areas zoned for urban development.

These approvals are by way of biodiversity certification of State Environmental Planning Policy (Sydney Region Growth Centres) 2006 and the signing of a Conservation Agreement by the NSW Government and the Commonwealth of Australia under the *Commonwealth Environment Protection and Biodiversity Conservation Act, 1999*.

This report has assessed the proposal against the Director Generals Requirements (DGRs) issued for the site under Part 3A of the *Environmental Planning and Assessment Act, 1979*. The DGRs require detailed assessment of the consistency of this proposal with these earlier strategic approvals.

This report has demonstrated that the proposal is consistent with the objectives and outcomes required by these strategic approvals. It has quantified the impact of proposed minor design changes and identified that this proposal will result in an increased area of Cumberland Plain Woodland and associated habitat being protected and managed than what was required under the existing strategic approvals.

1 Introduction

This ecological assessment report has been prepared by Eco Logical Australia to accompany a Concept Plan Application under Part 3A of the Environmental Planning & Assessment Act, 1979 (EP&A Act) and a proposal for State significant site listing under Schedule 3 of State Environmental Planning Policy Major Development 2005 (SEPP Major Development) in relation to the former Ingleburn Army Base and certain adjoining lands within the Edmondson Park Release Area of the South West Growth Centre (referred to herein as 'Edmondson Park South').

Landcom is proposing to deliver a new diverse and sustainable urban community at Edmondson Park South. Once complete, Edmondson Park South will accommodate a mix of land uses, a diversity of housing (approximately 3,200 dwellings), a new town centre incorporating 35,000 – 45,000m² retail, business and commercial floor space with employment opportunities for 1,000 people, multi-purpose community and education facilities, a new 150 hectare Regional Park, a number of other local parks and environmental conservation areas.

The new urban community at Edmondson Park South will meet's the State Government's objectives to increase housing supply, provide community benefits and create jobs.

The purpose of the Concept Plan is to secure statutory approval for the overall planning framework for the site and to further resolve a number of remaining site-wide infrastructure delivery and land use planning issues. The Project Application (submitted concurrently with the Concept Plan) for early works, infrastructure and subdivision relating to the initial phases of the development will enable site works to begin in 2010.

The Site

The subject site comprises an area of approximately 413.3 hectares and forms part of the larger Edmondson Park Release Area within the South West Growth Centre. It is located to the north-west of the M5 Motorway and lies approximately 40 km to the south west of Sydney CBD. Approximately 260.4 hectares of the site is located within the Liverpool LGA and approximately 152.9 hectares is located within the Campbelltown LGA. Refer to Location Plan at Figure 1.

The majority of the site is currently owned by the Commonwealth (Department of Defence) and was formerly used as an army camp (the Ingleburn Army Camp) up until the 1990s when it was identified as surplus to Defence requirements. Since this time it has been progressively vacated. The project is intended to be carried out once ownership or control of the former Ingleburn Army Camp land has passed to the State. Other land within the site is owned by Landcom, the Minister Administering the EP&A Act, the Minister for Education, Training and Youth Affairs, the RTA, along with several roads owned by Liverpool City Council and Campbelltown City Council.

The site is largely vacant. Remnants of military facilities (i.e. cottages, former building slabs, internal roads, training facilities etc) associated with the site's former Defence use are scattered through-out the site. There are a number of cottages / houses previously used by Defence personnel in an area of the site generally referred to as "Ingleburn and Bardia Villages". The Ingleburn North Public School (1.835

hectares) is located on the southern and the Bambi Preschool on the northern side of Campbelltown Road.

The site is undulating to steep. It slopes from its highest point (80 m AHD) at the intersection of Zouch and Campbelltown Roads to its lowest point (40 m AHD) at its eastern corner and to a similar elevation adjacent to the M5 Motorway in the south-west corner. The central portion of the site along Campbelltown Road forms a ridge with gentle falls to the north and south.

The condition of existing vegetation on the site varies from exotic pasture with negligible ecological value to areas of good condition vegetation with high recovery potential. The existing cleared portions of the site generally contain non native species.

The site is at the top of three catchments. Maxwell Creek, Bunbury Curran Creek and Cabramatta Creek pass through the site, with associated riparian zones and some woodland habitat (notably Cumberland Plain.

1.1 CONCEPT PLAN

The Concept Plan establishes the overall planning framework for the site, including:

- land use type and distribution;
- a mix of housing types and densities (approximately 3,200 dwellings);
- concept location of and approximately 35,000 – 45,000 m² of retail / commercial floor space within the new Edmondson Park Town Centre;
- identification and location of open space and drainage corridors, environmental conservation lands (to form the new Regional Park), and local active and passive recreation facilities, including levels of embellishment;
- road network layout;
- pedestrian and cycleway network layout;
- pedestrian bridge over the south western railway;
- Campbelltown Road corridor including the establishment of key intersection locations and configuration;
- utilities (including power, telecommunications and gas), infrastructure strategy, potable water strategy, sewer concept plan and water cycle management plan;
- location and dimensions of Bushfire Asset Protection Zones;
- appropriate interpretation of European and Aboriginal heritage located on the site;
- erection of signage and billboards;
- remediation works; and
- demolition.

The Concept Plan also sets out an approval framework that will enable the carrying out of the works necessary to remediate the site in accordance with a Remediation Strategy without the need for undertaking further environmental assessment.

A variety of housing types is proposed to be delivered. This will provide for a range of housing price points and will include moderate income housing and housing for seniors.

It is proposed to develop the Edmondson Park site progressively in stages over a 15-20 year period. The Concept Plan will address the staging and delivery of the overall development having regard to the progressive delivery of necessary infrastructure, services and facilities; and market demand.

The Concept Plan is accompanied by a proposal with respect to the future developer contributions framework for the provision of local facilities and services within the Liverpool and Campbelltown LGAs as well as State Infrastructure.

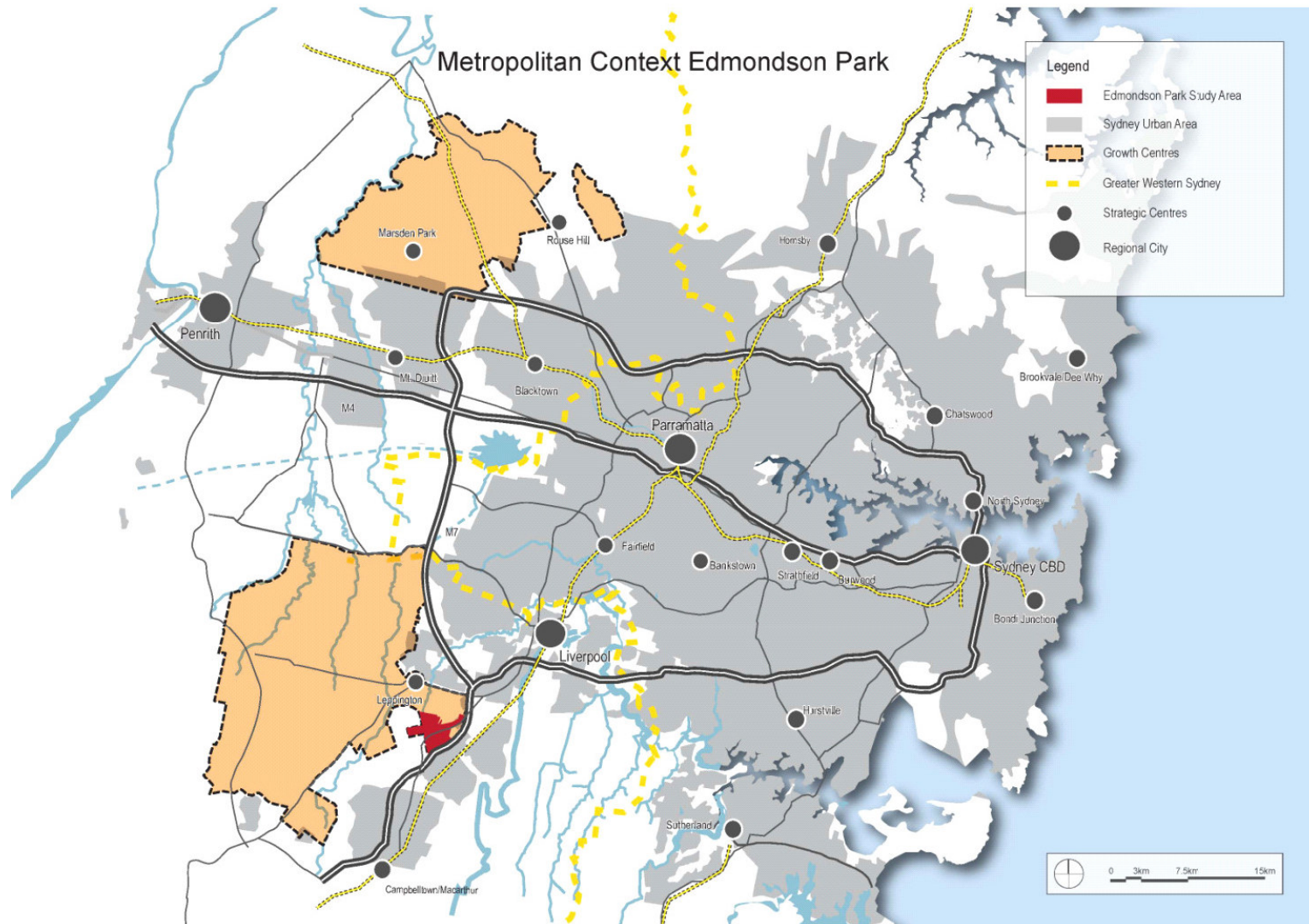


Figure 1. Regional Context



Figure 2. Location

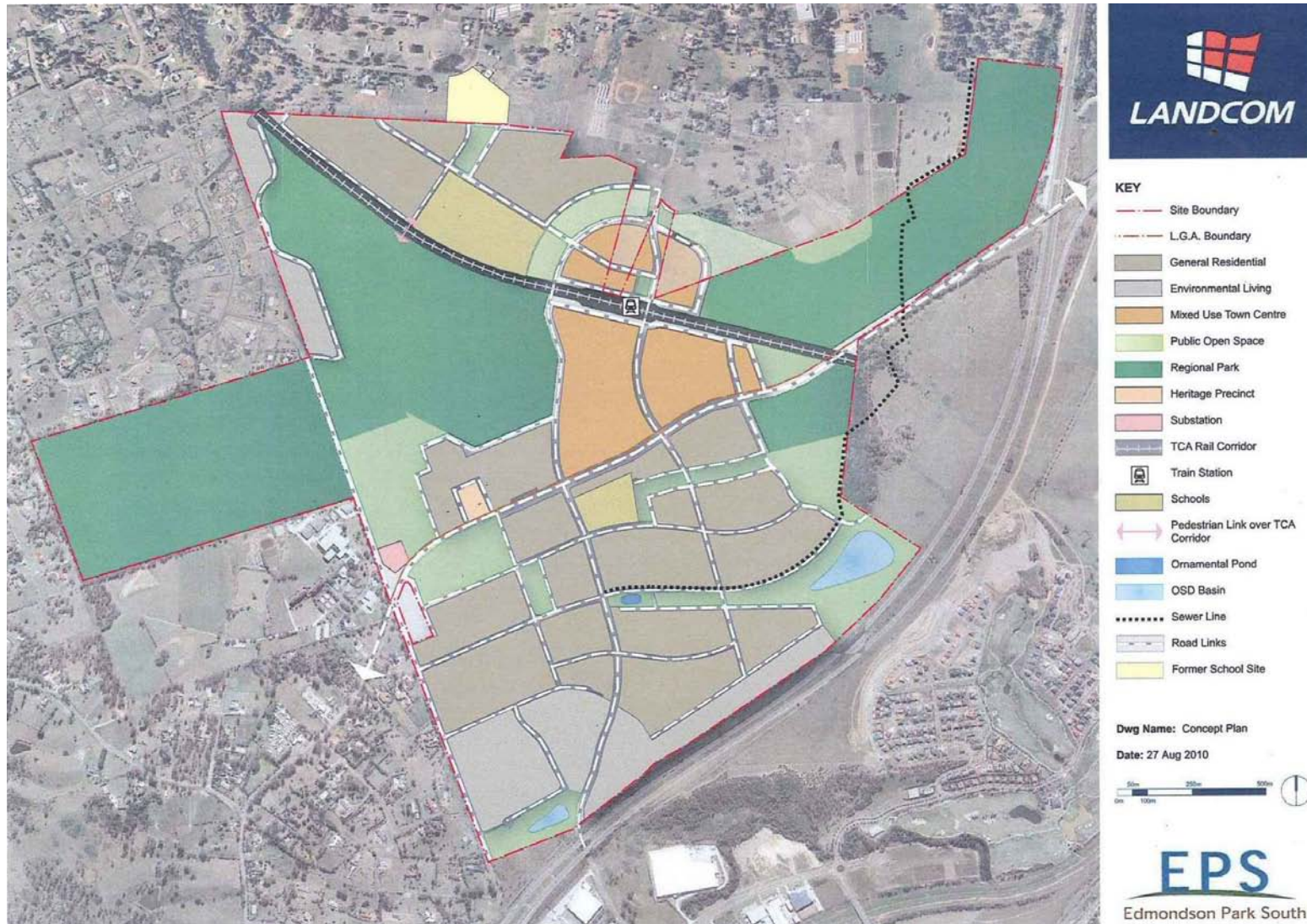


Figure 3. Concept Plan



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Figure 4. Stage 1 Project Application

1.2 PROJECT APPLICATION

The residential subdivision Project Application comprises:

- the creation of 206 residential lots, 8 super lots for future subdivision 15 Environmental Living lots and 3 lots for dedication to Campbelltown City Council as Public Reserve¹;
- the dedication of roads to Campbelltown City Council;
- On-site works comprising:
 - tree removal;
 - earthworks including excavation, cut and fill;
 - design and construction of physical infrastructure, including roads, stormwater drainage and utility reticulation, traffic management works, establishment of open space areas;
 - retaining walls as determined during detailed design;
 - design and construction of staged stormwater water quantity and quality infrastructure to achieve objectives required by the Water Cycle Management (WCM) strategy for the greater site;
 - demolition of all existing structures;
 - erosion and sediment control to areas of roadworks and bulk earthworks including provision of temporary sedimentation ponds and diversion drains;
 - Design and construction of an ornamental pond;
 - Landscaping of road reservations;
 - erection of signage and billboards; and;
 - Embellishment of open space.
- Off-site works comprising:
 - construction of the sewer lead in from the Sydney Water carrier main at Ash Road;
 - upgrade of overhead mains and construction of electrical lead-in feeders from the existing zone substation at Prestons;

¹ A number of residue lots will be created in undertaking the Project Application, the number of lots identified in the above description relate to the ultimate number of lots that will be created in the Project Application.

- connection to utility services, potable and recycled water, electricity, gas and telecommunications in Campbelltown and MacDonald Roads;
- Connection to existing stormwater drainage;
- tree removal;
- earthworks including excavation, cut and fill;
- design and construction of physical infrastructure, including roads, stormwater drainage and utility reticulation, traffic management works, including the connection to the existing MacDonald Road;
- design and construction of staged stormwater water quantity and quality infrastructure to achieve objectives required by the Water Cycle Management (WCM) strategy for the greater site;
- erection of an acoustic wall;
- erection of signage and billboards;
- extension or relocation of existing services including potable and recycled water, gas, telecommunication, power;
- demolition of all existing structures; and;
- Proposed new intersection to existing Macdonald Road.

It is intended to seek staged Construction Certificates as necessary to facilitate the efficient delivery of each phase of, the development works.

The first stage residential Project Application will include the proposed construction of a gravity sewer line through the future Regional Park.

A number of residue lots will be created in undertaking the Project Application, the number of lots identified in the above description relate to the ultimate number of lots that will be created in the Project Application.

Planning Background

The Edmondson Park Release Area, including the site, has been the subject of broad strategic planning investigation and environmental assessment over a number of years by Liverpool and Campbelltown City Councils, the Department of Planning, the Department of Defence (the current landowner of the Ingleburn Army Camp) and Landcom (owner of certain lands).

The whole of the Edmondson Park Release Area has been released for urban development by the Minister for Planning. Part of the site; the Ingleburn Army Camp, is currently the subject of a 'delayed' rezoning for urban purposes under Liverpool Local Environmental Plan 2008 and Campbelltown (Urban Area) Local Environmental Plan 2002.

In June 2010 the Minister for Planning considered a Preliminary Assessment Report for the Edmondson Park South Project that provided justification for the planning, assessment and delivery of the project to occur under Part 3A of the EP&A Act, having regard to the demonstrated contribution that the project will have to achieving State and regional planning objectives.

Subsequently, on 23 July 2010, pursuant to Clause 6 of SEPP Major Development, the Minister for Planning formed the opinion that the Edmondson Park Project constitutes a Major Project to be assessed and determined under Part 3A of the EP&A Act, and also authorised the submission of a Concept Plan for the site. In doing so, the Minister also formed the opinion that a State Significant Site (SSS) study be undertaken to determine whether to list the site as a State Significant Site in Schedule 3 of SEPP Major Development.

The Part 3A process under the EP&A Act allows for the Edmondson Park South Project to be planned, assessed and delivered in a holistic manner, with a uniform set of planning provisions and determination by a single consent authority. Given the scale of the proposal, the Concept Plan and SSS listing provide the opportunity to identify and resolve key issues such as land use and urban form, development staging, infrastructure delivery and environmental management in an integrated and timely manner.

This report has been prepared to fulfil the Environmental Assessment Requirements issued by the Director General for the inclusion of the Edmondson Park site as a State Significant Site under SEPP Major Development, and for a Concept Plan approval for the development.

Specifically, this report addresses the following requirements:

General Requirements

(5) a consideration of all relevant statutory and non-statutory provisions and identification of any non-compliance with such provisions (especially the SEPP (Major Development) 2005, SEPP 44, SEPP 55, SEPP (Infrastructure) 2007, SEPP (Sydney Region Growth Centres) 2006, Liverpool Local Environmental Plan 2008, Campbelltown (Urban Area) Local Environmental Plan 2002, Metropolitan Strategy, and draft South West Subregional Strategy.

Biodiversity

(1) Assess the consistency of the proposal with the Biodiversity Certification Order (dated 11 December 2007) conferred on the State Environmental Planning Policy (Sydney Region Growth Centres) 2006. Any clearing of existing native vegetation within the non-certified areas should be offset in accordance with the relevant biodiversity measures of the Biodiversity Certification.

(2) Provide an assessment of biodiversity impacts of the proposed development in accordance with draft Guidelines for Threatened Species Assessment (DEC July 2005). For certified areas under the Biodiversity Certification, the assessment undertaken in the draft Growth Centres Conservation Plan (GCC February 2007) and the offsets established in the Biodiversity Certification can be referenced for the proposal.

(3) Assess the consistency of the proposal with the Edmondson Park Conservation Agreement (dated 20 August 2009), in particular with the requirements of the Biodiversity Conservation Plan (Schedule 4). Any proposed variation to the Conservation Agreement would need to be justified (including consideration of alternative options) on ecological grounds.

Surface water, groundwater quality and riparian corridors

(2) Identify any potential impacts on groundwater and groundwater dependant ecosystems, and how impacts will be avoided mitigated or managed.

(4) Assess any proposed variation to riparian corridors and associated buffers in accordance with the Riparian Corridor Management Study approach applied to the Growth Centres, and provide justification for any changes. Details of any rehabilitation works for corridors should be provided.

Ecologically Sustainable Development (ESD)

(1) The EA should demonstrate that all aspects of the concept plan satisfy the principles of ESD including compliance with BASIX.

(2) The EA should outline commitments to sustainability including water reuse, waste minimisation, the minimisation of energy use and car dependency.

Regional Park

(1) Identify measures to mitigate interface impacts (both construction and operational) on the ecological values of the Regional Park from adjoining urban areas.

(2) Assess the consistency of the proposal with the Statement of Interim Management Intent for the Regional Park. Outline and justify any variations and provide an appropriate assessment of any potential impacts.

Additional Assessment Requirements (Project App)

Construction Requirements

(2) Identify strategies to minimise impacts on the ecological values of the regional park and open space areas, as well as to minimise the extent of vegetation clearing within the development area.

Consultation

In accordance with the Director General's Requirements this ecological assessment report has been prepared following consultation with the following agencies:

- NSW Department of Environment, Climate Change and Water
- Commonwealth Department of Environment, Water, Heritage and the Arts

2 Assessment Background

2.1 BIODIVERSITY CERTIFICATION

In NSW threatened species and endangered ecological communities are protected by the *NSW Threatened Species Conservation Act, 1995* (TSC Act). Under the TSC Act, developments or activities that have the potential to impact threatened species require detailed impact assessment, known as the 7-part test.

In addition to undertaking 7-part tests, detailed assessment of threatened species also takes place during the rezoning of land. To avoid duplication of effort and to streamline the approvals process for recently rezoned land, legislation enabling ‘Biodiversity Certification’ was introduced.

Biodiversity Certification allows the Minister for the Environment to exempt sites, developments, species etc from further impact assessment work (ie 7-part tests), providing that it has been demonstrated that Biodiversity Certification;

‘will lead to the overall improvement or maintenance of biodiversity values.’

The NSW Department of Planning undertook a comprehensive assessment of the Western Sydney Growth Centres that included quantifying the area of Cumberland Plain Woodland that would be impacted and the area that would be protected. It was identified that approximately 2000 hectares of Existing Native Vegetation (ENV) would be protected across the Growth Centres. In addition, a levy placed on development in the Growth Centres is to raise approximately \$530 million to undertake additional conservation works including buying and/or protecting high conservation value land.

On the 11th December, 2007 the Minister conferred Biodiversity Certification on the ‘Growth Centres SEPP’. This is known as the ‘Biodiversity Certification Order’. Effectively, areas of lower conservation value were ‘certified’, allowing clearing to occur without the need for further impact assessment. Areas of higher conservation value have been identified as ‘non-certified’. The non-certified lands continue to be protected by the *Threatened Species Conservation Act, 1995* and under the Biodiversity Certification Order additional assessment requirements have been identified that further limit clearing. Edmondson Park includes a mix of certified and non-certified lands, with the majority of non-certified lands located within the Regional Park.

2.2 COMMONWEALTH CONSERVATION PLAN

The Commonwealth *Environment Protection and Biodiversity Conservation Act, 1999* (EPBC Act) provides for the protection of Matters of National Environmental Significance (MNES). Cumberland Plain Woodland and the Swift Parrot are MNES that are known or likely to occur at Edmondson Park. Impact on MNES requires assessment and if the impacts are of a certain magnitude approval from the Commonwealth Department of Environment, Water, Heritage and the Arts is required.

One of the approvals mechanisms under the EPBC Act is a ‘Conservation Agreement’. The state of NSW and the Commonwealth of Australia have entered into a Conservation Agreement for Edmondson

Park. This legally binding agreement requires the establishment of a 150 hectare regional park, sympathetic management of public open space that contains Cumberland Plain Woodland and the protection of 72 hectares of Cumberland Plain Woodland outside of Edmondson Park.

2.3 SEPP 44 – KOALA HABITAT PROTECTION

State Environmental Planning Policy No. 44 provides for the protection of koala habitat. As there are no koalas on site, and no potential koala habitat; SEPP 44 does not apply to this site.

3 Methods

Edmondson Park has a long history of detailed survey and assessment of ecological values that was used in assessing the rezoning of the land and the preparation of a Conservation Agreement under the *Commonwealth Environment Protection and Biodiversity Conservation Act, 1999*. This information was also used to assist in the preparation of the Western Sydney Growth Centres Conservation Plan, and subsequent Biodiversity Certification of the Growth Centres SEPP.

The methodology used in this assessment has been based on the Draft Guidelines for Threatened Species Assessment (DEC, 2005).

3.1 PRELIMINARY ASSESSMENT

Geology and landform

The study area is underlain by Bringelly Shale of the Wianamatta Group. Areas of Quaternary alluvial sediments occur along the floodplains of creeks which flow through the site. The land is gently undulating. Maxwells Creek and tributaries flow through the eastern and southern parts of the land, generally flowing to the east and north. The north-eastern corner of the study area includes the upper catchment of Cabramatta Creek.

Soil landscapes

Three (3) soil landscapes occur across the study area. The most widespread of these is the Blacktown Soil Landscape, which occurs on gently undulating slopes. The South Creek soil landscape is associated with Quaternary alluvial deposits along creeks. The Luddenham Soil Landscape is found in the south of the study area along Campbelltown Road and Macdonald Road.

Vegetation

The majority of the native vegetation on the site is Shale Plains Woodland, a sub-community of Cumberland Plain Woodland (CPW). CPW is listed as a critically endangered ecological community under the TSC and EPBC Acts. This community is dominated by Grey Box (*Eucalyptus moluccana*) with Native Blackthorn (*Bursaria Spinosa*) being the dominant shrub species. The greatest diversity of this community occurs in the ground layer where a vast array of grasses, forbs and herbaceous species are present, most notably Kangaroo Grass (*Themeda australis*), Windmill Grass (*Chloris ventricosa*) and Saltbush (*Enardia spp.*).

A large area of Alluvial Woodland, part of the TSC Act listed community *River-Flat Eucalypt Forest on Coastal Floodplains* occurs primarily along Maxwells Creek in the north-eastern part of the site. This community is dominated by a thick canopy of *Casuarina glauca* with a low diversity of understorey

species present, the cover primarily comprising of *Microlaena stipoides*. As this community occurs in riparian environments it is typically subject to higher nutrient and water flows providing an environment that is favourable to a number of weed species. Wandering Jew (*Tradescantia fluminensis*) and Madeira Vine (*Anredera cordifolia*) were notable weed species occurring in this environment.

Areas of derived native grassland are also present across the study site. These areas typically comprised a mix of native and exotic species with African Lovegrass (*Eragrostis curvula*) being a common weed species in these environments.

Flora and Fauna

A search of the Atlas of NSW Wildlife identified a total of 55 threatened species have been recorded within a 10km radius of the site since 1980 (see Appendix A). Chapter 3 identifies the threatened species that are likely to occur on the site.

3.2 FIELD SURVEY

As the site has previously been extensively surveyed, subject to detailed strategic planning and is included in the biodiversity certified Growth Centres SEPP field survey was limited to areas of non-certified land that are likely to be impacted by the proposal. Specifically this includes:

- The Regional Park boundary adjustment
- Proposed sewer main alignment

Field survey of these sites utilised the random meander technique to:

1. Search for threatened plants
2. Litter searches for the Cumberland Land Snail (*Meridolum corneovirens*)
3. Identify vegetation communities and condition
4. Identify any significant habitat values (hollow bearing trees, fallen logs, rocky outcrops etc)

The sites were visited twice:

Date: 13th July 2010

Surveyors: Ross Wellington and Steven House

Effort: Regional Park boundary adjustment – 1 person hour

Sewer main alignment – 3 person hours

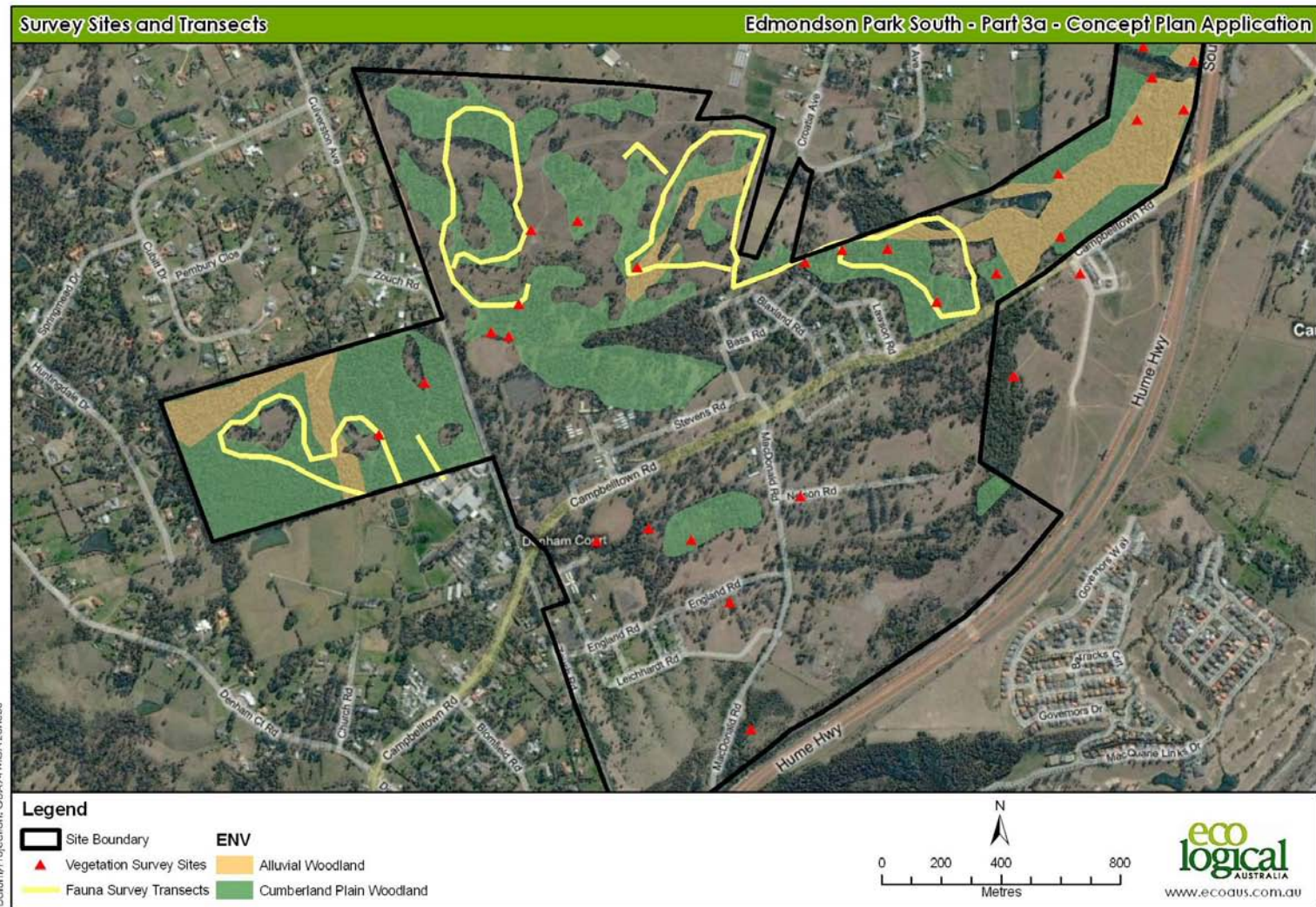
Date: 28th July 2010

Surveyors: Steven House

Effort: Regional Park boundary adjustment – 0.5 person hours

Sewer main alignment – 1 person hours

The location of survey work completed as part of the rezoning of Edmondson Park is indicated in Figure 5 below.



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Figure 5. Fieldwork completed during rezoning process (Eco Logical Australia, 2002)

4 Results

The following vegetation communities occur on site:

- Cumberland Plain Woodland (including derived native grassland)
- Alluvial Woodland

Whilst no threatened flora have been recorded on the site, twenty-nine (29) threatened flora have been recorded within a 10 km radius of the site since 1980. Of these, there is potential habitat for the following three species;

- Downy Wattle (*Acacia pubescens*)
- Spiked Rice-flower (*Pimelea spicata*)
- Sydney Plains Greenhood (*Pterostylis saxicola*)

Five (5) species of threatened fauna are known to occur on the site, whilst of the 32 species recorded within a 10 km radius of the site a further 17 are likely or have the potential to occur on the site. The bulk of these species are highly mobile bird and bat species that may utilise elements of the site on an intermittent basis for opportunistic foraging. The following species are known to occur on the site;

- Cumberland Plain Land Snail (*Meridolum corneovirens*)
- Eastern Bentwing-bat (*Miniopterus schreibersii oceanensis*)
- Eastern False Pipistrelle (*Falsistrellus tasmaniensis*)
- Eastern Freetail-bat (*Mormopterus norfolkensis*)
- Greater Broad-nosed Bat (*Scoteanax rueppellii*)

4.1 REGIONAL PARK BOUNDARY ADJUSTMENT

The Regional Park boundary adjustment consists of realignment along part of the boundary of the Regional Park and the planned town centre. The adjustment will have no net loss or gain in total area (the area of 1,650m² removed is equal to the area being added). No threatened flora or fauna were found in the area subject to the boundary adjustment. It is likely that both the area to be lost and the area to be added to the Regional Park play an intermittent role in providing foraging to a variety of mobile fauna species, particularly bats and birds.

The area that would be lost as part of the boundary adjustment is a disturbed area of derived native grassland that is dominated by Kangaroo Grass and *Aristida vagans* (see Figure 7)). There are a small

number of young Grey Box with African Olive present underneath. African Lovegrass is prevalent throughout the area that is proposed to be lost.

The area to be added to the Regional Park exhibits significantly greater structural diversity with intact canopy and mid-stratum layers. The ground layer whilst present, is not as dense under the canopy as it is in the area of derived native grassland. The area to be added to the Regional Park is of higher quality, greater structural diversity and is well connected to the Regional Park. It will also result in a more regular management boundary (see Figure 7). The area to be added to the Regional Park has previously been mapped as 'scattered trees' (TX) by the NPWS (2003). Field validation of the vegetation indicates that this mapping is incorrect and that the canopy should have been mapped as 'A' class.

4.2 SEWER MAIN ALIGNMENT

The proposed alignment will traverse the Regional Park in the east of the site. The northern part of the alignment cuts through a narrow strip of Cumberland Plain Woodland that will result in the loss of approximately 6 young trees during construction. The alignment then follows an existing trail before cutting through another narrow area of Cumberland Plain Woodland that will result in the loss of one immature tree. From here the alignment crosses through Alluvial Woodland where a number of Casuarinas will be lost.

The proposed alignment has been inspected by DECCW staff on 28 July 2010. Following construction, the alignment will be revegetated with local provenance native species.

The route for the sewer main is targeting the opportunity to allow drainage from Ingleburn Gardens to be incorporated with that from Edmondson Park South and be conveyed via a gravity main to the existing SWC Ash Rd carrier connection on Camden Valley Way. This avoids the need to construct and maintain in perpetuity a pumping station and rising main. This will significantly reduce ongoing operational costs and greenhouse gas emissions. By removing the need for a pump station, the risk of discharge overflow and potential impact on waterways is significantly reduced.

A 'leak tight' pipe system will be used rather than conventional pipes. This reduces infiltration and leakage and allows greater distance between manholes.

Overall, whilst the alignment will result in temporary disturbance to native vegetation, which will be subsequently revegetated, the environmental benefits of having a gravity maintain are overwhelmingly positive.

4.3 REMEDIATION ACTION PLAN (RAP) IMPLEMENTATION

The Remediation Action Plan (RAP) for the site (Golder, 2010) identifies actions that are to be implemented to adequately remediate a number of known contaminants including;

- Lead particulates
- Asbestos
- Surface and buried rubbish

There are a number of works that will occur within the Regional Park that will impact on vegetation. Principally this includes:

- Clearing and surface scraping of soil within the ‘Lead Particulate Area’
- ‘Emu search’ and collection of surface bonded asbestos within the ‘Remediation of Asbestos Area’. This may require slashing of grasses.
- Excavation of the former rifle range, deposition of contaminated material and capping
- Manual removal of razor-wire, metallic objects and other waste; and filling of trenches and pits across the Regional Park

The main impact is associated with clearing and scraping the ‘Lead Particulate Area’. This area which occupies approximately 1.4 hectares of ENV will require complete revegetation once the works have been completed. These areas are generally comprised of young regrowth with a mix of native and exotic species present in the understorey. Whilst larger trees will remain (those >150mm DBH), the remainder of the site will be subject to removal of top soil to a depth of up to 200mm. These areas will be completely revegetated following completion of the remediation works.

The emu search may require slashing of grasses in areas that do not overlap with the Lead Particulate Area. These areas are not located within ENV.

Excavation of the former rifle range will require the removal of a small number of saplings on the batters of the rifle range. These areas are not located within ENV.

Manual removal of other waste and filling of trenches and pits across the Regional Park will require the slashing of grasses and shrubs in areas of dense revegetation, primarily for the purposes of access. It is not possible to quantify the area of this temporary impact. The impacts will however be minor and limited to narrow areas of clearing rather than wholesale clearing of remnant vegetation. This level of understorey disturbance will not significantly alter the structure of ENV on the site. The impacts are significantly less than disturbance from natural events, particularly bushfire.

Bushfire could be used as an appropriate tool to assist in remediation of the site. The dominance of *Bursaria spinosa* across the site indicates a significant period where no fires have occurred on the site. Implementation of a controlled burn could assist in implementing the RAP and regeneration of the ecological values of the site, providing adequate resources were available to treat weeds in the post-fire environment. There would be obvious benefits to burning prior to residential development occurring on the perimeter of the site.

5 Impact Evaluation

Strategic planning for Edmondson Park has focused on retention of higher quality remnant vegetation within a Regional Park, and supplementary areas of habitat located within an open space network across the site.

Consequently across the development approximately 28 hectares of ‘Existing Native Vegetation’ (ENV)² will be lost and 102 hectares will be retained. The breakdown of loss and retention on the basis of certified and non-certified lands is provided below.

Table 1. ENV Calculations

ENV	Certified Lands (ha)	Non Certified Lands (ha)
Retained	4.2ha (Open Space areas & Regional Park addition adjacent to Zouch Rd)	102.0
Lost	27.8	0.1 (boundary adjustment) + 0.3 (sewer alignment) + 1.4 (RAP implementation) 1.8 Total
Total	32.0	103.8

The table above identifies that 0.1 hectares of non-certified ENV will be lost as part of the boundary adjustment (Figure 7). The disturbance of vegetation as part of construction of the sewer line will result in the clearing and revegetation of approximately 0.3 ha of mapped ENV (Figure 7). Conservatively, this has been estimated on the basis of a 10 metre wide disturbance corridor. A further 1.4 hectares will be cleared and rehabilitated as a result of RAP implementation (Figure 8). The proposal will therefore impact on a total of 1.8 hectares of non-certified ENV.

These impacts will be offset through modifying the open space network to retain 4.2 hectares of ENV that is otherwise certified for clearance. These areas are identified as ‘Protected ENV (certified lands) in Figure 6.

Protection of 4.2 hectares of certified ENV to ameliorate the loss of 1.8 hectares of non-certified ENV exceeds the requirements of the Clause 8 of the Biodiversity Certification Order:

*‘the **protection** of an equal or greater area of **existing native vegetation** elsewhere in the Growth*

Centres;’

² Existing Native Vegetation, as mapped in the *Growth Centres Conservation Plan 2007* and referred to in the *Biodiversity Certification Order, 2007*

In addition to the 4.2 hectares of certified ENV being protected, 9 hectares of land will be revegetated to Cumberland Plain Woodland as part of the Commonwealth Conservation Agreement. The location of the revegetation is identified in Figure 3 of the Conservation Agreement (see Appendix D to this report).

The area of additional land that is proposed to be added to the Regional Park as part of the boundary adjustment (see Figure 6) has not been mapped as ENV. This appears to be a mapping error as this 4 hectare parcel of vegetation is contiguous with surrounding ENV and has a canopy density of approximately 40%.

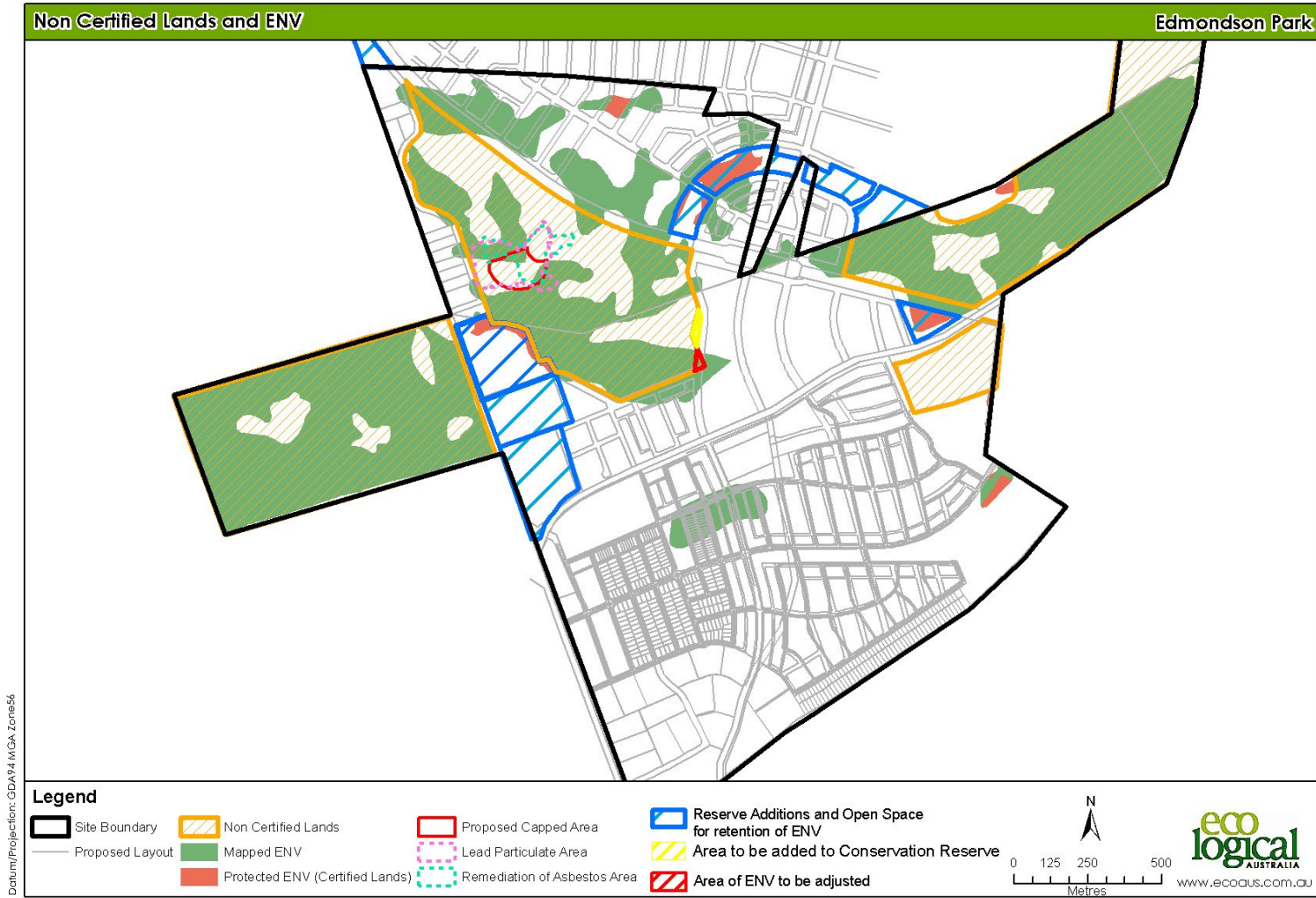


Figure 6. Non-certified Lands and ENV



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Figure 7. Regional Park Boundary Adjustment

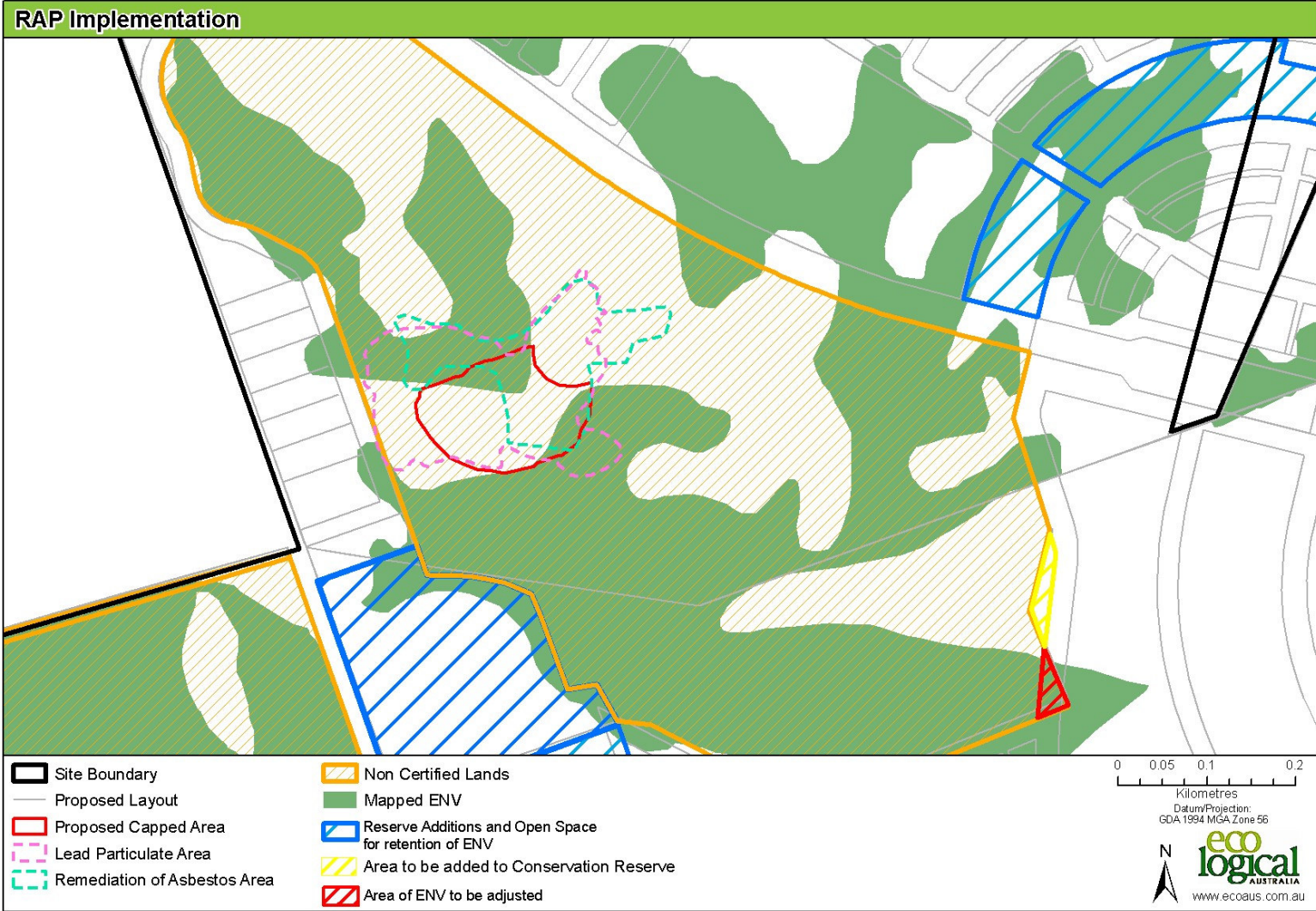


Figure 8. Location of RAP Implementation Works

6 Mitigation

Edmondson Park has been designed to retain some 79% of ENV plus additional areas of ecological value within a Regional Park and Open Space network. This equates to an ENV offset ratio of approximately 4 to 1. These areas will be provided with high levels of protection and will be subject to ongoing management that will reduce threats to the environment and lead to a significant improvement in the quality of habitat in these areas.

6.1 BIODIVERSITY CERTIFICATION ORDER

The site is subject to Biodiversity Certification by way of its inclusion in Clause 7a of the Growth Centres SEPP. Biodiversity Certification has been conferred upon the SEPP as the Minister for the Environment is satisfied that this:

‘will lead to the overall improvement or maintenance of biodiversity values.’

Broadly speaking, the proposal is consistent with the Biodiversity Certification Order and avoids impacts to non-certified lands with the exception of:

1. Regional Park Boundary adjustment
2. Sewer Main Construction
3. RAP implementation

Chapter 4 above identified that despite the impacts on non-certified land the proposed onsite amelioration measures will exceed the requirements of the Biodiversity Certification Order as it applies to this site. Additional environmental ‘upside’ will occur through the restoration and management of areas of disturbed vegetation and revegetation of cleared lands within the Regional Park.

Additionally, Edmondson Park will contribute to the \$530 million Conservation Fund, of which at least \$397.5 million is planned to buy lands or enter into agreements outside of the Growth Centres.

Notwithstanding that the proposed outcome exceeds the requirements of Biodiversity Certification, the clearing of lands marked with a ‘red hatching’ in the Growth Centres Conservation Plan requires agreement from DECCW pursuant to Clause 12 of the Biodiversity Certification Order;

*Notwithstanding any other conditions of biodiversity certification, in the lands marked by a red hatching on the **biodiversity certification maps existing native vegetation** must not be **cleared** unless it is in accordance with a plan of management or unless such clearance has been agreed to by the **DECC**.*

Whilst DECCW has been consulted onsite and has provided verbal in-principal support for the proposal, formal approval is required under Clause 12.

6.1.1 Regional Park Boundary Adjustment

This will result in the clearing of approximately 1,247 m² of derived native grassland that has been mapped as ENV and the loss of 403 m² that has not been mapped as ENV. This will be ameliorated through the addition of approximately 1,650 m² of high quality vegetation to the Regional Park. Clearing of the 1,247 m² of ENV requires assessment under Clause 10 of the Biodiversity Certification Order:

10. In the non-certified areas, proposals to clear existing native vegetation shall be subject to the relevant development controls in the SEPP and Sydney Regional Environmental Plan No. 31 – Regional Parklands, and the requirements of the Environmental Planning and Assessment Act 1979.

The reference to the Growth Centres SEPP requires consideration of clearing under Clause 23 of the SEPP:

23 Consent for clearing native vegetation

(1) A person must not clear native vegetation on land to which this Part applies without:

- (a) approval under Part 3A of the Act, or
- (b) development consent.

In effect, the DGRs for this project require consideration of the Biodiversity Certification Order, which in turn triggers assessment requirements under the SEPP which allows for approval under Part 3A. The Approval authority should therefore consider whether the proposed 'swap' of 1,247 m² of derived native grassland for 1,650 m² of high quality vegetation meets the maintain or improve requirements. As identified in Chapter 4, the proposal exceeds the requirements of the Biodiversity Certification Order which has been conferred on the basis that maintain or improve has been met.

6.1.2 Sewer Main Construction

The proposed sewer main will cross non-certified lands and require removal of approximately 0.3 ha of mapped ENV within the Regional Park. Whilst the sewer main has been located to minimise impacts, clearing of ENV requires assessment under Clause 12 of the Biodiversity Certification Order;

Where there are essential infrastructure proposals, including but not limited to proposals under Part 3A of the Environmental Planning and Assessment Act 1979, that involve clearing of existing native vegetation in the non-certified areas and that do not require development consent under the SEPP, such clearing must be offset by applying the same requirements specified in condition 8 above.

In this case the offsets may be located outside of the Growth Centres (but within the Cumberland Plain of Western Sydney, as defined in condition 32) if the GCC is satisfied that there are no practicable offset options within the Growth Centres and all other requirements of condition 8 will be met. However, any offsets outside the Growth Centres cannot be counted towards meeting the requirements of condition 6.

As assessment of the proposal in relation to condition 8 is provided below.

Criteria	Response
<p>In making a determination under condition 7, the GCC must demonstrate by way of information provided during the public exhibition of the precinct plan (where that exhibition occurs after this order takes effect) that the clearing of any existing native vegetation in the non-certified areas will be offset by:</p> <p>(a) the protection of an equal or greater area of existing native vegetation elsewhere in the Growth Centres; and/or</p> <p>(b) the revegetation and/or restoration of an area of land elsewhere in the Growth Centres, subject to satisfying the following,</p> <p>(i) that the clearance of existing native vegetation in the non-certified areas will not affect the capacity to achieve overall improvement or maintenance of biodiversity values for threatened species, populations and ecological communities and their habitats,</p> <p>(ii) the revegetated and/or restored areas will be protected,</p> <p>(iii) the extent of revegetation and/or restoration compared to clearing of existing native vegetation must be undertaken at a ratio of at least 3:1 (to reflect the greater ecological risks relative to retaining existing native vegetation),</p> <p>(iv) areas subject to revegetation and/or restoration must be of a suitable boundary configuration and design to support long-term management,</p> <p>(v) revegetation and/or restoration of the proposed areas would not be undertaken under another scheme or regulatory requirement already in operation at the time that the clearing is approved (this includes but is not limited to any approvals, and associated conditions of such approvals, that may be required under the <i>Rivers and Foreshores Improvement Act 1948</i> and <i>Water Management Act 2000</i>),</p> <p>(vi) revegetation and/or restoration will be</p>	<p>A total of 1.8 hectares of non-certified ENV will be impacted by this proposal. 4.2 hectares of ENV certified for clearing will be protected by this proposal. Thus a greater area is being protected.</p> <p>NA – Pathway ‘a’ has been followed</p> <p>NA – Pathway ‘a’ has been followed</p> <p>NA – Pathway ‘a’ has been followed</p> <p>NA – Pathway ‘a’ has been followed</p> <p>NA – Pathway ‘a’ has been followed</p> <p>NA – Pathway ‘a’ has been followed</p>

<p>undertaken by suitably qualified and experienced persons using indigenous plant stock, and sufficient resources will be made available to undertake the revegetation and/or restoration and any necessary follow-up maintenance and monitoring for a minimum period of 5 years following the commencement of the revegetation and/or restoration.</p>	<p>NA – Pathway 'a' has been followed</p>
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6.2 EPBC ACT CONSERVATION AGREEMENT

A Conservation Agreement under the EPBC Act applies to the site. This agreement requires the following measures to be implemented to ameliorate and offset the impact to matters of National Environmental Significance:

1. Establishment and management of a Regional Park including undertaking control measures for existing areas of African Olive;
2. Sympathetic management of Public Open Space (for Conservation) that contains CPW; and
3. An environmental offset outside the Release Area to offset unavoidable impacts.

The Regional Park includes approximately 79 hectares of CPW and 31 hectares of River-Flat Eucalypt Forest on Coastal Floodplains. A further 9 hectares of currently cleared land is required to be rehabilitated and restored to CPW.

The above onsite outcomes are indicated in Figure 3 of the Conservation Agreement (see Appendix D).

This proposal meets or exceeds the requirement identified above. A small number of minor variations from the outcomes identified in Figure 3 of the Conservation Agreement are proposed that will result in an increase in the area of Cumberland Plain Woodland protected across the site. Figure 9 below maps the location of the proposed changes.

6.2.1 Regional Park Boundary Adjustment

The proposal is for an equal land area swap that would result in a smoother, rationalised Regional Park boundary. The current boundary in this area has no relationship to the ecology and would result in the construction of buildings that would back on to the Regional Park.

The adjustment would result in the Regional Park boundary being defined by a major road. It would result in the loss of 1,247 m² of derived native grasslands that would be classified as class 'C' according to the definition of the Cumberland Plain Woodlands Critically Endangered Ecological Community description (DEWHA, 2009) and 403 m² of cleared land. This loss would be ameliorated by the inclusion of 1,650 m² of high quality habitat 'A' class vegetation within the Regional Park.

6.2.2 Sewer Alignment

The proposed sewer alignment would impact on approximately 1,100 m² of 'A' class Cumberland Plain Woodland. It would impact upon approximately 1,800 m² of Alluvial Woodland, which is not protected under the EPBC Act. This is a small scale temporary disturbance that will be fully revegetated and will not result in a material difference to the conservation outcomes.

6.2.3 RAP Implementation

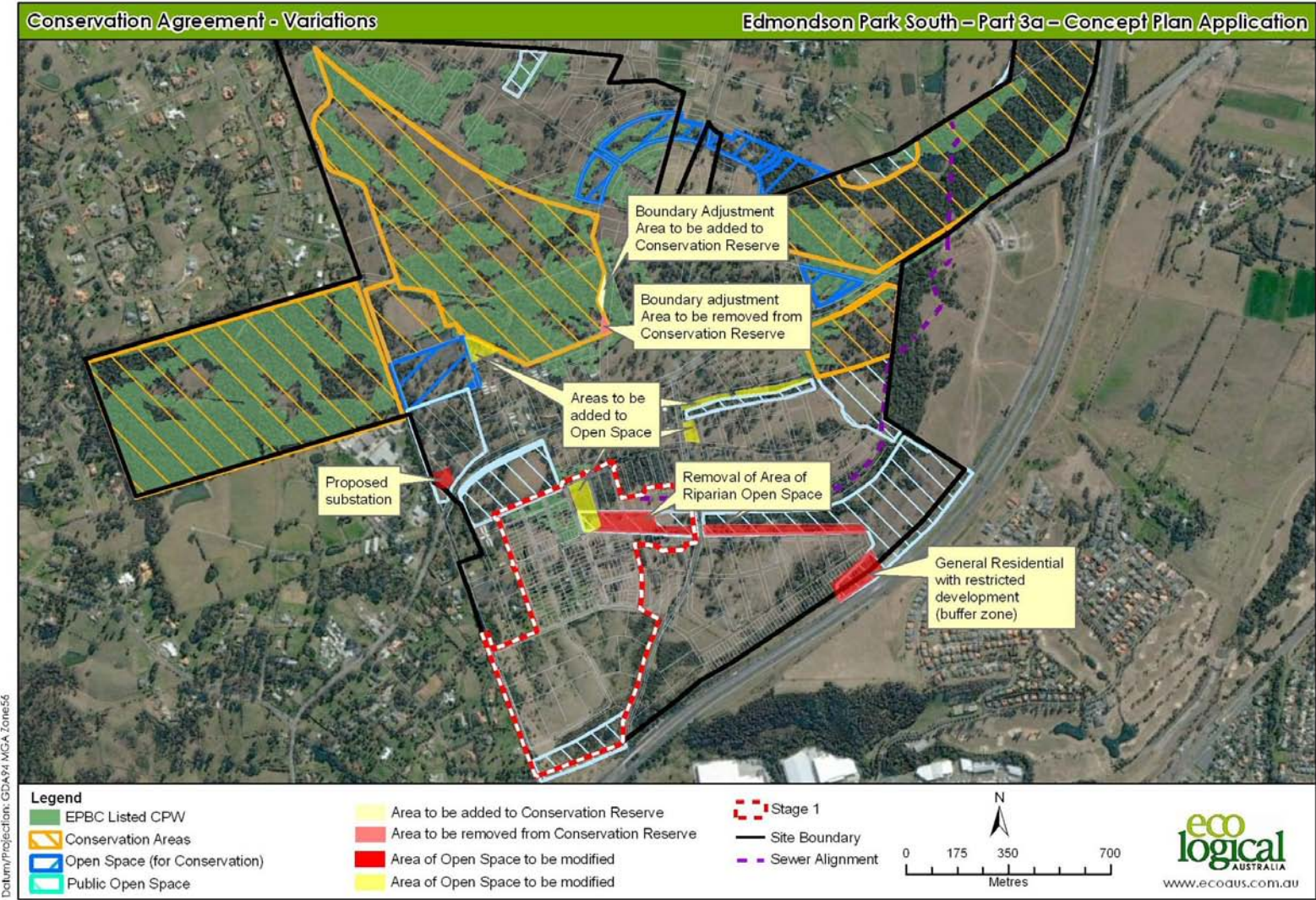
The proposal will impact on 1.4 hectares of 'A' class Cumberland Plain Woodland. This area is younger regrowth vegetation on the margins of remnants. It will be fully revegetated with local provenance Cumberland Plain Woodland species following the remediation works. This loss will be ameliorated through the increased amount of Cumberland Plain Woodland being protected in the Open Space network.

6.2.4 Open Space Modification

The Conservation Agreement requires sympathetic management of CPW on lands identified as Public Open Space (for Conservation). No changes are proposed for these areas and the proposal is consistent with the Conservation Agreement.

Other areas of Open Space are proposed to be modified. Whilst this does not impact on the requirements of the Conservation Agreement the proposed Open Space areas differ from Figure 3 in the Conservation Agreement in the following way:

1. Location of electricity substation in an area mapped as Proposed Open Space Public (4)
2. Reduction in the length and width of a riparian corridor mapped as Open Space Public (1)
3. Increase in the width of a riparian corridor mapped as Open Space Public (1)
4. Rezoning of a strip of Open Space Public (1) along the boundary with the Hume Highway to Residential with development controls
5. Addition of three (3) new areas of Open Space Public (for Conservation) (2)



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Figure 9. Conservation Agreement modifications

7 Water and Riparian

The Director General's Requirements require the following issues to be addressed that are relevant to this ecological assessment report.

- (2) Identify any potential impacts on groundwater and groundwater dependant ecosystems, and how impacts will be avoided mitigated or managed.
- (4) Assess any proposed variation to riparian corridors and associated buffers in accordance with the Riparian Corridor Management Study (RCMS) approach applied to the Growth Centres, and provide justification for any changes. Details of any rehabilitation works for corridors should be provided.

7.1 GROUNDWATER DEPENDENT ECOSYSTEMS

Groundwater dependent ecosystems on the site are principally concerned with riparian zones and floodplains that are vegetated with Alluvial Woodland. There are no natural wetlands on the site. As riparian zones are being protected across the site, impacts to Groundwater dependent ecosystems will occur through altered hydrological regimes as a result of an urbanised catchment.

The potential impacts to Groundwater dependent ecosystems are being mitigated through the following measures:

1. Protection and revegetation of a system of riparian corridors
2. Bush regeneration of vegetated floodplain areas that are subject to existing weed infestation
3. Improvement of water quality through the implementation of Water Sensitive Urban Design Measures
4. Management of peak storm flows and flood flows through a series of stormwater detention basins to reduce erosion.

7.2 RIPARIAN CORRIDORS

The approach to riparian corridors is primarily addressed in J. Wyndham Prince (2010) where a detailed assessment of the geomorphic character, hydrological regime and Strahler Stream Order has been undertaken. The proposed changes to the riparian areas compared to that previously identified for the site have been considered below in relation to ecological values.

During rezoning of Edmondson Park a detailed assessment of the site using the Riparian Corridor Management Strategy (RCMS) methodology implemented in the Growth Centres was undertaken. The RCMS is a subjective methodology that categorises streams based on their relative importance in the catchment. The categories are:

Category 1 – Regional Habitat Corridor (40m CRZ + 10m VB, either side from top of bank)

Category 2 – Terrestrial and Aquatic Habitat (20m CRZ + 10m VB, either side from top of bank)

Category 3 – Bank Stability and Water Quality (10m CRZ, either side from top of bank)

This approach differs to the more recent guidelines issued under the *Water Management Act, 2000* that classifies streams based on the Strahler Stream Order methodology.

This proposal is broadly consistent with the outcomes of the RCMS assessment undertaken during the rezoning of the site. This earlier assessment provides for a network of riparian corridors across the site, with corridor widths determined by the relative importance of the creeklines. Changes are identified below;

Reach	Old RCMS Width (m)	New Proposed Width (m)
A	80	45
B	28	45

REACH A – This reach is located within the Maxwell Creek South Riparian Park

The outcome negotiated for this reach using the RCMS methodology was for an 80 metre wide corridor and Category 1 outcome. It is understood that this outcome was to compensate for the presence of a concrete lined channel along much of the length of the stream and to compensate for a narrower riparian area along Reach B.

This ephemeral stream occurs within cleared paddocks and is of little ecological value. As seen in the concept plan, land to the west of the stream will be fully developed in the future and this

stream will not provide opportunities for linking proximal areas of vegetation. It is not considered to provide any real value as a habitat corridor.

As it is a concrete lined channel with little fringing terrestrial vegetation it is difficult to justify categorisation as a Category 2 stream.

A more appropriate classification is a Category 3 stream.

Consequently, it is proposed to classify this as a Category 3 stream but to increase the total width of the corridor to 45 metres to allow for a path to meander through the corridor whilst still achieving the objectives of this classification.

It is also proposed to remove the concrete lined channel and to reinstate a 'natural' channel within the corridor. This combined with an increase in the width of Reach B (see below) negates the rationale for this corridor to be allocated a width of 80 metres.

It is also proposed to shorten the length of this channel and to place water detention/treatment basins to the west of the corridor. The area that is proposed to be shortened has been surveyed by J. Wyndham Prince (2010) and does not meet the definition of a 'river'.

The corridor will be revegetated with local provenance native species.

REACH B – This reach is located within the Maxwell Creek Linear Park

This reach exhibits better riparian qualities than Reach A. It has a natural channel and areas of fringing native vegetation.

During negotiation of the RCMS categorisation, it is understood that a reduced width was sought for this creek primarily due to its proximity to the town centre. This reduced width was to some extent compensated by the increase in width for Reach A.

It is now proposed to increase the width of Reach B from 28 metres to 45 metres, in part due to the proposal to reduce the previously negotiated width of Reach A. Increasing the width of Reach B will provide for greater protection of areas of native vegetation that occur in close proximity to the creek.

8 Ecologically Sustainable Development (ESD)

The Director General's Requirements require consideration of the principles of Ecologically Sustainable Development:

(1) The EA should demonstrate that all aspects of the concept plan satisfy the principles of ESD including compliance with BASIX.

(2) The EA should outline commitments to sustainability including water reuse, waste minimisation, the minimisation of energy use and car dependency.

Whilst these principles are generally considered in the context of the built environment it is notable that the urban design of Edmondson Park has facilitated the protection of a substantial area of critically endangered ecological communities and potential threatened species habitat. The approach has focused on the retention of large habitat nodes and the provision of vegetated corridors between these nodes.

Areas that will be revegetated will utilise local provenance native species, maintaining the genetic integrity of the bushland.

Construction of the proposed sewer main, whilst resulting in a temporary disturbance to an area of bushland, will negate construction of a sewer pump station as the site can now be serviced by a gravity main. This will reduce potential impacts during the construction of a pump station, remove a potential sewer overflow point and avoid long-term carbon emissions.

The provision of passive recreation including cycle links through the Regional Park provides an opportunity to reduce car use.

9 Regional Park

The Director General's Requirements require consideration of the proposal in relation to the Regional Park:

- (1) Identify measures to mitigate interface impacts (both construction and operational) on the ecological values of the Regional Park from adjoining urban areas.
- (2) Assess the consistency of the proposal with the Statement of Interim Management Intent for the Regional Park. Outline and justify any variations and provide an appropriate assessment of any potential impacts.

9.1 MITIGATION OF INTERFACE IMPACTS

Active planning and management of the interface area is required to reduce potential impacts to the Regional Park. At the planning stage this has included:

1. Inclusion of perimeter roads to avoid having houses backing on to the Regional Park
2. Identification of 'desire lines' and intelligent placement of pathways to reduce the likelihood of informal access routes
3. Detailed design of the high use precincts within the park to concentrate activities in areas of lower environmental sensitivity
4. Preparation of water and sediment control plans

During demolition and construction the potential to damage the environmental values of the Regional Park will be mitigated through:

1. Provision of fencing to keep contractors out of the Regional Park
2. Provision of signage that identifies the location of critically endangered ecological communities and liability for prosecution under State and Commonwealth legislation
3. Inclusion of an environmental site induction
4. Identification of environmental protection requirements in contracts
5. Installation of sediment control devices (sediment fences, hay bales, ponds) during construction
6. Use of sterile cover crops in spray grass applications
7. Regular weed management along the interface

9.2 CONSISTENCY WITH STATEMENT OF INTERIM MANAGEMENT INTENT

The Statement of Interim Management Intent (SIMI) establishes a vision for the long term management of the Regional Park that focuses on achieving a series of outcomes;

- A sense of community ownership by local and regional communities.
- Exceptional natural environmental outcomes.
- Exceptional heritage outcomes.
- Exceptional urban/natural interface outcomes.
- Community well being and enriching of community lives.
- Governance reflecting stakeholder aspirations.
- Sustainable financing.

The SIMI identifies a series of challenges and threats to achieving the above outcomes. Whilst future Plans of Management will identify the most effective ways of managing these issues, a suite of issues are relevant to this stage of site development. The table below assesses the proposal in relation to the identified challenges and threats.

Table 2. SIMI Management Challenges and Threats

Management Challenge	Compatibility
Environmental protection <ul style="list-style-type: none"> • Land contamination and remediation for land useability 	Department of Defence is currently implementing a remediation plan
<ul style="list-style-type: none"> • Pest species 	The need to manage pest species has been identified in a proposed funding mechanism for the Regional Park. Management actions will be identified in subsequent Plans of Management.
<ul style="list-style-type: none"> • Stormwater management 	A comprehensive stormwater and water sensitive urban design strategy will be implemented.
<ul style="list-style-type: none"> • Retention of Cumberland Plain Woodland 	The amount of Cumberland Plain Woodland being retained on site exceeds that identified in the SIMI.
Fire management <ul style="list-style-type: none"> • Appropriate location of asset protection zones 	Asset protection zones will be located outside of the Regional Park. These will typically constitute urban perimeter roads and front yard setbacks.

Management Challenge	Compatibility
<ul style="list-style-type: none"> • Fire management/people risk 	<p>Urban design is ensuring that fire hazards are adequately catered for.</p>
<ul style="list-style-type: none"> • Inappropriate fire regimes 	<p>Proposed urban design is unlikely to place any specific limitations on implementing fire regimes. The potential for increased levels of arson will require ongoing monitoring and management. The close proximity of fire fighting resources will provide for rapid response in the event of a fire igniting.</p>
Community connectivity	
<ul style="list-style-type: none"> • Interface with the town centre, and other developed areas, both new, and existing residents 	<p>A detailed landscape masterplan (Hassell, 2010) has been prepared to ensure appropriate levels of connectivity.</p>
<ul style="list-style-type: none"> • Protecting existing heritage 	<p>Heritage items have been assessed and incorporated into the landscape masterplan for the site (Hassell, 2010).</p>
<ul style="list-style-type: none"> • Links to Western Sydney Regional Parklands 	<p>Links will be enhanced through the establishment of the Regional Park.</p>
<ul style="list-style-type: none"> • Management for the regional park 	<p>DECCW is proposed to be the responsible entity for management of the Regional Park.</p>
<ul style="list-style-type: none"> • Funding for the regional park 	<p>A funding proposal has been separately prepared for consideration.</p>
<ul style="list-style-type: none"> • Informal tracking 	<p>NA</p>
<ul style="list-style-type: none"> • Inappropriate access (degradation, and trampling) 	<p>This has been recognised in the landscape masterplan (Hassell, 2010) and a comprehensive trail network will be constructed. Astute use of certain native species (eg <i>Bursaria spinosa</i>) may be used to discourage access to areas of high sensitivity.</p>
<ul style="list-style-type: none"> • Unauthorised activities (eg. trail bike riding) 	<p>This will be addressed through preparation and implementation of a Plan of Management.</p>
Park management capacity	
<ul style="list-style-type: none"> • Vehicle parking, traffic, and access management 	<p>To be addressed during design of Regional Park.</p>
<ul style="list-style-type: none"> • Lack of management capacity for maintenance 	<p>A funding proposal has been separately prepared for consideration.</p>

Management Challenge	Compatibility
<ul style="list-style-type: none"> <li data-bbox="298 275 561 300">• Ablution management 	A funding proposal has been separately prepared for consideration.
<ul style="list-style-type: none"> <li data-bbox="298 369 545 394">• Waste management 	A funding proposal has been separately prepared for consideration.
<ul style="list-style-type: none"> <li data-bbox="298 464 558 489">• Recreational conflicts 	To be considered during preparation of a Plan of Management.
<ul style="list-style-type: none"> <li data-bbox="298 558 643 583">• Capacity to manage (overuse) 	To be considered during preparation of a Plan of Management.
<ul style="list-style-type: none"> <li data-bbox="298 653 662 678">• Capacity to manage (under use) 	To be considered during preparation of a Plan of Management.
<p data-bbox="253 800 394 825">Park security</p>	To be mitigated through the use of appropriate fencing and access restrictions. Further detailed consideration will occur during preparation of a Plan of Management.
<ul style="list-style-type: none"> <li data-bbox="298 863 626 888">• Disposal of rubbish/dumping 	To be mitigated through the use of appropriate fencing and access restrictions. Further detailed consideration will occur during preparation of a Plan of Management.
<ul style="list-style-type: none"> <li data-bbox="298 936 537 961">• Arson, and security 	To be considered during preparation of a Plan of Management.
<ul style="list-style-type: none"> <li data-bbox="298 1031 548 1056">• Vandalism, and theft 	To be considered during preparation of a Plan of Management.
<p data-bbox="253 1178 573 1203">Financial management issues</p>	A funding proposal has been separately prepared for consideration.
<ul style="list-style-type: none"> <li data-bbox="298 1241 586 1266">• Cost of service provision 	A funding proposal has been separately prepared for consideration.
<ul style="list-style-type: none"> <li data-bbox="298 1314 797 1339">• Insufficient funds (both capital, and operating) 	A funding proposal has been separately prepared for consideration.
<p data-bbox="253 1472 621 1497">Management of delivery timeframe</p>	This will be mitigated through sound urban design that does not allow properties to back on to the Regional Park. This is enhanced through the proposed boundary adjustment.
<ul style="list-style-type: none"> <li data-bbox="298 1535 578 1560">• Property encroachment 	This will be mitigated through sound urban design that does not allow properties to back on to the Regional Park. This is enhanced through the proposed boundary adjustment.
<ul style="list-style-type: none"> <li data-bbox="298 1619 597 1644">• Slow rate of development 	Development is likely to be subject to market forces.
<ul style="list-style-type: none"> <li data-bbox="298 1692 813 1749">• Security of long term land tenure, and management 	The Regional Park will be owned and management by the NSW Department of Environment, Climate Change and Water (DECCW).

Management Challenge	Compatibility
<p>Longer term issues</p> <ul style="list-style-type: none"> • Transition to five year management regime 	<p>Landcom and DECCW will jointly decide on the management actions within the Regional Park prior to DECCW taking complete ownership of and responsibility for management actions.</p>
<ul style="list-style-type: none"> • Climate change 	<p>Reserve design provides for connectivity and areas of refugia. Urban design and servicing strategies seek to minimise energy use (eg. Gravity sewer main, walkable neighbourhoods, access to public transport).</p>

A Plan of Management will be prepared for the site under the *National Parks and Wildlife Act, 1974* that will detail actions to address the above management challenges and threats.

The concept plan for Edmondson Park has been designed in a manner to be sympathetic to the management requirements of the Regional Park and is the first step in achieving the management outcomes identified in the SIMI.

This development provides a mechanism for the Regional Park to be established, funded and managed into the future and is considered to be consistent with the requirements of the SIMI.

10 Conclusion

Remnant and regrowth vegetation, primarily Cumberland Plain Woodland occurs across the site and provides potential habitat for a number of threatened species protected by state and commonwealth legislation.

Significant past survey and strategic planning of the Edmondson Park release area has identified a development and conservation package that will maintain or improve biodiversity values at the site. Development of this site has received provisional statutory approval under State and Commonwealth legislation by way of the Growth Centres Biodiversity Certification and the Edmondson Park Conservation Agreement.

The report has assessed the proposal in the context of these strategic approvals as required by the DGRs. The following deviations from the approvals have been assessed;

- Regional Park boundary adjustment
- Sewer line alignment
- RAP implementation
- Modification of riparian open space corridors

It has been demonstrated that the above modifications are broadly consistent with the Biodiversity Certification and Conservation Agreement and collectively result in an increase in the area of Cumberland Plain Woodland being protected.

The design of the site has placed the majority of high quality vegetation into a Regional Park that will be managed by the state government in-perpetuity. This conservation outcome will be augmented by a series of open space areas that will protect additional areas of Cumberland Plain Woodland, which over time will contribute to habitat links across the site.

The relatively high levels of protection, combined with ongoing management of the site and additional offsite offsets afforded through the Conservation Fund and Conservation Agreement will;

- maintain or improve biodiversity values;
- not reduce the long-term viability of a local population of a species, population or ecological community;
- not accelerate the extinction of a species, population or ecological community or place it at risk of extinction; and
- will not adversely affect critical habitat.

The concept plan has demonstrated consistency with the Statement of Interim Management Intent for the Regional Park and will provide the initial step for securing funding and initiating much needed management actions.

A series of recommendation have also been prepared to minimise any impacts to the Regional Park during the construction stage and to assist in integrating the Regional Park/urban interface.

References

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NSW NPWS, 2003. *Native Vegetation of the Cumberland Plain, Western Sydney*. NSW NPWS, Hurstville, Sydney.

Appendix A: Likelihood of Occurrence

THREATENED FAUNA

Common Name	Scientific Name	Legal Status	Likelihood
Eastern False Pipistrelle	<i>Falsistrellus tasmaniensis</i>	V	Known
Cumberland Plain Land Snail	<i>Meridolum corneovirens</i>	E1	Known
Eastern Bentwing-bat	<i>Miniopterus schreibersii oceanensis</i>	V	Known
Eastern Freetail-bat	<i>Mormopterus norfolkensis</i>	V	Known
Greater Broad-nosed Bat	<i>Scoteanax rueppellii</i>	V	Known
Varied Sittella	<i>Daphoenositta chrysoptera</i>	V	Likely
Little Lorikeet	<i>Glossopsitta pusilla</i>	V	Likely
Little Eagle	<i>Hieraetus morphnoides</i>	V	Likely
Square-tailed Kite	<i>Lophoictinia isura</i>	V	Likely
Large-footed Myotis	<i>Myotis adversus</i>	V	Likely
Scarlet Robin	<i>Petroica boodang</i>	V	Likely
Flame Robin	<i>Petroica phoenicea</i>	V	Likely
Grey-headed Flying-fox	<i>Pteropus poliocephalus</i>	V	Likely
Spotted Harrier	<i>Circus assimilis</i>	V	No
White-fronted Chat <i>Epthianura albifrons</i> (Jardine & Selby, 1828) in the Sydney Metropolitan Catchment Management Authority area	<i>Epthianura albifrons</i>	E2	No
Giant Burrowing Frog	<i>Heleioporus australiacus</i>	V	No
Brush-tailed Rock-wallaby	<i>Petrogale penicillata</i>	E1	No
Red-crowned Toadlet	<i>Pseudophryne australis</i>	V	No
Spotted-tailed Quoll	<i>Dasyurus maculatus</i>	V	Potential
Swift Parrot	<i>Lathamus discolor</i>	E1	Potential
Black-chinned Honeyeater (eastern subsp.)	<i>Melithreptus gularis gularis</i>	V	Potential
Southern Myotis	<i>Myotis macropus</i>	V	Potential
Powerful Owl	<i>Ninox strenua</i>	V	Potential
Superb Parrot	<i>Polytelis swainsonii</i>	V	Potential
Speckled Warbler	<i>Pyrrholaemus sagittatus</i>	V	Potential
Yellow-bellied Sheath-tail-bat	<i>Saccolaimus flaviventris</i>	V	Potential
Regent Honeyeater	<i>Xanthomyza phrygia</i>	E1	Potential
Magpie Goose	<i>Anseranas semipalmata</i>	V	Unlikely
Major Mitchell's Cockatoo	<i>Cacatua leadbeateri</i>	V	Unlikely
Eastern Pygmy-possum	<i>Cercartetus nanus</i>	V	Unlikely
Green and Golden Bell Frog	<i>Litoria aurea</i>	E1	Unlikely
Koala	<i>Phascolarctos cinereus</i>	V	Unlikely

THREATENED FLORA

Common Name	Scientific Name	Legal Status	Likelihood
Allocasuarina glareicola	<i>Allocasuarina glareicola</i>	E1	No
White-flowered Wax Plant	<i>Cynanchum elegans</i>	E1	No
Narrow-leaved Black Peppermint	<i>Eucalyptus nicholii</i>	V	No
Wallangarra White Gum	<i>Eucalyptus scoparia</i>	E1	No
Grevillea caleyi	<i>Grevillea caleyi</i>	E1	No
Grevillea parviflora	<i>Grevillea parviflora</i>	V	No
Small-flower Grevillea	<i>Grevillea parviflora subsp. parviflora</i>	V	No
Grevillea shiressii	<i>Grevillea shiressii</i>	V	No
Leucopogon exolasius	<i>Leucopogon exolasius</i>	V	No
Marsdenia viridiflora R. Br. subsp. viridiflora population in the Bankstown, Blacktown, Camden, Campbelltown, Fairfield, Holroyd, Liverpool and Penrith local government areas	<i>Marsdenia viridiflora subsp. viridiflora</i>	E2	No
Deane's Paperbark	<i>Melaleuca deanei</i>	V	No
Hairy Geebung	<i>Persoonia hirsuta subsp. hirsuta/evoluta</i>	E1	No
Nodding Geebung	<i>Persoonia nutans</i>	E1	No
Pultenaea pedunculata	<i>Pultenaea pedunculata</i>	E1	No
Syzygium paniculatum	<i>Syzygium paniculatum</i>	V	No
Tetraloche juncea	<i>Tetraloche juncea</i>	V	No
Woronora Beard-heath	<i>Leucopogon exolasius</i>	V	No
Leucopogon fletcheri subsp. fletcheri	<i>Leucopogon fletcheri subsp. fletcheri</i>	E1	No
Downy Wattle	<i>Acacia pubescens</i>	V	Potential
Spiked Rice-flower	<i>Pimelea spicata</i>	E1	Potential
Sydney Plains Greenhood	<i>Pterostylis saxicola</i>	E1	Potential
Dillwynia tenuifolia	<i>Dillwynia tenuifolia</i>	E2	Unlikely
Juniper-leaved Grevillea	<i>Grevillea juniperina subsp. juniperina</i>	V	Unlikely

Appendix B: Biodiversity Certification Consistency Report

	Relevant Biodiversity Measure	Edmondson Park - Comment	Consistent with RBMs and Schedule 7 Part 7 of TSC Act	Justification
General				
4	Copies of all final reports, maps, reviews, plans and monitoring data referred to in the conditions of biodiversity certification must be held by the GCC and made publicly available, either on request and/or by a mechanism that is broadly publicly accessible. This does not apply to material that is commercially sensitive or contains sensitive information regarding the location of threatened species, populations or ecological communities or their habitat.	All information required by the RBMs for Edmondson Park will be publically exhibited and made available via the DoP Part 3A portal	Yes	Provided DoP maintain access to these reports, this condition is satisfied.
Retention of existing native vegetation during development				

	Relevant Biodiversity Measure	Edmondson Park - Comment	Consistent with RBMs and Schedule 7 Part 7 of TSC Act	Justification
8	<p>In making a determination under condition 7, the GCC must demonstrate by way of information provided during the public exhibition of the precinct plan (where that exhibition occurs after this order takes effect) that the clearing of any existing native vegetation in the non-certified areas will be offset by:</p> <p>(a) the protection of an equal or greater area of existing native vegetation elsewhere in the Growth Centres; and/or</p> <p>(b) the revegetation and/or restoration of an area of land elsewhere in the Growth Centres, subject to satisfying the following,</p> <p>(i) that the clearance of existing native vegetation in the non-certified areas will not affect the capacity to achieve overall improvement or maintenance of biodiversity values for threatened species, populations and ecological communities and their habitats,</p> <p>(ii) the revegetated and/or restored areas will be protected,</p>	<p>4.2 Ha of certified ENV is being protected compared to 1.8 Ha of non-certified ENV that is being lost.</p> <p>NA – Pathway 'a' has been followed</p>	Yes	Offsets will be provided by way of protecting 4.2 Ha of certified ENV. A further 9 Ha of cleared land will be revegetated under the Commonwealth Conservation Agreement. An additional 4 Ha parcel of CPW that meets the definition of ENV but is not mapped as ENV is also located within the Regional Park.

	Relevant Biodiversity Measure	Edmondson Park - Comment	Consistent with RBMs and Schedule 7 Part 7 of TSC Act	Justification
	<p>(iii) the extent of revegetation and/or restoration compared to clearing of existing native vegetation must be undertaken at a ratio of at least 3:1 (to reflect the greater ecological risks relative to retaining existing native vegetation),</p> <p>(iv) areas subject to revegetation and/or restoration must be of a suitable boundary configuration and design to support long-term management,</p> <p>(v) revegetation and/or restoration of the proposed areas would not be undertaken under another scheme or regulatory requirement already in operation at the time that the clearing is approved (this includes but is not limited to any approvals, and associated conditions of such approvals, that may be required under the <i>Rivers and Foreshores Improvement Act 1948</i> and <i>Water Management Act 2000</i>),</p> <p>(vi) revegetation and/or restoration will be undertaken by suitably qualified and experienced persons using indigenous</p>			

	Relevant Biodiversity Measure	Edmondson Park - Comment	Consistent with RBMs and Schedule 7 Part 7 of TSC Act	Justification
	<p>plant stock, and</p> <p>(vii) sufficient resources will be made available to undertake the revegetation and/or restoration and any necessary follow-up maintenance and monitoring for a minimum period of 5 years following the commencement of the revegetation and/or restoration.</p>			
10	<p>In the non-certified areas, proposals to clear existing native vegetation shall be subject to the relevant development controls in the SEPP and <i>Sydney Regional Environmental Plan No. 31 – Regional Parklands</i>, and the requirements of the <i>Environmental Planning and Assessment Act 1979</i>.</p>	<p>Under the SEPP Clearing for the purposes of a sewer main may be undertaken without consent.</p> <p>Clearing of 'native vegetation' that will be required for the Regional Park boundary adjustment has been considered under Part 6 of the SEPP will result in a maintain or improve outcome and is suitable for approval.</p>	Yes	See detailed justification in Chapter 5.
11	<p>Where there are essential infrastructure proposals, including but not limited to proposals under Part 3A of the <i>Environmental Planning and Assessment Act 1979</i>, that involve clearing of existing native vegetation in the non-certified areas and that do not require development consent under the SEPP, such clearing must be offset by applying the same requirements specified in condition 8 above.</p>	<p>Construction of the sewer line is considered to be a critical infrastructure requirement that will result in the clearing of 0.29 Ha of ENV during construction. This area will be revegetated post-construction. The offset requirement is addressed in Clause 8 above.</p>	Yes	Addressed in Clause 8 above.

	Relevant Biodiversity Measure	Edmondson Park - Comment	Consistent with RBMs and Schedule 7 Part 7 of TSC Act	Justification
	In this case the offsets may be located outside of the Growth Centres (but within the Cumberland Plain of Western Sydney, as defined in condition 32) if the GCC is satisfied that there are no practicable offset options within the Growth Centres and all other requirements of condition 8 will be met. However, any offsets outside the Growth Centres cannot be counted towards meeting the requirements of condition 6.			
	Retention of existing native vegetation shown in areas marked with red hatching			
12	Notwithstanding any other conditions of biodiversity certification, in the lands marked by a red hatching on the biodiversity certification maps existing native vegetation must not be cleared unless it is in accordance with a plan of management or unless such clearance has been agreed to by the DECC .	All non-certified lands within Edmondson Park are marked by the red hatching. The proposed clearing (boundary adjustment, sewer and RAP implementation) is not in accordance with a plan of management.	Yes – subject to formal agreement from DECCW.	Formal agreement from DECCW required.

Appendix C: Qualifications

The following people have been involved in the preparation of this report:

Name	Role	Qualifications
Steven House	Project Director Field survey, reporting	Bachelor of Science Grad Dip. Bushfire Scientific License: S10805
Ross Wellington	Project Manager Field survey	Bachelor of Arts Diploma of Education Scientific License: S10805
Robert Mezzatesta	GIS Manager GIS analysis, map preparation	Bachelor of Science Master of Environmental Planning

Certification

I certify that this is a true and accurate report.



Steven House

Director

26th August, 2010

Appendix D: Conservation Agreement

Appendix E: Biodiversity Certification Order



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